

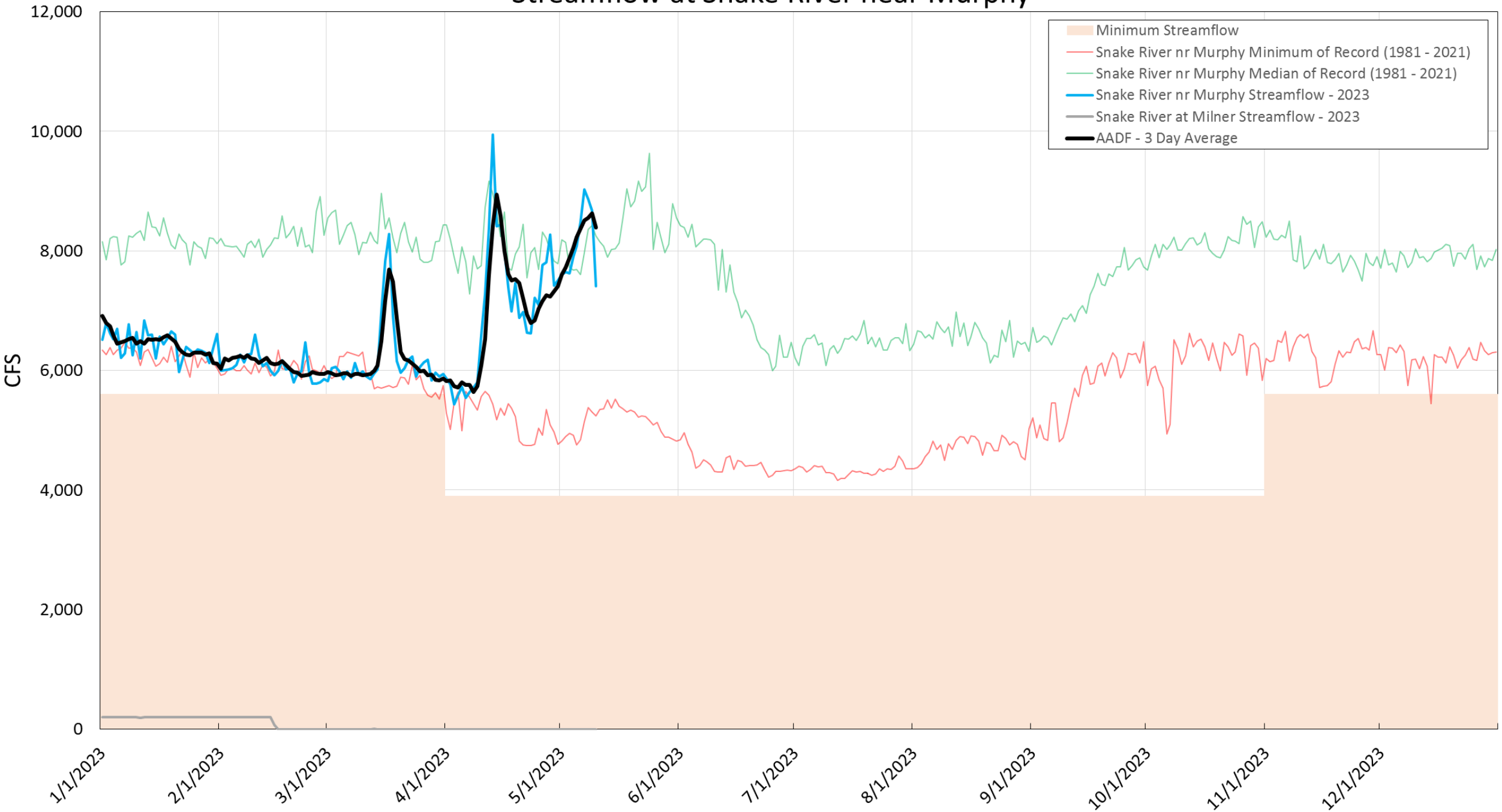
Swan Falls AADF Update

Presented by Ethan Geisler

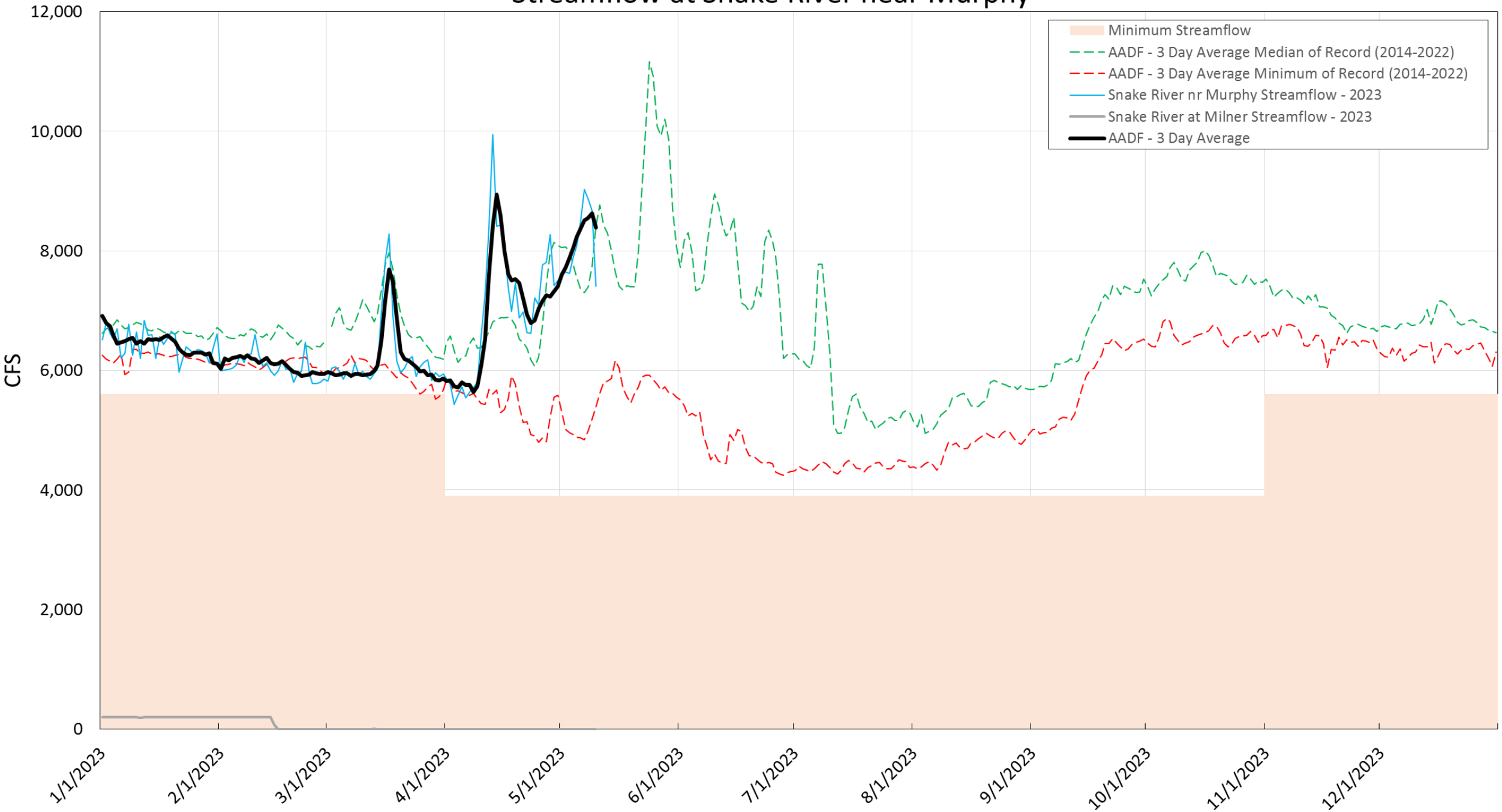
May 11th, 2023



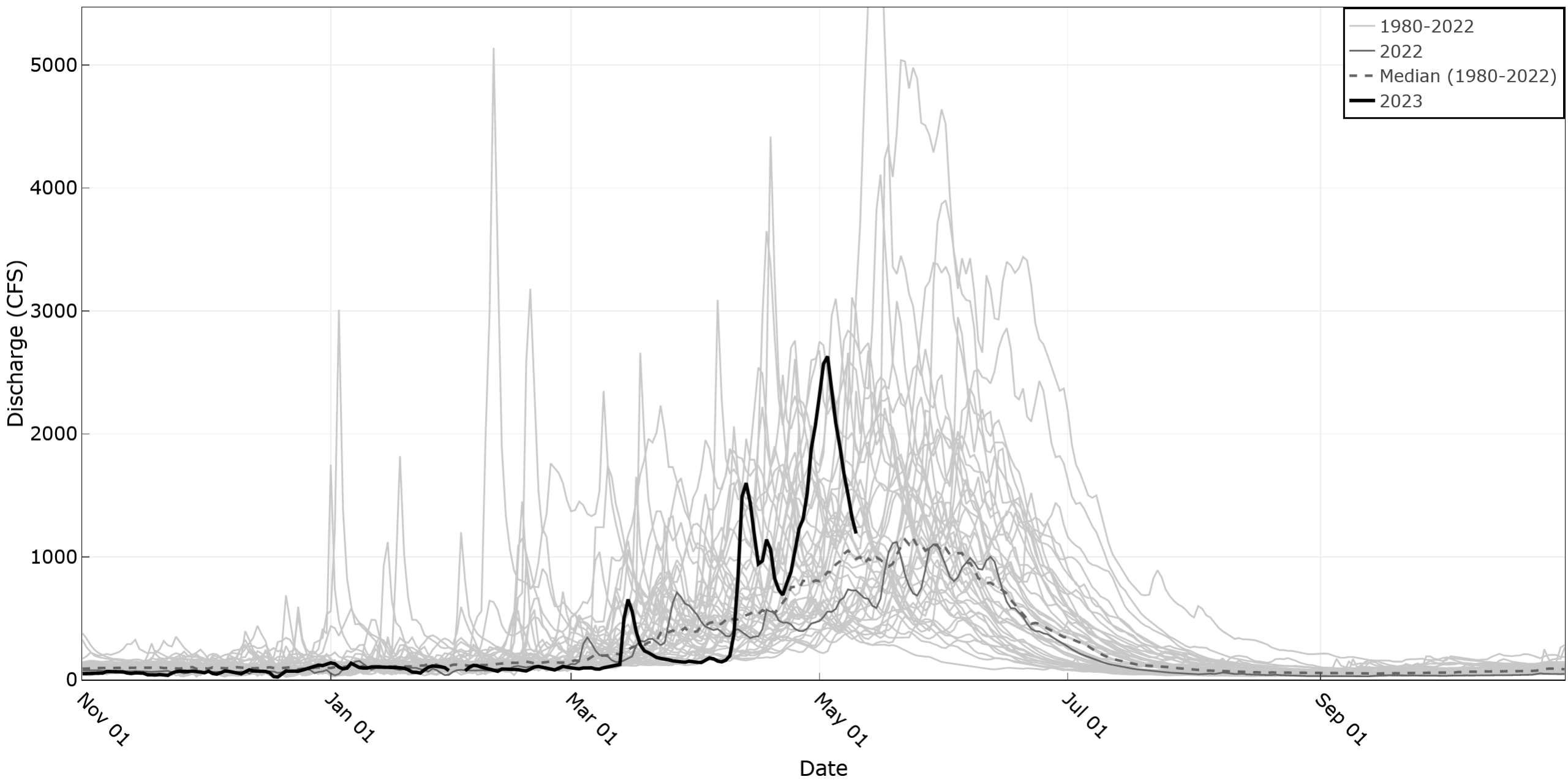
Streamflow at Snake River near Murphy



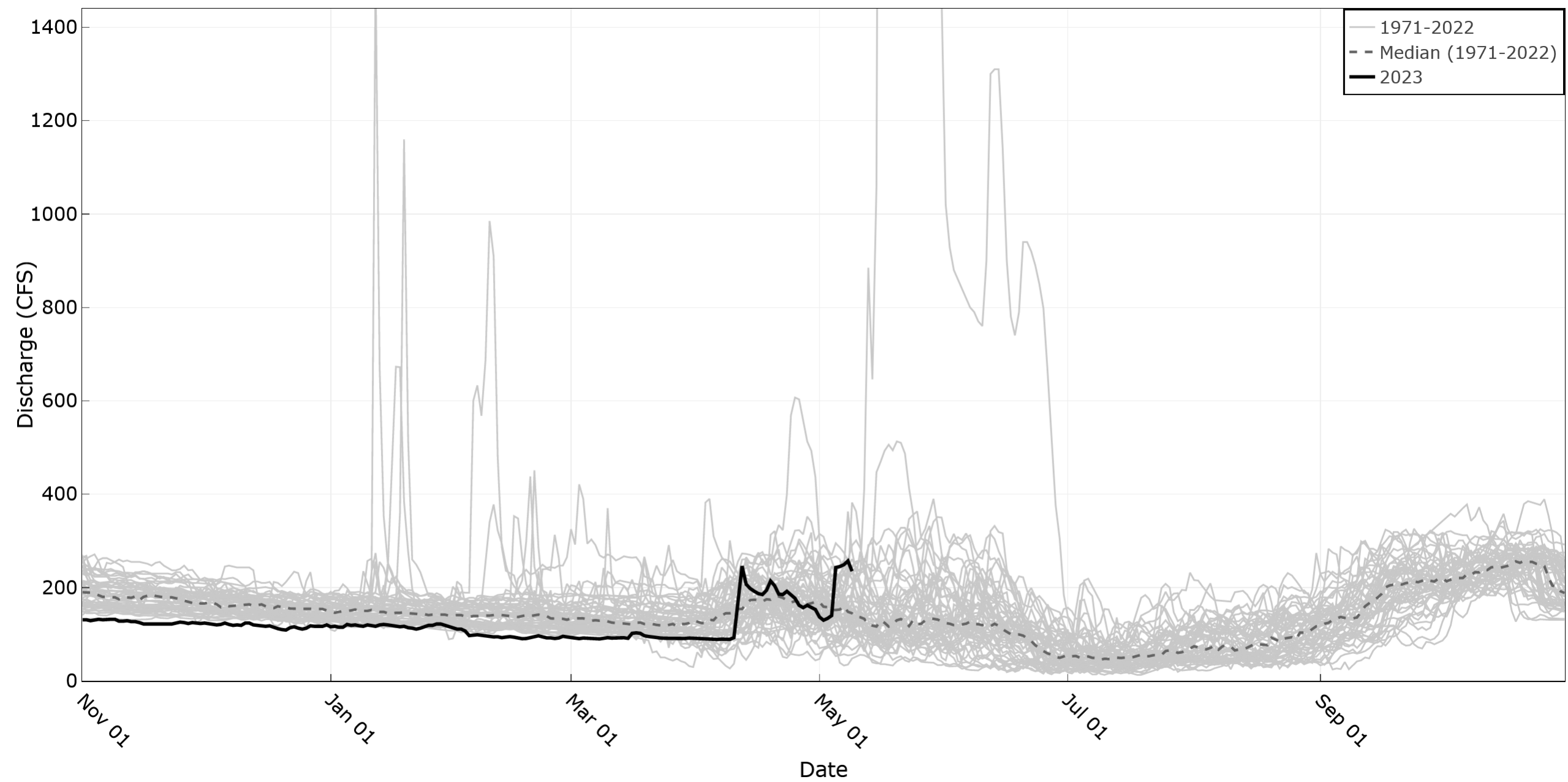
Streamflow at Snake River near Murphy



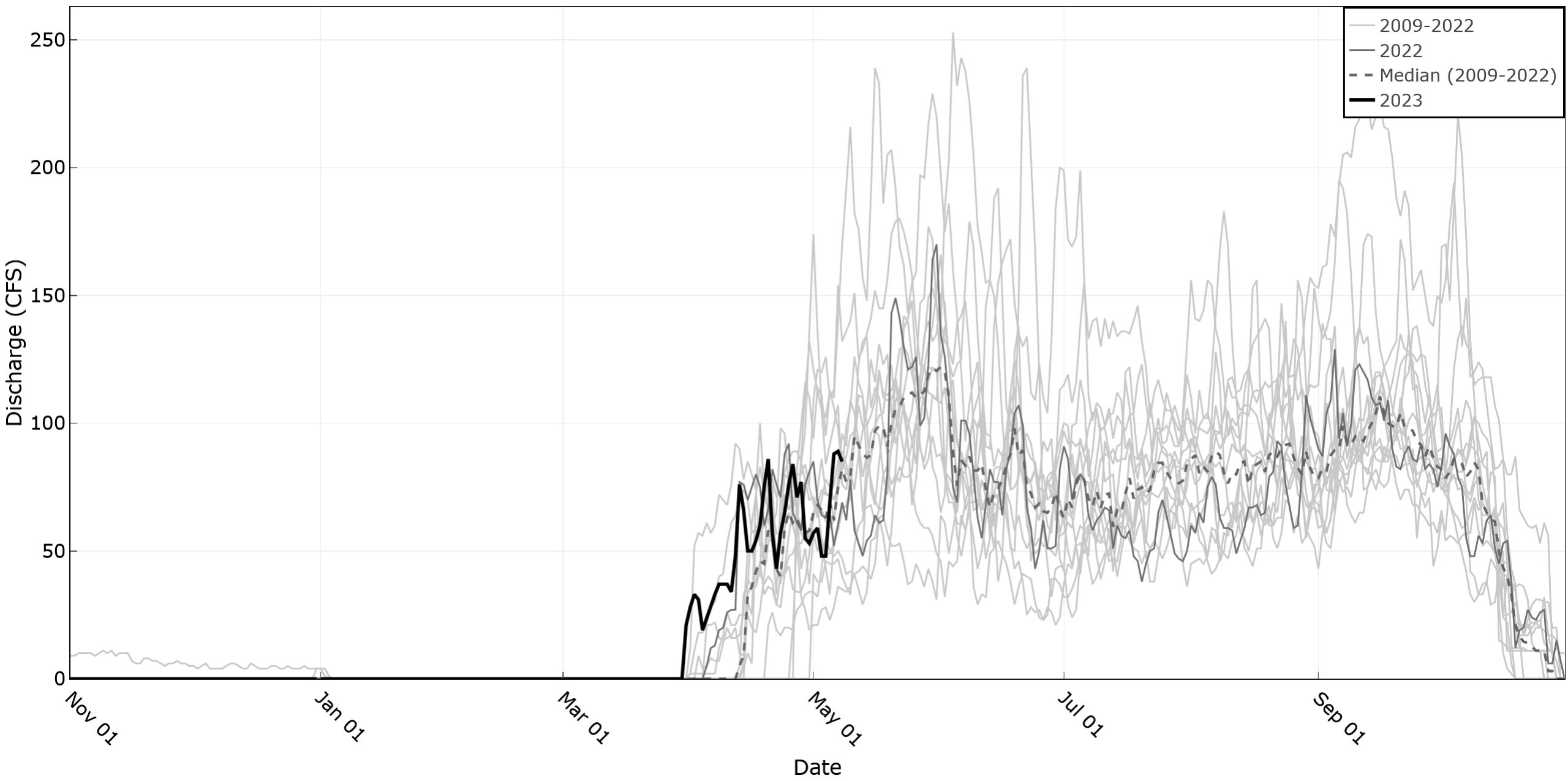
Bruneau River nr Hot Springs



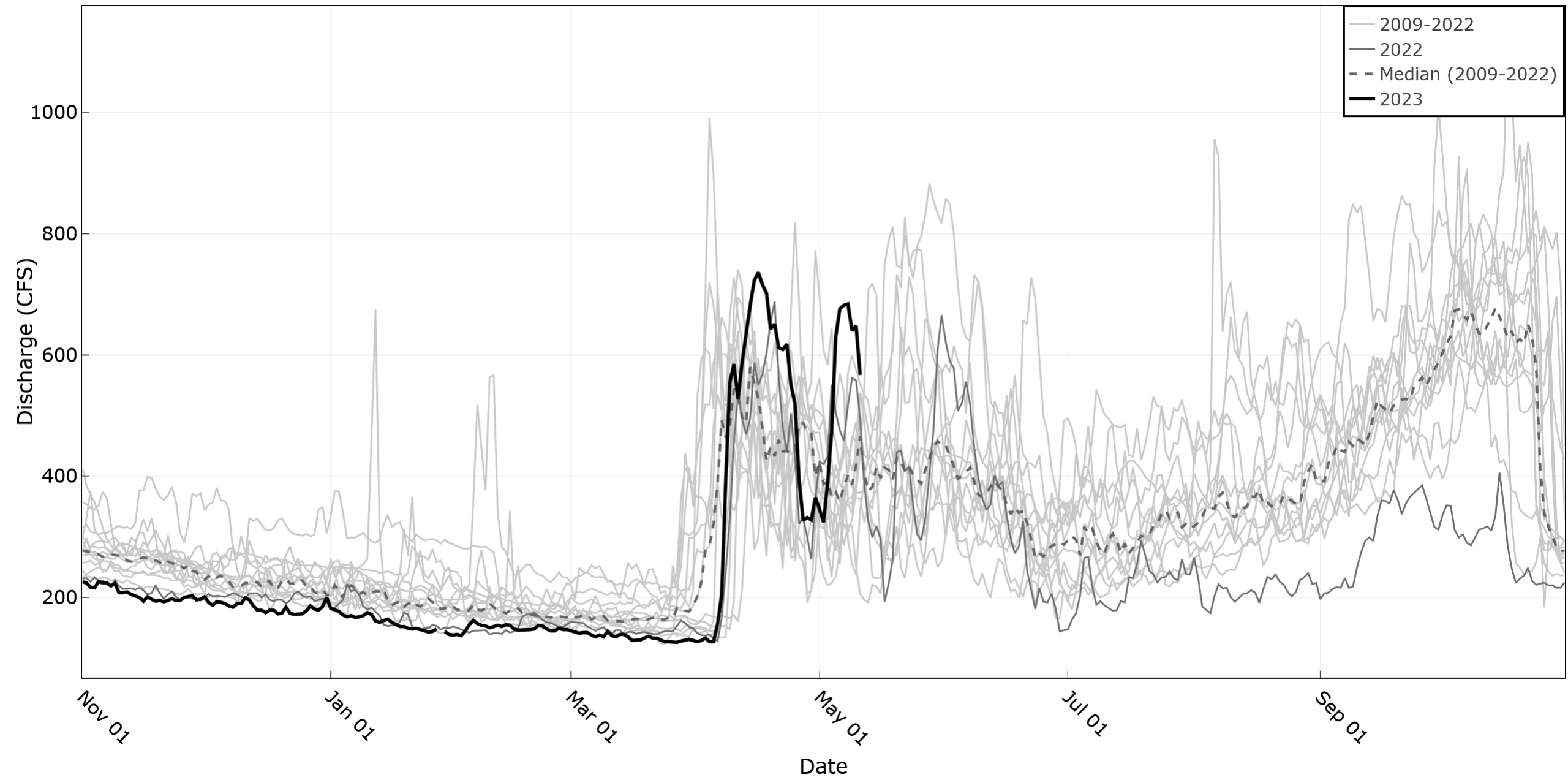
Salmon Falls Creek nr Hagerman



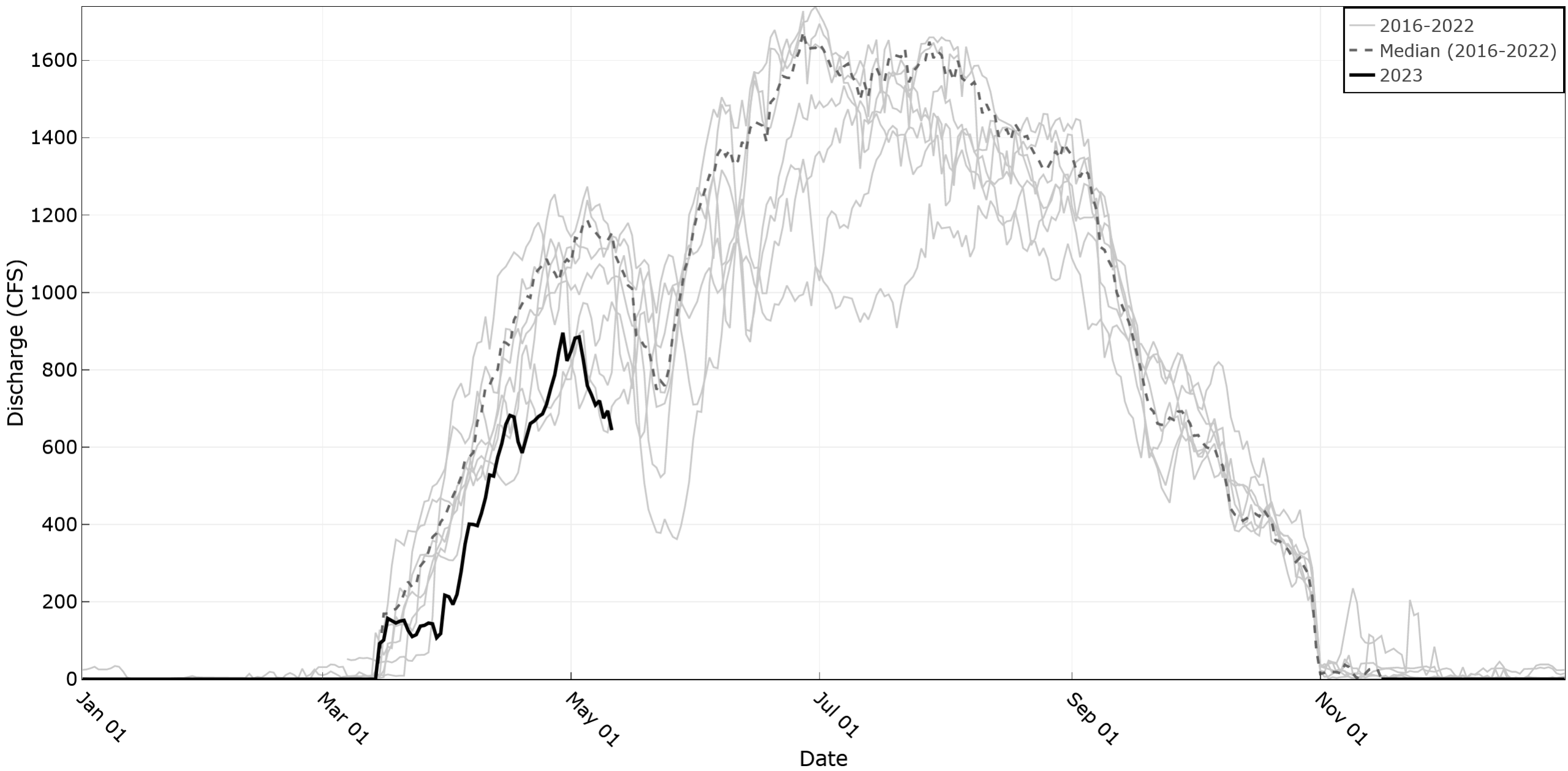
Snake River Northside Return Flow



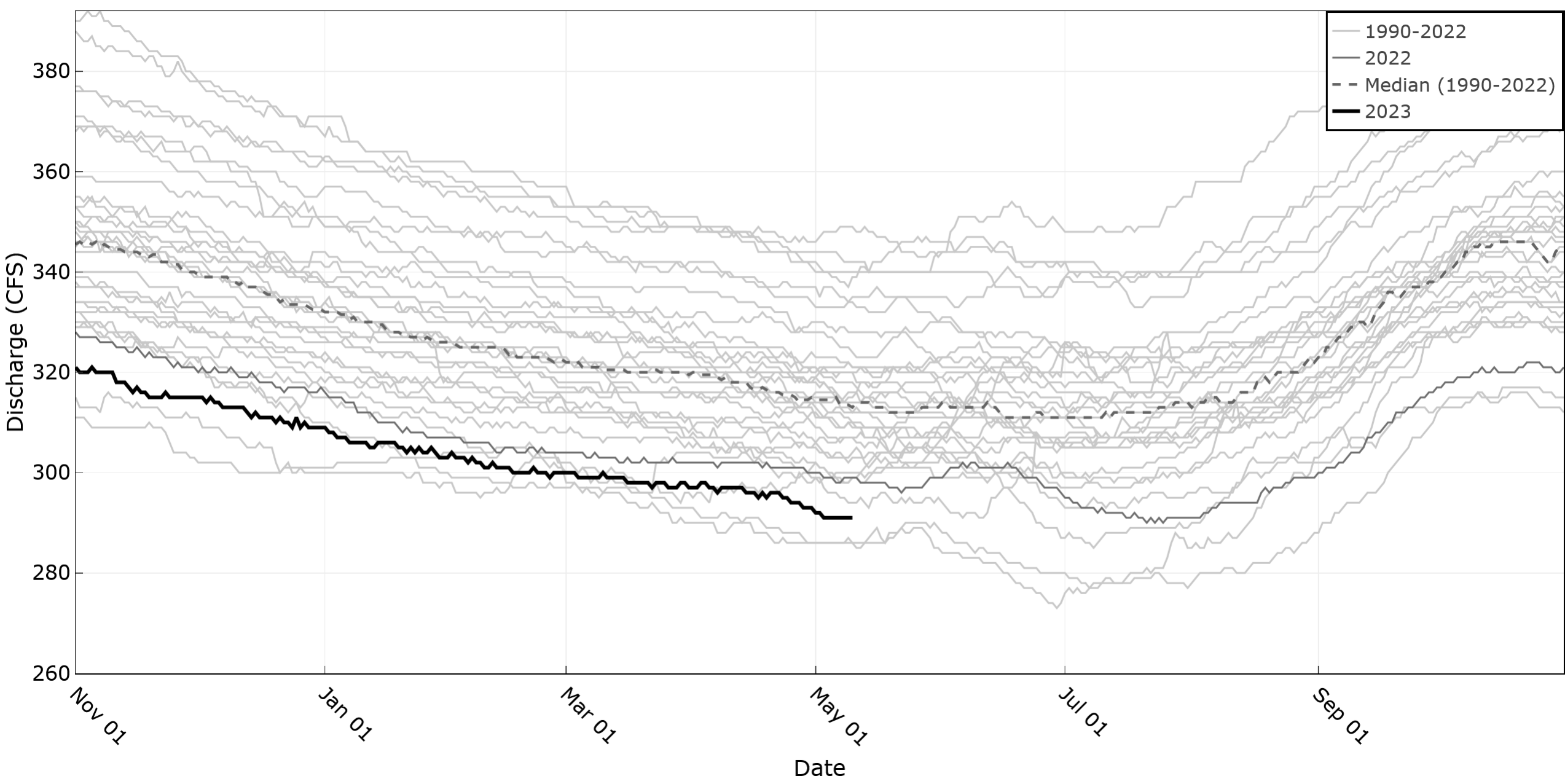
Snake River Southside Return Flows



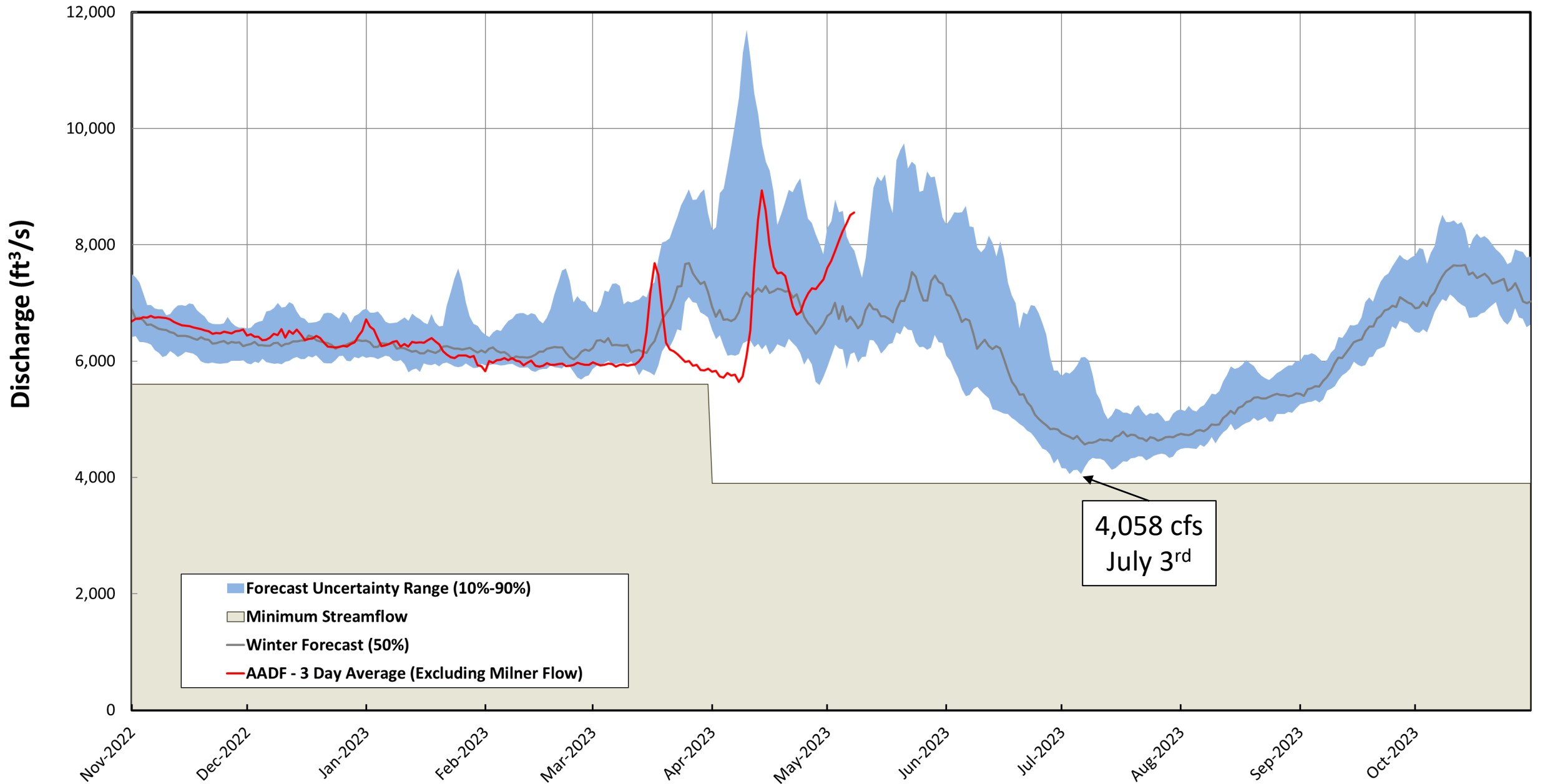
WD02 Diversions



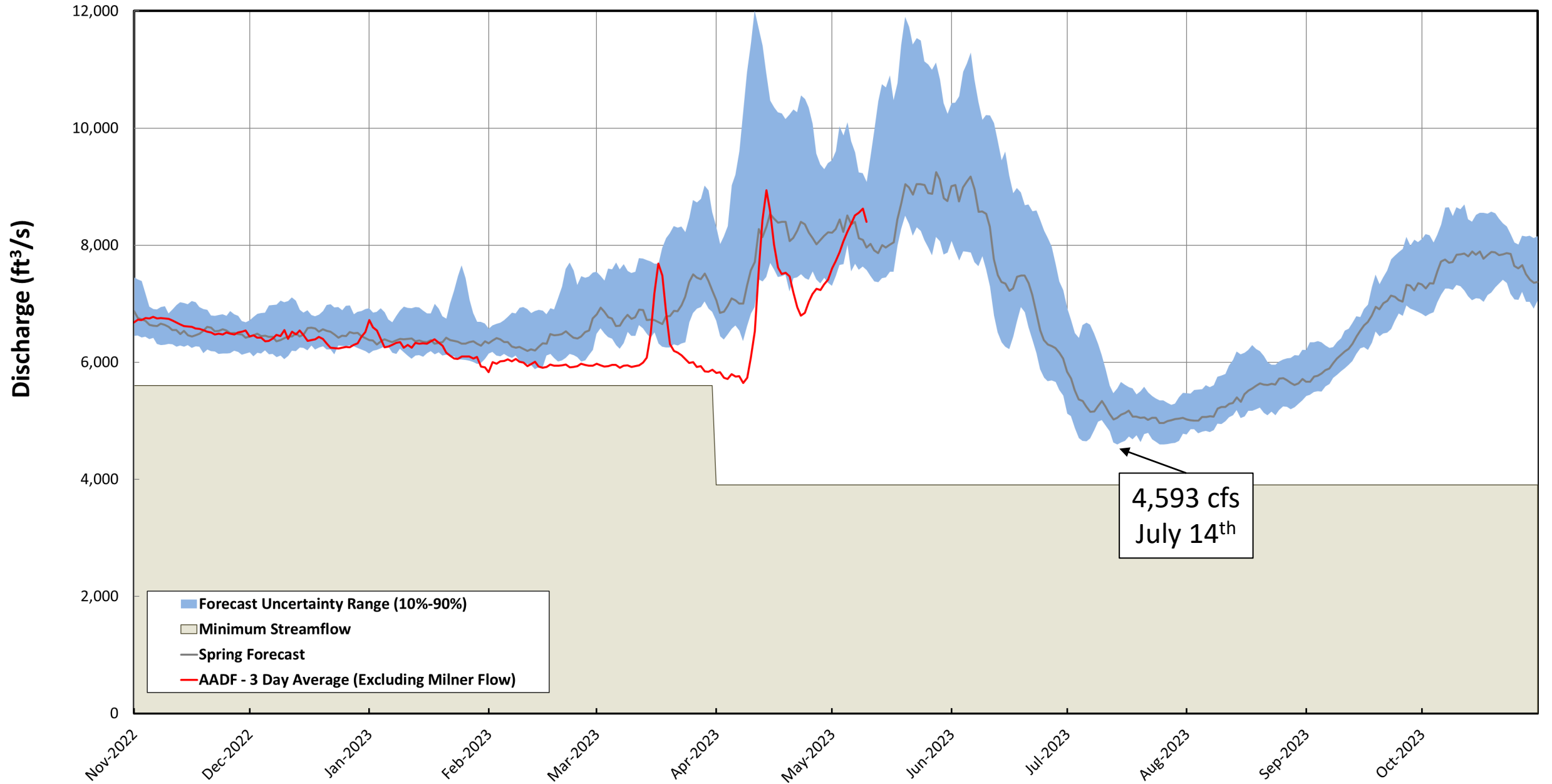
Box Canyon Spring nr Wendell



2023 Winter Forecast



2023 Spring Forecast



AutoSave Off May_Forecast_v7_2023_Provisional.xlsx

File Home Insert Page Layout Formulas Data Review View Automate SRS1 Splines Help DYMO L

Undo Clipboard Font Alignment

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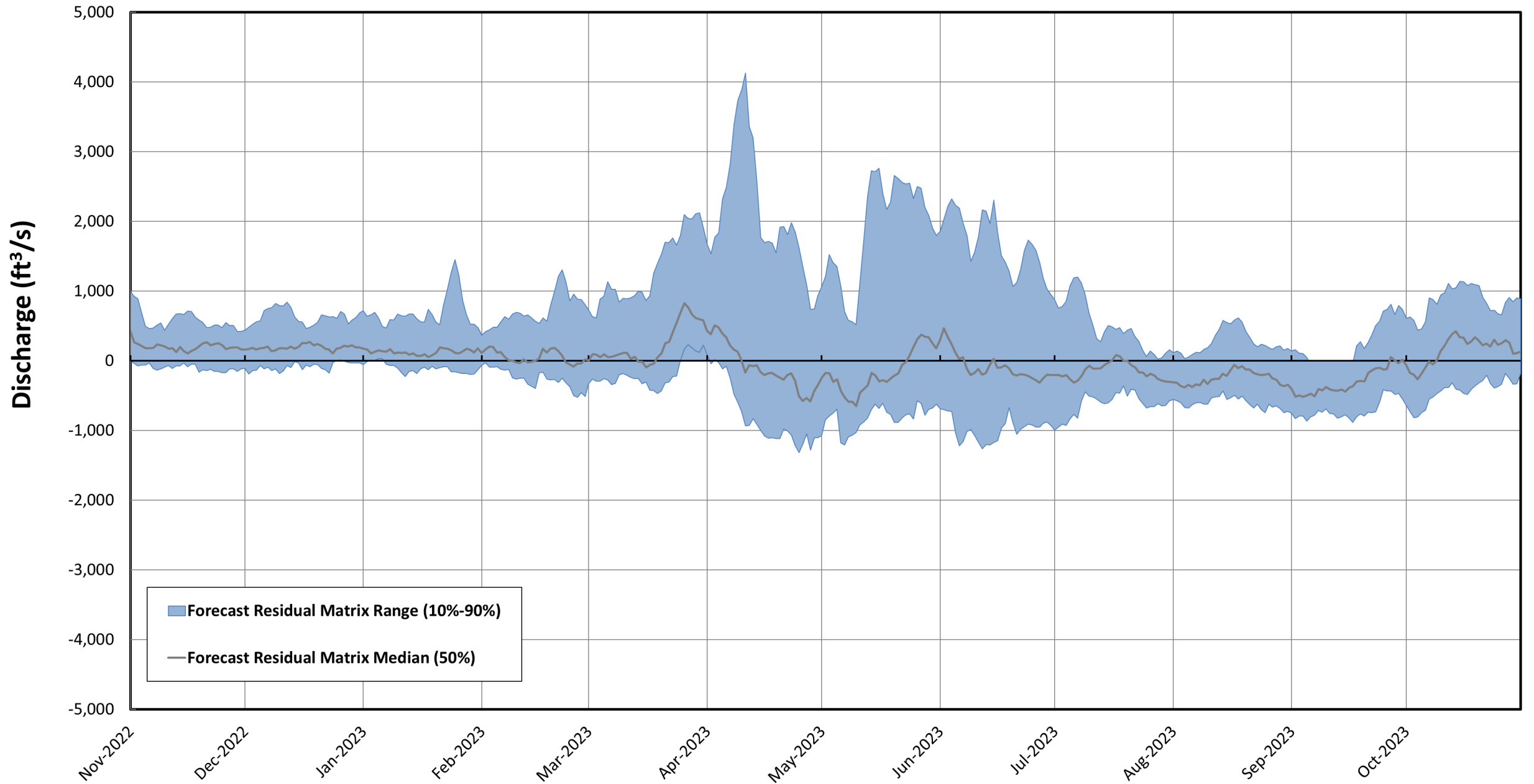
WELL SELECTION

Enter the Observation Yr	Enter Number of Wells in Interpolation Neighborhood									
2022	10 (between 1 and 100)									
Well ID	X IDTM	Y IDTM	x - orig (mi)	y - orig (mi)	Column	Row	2008 DTW	DTW	Delta H	
05S 15E 35DBD2	2447737	1304903	43.11	17.46	28	38	153.35	159.99	-6.64	
08S 24E 31DAC1	2525237	1275694	91.27	35.61	60	78	172.95	9999.00	9999.00	
09S 25E 03CAC1	2538833	1274215	99.72	36.53	67	84	65.27	69.00	-3.73	
08S 25E 36DAA1	2543147	1276060	102.40	35.38	69	84	128.96	132.26	-3.30	
09S 25E 23DBA1	2540978	1269569	101.05	39.41	66	87	157.59	158.91	-1.32	
12S 21E 26CCD2	2502551	1238321	77.17	58.83	36	91	470.62	462.88	7.74	
10S 21E 28BCB1	2499269	1258656	75.14	46.19	41	79	339.80	334.56	5.24	
10S 21E 26AAA2	2503776	1259168	77.94	45.88	43	80	285.57	285.82	-0.25	
08S 26E 03DCC1	2549013	1283256	106.04	30.91	75	82	277.20	281.93	-4.73	
07S 26E 14CCC1	2549625	1289800	106.43	26.84	77	79	331.81	336.33	-4.52	
12S 21E 02DAA1	2504002	1245472	78.08	54.39	39	88	462.40	411.39	51.01	
08S 14E 16CBB1	2432018	1281521	33.35	31.99	12	45	42.11	42.59	-0.48	
07S 25E 19BAA1	2534180	1289767	96.83	26.86	69	74	265.09	9999.00	9999.00	
08S 15E 32CBB1	2439955	1276681	38.28	34.99	15	50	79.13	78.65	0.48	
12S 23E 06DCC1	2515360	1244790	85.13	54.81	45	92	403.17	412.08	-8.91	
11S 21E 25AAA1	2505612	1249466	79.08	51.90	41	86	489.13	489.91	-0.78	
05S 17E 26ACA1	2467272	1306960	55.25	16.18	39	43	229.91	238.25	-8.34	
09S 29E 04BCA1	2575456	1274856	122.48	36.13	86	95	4.44	7.60	-3.16	
07S 14E 33BBB1	2432072	1287049	33.38	28.55	14	42	110.88	112.00	-1.12	
08S 17E 33DAD2	2462011	1276110	51.98	35.35	26	58	263.95	262.38	1.57	
06S 29E 15BBC1	2576189	1300655	122.93	20.10	95	82	417.73	419.94	-2.20	
05S 14E 12AAA1	2440267	1312524	38.47	12.72	27	31	129.85	132.50	-2.65	
12S 21E 25CCC1	2504025	1238452	78.09	58.75	37	91	437.01	415.08	21.93	
08S 14E 12CBC1	2436872	1282918	36.36	31.12	15	46	73.52	73.35	0.17	
09S 28E 18BAD1	2563192	1271741	114.86	38.06	79	93	16.81	16.43	0.38	
09S 29E 18CDA1	2572902	1270942	120.89	38.56	84	96	45.43	45.51	-0.08	
08S 29E 34CBC1	2576877	1276044	123.36	35.39	87	95	152.51	165.78	-13.27	
08S 28E 01AAA2	2571981	1284979	120.32	29.84	88	89	233.91	235.18	-1.27	
05S 28E 26BBD1	2568350	1307236	118.06	16.01	93	76	9999.00	690.65	9308.35	

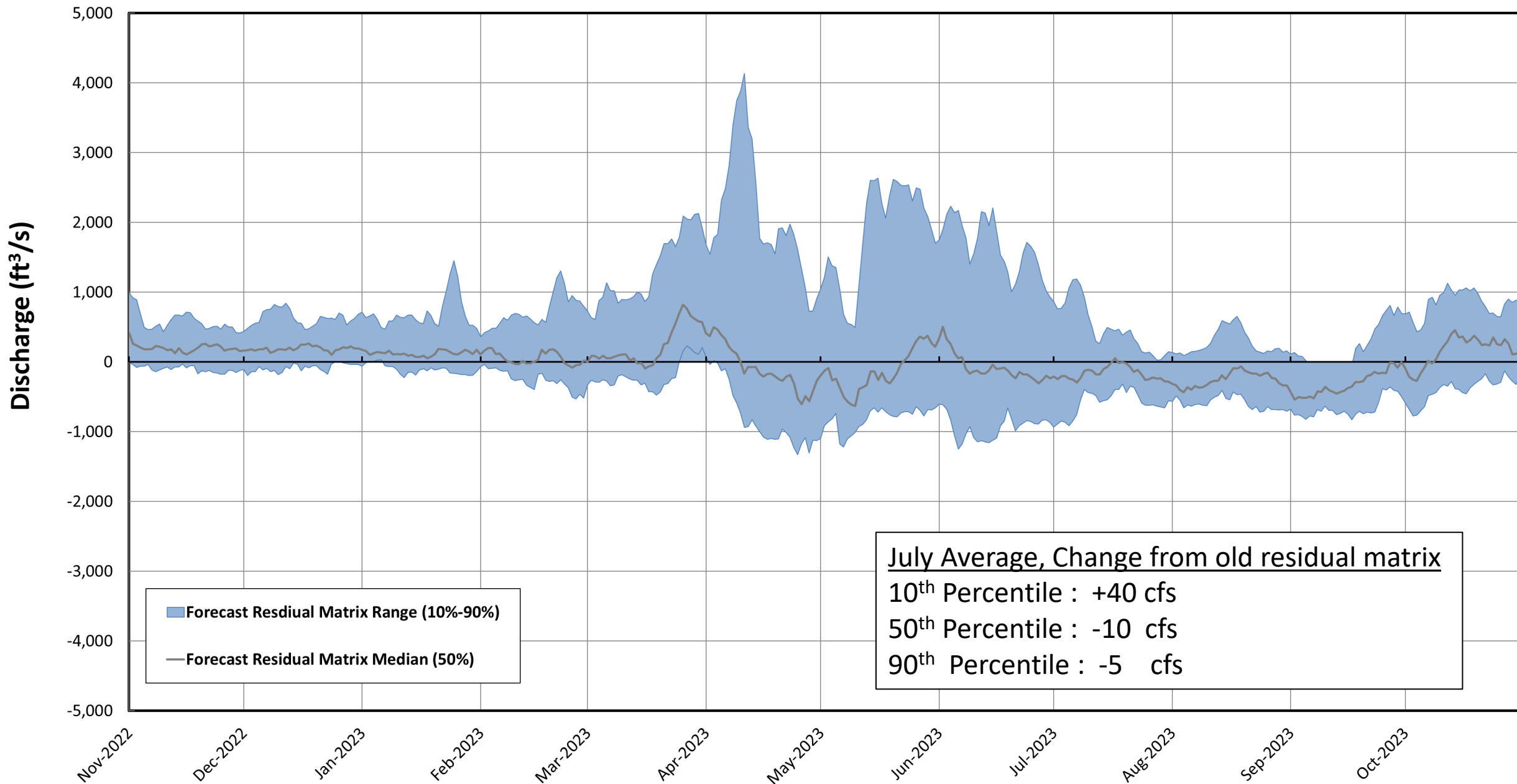
Return Flow - datasheet | Head - Map | **Head - Well Selection** | Head - Well Data | Irr Rech Inp

- Recalibrate from 2002 -2021 with updated “Head – Well Selection” Tab
 - ESPAM 2.2 observed data vs Forecast Tool forecasted data
 - Recalculated residuals for each year

Residual Matrix: Previous Version



Residual Matrix: New Version



July Average, Change from old residual matrix
10th Percentile : +40 cfs
50th Percentile : -10 cfs
90th Percentile : -5 cfs

- Original Question 5:

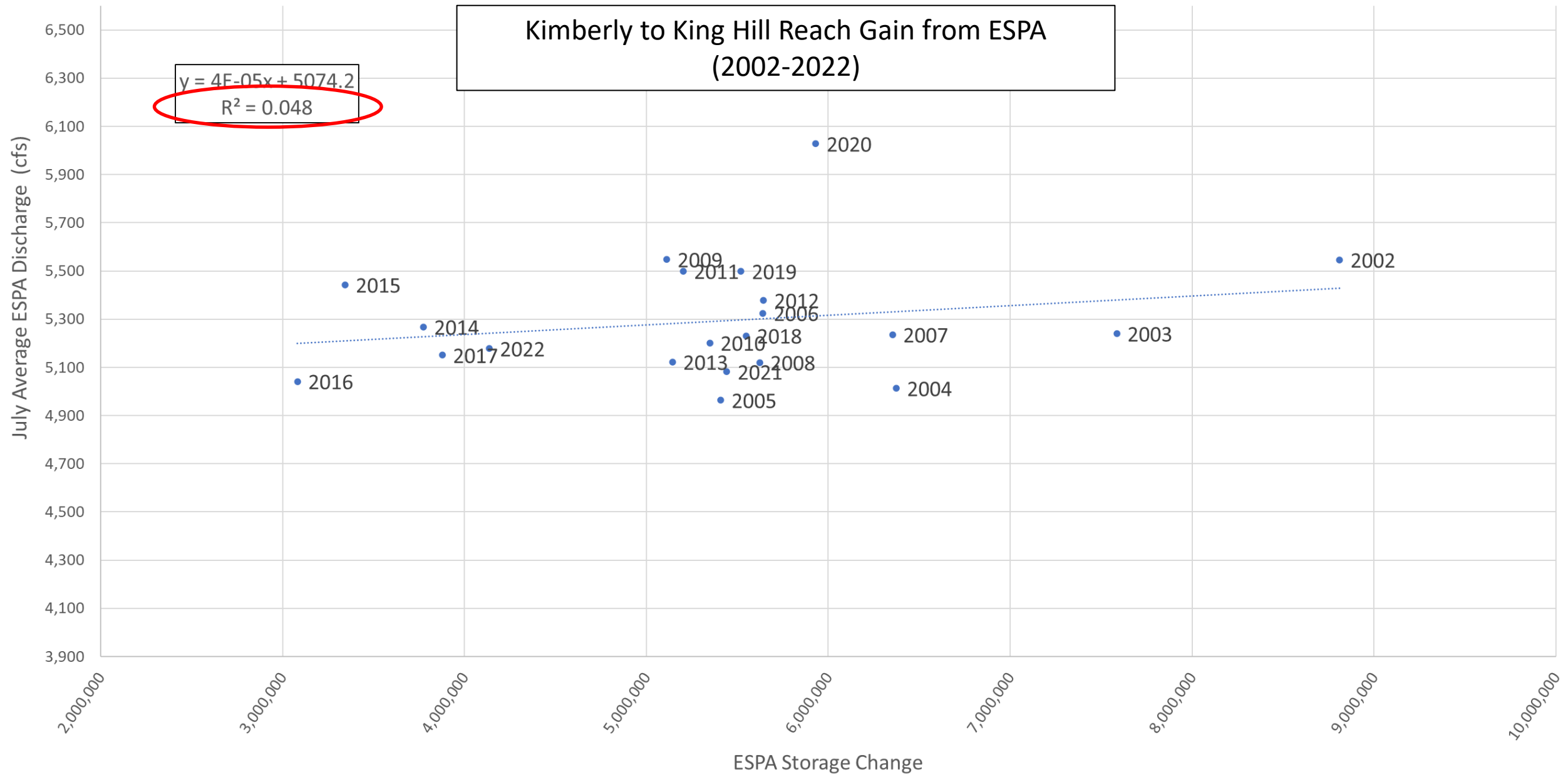
Analysis of the necessary ESPA levels, storage volumes, and discharge required to maintain minimum flows at the Murphy Gage

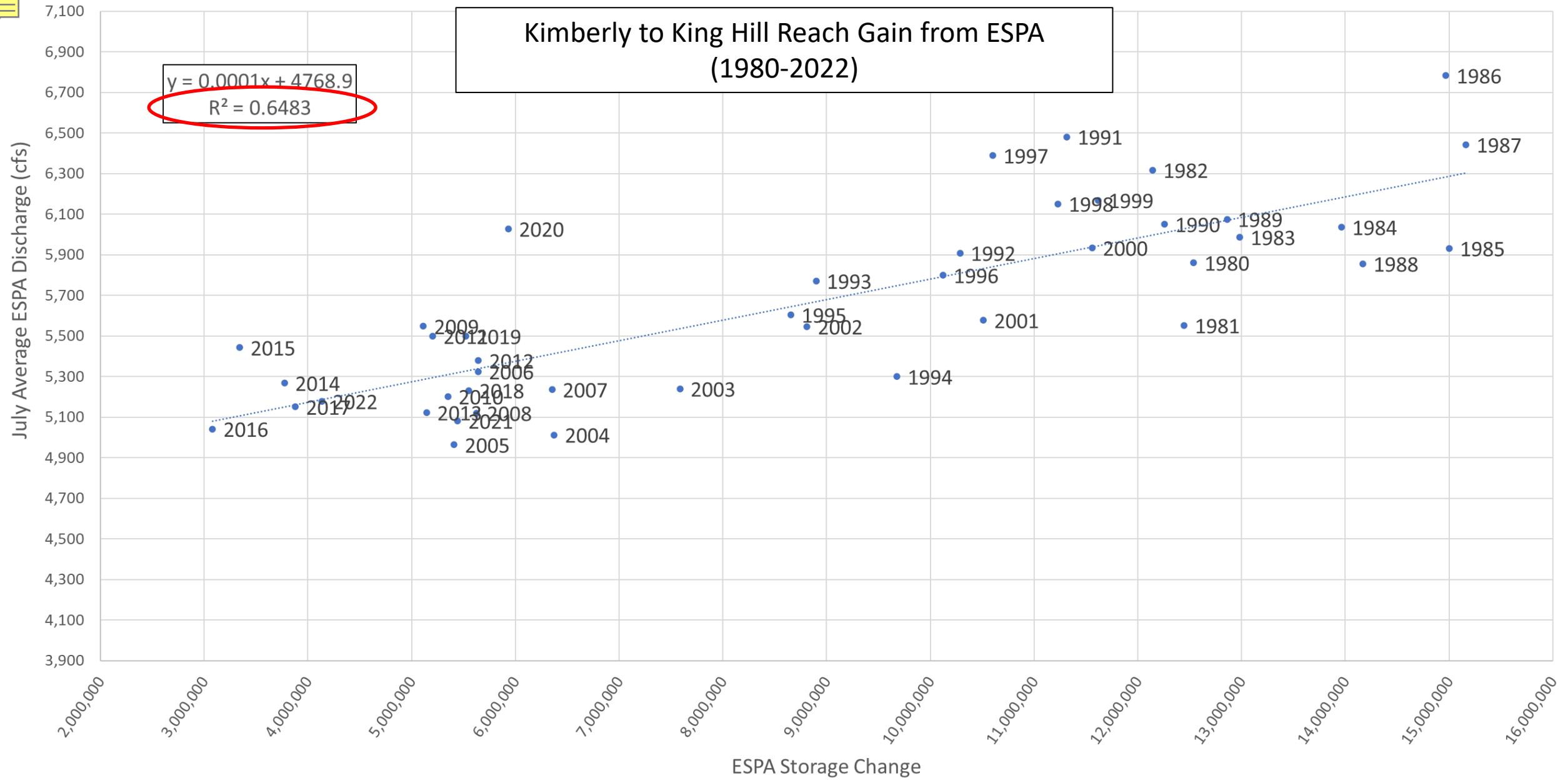
- Revised:

Analysis of the necessary ESPA levels and/or cumulative storage change required to maintain the minimum flow rate at the Murphy Gage during the low flow period

Kimberly to King Hill Reach Gain from ESPA (2002-2022)

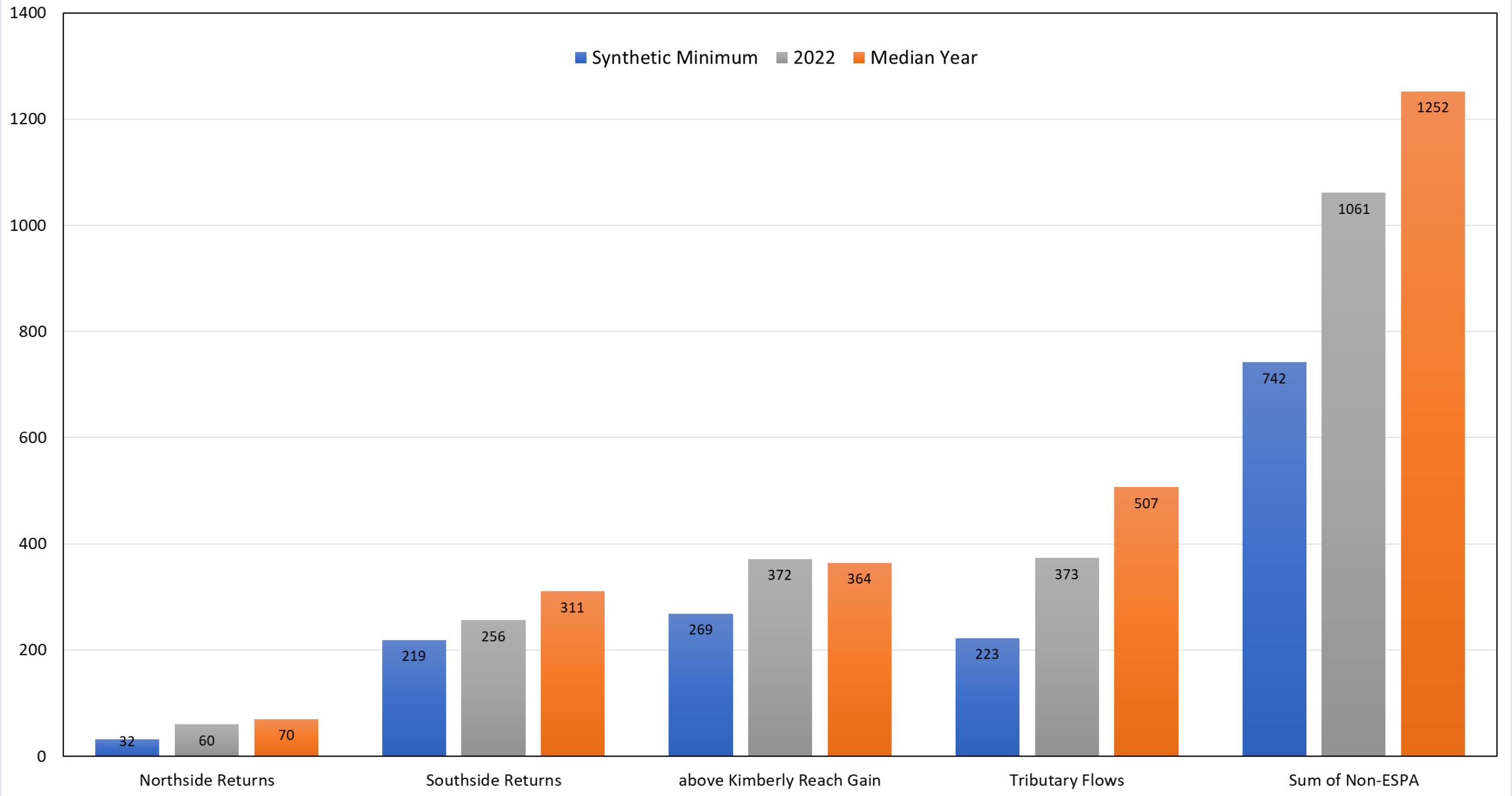
$y = 4E-05x + 5074.2$
 $R^2 = 0.048$



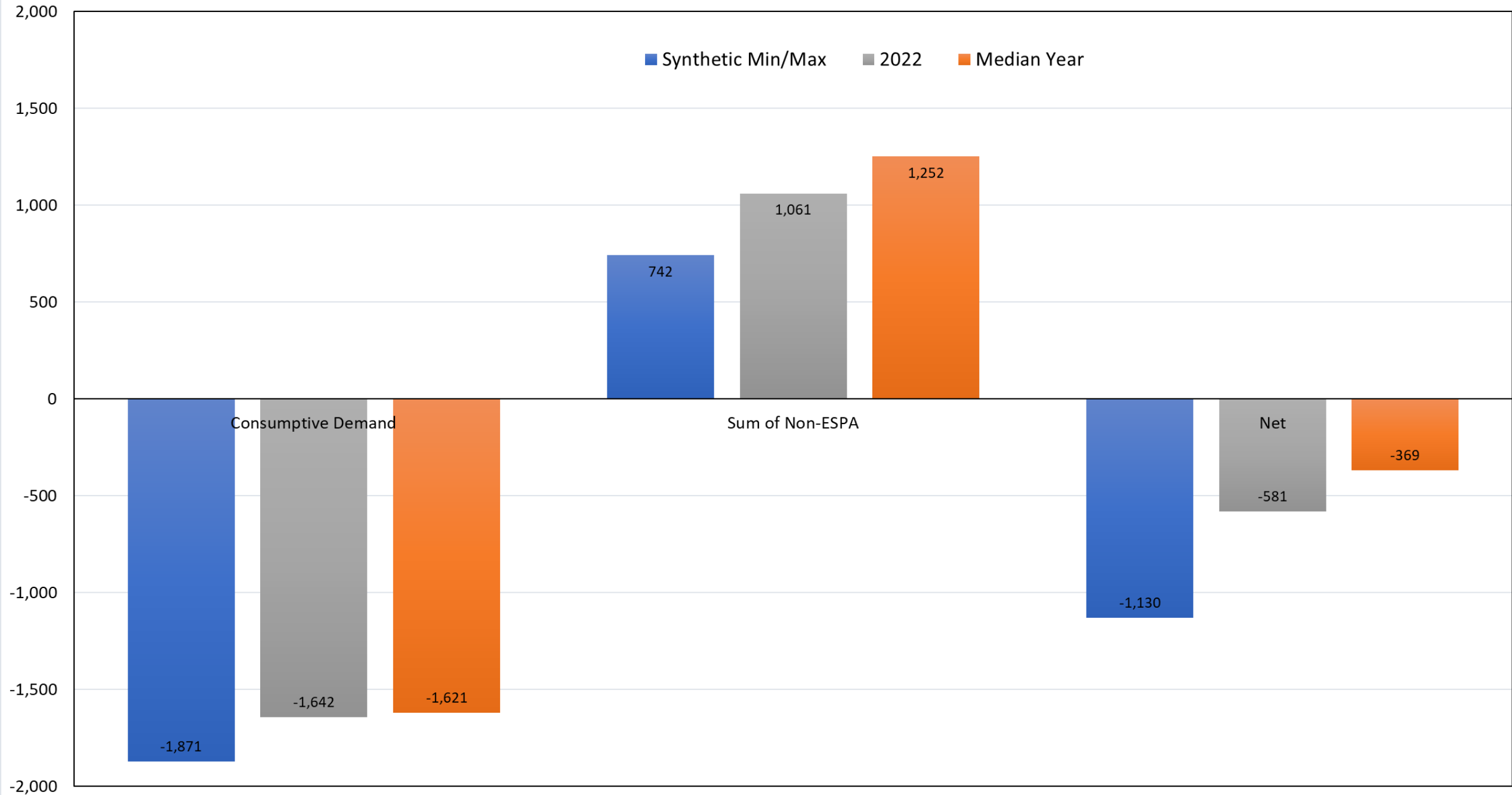




July Average Daily Flow (cfs)



July Average Daily Flow (cfs)

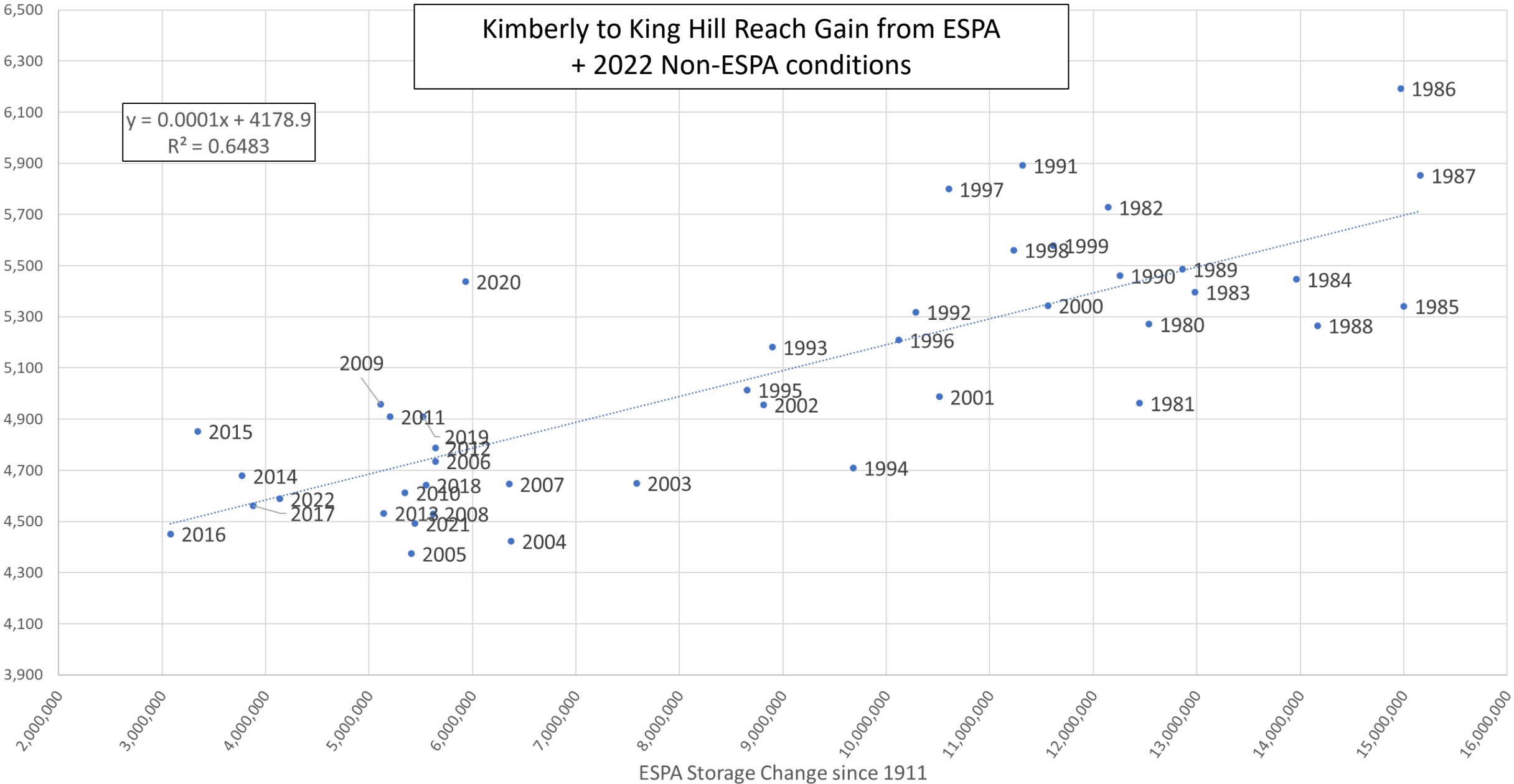




July Average ESPA Discharge with 2022 Non-ESPA Conditions (CFS)

Kimberly to King Hill Reach Gain from ESPA + 2022 Non-ESPA conditions

$y = 0.0001x + 4178.9$
 $R^2 = 0.6483$



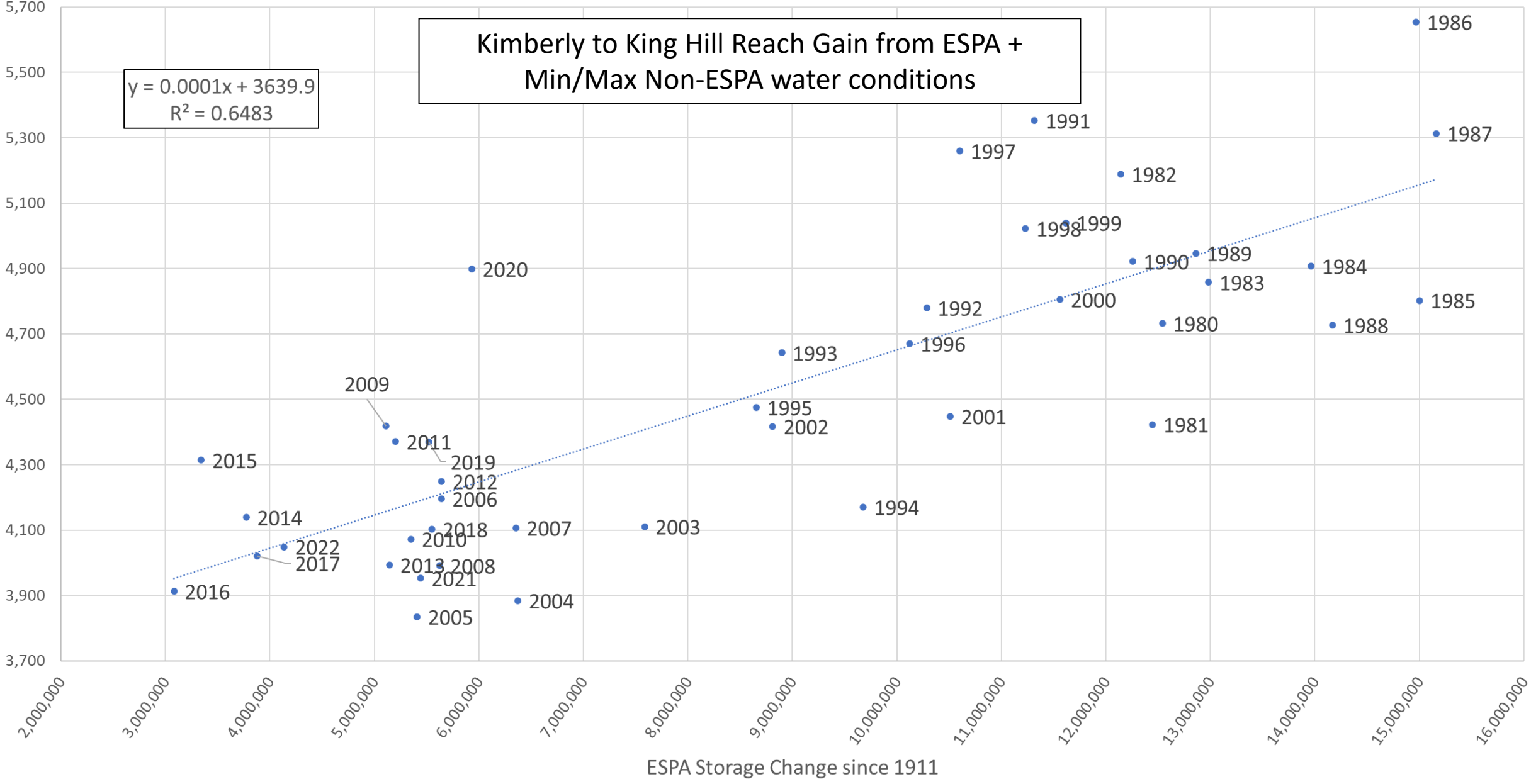
ESPA Storage Change since 1911



July Average ESPA Discharge with Min/Max Non-ESPA Conditions (CFS)

Kimberly to King Hill Reach Gain from ESPA + Min/Max Non-ESPA water conditions

$y = 0.0001x + 3639.9$
 $R^2 = 0.6483$



Future Tasks for SFIG Q5 analysis:

- Comparison of July Average vs July Minimum (3-Day Average AADF)
- Return Flow Trends
- Identifying value like the Sentinel Well Index for Southwest ESPA (1980's – present)