Lake Okeechobee System Operating Manual

Iteration 2 Modeling Evaluation
(with SFWMD Sensitivity Run)

Sanibel-Captiva Conservation Foundation

Conservancy of Southwest Florida

DRAFT - July 14, 2021

Iteration 2 - Model runs

Alternative	Description
ECBr [1]	LOSOM Existing Condition Baseline 2019
NA25 [2]	LOSOM No Action 2025 (FWO)
AA	ESLE Framework. Enhances SLE ecology.
BB	SPLC Framework. Improve water supply to pre-LORS08
CC	Pareto Plan D Framework. Enhances CRE ecology and improves water supply
DD	Pareto Plan A Framework. Incremental improvement over LORS.
EE1	Stage Target Operation Framework. Improve water supply performance by reducing flows south.
EE2	Stage Target Operations Framework. Reduce flows to SLE by reducing Zone B release rate.
SR3.5	SFWMD Sensitivity Run

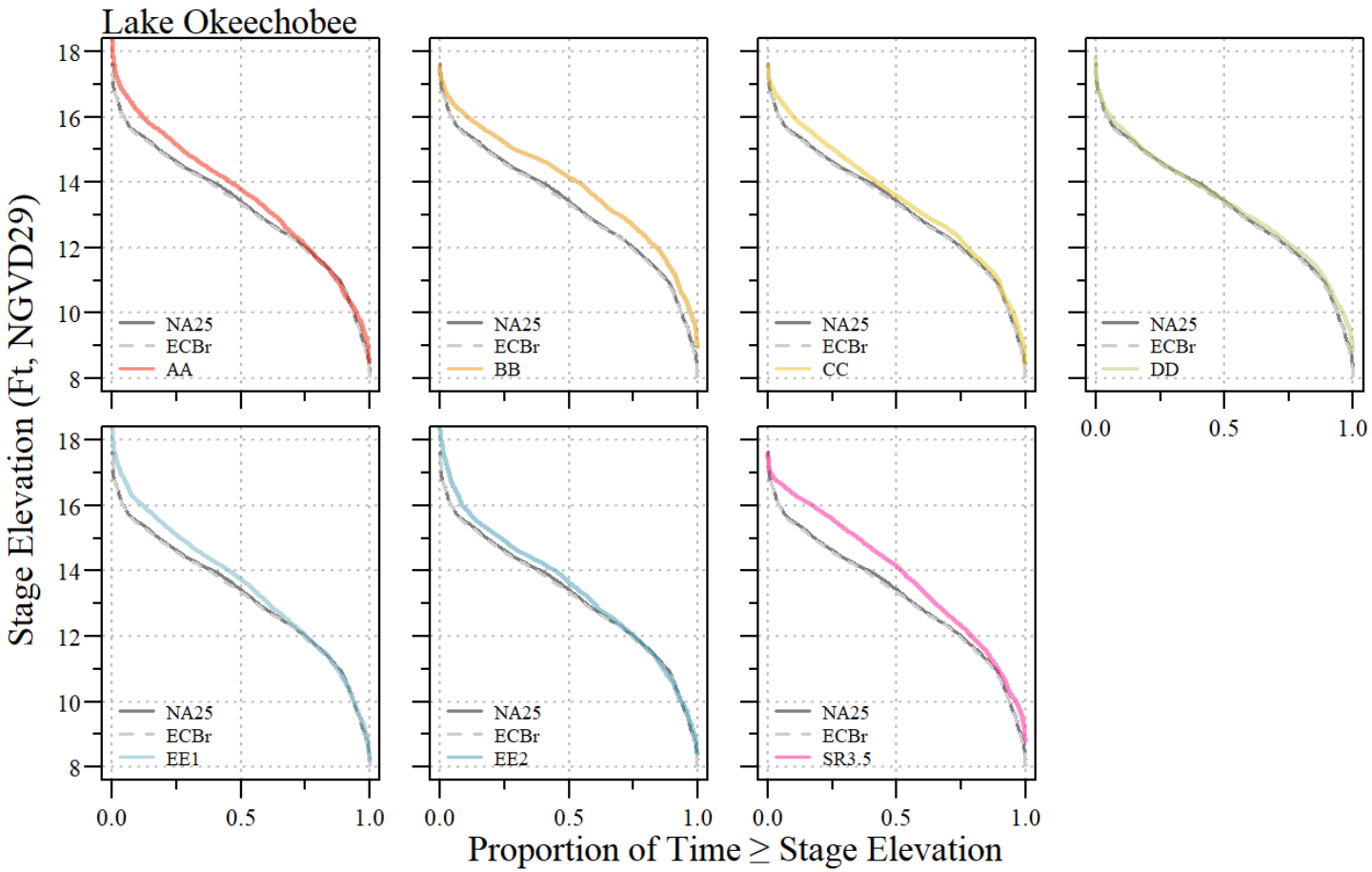
[1] Existing Conditions Baseline 2019, revised (replaces LSMECB)

[2] No action Condition 2025 (replaces LSM25B)

SR3.5

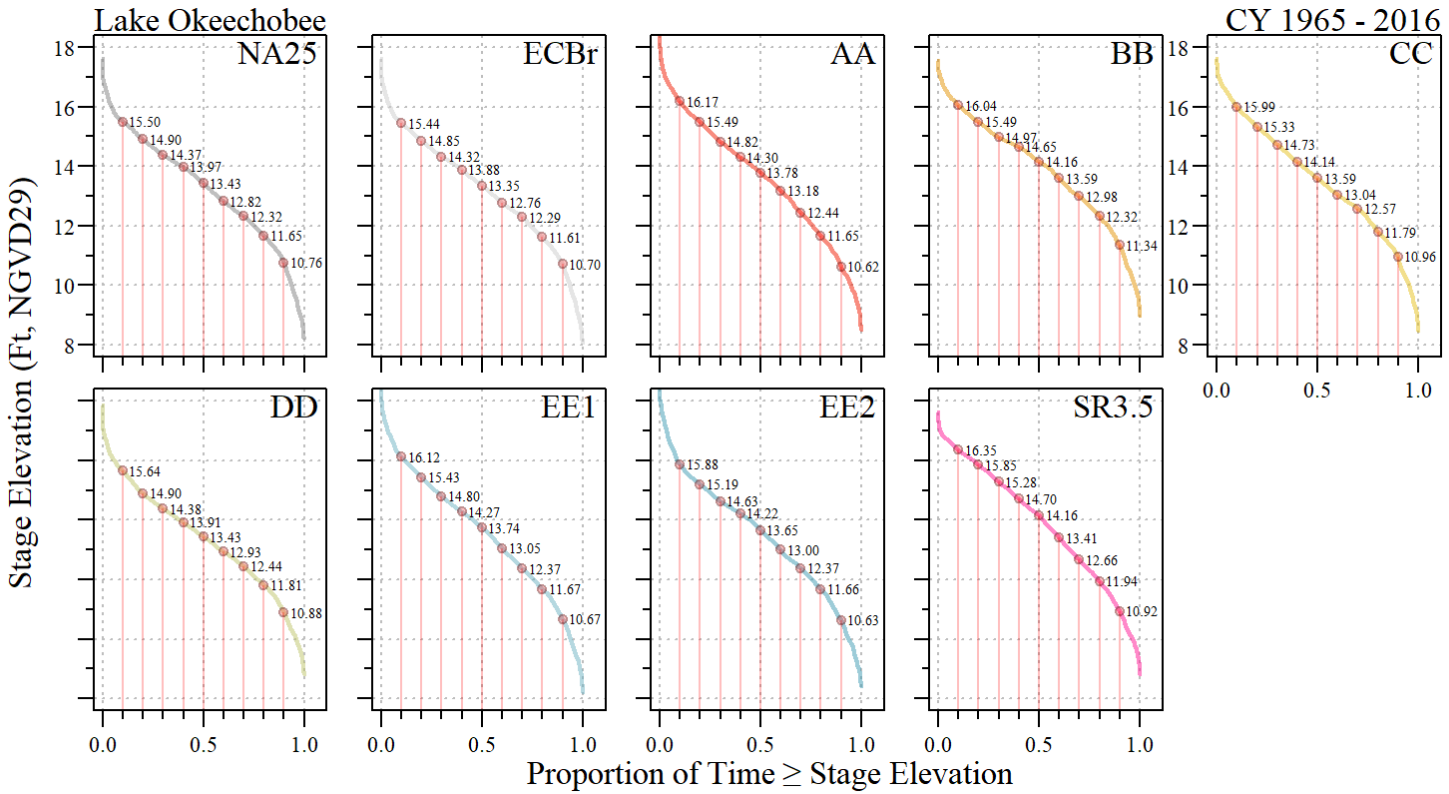
- SFWMD sensitivity run which serves as an example run incorporating policy direction (as informed by the Governing Board) and trade-offs between the different systems
- Presented at the July 15th 2021 Governing Board

Lake Stage Duration Curves



Lake Okeechobee stage duration curves comparing FWO and ECB relative to each alternative during the simulation period of record (CY1965 - 2016).

Lake Stage Duration Curves



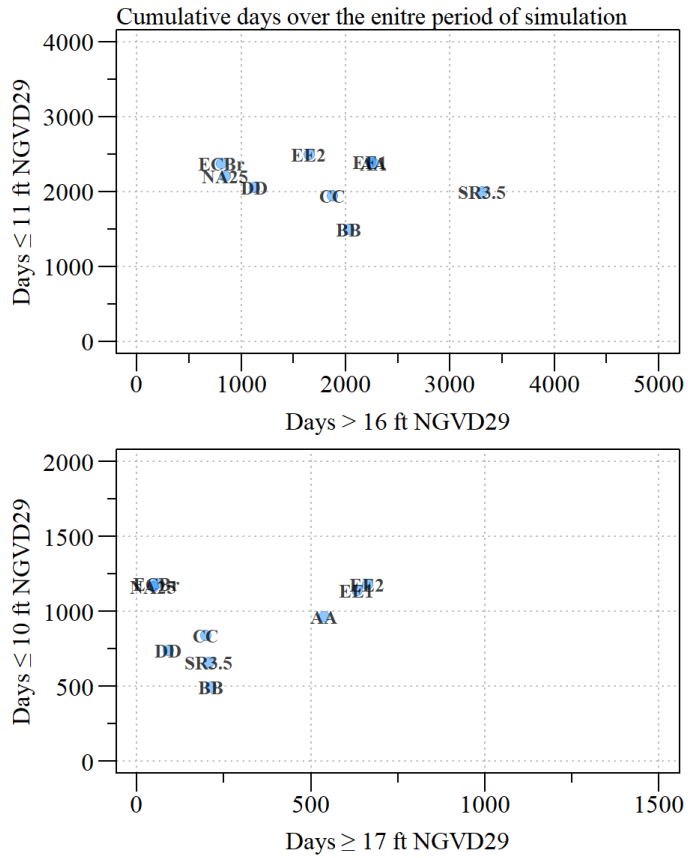
Lake Okeechobee stage duration curves for all alternatives including SR3.5 with stage values identified along the curve during the simulation period of record (CY1965 - 2016).

Lake Stage Duration Curves

Stage values for each segment of the stage duration curve for each alternative including SR3.5 during the simulation period of record (CY1965 - 2016).

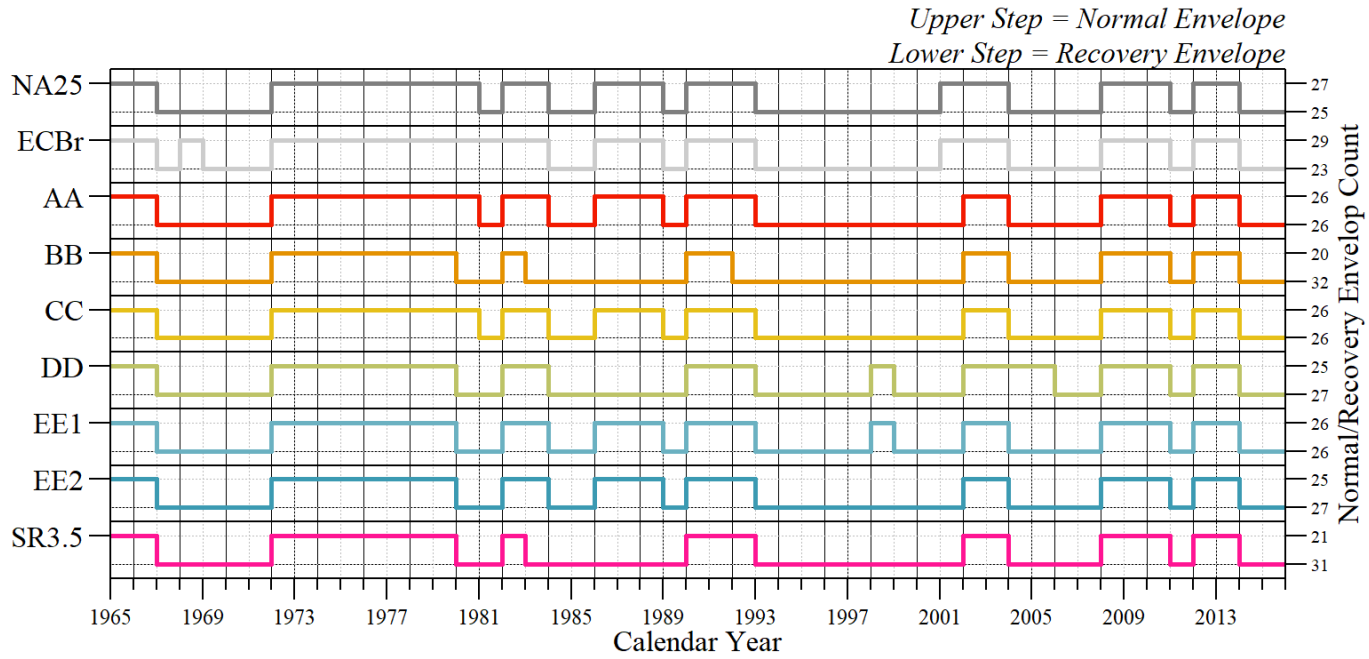
Alt	10% Pt	20% Pt	30% Pt	40% Pt	50% Pt	60% Pt	70% Pt	80% Pt	90% Pt
NA25	15.50	14.90	14.37	13.97	13.43	12.82	12.32	11.65	10.76
ECBr	15.44	14.85	14.32	13.88	13.35	12.76	12.29	11.61	10.70
AA	16.17	15.49	14.82	14.30	13.78	13.18	12.44	11.65	10.62
BB	16.04	15.49	14.97	14.65	14.16	13.59	12.98	12.32	11.34
CC	15.99	15.33	14.73	14.14	13.59	13.04	12.57	11.79	10.96
DD	15.64	14.90	14.38	13.91	13.43	12.93	12.44	11.81	10.88
EE1	16.12	15.43	14.80	14.27	13.74	13.05	12.37	11.67	10.67
EE2	15.88	15.19	14.63	14.22	13.65	13.00	12.37	11.66	10.63
SR3.5	16.35	15.85	15.28	14.70	14.16	13.41	12.66	11.94	10.92

High/Low Stages



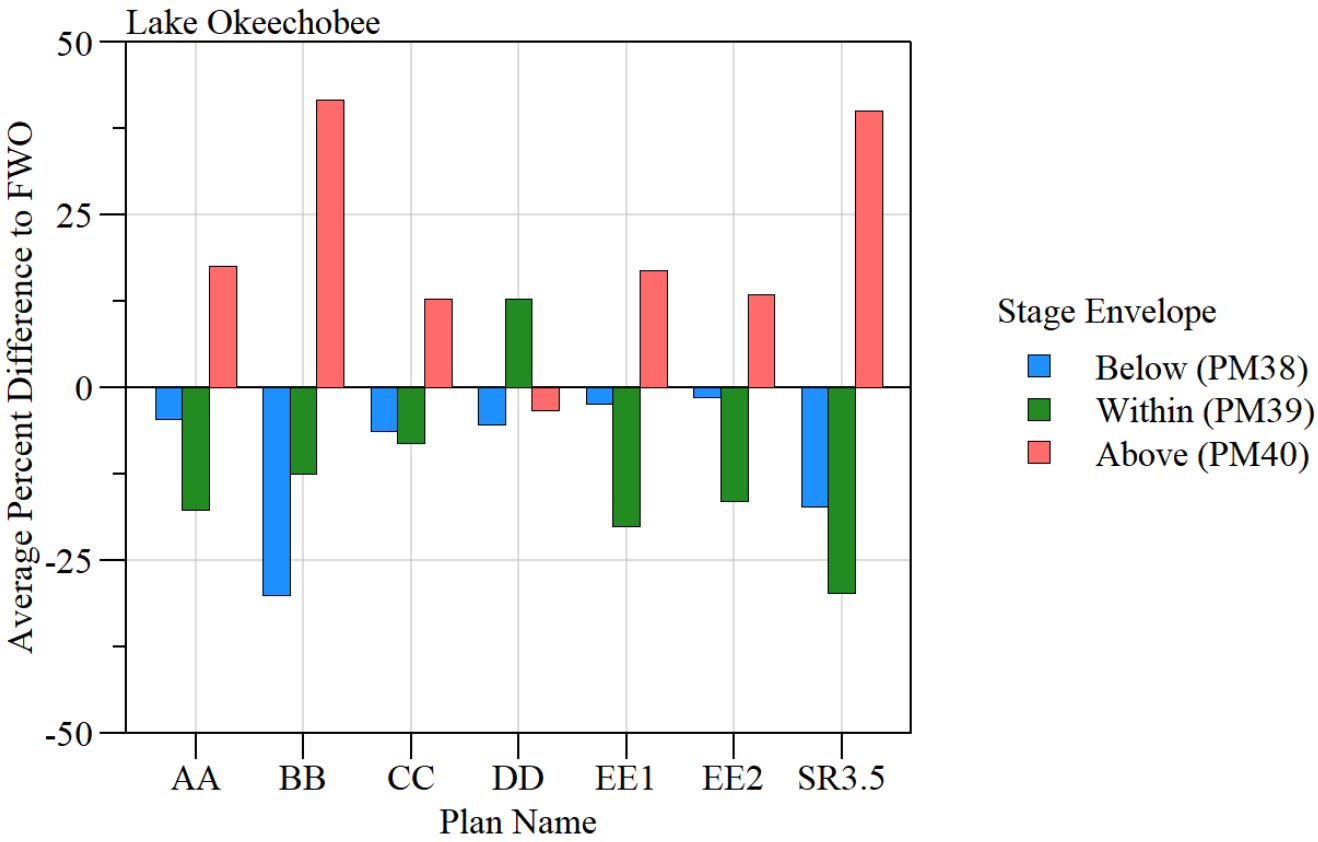
Total number of days during the simulation period where (Top) stage elevations were ≤ 11 or > 16 Ft NGVD29 and (Bottom) ≤ 10 or ≥ 17 Ft NGVD29.

Normal/Recovery Envelope



Lake Okeechobee ecological stage envelope across alternatives and period of simulation. Upper step signifies the year during which the normal stage envelope applies and the lower is the recovery envelope. Counts of each evelope are identified on the secondary y-axis (right).

Normal/Recovery Envelope



Percent average difference relative to FWO of the percent of time below, within and above the ecological stage envelope across alternatives including SR3.5 during the period of simulation.

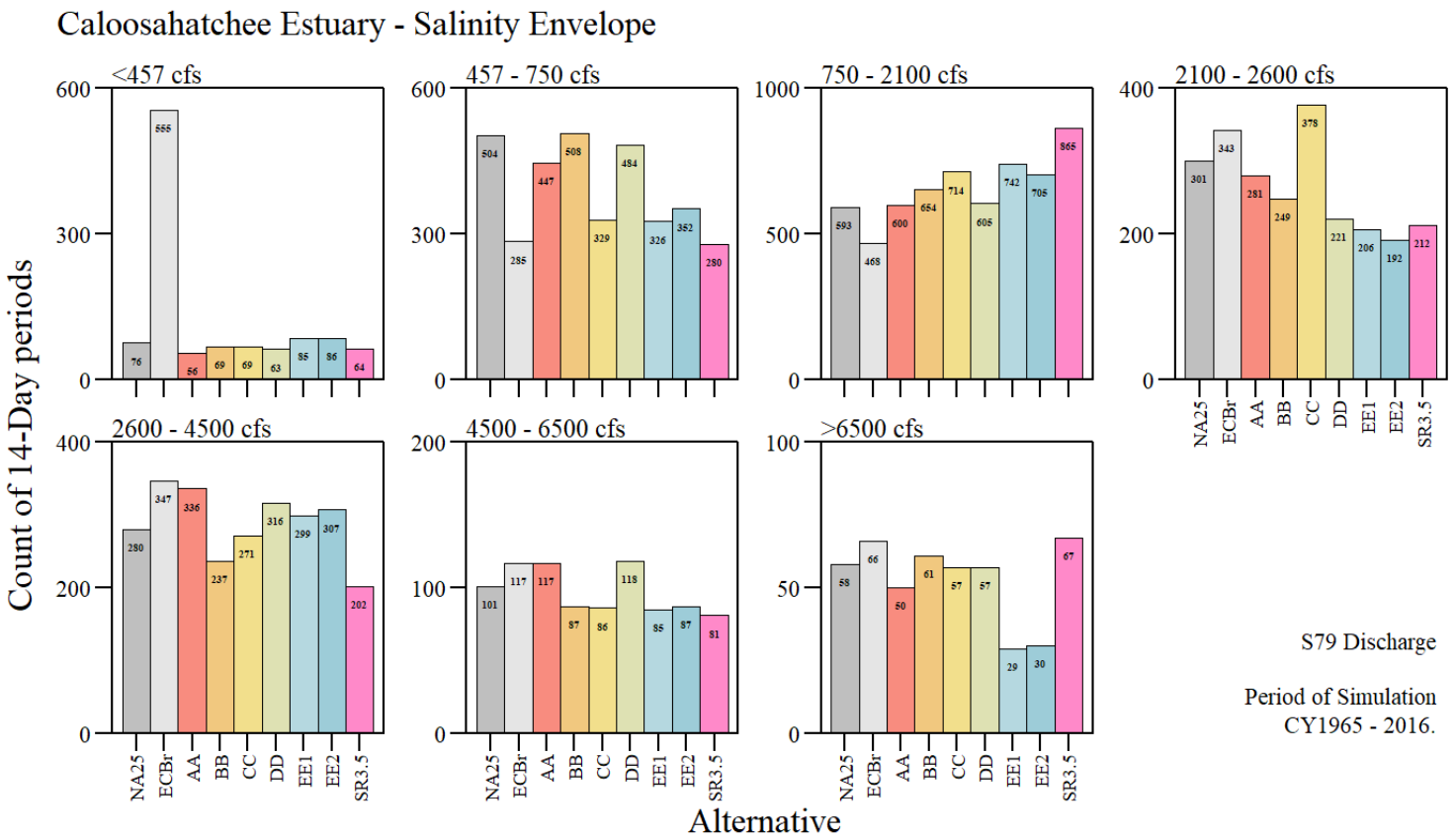
Caloosahatchee Estuary

S77 and S79 average total discharge comparison between alternatives with percent change relative to FWO and ECB across the entire simulation period of record (Jan 1965 - Dec 2016).

	Average Total Annual Discharge (x1000 Ac-Ft Yr^{-1})		% Change Compared to FWO [1]	
Alternative	S77	S79	S77 [1]	S79 [1]
NA25	584.7	1293.9	0.0	0.0
ECBr	571.2	1298.8	-2.3	0.4
AA	633.3	1342.1	8.3	3.7
BB	467.2	1188.1	-20.1	-8.2
CC	635.3	1347.4	8.7	4.1
DD	574.3	1286.1	-1.8	-0.6
EE1	521.8	1229.6	-10.8	-5.0
EE2	552.1	1258.9	-5.6	-2.7

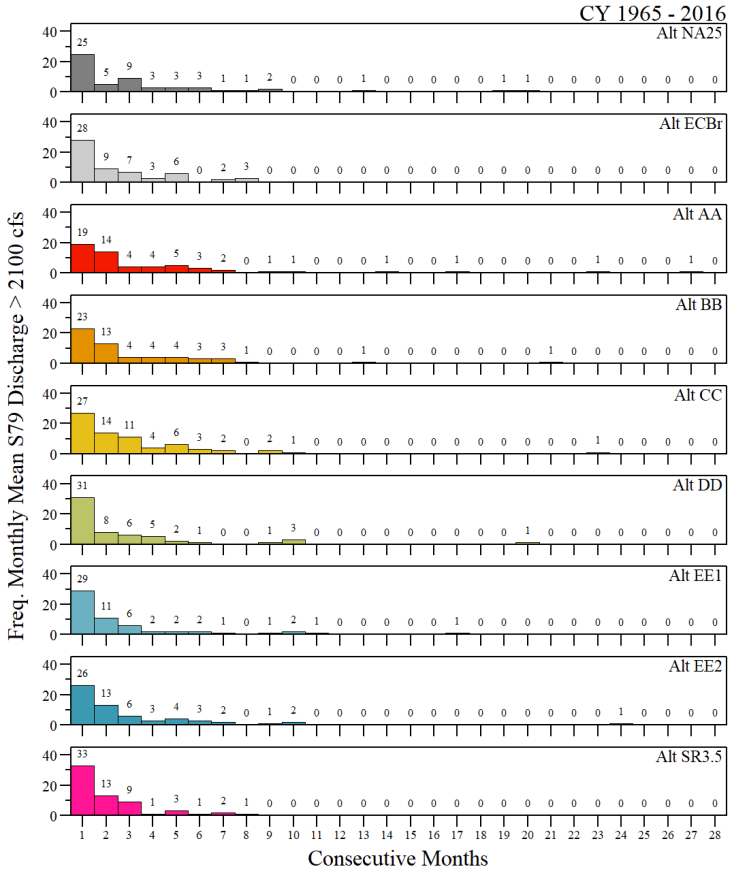
[1] FWO = NA25

RECOVER Salinity Envelope



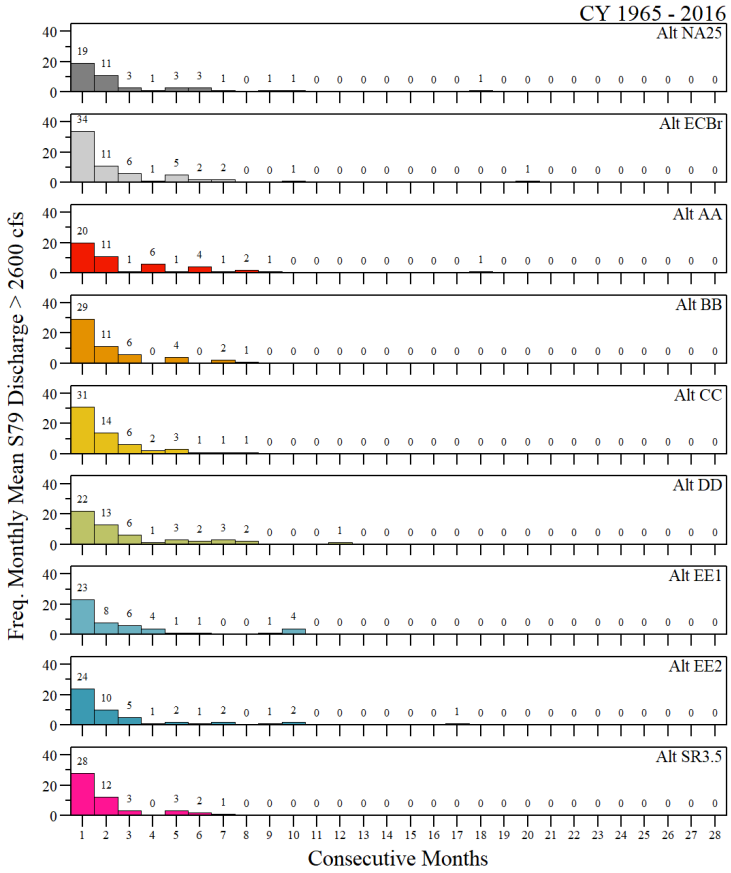
Count of 14-day period within each respective flow category for each alternative across the simulation period of record. Estimates consistent with RECOVER methodology using 14-day moving average dischare values for S79.

Monthly Mean Discharge



Frequency of consecutive months of monthly mean S79 discharges greater than 2100 cfs for each alternative across the simulation period of record (CY 1965 - 2016).

Monthly Mean Discharge



Frequency of consecutive months of monthly mean S79 discharges greater than 2600 cfs for each alternative across the simulation period of record (CY 1965 - 2016).