BUREAU OF RECLAMATION

CRFS 2019 Fall Meeting

LC Basin Region Operations Update

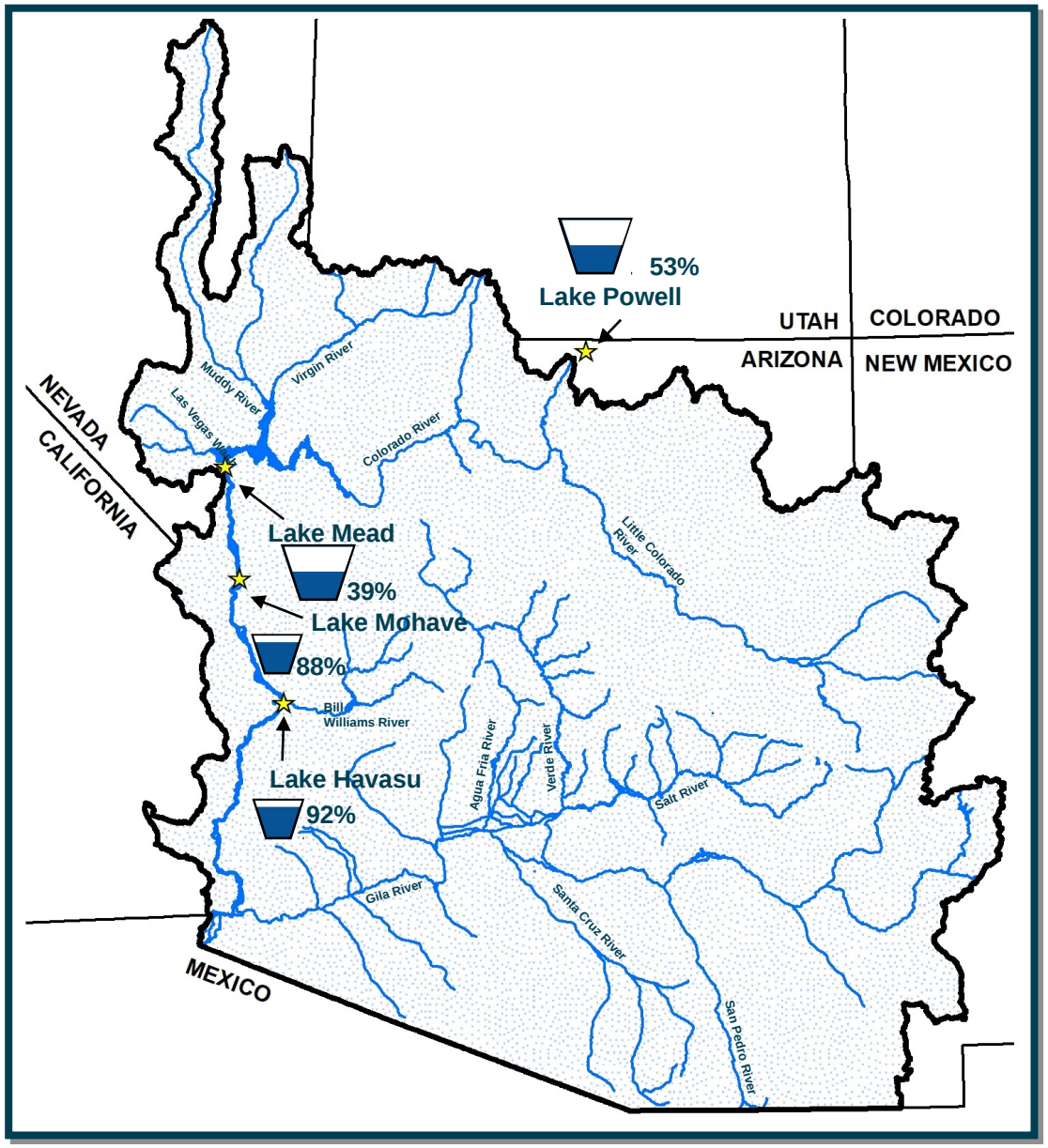
Boulder Canyon Operations Office

November 21, 2019

Overview

- Current Conditions & 2019 Operations
- 2020 Projected Operations
- Intervening Flow Plan of Study

Lower Colorado River Basin
Current Conditions



Colorado River System Conditions

as of November 19, 2019

Reservoir	Percent Full	Storage (maf)	Elevation (feet)
Lake Powell	53	12.92	3,611.90
Lake Mead	39	10.28	1,083.24
Lake Mohave	88	1.59	638.89
Lake Havasu	92	0.57	447.58
Total System Storage	52	31.14	-
Total System Storage *(at this time last year)*	*46*	*27.46*	-

2019[1,2]
Intervening Flow from Glen Canyon to Hoover Dam

Month in WY/CY 2019		5-Year Average Intervening Flow (KAF)	Observed Intervening Flow (KAF)	Observed Intervening Flow (% of Average)	Difference From 5-Year Average (KAF)
HI	October 2018	82	100	123%	19
	November 2018	54	67	125%	13
	December 2018	51	52	101%	<1
	January 2019	83	106	128%	23
	February 2019	91	126	138%	35
	March 2019	57	200	353%	143
	April 2019	49	118	240%	69
	May 2019	30	108	361%	78
	June 2019	17	69	408%	52
	July 2019	80	20	25%	-60
	August 2019	100	64	64%	-37
	September 2019	91	60	66%	-31
	October 2019	82	35	43%	-47
FU	November 2019	54			
	December 2019	51			
	WY 2019 Totals	784	1,089	139%	305
	CY 2019 Totals	784	1,010	129%	226

[1] Values were computed with the LC's gain-loss model for the most recent 24-month study.
[2] Percents of average are based on the 5-year mean from 2014-2018.

Lower Colorado River Basin Operations Update

Projected Lake Mead Operational Tiers

Based on 24-Month Study Inflow Scenarios

Inflow Scenario	CY 2020 Jan 1, 2020 Projection[1]	CY 2021 Jan 1, 2021 Projections
Oct Probable Maximum	Normal - ICS Surplus Condition + Water Savings Contributions[2] Elevation 1,089.40 ft	Normal - ICS Surplus Condition Elevation 1,121.36 ft *Previous year's DCP contributions may be recovered.*
Nov Most Probable		Normal - ICS Surplus Condition + Water Savings Contributions[2] Elevation 1,080.42 ft
Oct Probable Minimum		Normal - ICS Surplus Condition + Water Savings Contributions[2] Elevation 1,086.10 ft

[1]CY 2020 projections and operations were determined with the August 2019 24-Month Study.
[2]Water savings contributions consistent with the 2019 Colorado River Drought Contingency Plans and Section IV of IBWC Minute No. 323.

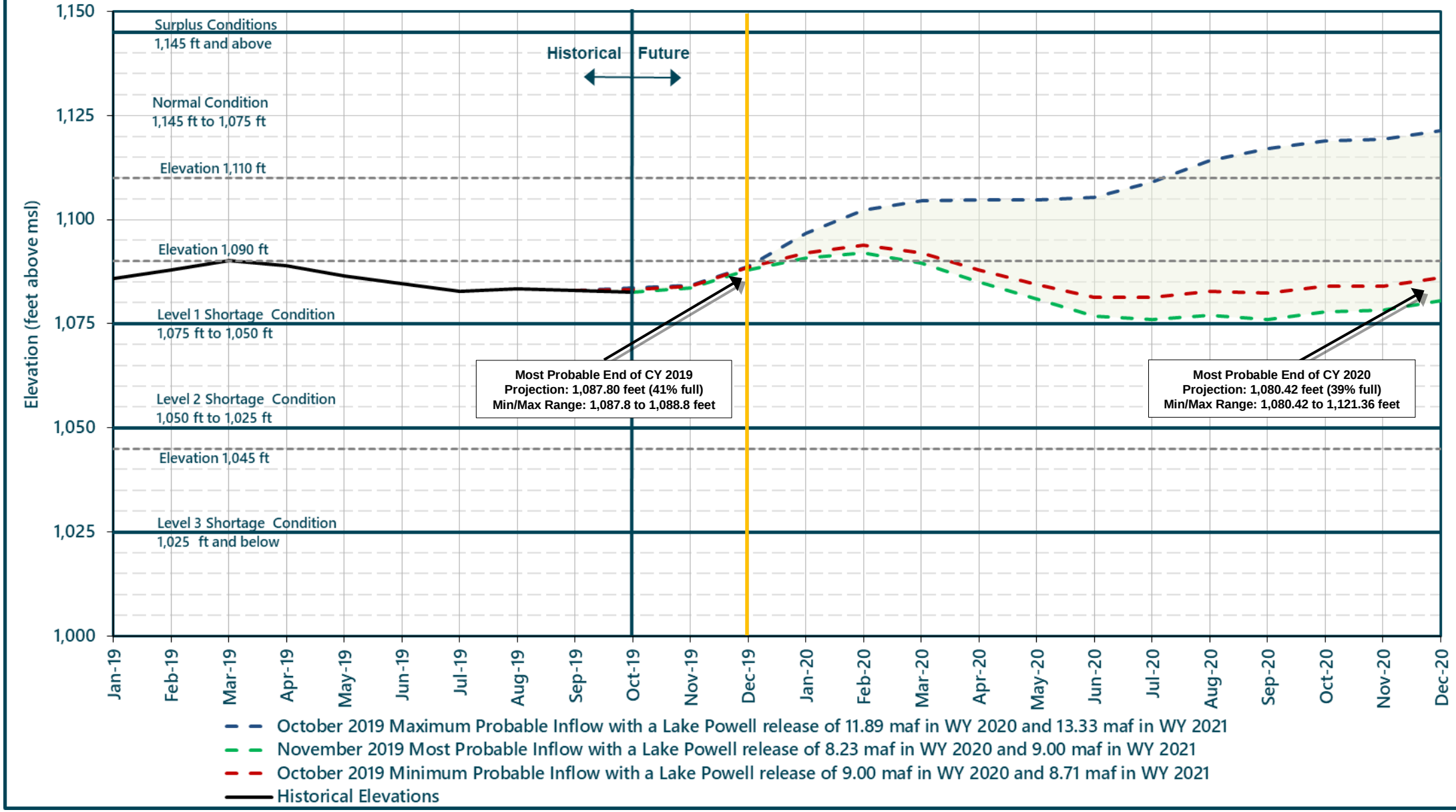
2007 Interim Guidelines, Minute 323, Lower Basin Drought Contingency Plan & Binational Water Scarcity Contingency Plan
Total Volumes (kaf)

Lake Mead Elevation (feet msl)	2007 Interim Guidelines Shortages		Minute 323 Delivery Reductions	Total Combined Reductions	DCP Contributions			Binational Water Scarcity Contingency Plan Savings	Combined Volumes by Country *US: (2007 Interim Guidelines Shortages + DCP Contributions)* *Mexico: (Minute 323 Delivery Reductions + Binational Water Scarcity Contingency Plan Savings)*					Total Combined Volumes
	AZ	NV	Mexico	***Lower Basin States + Mexico***	AZ	NV	CA	Mexico	*AZ Total*	*NV Total*	*CA Total*	*Lower Basin States Total*	*Mexico Total*	***Lower Basin States + Mexico***
1,090 - 1,075	0	0	0	***0***	192	8	0	41	192	8	0	*200*	*41*	***241***
1,075 - 1050	320	13	50	***383***	192	8	0	30	512	21	0	*533*	*80*	***613***
1,050 - 1,045	400	17	70	***487***	192	8	0	34	592	25	0	*617*	*104*	***721***
1,045 - 1,040	400	17	70	***487***	240	10	200	76	640	27	200	*867*	*146*	***1,013***
1,040 - 1,035	400	17	70	***487***	240	10	250	84	640	27	250	*917*	*154*	***1,071***
1,035 - 1,030	400	17	70	***487***	240	10	300	92	640	27	300	*967*	*162*	***1,129***
1,030 - 1,025	400	17	70	***487***	240	10	350	101	640	27	350	*1,017*	*171*	***1,188***
<1,025	480	20	125	***625***	240	10	350	150	720	30	350	*1,100*	*275*	***1,375***

The US will work to create or conserve 100,000 af or more of Colorado River system water on an annual basis to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs. All actions taken by the United States shall be subject to applicable federal law, including availability of appropriations.

Lake Mead End of Month Elevations

Projections from the October and November 2019 24-Month Study Inflow Scenarios



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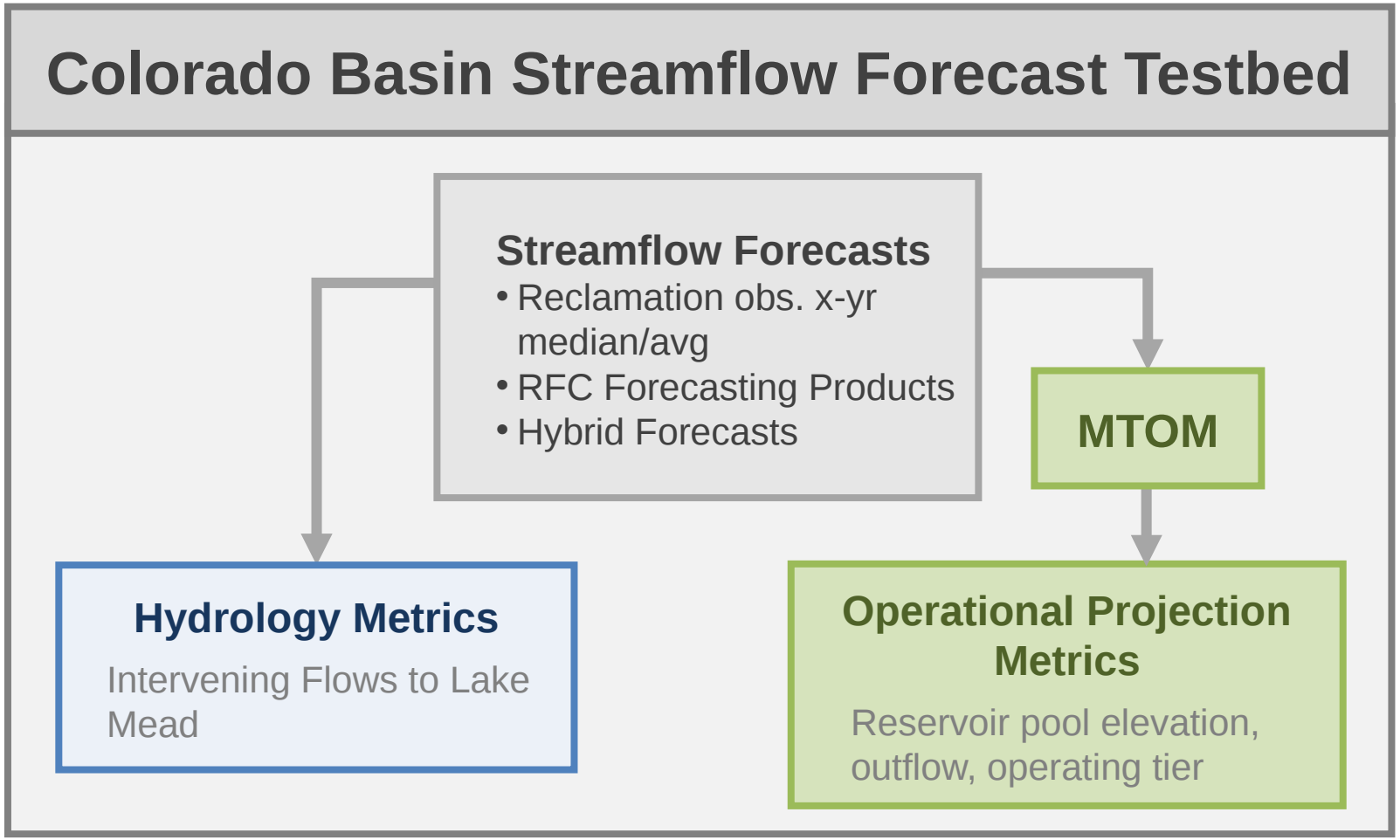
Intervening Flow Study

Methodology



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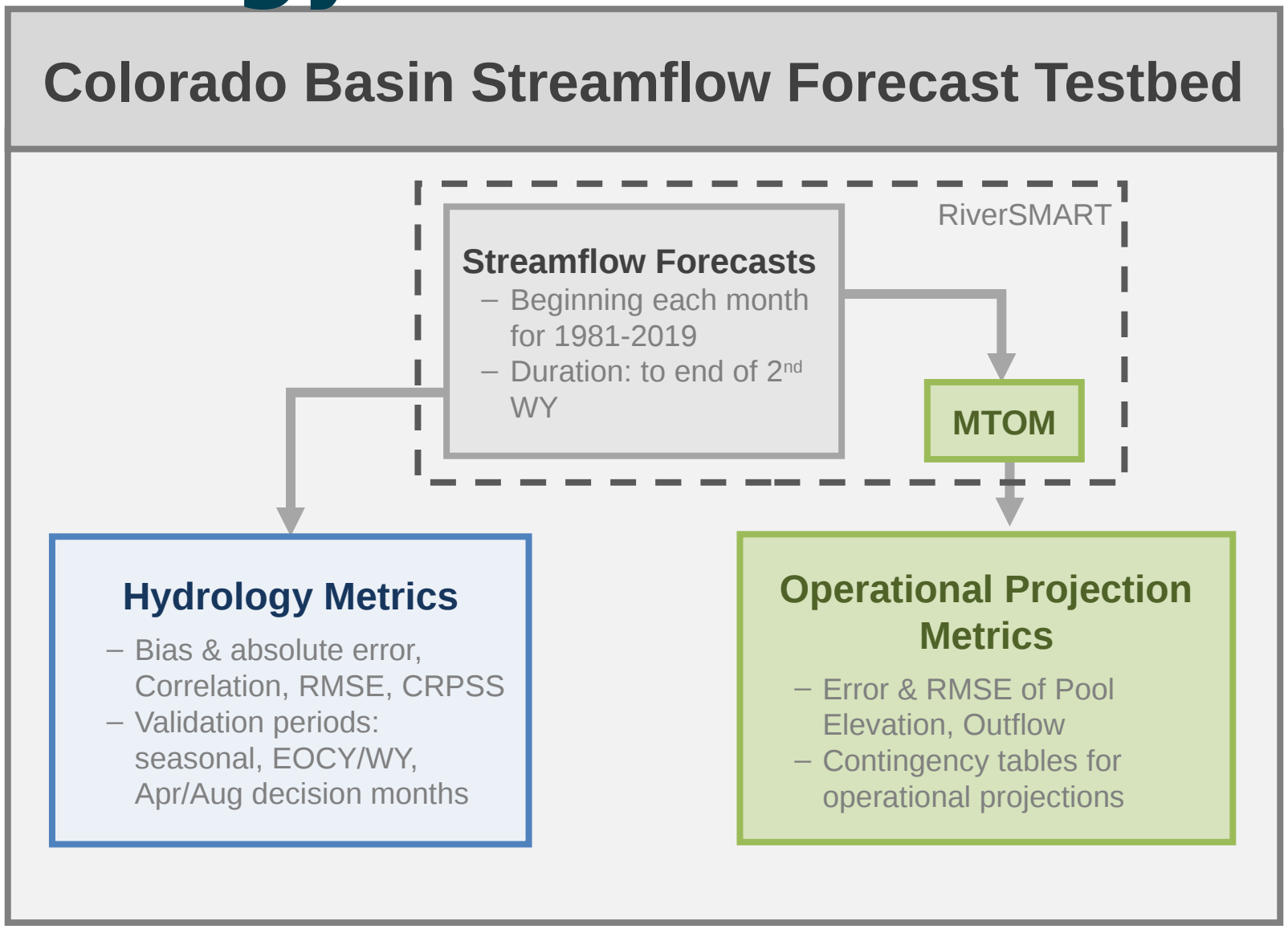

Approach and Timeline

Phase	Description	Anticipated Timeframe
1) Data collection and assessment	Receive hindcasts from RFC, update analysis of current forecasting method	Nov. 2019 – Mar. 2020
2) Testbed development	Extend testbed framework to assess Lower Basin forecast points	Nov. 2019 – Jan. 2020
3) Forecast development	Develop forecasts that will be evaluated in testbed	Mar. – Apr. 2020
4) Run forecast through Testbed	Perform operational projections analysis; initial review of results	Apr. – May 2020
5) Produce study report	Summarize results and new 24MS side inflow forecasting technique	May – Aug. 2020
6) Evaluate next steps	Determine if any model development or workflows are needed for new method implementation	Sept. 2020

*Provide status updates at Basin States/Utilities Group March and May 2020 meetings

Lower Colorado River Operations

For further information: https://www.usbr.gov/lc/riverops.html

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