

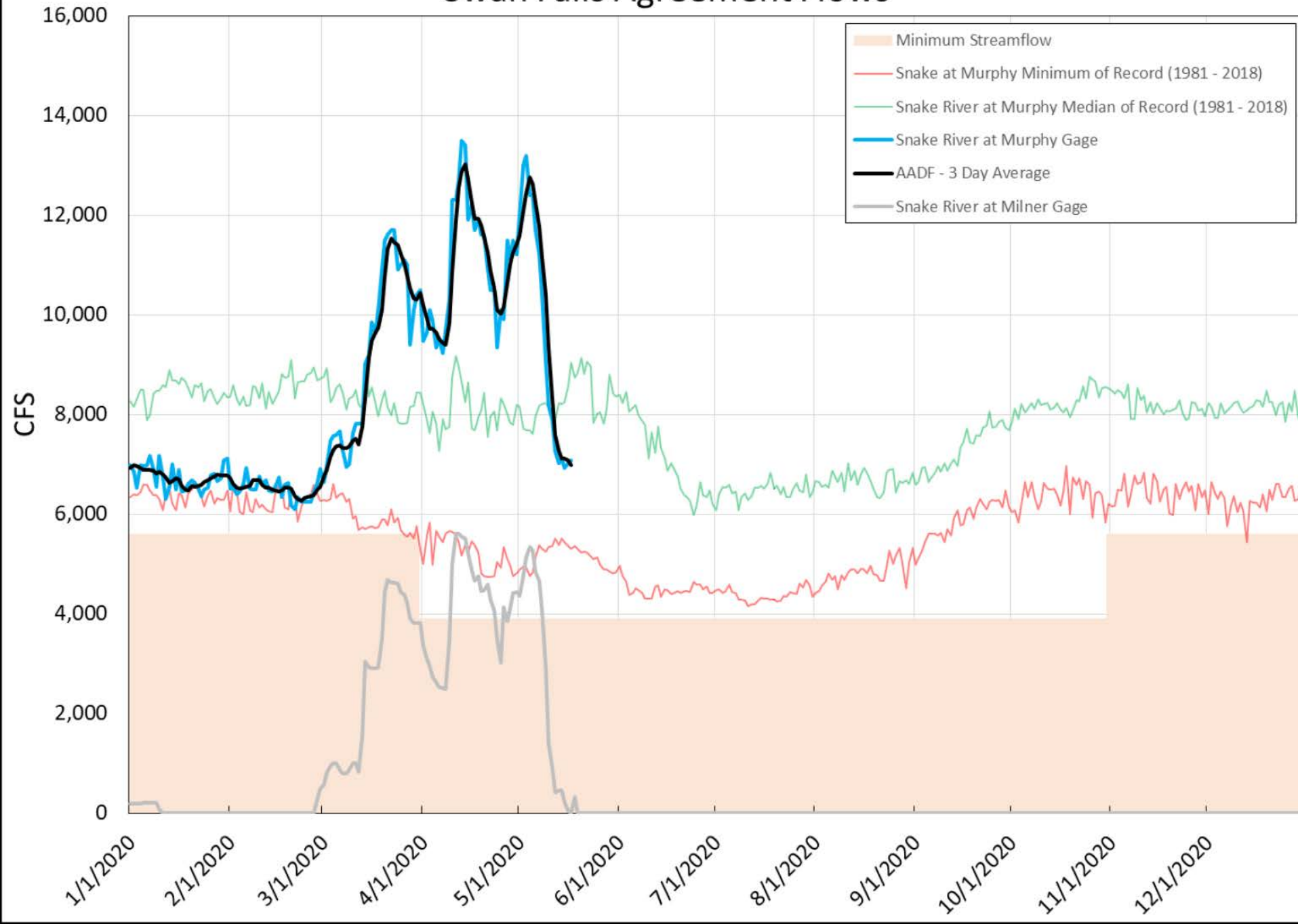
2020 Swan Falls Technical Working Group

Presented by Ethan Geisler

May 20, 2020



Swan Falls Agreement Flows



[Water Rights](#)[Wells](#)[Streams/Dams/Floods](#)[Forms](#)[Water Data](#)[Maps/Spatial Data](#)[Legal Actions](#)[Water Resource Board](#)[Home](#) / [Legal Actions](#) / [Settlements](#) / [Swan Falls](#) / AADF Calculations

External link

Swan Falls Settlement

[Settlement Archive](#)[Technical Working Group](#)[Policy Group](#)[AADF Calculations](#)[Technical Archive](#)[Media](#)

ADJUSTED AVERAGE DAILY FLOW (AADF) CALCULATIONS

[Swan Falls Adjusted Average Daily Flow Calculation](#)[3-Day Average AADF](#)[AADF Graphs – Weekly Update](#)

<https://idwr.idaho.gov/legal-actions/settlements/swan-falls/AADF-calculations.html>



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Old USGS Gage: 13172500

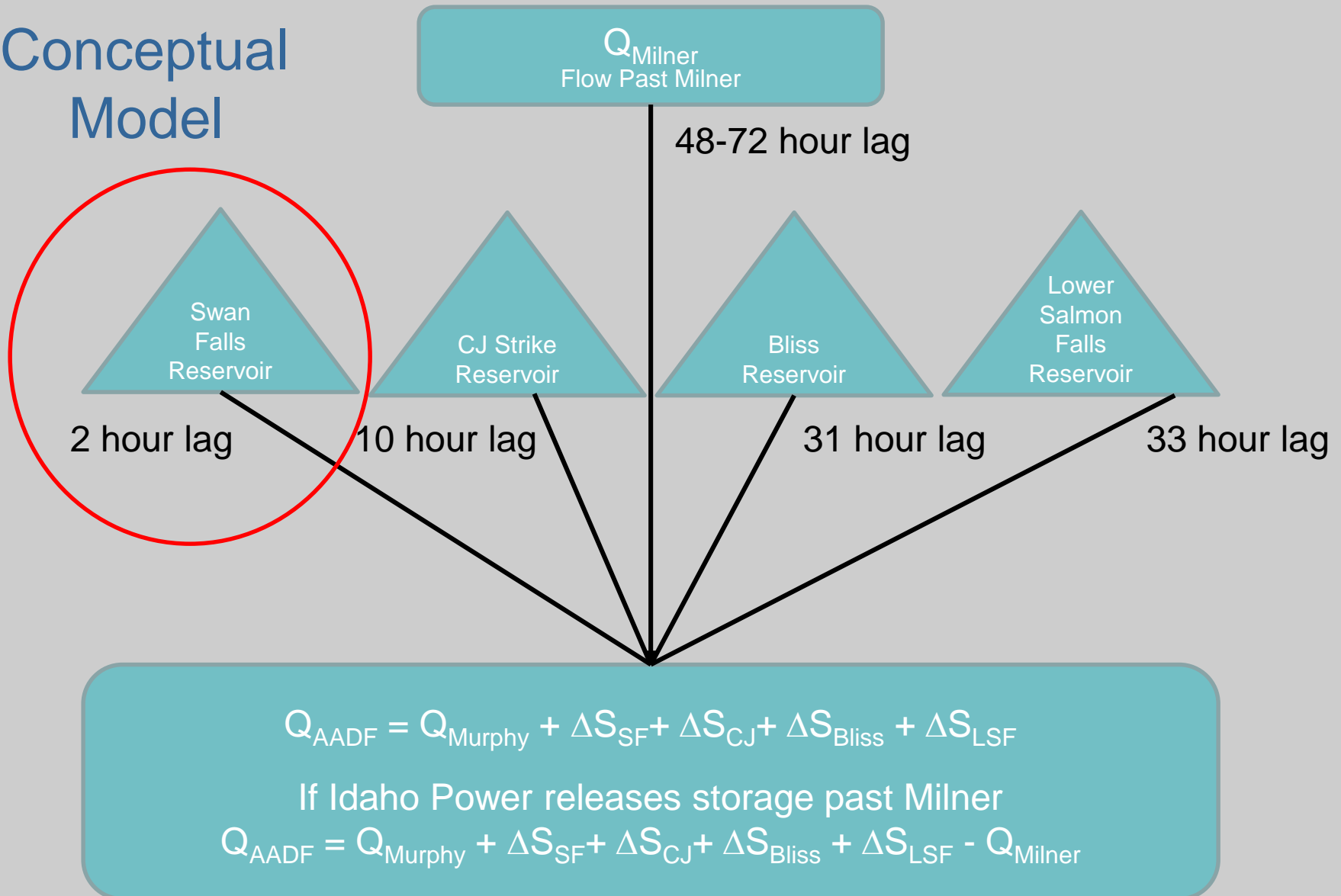
New USGS Gage: 13172500

IPC Gage: 13172454

Swan Falls Dam Reservoir

0 0.5 1 2 Miles

Conceptual Model

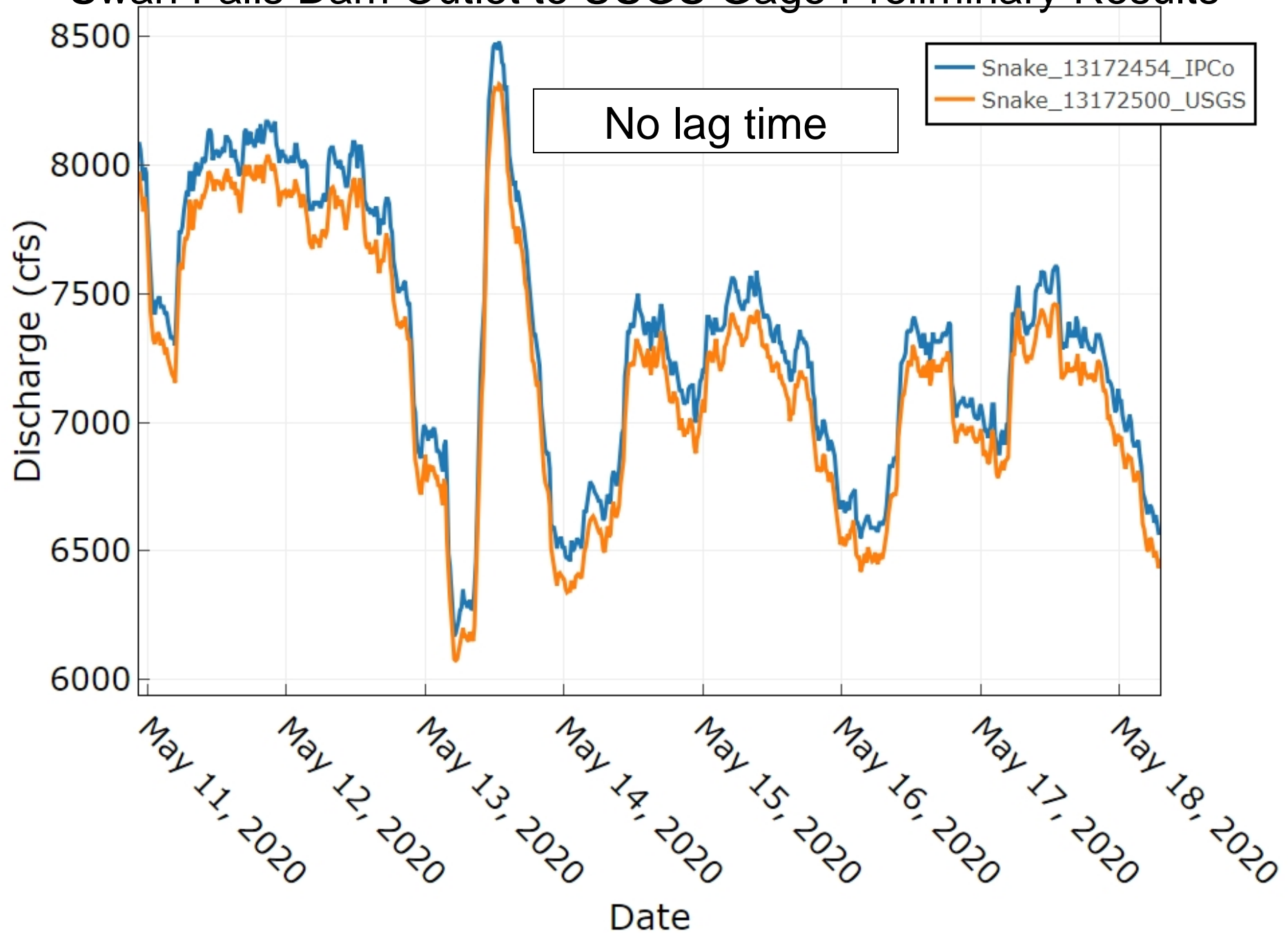


Swan Falls Dam Lag Time

- Idaho Power analyzed different seasons and flow rates for comparison between Swan Falls Dam Outlet and the old Snake River nr Murphy gage
- Current lag time is 2 hours (based on old analysis)

Date	Flow	Travel time (min)
4/20/2006	27500	45
5/11/2011	30000	45
10/1/2013	8900	45
10/2/2013	6200	45
1/9/2014	7000	45
4/4/2014	6000	45
4/1/2014	5000	45
7/9/2014	9000	45
7/24/2014	4700	45
10/4/2014	9250	45
10/4/2014	6600	45
1/24/2015	8600	45
1/25/2015	6900	45
4/11/2015	5600	45
5/26/2015	12000	45
7/4/2015	4550	45
9/18/2015	9000	45
9/29/2015	5500	45
1/2/2016	6500	45
2/16/2016	10000	45

Swan Falls Dam Outlet to USGS Gage Preliminary Results



Next Steps

- Lag Time
 - Verify 0 hour lag for Swan Falls Dam
 - Change lag in Excel AADF calculation for this year
 - Or next year?

Aquarius Time-series Calculation

- IDWR and Idaho Power both utilize Aquarius (AQ)
- Last meeting: proposed exploring calculation in AQ
- Status:
 - Idaho Power: Developed the calculation in AQ (with 15 minute time series)
 - 15 minute data is necessary
 - IDWR: Import USGS and Idaho Power Data
 - Have the capability to reproduce the calculation in AQ

Current Time-steps

Swan Falls 15 min stage	CJ Strike 60 min stage	Bliss Dam 15 min stage	Lower Salmon Falls 15 min stage
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Δ Storage

Discharge

Hourly to
Daily Mean

Daily
Value

Daily
Mean

Daily
Mean

AADF

=

Snake River
nr Murphy

+

Reservoir
Adjustment

-

Snake River
at Milner

* If flow is IPCo Storage

Proposed Time-steps

Swan Falls 15 min stage	CJ Strike 15 min stage	Bliss Dam 15 min stage	Lower Salmon Falls 15 min stage
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Δ Storage

Discharge

15 min to
Daily Mean

Daily
Value

Daily
Mean

Daily
Mean

AADF

=

Snake River
nr Murphy

+

Reservoir
Adjustment

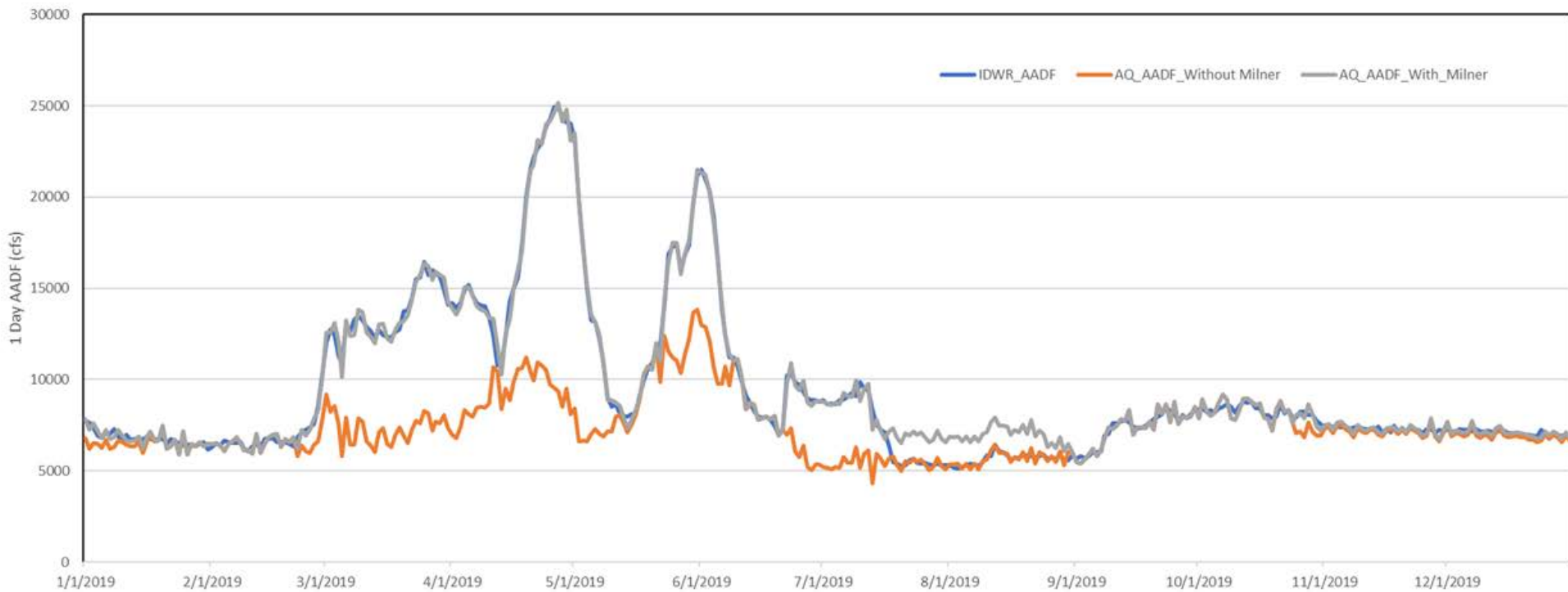
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Snake River
at Milner

* If flow is IPCo Storage

2019 AADF vs 15 minute calculation

1 Day AADF Comparison Plot - 2019 Calendar Year Data (Preliminary Results)

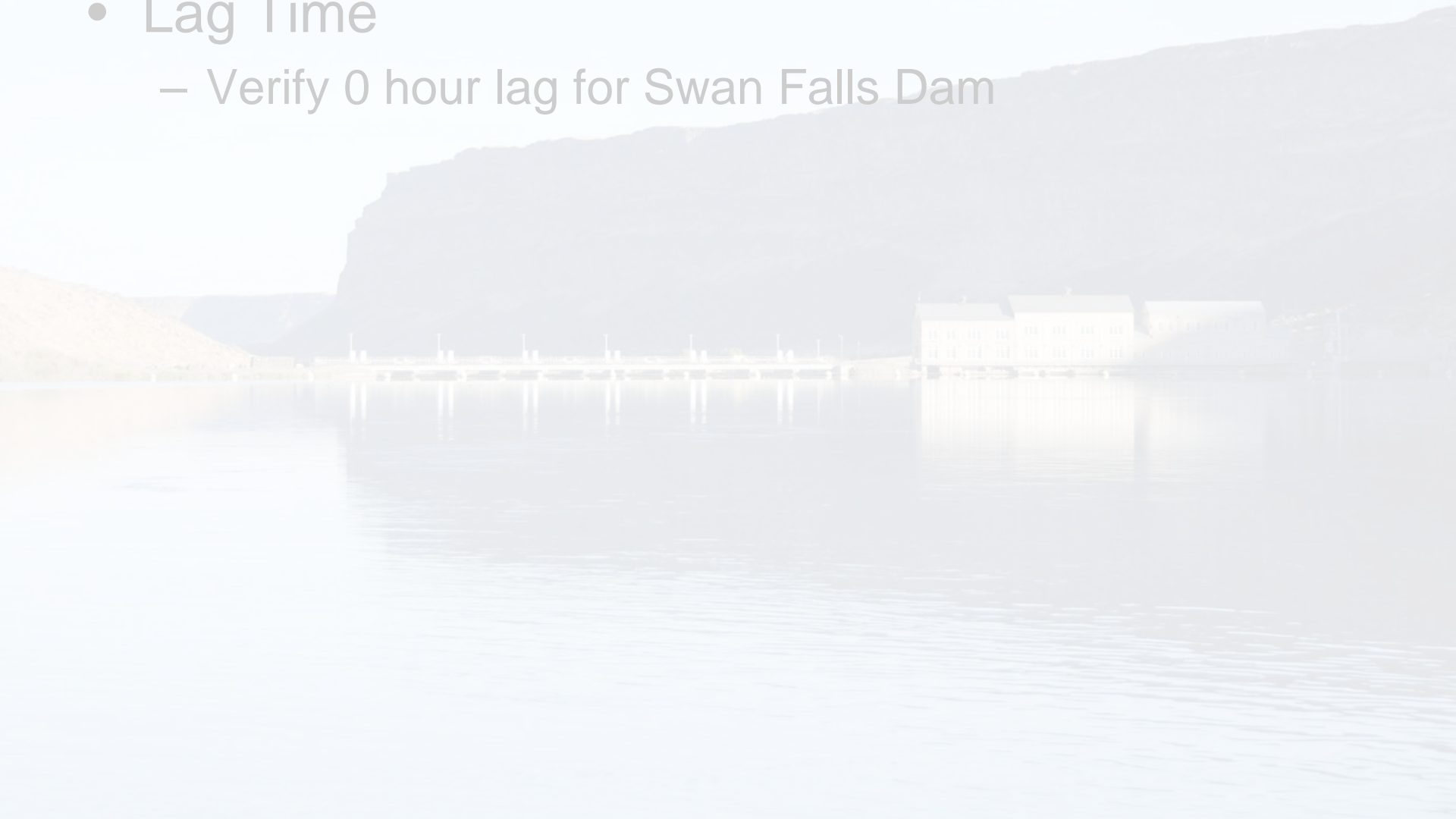


Discussion

- Official AADF: Excel, Aquarius, R, or other
 - Currently Excel
 - Datasets posted online
- Any concern with 15 minute datasets?

Next Steps

- Lag Time
 - Verify 0 hour lag for Swan Falls Dam



Next Steps

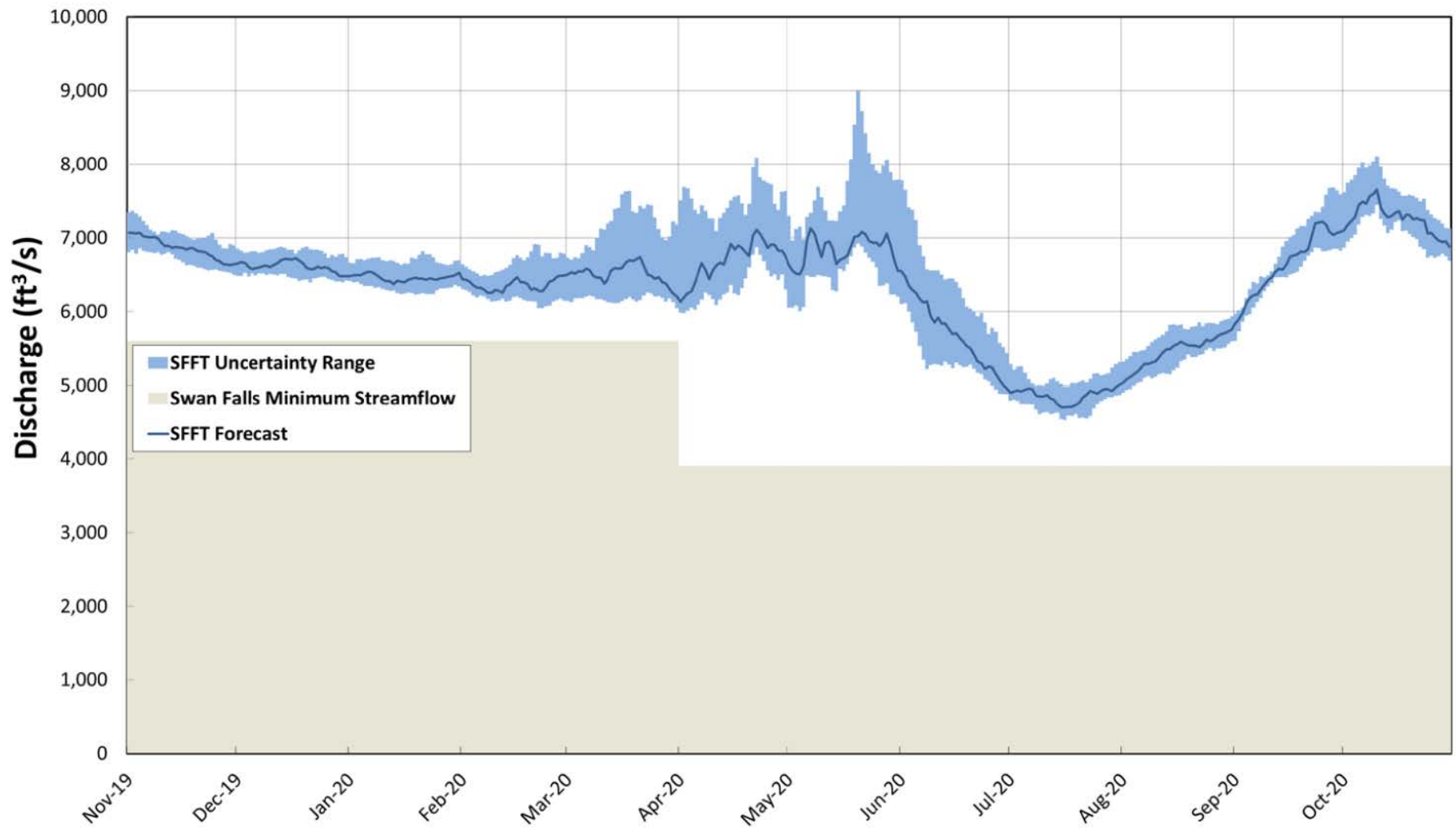
- Lag Time
 - Verify 0 hour lag for Swan Falls Dam
- Aquarius Calculation
 - Refine 15 minute time step calculation in Aquarius and work on 15 minute Excel calculation?
 - Verify 15 minute calculation: QA/QC
 - Analyze reservoir lag times?

Swan Falls Forecast Tool

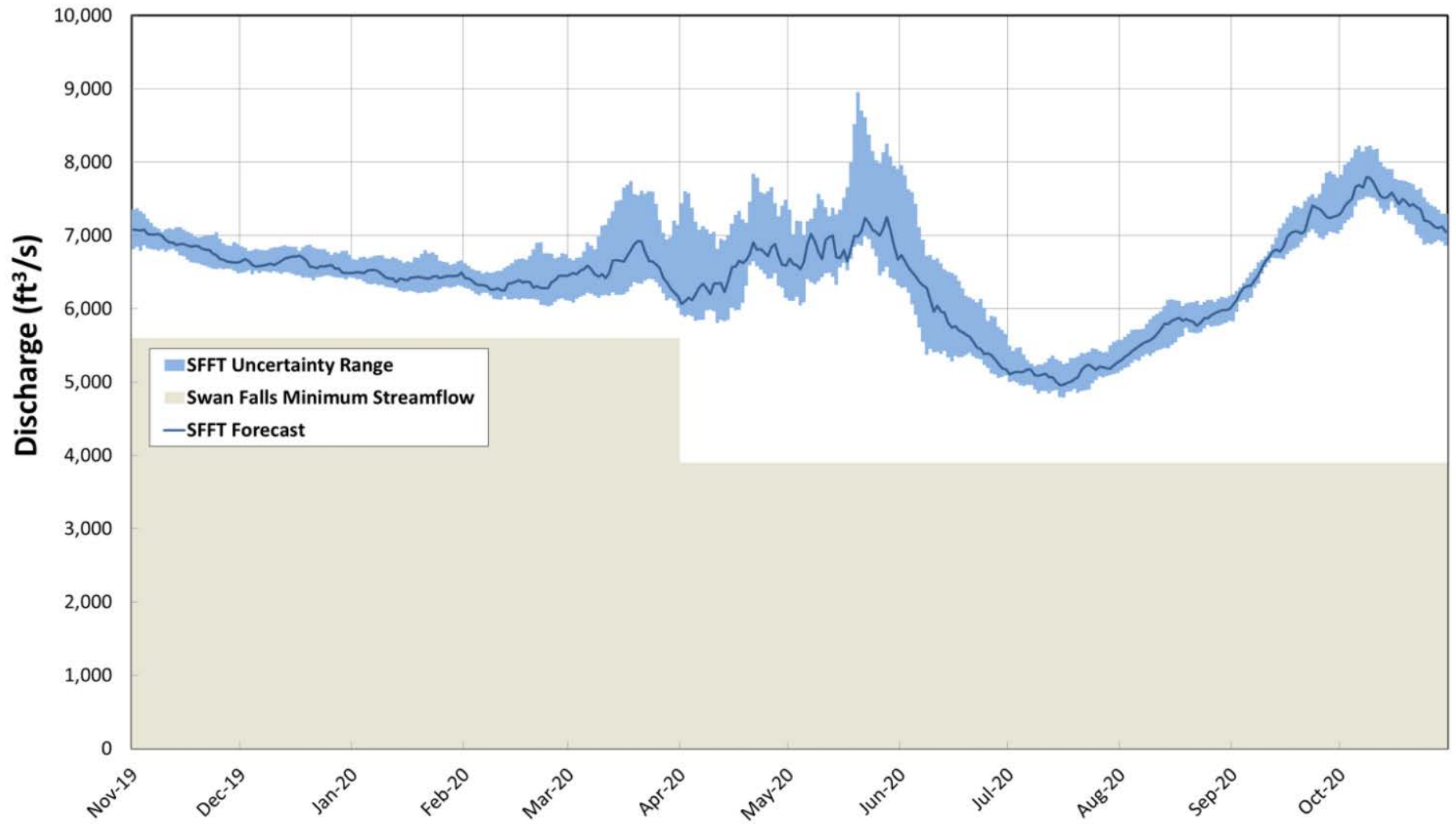
May 20, 2020



Swan Falls Forecast Tool - January 2020 Forecast



Swan Falls Forecast Tool - May 2020 Forecast



Manual for the Milner to Murphy
Reach Gain Forecast Tool
Version 1.0

Final Report

May 2020

Idaho Department of Water Resources
Adapted from CH2M Hill's Final Signed Document (May 31, 2017)



Comments?
or
Discussion?