INFORMATION TO SUPPORT EXPOSED LAKEBED CALCULATIONS FOR DROUGHT FLOW SCENARIOS

California Natural Resources Agency

DROUGHT REDUCTION IMPACTS ON IMPERIAL VALLEY

- Reduction scenarios: 250 TAFY reduction to IID over 2023-2026, with a return to baseline inflows after 2026
- Two assumptions are modeled:
    1. Fallowing conservation program
    2. Hybrid conservation program (50 TAFY efficiency and 200 TAFY fallowing conservation)
- Based on a review of records over the past 5 years, the fallowing effect represents a 35.7% loss to Sea, derived from fraction of Salton Sea inflow compared to CO River water supply to IID
- Model results do not include effects of 10-Year Plan projects including SCH

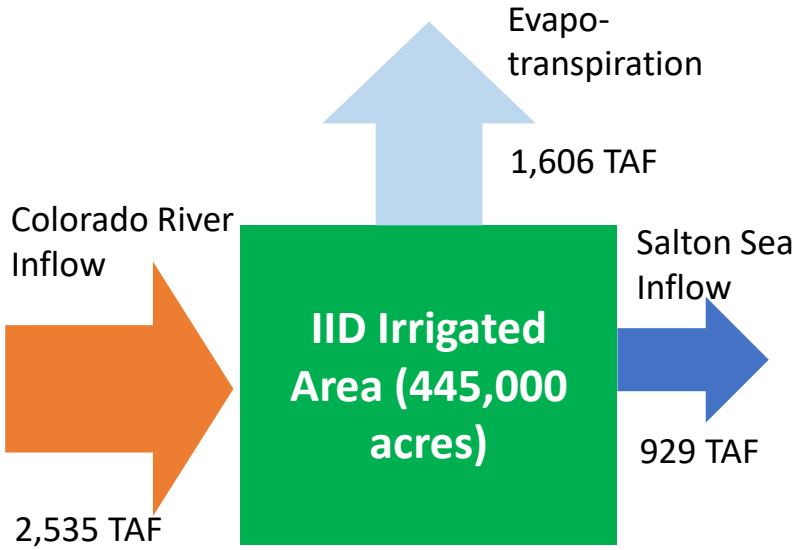
SALTON SEA INFLOW REDUCTION SCENARIOS (2023-2026) TO IMPERIAL VALLEY

Assumption	Inflow Reduction for 250,000 AFY Drought Reduction	Equation for Inflow Reduction
No drought reduction	0	-
Fallowing (35.7% Loss)	89,000	35.7% * 250,000
50 TAFY Efficiency & Fallowing (35.7% Loss)	121,000	50,000 + 35.7% * (250,000 - 50,000)

DROUGHT REDUCTION IMPACTS ON COACHELLA VALLEY

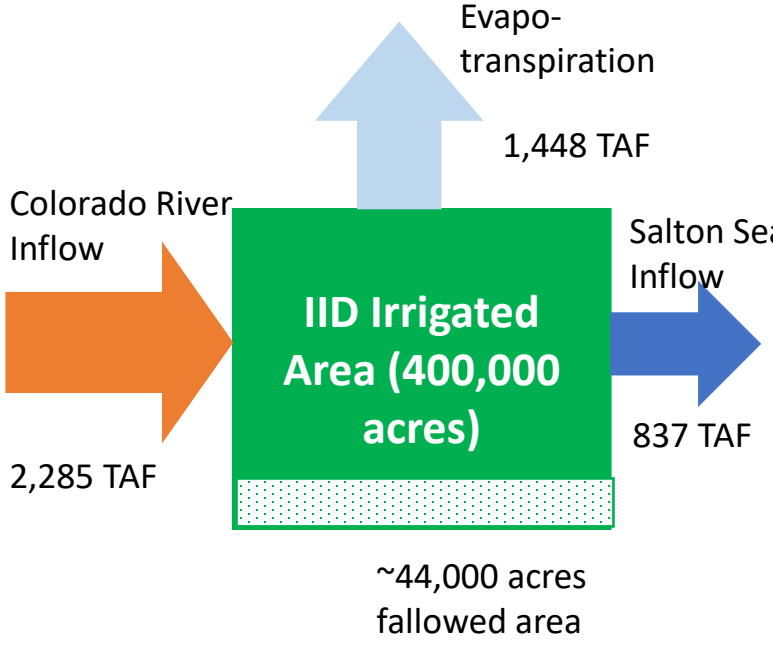
- CVWD suggested using delivery reductions of 25 TAFY (10% of inflow reduction to IID).
- The reduction would be achieved through voluntary Colorado River Water Conservation Program up to 10 TAFY. Average return flows to drains are 20%, so the maximum potential reduction in flows to Salton Sea over the four-year period would be 2,000 AFY.
- The remainder and any amount that cannot be achieved by the Colorado River Water Conservation Program would be achieved by reducing recharge at CVWD groundwater recharge facilities, which would have no impact to flows to the Salton Sea for the four-year period.
- The impact on flows to the Salton Sea from Coachella Valley will be small, and therefore are not included in the modeling.

IID Pre-Drought Conditions



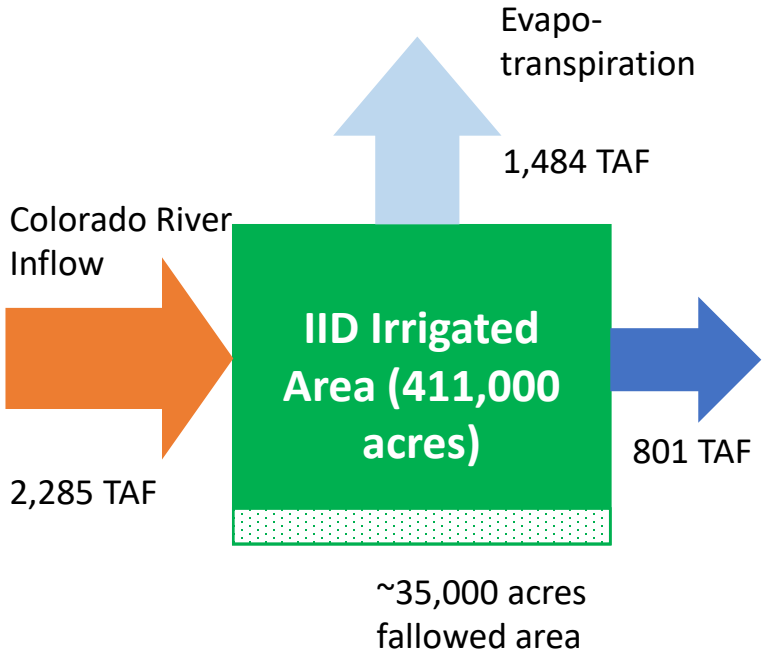
2,535 Inflow
-1,606 ET
929 Salton Sea

IID Drought Reduction Plus Fallowing



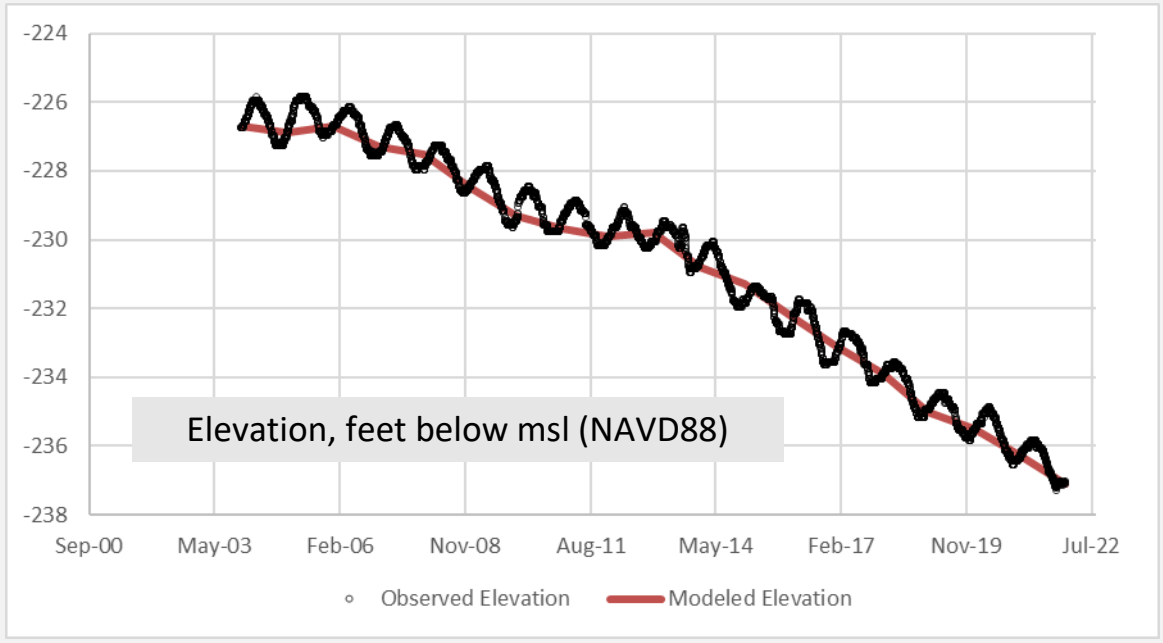
2,285 Inflow
-1,448 ET
837 Salton Sea

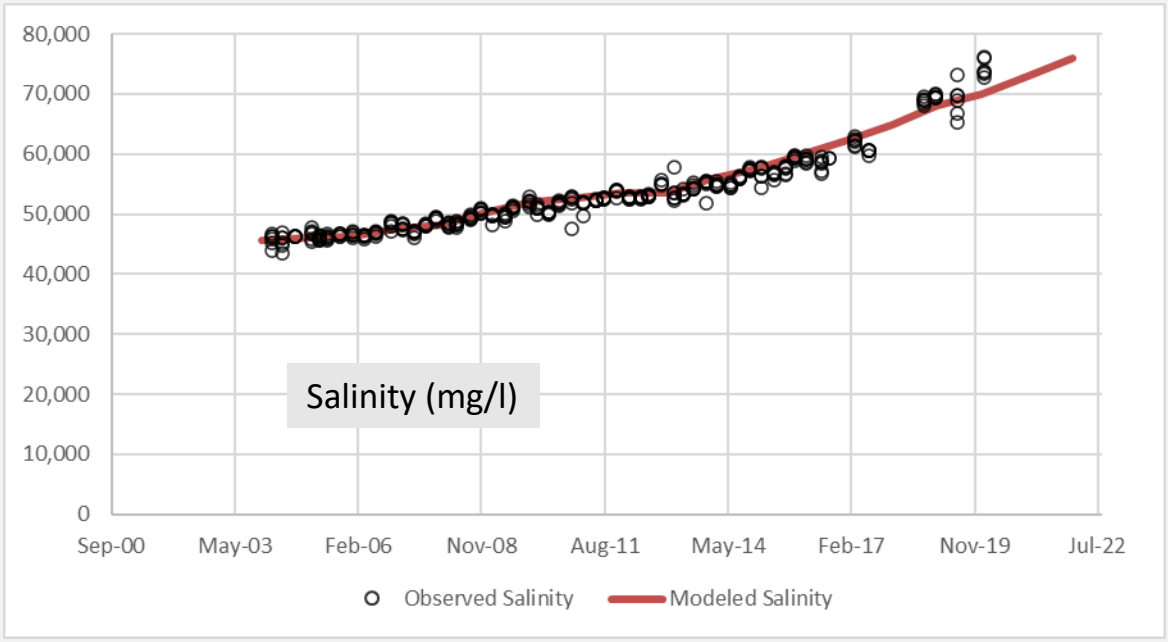
IID Drought Reduction Plus Fallowing and Efficiency



2,285 Inflow
-1,484 ET
801 Salton Sea

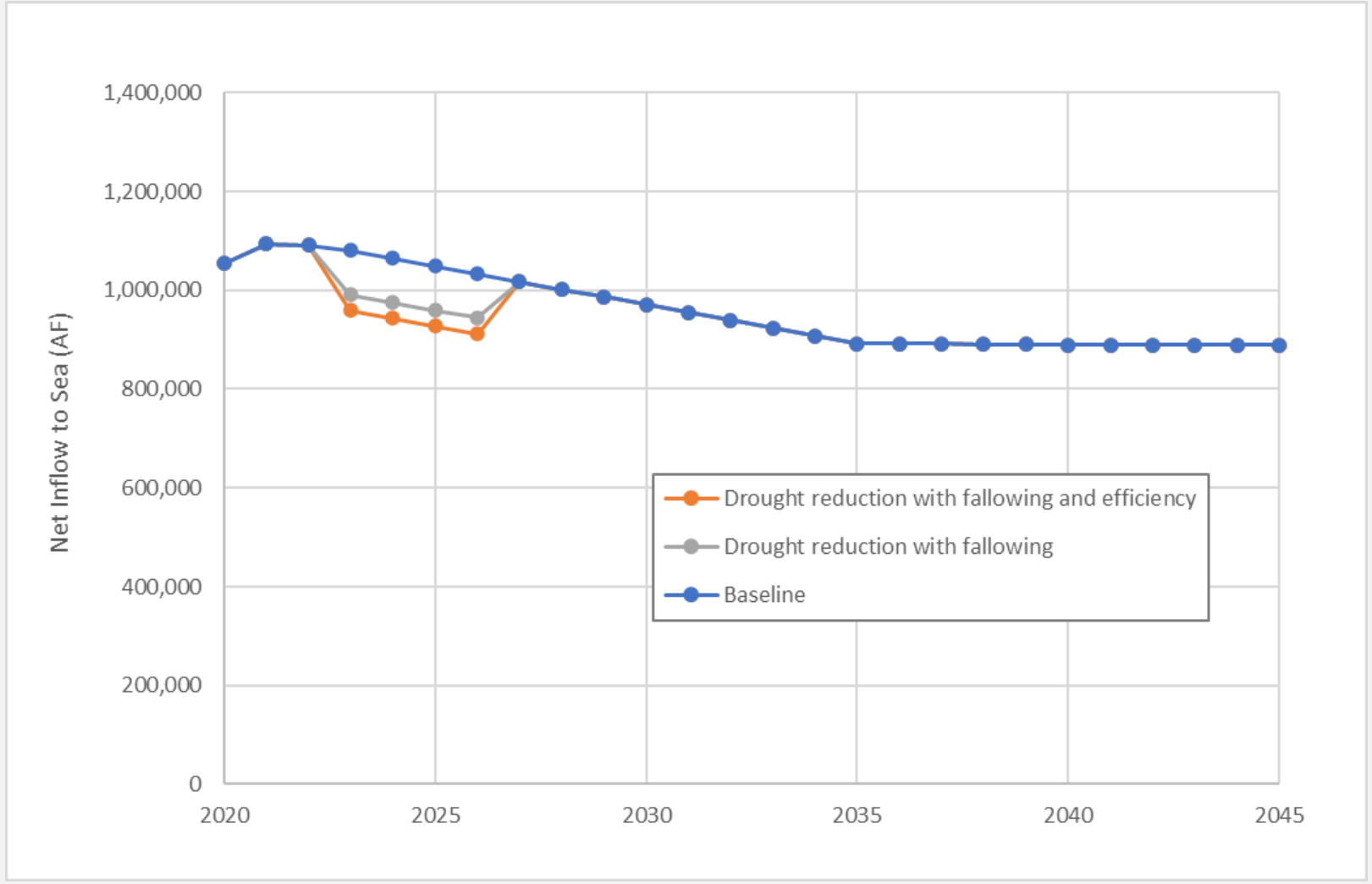
SALTON SEA ACCOUNTING MODEL (SSAM) TO MODEL RECENT INFLOW, SALINITY AND ELEVATION DATA



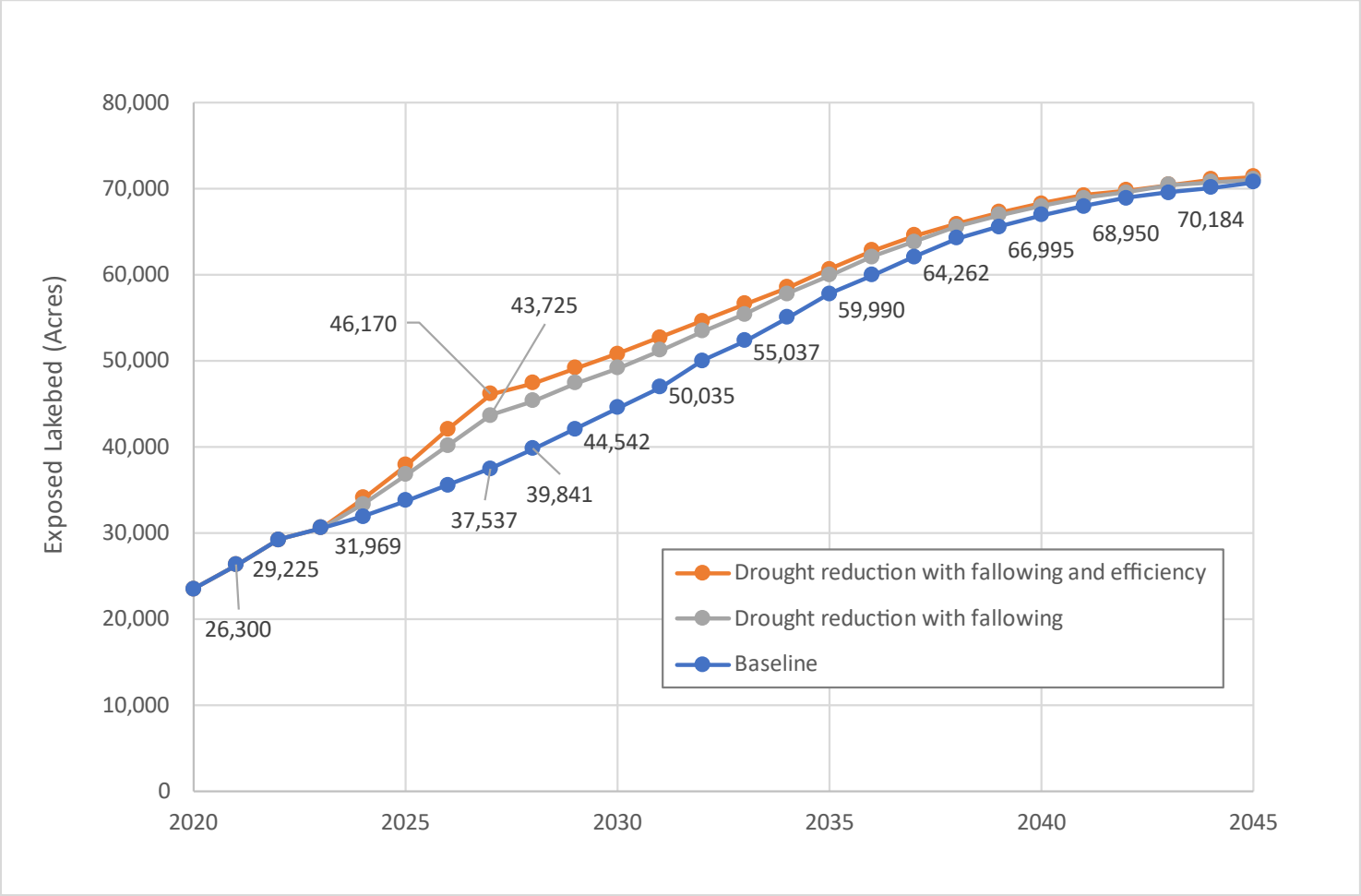


We used this model to make future projections of the Sea's elevation and salinity for any given projected inflow scenario, as shown in the following slides.

MODELED INFLOW SCENARIOS

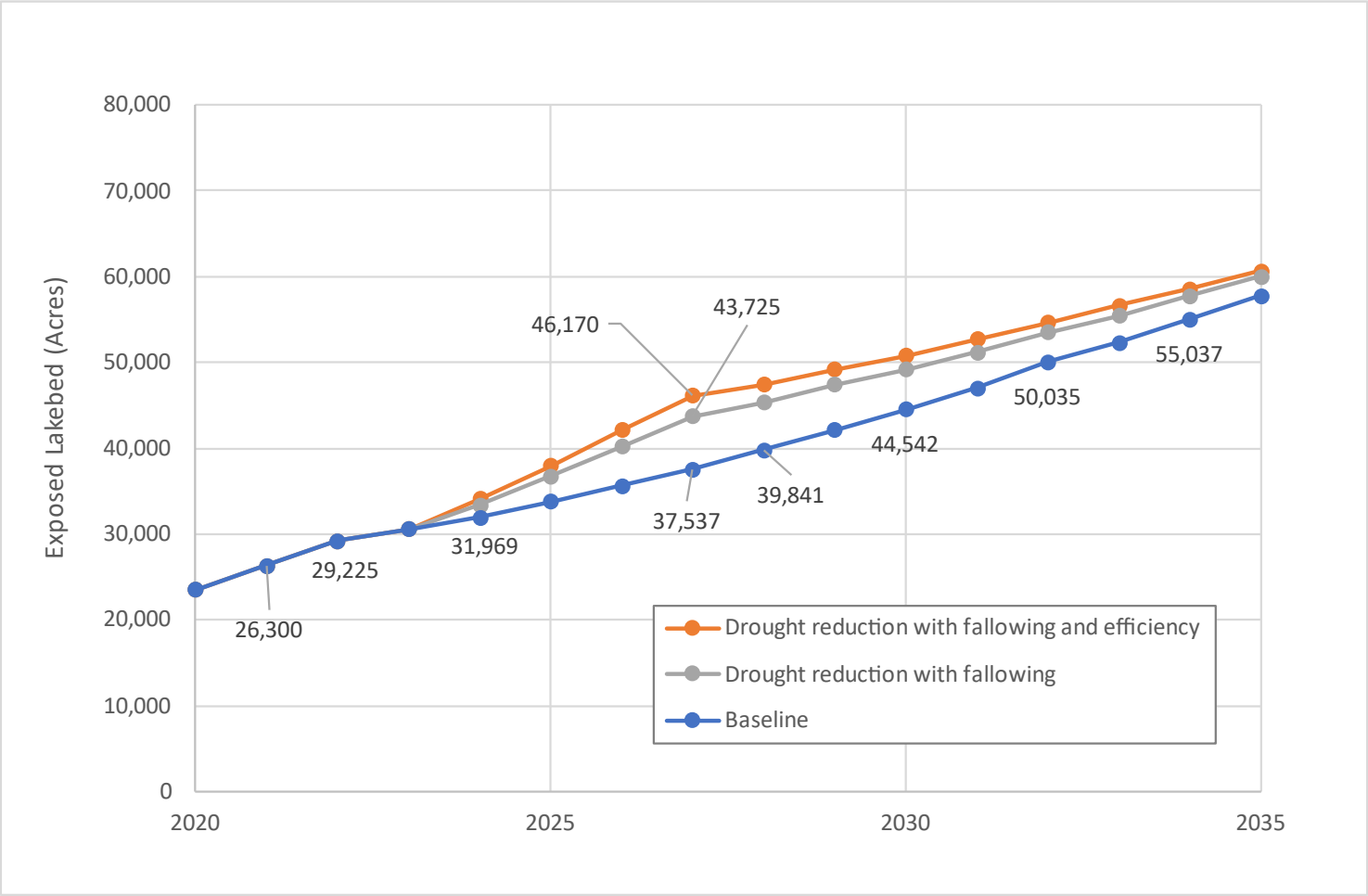


IMPACT TO EXPOSED LAKEBED FROM DROUGHT REDUCTION SCENARIOS (2020-2045)



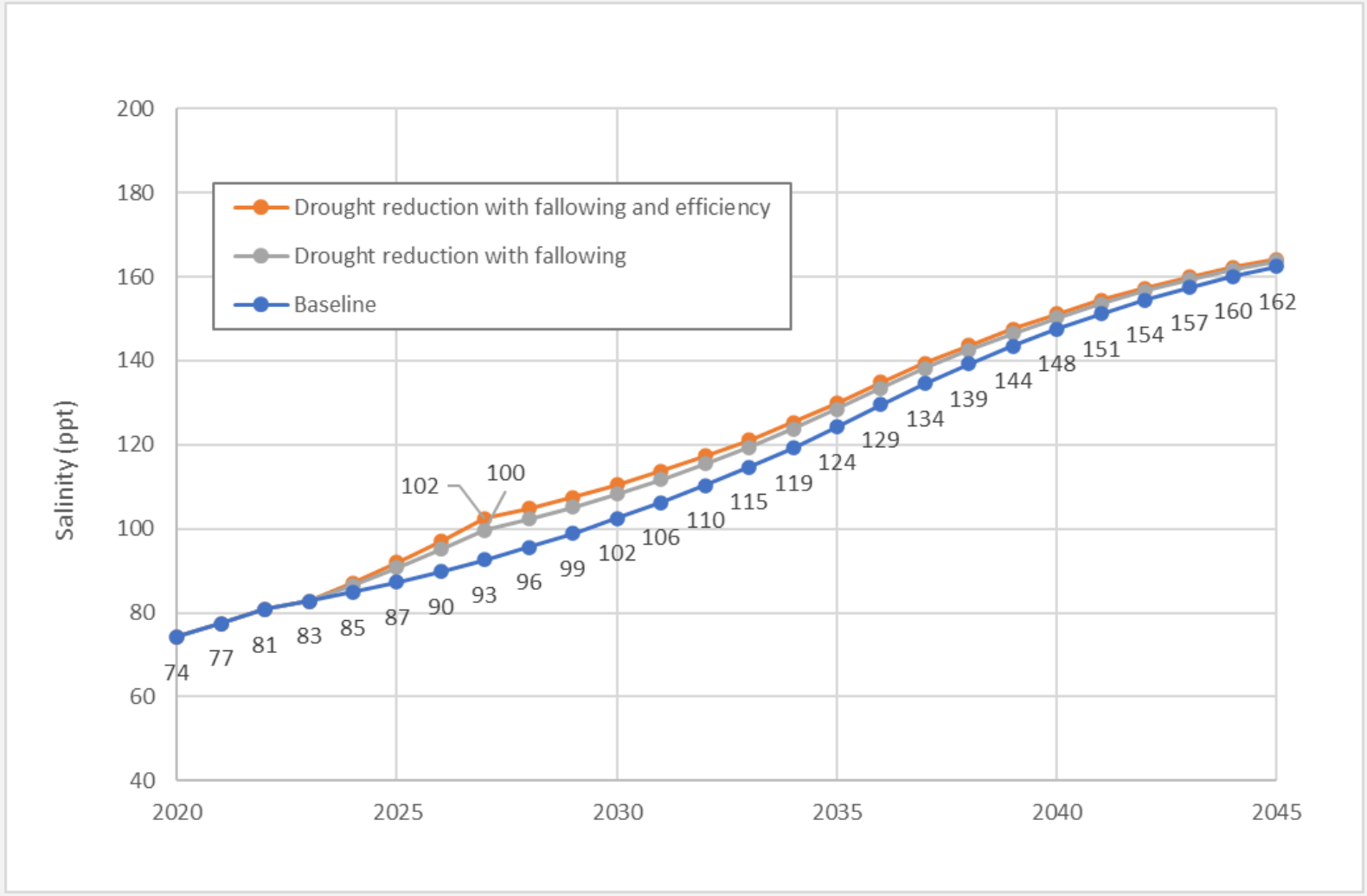
The maximum expected increase in exposed lakebed resulting from 250,000 AF of water conserved in Imperial County ranges from 6,200 acres to 8,600 acres, which would occur in 2027.

IMPACT TO EXPOSED LAKEBED FROM DROUGHT REDUCTION SCENARIOS (2020-2035)



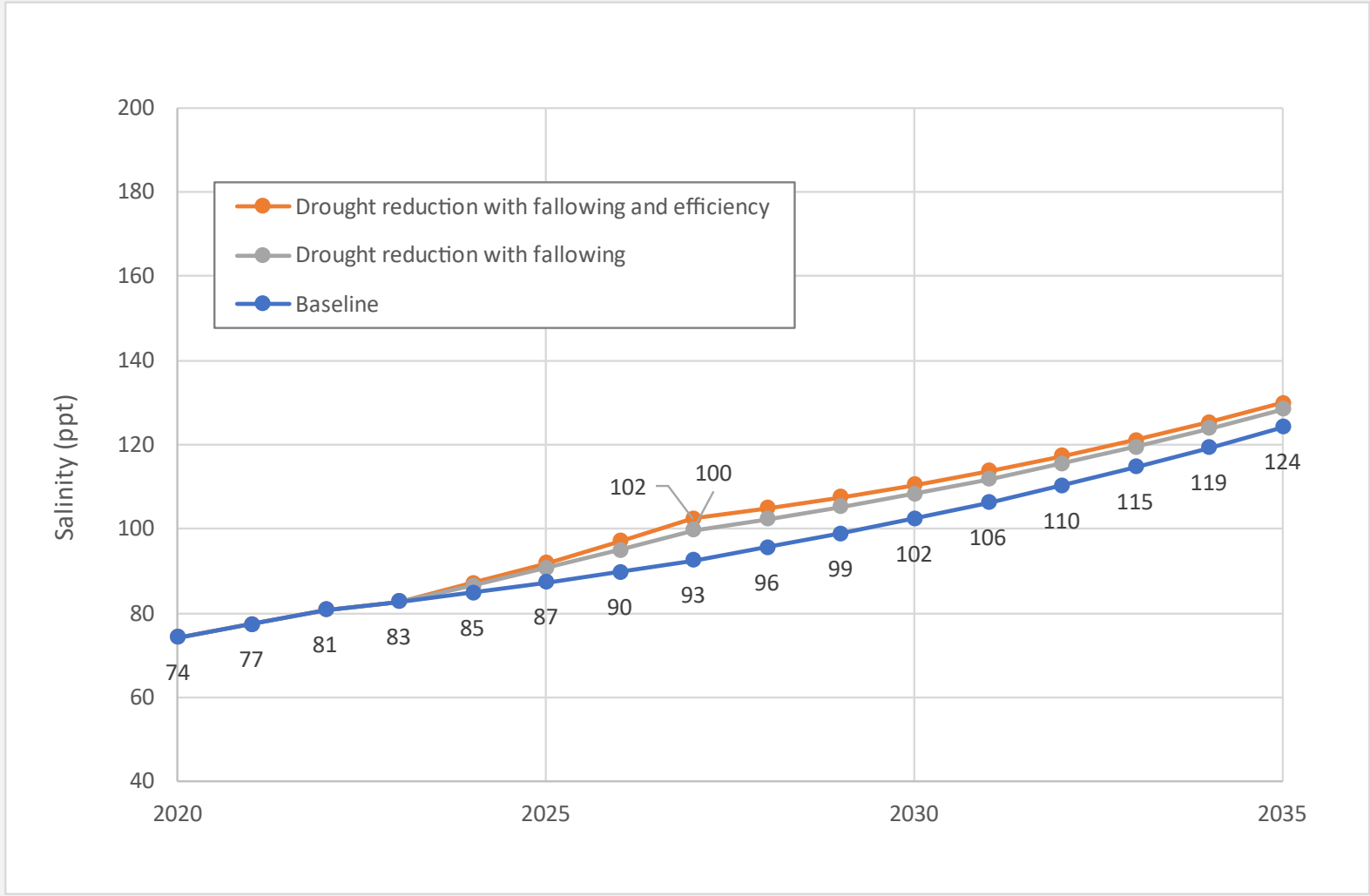
The maximum expected <u>increase</u> in exposed lakebed resulting from 250,000 AF of water conserved in Imperial County ranges from 6,200 acres to 8,600 acres, which would occur in 2027.

IMPACT TO SALINITY FROM DROUGHT REDUCTION SCENARIOS



The maximum expected <u>increase</u> in salinity resulting from 250,000 AF of water conserved in Imperial County ranges from 7 ppt to 9 ppt, which would occur in 2027.

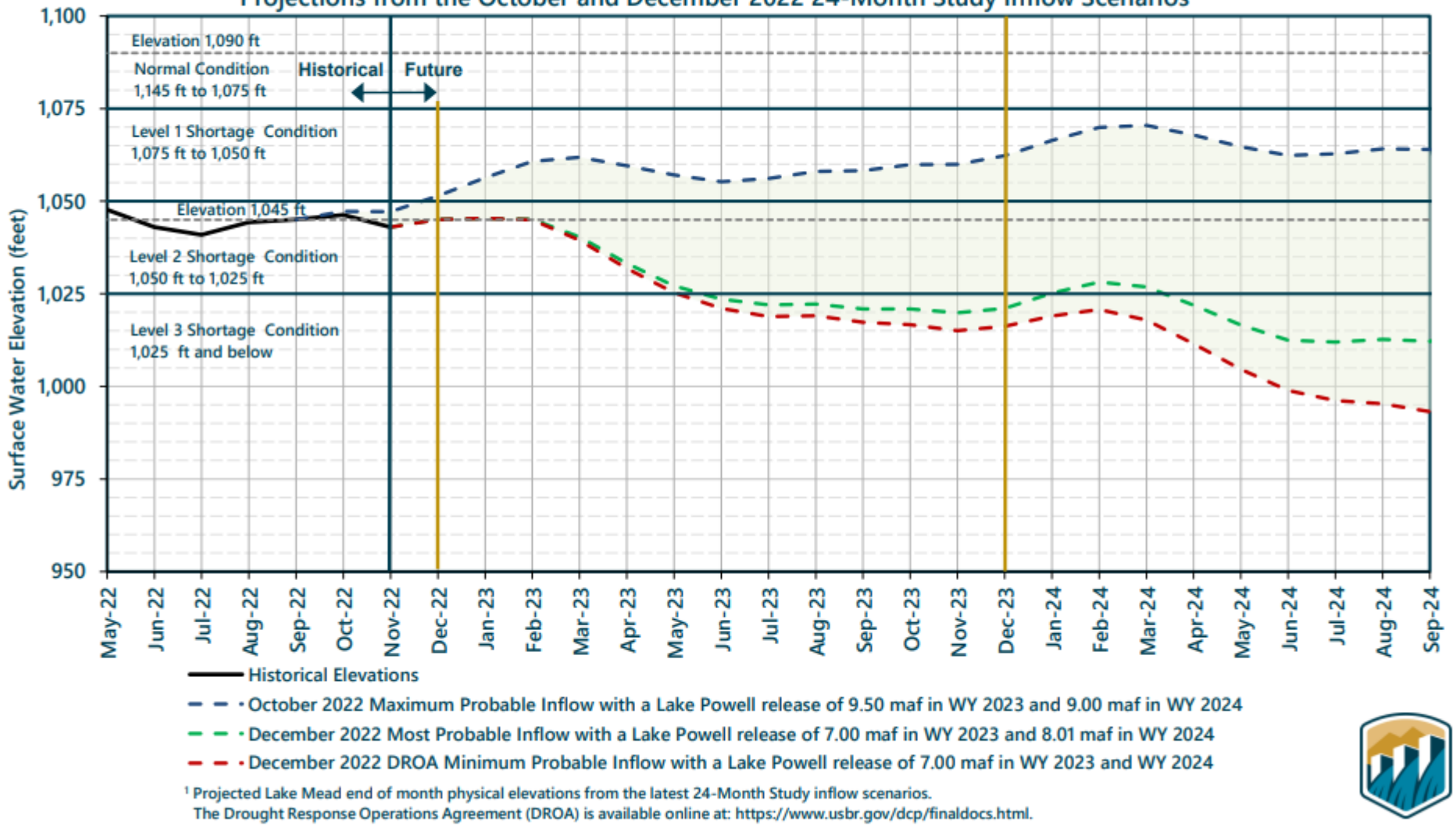
IMPACT TO SALINITY FROM DROUGHT REDUCTION SCENARIOS



The maximum expected increase in salinity resulting from 250,000 AF of water conserved in Imperial County ranges from 7 ppt to 9 ppt, which would occur in 2027.

Lake Mead End of Month Elevations[1]

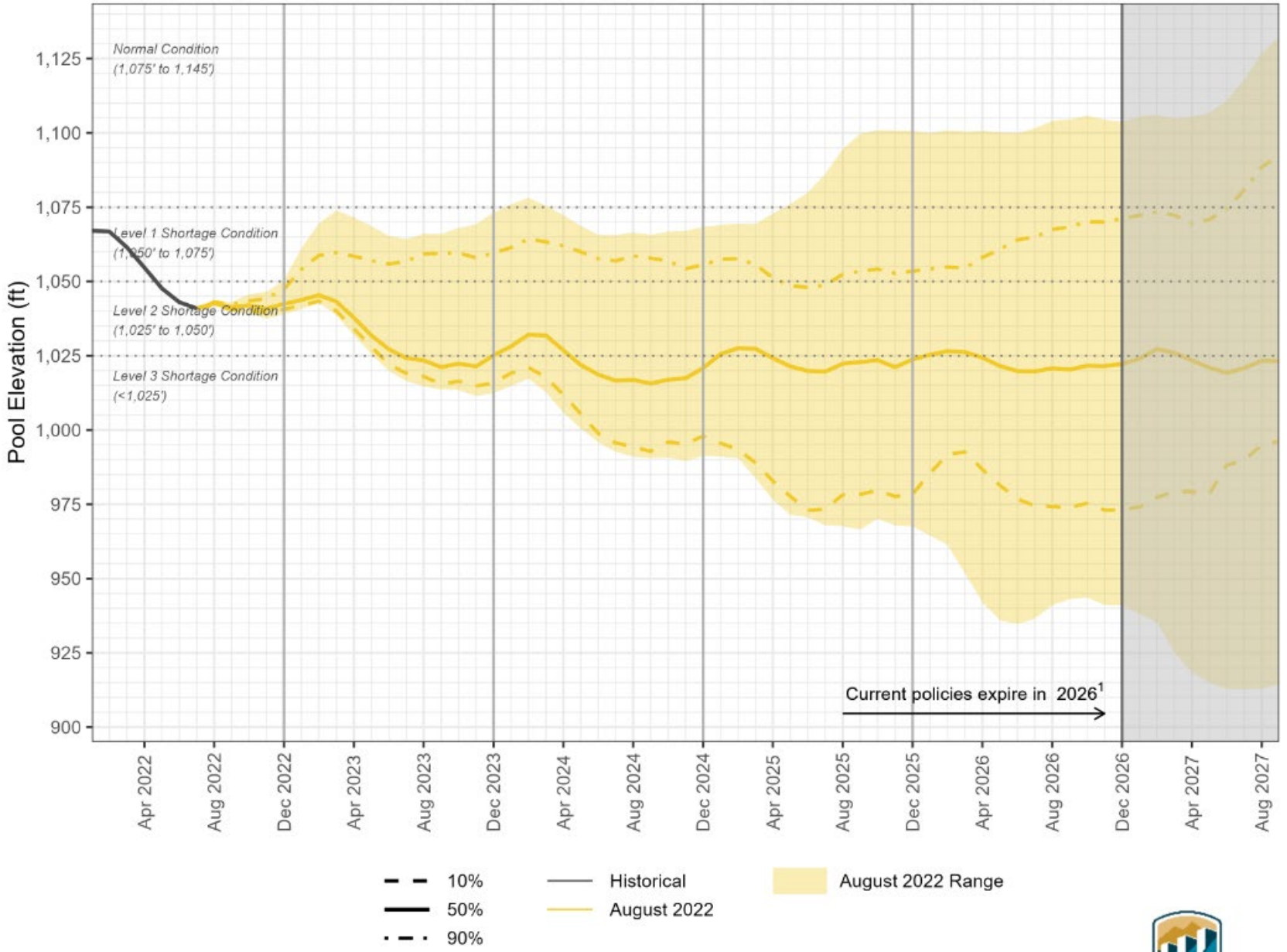
Projections from the October and December 2022 24-Month Study Inflow Scenarios



[1] Projected Lake Mead end of month physical elevations from the latest 24-Month Study inflow scenarios.
The Drought Response Operations Agreement (DROA) is available online at: https://www.usbr.gov/dcp/finaldocs.html.

Lake Mead End-of-Month Elevations

August 2022 CRMMS-ESP Projection



1 - For modeling purposes, simulated years beyond 2026 (shaded region) assume a continuation of the 2007 Interim Guidelines, the 2019 Colorado River Basin Drought Contingency Plans, and Minute 323, including the Binational Water Scarcity Contingency Plan. Except for certain provisions related to ICS recovery and Upper Basin demand management, operations under these agreements are in effect through 2026. Reclamation anticipates beginning a process in early 2023 to develop operations forpost-2026, and the modeling assumptions described here are subject to change for the analysis to be used in that process.

BUREAU OF RECLAMATION

SUMMARY

- SSAM model is a good representation of Salton Sea water and salt balance, and does a good job explaining trends over the past two decades
- SSAM model coupled with future projected inflows were used to estimate the change in elevation, exposed lakebed and salinity
- Under current trajectories of inflows, absent drought reductions, the exposed lakebed and salinity are both expected to increase over the next two decades
- If drought conditions are taken into account, the exposed playa area and salinity are both increased in the near term, with the greatest difference occurring by 2027; the differences are less visible by 2040

REFERENCE: RECENT HISTORICAL DATA ON SALTON SEA FLOWS, ELEVATION AND SALINITY

Year	Inflow (AF)	Base evaporation (in)	Precipitation (in)	Sea Elevation (ft NAVD88)	Sea Area (acre)	Sea Salinity (ppt)	Exposed lakebed area (acre)
2004	1,205,693	68.0	4.4	-226.7	235,669	45.7	0
2005	1,252,187	68.0	4.4	-227.1	234,663	46.5	0
2006	1,214,560	68.0	0.7	-227.2	234,311	47.0	0
2007	1,206,227	68.0	1.9	-227.7	232,401	48.2	1,449
2008	1,166,790	68.0	2.7	-228.2	230,373	49.3	3,476
2009	1,058,828	68.0	1.0	-228.6	228,888	50.5	4,962
2010	1,190,201	68.0	4.9	-230.0	225,334	52.8	8,515
2011	1,172,468	65.0	1.9	-230.2	225,195	53.6	8,654
2012	1,267,420	68.0	2.2	-230.4	224,645	54.4	9,205
2013	1,143,849	70.0	1.8	-230.4	224,645	54.7	9,205
2014	1,098,163	70.0	0.6	-231.1	222,315	56.7	11,535
2015	1,126,640	70.0	1.5	-232.1	219,744	59.2	14,105
2016	1,148,693	72.0	1.91	-232.8	218,041	61.2	15,808
2017	1,104,305	72.0	4.00	-233.5	216,312	63.3	17,537
2018	1,065,116	72.0	2.33	-234.2	214,454	65.5	19,396
2019	1,044,076	72.0	3.44	-235.2	211,545	68.6	22,305
2020	1,053,611	72.0	2.04	-236.0	209,123	71.6	24,726
2021	1,093,575	72.0	2.01	-237.0	205,947	75.0	27,902