

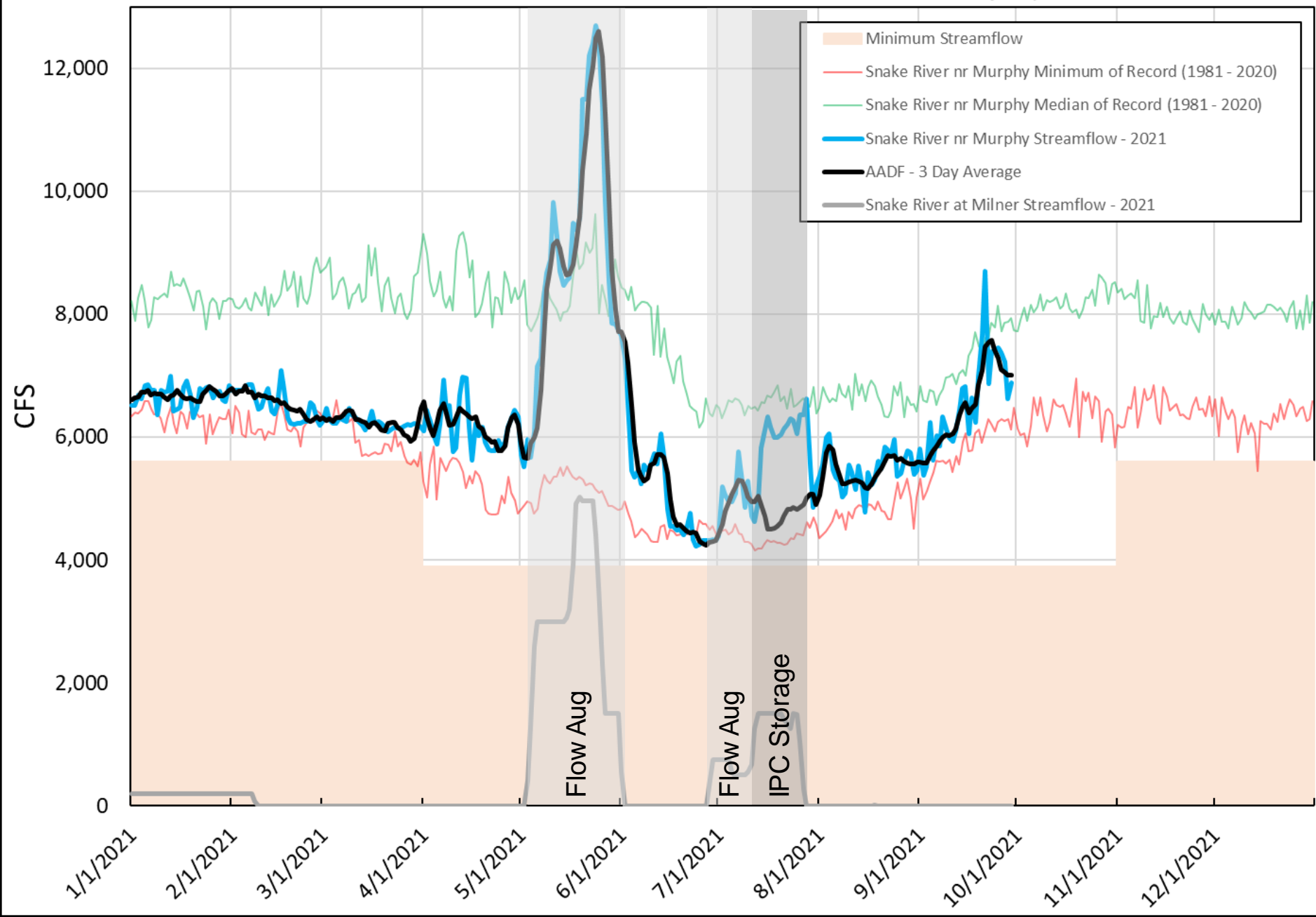
# 2021 Swan Falls Technical Working Group

Presented by Ethan Geisler

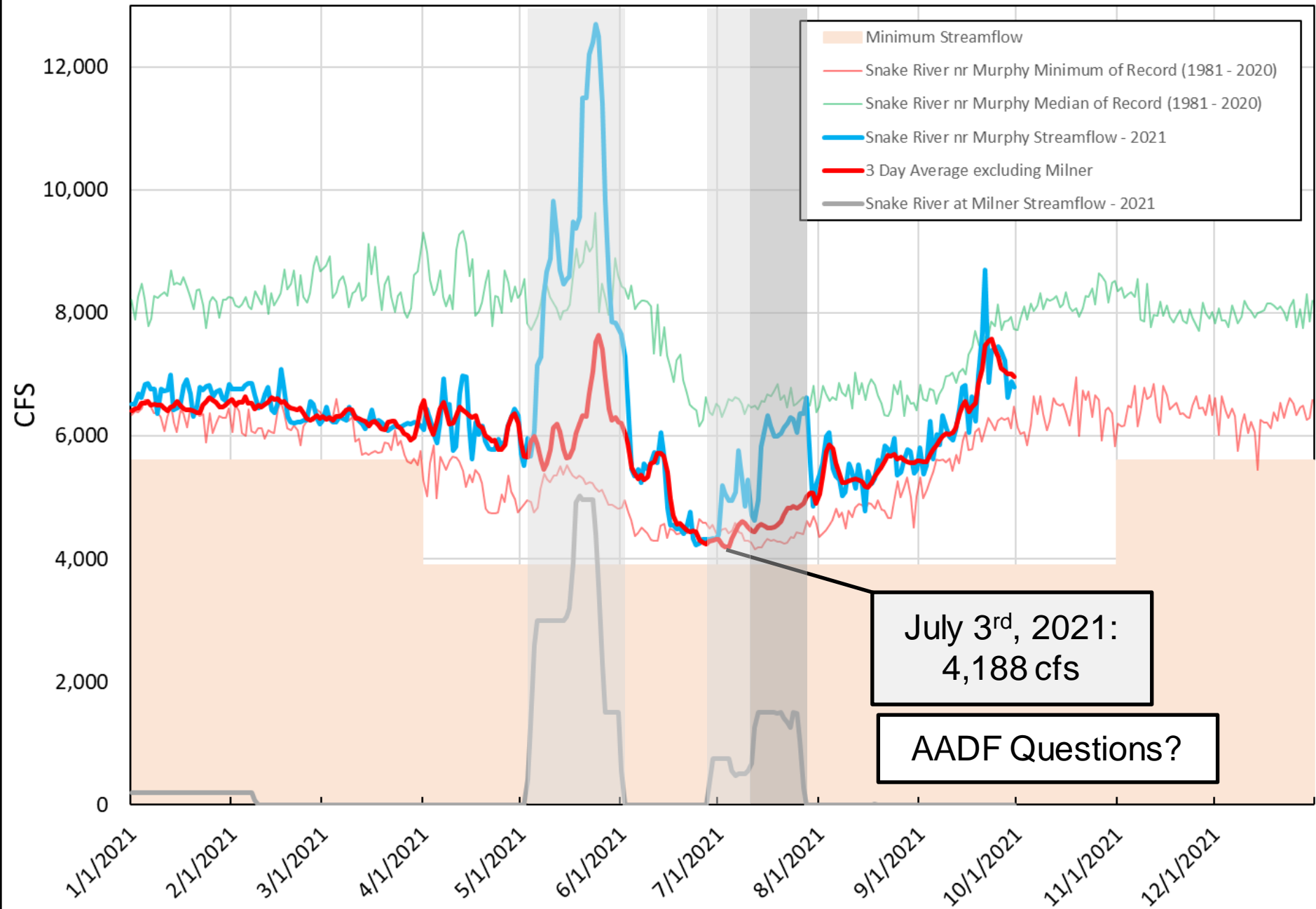
October 6, 2021



# Streamflow at Snake River near Murphy



### 3 Day Average Excluding Milner



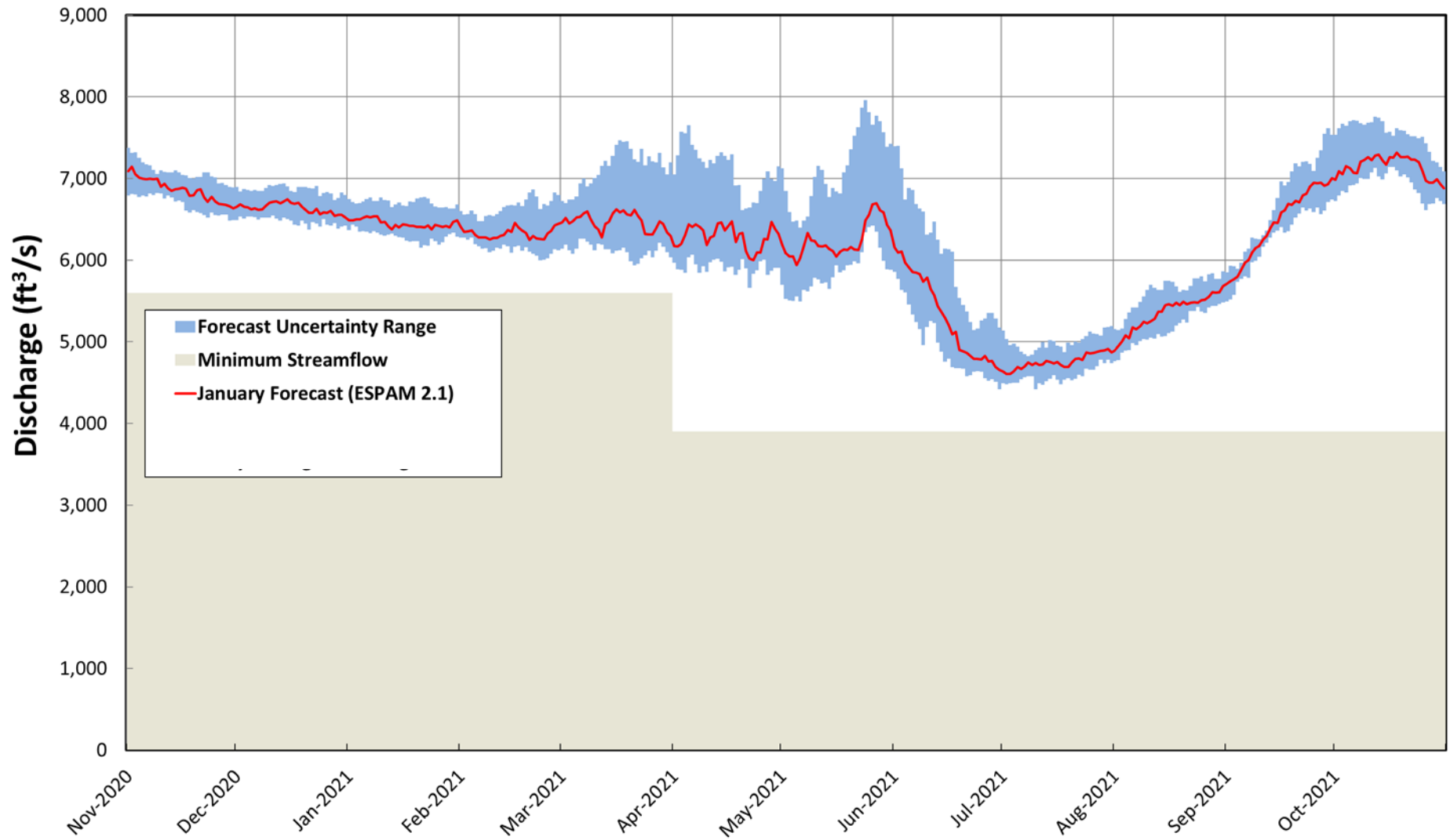
# Swan Falls Forecast Tools Update

- Updated to ESPAM 2.2
- 18 worksheets were updated in the January and May forecast tool (compiled by Jennifer Sukow)
  - Response Functions
  - Pumping Stresses
  - Canal Seepage
  - On Farm Recharge
  - ET and Precipitation Statistics
- The forecast tools were not recalibrated
- Task was to compare 2021 forecast between ESPAM 2.1 and ESPAM 2.2 response functions

Jan\_Forecast\_v6\_EPSAM2\_2.xlsx

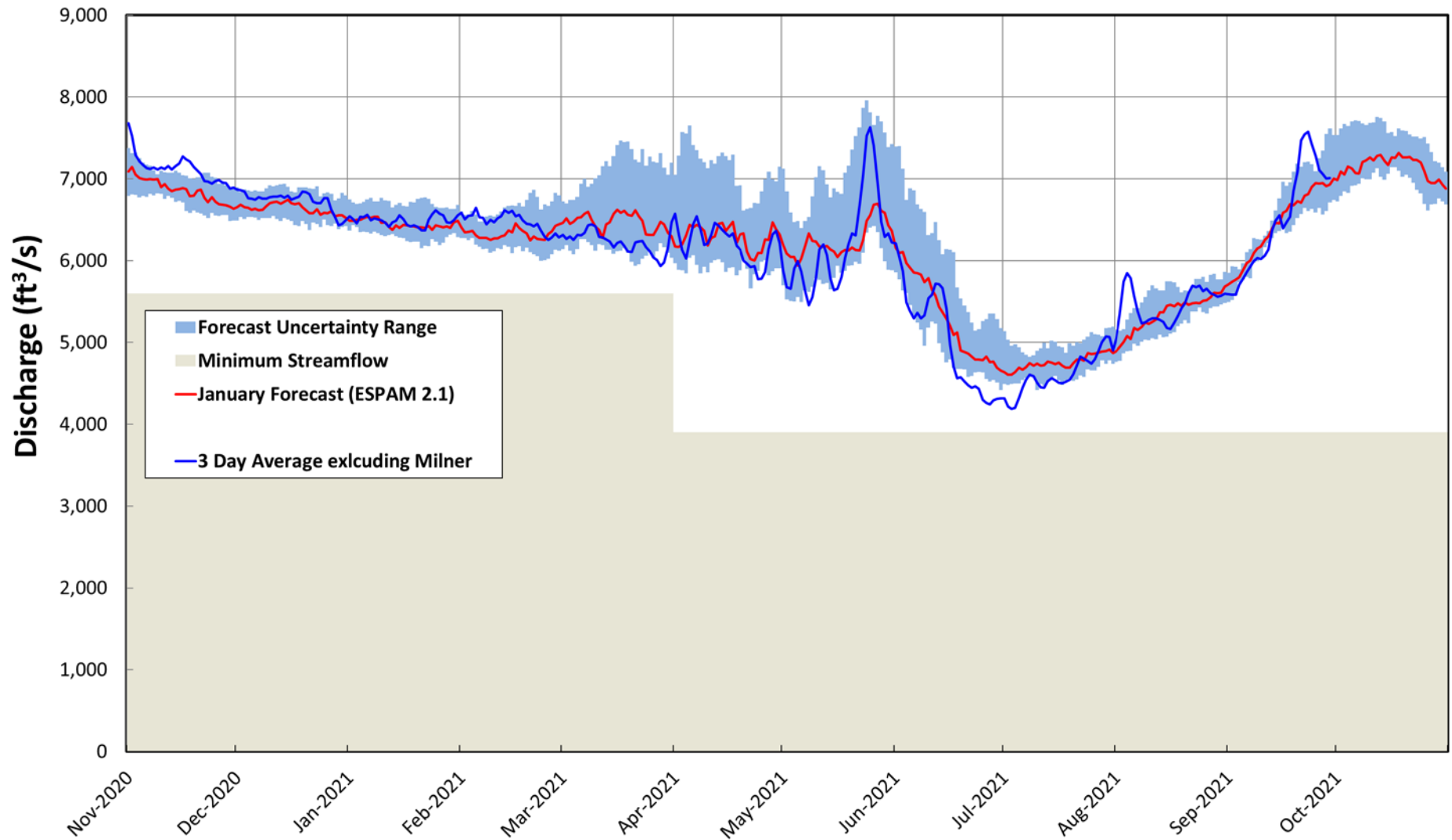
A	B	C	D	E	F	G	H	I	J	K	L
USER ENTER DATA HERE:											
	Enter Forecast Year	Enter the number of wells in interpolation neighborhood (between 1 and 100)	Uncertainty Range Lower Bound (percentile)	Uncertainty Range Upper Bound (percentile)	Bruneau SVSI	February Big Wood SVSI	Snake (Heise) SVSI	Upper Snake Reservoir Storage			
	2021	10	0.25	0.75	(-4 to +4)	(-4 to +4)	(-4 to +4)	(10000 ac-ft)			
					-13		-0.5	2610.597			
USER ENTER MANAGED AQUIFER RECHARGE (AF/MO) HERE:											
	SV Irrigation District	Miler Gooding Main Canal	Miler Gooding - Shoshone	Miler Gooding - Milepost 31	Northside Main Canal including Wilson Lake	Twin Falls Canal Co. - Murtagh Canal	Big Wood Canal Co. - Richfield	Hold for Future Site	Hold for Future Site	TOTAL MANAGED RECHARGE	
	AF/mo	AF/mo	AF/mo	AF/mo	AF/mo	AF/mo	AF/mo	AF/mo	AF/mo	AF/mo	AF/mo
Nov	2393		23916	0	0	4125	7667	0	0	40167	
Dec	2342		18648	1814	0	2521	0	0	0	25325	
Jan	2831		3378	10405	0	2526	0	0	0	25200	
Feb										0	
Mar										0	
Apr										0	
May										0	
Jun										0	
Jul										0	
Aug										0	
Sep										0	
Oct										0	
OUTPUT - JANUARY FORECAST											
ESPAM 2.1											
Date	Calculated ESPA Discharge using 50% Exceedance (reach gain from model)	Last Year Calculated Daily ESPA Discharge (reach gain from model)	January Forecast (ESPAM 2.2)	Uncertainty Range Lower Bound	Uncertainty Range Upper Bound		Modified AADF - 3 Day Average (excluding Milner)	January Forecast	Uncertainty Range Lower Bound	Uncertainty Range Upper Bound	
11/1/2020	6,006	5,778	7089	6786	7373		7680.005462	7091.69648	6783	7376	
11/2/2020	5,397	5,758	7143	6808	7313		7528.51315	7145.672866	6811	7316	
11/3/2020	5,369	5,739	7051	6738	7315		7292.535412	7054.068393	6801	7319	
11/4/2020	5,361	5,720	7005	6711	7246		7215.261239	7008.700646	6774	7250	
11/5/2020	5,373	5,701	6933	6731	7152		7167.356634	6936.413047	6734	7156	
11/6/2020	5,364	5,682	6901	6719	7172		7135.858439	6930.328425	6762	7176	
11/7/2020	5,355	5,665	6935	6812	7158		7118.630367	6933.128458	6816	7162	
11/8/2020	5,347	5,648	6990	6793	7100		7135.984371	6993.839242	6797	7105	
11/9/2020	5,333	5,632	6994	6820	7051		7115.528191	6998.371797	6825	7055	
11/10/2020	5,330	5,617	6897	6811	7094		7136.683304	6901.416828	6815	7099	
11/11/2020	5,322	5,603	6929	6750	7074		7123.350055	6933.323816	6755	7079	
11/12/2020	5,313	5,591	6876	6786	7071		7155.84808	6880.457029	6791	7076	

## January Forecast with ESPAM 2.1

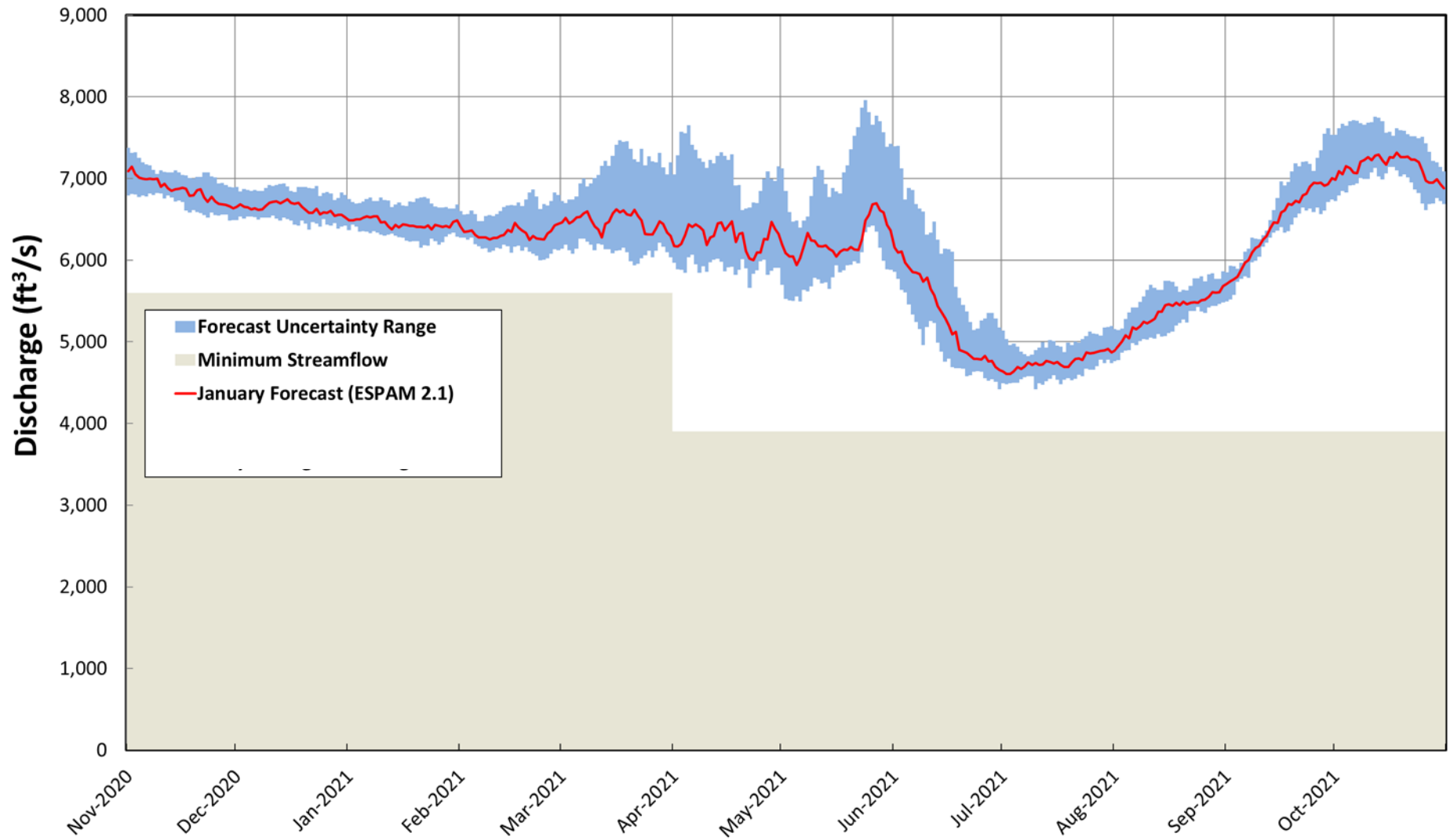




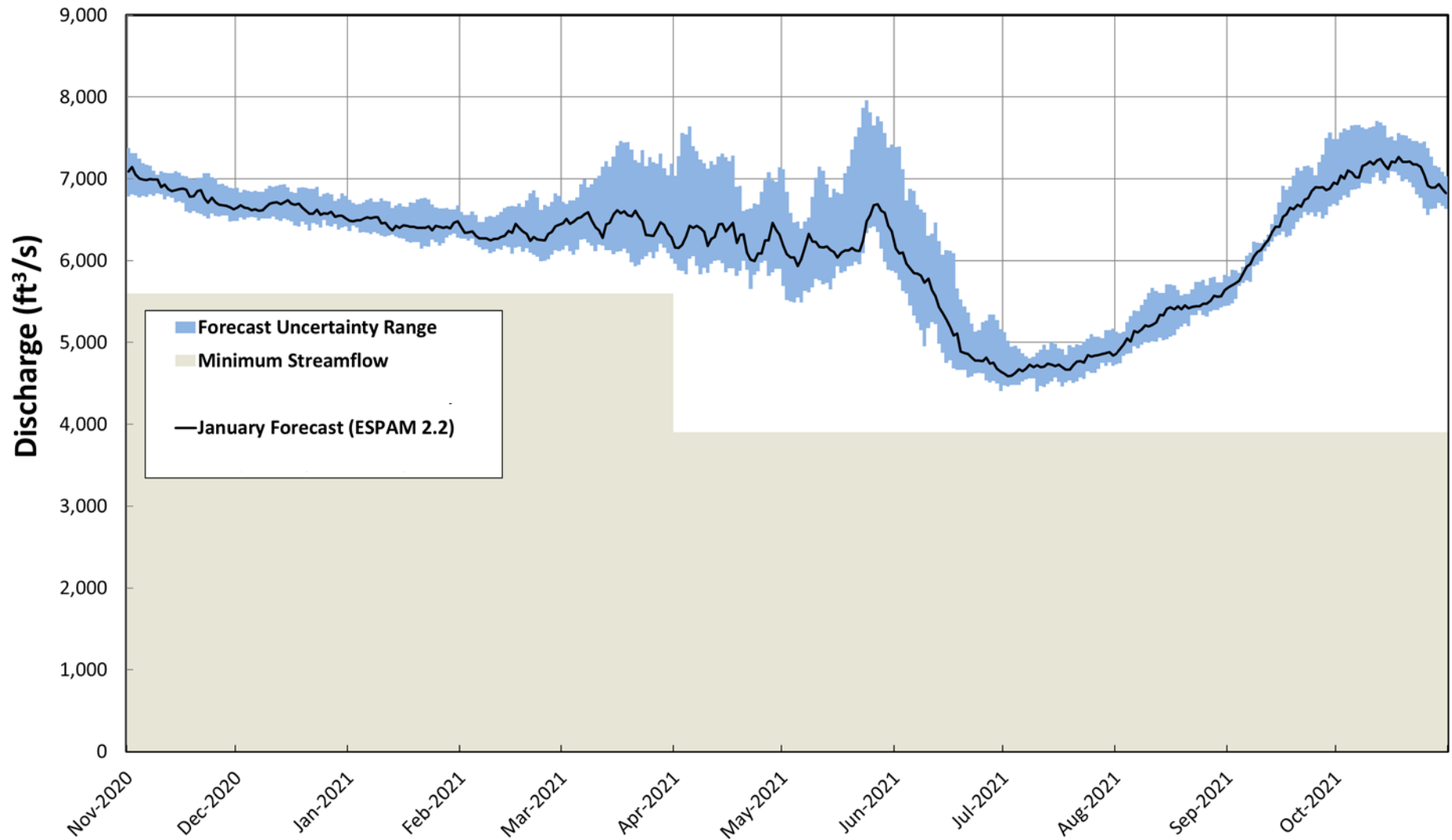
## January Forecast with ESPAM 2.1



## January Forecast with ESPAM 2.1

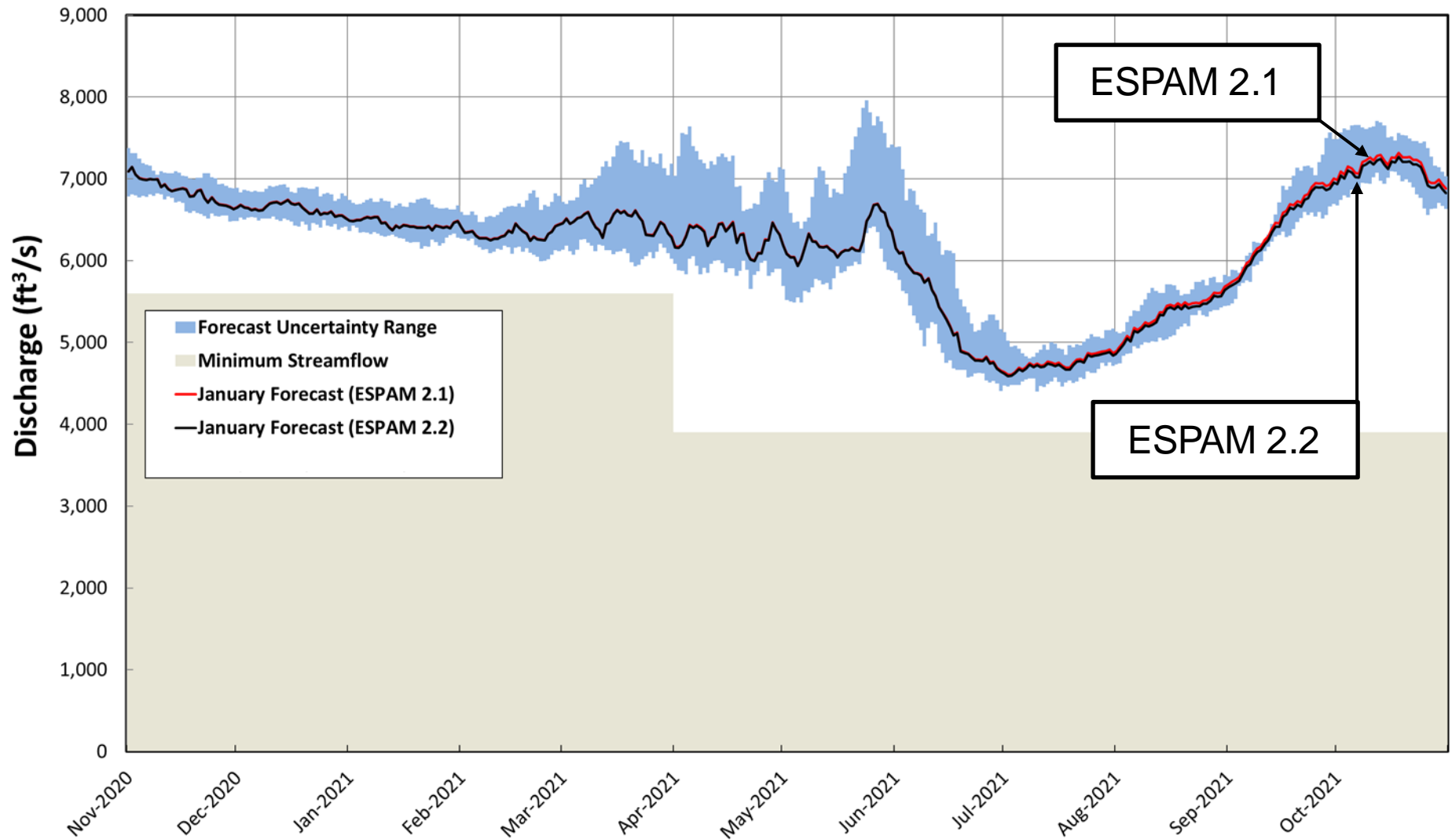


## January Forecast with ESPAM 2.2

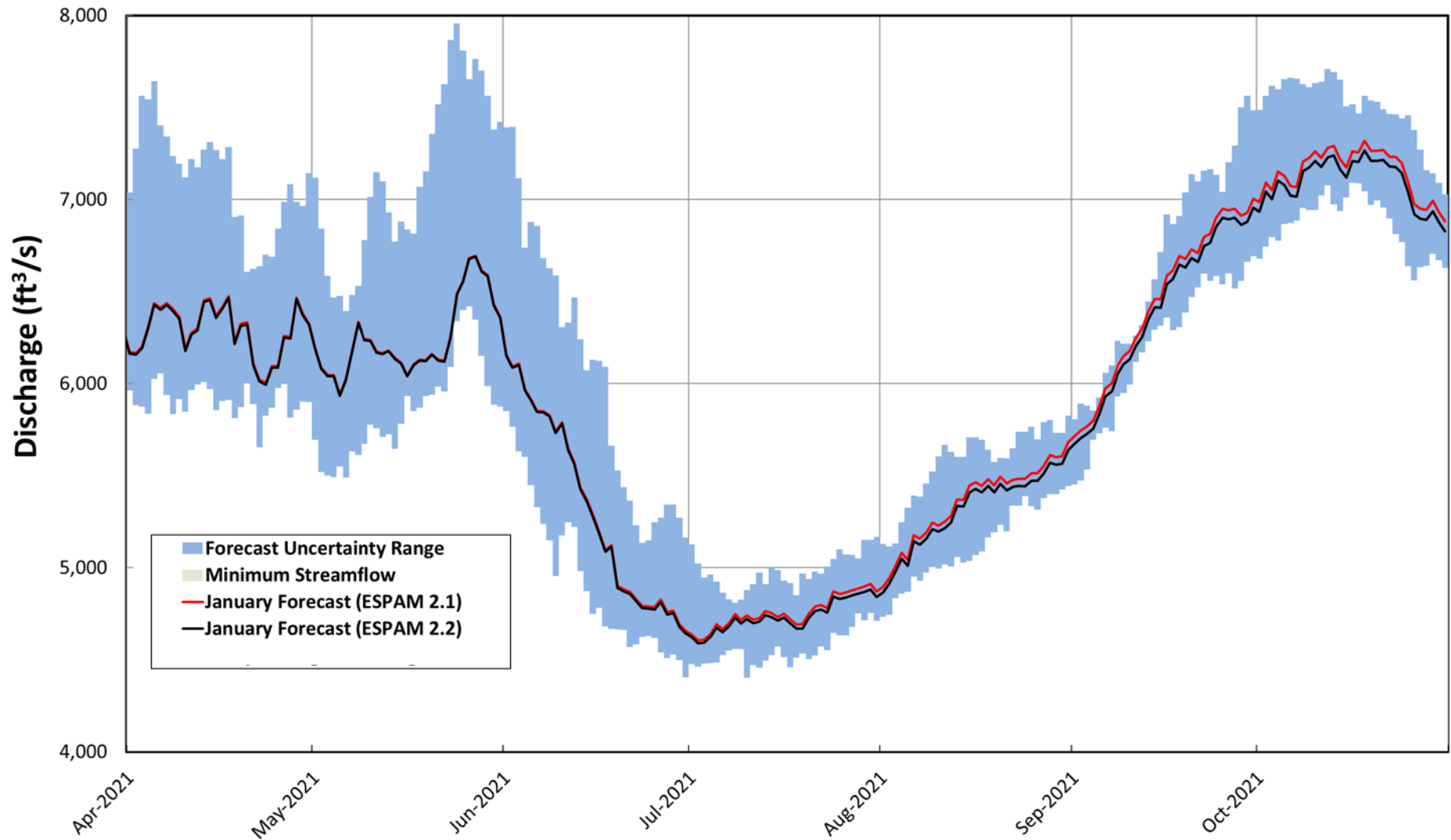




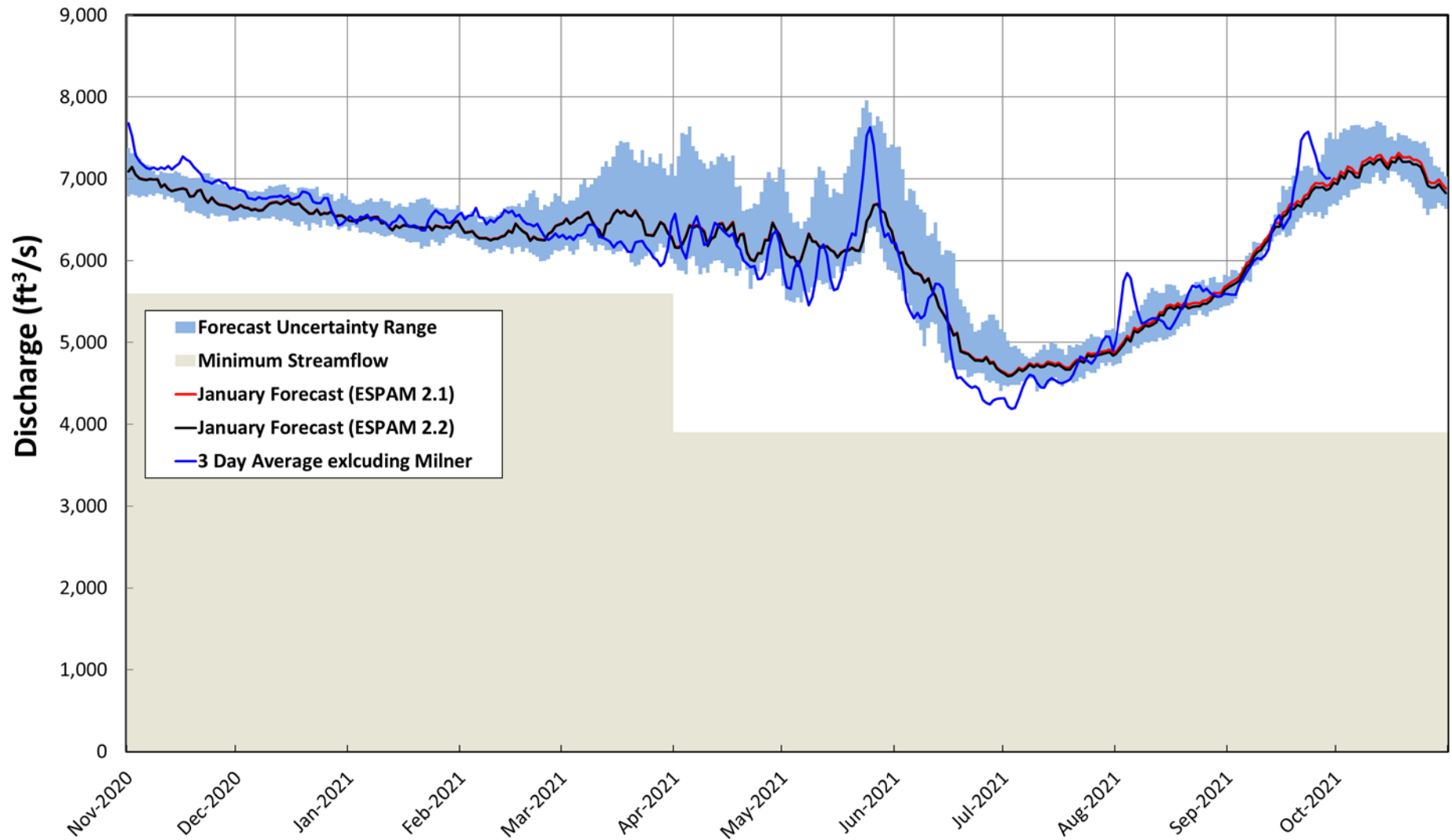
## January Forecast with ESPAM 2.2



## January Forecast with ESPAM 2.2



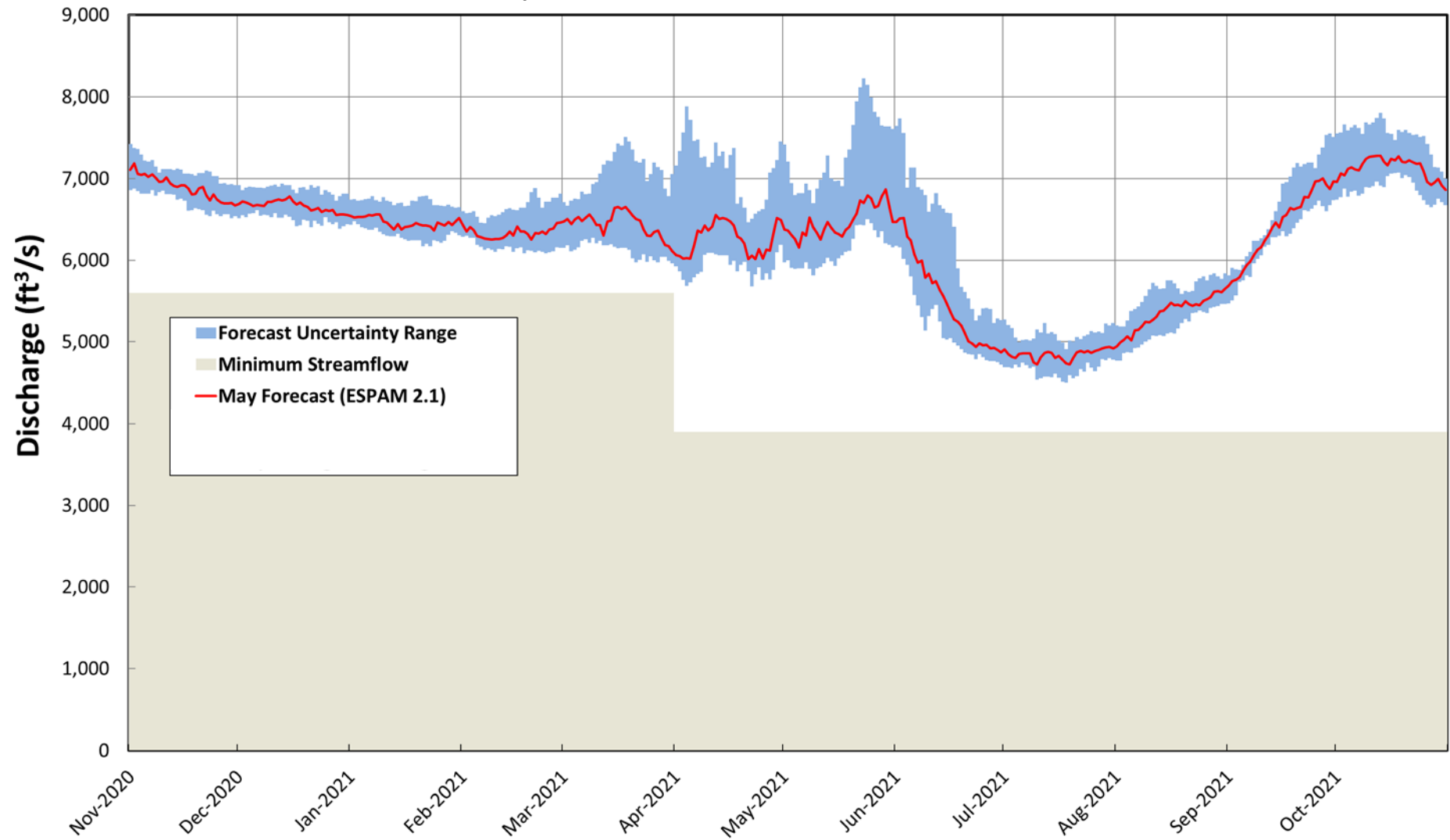
## January Forecast with ESPAM 2.2



# Swan Falls May Forecast

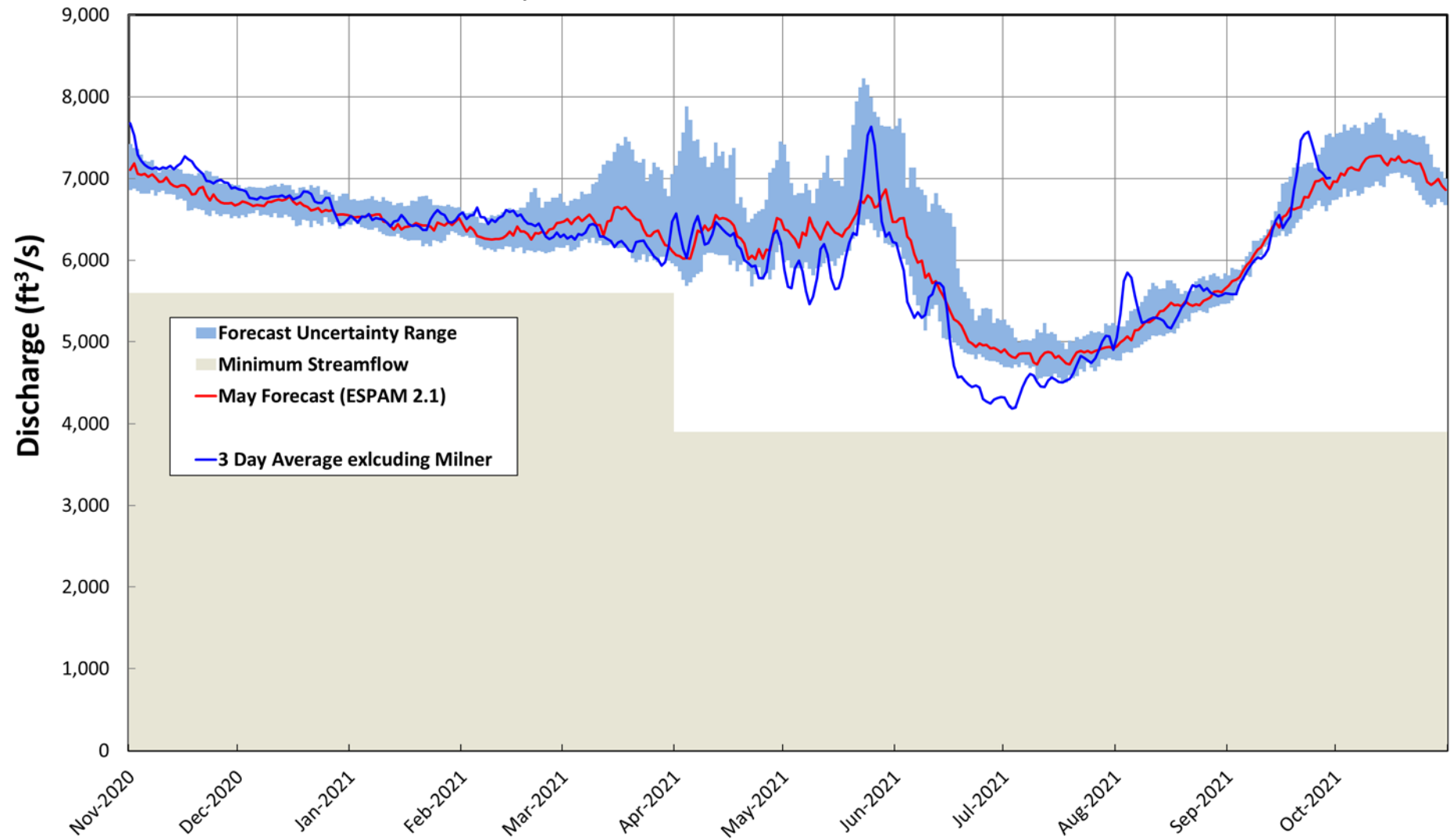


## May Forecast with ESPAM 2.1

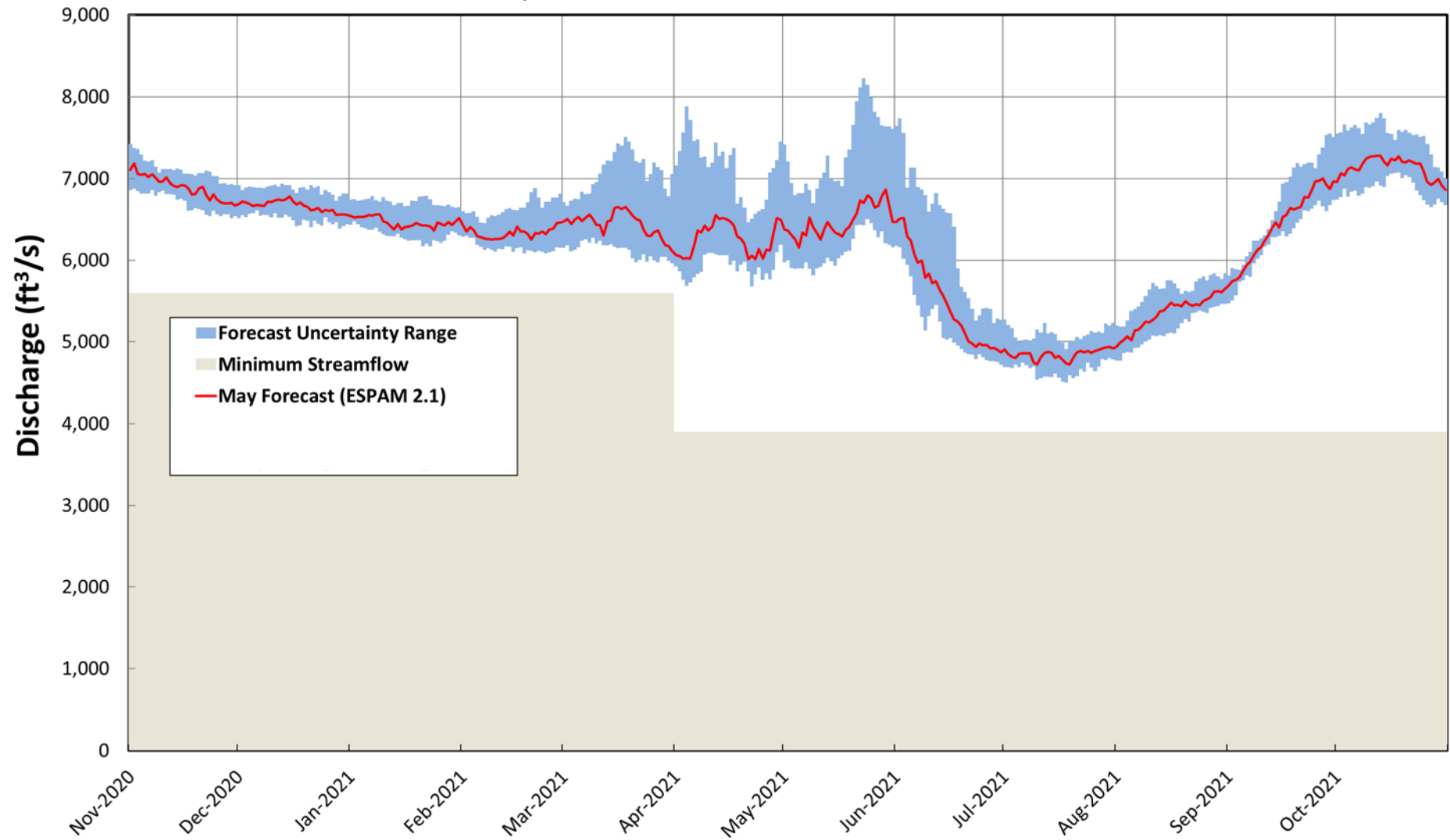




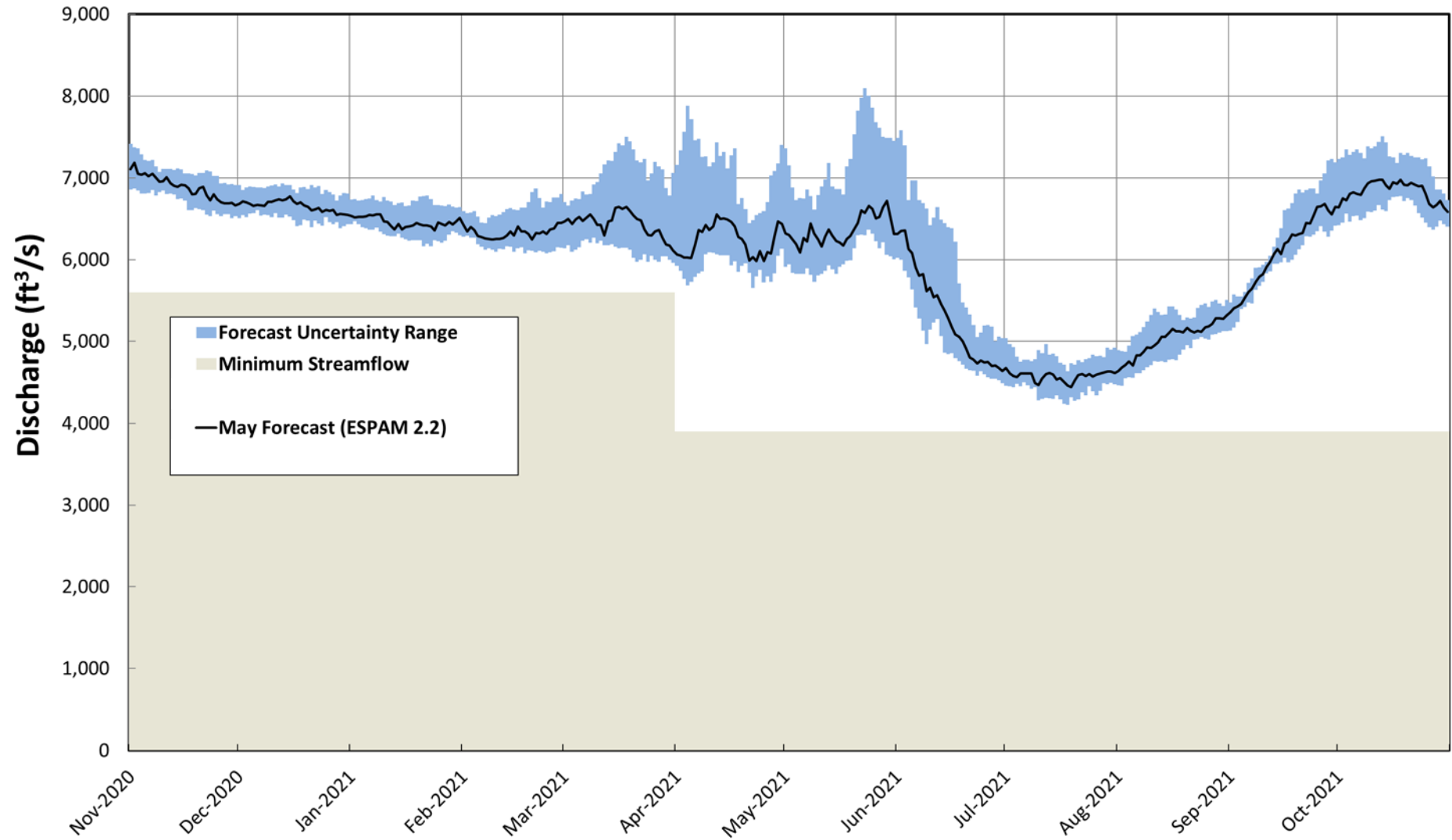
## May Forecast with ESPAM 2.1



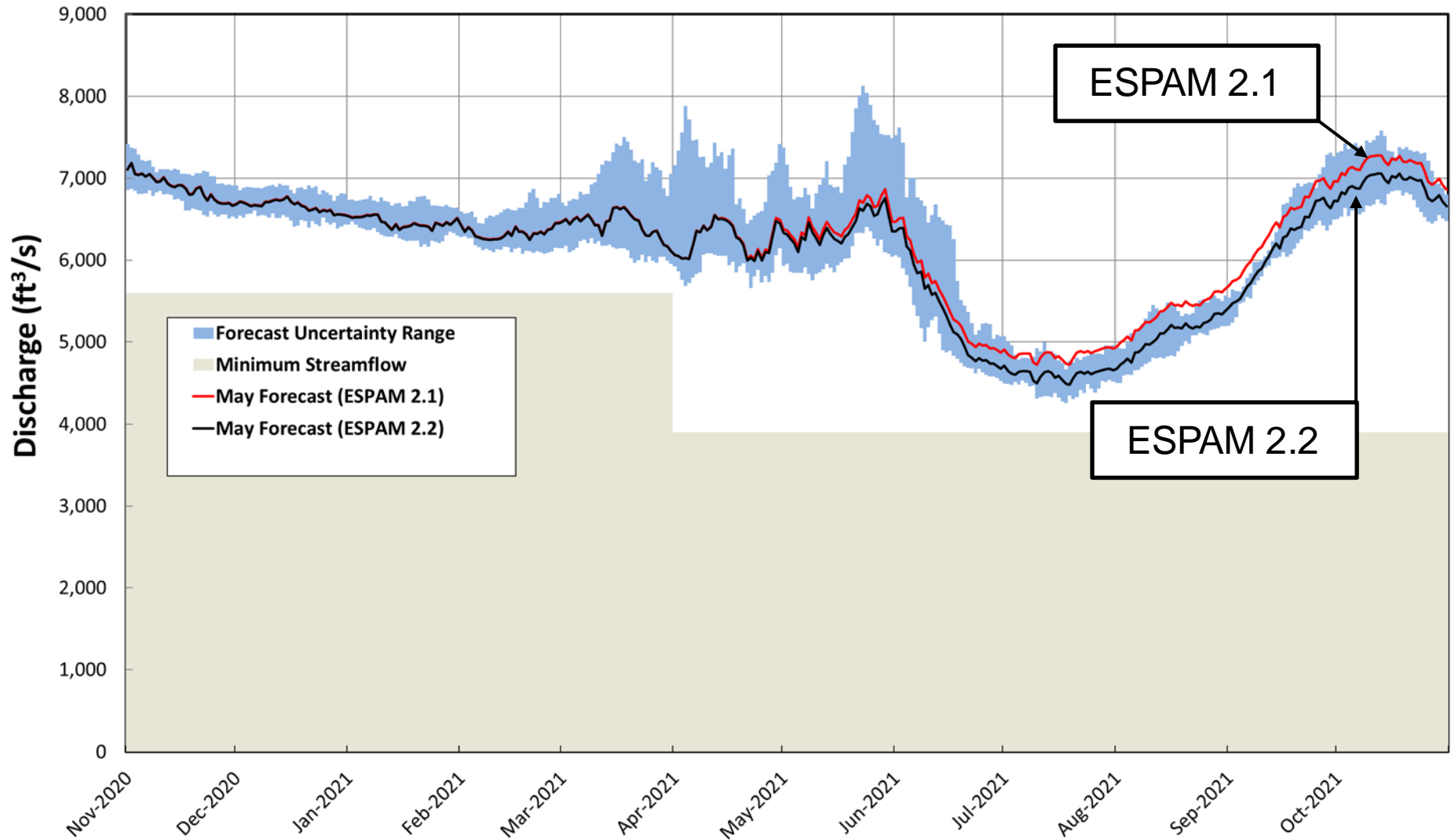
## May Forecast with ESPAM 2.1



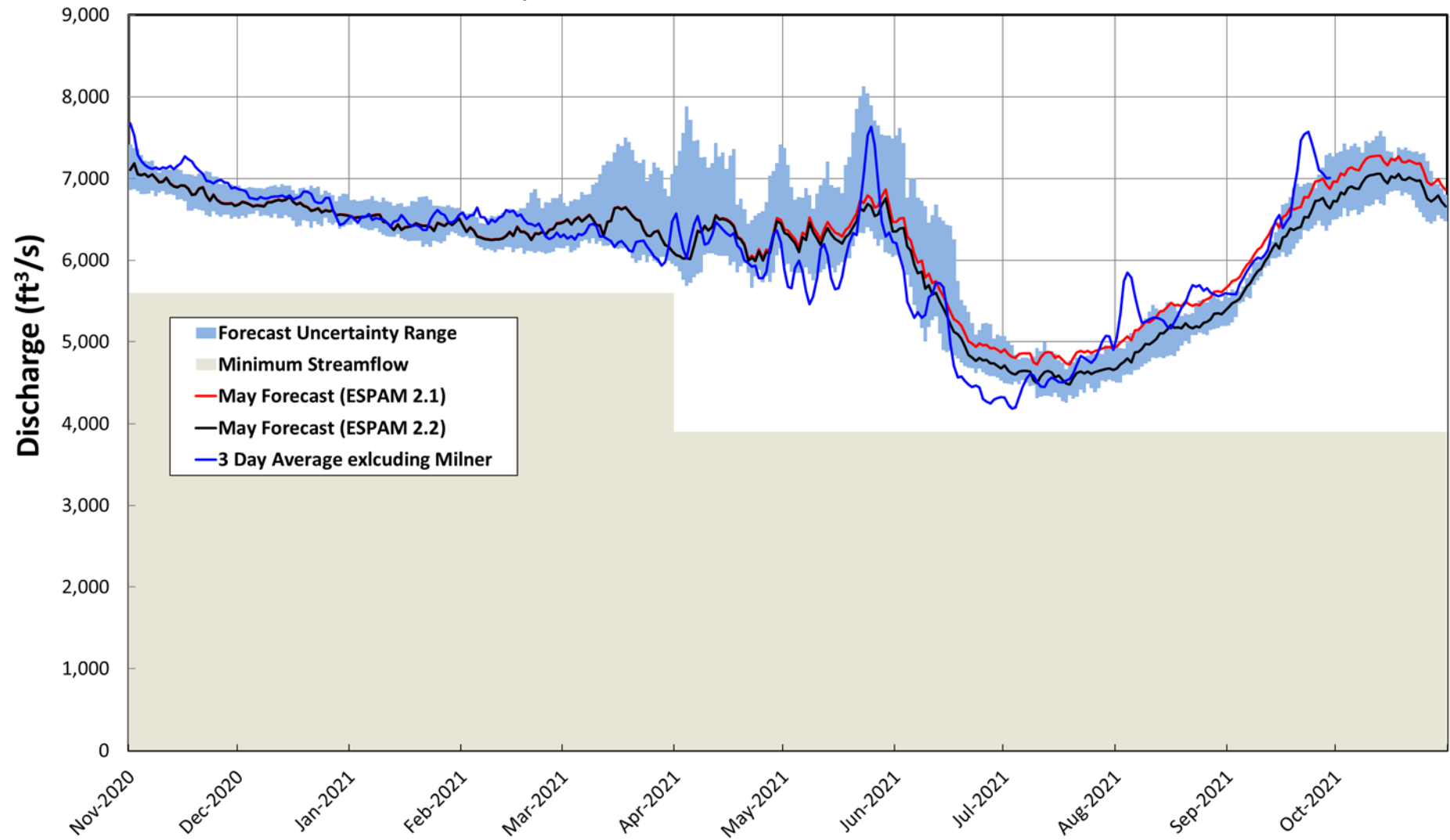
## May Forecast with ESPAM 2.2



## May Forecast with ESPAM 2.2

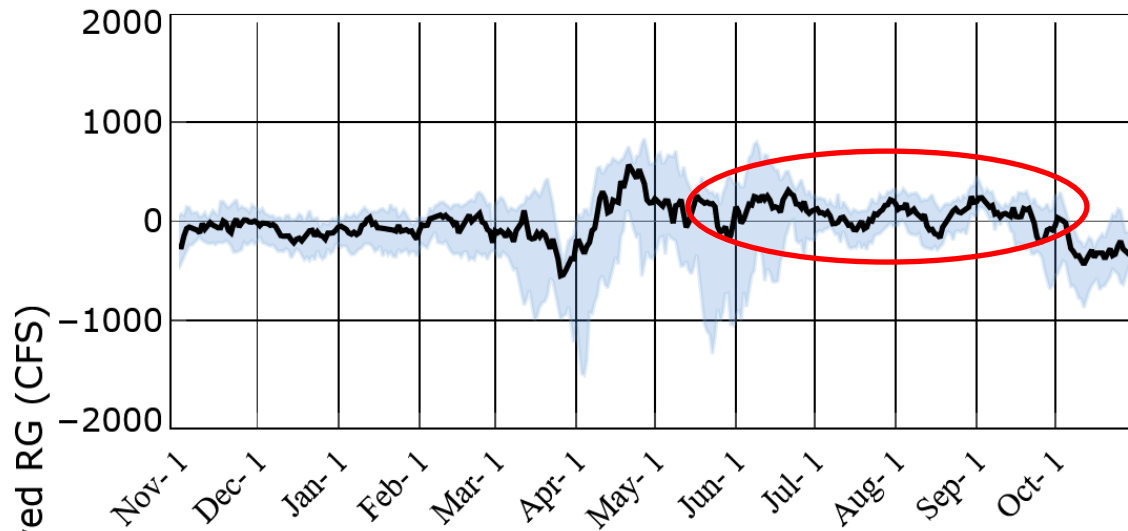


## May Forecast with ESPAM 2.2



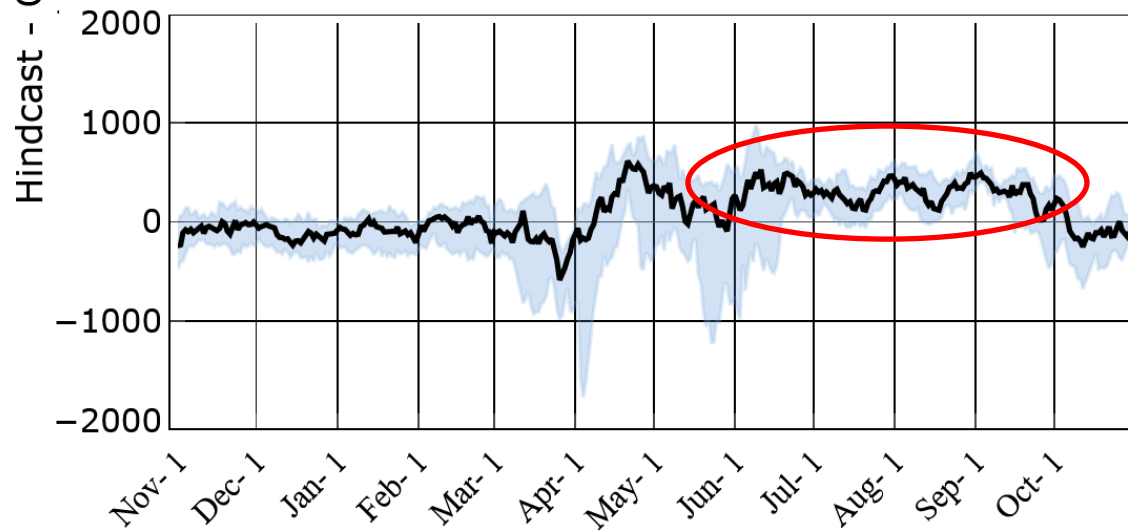


# January Hindcast Output Residuals



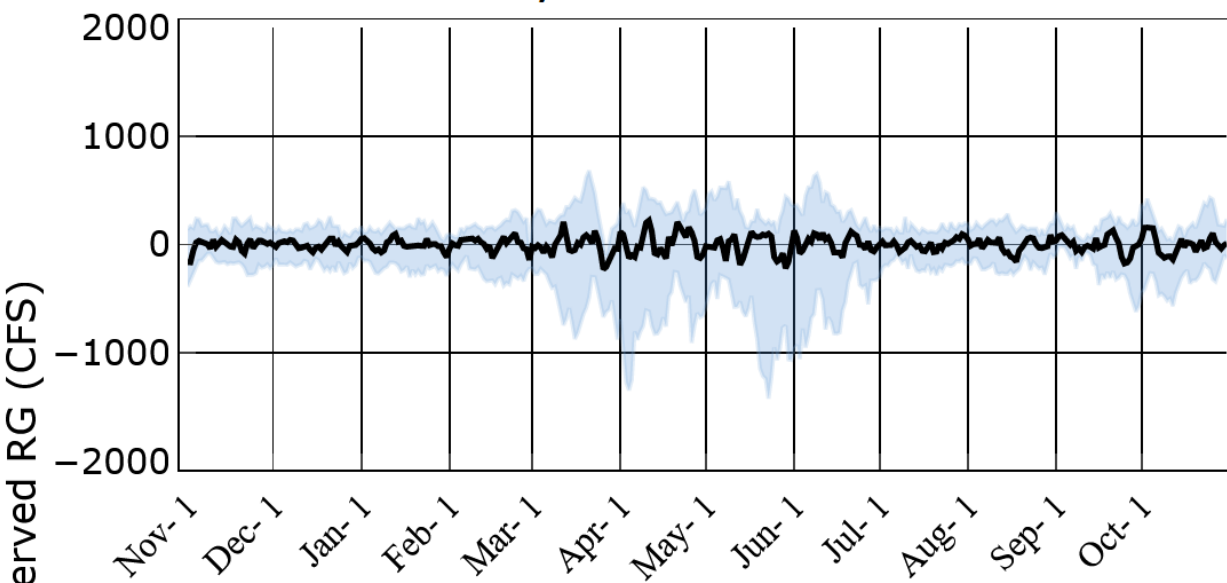
Forecast Tool Manual:  
Section 6.2 discusses  
“Residual Analysis and  
Uncertainty  
Quantification”

# May Hindcast Output Residuals

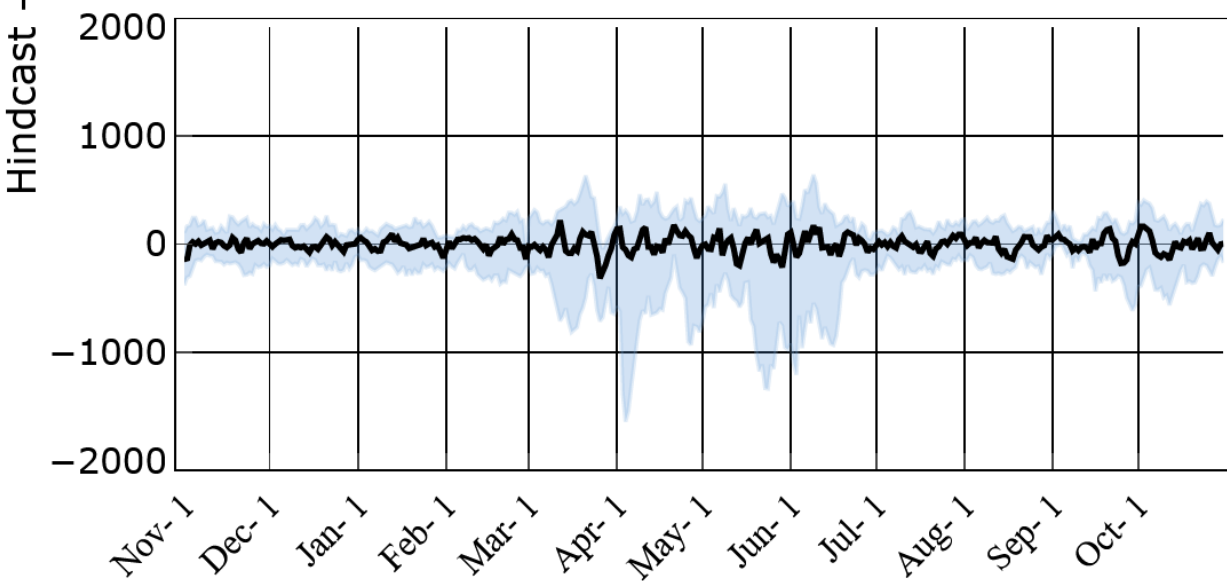


— Median    Interquartile Range

January Hindcast Residuals



May Hindcast Residuals

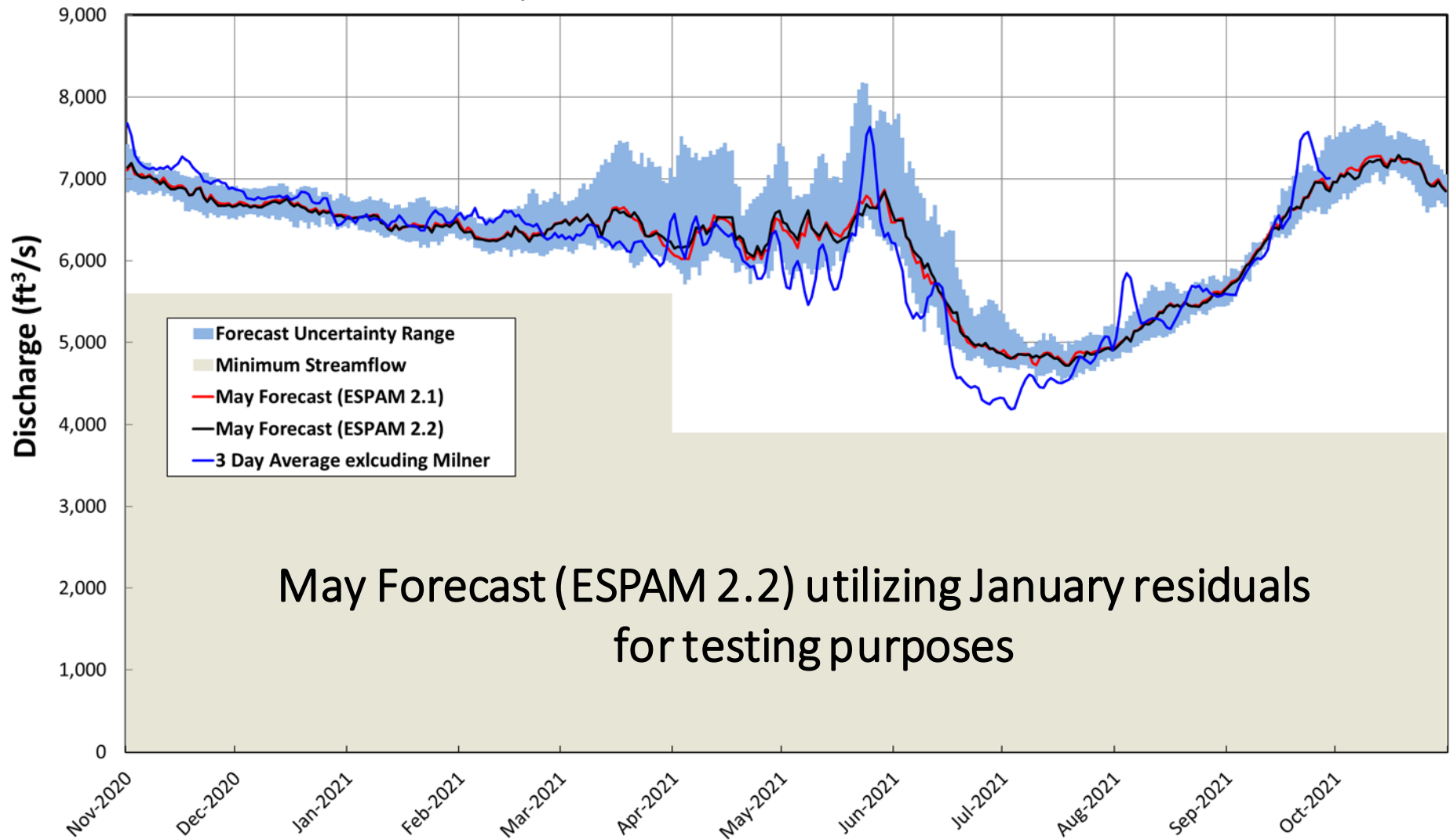


— Median — Interquartile Range

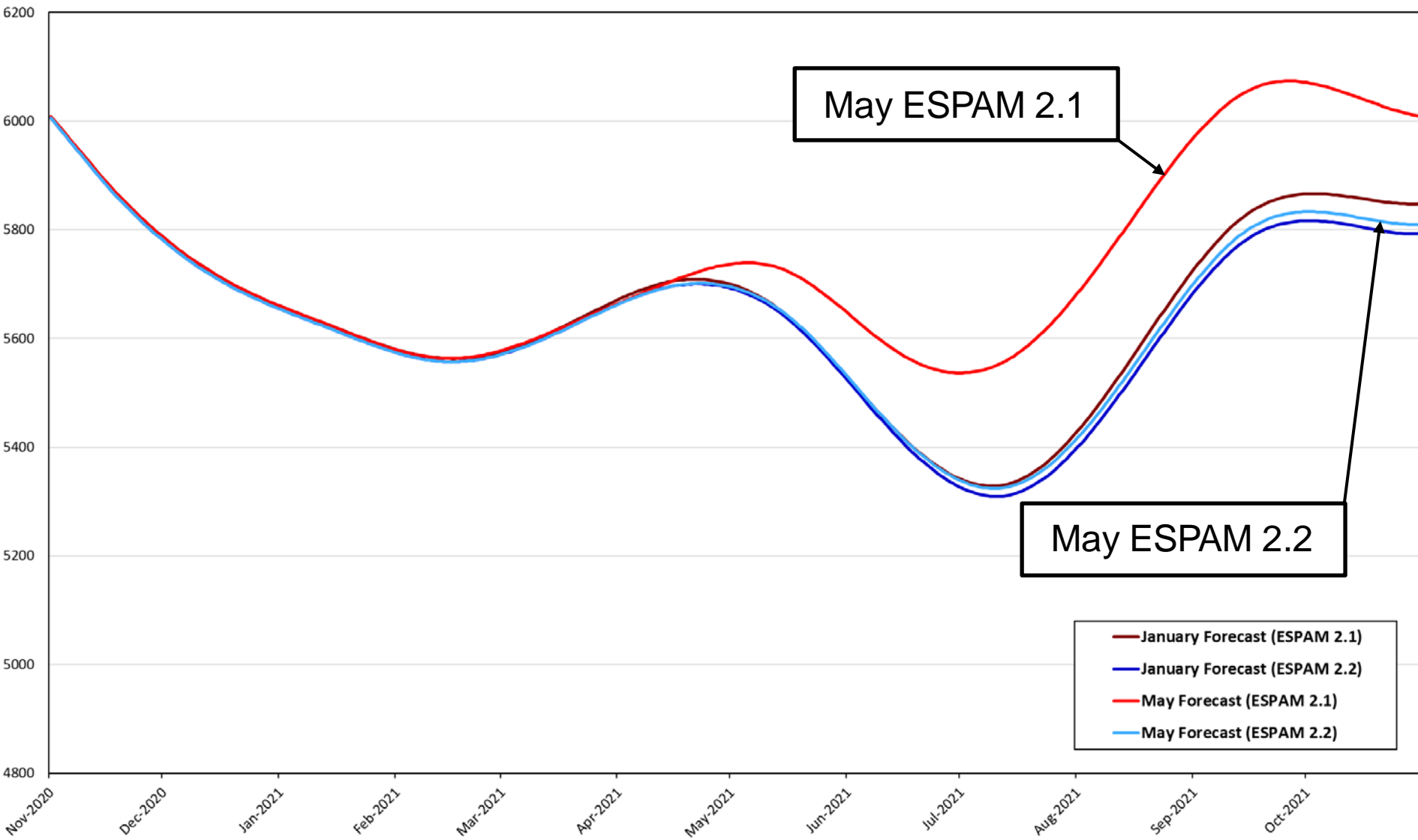


Forecast Tool Manual:  
Section 6.3  
“Residual Analysis Fit  
to SFFT Prediction”

## May Forecast with ESPAM 2.2



## Calculated ESPA Discharge



# Questions?

