

May 15, 2026: Conditional Position Analysis (CPA) Implementation – LOSOM

Water Resources & Systems Modeling Bureau, Systems Modeling Unit
SFWMD

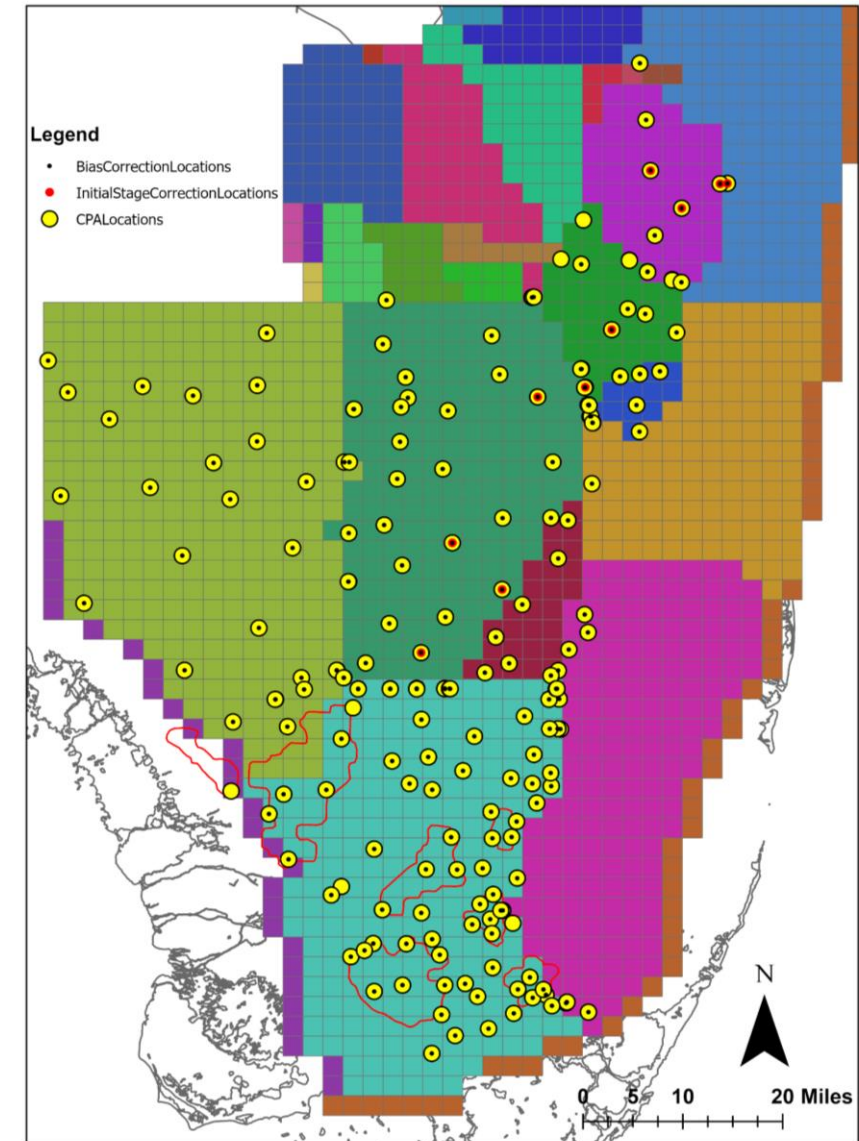


CPA Overview



- 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](#)). DPA uses a physically based model (SFWMM) to forecast stages from the currently observed stages using 52-years of historical rainfall.
- 3 rainfall outlook scenarios (climatological, CPC, and Preferred Scenario) are used to compare potential stage outlooks.
- CPA is implemented for 200 locations in the Everglades including Lake Okeechobee. Additionally, CPA is implemented for WCA1Avg (avg of Site 7, Site 8T, and Site 9) and WCA3AAvg (avg of Site 63, Site 64, and Site 65) stages (Khare et al., 2024) in the Everglades.

Conditional Position Analysis (CPA) Gage Locations



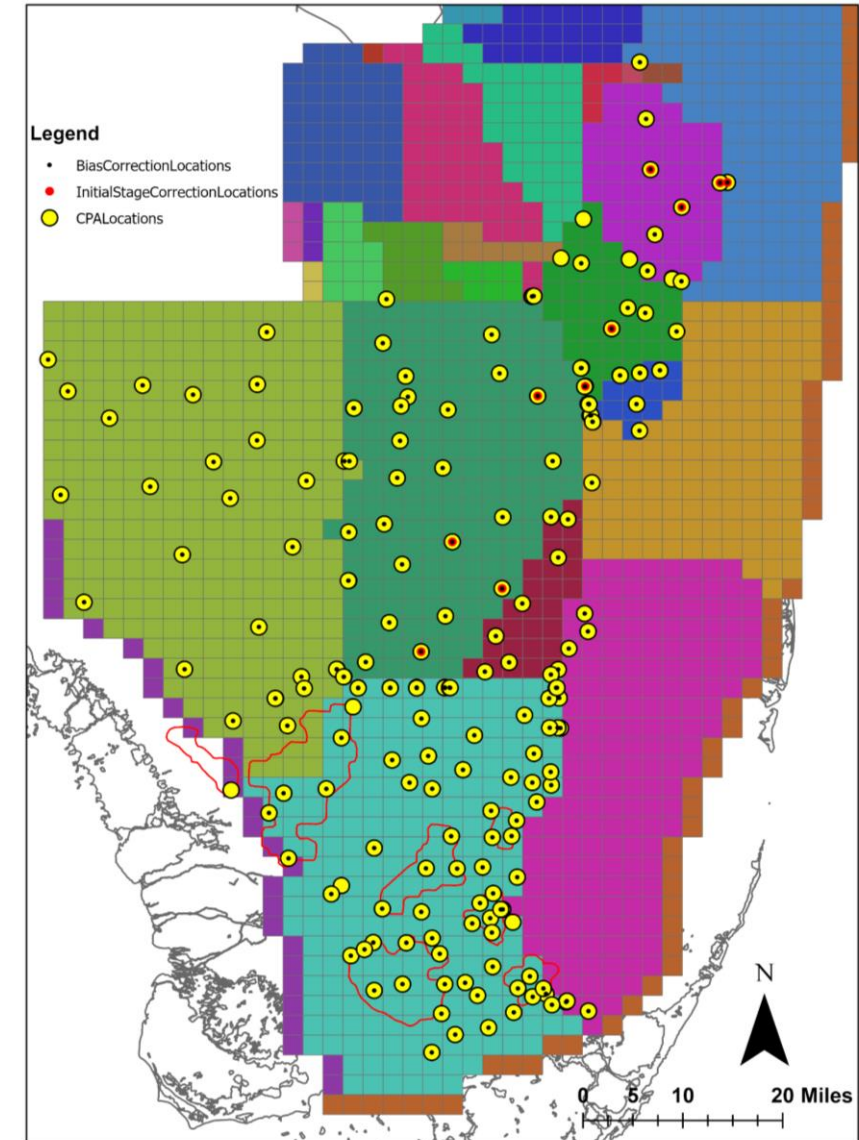
CPA Overview



➤ CPA Outputs

- CPA forecasted stage percentiles from 'Climatological' scenario are first collapsed on DPA stage percentiles. Corresponding adjustments are then applied to stage percentile lines for all other rainfall scenarios.

Conditional Position Analysis (CPA) Gage Locations



CPA: Rainfall Scenarios for May 15, 2026



➤ Climatological

- Climatological scenario assumes equal chances of below-normal/dry, normal, and above-normal/wet rainfall conditions over next twelve 3-month seasons (slide 5).
- This scenario is the connecting link between DPA and all other scenarios simulated under CPA.

➤ CPC

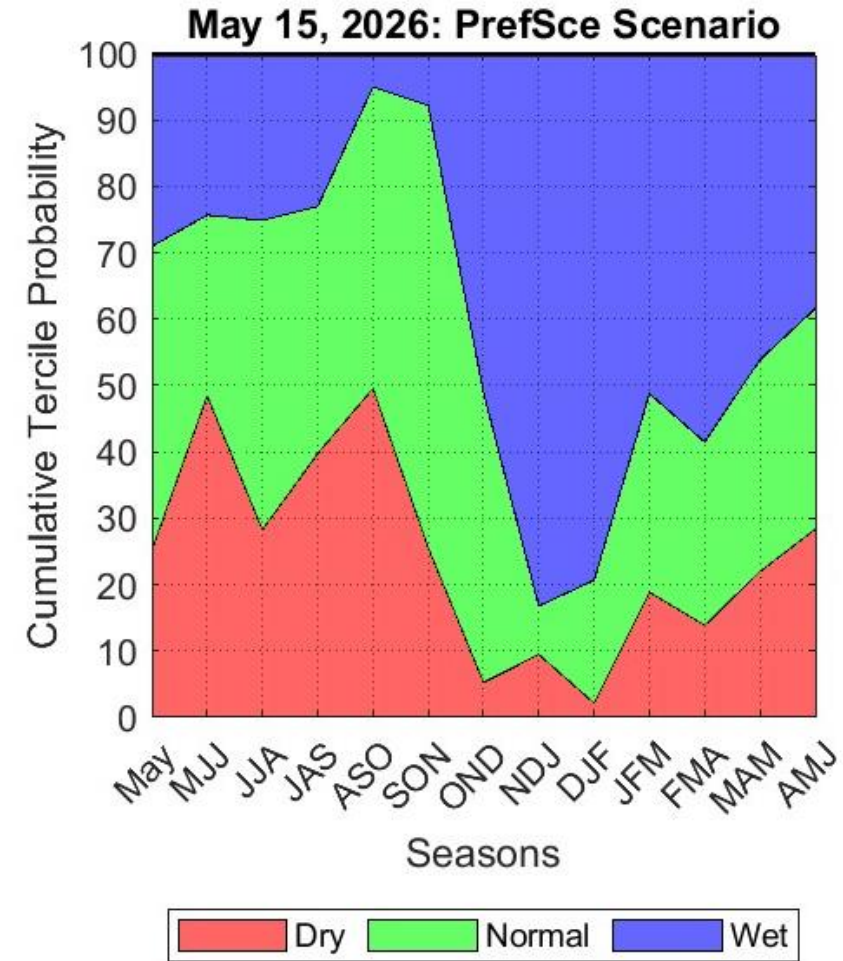
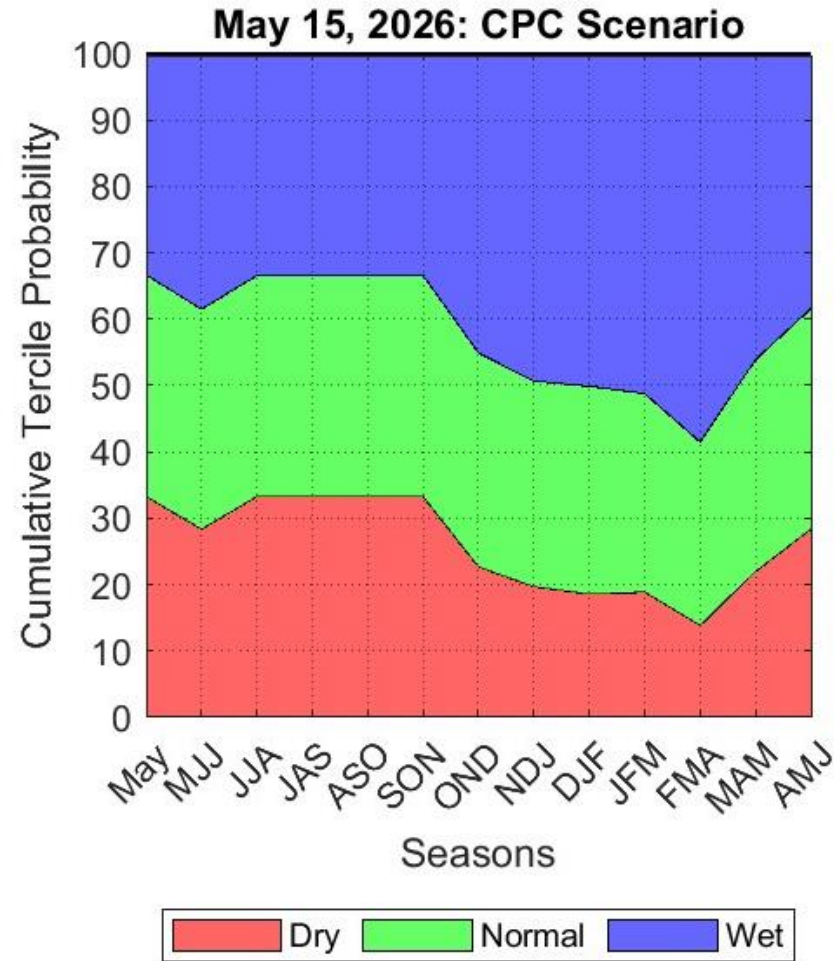
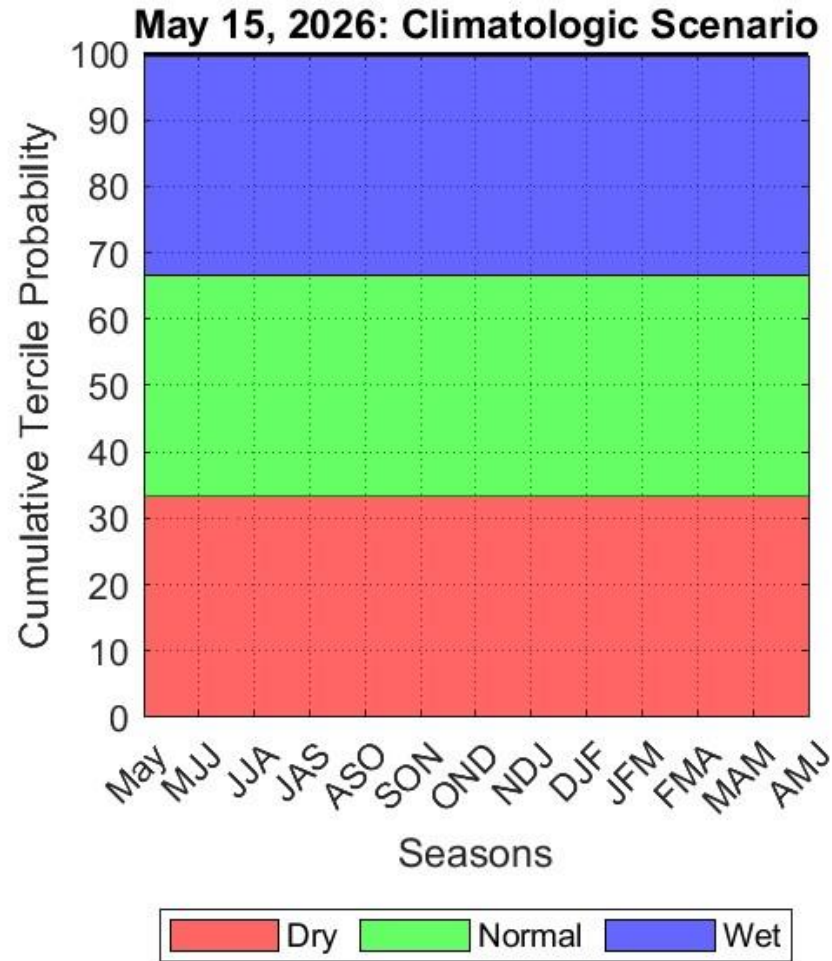
- This is based on official rainfall forecasts published by NOAA's Climate Prediction Center (CPC) every month ([Climate Prediction Center - Forecasts & Outlook Maps, Graphs and tables \(noaa.gov\)](https://www.noaa.gov/climate-prediction-center-forecasts-outlook-maps-graphs-tables)).
- The May 15, 2026, CPC rainfall scenario reflects the latest rainfall outlook released by CPC.
- It is also used by JEM's EverForecast tool for stage prediction.

➤ Preferred Scenario (PrefSce)

- Seasonal rainfall probabilities are calculated based on historical data and projected Niño-3.4 Index ([Climate Prediction Center - El Nino Southern Oscillation \(noaa.gov\)](https://www.noaa.gov/climate-prediction-center-el-nino-southern-oscillation)) published by CPC.
- This scenario developed by System Modeling Unit represents a best professional judgement rainfall outlook.
- May 15, 2026, PrefSce rainfall scenario includes latest release of seasonal rainfall outlook from [NOAA](https://www.noaa.gov).
- Seasonal tercile probabilities of the remaining days of the current MJJ season are estimated from QPF produced by WMD, WPC, ECMWF HRES, and 100 ECMWF ensembles, in combination with historical rainfall data during 1991–2020.
- The monthly probability for the remaining days of May is derived from the QPF estimates generated using the same method described above.

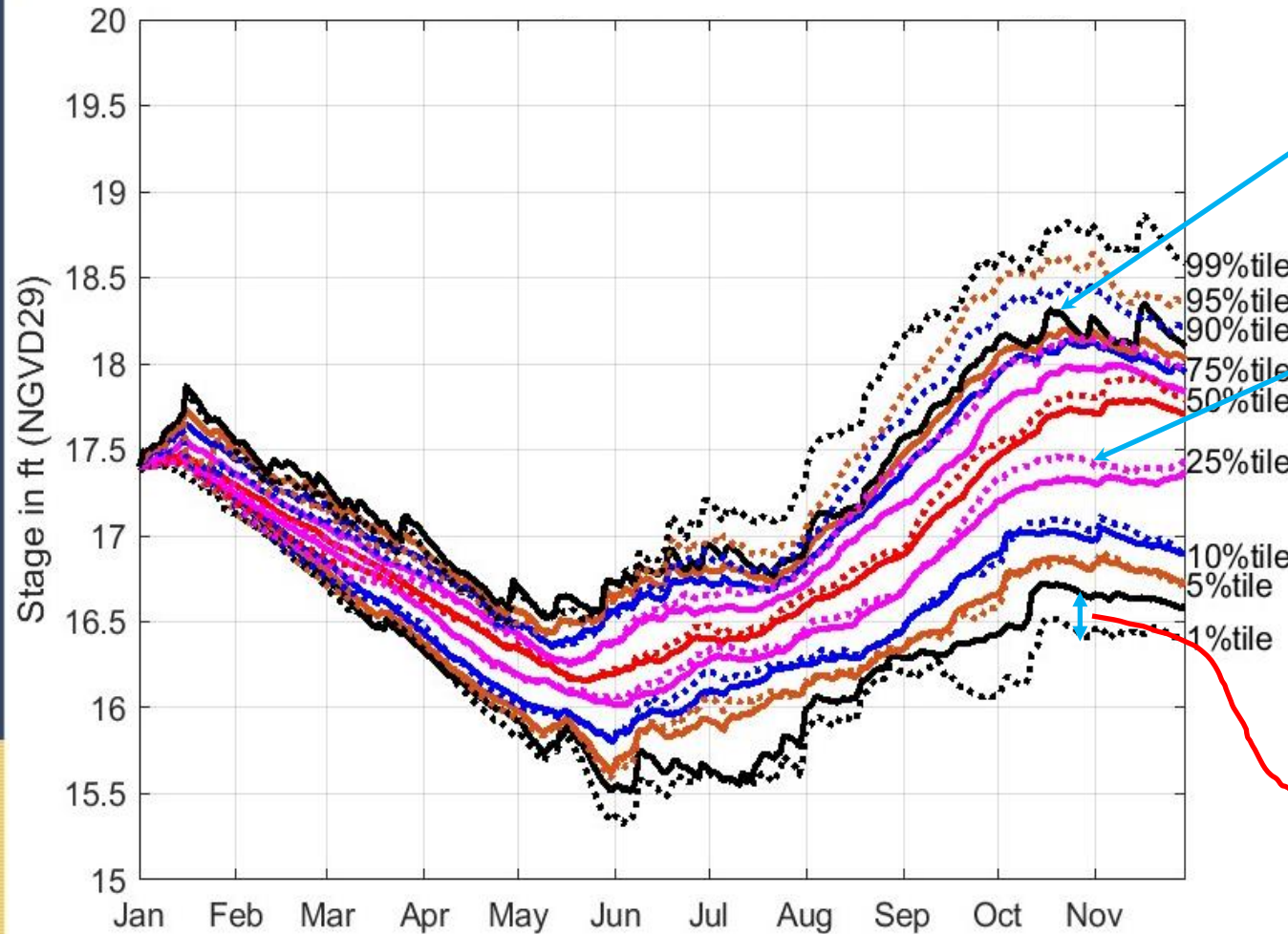


May 15, 2026 CPA: Rainfall Scenarios





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



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May 15, 2026 CPA: LOK

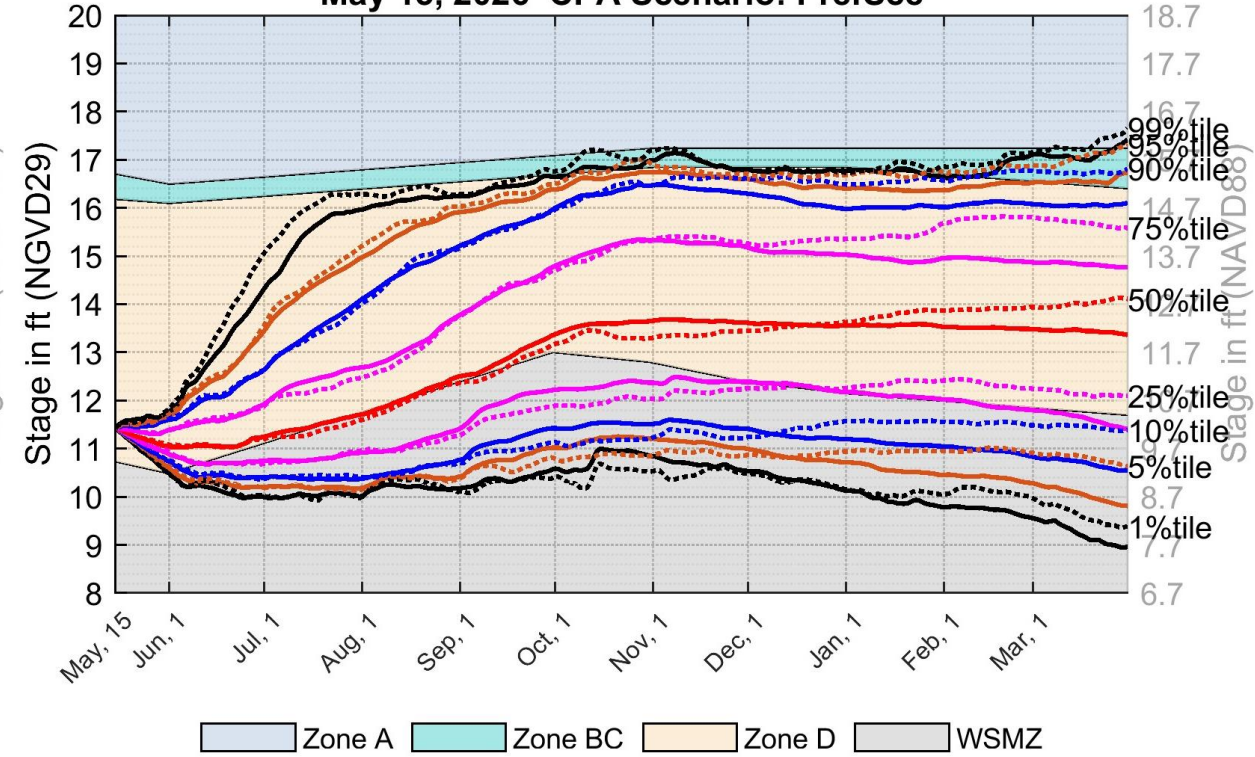
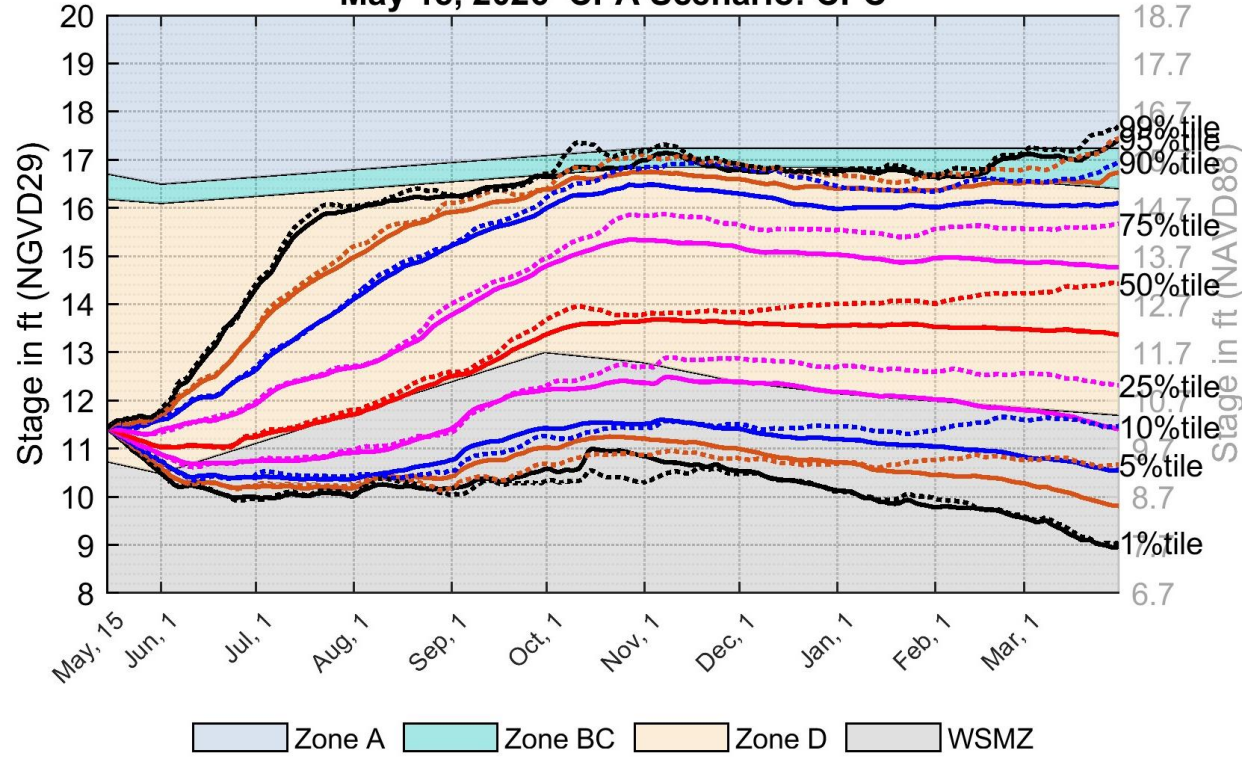


CPC
LOK

PrefSce
LOK

May 15, 2026 CPA Scenario: CPC

May 15, 2026 CPA Scenario: PrefSce



Zone A Zone BC Zone D WSMZ

Zone A Zone BC Zone D WSMZ

Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.30 ft for Lake Okeechobee).



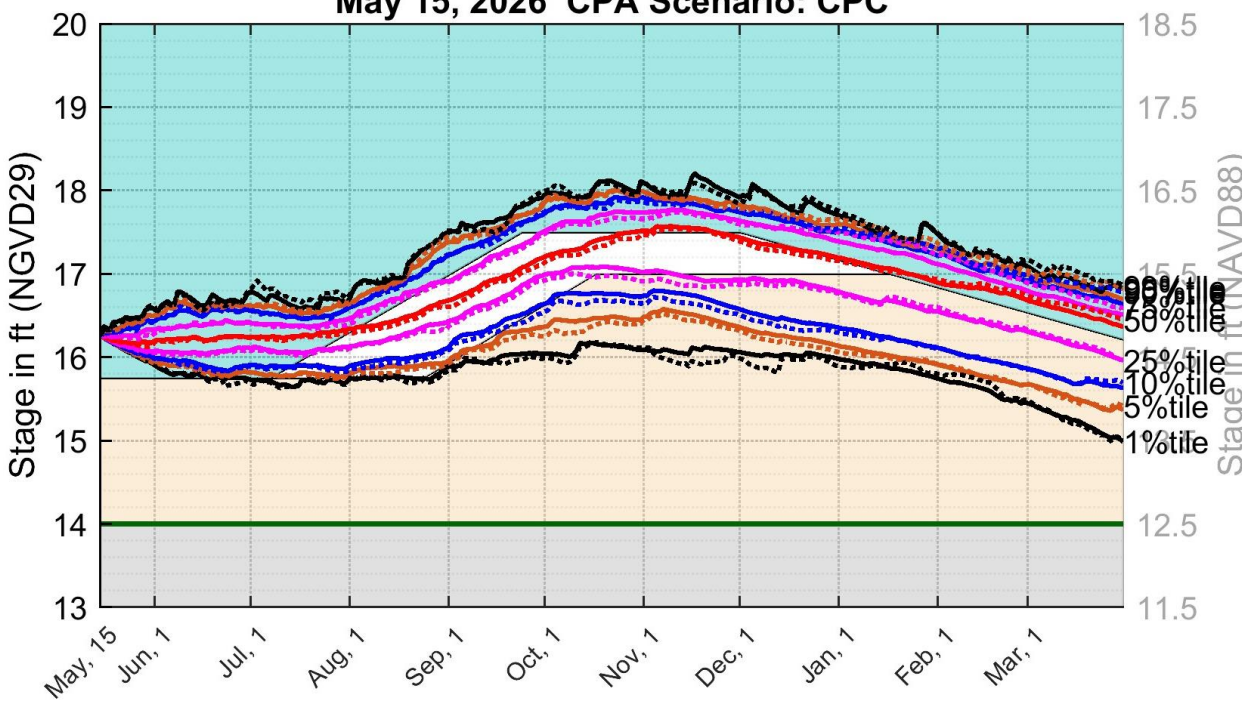
May 15, 2026 CPA: WCA1 3-Gage Avg.



CPC

WCA1 3-Gage Avg

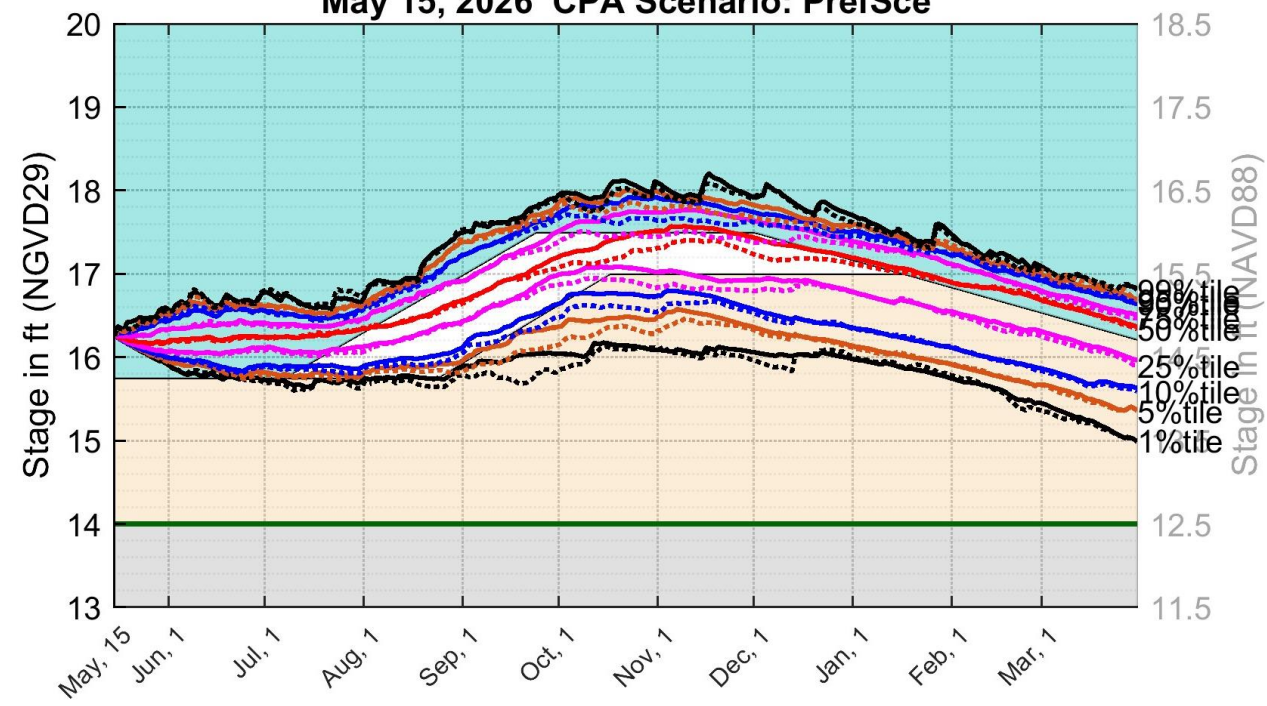
May 15, 2026 CPA Scenario: CPC



PrefSce

WCA1 3-Gage Avg

May 15, 2026 CPA Scenario: PrefSce



Zone A1 Zone A2 Zone B Zone C WS Floor

Zone A1 Zone A2 Zone B Zone C WS Floor

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).



May 15, 2026 CPA: WCA1 Site 8-C

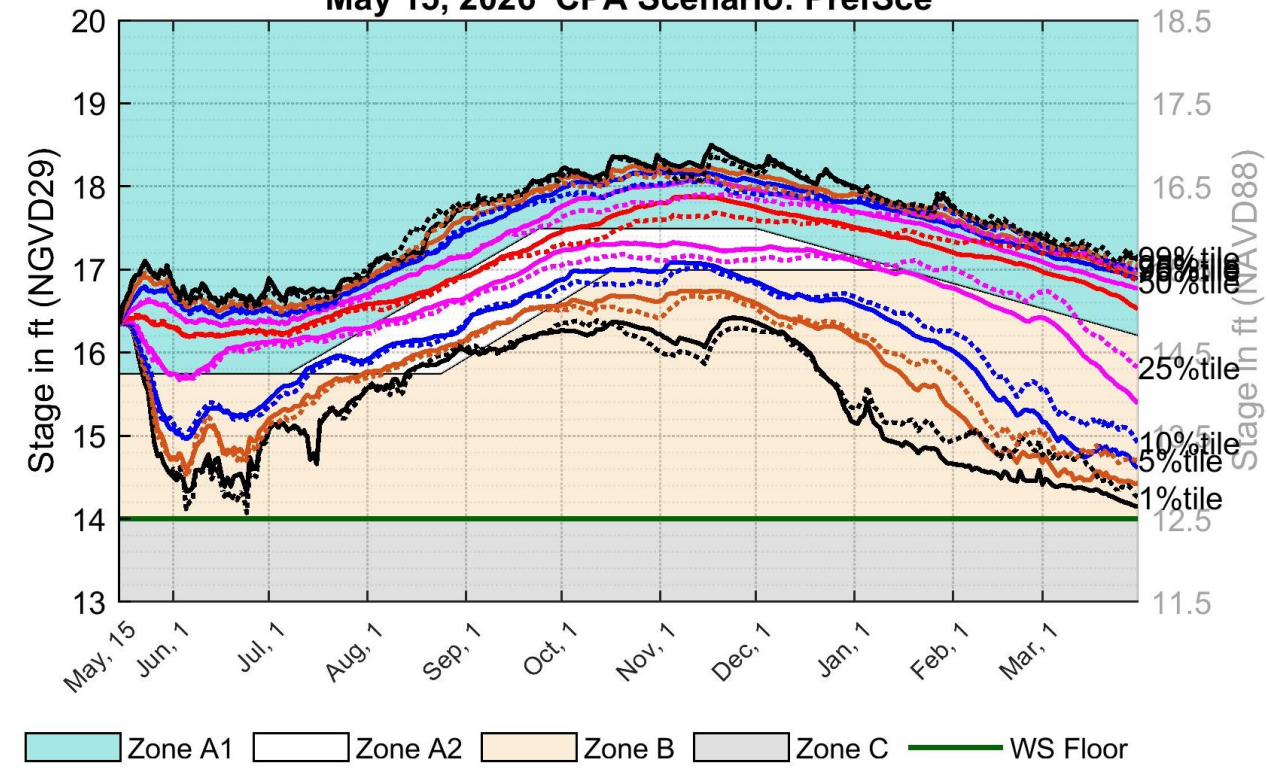
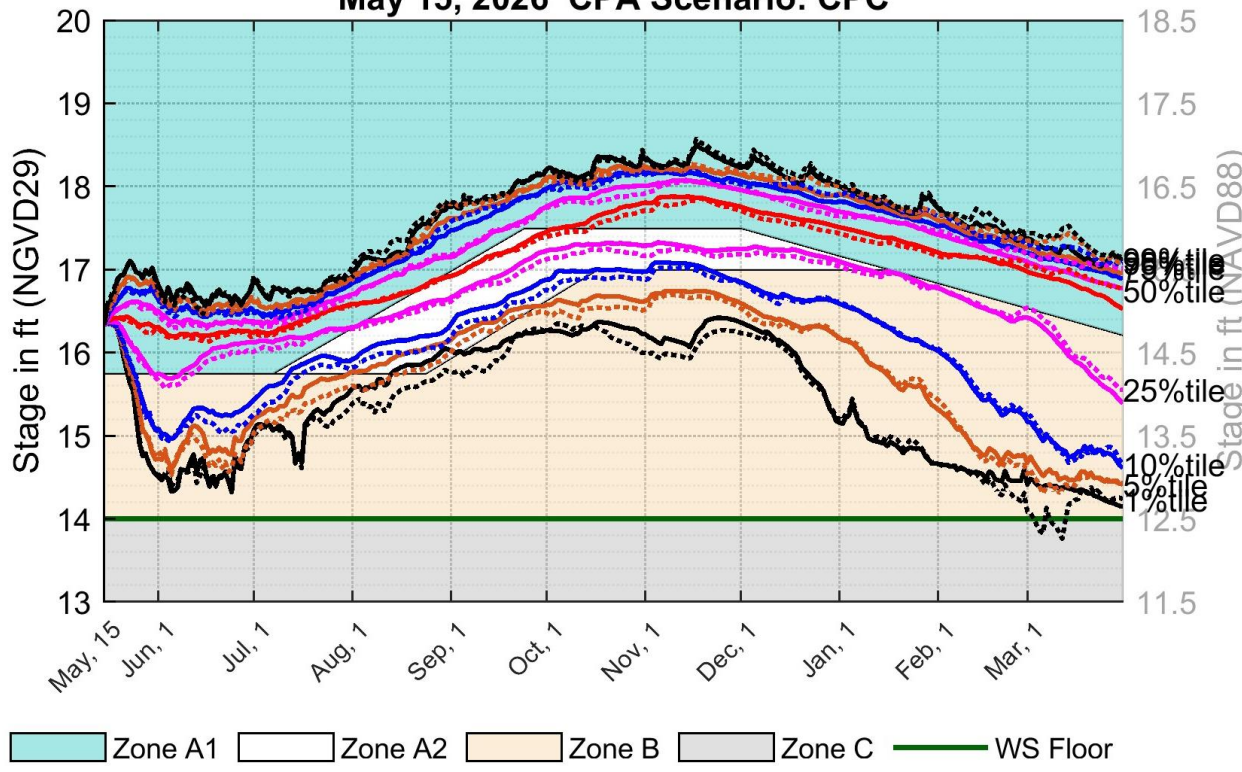


CPC
WCA1 Site 8-C

PrefSce
WCA1 Site 8-C

May 15, 2026 CPA Scenario: CPC

May 15, 2026 CPA Scenario: PrefSce



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).



May 15, 2026 CPA: WCA2A Site-17

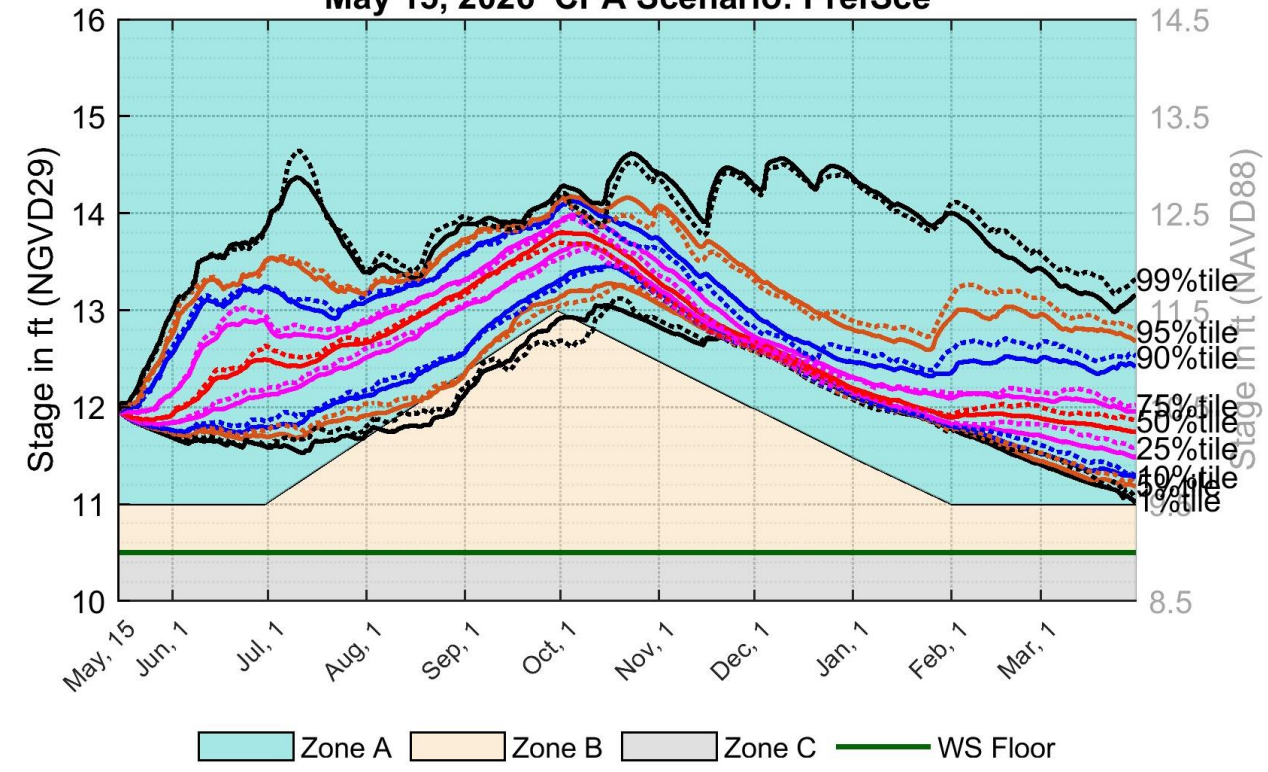
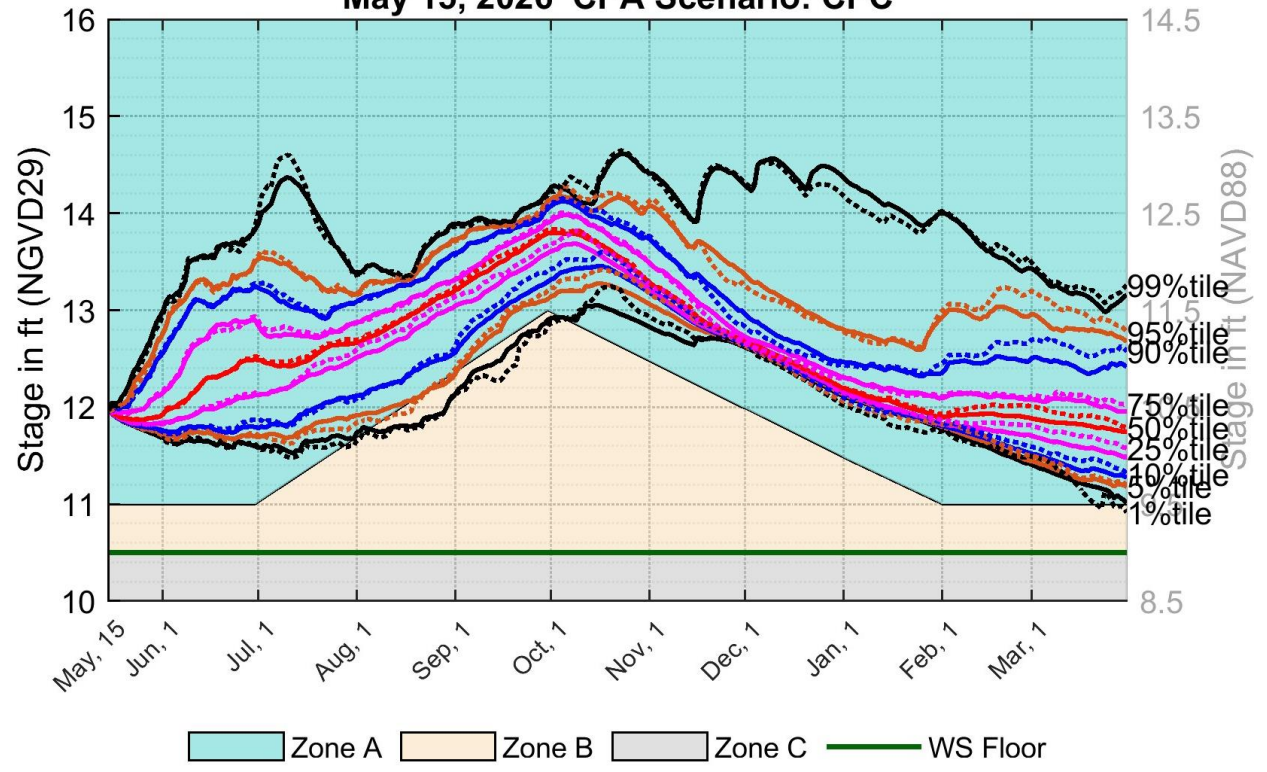


CPC
SITE_17

PrefSce
SITE_17

May 15, 2026 CPA Scenario: CPC

May 15, 2026 CPA Scenario: PrefSce



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).

May 15, 2026 CPA: WCA2A S11B_H

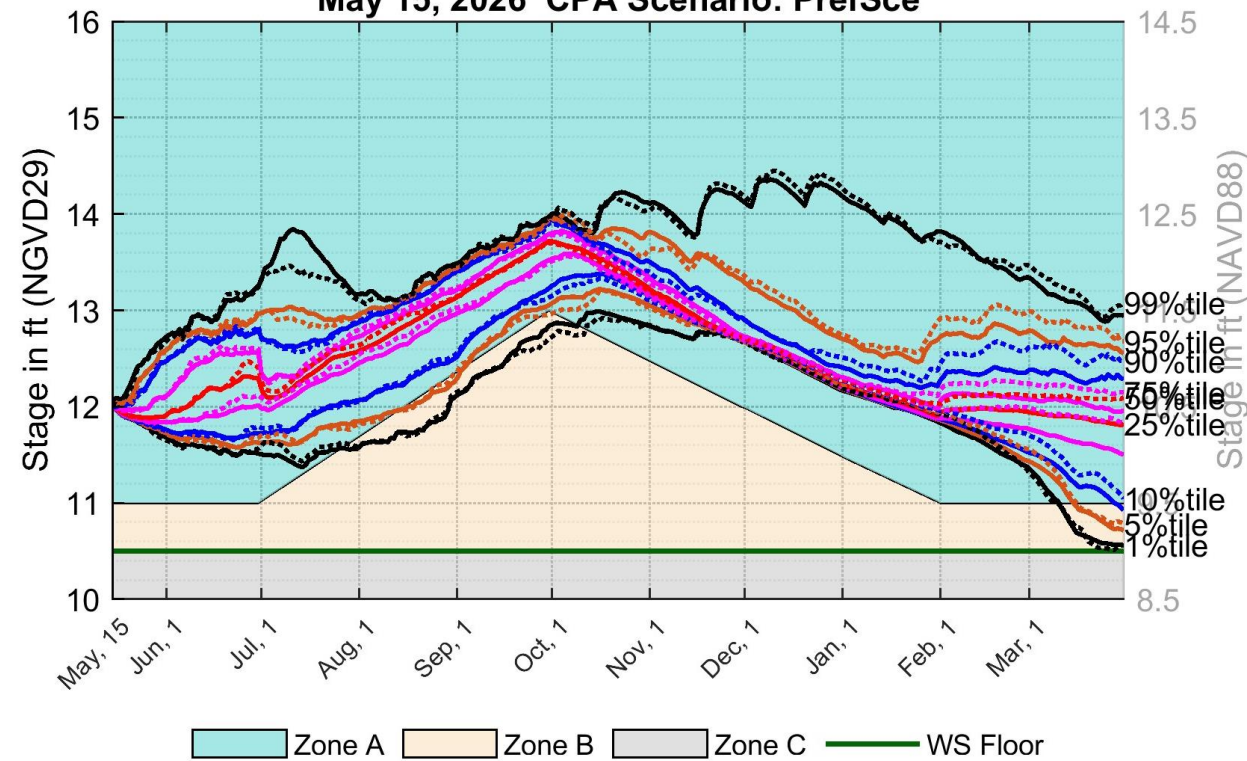
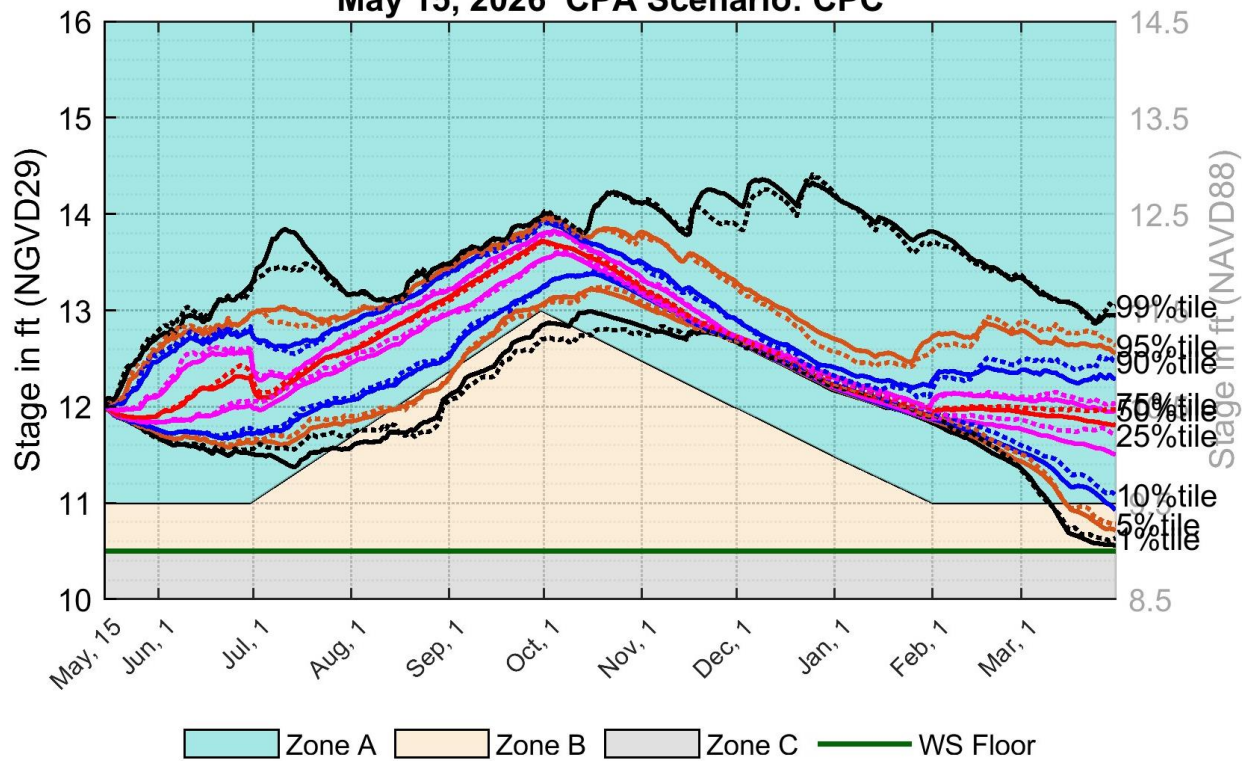


CPC
WCA2A S11B_H

PrefSce
WCA2A S11B_H

May 15, 2026 CPA Scenario: CPC

May 15, 2026 CPA Scenario: PrefSce



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).

May 15, 2026 CPA: WCA3A 3 Gage Avg.

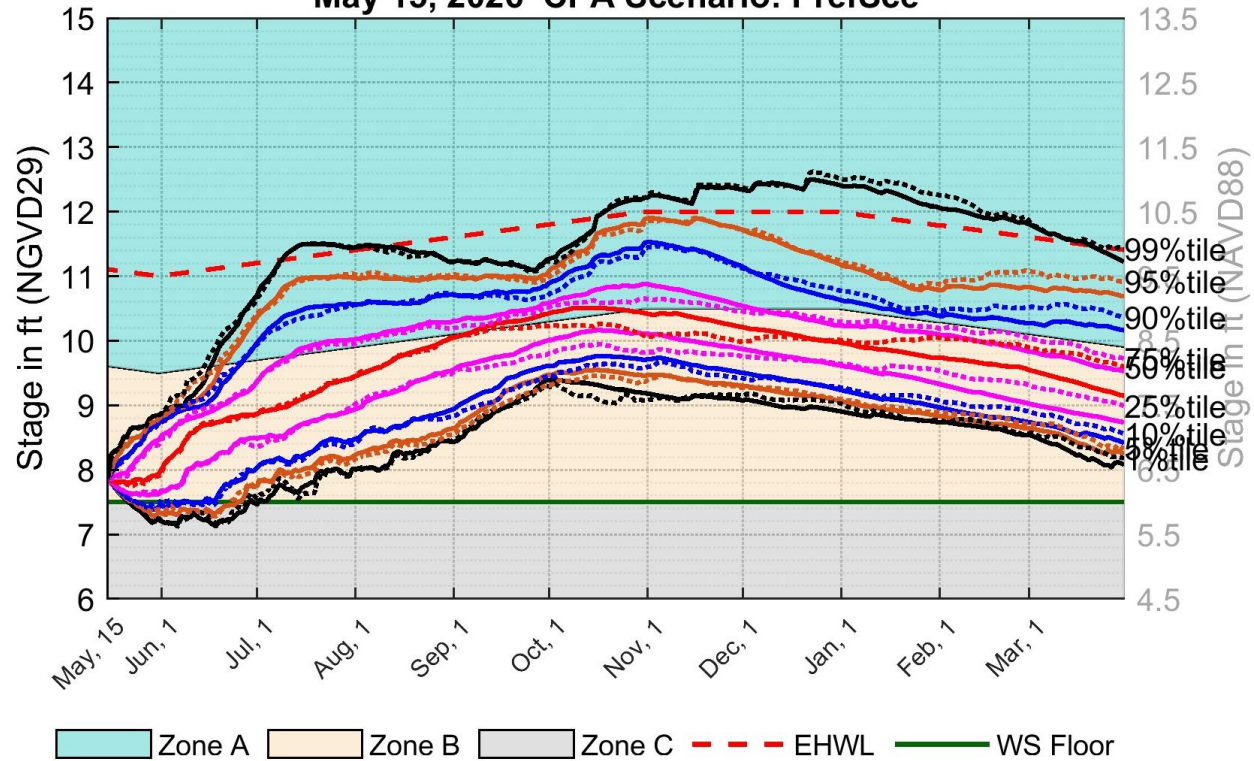
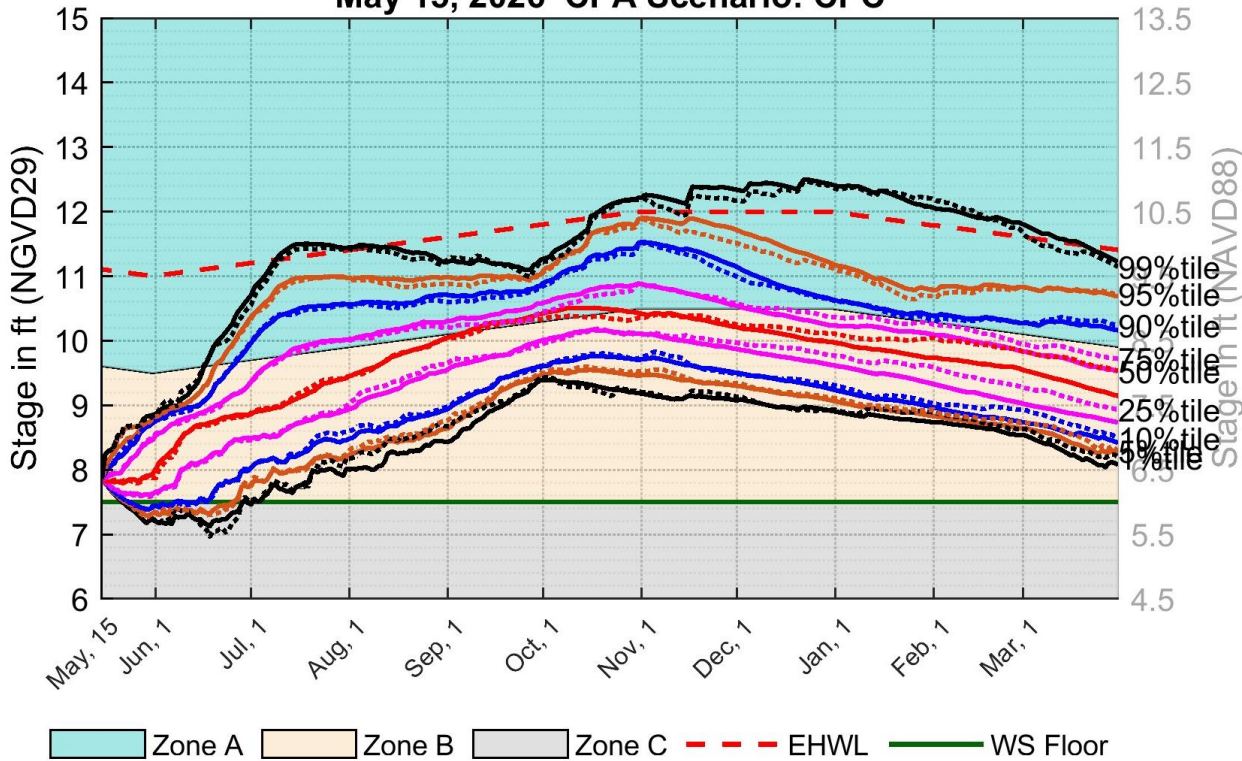


CPC
WCA3AAvg

PrefSce
WCA3AAvg

May 15, 2026 CPA Scenario: CPC

May 15, 2026 CPA Scenario: PrefSce



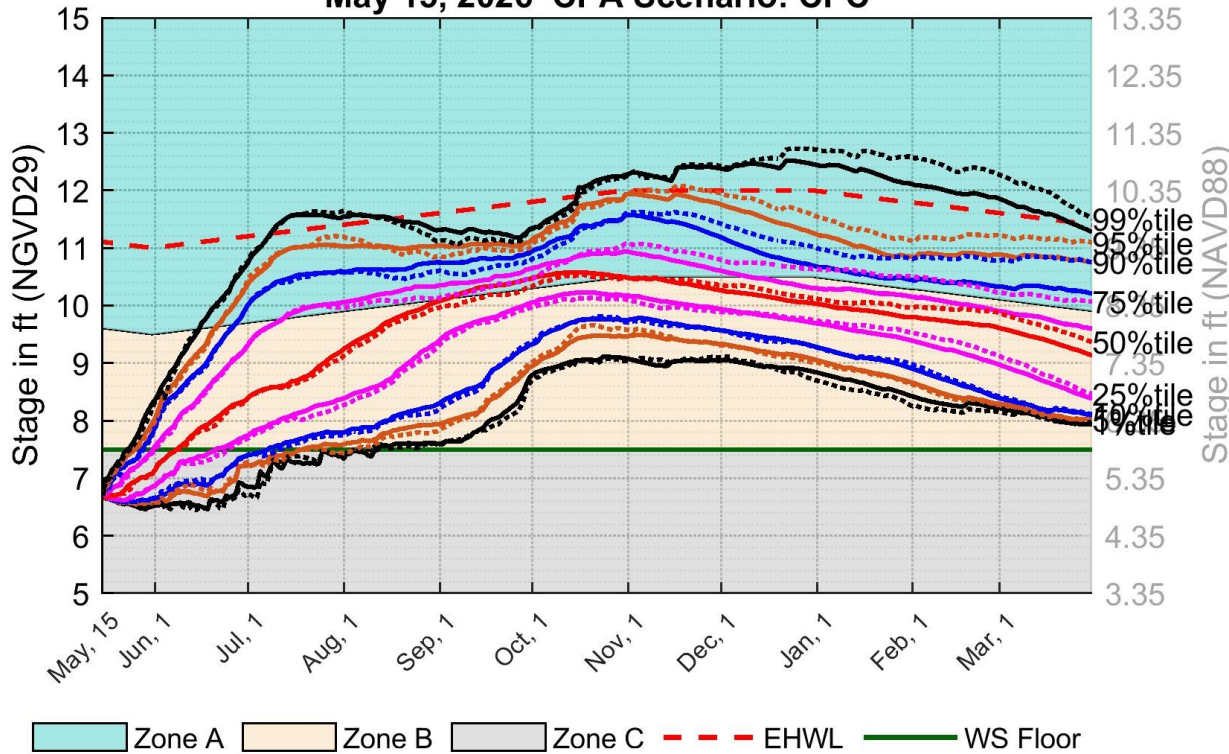
Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.5 ft for WCA3A).

May 15, 2026 CPA: WCA3A Site 69W



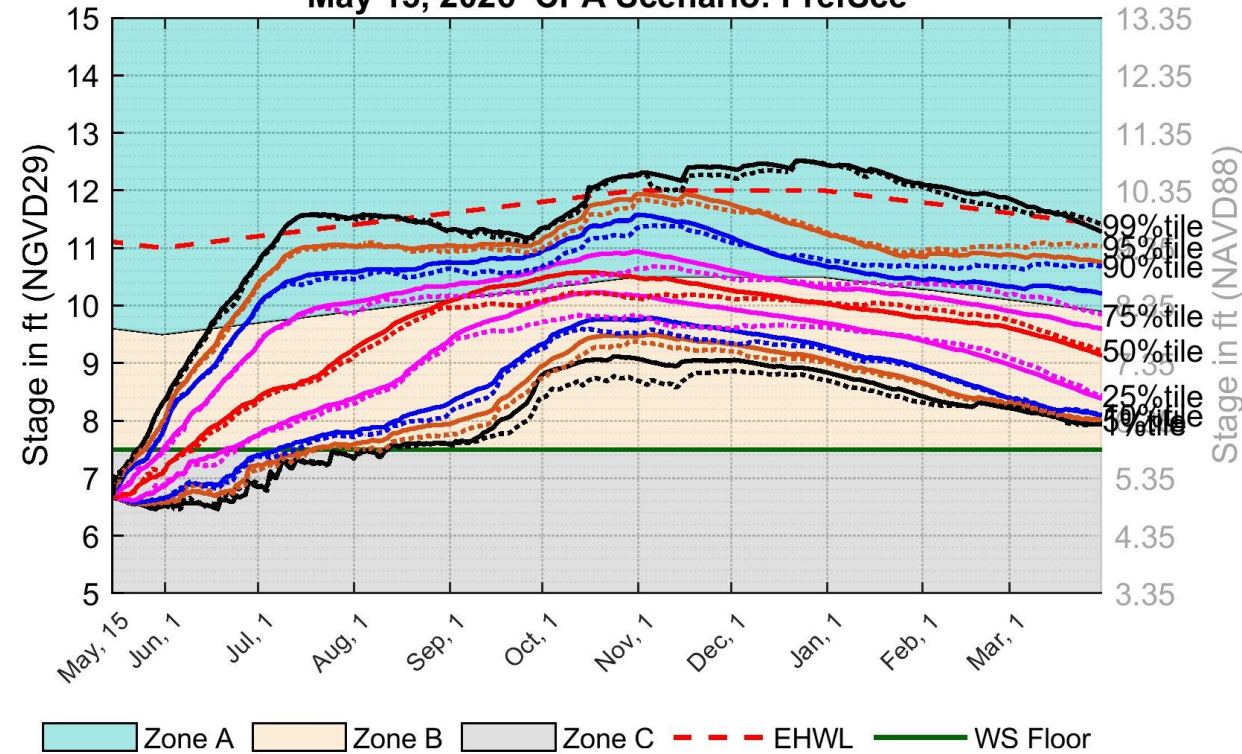
CPC
WCA3A Site 69W

May 15, 2026 CPA Scenario: CPC



PrefSce
WCA3A Site 69W

May 15, 2026 CPA Scenario: PrefSce



Secondary vertical axis shows stages in NAVD88. These stages are based on Agreed Upon Regulation Schedule Conversion Offsets between NGVD29 and NAVD88 (1.65 ft for WCA3A Site 69W).