SOUTH FLORIDA WATER MANAGEMENT DISTRICT

September 2025: Conditional Positional Analysis (CPA) Implementation – LOSOM

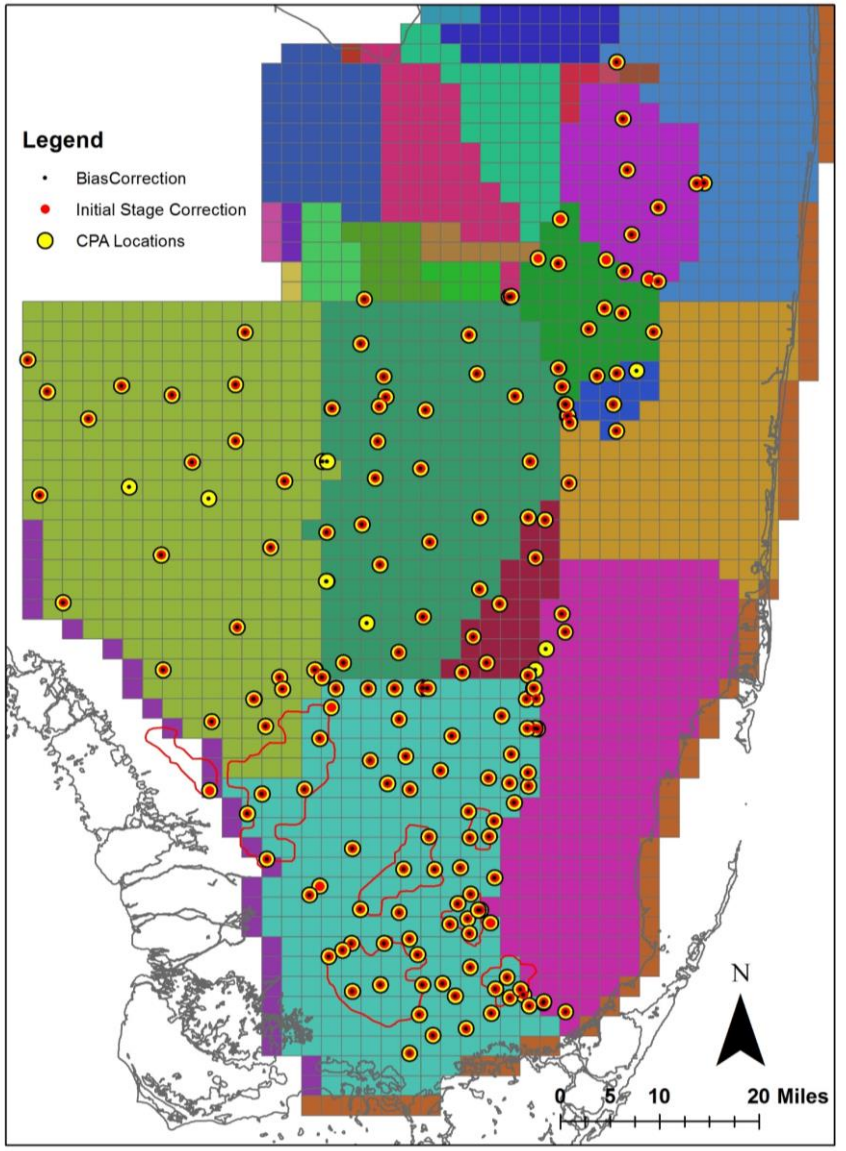
Water Resources & Systems Modeling Bureau, Modeling Section
SFWMD

sfwmd.gov

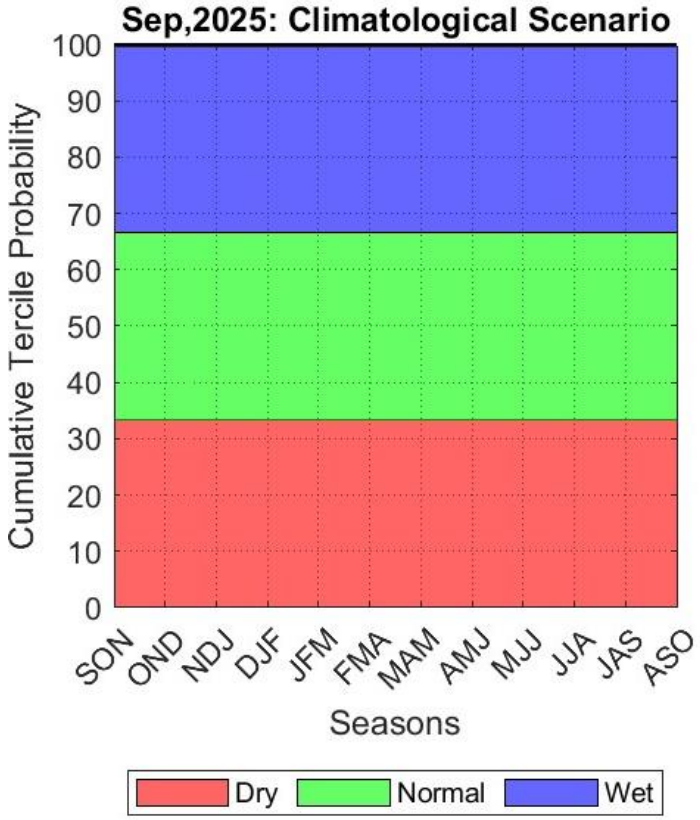
CPA Overview

- CPA is a stochastic framework that transforms stages obtained from Dynamic Position Analysis (DPA) based on forecasted rainfall conditions over the next twelve months (Ali, 2016).
- CPA depends on DPA - DPA stage outputs are used as inputs to CPA. DPA uses a physically based model (SFWMM) to forecast stages progression over 1 year from the currently observed stages using 52-years of historical rainfall.
- CPA is implemented for 200+ locations in the Everglades including Lake Okeechobee.

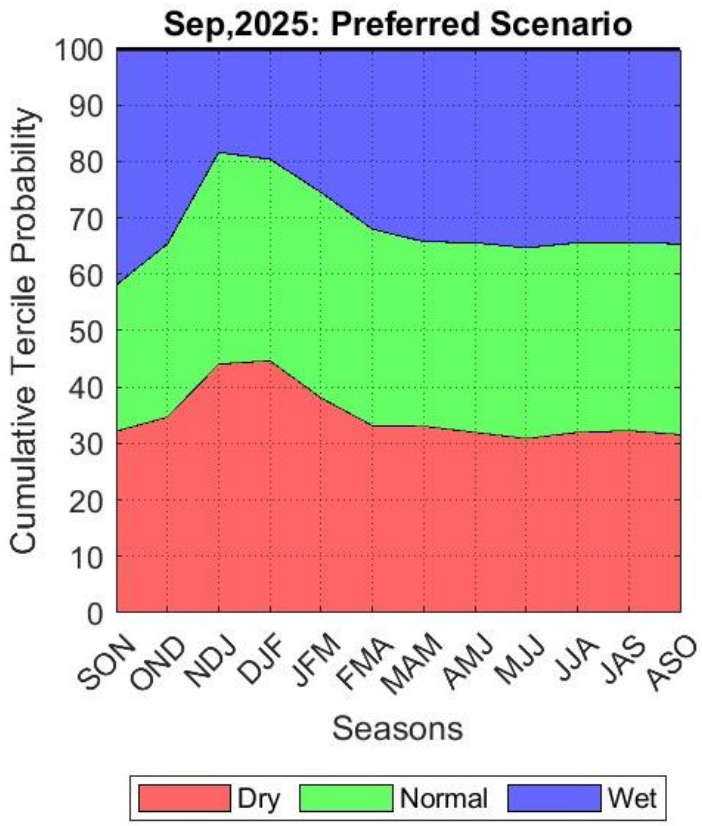
Conditional Position Analysis (CPA) Gage Locations



September 2025 CPA: Rainfall Scenarios



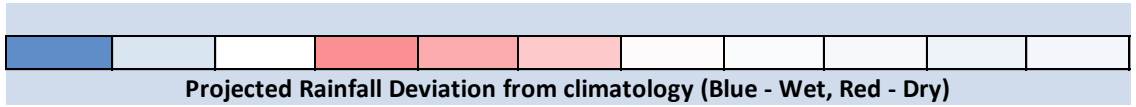
Climatological scenario assumes equal chances of below-normal/dry, normal, and above-normal/wet rainfall conditions over next twelve 3 monthly seasons.

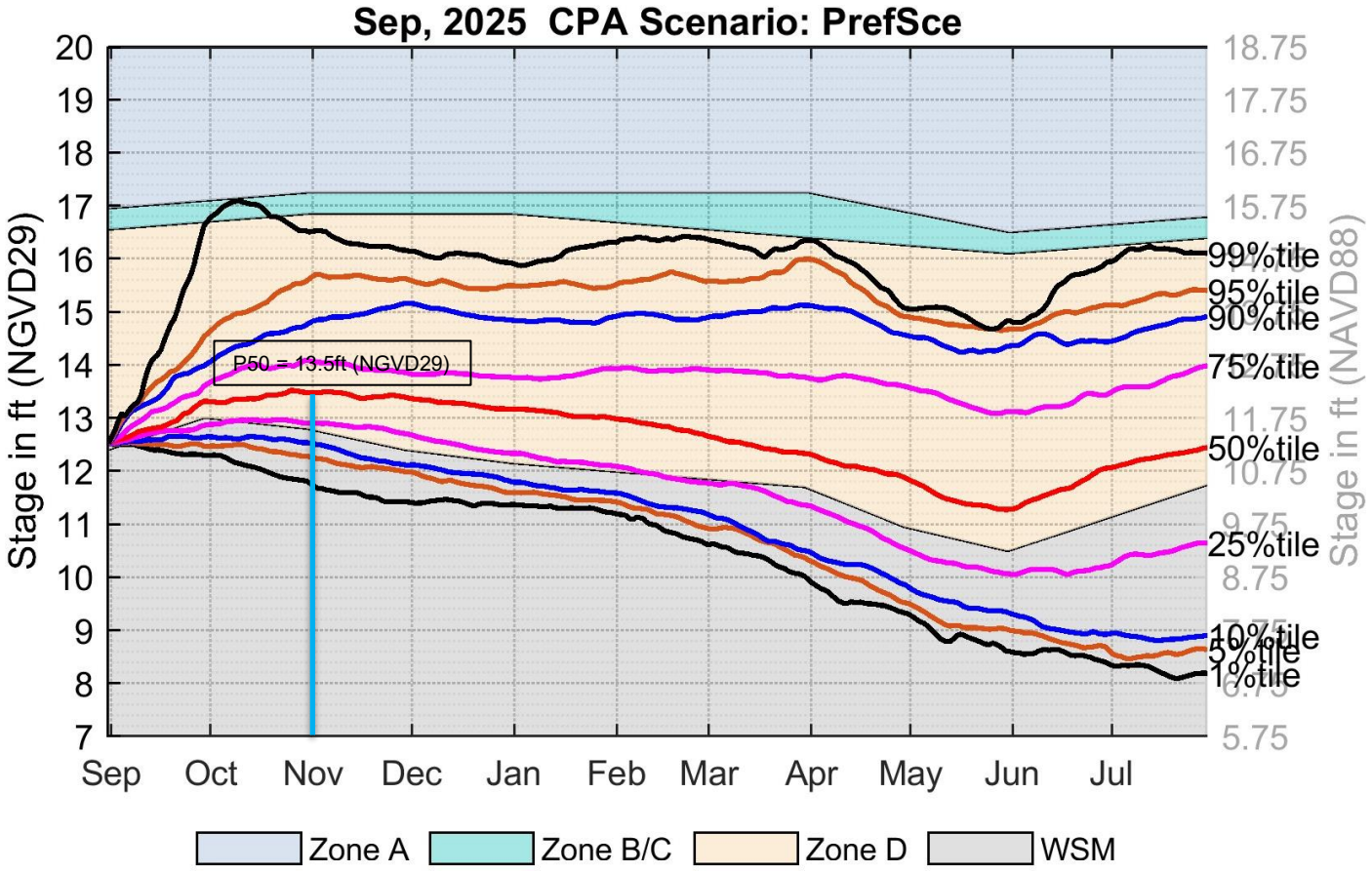


Rainfall probabilities are calculated based on historical data and projected Niño-3.4 Index (Climate Prediction Center - El Nino Southern Oscillation (noaa.gov)) published by CPC.

September 2025 CPA: LOK under LOSOM

Preferred Scenario





Note: The Color bar is qualitative and included for enhanced visualization

- Lake Okeechobee – CPA implementation shows the majority of percentile lines shift upward from the respective DPA percentile lines by ~0.1 to 0.2 ft at the start of the dry season in November 2025. Under PrefSce, the median trace projects a stage of approximately 13.5 ft NGVD29 (12.25 ft NAVD88). By the start of the next wet season (May 2026), the median trace of CPA shifts downward by ~0.1 ft from the DPA median line.

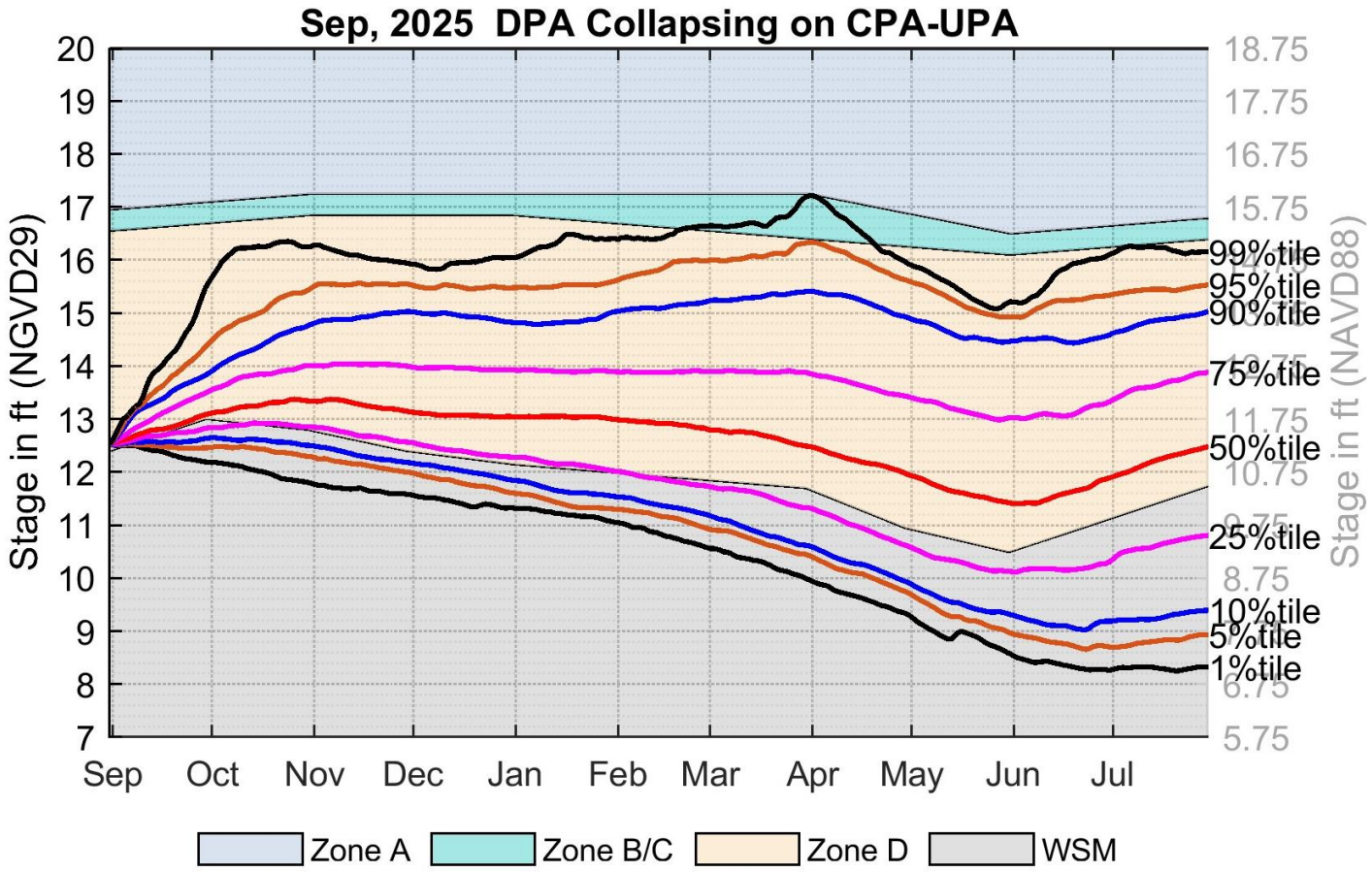
Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.25 ft for Lake Okeechobee).

Similar to DPA, CPA is to be run each month to provide updated perspective on stages under updated forecasts and observed stages.

September 2025 CPA: LOK under LOSOM

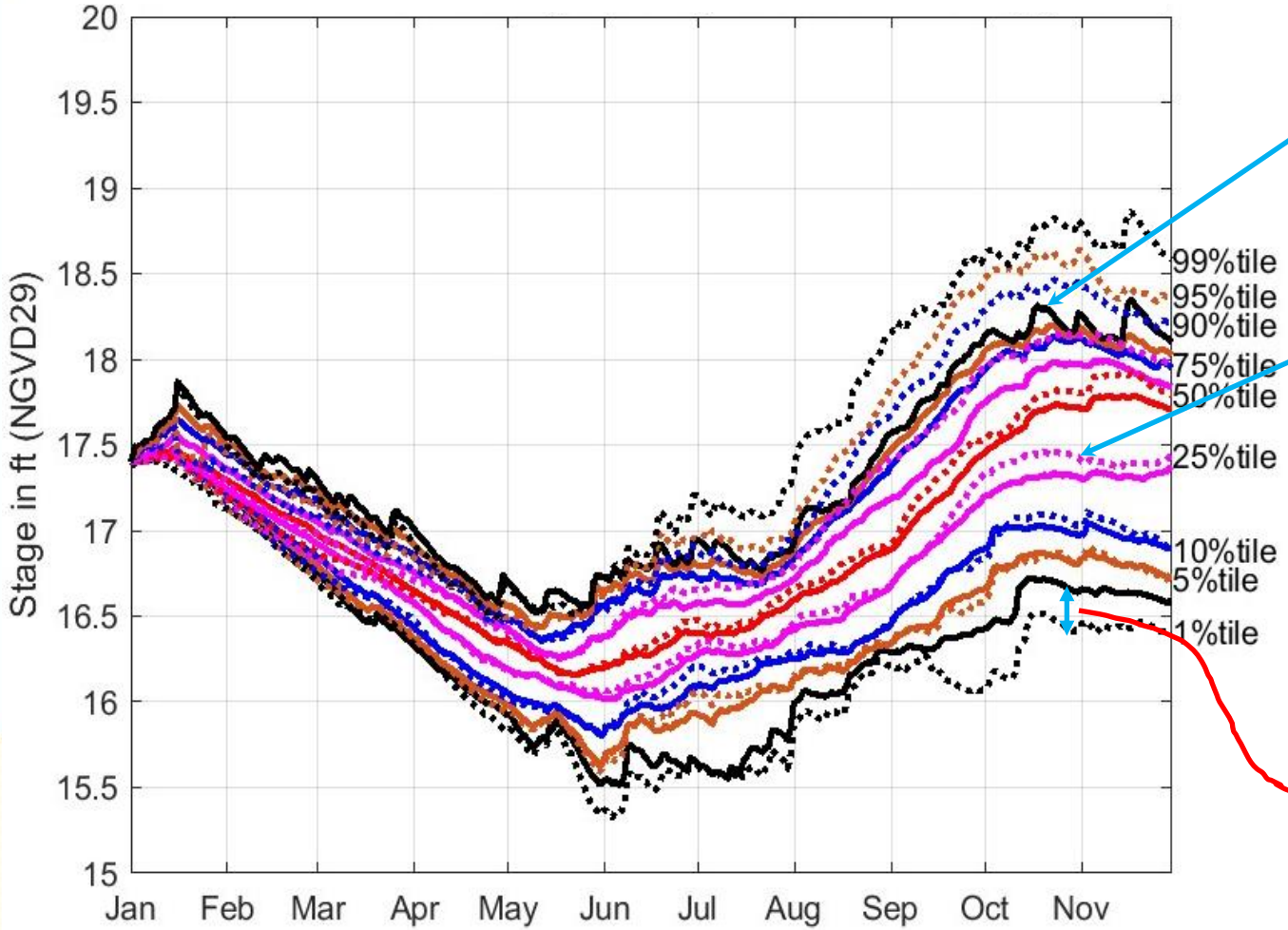
Climatological

LOK



Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.25 ft for Lake Okeechobee).

CPA: Key to Reading Results



Solid lines → Climatological Scenario/DPA

Dotted lines → Alternative Rainfall Scenario

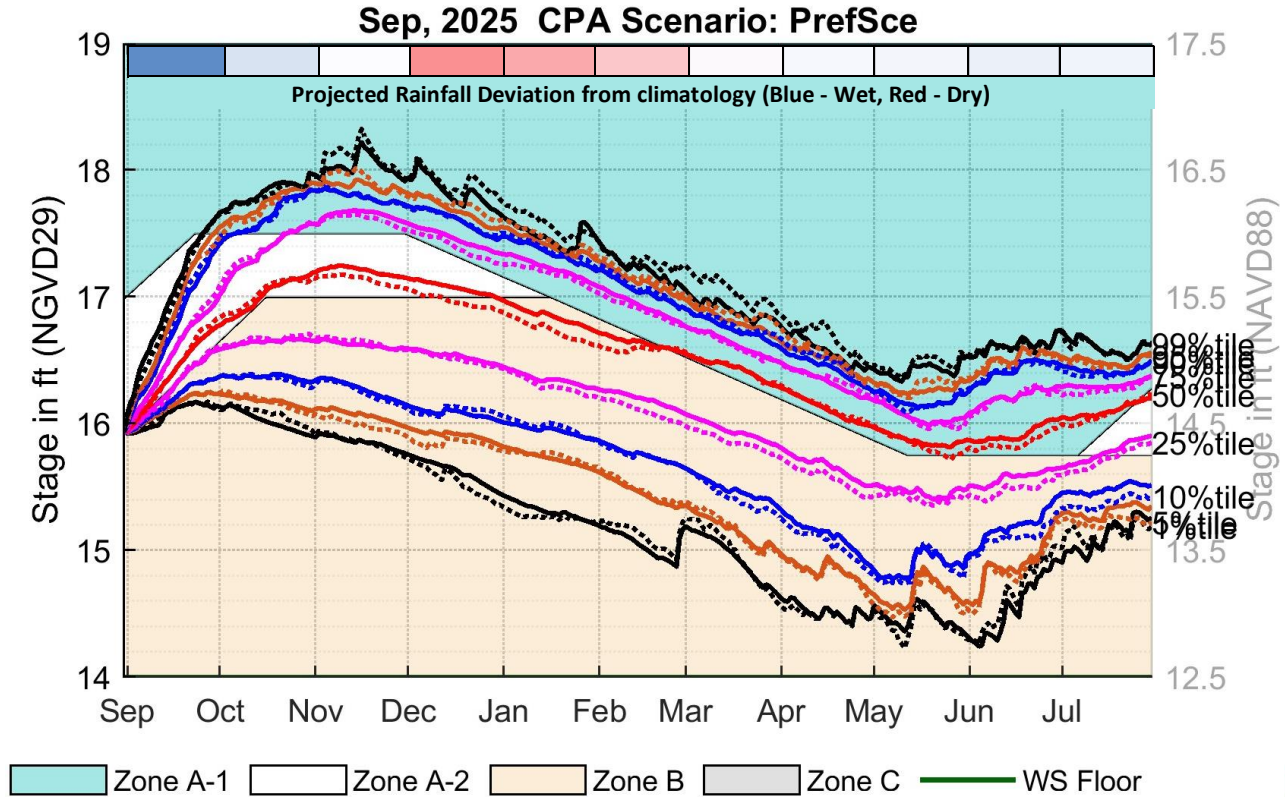
Black lines → 1% and 99%
Brown lines → 5% and 95%
Blue lines → 10% and 90%
Pink lines → 25% and 75%
Red lines → 50%

Need to focus on how DPA percentile lines shift under Alternate Rainfall Scenario

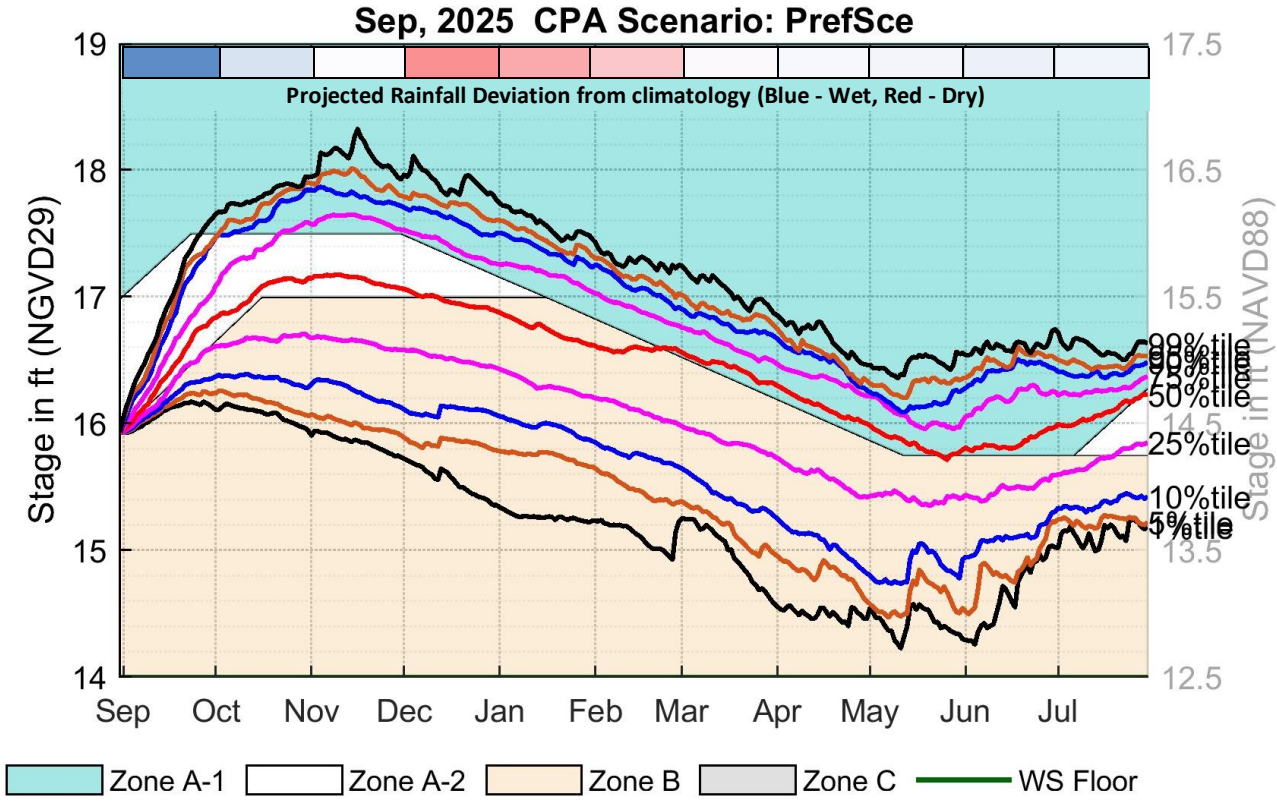
Sep'2025 CPA: WCA1 3 Gage Avg. LOSOM

Preferred Scenario

WCA1 3 Gage Avg



WCA1 3 Gage Avg



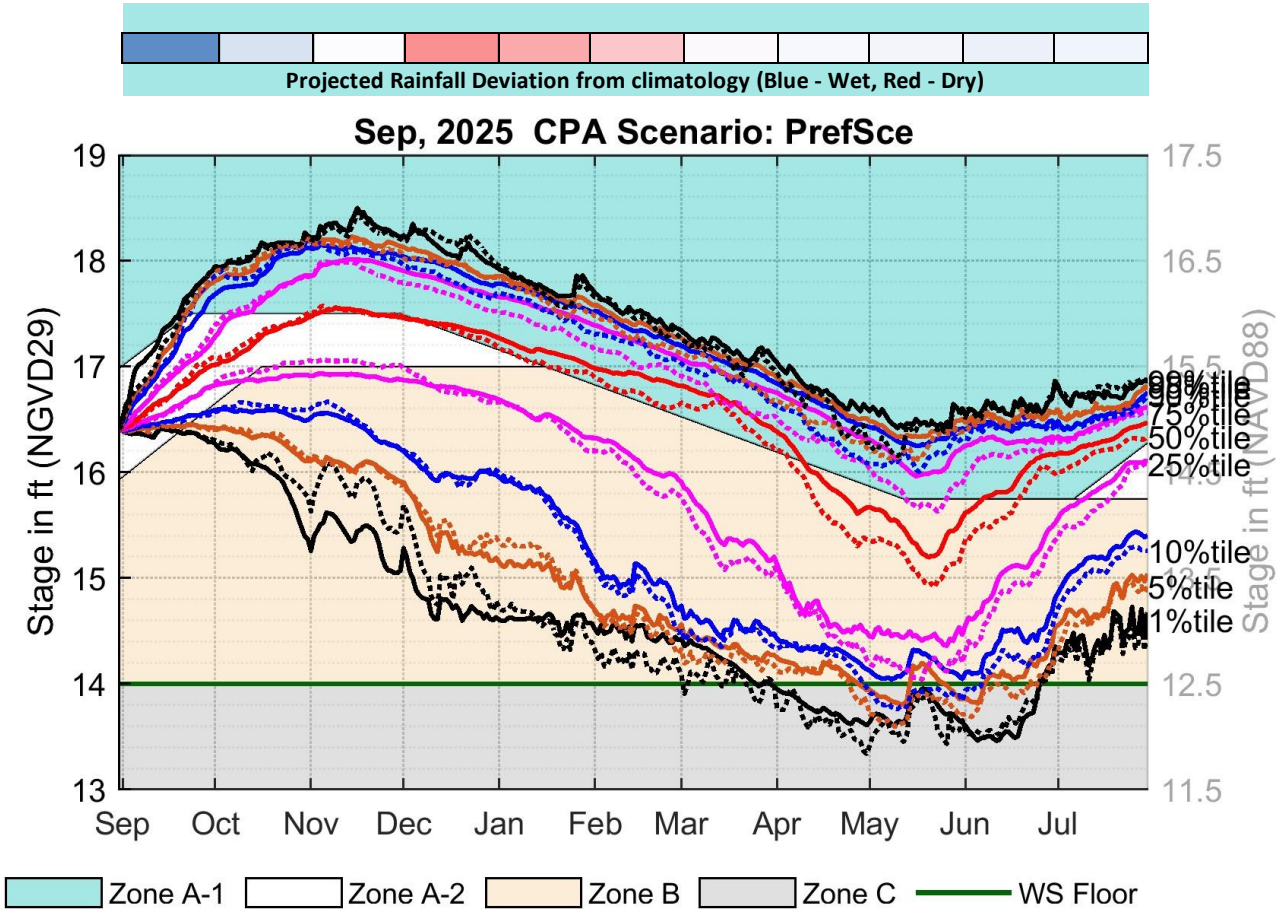
Note: The Color bar is qualitative and included for enhanced visualization

Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.5 ft for WCA1).

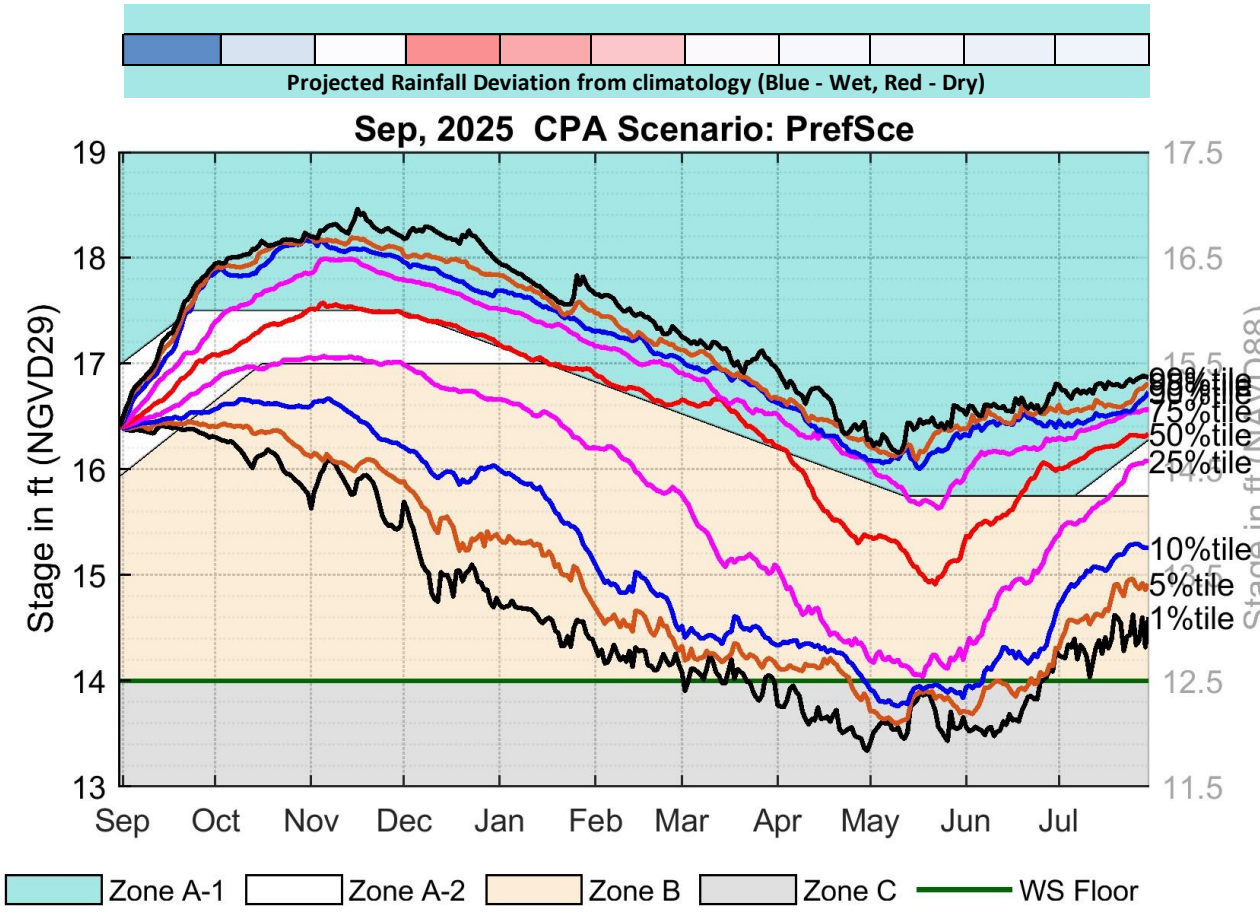
Sep'2025 CPA: WCA1 Site 8-C LOSOM

Preferred Scenario

WCA1 Site 8-C



WCA1 Site 8-C



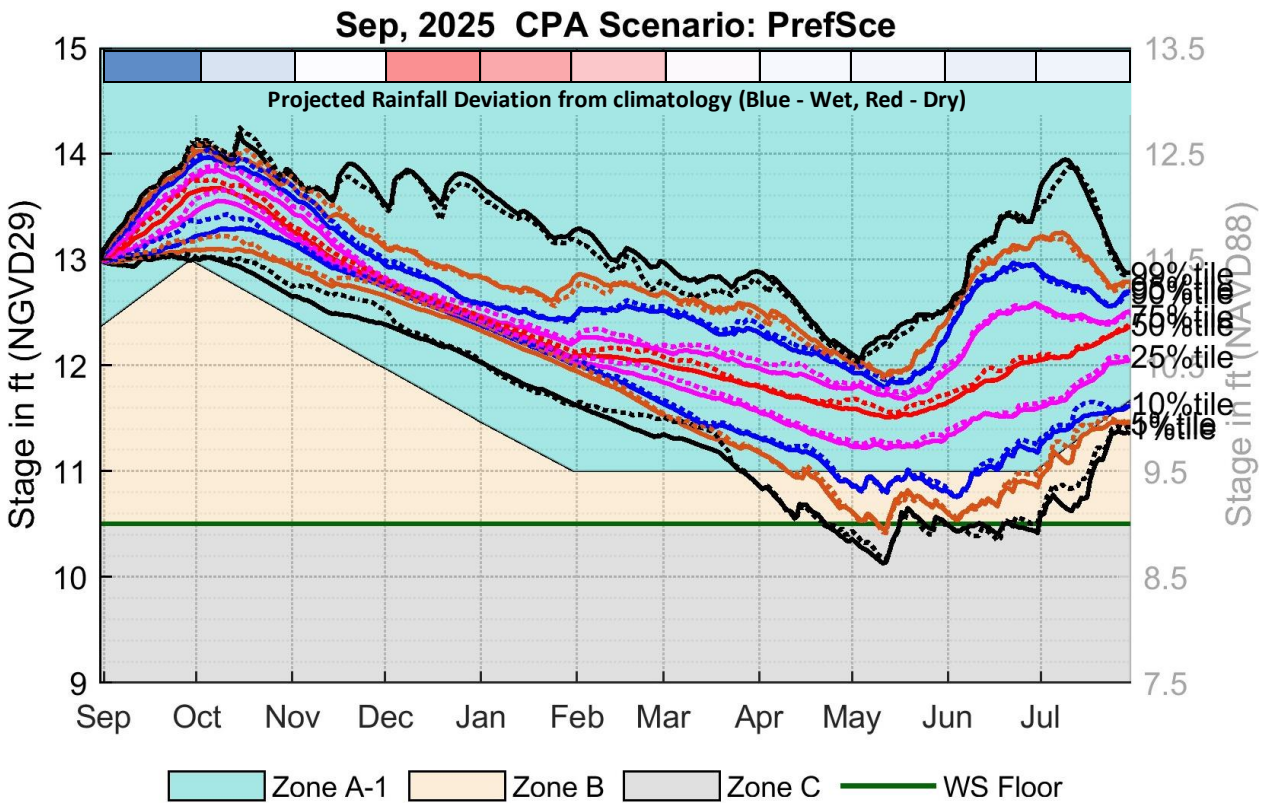
Note: The Color bar is qualitative and included for enhanced visualization

Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.5 ft for WCA1).

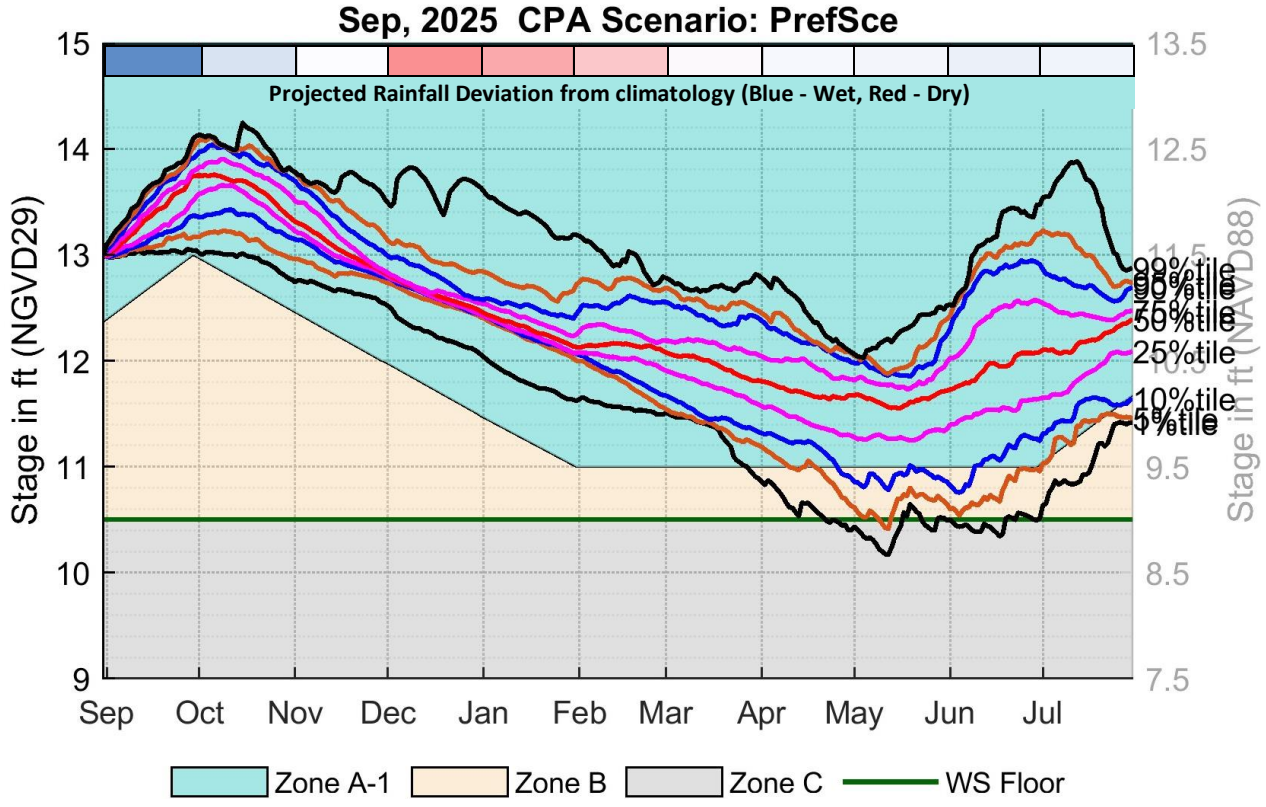
Sep'2025 CPA: WCA2A Site 17 LOSOM

Preferred Scenario

WCA2A Site-17



WCA2A Site-17



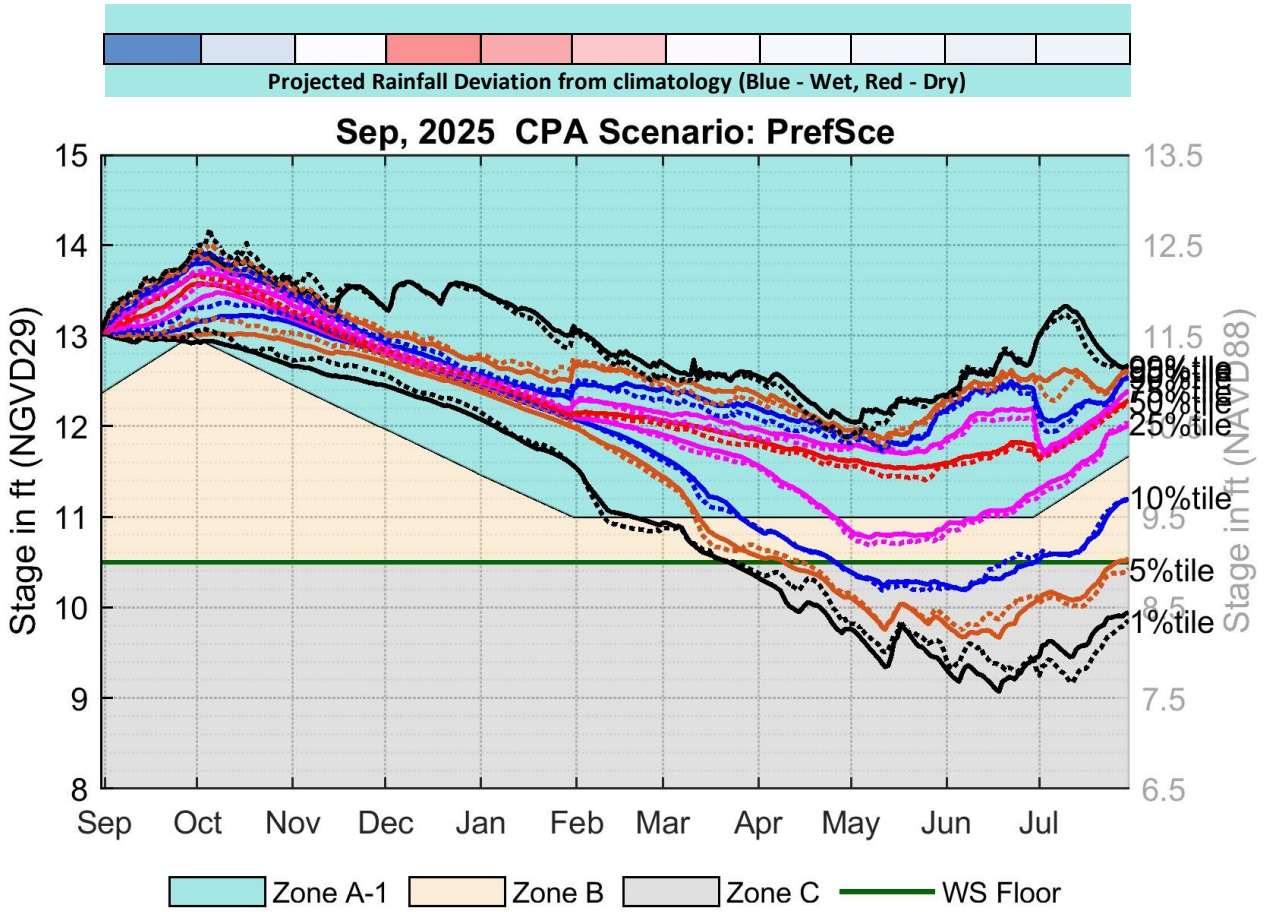
Note: The Color bar is qualitative and included for enhanced visualization

Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.5 ft for WCA2A).

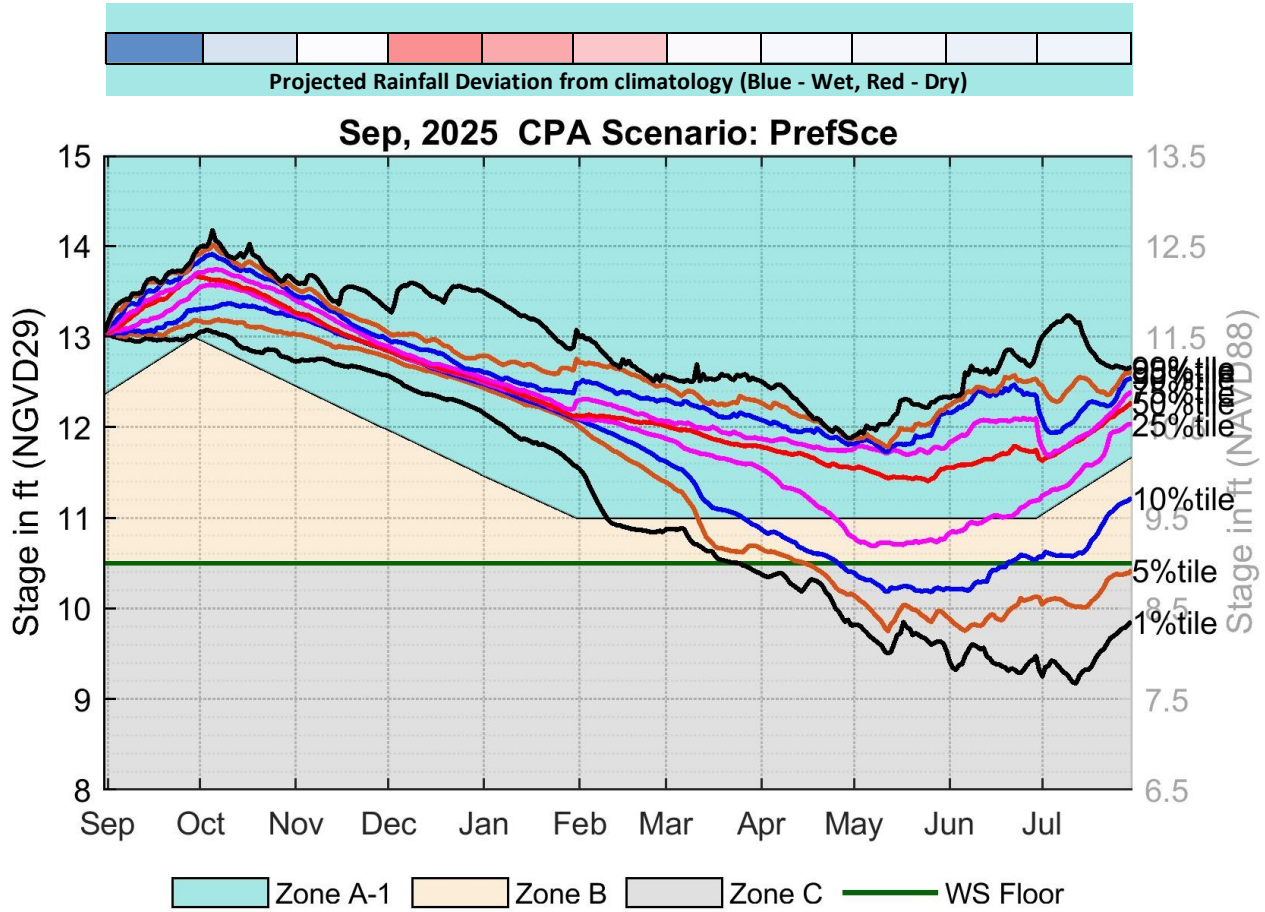
Sep'2025 CPA: WCA2A S11B_H LOSOM

Preferred Scenario

WCA2A S11B_H



WCA2A S11B_H



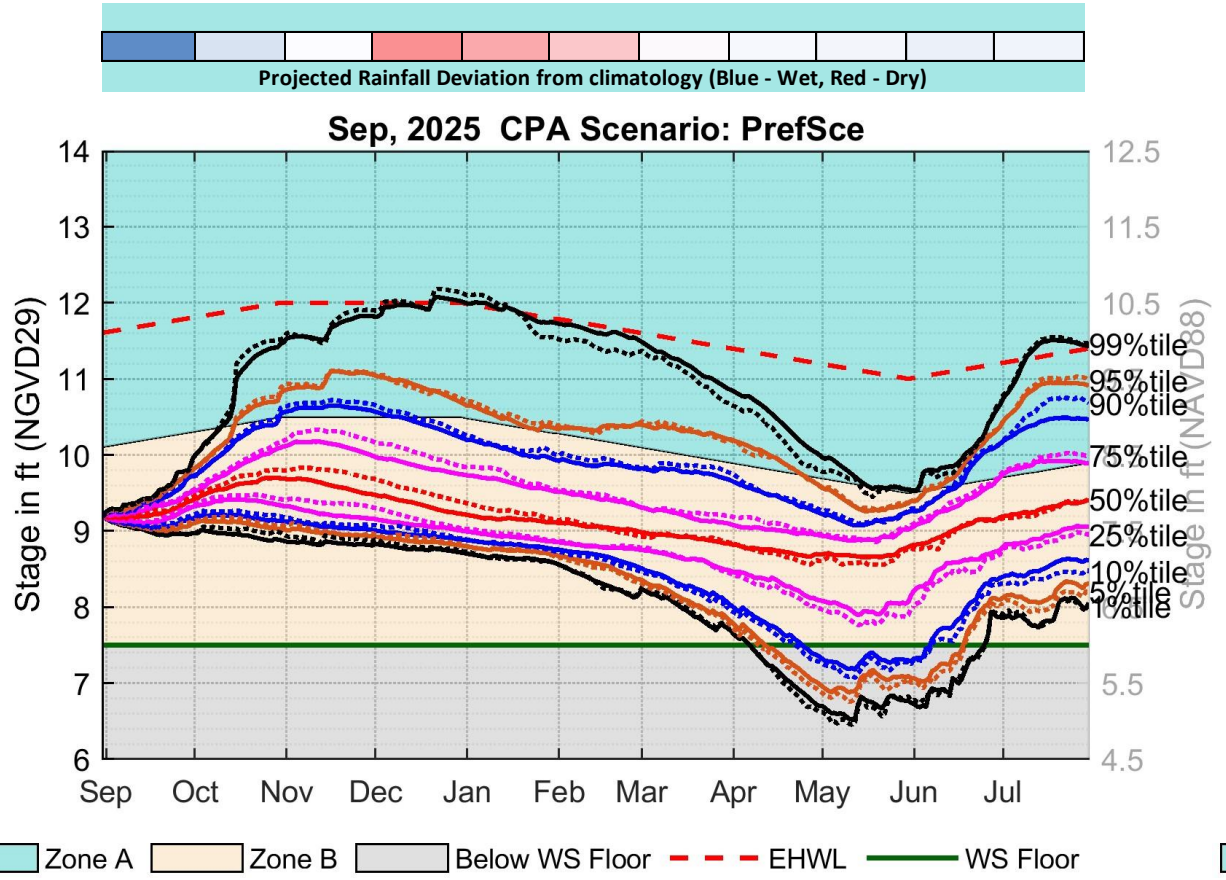
Note: The Color bar is qualitative and included for enhanced visualization

Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.5 ft for WCA2A).

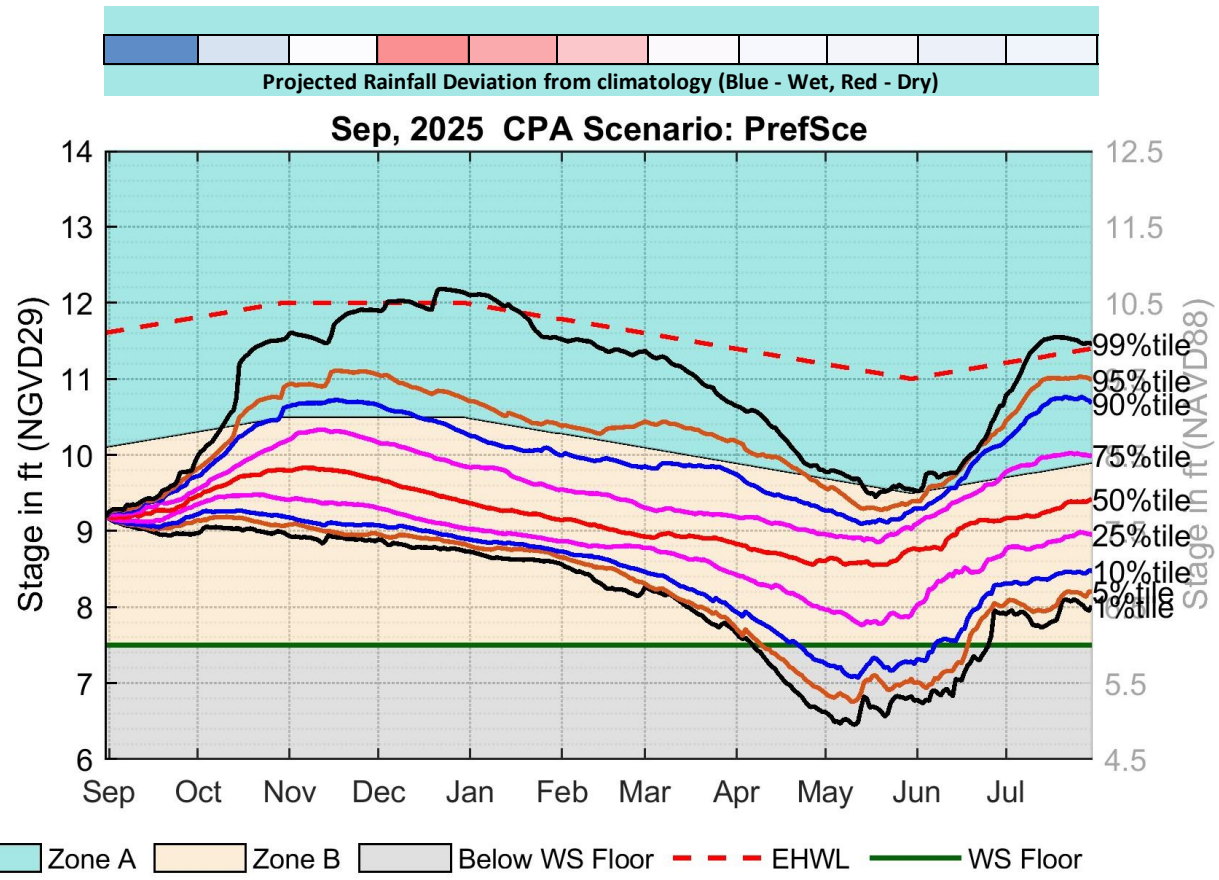
Sep'2025 CPA: WCA3AAvg LOSOM

Preferred Scenario

WCA3AAvg



WCA3AAvg



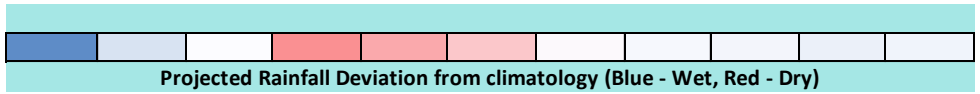
Note: The Color bar is qualitative and included for enhanced visualization

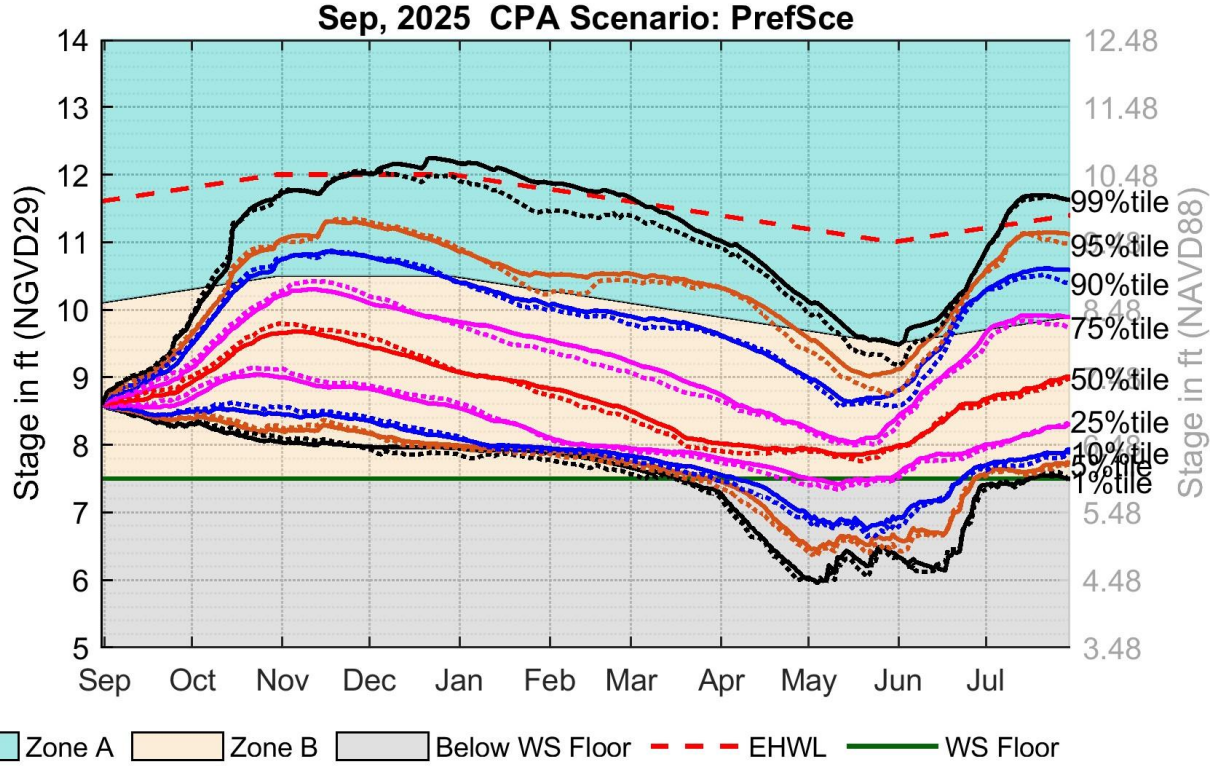
Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.5 ft for WCA3A).

Sep'2025 CPA: WCA3A Site 69W LOSOM

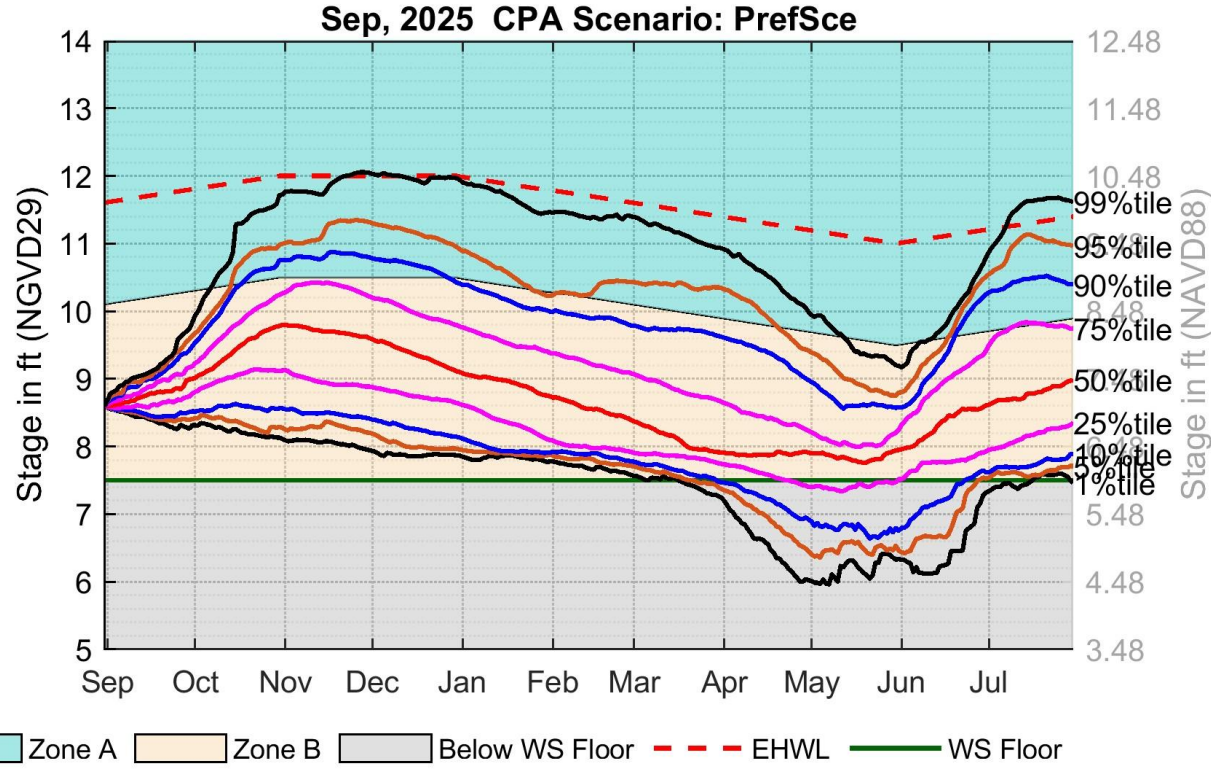
WCA3A Site 69W

Preferred Scenario





WCA3A Site 69W



Note: The Color bar is qualitative and included for enhanced visualization

Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.5 ft for WCA3A).