

SEPTEMBER & OCTOBER 2021 BIG CYPRESS BASIN HYDROLOGIC REPORT

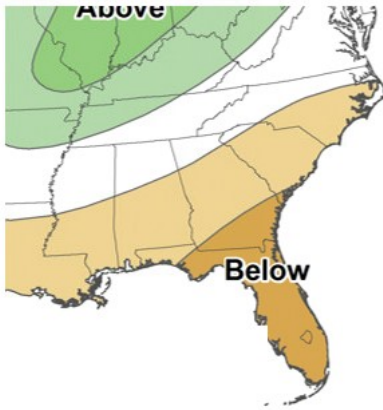


SUMMARY OF HYDROLOGIC CONDITIONS IN THE BIG CYPRESS BASIN

September & October 2021

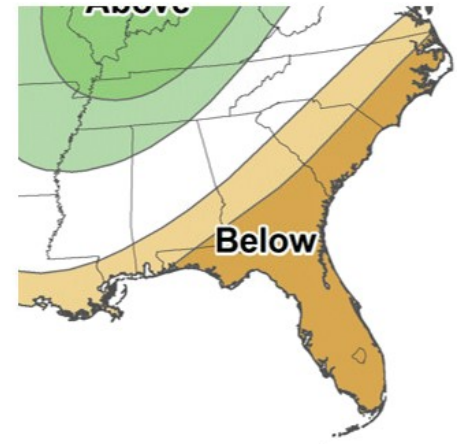
SUMMARY

September was another typical summer month with a pattern of daily thunderstorm activity. The tropics remained very active, but fortunately all activity was well away from south Florida. In terms of rainfall, it was again nearly average with about 107% of normal. The summertime pattern remained in place well into October until the Basin had its first significant cold front near the middle of the month. The frontal passage on October 17th marked the end of the wet season and beginning of the dry season. As October ended, the near average rainfall trend continued with the Basin receiving about 106% of normal rainfall.



Dec. 2021 – Feb. 2022

Looking ahead to the rest of the dry season, La Nina has developed again over the Pacific Ocean which typically means Florida will have a warmer and drier than average winter. NWS Climate Prediction Center long term outlooks indicate Florida will likely have below average rainfall until April 2022.



Jan. 2022 – Mar. 2022

BCB RAINFALL

September

As measured by twenty-three (23) reporting stations (ref. **Figures 1, 2, Table 1**), the basin-wide September monthly average was **9.5 inches (107% of normal)**, which is above the average 8.8 inches typically collected.

Based on collected gauge and radar data, the rainfall distribution across the Basin was highly variable. Some areas of Okaloacoochee and Fakahatchee basins received 15—17” of rainfall, while portions of the Coastal basin received only 3—5” of rain. **Figure 3a** shows the average rainfall for each of the Basin’s watersheds based on gauge adjusted radar. The Barron River basin received the highest rainfall with about **12.6 inch** areal average across the watershed and the lowest was the Gordon River basin with about **8.0 inches**. The Basin’s total areal weighted average rainfall was **9.8 inches**. The month’s highest gauge total was collected at the Fakahatchee Strand North End (Site R-16), which received **13.7 inches**. This month’s lowest rainfall was recorded at SGGE Weather Station (Site R-7), which received **6.02 inches**. The rainfall totals and their distribution across the BCB/Lower West Coast are shown on **Figure 3, 3a** and **4**.

October

As measured by twenty-three (23) reporting stations (ref. **Figures 1, 2, Table 1**), the basin-wide October monthly average was **4.06 inches (107% of normal)**, which above the average 3.8 inches typically collected.

Based on collected gauge and radar data, the rainfall distribution across the Basin was highly variable. Some localized areas of Okaloacoochee and Coastal basins received 8-9" of rainfall, while portions of Fakahatchee and Okaloacooche basins received only 1—2" of rain. **Figure 3a** shows the average rainfall for each of the Basin's watersheds based on gauge adjusted radar. The East Naples basin received the highest rainfall with about **5.6 inch** areal average across the watershed and the lowest was the Cocohatchee basin with about **2.7 inches**. The Basin's total areal weighted average rainfall was **3.8 inches**. The month's highest gauge total was collected at Bird Rookery (Site R-19), which received **5.6 inches**. This month's lowest rainfall was recorded at Fakahatchee Strand North End (Site R-16), which received **2.25 inches**. The rainfall totals and their distribution across the BCB/Lower West Coast are shown on **Figure 3, 3a** and **4**.

BCB CANAL SYSTEMS

All of the BCB canals were maintained in flood control mode as water levels were held, to the extent possible, near the top of the normal wet season operational ranges until the system was transitioned to water conservation operations. Canal operations were transitioned before the normal end of wet season given the high confidence long term forecast for a drier than normal winter and spring. The transition occurred around the 20th of September which allowed the system to continue to fully fill before daily rainfall ended. Structures continued to discharge after the system filled throughout October but with much diminished discharges from the normal wet season rates (**Figure 4a**).

- **GOLDEN GATE SYSTEM**

Control structures in the Golden Gate Main canal system were operated in flood control mode until late September when it was transitioned to water conservation operations. Water levels were maintained near the top of the normal operational ranges in their respective operational regimes (flood control and water conservation). Canal water levels in most areas of the Golden Gate system were able to be held between the 75th and 90th percentile. Several places within the system are being held above the 90th percentile near the maximum for the period of record such as the Corkscrew Canal and middle Golden Gate Main (GG3 to GG4/Cypress) in an effort to conserve all surface water possible given the dry outlook. (ref **Figure 5A & 5B**).

- **COCOCHATCHEE SYSTEM**

Similarly to Golden Gate, the Cocohatchee system was operated in flood control range until mid/late September until the system was transitioned to conservation operations. All areas are well above the 75th percentile with COCO3 well above the 90th percentile. (ref **Figure 6A, 6B, 6C, & 6D**).

- **FAKA UNION SYSTEM**

Faka Union followed a similar operational pattern as the previous basins. All areas of Faka Union including the newly restored sections of the Picayune Restoration Project are all over the 90th percentile for late October. The recent plugging of 3.3 miles of Faka Union Canal south of S487 has resulted in restored sheet flow in the region while also allowing more surface water to be retained in the system upstream of I75. Given the high cyclical nature of the canal section north of FU4S, water levels are being held as high as possible within the water conservation operational range to promote groundwater recharge. (ref **Figure 7A & 7B**).

- **HENDERSON CREEK SYSTEM**

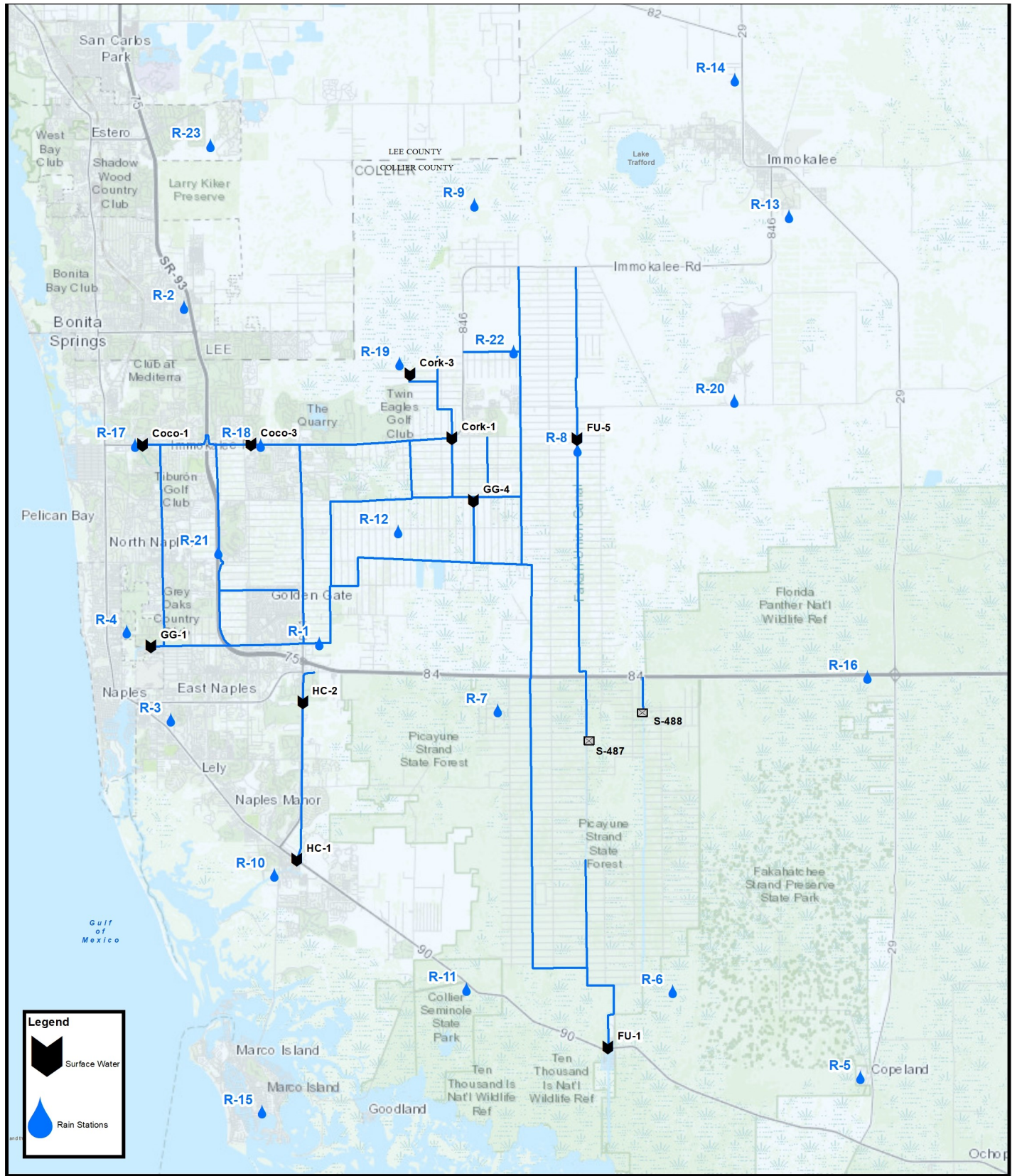
HC2 has remained fully closed during September and October. Automatic operations at HC1 have been altered in an effort to reduce the amount of freshwater discharged from the system to Rookery Bay. HC1 will now automatically close when canal levels reach 5.0 NGVD vs the previous close trigger of 4.0 NGVD. This change can be reversed during wetter than normal times to maintain flood control (ref **Figure 8A & 8B**).

- **CORKSCREW SWAMP**

Figure 10 shows the historical trends for Corkscrew, Bird Rookery, and the Cork 3 structure and the 2021 corresponding levels. All three sites started a slow recession mid-September which was another indicator that warranted a shift to water conservation operations. CORK3 and CORK2 have both been slowly closed to maintain water levels as high as possible in the upstream natural areas. Water levels at Lake Trafford are shown in **Figure 10A**, which show lake levels reaching their 2021 peak around mid-September near 21.0 NGVD or around the 85th percentile line.

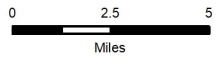
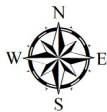
BIG CYPRESS BASIN & LOWER WEST COAST GROUNDWATER LEVELS

The current reporting (10/31/2021) for the Lower West Coast [LWC] indicate mixed trends for September and decreasing trends for October. Even though several wells were below the 25th percentile and in yellow and red indicator levels in May, all reporting wells are at or above median levels for late October. All wells remain in normal condition indicator range (green color) (ref. **Table 2**). All reported wells in **Table 2—October** show an average decrease of 1.5 feet. C-462 recorded the highest decrease of 2.6 feet, and C-1004R the smallest decrease of 0.4 (ref. **Table 2, Figure 9**).



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BIG CYPRESS BASIN
 SFWMD
 2660 Horseshoe Dr. N.
 Naples, Florida 34104
 239-263-7615

FIGURE 1

Hydrologic Station Map

Collier County, Florida



TABLE 1
RAINFALL REPORT - SEPTEMBER 2021
DISTRICT/BASIN RAINFALL STATIONS

(ALL NUMBERS ARE IN INCHES)

STATION INDEX NO.	STATION NAME	SEPTEMBER 2021	LONG TERM AVERAGE FOR THIS MONTH	MONTHLY DIFFERENCE	CALENDAR YEAR 2021 CUMULATIVE TOTAL	AVERAGE CALENDAR YEAR TO DATE	YEAR TO DATE DIFFERENCE
R-1	GOLDEN GATE #3	9.76	9.98	-0.22	50.48	58.04	-7.56
R-2	BONITA SPRINGS WATER PLANT	10.10	8.03	2.07	42.39	45.35	-2.96
R-3	COLLIER COUNTY COURTHOUSE	9.93	8.64	1.29	50.64	46.18	4.46
R-4	FREEDOM PARK	8.13	9.85	-1.72	48.25	52.48	-4.23
R-5	FAKAHATCHEE STRAND HQ	11.02	8.99	2.03	39.85	53.12	-13.27
R-6	DAN HOUSE PRAIRIE	7.30	8.52	-1.22	43.30	45.53	-2.23
R-7	SGGE WEATHER STATION	6.02	10.99	-4.97	46.08	54.52	-8.44
R-8	FAKA UNION #5	7.51	8.75	-1.24	53.25	55.59	-2.34
R-9	CORKSCREW SWAMP NORTH END	9.87	7.38	2.49	45.44	45.10	0.34
R-10	ROOKERY BAY HQ	13.20	9.72	3.48	52.21	48.83	3.38
R-11	COLLIER SEMINOLE STATE PARK	10.17	9.49	0.68	51.28	49.82	1.46
R-12	G.G. FIRE STATION	N/A	10.20		Inc/Rec	43.04	3.38
R-13	IMMOKALEE LANDFILL	11.33	7.73	3.60	46.42	45.43	-9.60
R-14	IFAS	8.99	6.90	2.09	35.83	43.94	-1.72
R-15	MARCO R.O. PLANT	8.20	8.59	-0.39	42.22	46.19	-0.34
R-16	FAKAHATCHEE STRAND NORTH END	13.70	8.44	5.26	45.85	53.03	-12.80
R-17	COCO#1	6.50	7.88	-1.38	40.23	42.69	1.31
R-18	COCO#3	7.87	9.17	-1.30	44.00	50.33	-4.70
R-19	BIRD ROOKERY	10.83		New Site	45.63	No Historical Data	
R-20	AVE MARIA	9.13	8.08	1.05	40.33	47.53	-0.83
R-21	I75W2	7.83		New Site	46.70	No Historical Data	
R-22	GG#7	11.62		New Site	49.98	No Historical Data	
R-23	FLINT PEN STRAND	7.58			Inc/Rec		
AVERAGES		9.48	8.81	0.67	45.73	48.78	-3.04

TABLE 1
RAINFALL REPORT - OCTOBER 2021
DISTRICT/BASIN RAINFALL STATIONS

(ALL NUMBERS ARE IN INCHES)

STATION INDEX NO.	STATION NAME	OCTOBER 2021	LONG TERM AVERAGE FOR THIS MONTH	MONTHLY DIFFERENCE	CALENDAR YEAR 2021 CUMULATIVE TOTAL	AVERAGE CALENDAR YEAR TO DATE	YEAR TO DATE DIFFERENCE
R-1	GOLDEN GATE #3	3.83	3.39	0.44	54.31	61.43	-7.12
R-2	BONITA SPRINGS WATER PLANT	2.64	3.51	-0.87	45.03	48.87	-3.84
R-3	COLLIER COUNTY COURTHOUSE	5.26	3.51	1.75	55.90	49.69	6.21
R-4	FREEDOM PARK	5.36	3.83	1.53	53.61	56.31	-2.70
R-5	FAKAHATCHEE STRAND HQ	4.46	3.33	1.13	44.31	56.45	-12.14
R-6	DAN HOUSE PRAIRIE	3.66	3.40	0.26	46.96	48.94	-1.98
R-7	SGGE WEATHER STATION	5.52	3.30	2.22	51.60	57.82	-6.22
R-8	FAKA UNION #5	3.82	3.79	0.03	57.07	59.39	-2.32
R-9	CORKSCREW SWAMP NORTH END	3.30	3.19	0.11	48.74	48.29	0.45
R-10	ROOKERY BAY HQ	3.67	3.66	0.01	55.88	52.49	3.39
R-11	COLLIER SEMINOLE STATE PARK	4.32	3.63	0.69	55.60	53.45	2.15
R-12	G.G. FIRE STATION	5.25	9.08	-3.83	47.82	52.11	-4.29
R-13	IMMOKALEE LANDFILL	2.62	3.51	-0.89	49.04	48.91	0.13
R-14	IFAS	2.37	2.98	-0.61	38.20	46.92	-8.72
R-15	MARCO R.O. PLANT	4.94	3.73	1.21	47.16	49.92	-2.76
R-16	FAKAHATCHEE STRAND NORTH END	2.25	3.57	-1.32	48.10	56.60	-8.50
R-17	COCO#1	2.71	3.81	-1.10	42.94	46.50	-3.56
R-18	COCO#3	4.18	3.70	0.48	48.18	54.03	-5.85
R-19	BIRD ROOKERY	5.58		New Site	51.21	No Historical Data	
R-20	AVE MARIA	3.17	3.27	-0.10	43.50	50.80	-7.30
R-21	I75W2	5.02		New Site	51.72	No Historical Data	
R-22	GG#7	5.34		New Site	55.32	No Historical Data	
R-23	FLINT PEN STRAND	2.85			INC/REC		
AVERAGES		4.06	3.80	0.26	49.65	52.08	-2.44

BCB ANNUAL RAINFALL
MONTHLY AVERAGE & HISTORICAL AVERAGE TRENDS
(FROM BCB RAINFALL GAUGE DATA)

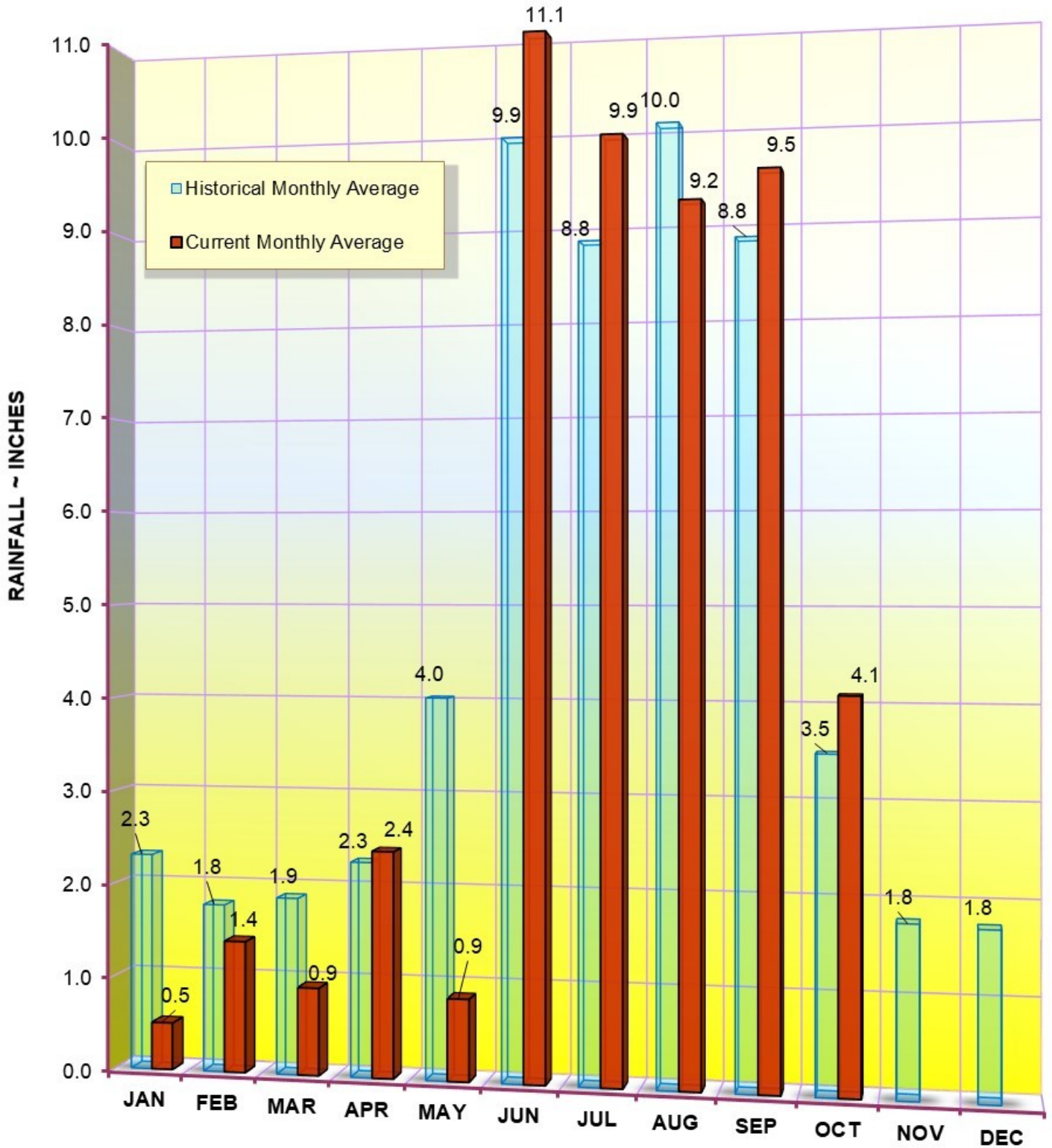
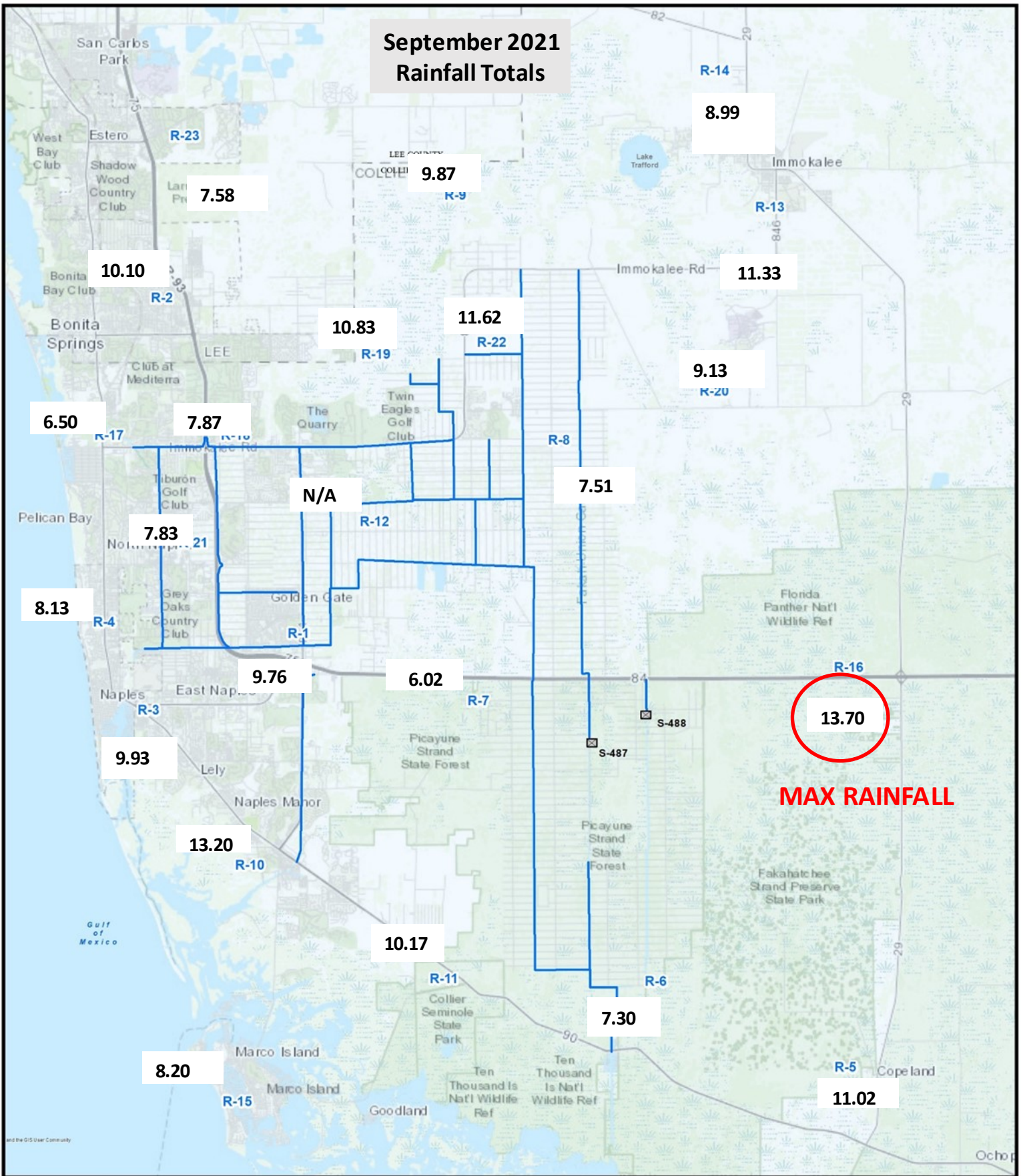


FIGURE 2
BCB GAUGE RAINFALL
MONTHLY AVERAGES THROUGH OCTOBER 2021

**September 2021
Rainfall Totals**



**FIGURE 3
BCB RAINFALL DISTRIBUTION
SEPTEMBER 2021**

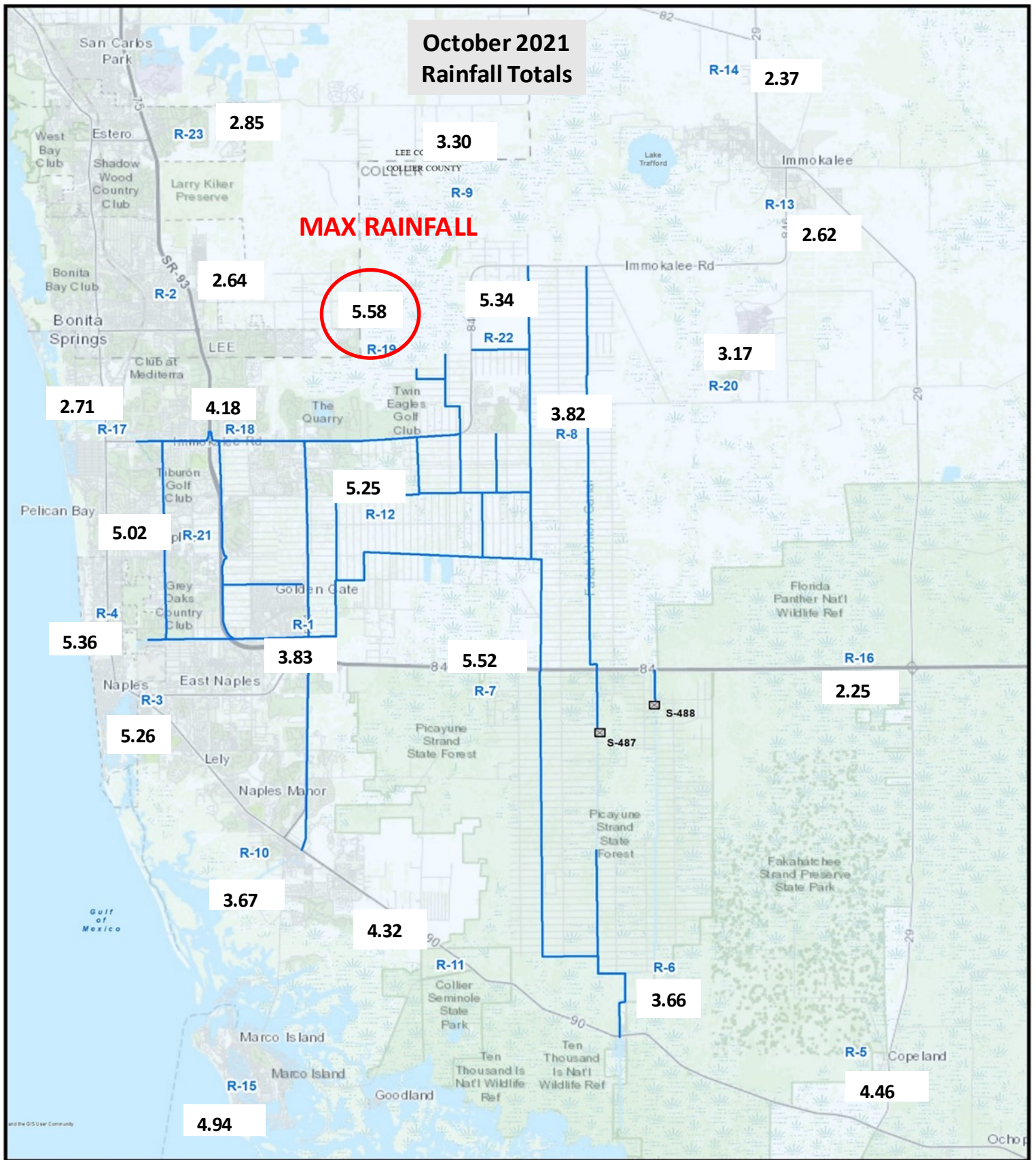


FIGURE 3
BCB RAINFALL DISTRIBUTION
OCTOBER 2021

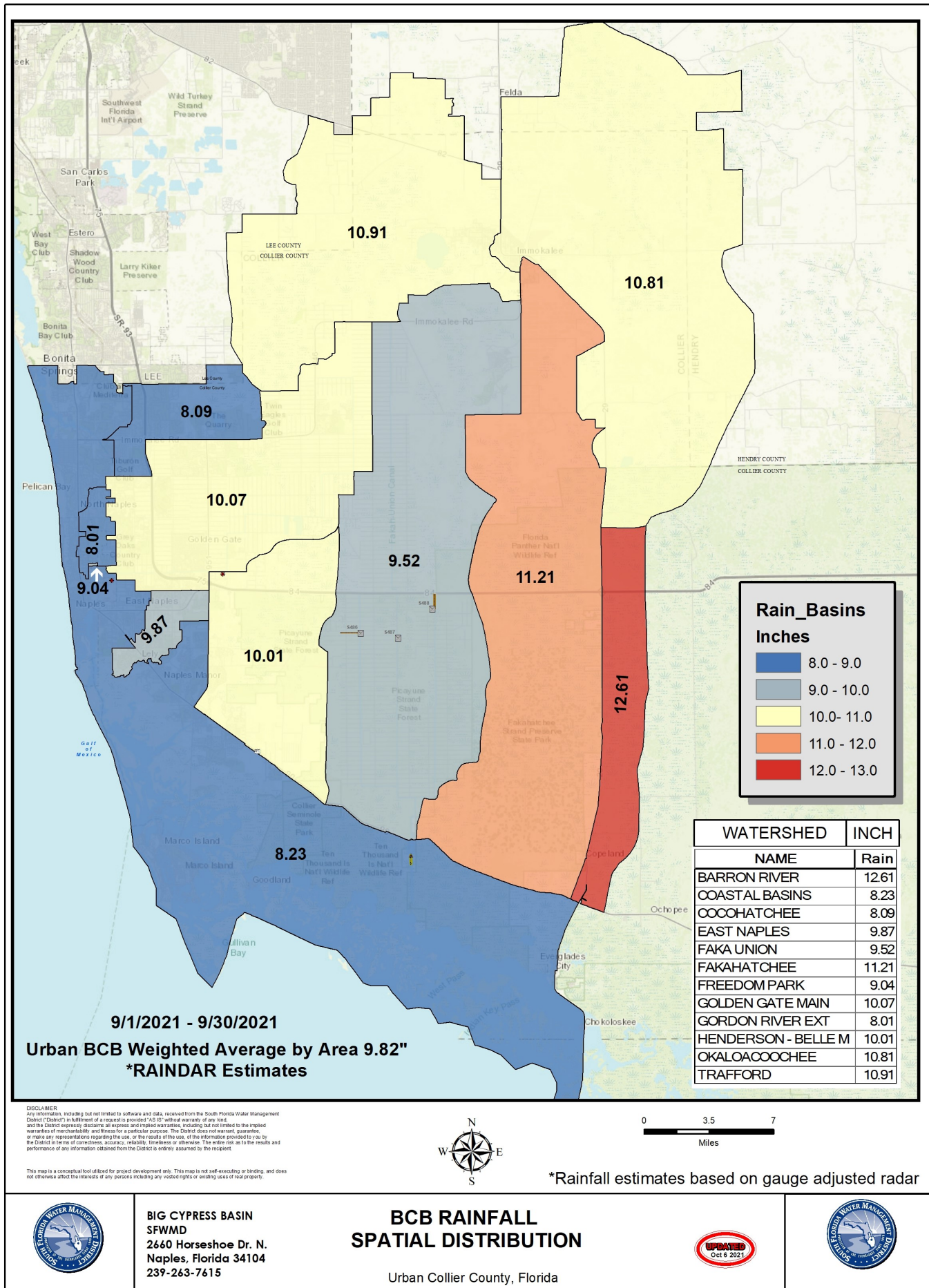


FIGURE 3a

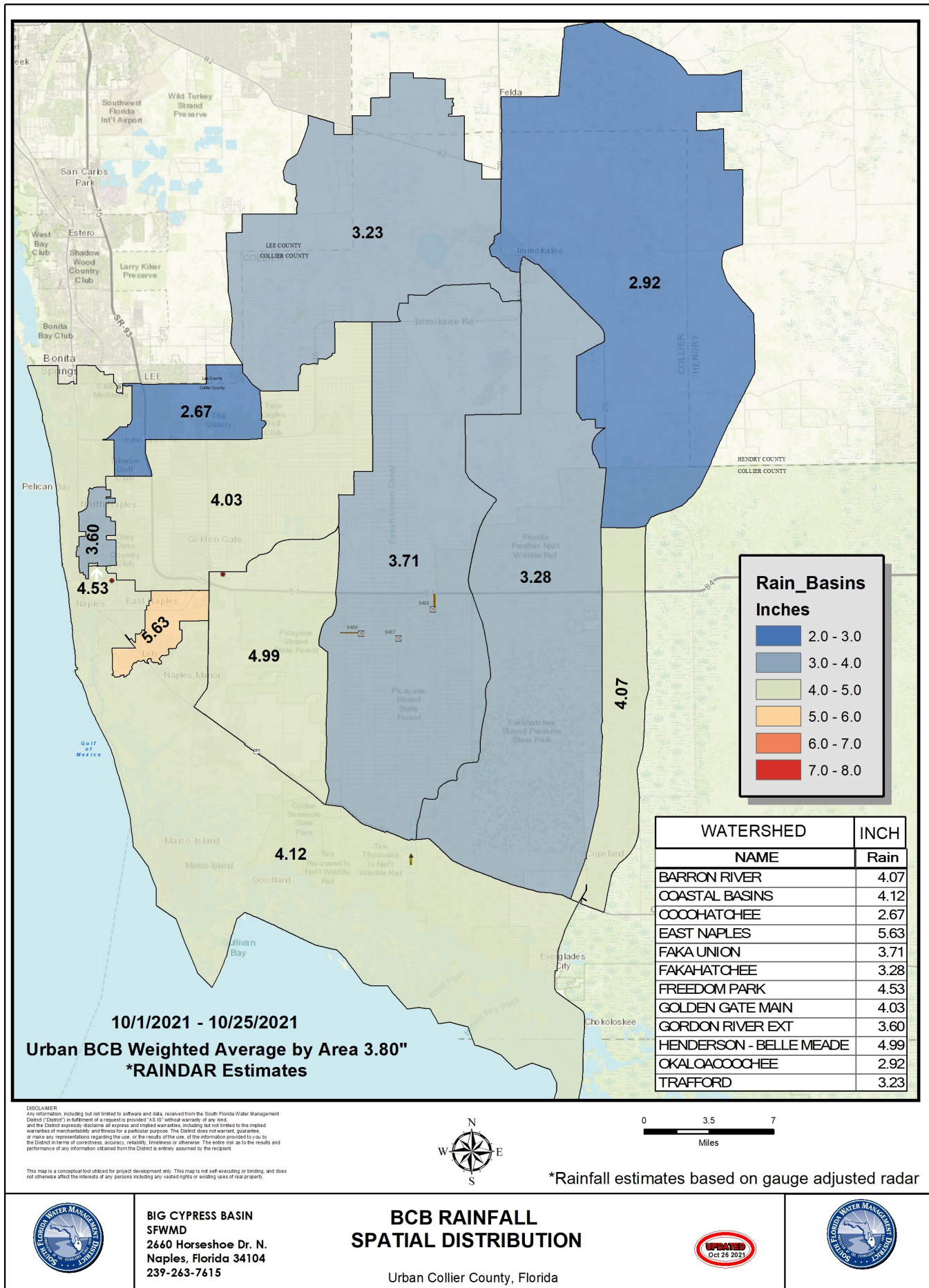


FIGURE 3a

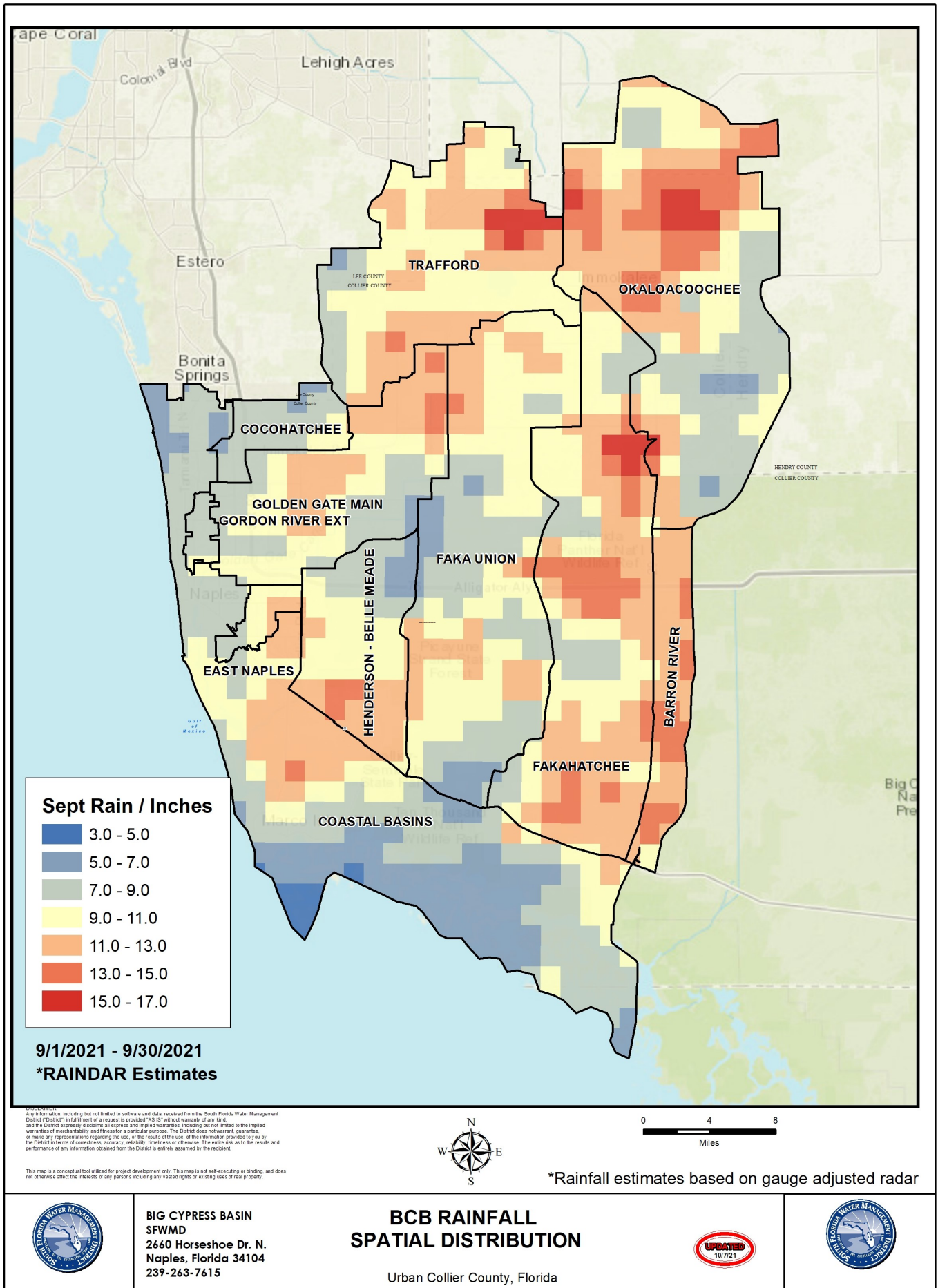


FIGURE 4

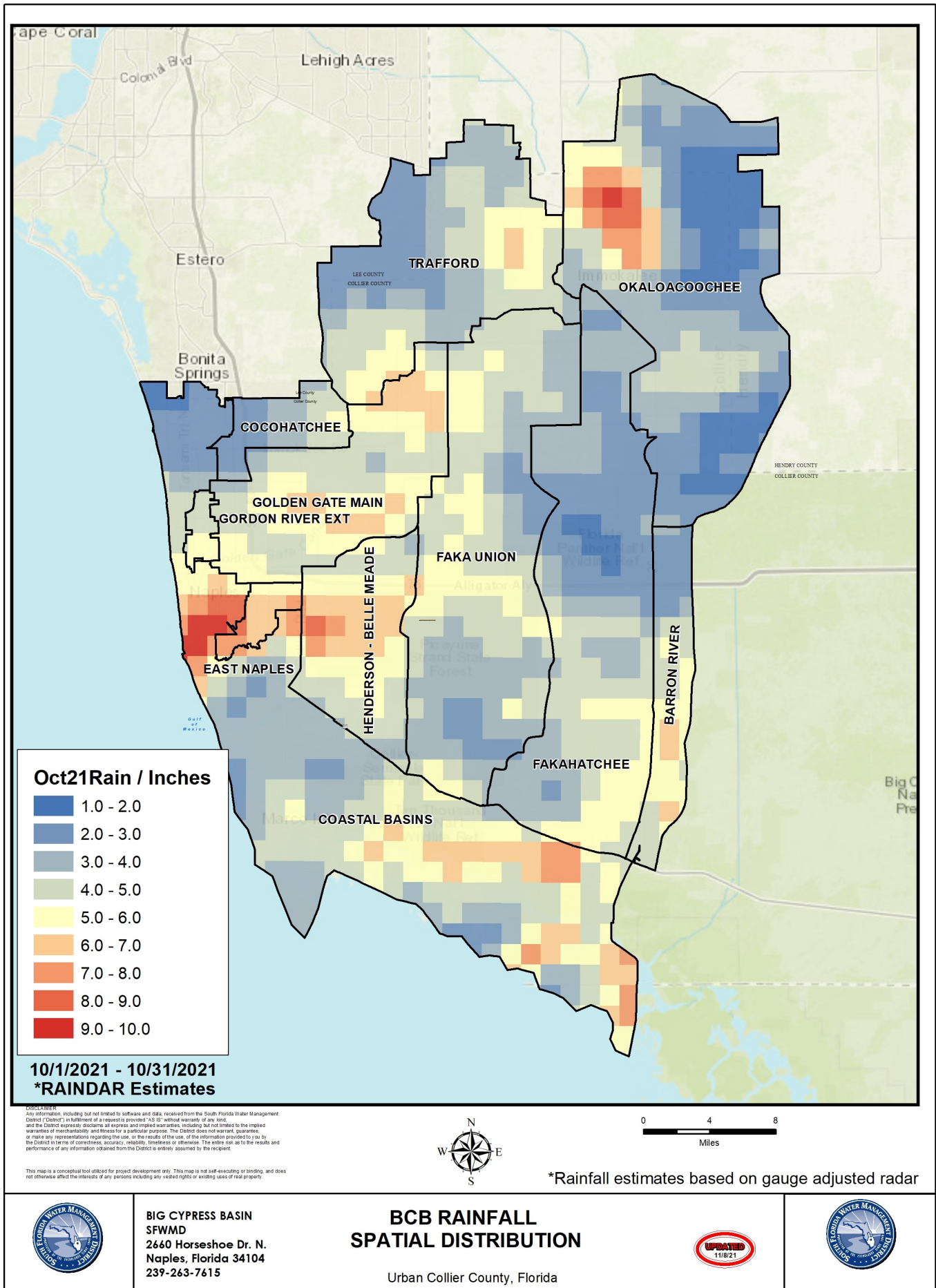
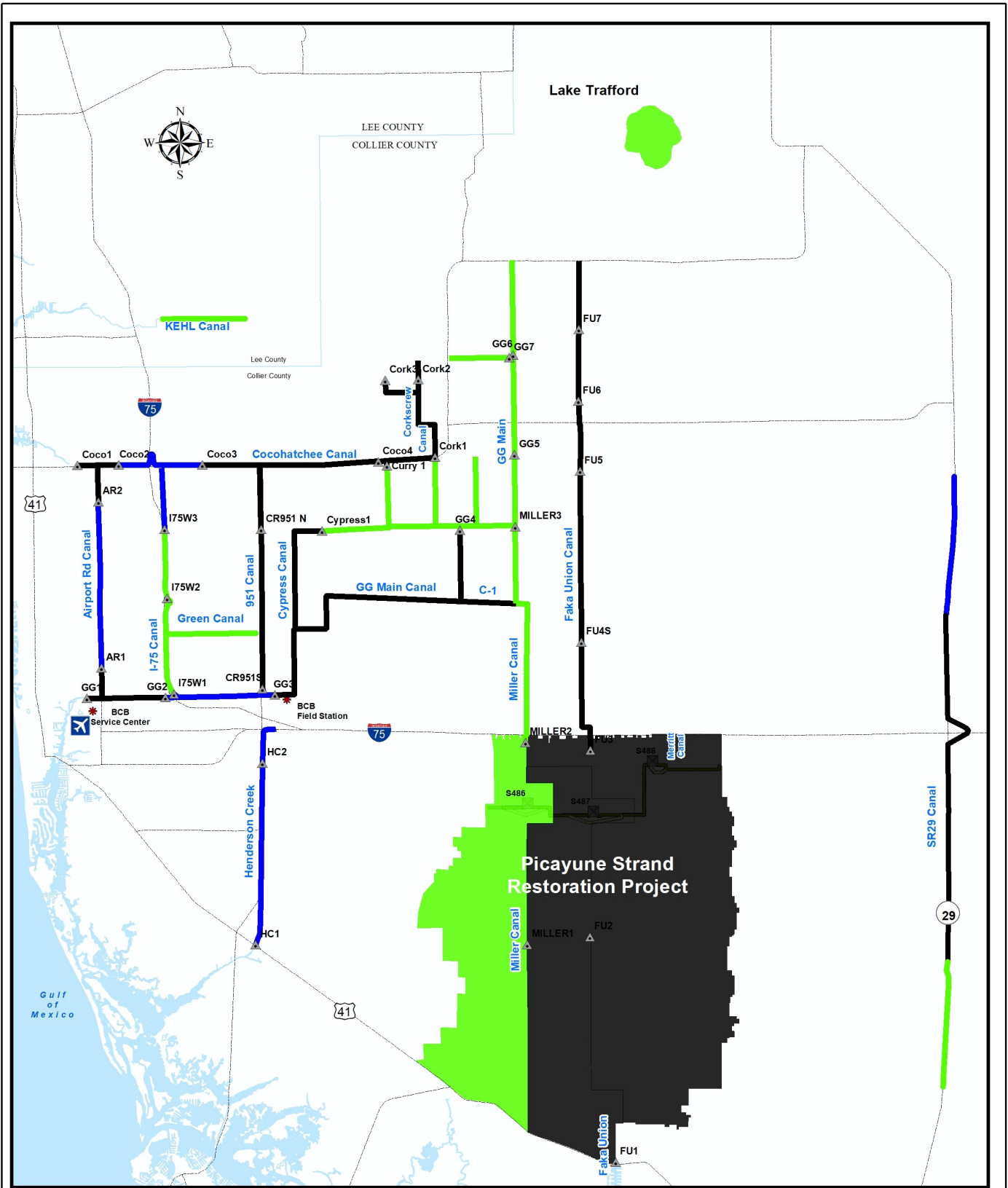
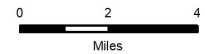


FIGURE 4



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* Based on period of record for each canal reach



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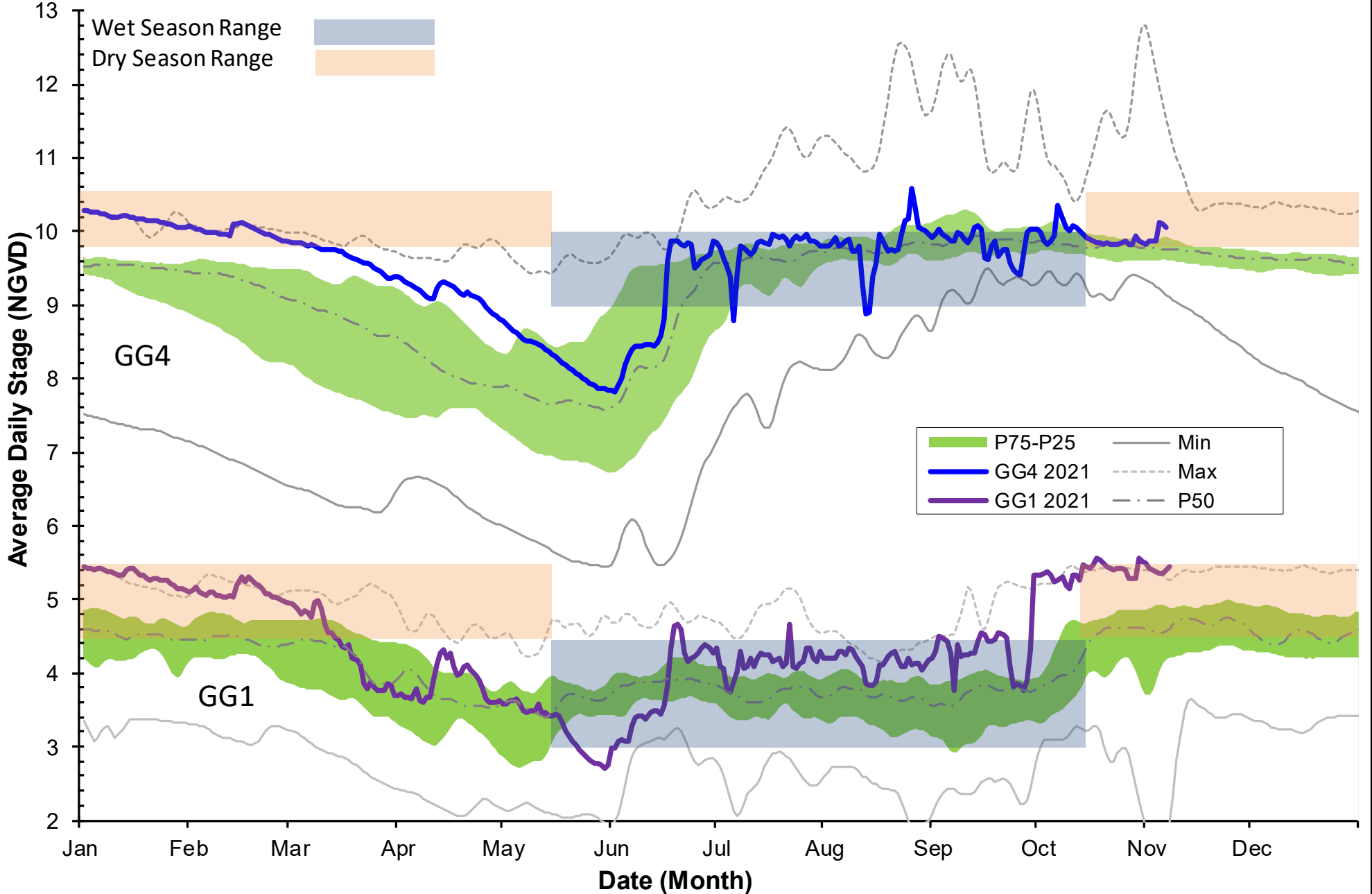
BCB Conditions Index
 Urban Collier County, Florida



SFWMD_Nap_Nr_2019

FIGURE 4A

Golden Gate Canal Historic Average Daily Headwater Percentiles



Cocohatchee Canal Historic Average Daily Headwater Percentiles

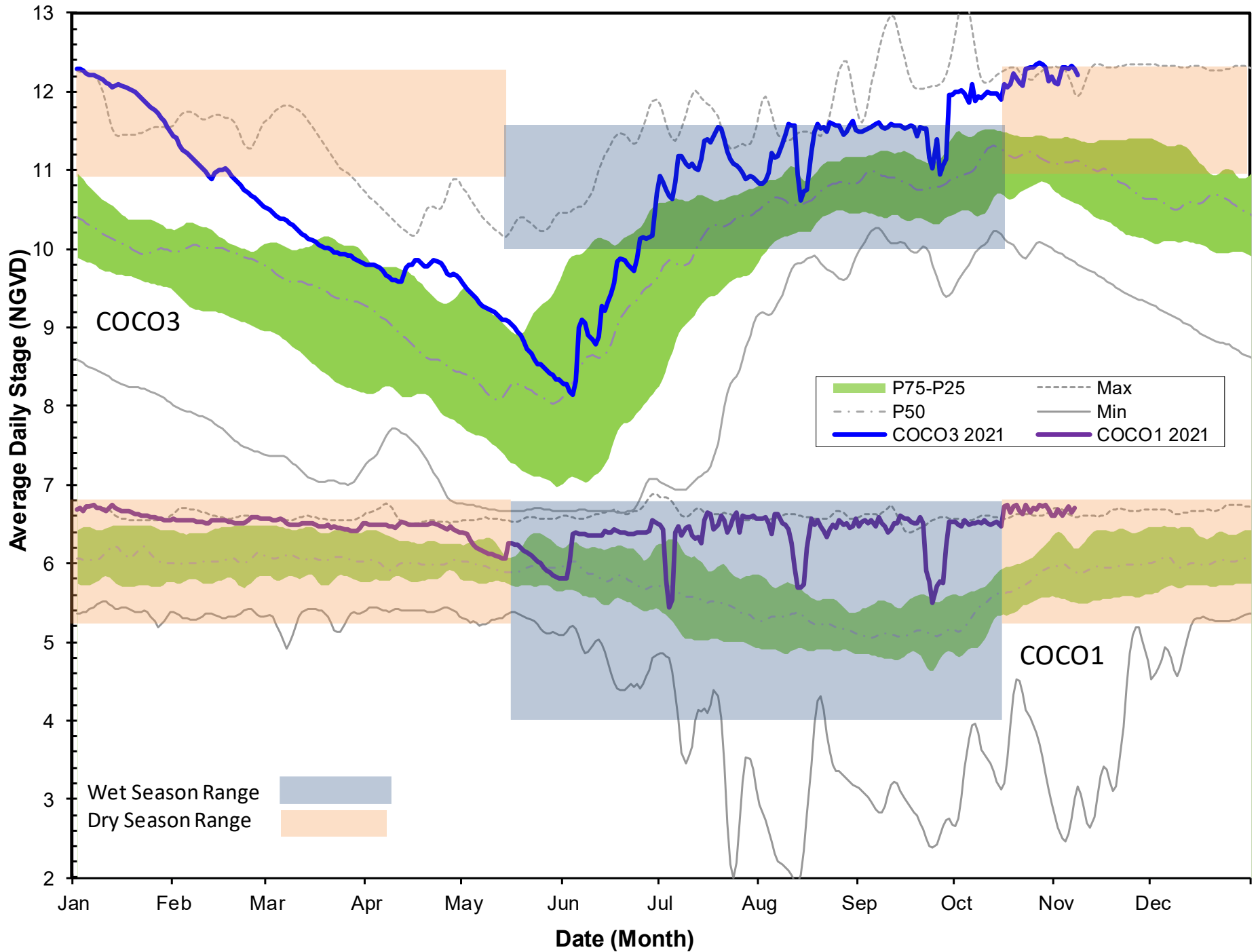


Figure 6C - CORK1 Historic Average Daily Headwater Percentiles (1989-2020)

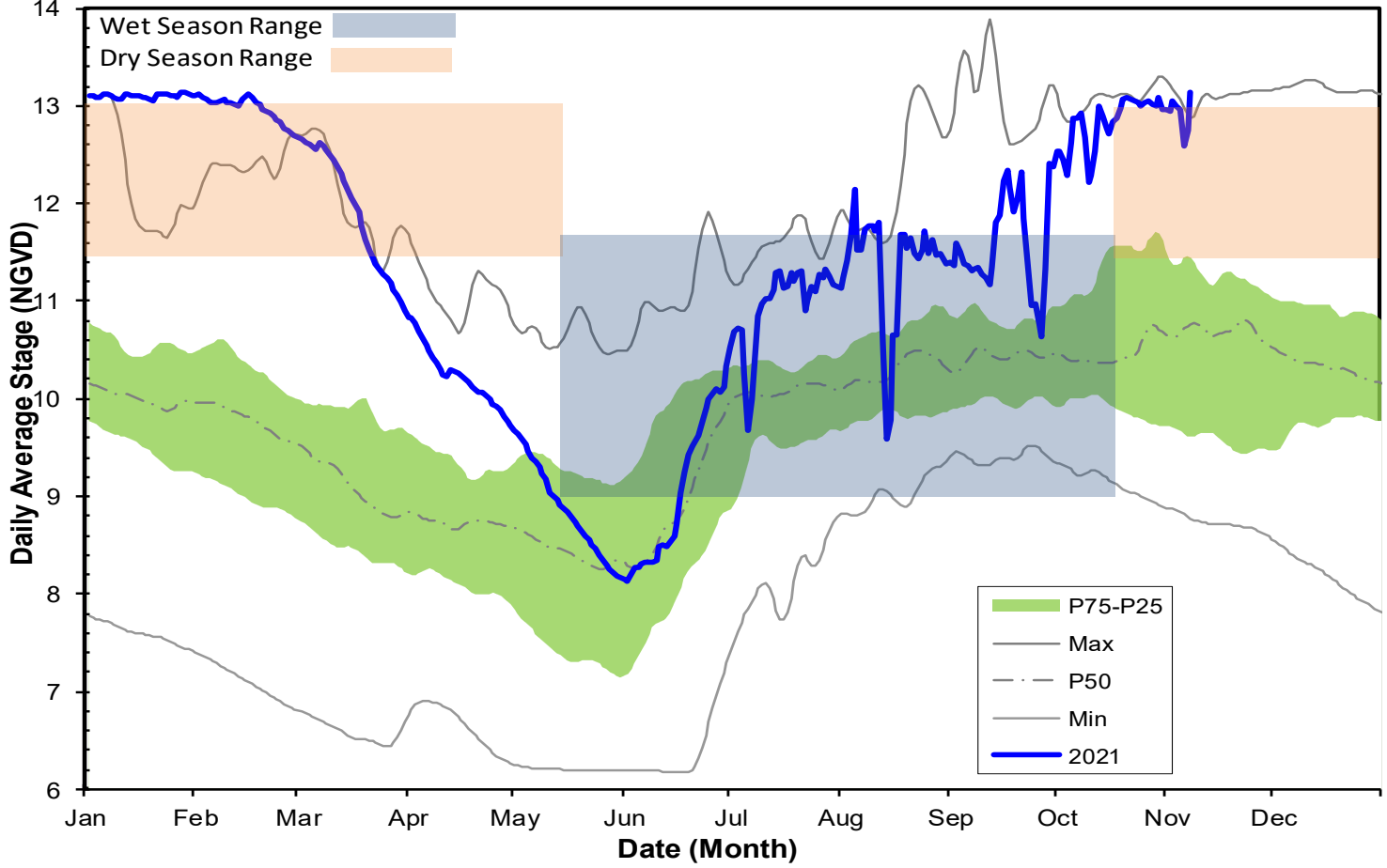
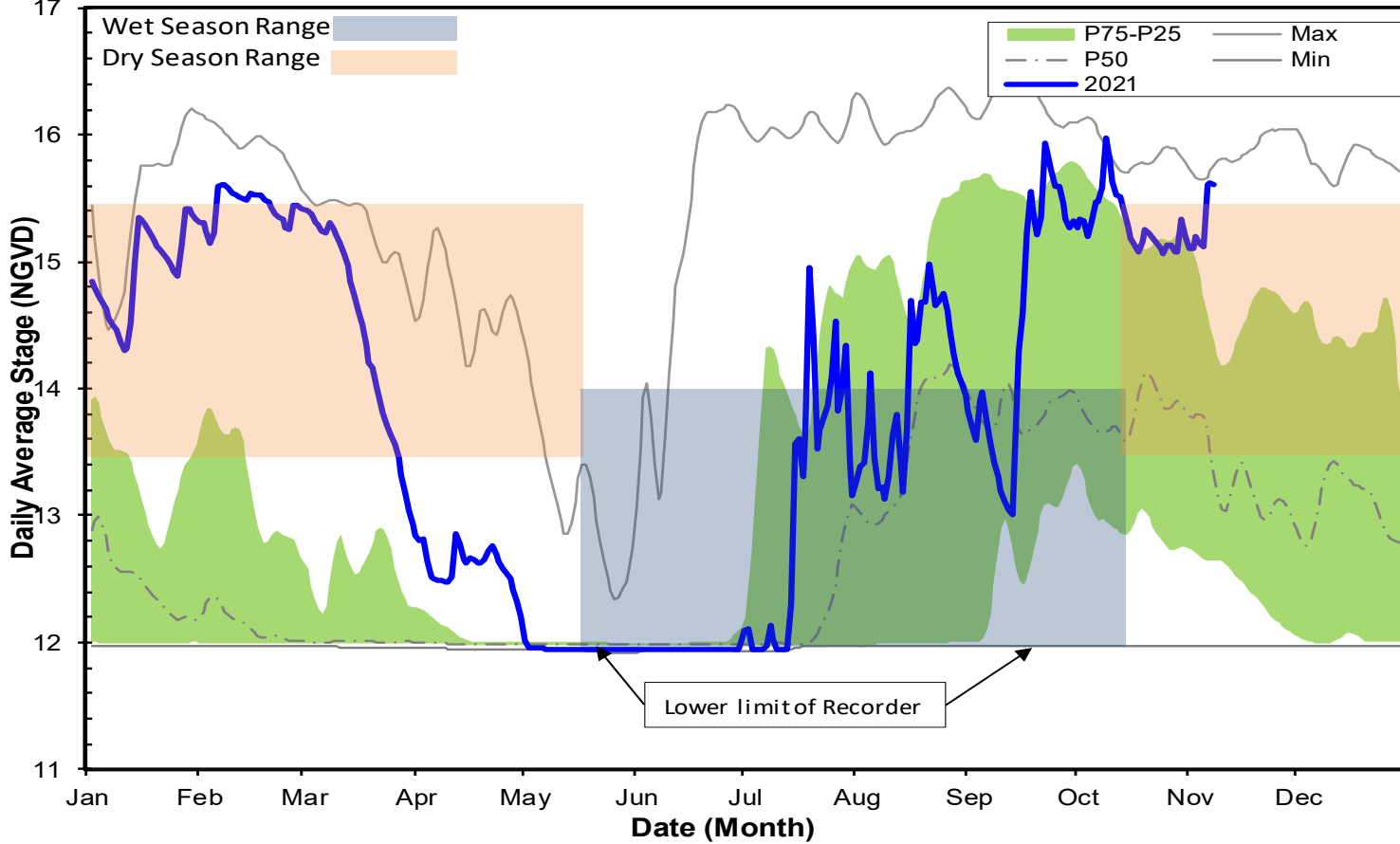
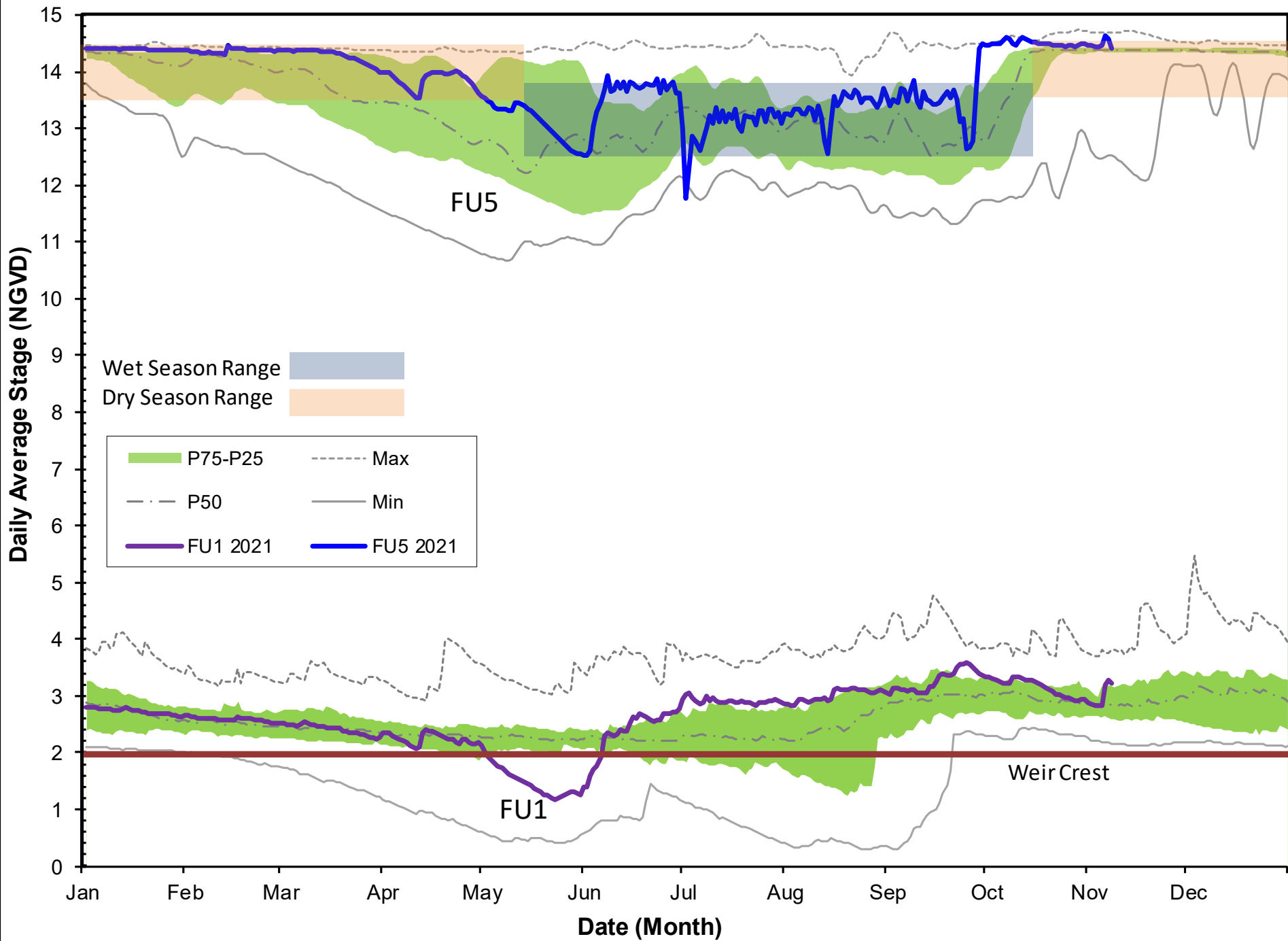


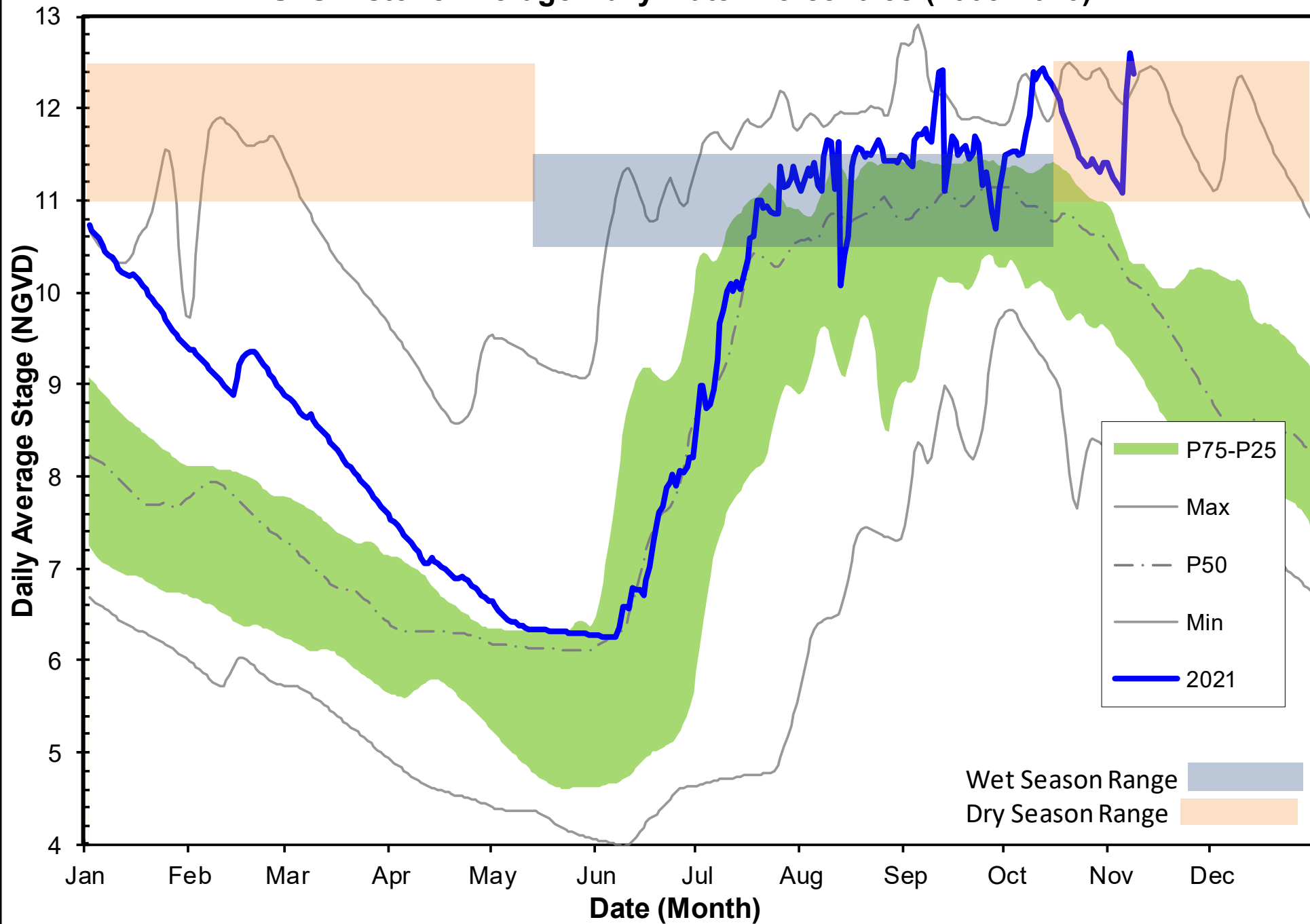
Figure 6D - CORK3 Average Daily Headwater Percentiles (2004-2020)



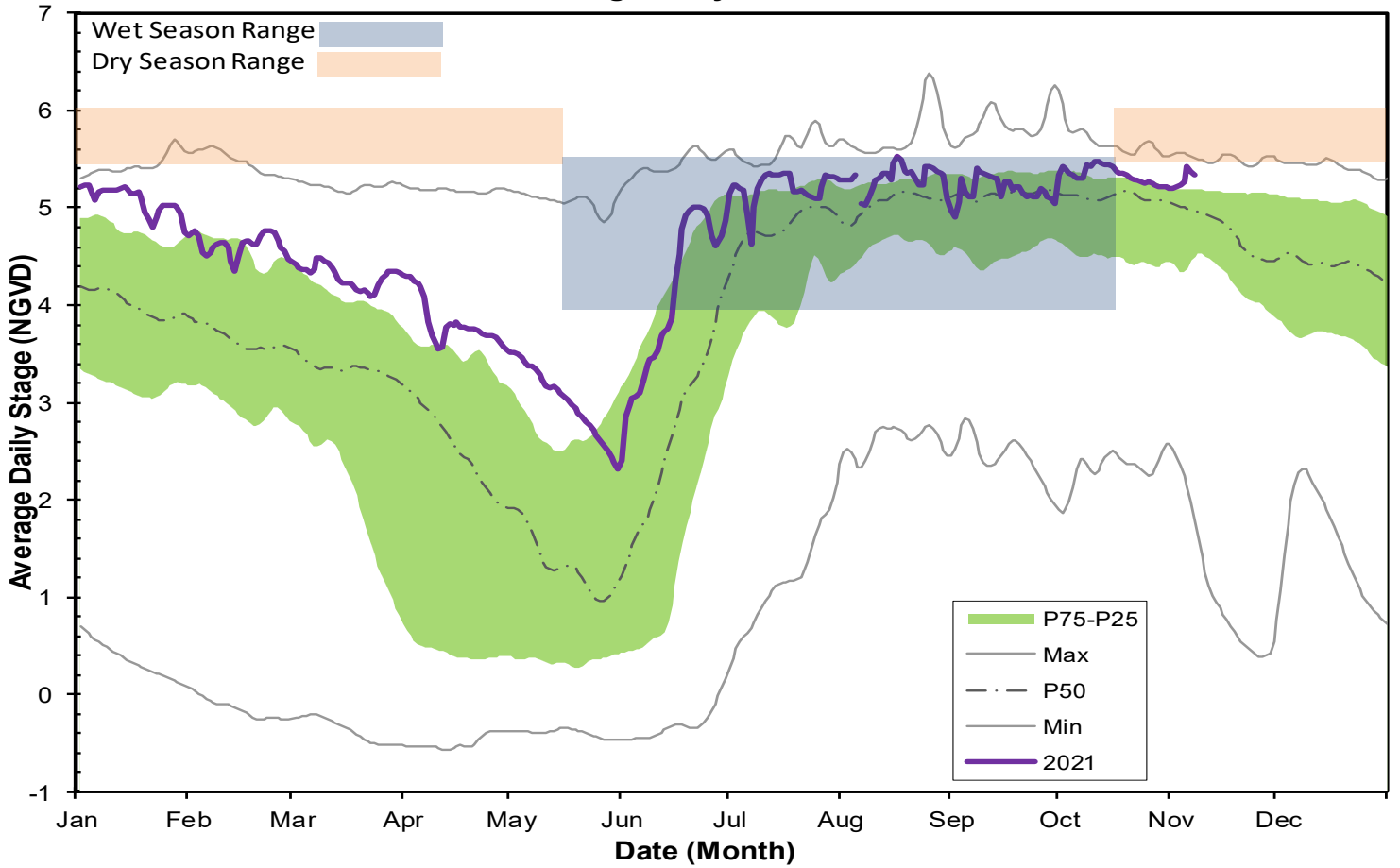
Faka Union Canal Historic Average Daily Headwater Percentiles



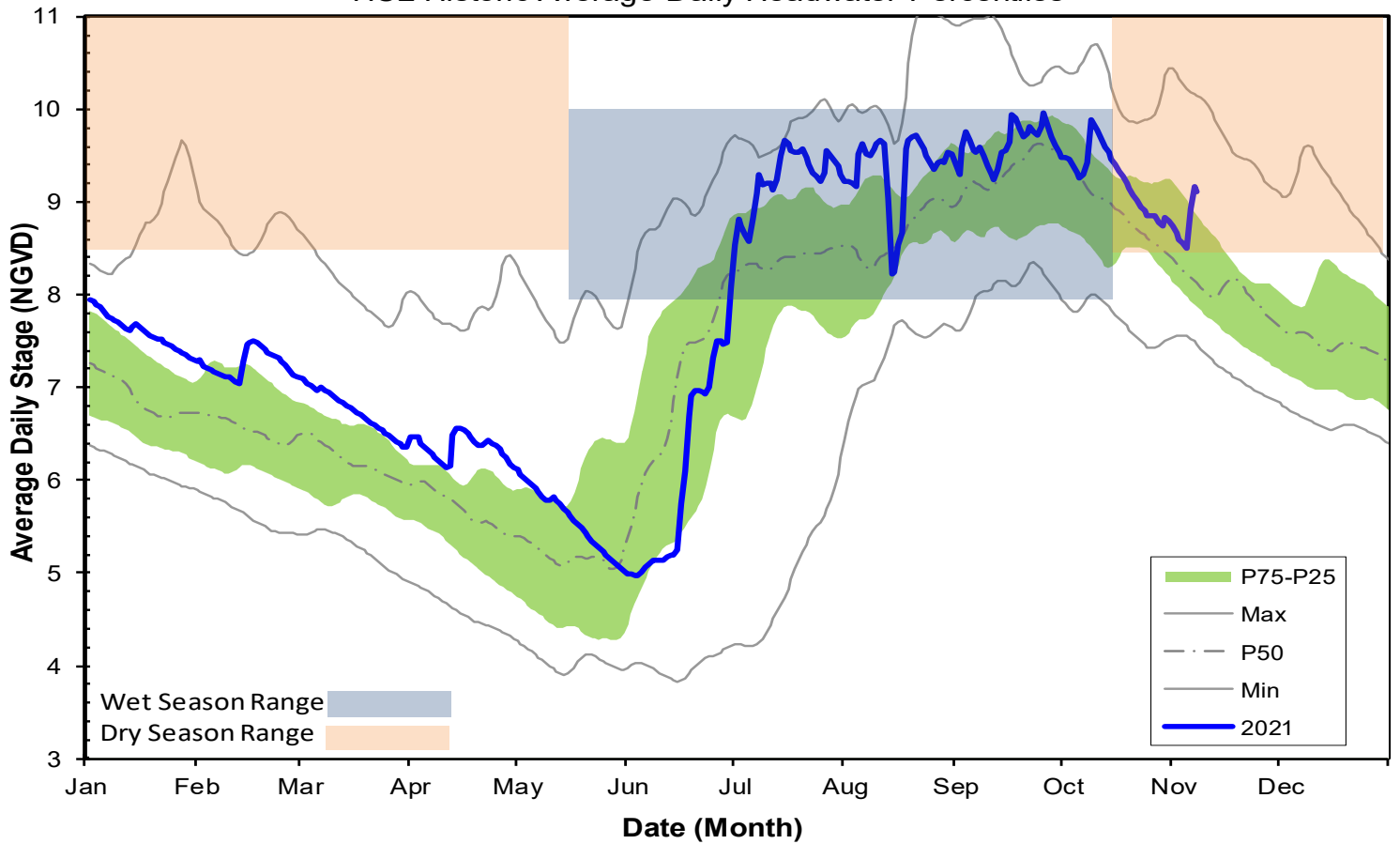
FU4S Historic Average Daily Water Percentiles (2005-2020)



HC1 Historic Average Daily Headwater Percentiles



HC2 Historic Average Daily Headwater Percentiles



WATER CONDITIONS SUMMARY - September 2021

SELECTED STATIONS for BCB AREA / SW FLORIDA

Last Reading Date :		September 30, 2021					
Previous Period Reading Date:		August 31, 2021					
STATION INDEX NO.	WELL LOCATION	WELL / AQUIFER - TYPE	CHANGE (from previous date)	PREVIOUS LEVEL	CURRENT LEVEL (ft)	DIRECTION OF CHANGE	CONCERN INDICATOR
ALL INDICATOR LEVELS SHOWN IN FT-NGVD							
C-462	Immokalee	Lower Tamiami Aquifer	0.88	33.36	34.24	↑	GREEN
C-1004R	Naples	Lower Tamiami Aquifer	-0.54	5.52	4.98	↓	GREEN
C-1224	Marco Lakes	Lower Tamiami Aquifer	0.23	4.57	4.80	↑	GREEN
C-948R	Golden Gate	Mid Hawthorn Aquifer	0.12	36.22	36.34	↑	
C-951R	Golden Gate	Lower Tamiami Aquifer	0.43	6.40	6.83	↑	
L-2194	Bonita Springs	Sandstone Aquifer	0.56	8.26	8.82	↑	GREEN
L-2195	Bonita Springs	Surficial Aquifer System	0.43	12.43	12.86	↑	GREEN
L-738	Bonita Springs	Lower Tamiami Aquifer	-0.45	4.22	3.77	↓	GREEN

**TABLE 2
BCB WATER CONDITIONS SUMMARY
SEPTEMBER 2021**

WATER CONDITIONS SUMMARY - October 2021

SELECTED STATIONS for BCB AREA / SW FLORIDA

Last Reading Date :		November 1, 2021					
Previous Period Reading Date:		September 30, 2021					
STATION INDEX NO.	WELL LOCATION	WELL / AQUIFER - TYPE	CHANGE (from previous date)	PREVIOUS LEVEL	CURRENT LEVEL (ft)	DIRECTION OF CHANGE	CONCERN INDICATOR
ALL INDICATOR LEVELS SHOWN IN FT-NGVD							
C-462	Immokalee	Lower Tamiami Aquifer	-2.63	34.24	31.61	↓	GREEN
C-1004R	Naples	Lower Tamiami Aquifer	-0.43	4.98	4.55	↓	GREEN
C-1224	Marco Lakes	Lower Tamiami Aquifer	-0.71	4.80	4.09	↓	GREEN
C-948R	Golden Gate	Mid Hawthorn Aquifer	-1.72	36.34	34.62	↓	
C-951R	Golden Gate	Lower Tamiami Aquifer	-1.27	6.83	5.56	↓	
L-2194	Bonita Springs	Sandstone Aquifer	-2.21	8.82	6.61	↓	GREEN
L-2195	Bonita Springs	Surficial Aquifer System	-1.09	12.86	11.77	↓	GREEN
L-738	Bonita Springs	Lower Tamiami Aquifer	-1.67	3.77	2.10	↓	GREEN

**TABLE 2
BCB WATER CONDITIONS SUMMARY
OCTOBER 2021**

BIG CYPRESS BASIN

SEPTEMBER & OCTOBER 2021

GROUNDWATER LEVEL DAILY TRENDS COMPARED TO HISTORICAL AVERAGE

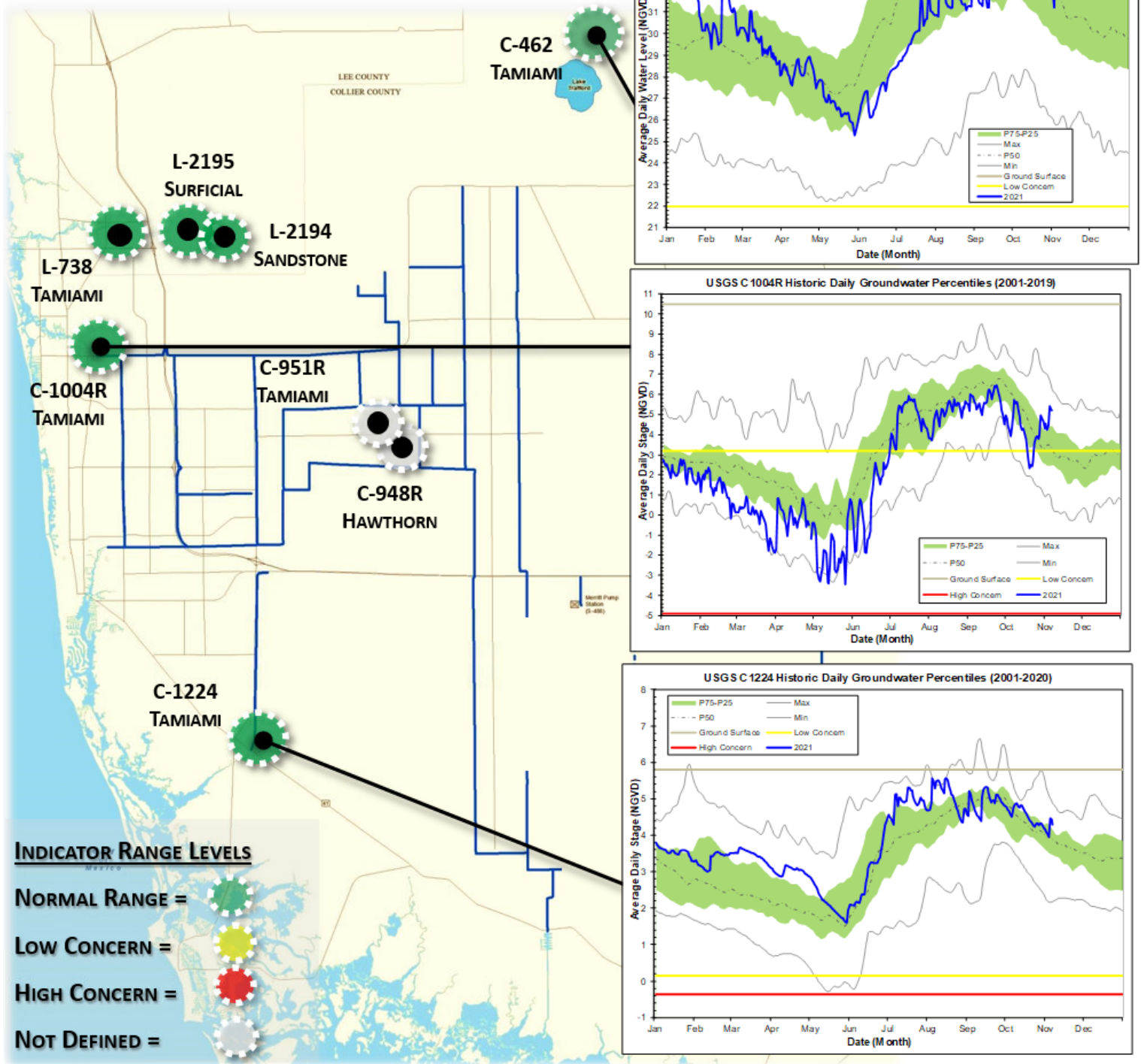


FIGURE 9

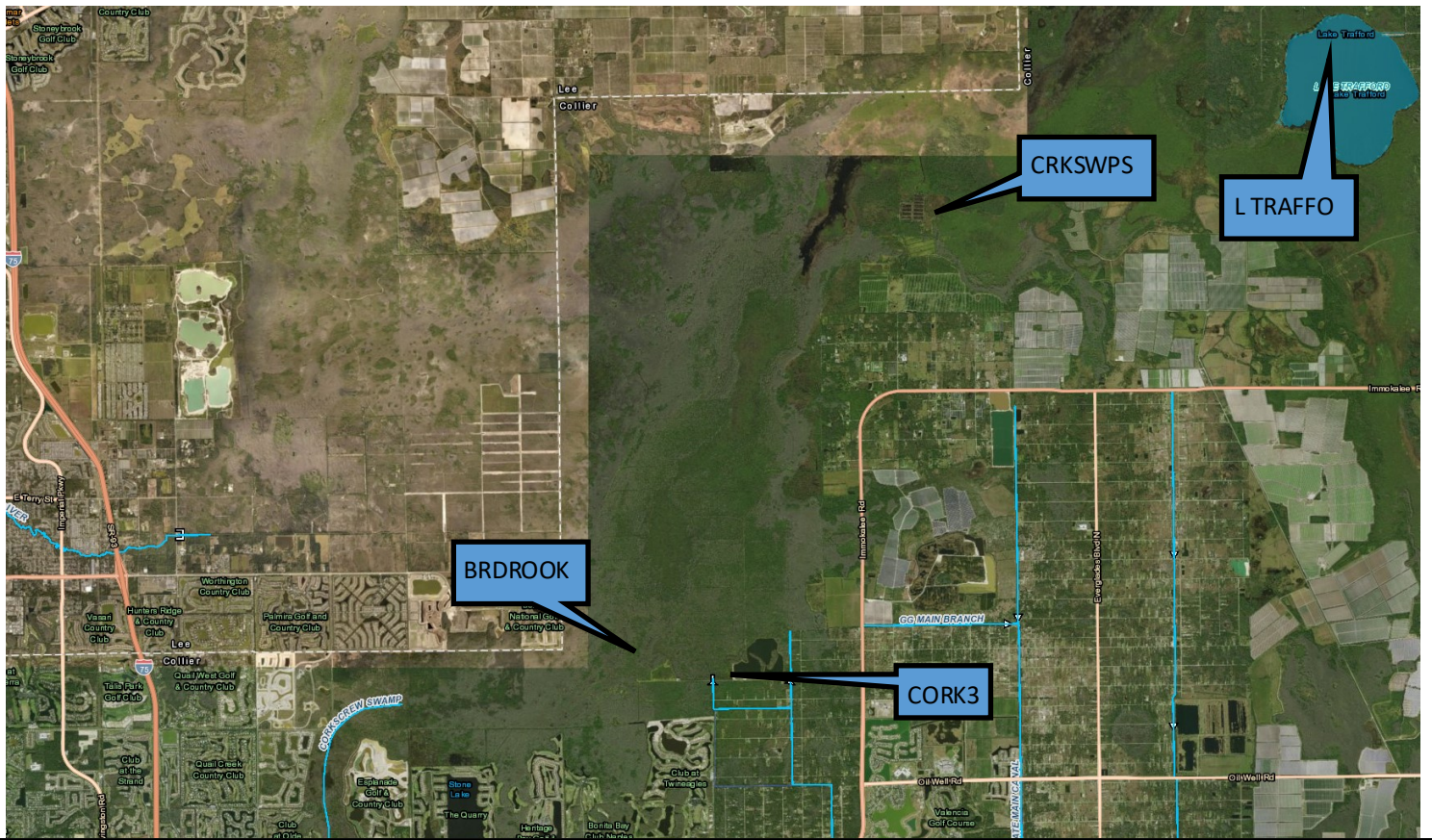
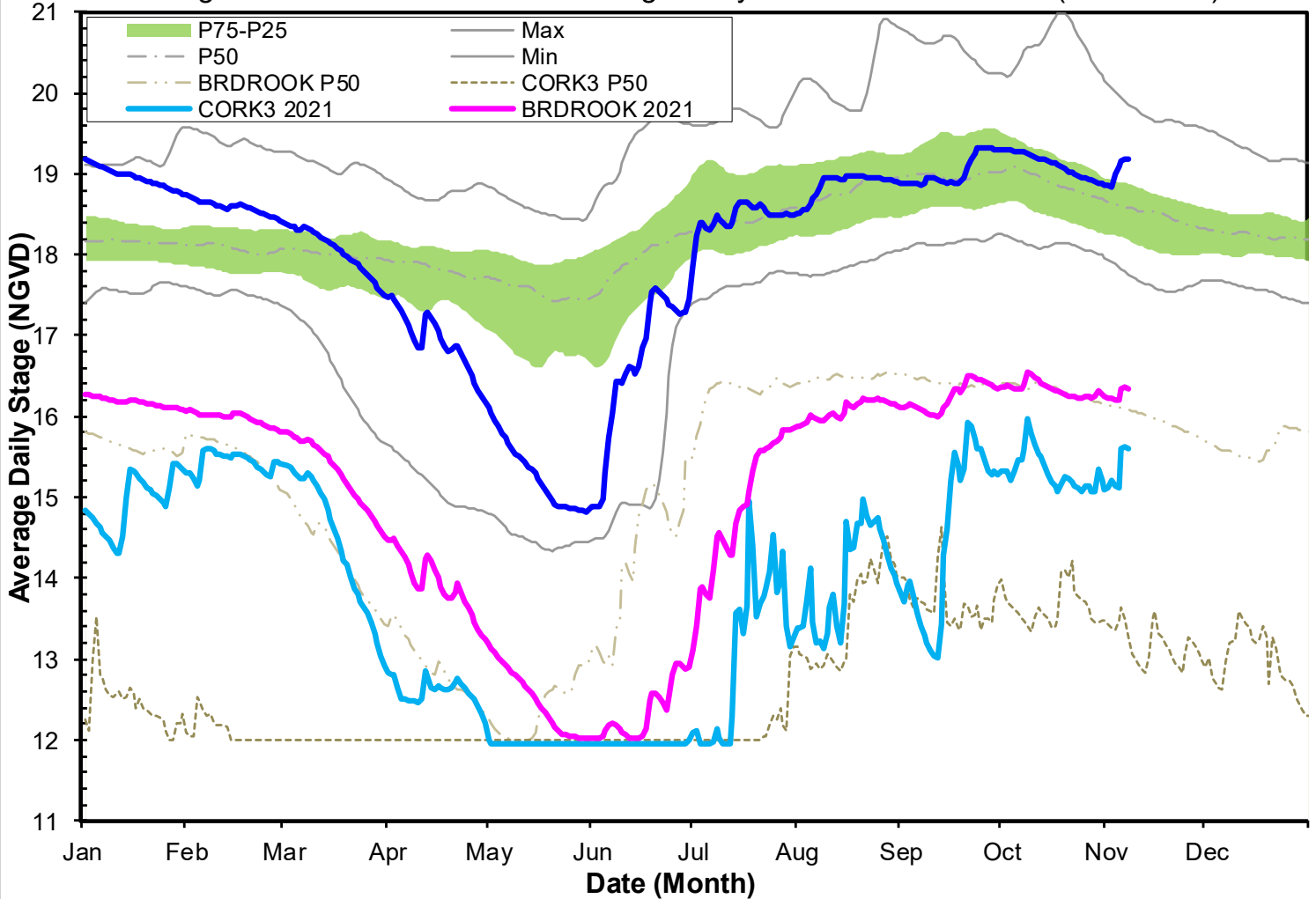


Figure 10-Corkscrew Historic Average Daily Headwater Percentiles(1984-2019)



Lake Trafford Historic Daily Water Level Percentiles (1941-2021)

