APPENDIX A

DRAFT ALTERNATIVE B OPERATIONAL STRATEGY

WITH HYDROLOGICAL ANALYSES

PLANNED TEMPORARY DEVIATION 1981 LAKE KISSIMMEE, CRYPRESS, AND HATCHINEHA (KCH)

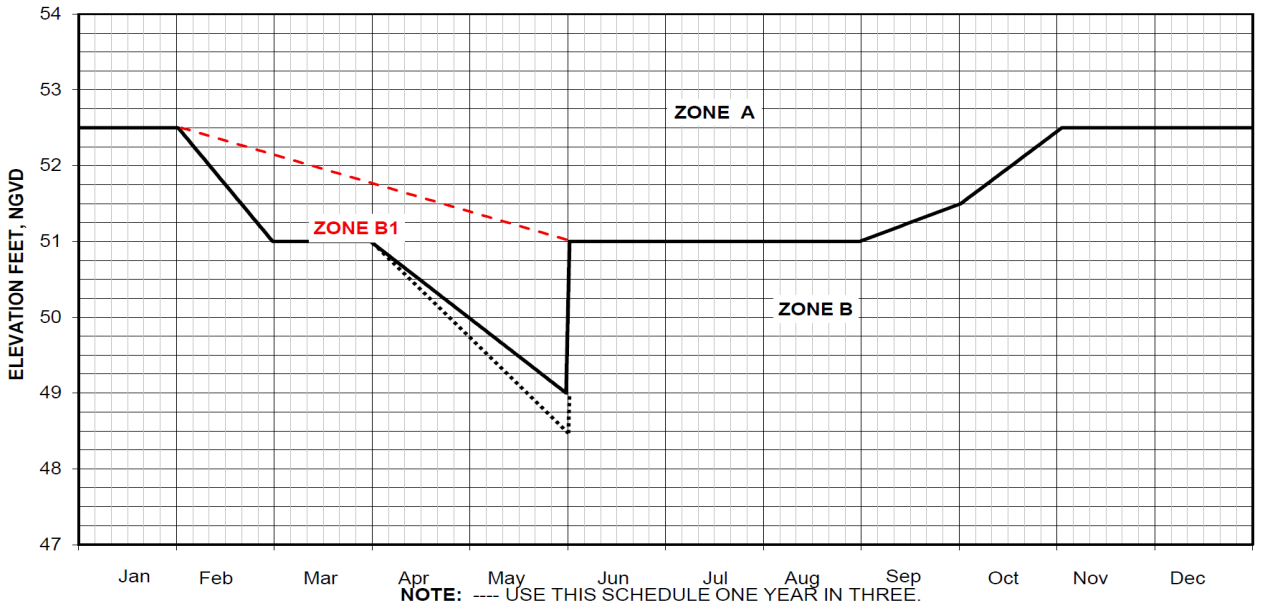
INTERIM REGULATION SCHEDULE

OSCEOLA AND POLK COUNTIES, FLORIDA

Operational Strategy: Alternative B

All elevations referenced in this Appendix are in National Geodetic Vertical Datum of 1929 (NGVD29).

The Corps of Engineers, Jacksonville District (Corps) is seeking a Planned Temporary Deviation to the 1981 Lake Kissimmee, Hatchineha and Cypress Interim Regulation Schedule by raising the low summer pool elevation from 49.0 to 51.0 feet in order to better facilitate construction along the Kissimmee River, The intent of the deviation is to limit Lake Kissimmee releases up to 900 cfs until 1 June 2021 in order to facilitate Kissimmee River Restoration (KRR) construction in Reach 2. This is necessary because flows greater than 900 cfs as measured at S-65A cause water to rise into the Kissimmee River flood plain, and impacts construction activity in the area. The temporary deviation to raise the summer (June 1) pool elevation will provide greater operational flexibility to South Florida Water Management District (SFWMD) and increase the likelihood of providing flows within the optimum range for the Corps' on-going construction. As shown in Figure 1. The figure also shows the proposed changes to the regulation schedule (the new Zone B1) and the corresponding release guidance at Structure 65 (S-65). There will be no changes to the S-65 Zone A and B Zone release guidance; however, guidance for Zone B1 has been included for consideration of environmental recommendations during the deviation. USACE will continue to provide operational input to SFWMD in real time .



ZONE	RELEASES S-65
A	3,000 CFS UP TO DESIGN CAPACITY (11,000 CFS) WITHOUT EXCEEDING DESIGN CONDITIONS DOWNSTREAM. WHEN THE LAKE IS WITHIN 0.5 FT. OF DESIRED STAGE, FORECASTS WILL THEN BE MADE AND RELEASES STARTED TO BRING THE LAKE BACK DOWN TO SCHEDULE WITHIN 15 DAYS.
B	TO MAINTAIN MINIMUM FLOWS
B1	TO MAINTAIN MINIMUM FLOWS. CONSIDER ENVIRONMENTAL RECOMMENDATIONS.

CENTRAL AND SOUTHERN FLORIDA
KISSIMMEE RIVER BASIN

LAKE KISSIMMEE,
HATCHINEHA & CYPRESS
INTERIM REGULATION SCHEDULE

US ARMY ENGINEER DISTRICT
JACKSONVILLE FL

DATED: 11 FEBRARY 2020
ALT B

Figure 1: Proposed Lake Kissimmee, Hatchineha & Cypress Regulation Schedule during the Planned Temporary Deviation

Hydrologic Data and Analyses

The following hydrologic data and analysis includes background information, data analysis, and a summary regarding water management activities in the Upper Kissimmee Basin.

S-65 is a spillway located at the outlet of Lake Kissimmee at the head of Canal 38 (C-38, as known as the Kissimmee River). Flow exceedance curves are shown in Figure 2. S-65 flows begin to rise in January as Lake Kissimmee is normally drawn down to reach a low of 49 ft. on June 1 and provide flood storage for the wet season. These flows on average, rise above 900 cfs around mid-February. Structure 65A (S-65A) flow exceedance curves are also shown in Figure 3. S-65A is approximately ten miles downstream of S-65. S-65A is the final control structure on the Kissimmee River upstream of the construction site. On average, S-65A flows begin to rise above 900 cfs in late January and remain above 900 cfs throughout February. S-65 Headwater Elevation exceedance curves (Lake Kissimmee elevation), as shown in Figure 4, illustrate that flows greater than 900 cfs are generally required to bring the lake elevation down to the low summer pool level of 49.0 feet. Pool A is the Kissimmee River reach immediately downstream of Lake Kissimmee. The Pool A elevation exceedance curves shown in Figure 5 demonstrate that S-65A flows greater than 900 cfs may be necessary to maintain Pool A at its optimum elevation of 46.3.

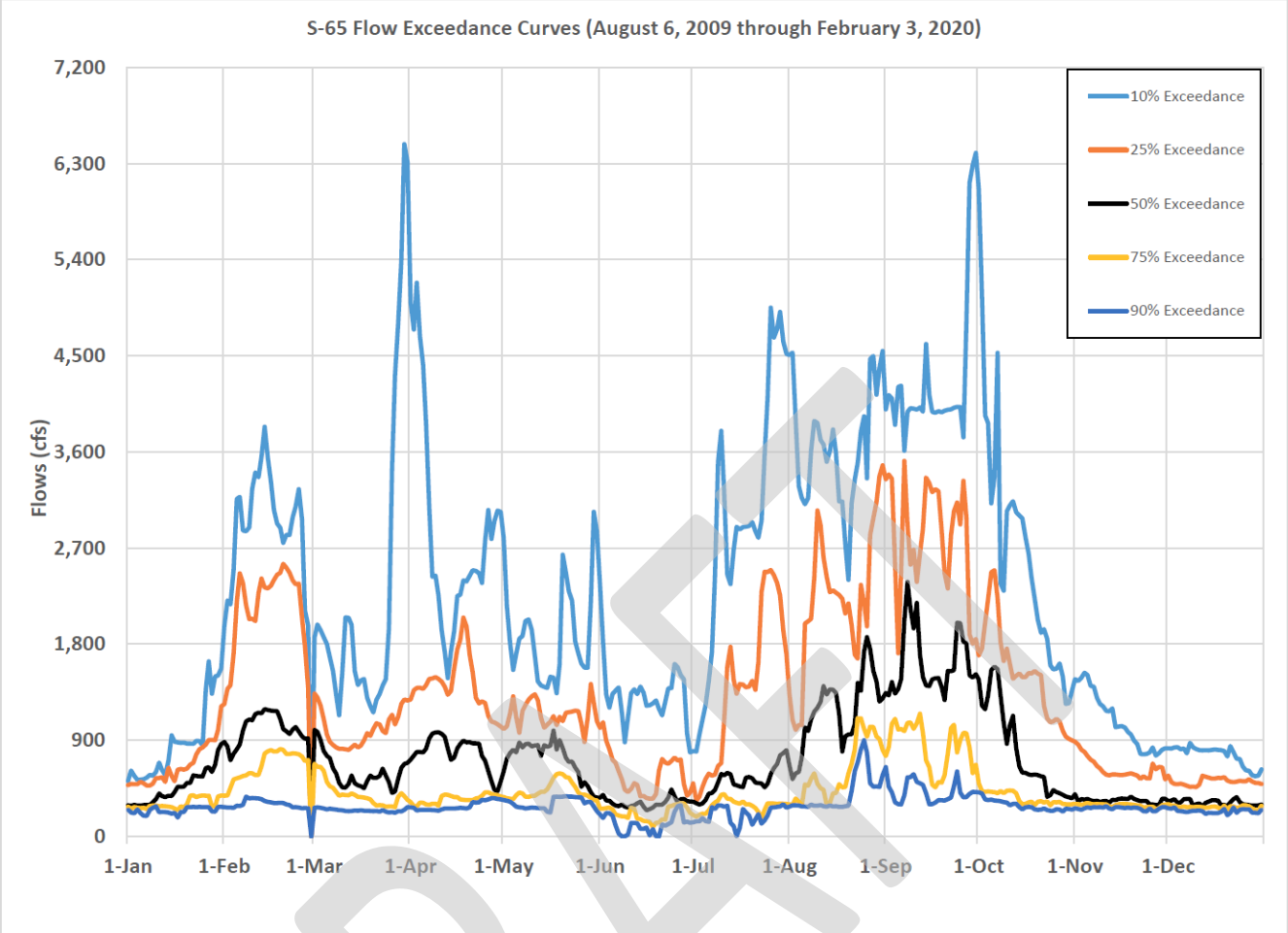


Figure 2: S-65 Flow Exceedance Curves

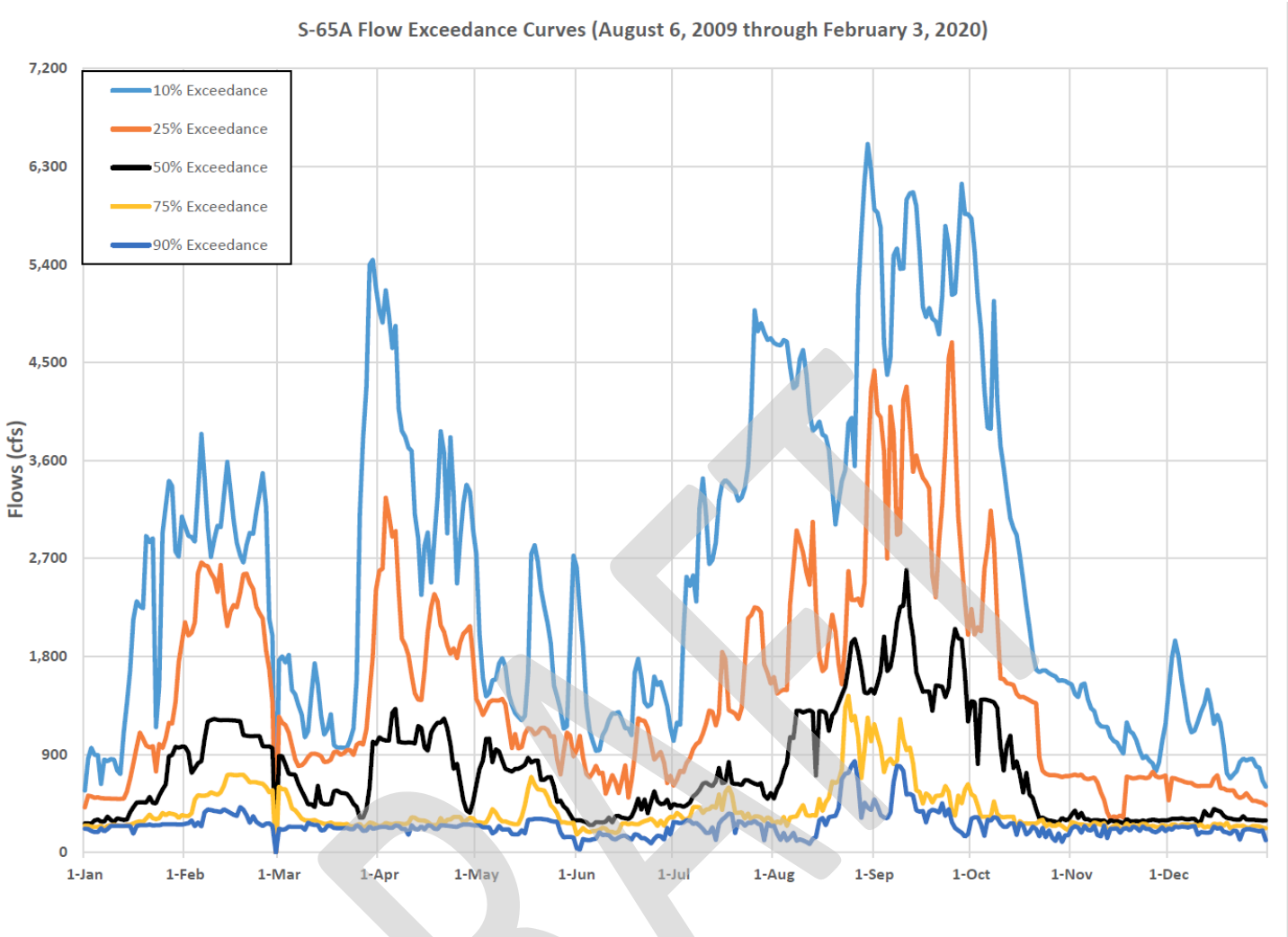


Figure 3: S-65A Flow Exceedance Curves

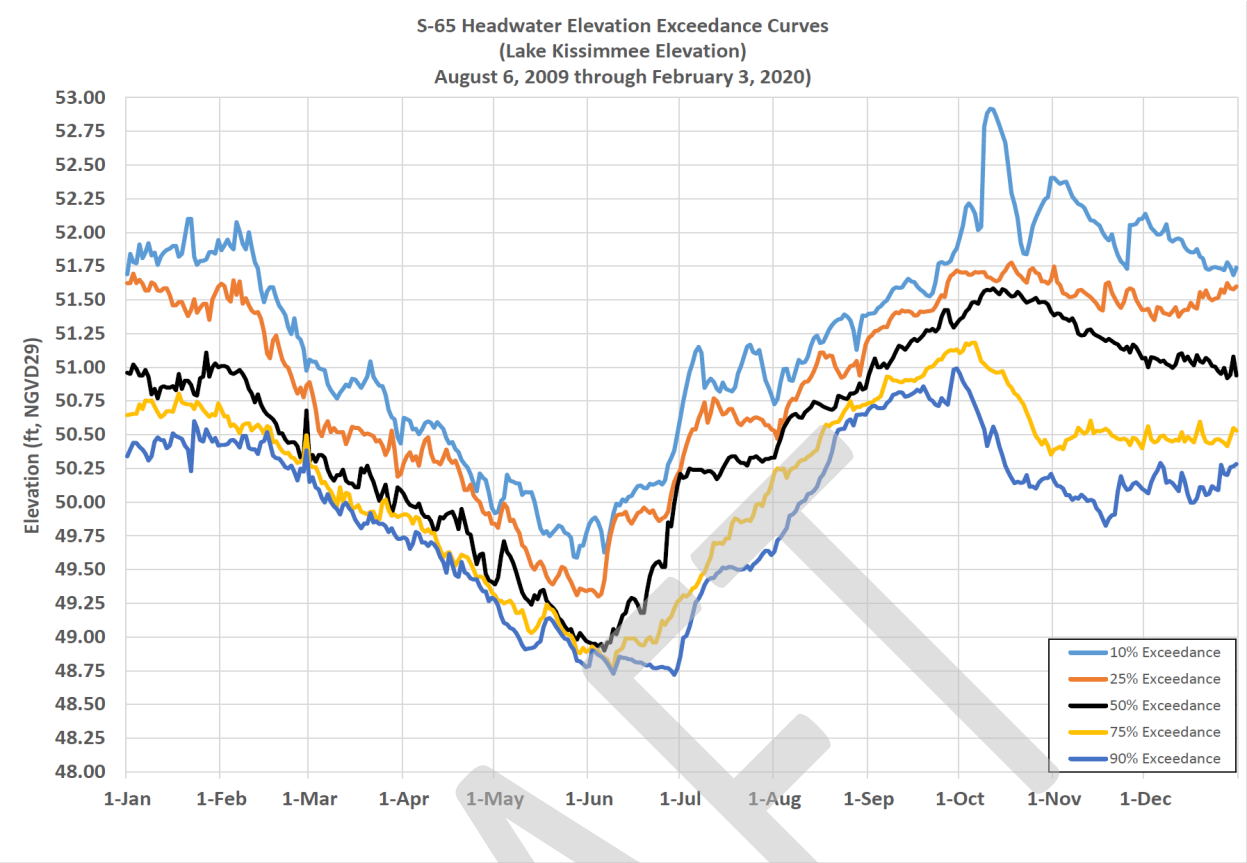


Figure 4: S-65 Headwater Elevation (Lake Kissimmee Elevation) Exceedance Curves

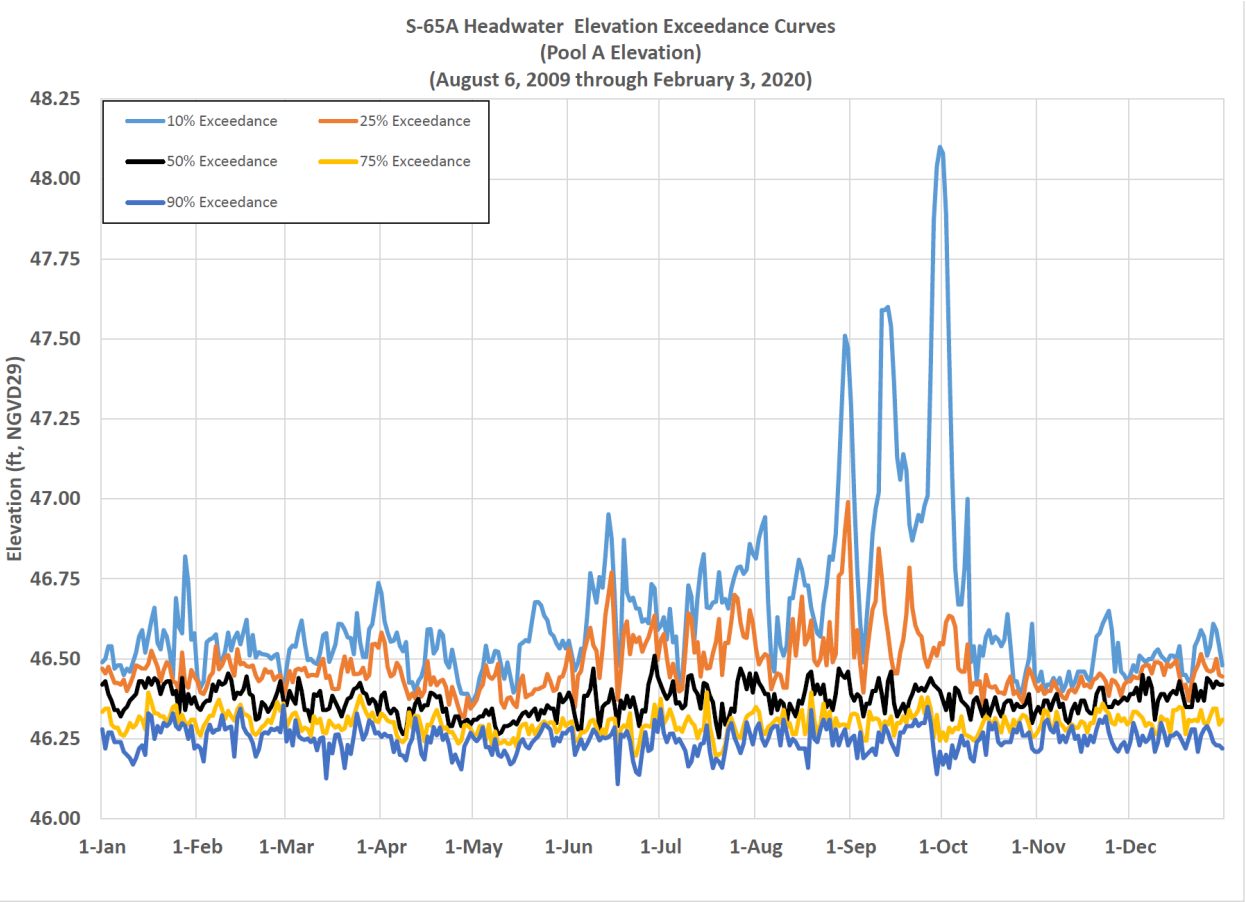


Figure 5 S-65A Headwater Elevation (Pool A) Exceedance Curves

<u>Water Management Activities in the Upper Kissimmee Basin</u>:

All lakes in the Kissimmee chain of lakes are drawn down to their lowest pools around June 1 of each year to provide critical flood storage in preparation for the rainy season. Their regulation schedules reflect this draw down. This temporary deviation will not provide this typical draw down, but allow Lake Kissimmee to go up to its peak rainy season stage. The risk with this action is, if significant rainfall occurs over Pool A, S-65A flows can and will exceed 900 cfs even with this deviation. If Lake Kissimmee elevation rises into Zone A, the S-65A releases will be made according to the existing S-65 release guidance during the deviation period.

East Lake Tohopekaliga Regulation Schedule Temporary Planned Deviation (approved 17 OCT 2019) for Fish and Wildlife Enhancement began mid-October 2019. Structure 59 (S-59), East Lake Tohopekaliga's outlet structure, was opened to begin following the temporary deviation line shown in Figure 6. Because Lake Tohopekaliga's elevation has remained in Zone B, this deviation has not impacted inflows to Lake Kissimmee. A target elevation of 54.5 ft was also established for Lake Tohopekaliga to facilitate the drawdown of East Lake Tohopekaliga, seen in Figure 7. Despite heavy rainfall in late October/early November 2019, the recommended elevation in Lake Tohopekaliga was achieved, as of 16 Dec 2019. Flows from Lake Tohopekaliga to Lake Kissimmee through Structure 61 (S-61, Lake Tohopekaliga's outlet structure) exceeded 1,200 cfs in mid-December, as shown in Figure 8.

Weather in the Upper and Lower Kissimmee Basins:

If the upper Kissimmee Basin receives above average rainfall this spring (according to Figure 11), significant rainfall could result in lake Kissimmee elevations rising 0.5 feet above the Zone A regulation line. In accordance with the S-65 release guidance, S-65 flows could increase up to the design capacity of 11,000 cfs. to bring the lake elevation back down to Zone B within 15 days. These high releases would negatively impact the KRR construction site; thus negating the purpose of this deviation. Rainfall recorded in January 2020 was below average in both the upper and lower Kissimmee Basins, as shown in Figure 9. Thus far, rainfall in February is near average, as shown in Figure 10 . The National Oceanographic and Atmospheric Administration's Climate Prediction Center's latest Three-Month Precipitation Probability Outlook is forecasting an equal chance for above average, average rainfall, as shown in Figure 11. Average (1989-2018) February rainfall for the Kissimmee region is 2 inches total and March is usually wetter up to 3 inches total. South Florida wet season typically begins mid-May to mid-June where monthly rainfall averages up to 8 inches.

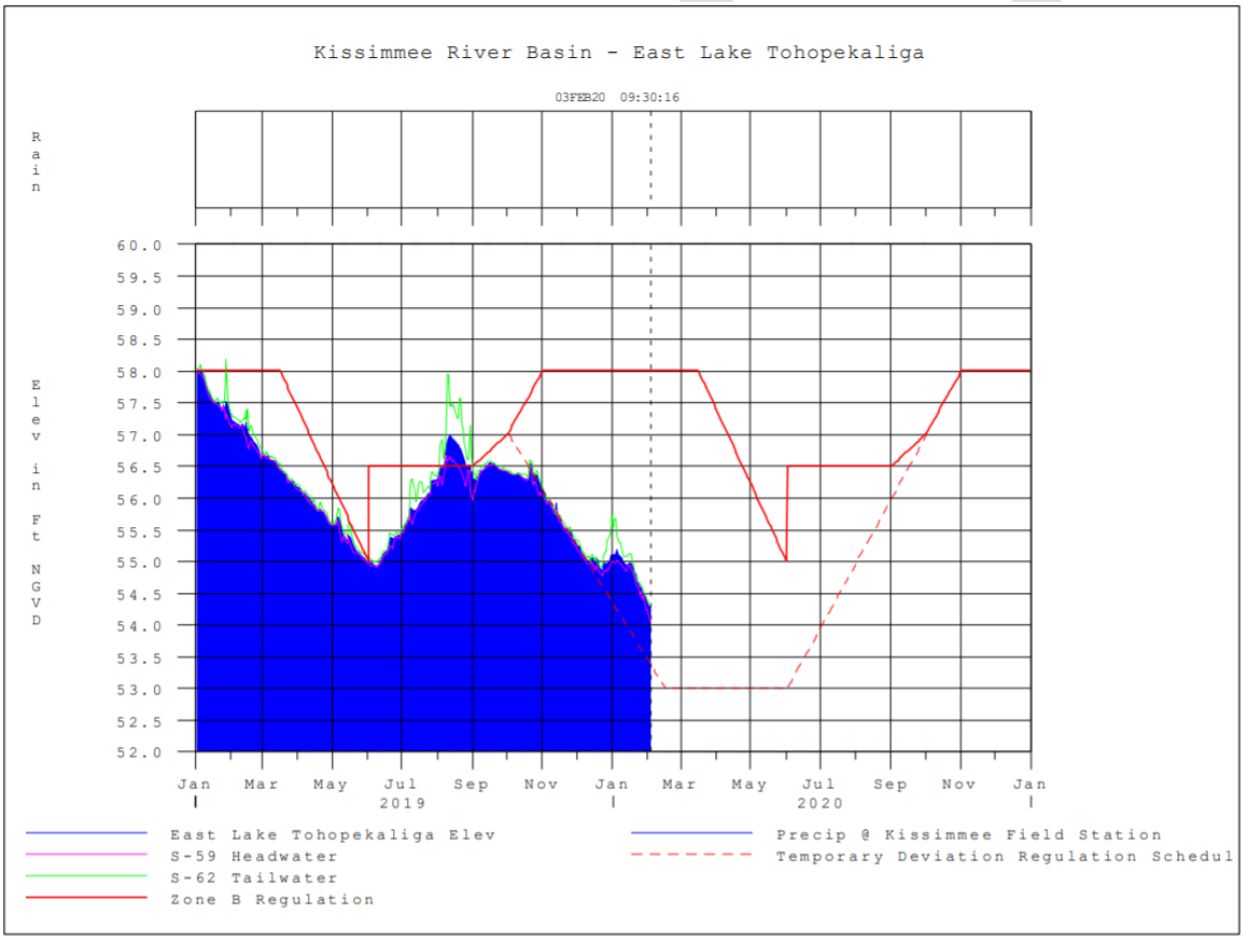


Figure 6: East Lake Tohopekaliga Temporary Deviation (historical water levels shown in shaded blue and temporary deviation regulation schedule line shown in dashed red)

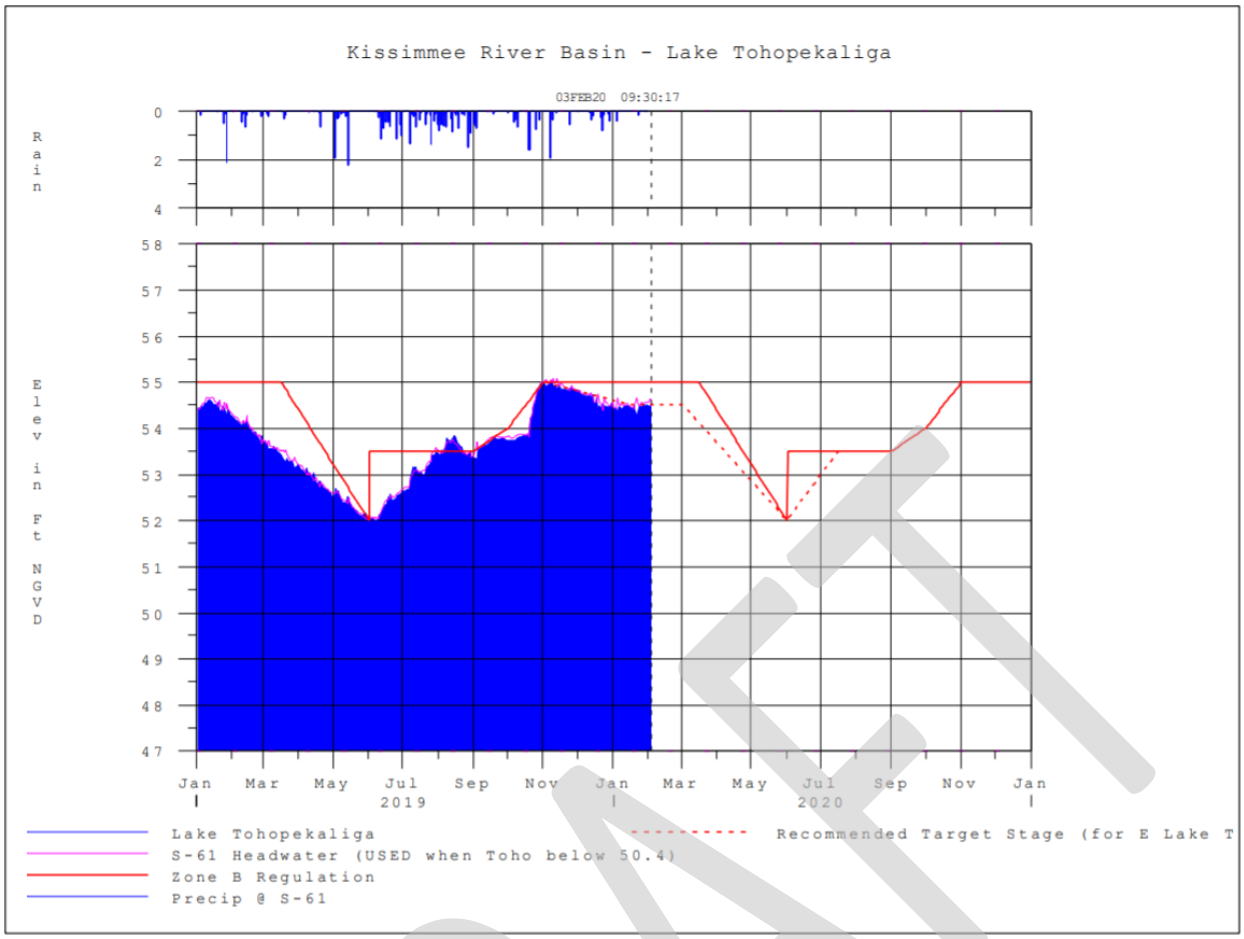


Figure 7: Lake Tohopekaliga Recommended Target Stage for East Lake Tohopekaliga Drawdown

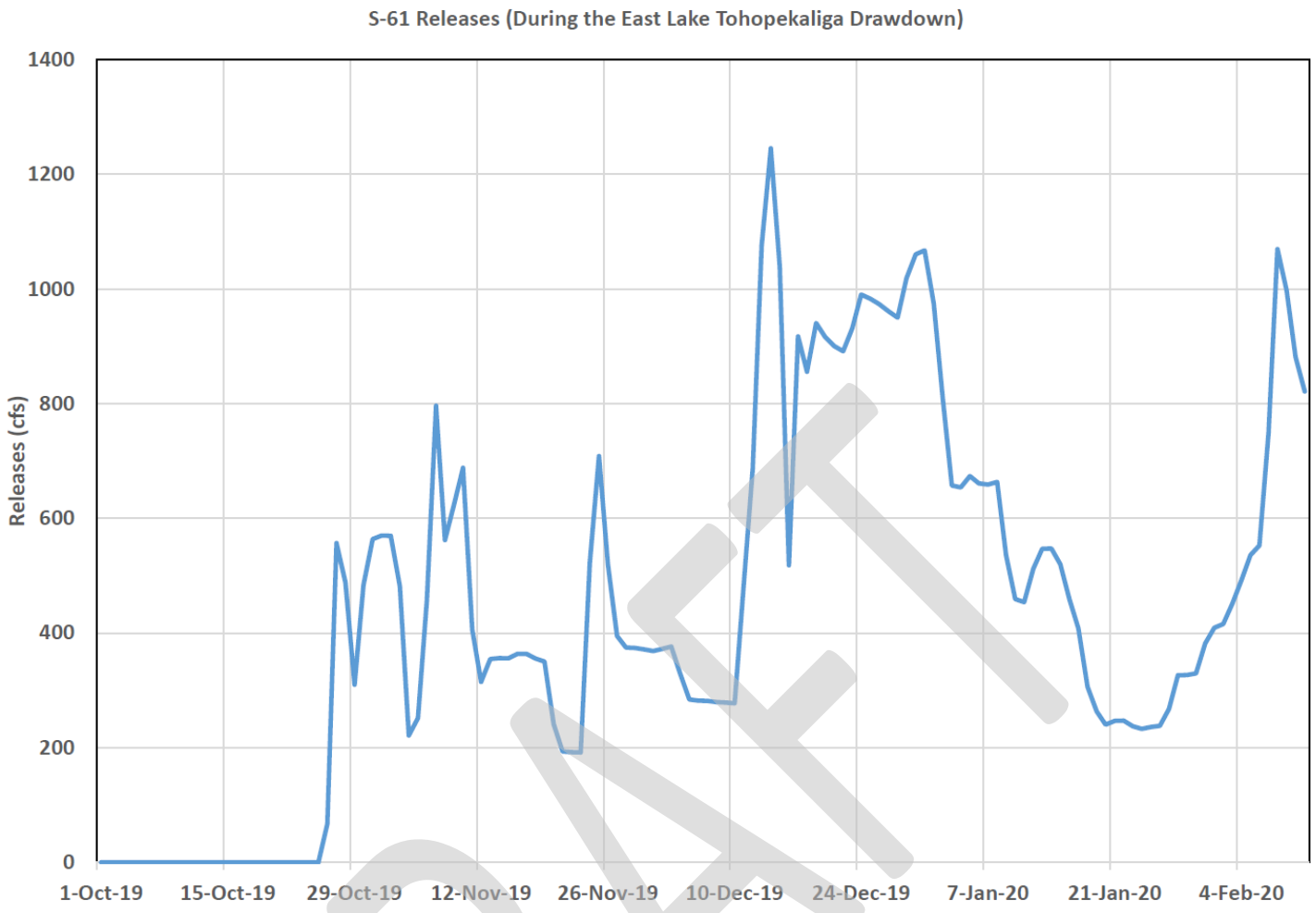


Figure 8: S-61 Releases from Lake Tohopekaliga

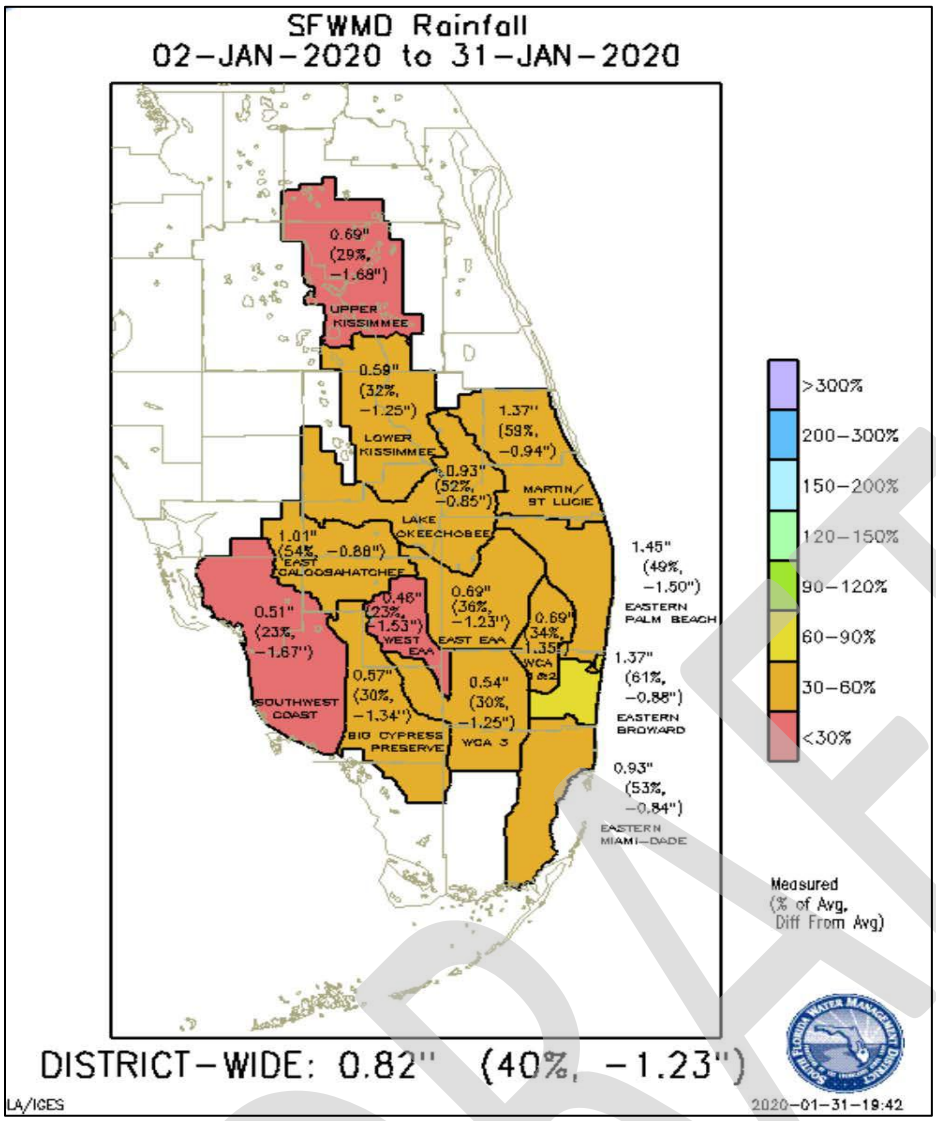


Figure 9: January 2020 rainfall (SFWMD) map

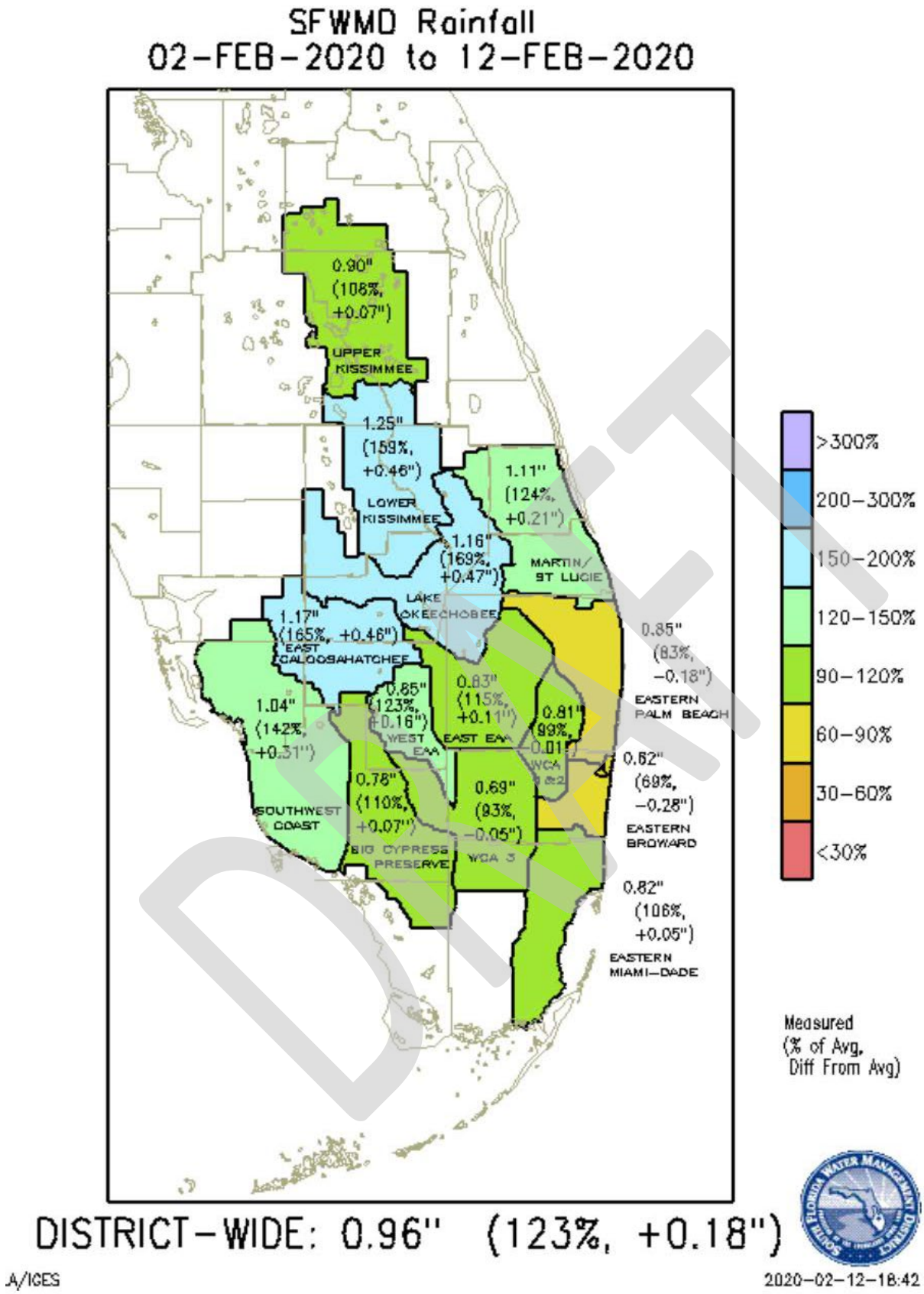


Figure 10: February 2-12 2020 Rainfall (SFWMD) map

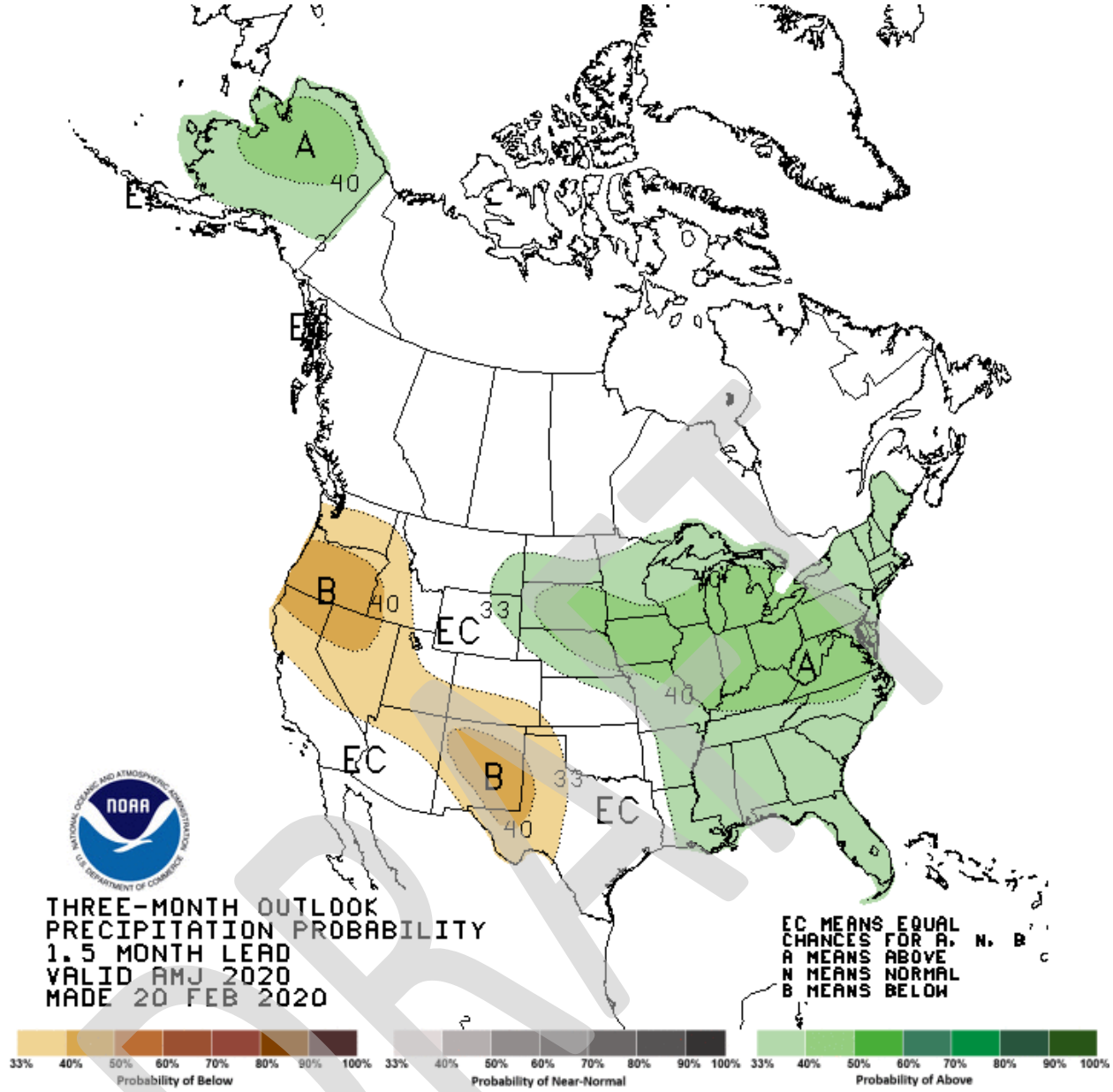


Figure 11: Three Month Precipitation Probability Outlook (NOAA Climate Prediction Center)