

JULY 2020

# BIG CYPRESS BASIN HYDROLOGIC REPORT



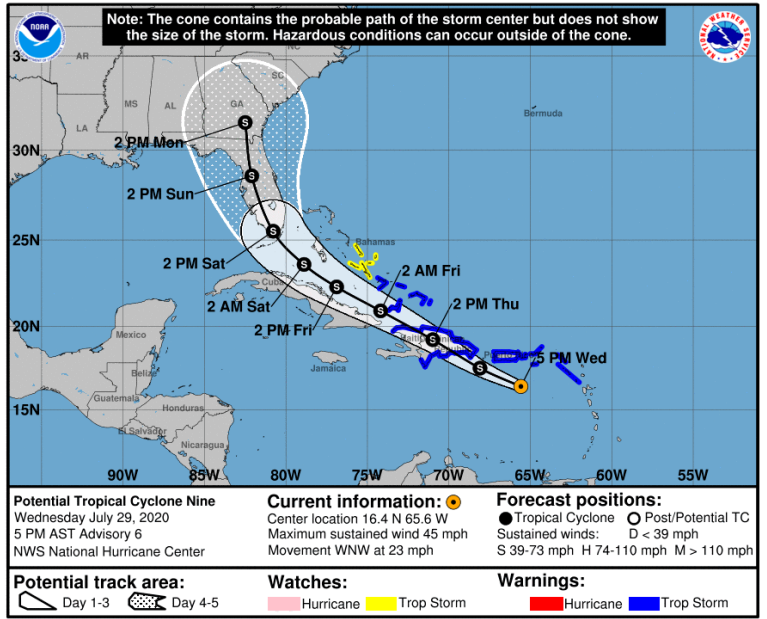
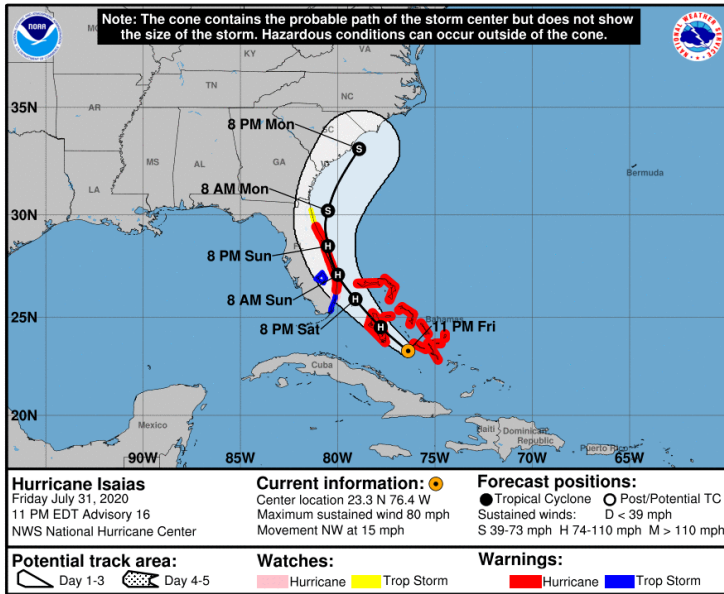
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# SUMMARY OF HYDROLOGIC CONDITIONS IN THE BIG CYPRESS BASIN

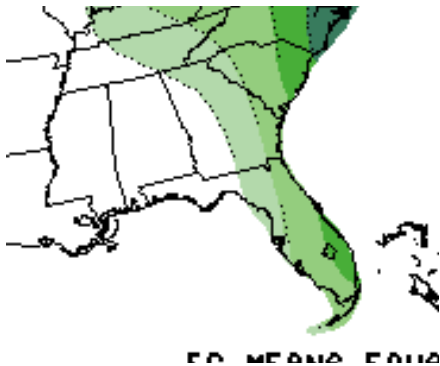
July 2020

## SUMMARY

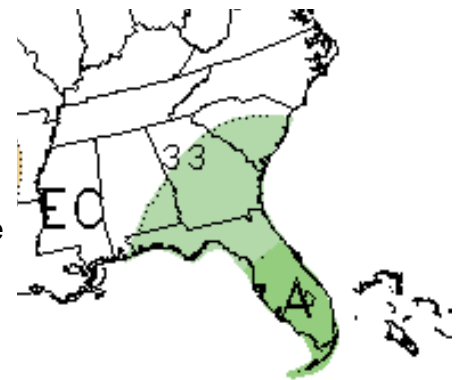
The first few weeks of July brought below average rainfall to the Basin. A strong and persistent southwest steering flow kept the majority of the rainfall to the east coast of Florida for the first few weeks of the month. Finally, the pattern shifted to an Atlantic sea-breeze pattern and the more normal afternoon thunderstorm pattern was established for the last couple weeks of the month. The month then ended with the threat of Hurricane Isaias, which first appeared like it would impact the Basin (right). Fortunately for the Florida, the track shifted off the east coast of Florida and did not make landfall (left), but it did intensify into a hurricane. The Basin was spared any impacts from the storm.



Operations in the Basin followed suit with the rainfall pattern. For the first few weeks, operations followed a water conservation strategy, then transitioned to flood control operations for the return of the normal wet season pattern. When faced with the threat of Isaias, operations were transitioned again to a lower wet season level with the ability to implement a pre-storm drawdown if the storm shifted again to the left.



Looking forward, the 30 day outlook for August (left) is indicating above average chances for above average rainfall and the 3 month outlook (right) for September, October, and November is also indicating an above average chance for above average rainfall.



## BCB RAINFALL

Rainfall in July was below normal due to the dry streak towards the beginning of the month. As measured by twenty-two (22) reporting stations (ref. **Figures 1, 2, Table 1**), the basin-wide monthly average was **7.5 inches (86% of normal)**, which is below the average 8.73 inches typically collected.

Based on collected gauge data, the rainfall distribution across the Basin was highly variable given the typical summertime afternoon thunderstorm pattern that established across the region. Given the highly variable coverage in rainfall that routinely occurs in the Basin, gauge adjusted radar is presented to more accurately convey the rainfall patterns for the Basin. **Figure 3a** shows the average rainfall for each of the Basin's watersheds based on gauge adjusted radar. The Trafford basin received the highest with a **9.9 inch** areal average across the watershed and the lowest was Gordon River/Freedom Park with about **5.0 inches**. The Basin's total areal weighted average rainfall was **8.5 inches**. This average is higher than rain gauge only average as it accounts for every square kilometer of the Basin rather than only 22 rain gauges. The month's highest gauge total was collected at the Corkscrew Swamp (Site R-9), which received **13.1 inches**. This month's lowest rainfall was recorded at I75W2 (Site R-21), which received **3.41 inches**. The rainfall totals and their locality distribution across the BCB/Lower West Coast are shown on **Figure 3** and **Figure 3a**.

## **BCB CANAL SYSTEMS**

All of the canals were maintained in water conservation mode for the first half of the month and flood control operations for the second half the month. The system was lowered towards the end of the month in anticipation of Hurricane Isaias, but were returned to the high range for normal flood control operations as the threat passed. Water levels are being maintained as high as possible while still providing flood control to assist with groundwater recharge. Area groundwater wells are near the 25th percentile for this time of year. Discharges from all coastal structures continued for flood control for the month, but discharges were reduced during the dry periods to conserve water.

- **GOLDEN GATE SYSTEM**

The Golden Gate Main canal system was operated in flood control mode and continued to be maintained near or slightly above the top of normal operation range based on the rainfall patterns. Canal water levels in most areas of the Golden Gate system were held between the 75th and 90th percentile as the system was returned to more normal operations after Isaias. (ref **Figure 5A & 5B**).

- **COCOCHATCHEE SYSTEM**

The western half of Cocohatchee system was maintained in flood control operations, while the eastern half continued to need additional rainfall to bring water levels to normal wet season operating levels. The western half of the system was maintained above the 75th percentile as the month ended and the eastern half is still near the 50th percentile (ref **Figure 6A, 6B, 6C, & 6D**).

- **FAKA UNION SYSTEM**

Most of the Faka Union system was maintained in wet season operations for the second half of the month with the exception of FU4S which still needs substantial water to recover to normal operations mode. Just like the rest of the Basin, the Faka Union system was kept in water conservation mode the first half of the month. (ref **Figure 7A & 7B**).

- **HENDERSON CREEK SYSTEM**

Lower Henderson Creek system maintained levels at about the 75th percentile but no operations at HC1 occurred except for flow over the fixed weir to limit discharges to Rookery Bay. Upper Henderson Creek continued to need additional water to reach normal wet season levels. No

operations occurred at HC2 to allow adjacent wetlands to fill, but the highly porous ground allowed levels to decrease during the dry portions of the month. (ref **Figure 8A & 8B**).

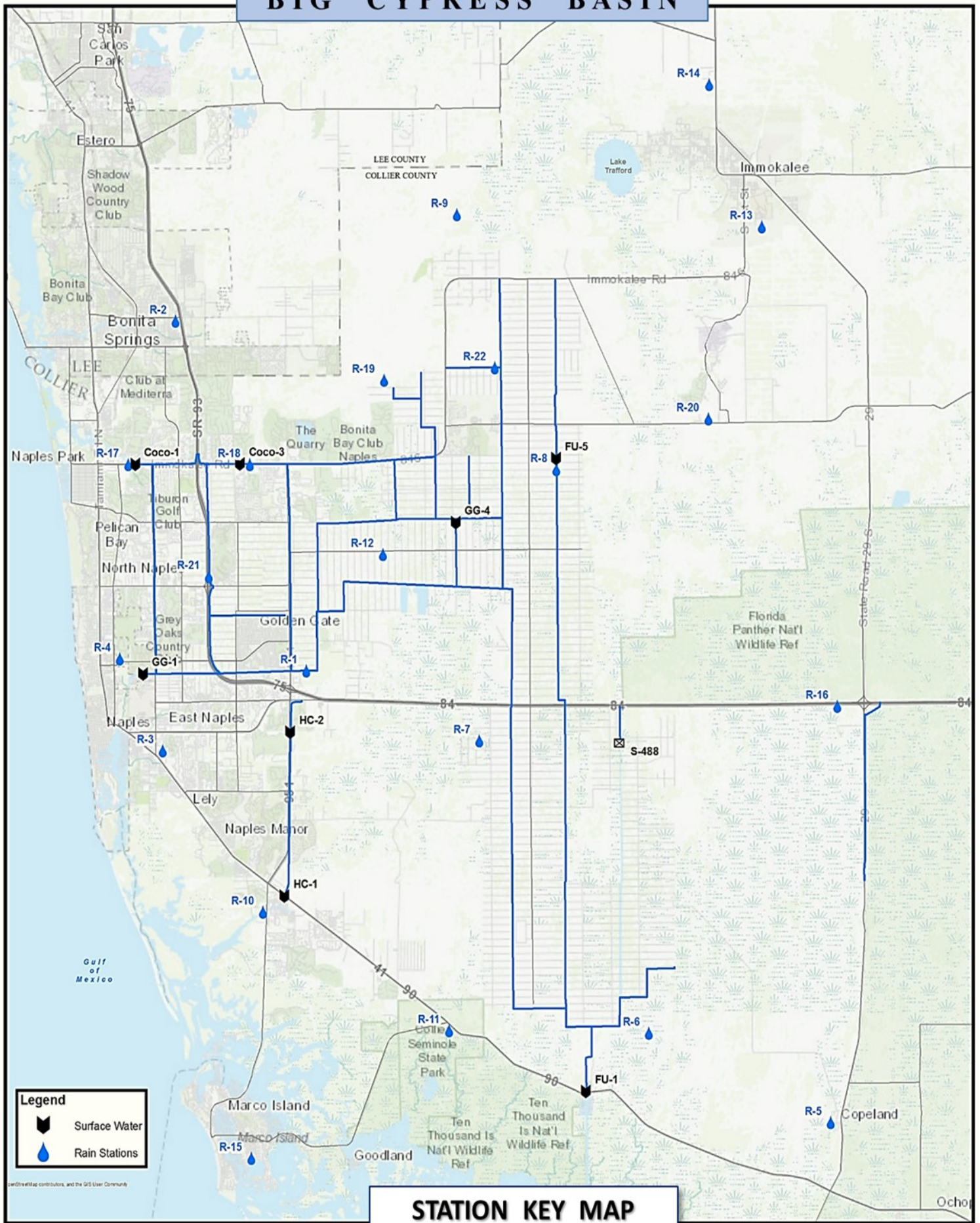
- **CORKSCREW SWAMP**

**Figure 10** shows the historical trends for Corkscrew, Bird Rookery, and Cork 3 structure and the 2020 corresponding levels. Two of the three sites (CRKSWPS, BRDROOK) have finally started to recover from low levels from lack of rainfall between late June until mid-July. Cork 3, Bird Rookery, and CRKSWPS were at or near historic minimums at mid-July. Water levels at Lake Trafford are shown in **Figure 10A**, which show lake levels still closing in on the 50th percentile.

### **BIG CYPRESS BASIN & LOWER WEST COAST GROUNDWATER LEVELS**

The current reporting (08/05/2020) for the Lower West Coast [LWC] indicates nearly flat levels from the beginning of the month. Levels rose sharply for the second half of the month with the excess rainfall, while the levels decreased almost the same amount the first half of July with very little rainfall. By the end of July, only one reporting well (C1004R) is still in the low concern condition indicator (yellow color) (ref. **Table 2**). All other reporting wells have maintained normal conditions (green color). All reported wells in **Table 2** show an average increase of 0.57 feet. L-462 recorded the highest increase of 1.93 feet, and L-738 had largest decrease of 0.40 feet. Most of the reported wells still remain below the 25th percentile and nearing historic minimum for this time of year (ref. **Table 2, Figure 9**).

BIG CYPRESS BASIN



STATION KEY MAP

FIGURE 1

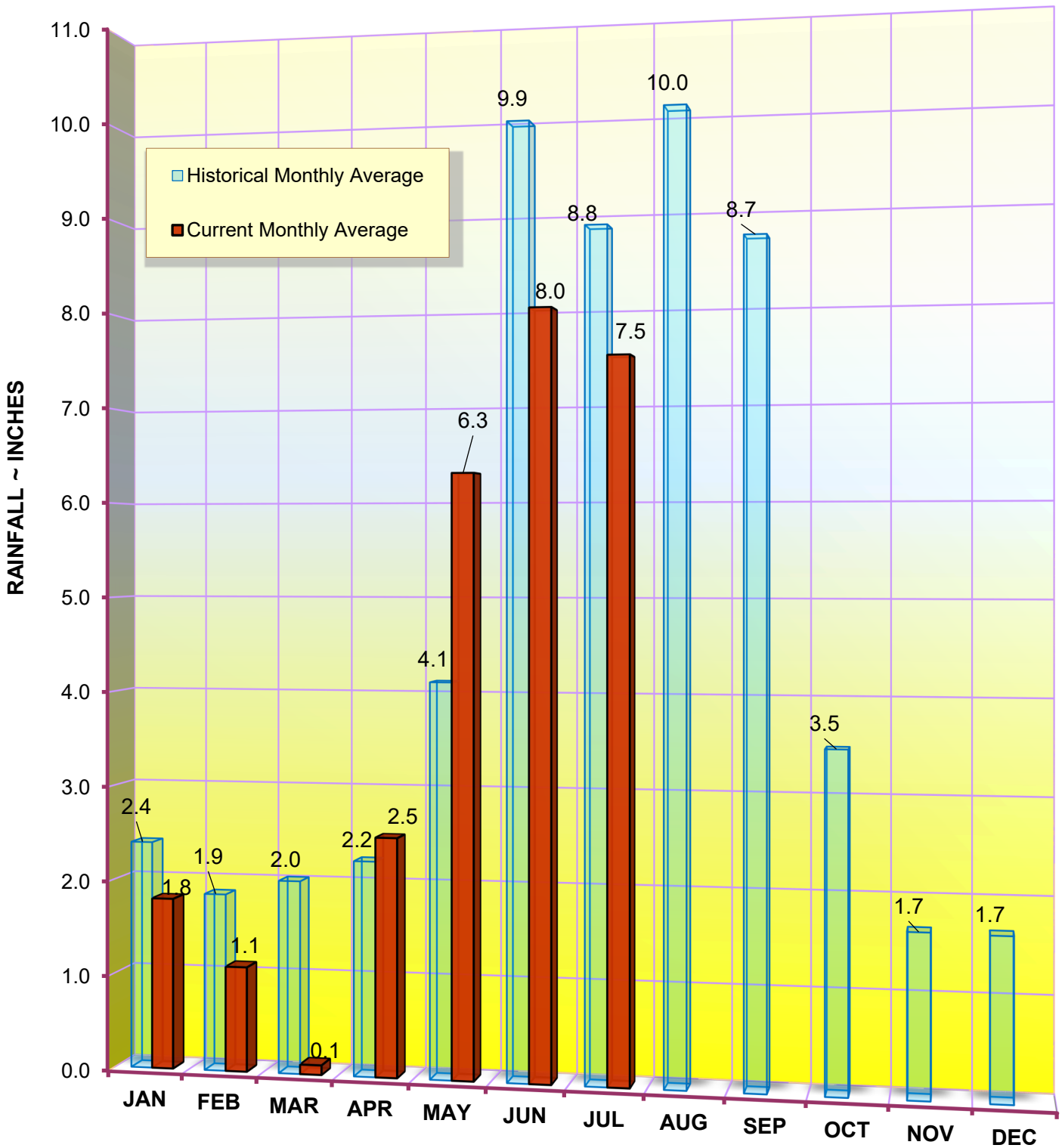
**RAINFALL REPORT - JULY 2020**  
**DISTRICT/BASIN RAINFALL STATIONS**

(ALL NUMBERS ARE IN INCHES)

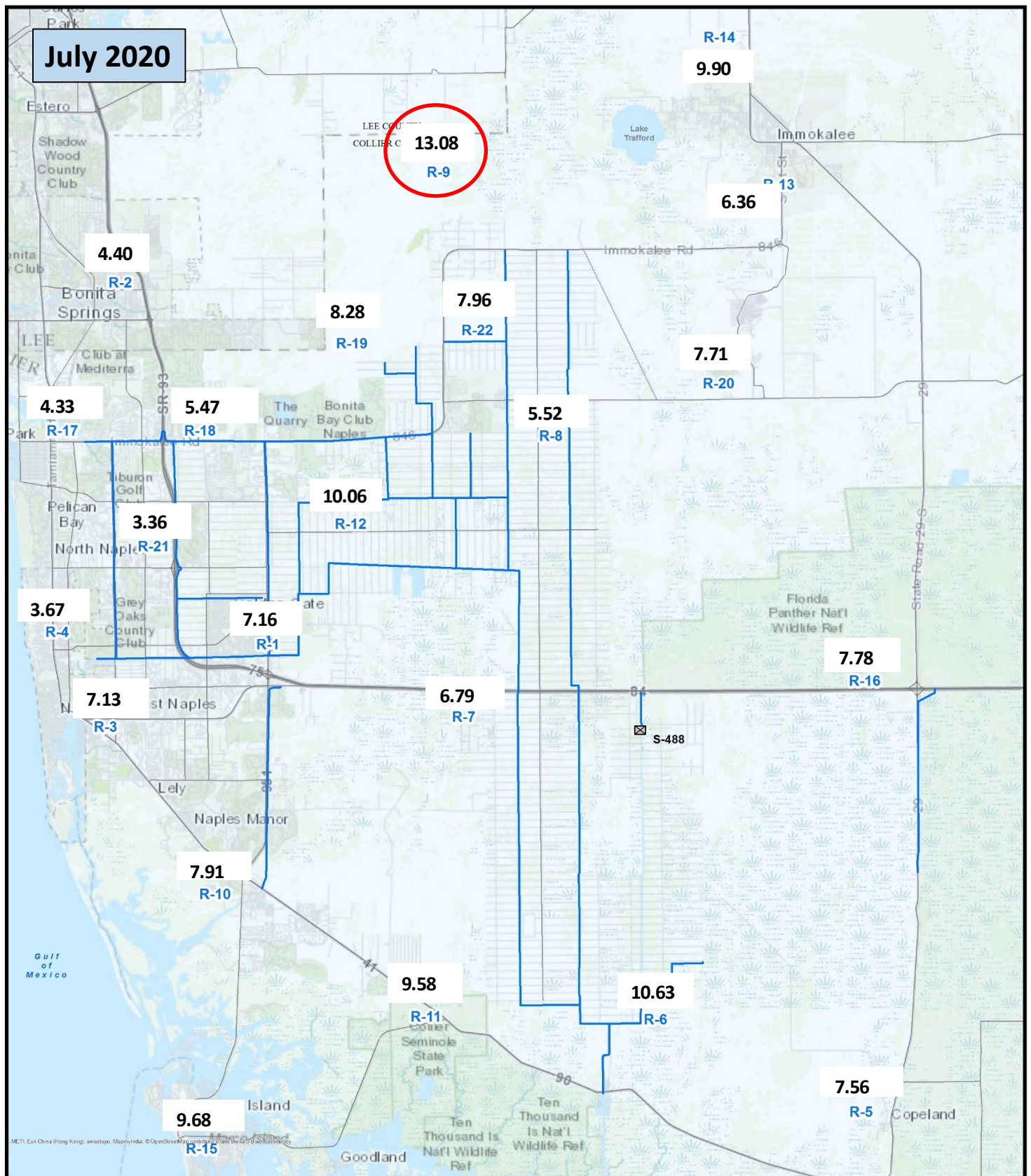
<b>STATION INDEX NO.</b>	<b>STATION NAME</b>	<b>JULY 2020</b>	<b>LONG TERM AVERAGE FOR THIS MONTH</b>	<b>MONTHLY DIFFERENCE</b>	<b>CALENDAR YEAR 2020 CUMULATIVE TOTAL</b>	<b>AVERAGE CALENDAR YEAR TO DATE</b>	<b>YEAR TO DATE DIFFERENCE</b>
R-1	GOLDEN GATE #3	7.16	8.90	-1.74	30.20	36.57	-6.37
R-2	BONITA SPRINGS WATER PLANT	4.40	8.16	-3.76	21.77	28.42	-6.65
R-3	COLLIER COUNTY COURTHOUSE	7.13	8.26	-1.13	31.51	28.49	3.02
R-4	FREEDOM PARK	3.67	10.81	-7.14	29.26	32.38	-3.12
R-5	FAKAHATCHEE STRAND HQ	7.56	9.22	-1.66	27.45	33.48	-6.03
R-6	DAN HOUSE PRAIRIE	10.63	8.33	2.30	33.25	27.83	5.42
R-7	SGGE WEATHER STATION	6.79	9.39	-2.60	27.85	32.73	-4.88
R-8	FAKA UNION #5	5.52	9.38	-3.86	21.07	39.40	-18.33
R-9	CORKSCREW SWAMP NORTH END	13.08	7.55	5.53	28.00	30.29	-2.29
R-10	ROOKERY BAY HQ	7.91	8.44	-0.53	23.67	29.53	-5.86
R-11	COLLIER SEMINOLE STATE PARK	9.58	8.64	0.94	29.83	30.27	-0.44
R-12	G.G. FIRE STATION	10.06	10.32	-0.26	28.94	32.94	-4.00
R-13	IMMOKALEE LANDFILL	6.36	7.80	-1.44	31.36	30.16	1.20
R-14	IFAS	9.90	7.22	2.68	24.50	29.32	-4.82
R-15	MARCO R.O. PLANT	9.68	7.49	2.19	31.57	28.68	2.89
R-16	FAKAHATCHEE STRAND NORTH END	7.78	9.41	-1.63	27.45	35.24	-7.79
R-17	COCO#1	4.33	7.79	-3.46	21.78	26.78	-5.00
R-18	COCO#3	5.47	10.74	-5.27	25.67	30.16	-4.49
R-19	BIRD ROOKERY	8.28		New Site	27.21	No Historical Data	
R-20	AVE MARIA	7.71	8.00	-0.29	26.02	30.56	-4.54
R-21	I75W2	3.36		New Site	27.05	No Historical Data	
R-22	GG#7	7.96		New Site	24.21	No Historical Data	

AVERAGES	7.47	8.73	-1.26	27.26	31.22	-3.97
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**BCB ANNUAL RAINFALL**  
**MONTHLY AVERAGE & HISTORICAL AVERAGE TRENDS**  
**(FROM BCB RAINFALL GAUGE DATA)**

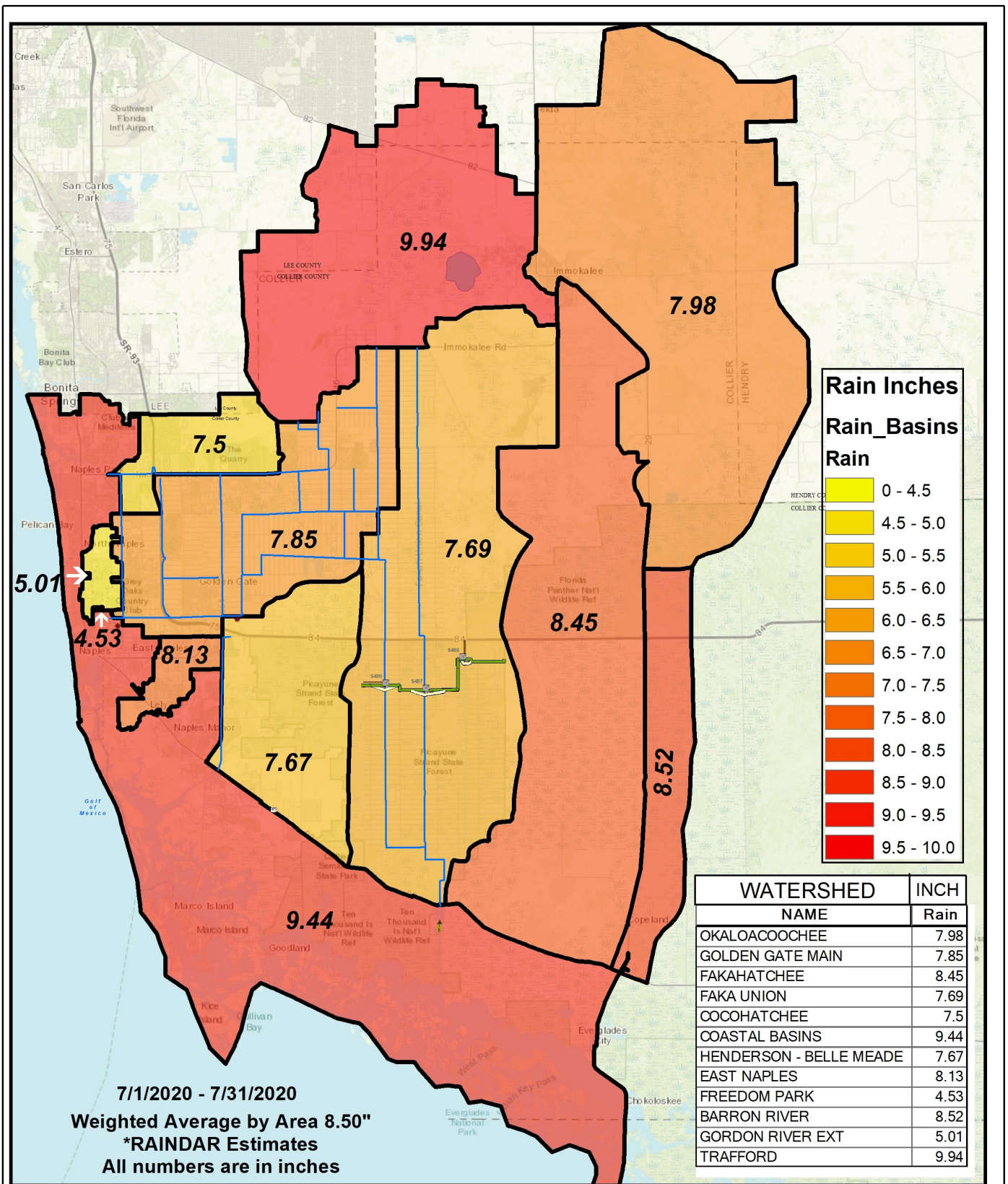


**FIGURE 2**  
**BCB GAUGE RAINFALL**  
**MONTHLY AVERAGES THROUGH JULY 2020**



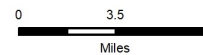
**FIGURE 3  
BCB RAINFALL DISTRIBUTION  
JULY 2020**





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\*Rainfall estimates based on gauge adjusted radar



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

**BCB RAINFALL  
 SPATIAL DISTRIBUTION**

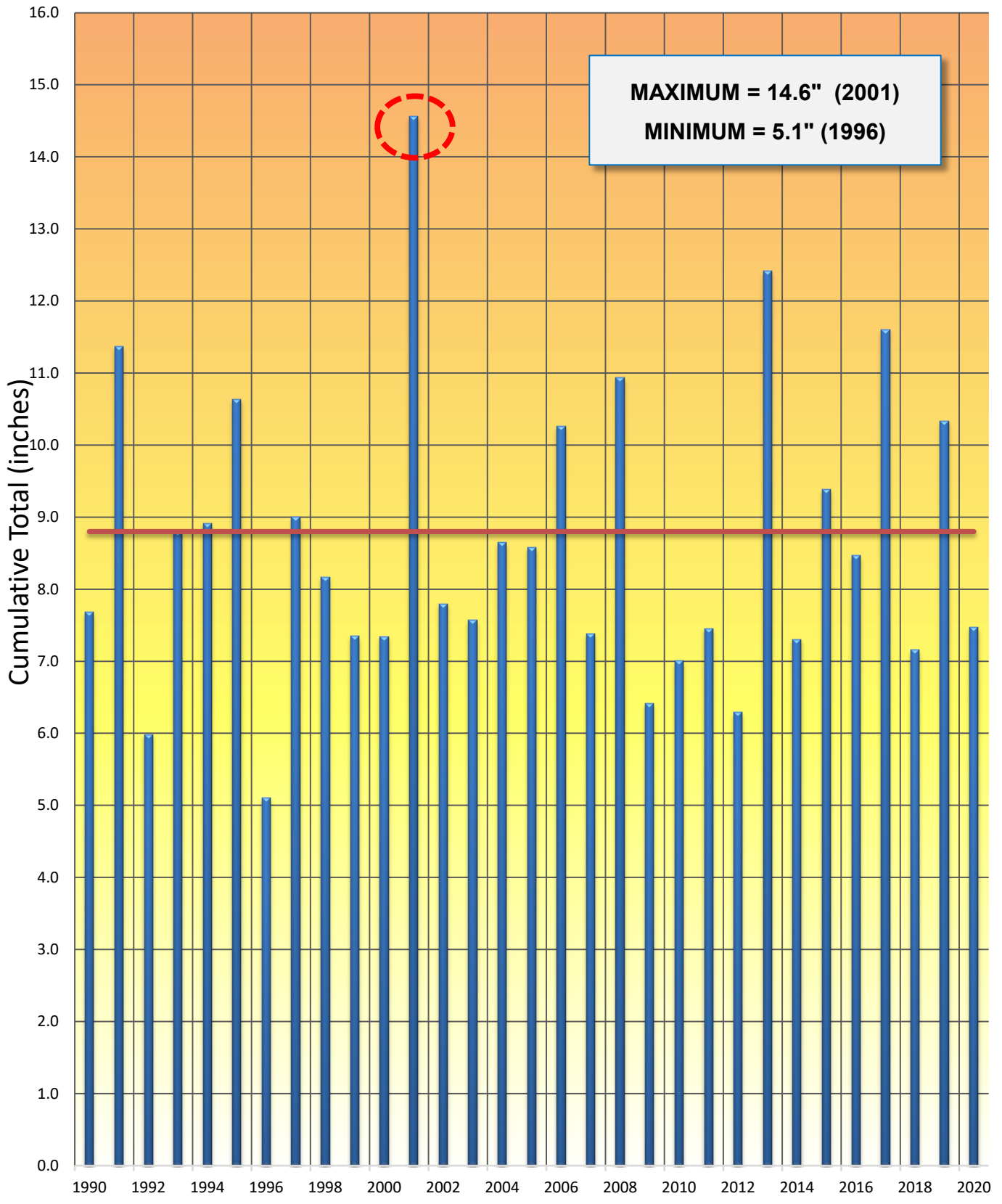
Urban Collier County, Florida



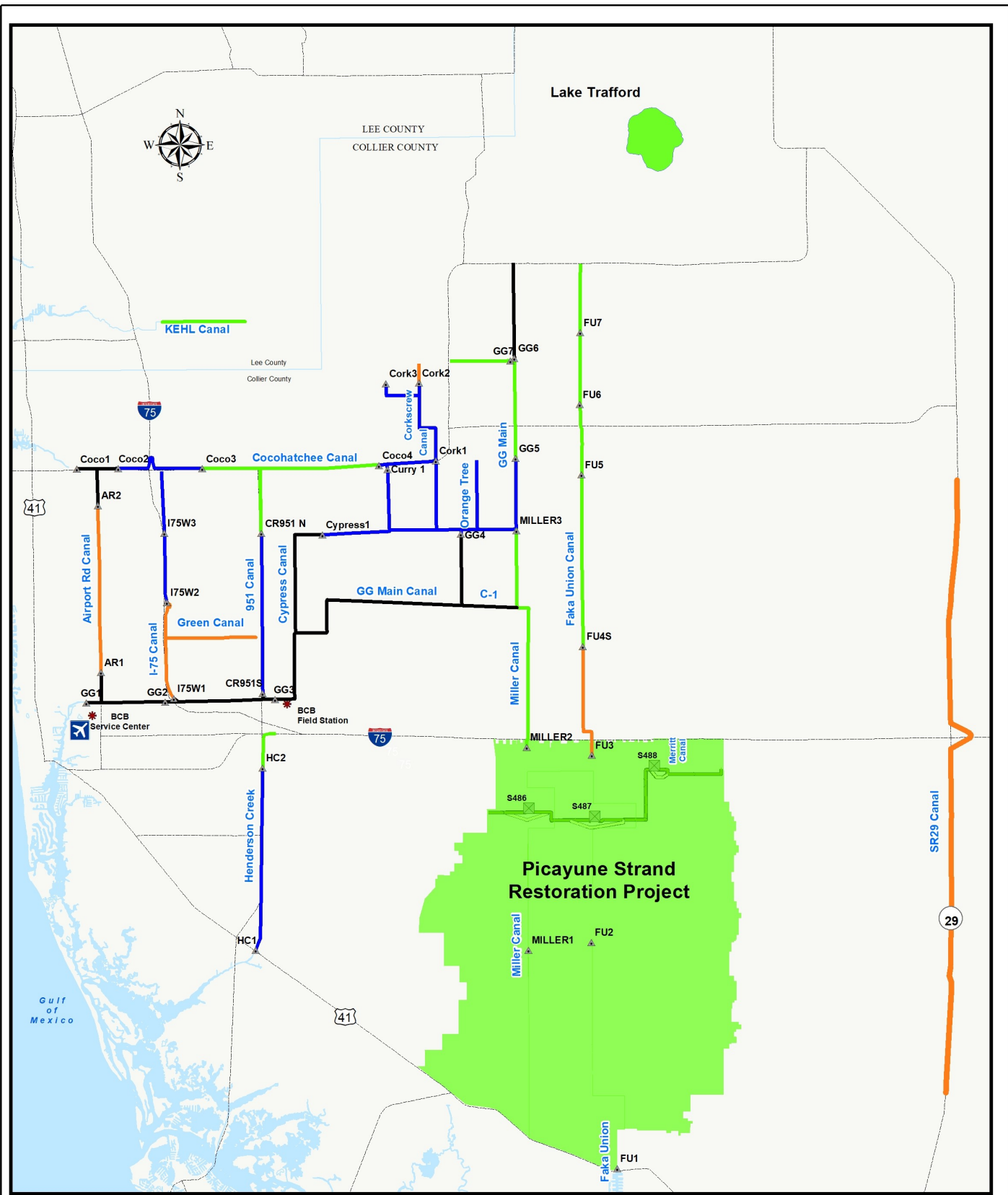
SPWMD\_FL\_Map\_Nov\_2019

**FIGURE 3a**

**BCB JULY RAINFALL**  
**Period (1990 ~ 2020)**

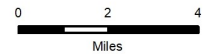


**FIGURE 4**  
**HISTORICAL TRENDS**  
**(PERIOD OF RECORD: 1990—2020)**



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\* Based on period of record for each canal reach



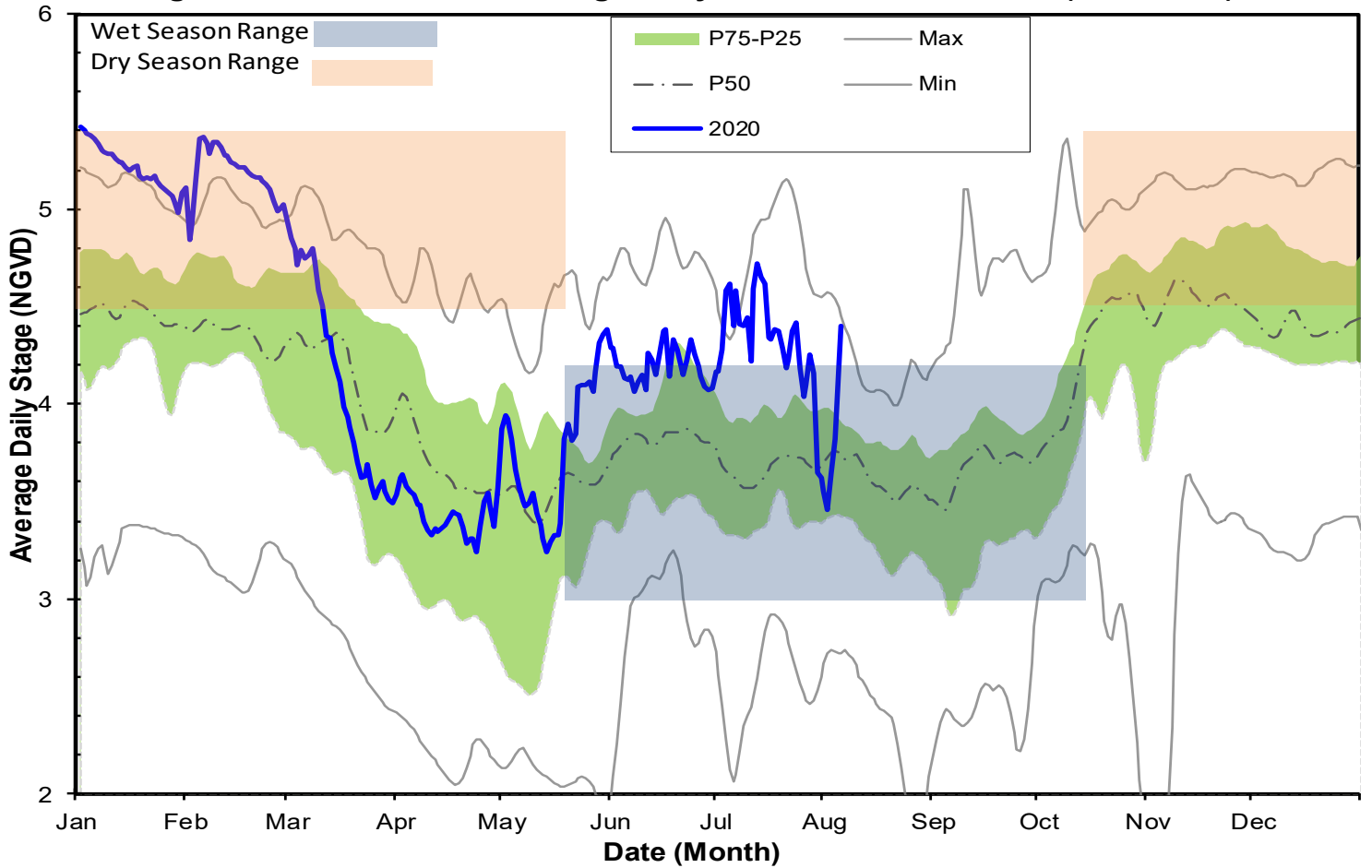
**BIG CYPRESS BASIN**  
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 Naples, Florida 34104  
 239-263-7615

**BCB Conditions Index**  
 8/7/20  
 Urban Collier County, Florida



**FIGURE 4A**

**Figure 5A - GG1 Historic Average Daily Headwater Percentiles (2004-2018)**



**Figure 5B - GG4 Historic Average Daily Headwater Percentiles (1994-2017)**

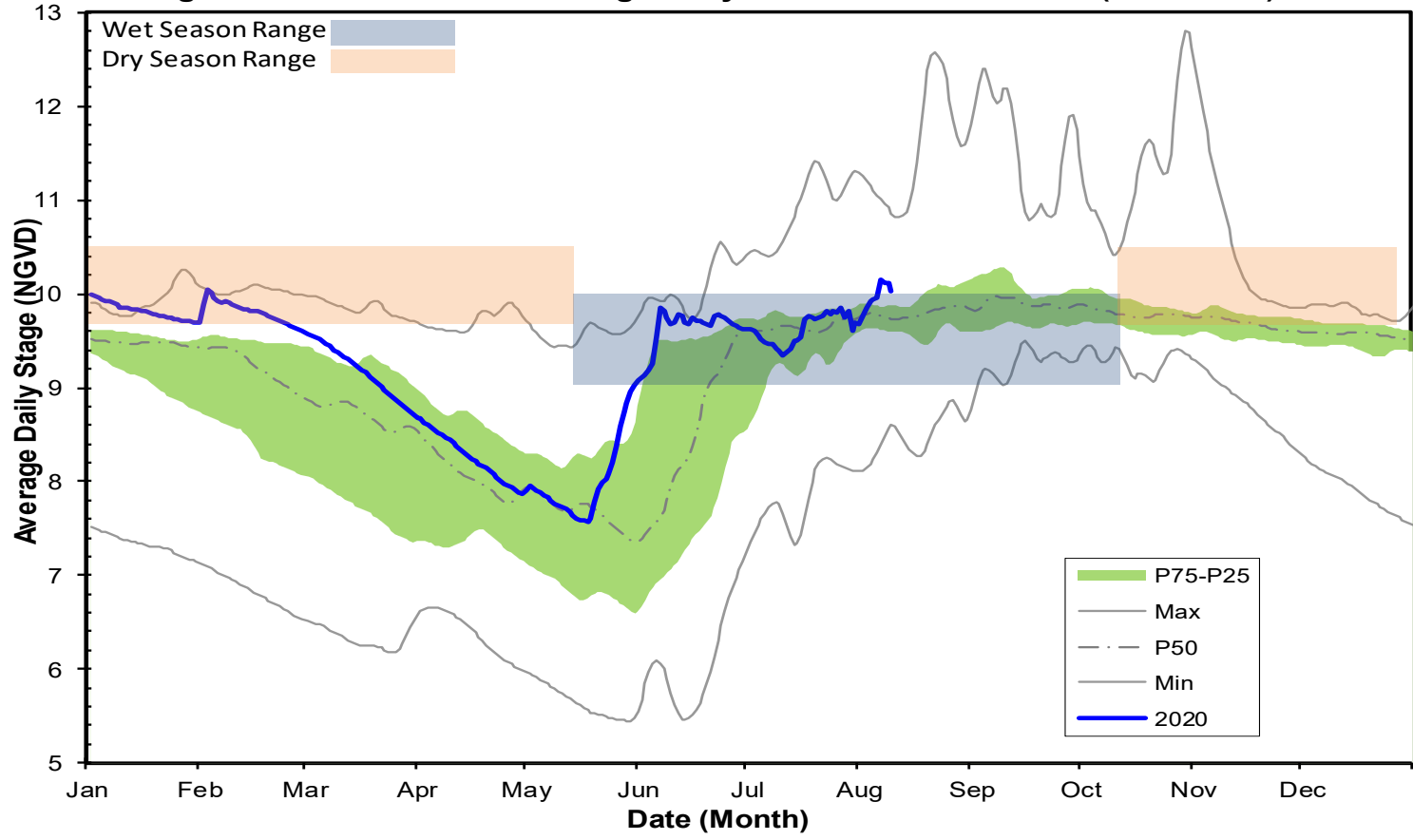


Figure 6A - COCO1 Historic Daily Headwater Percentiles (1994-2018)

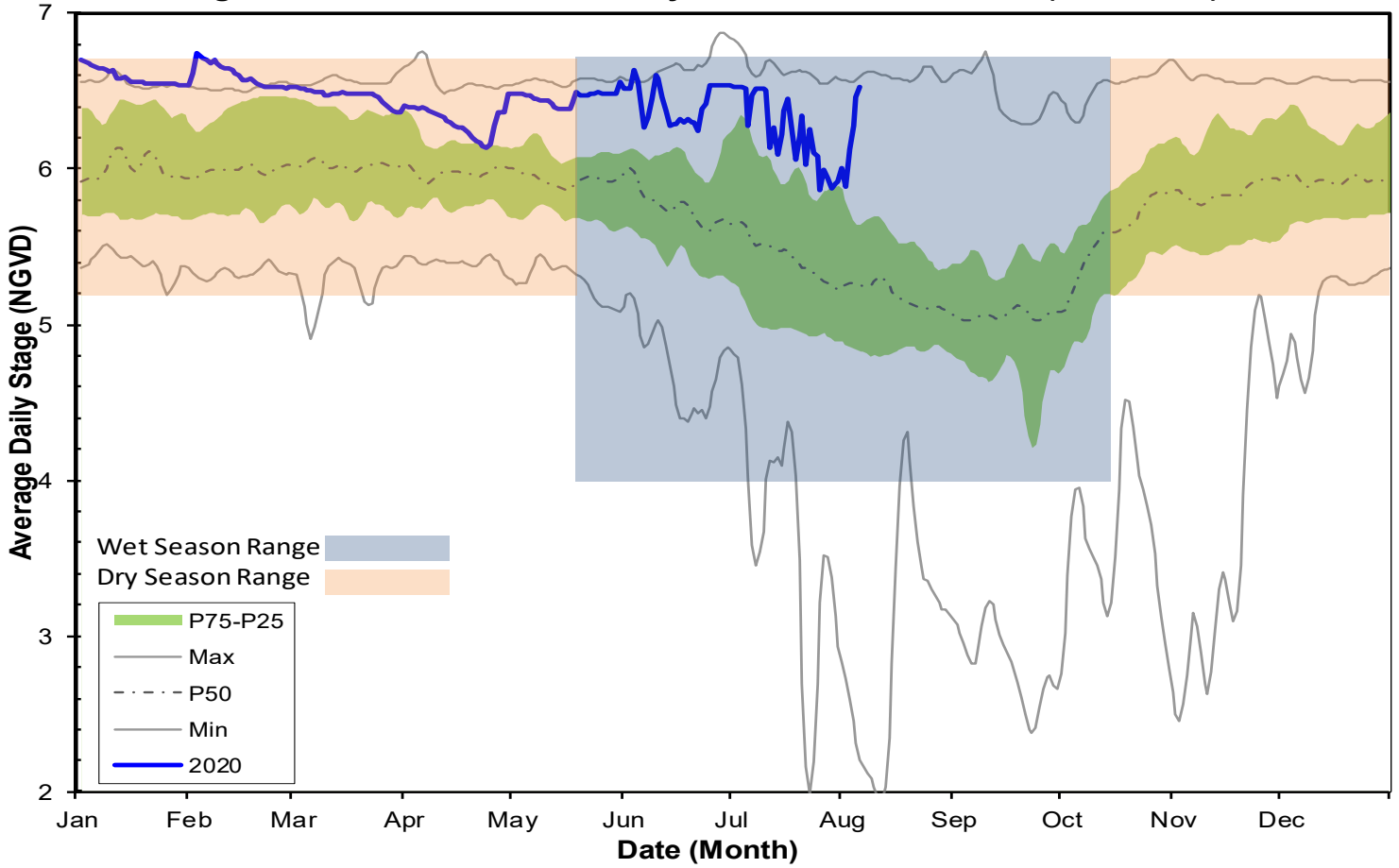


Figure 6B - COCO3 Historic Average Headwater Percentiles (2000-2018)

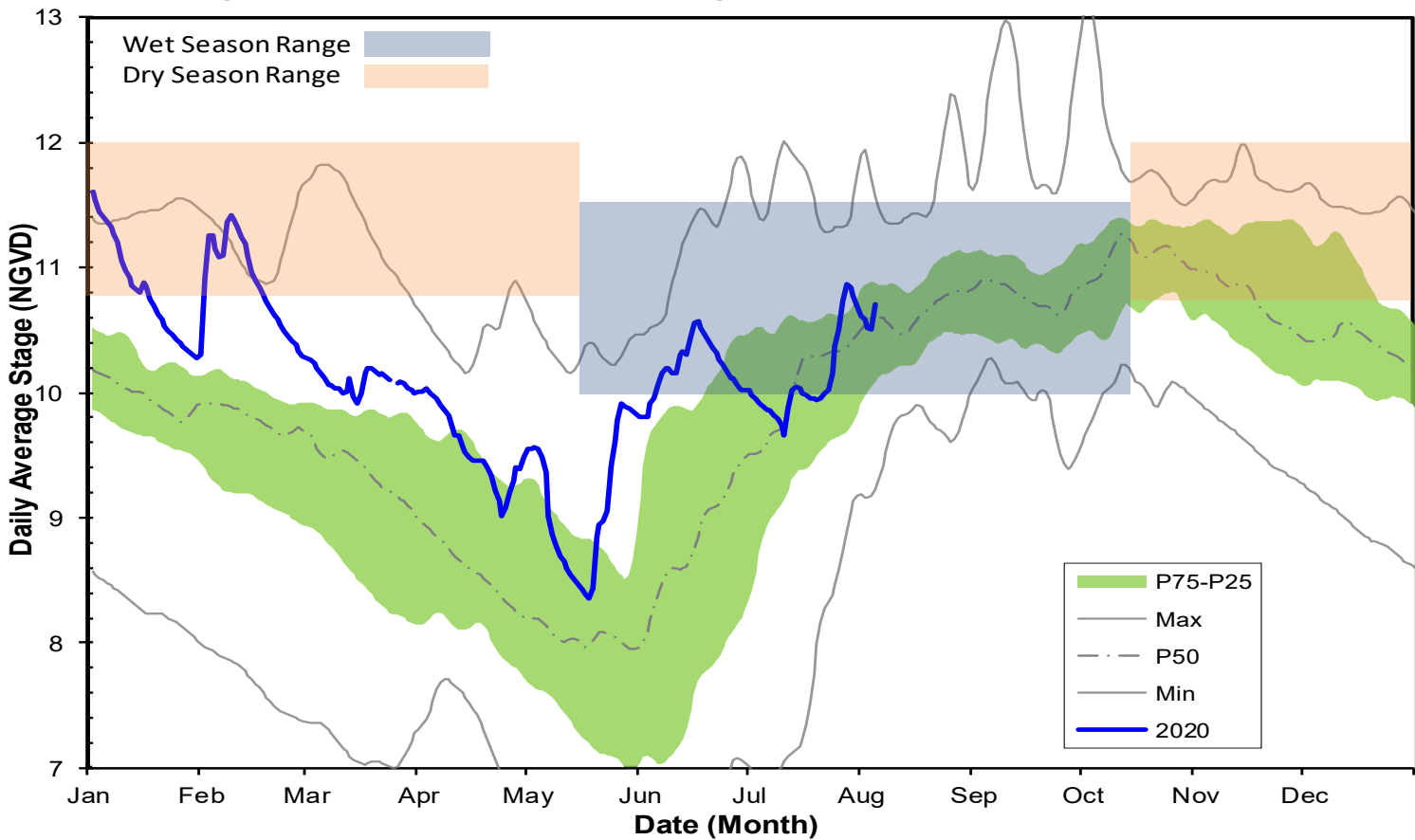


Figure 6C - CORK1 Historic Average Daily Headwater Percentiles (1989-2018)

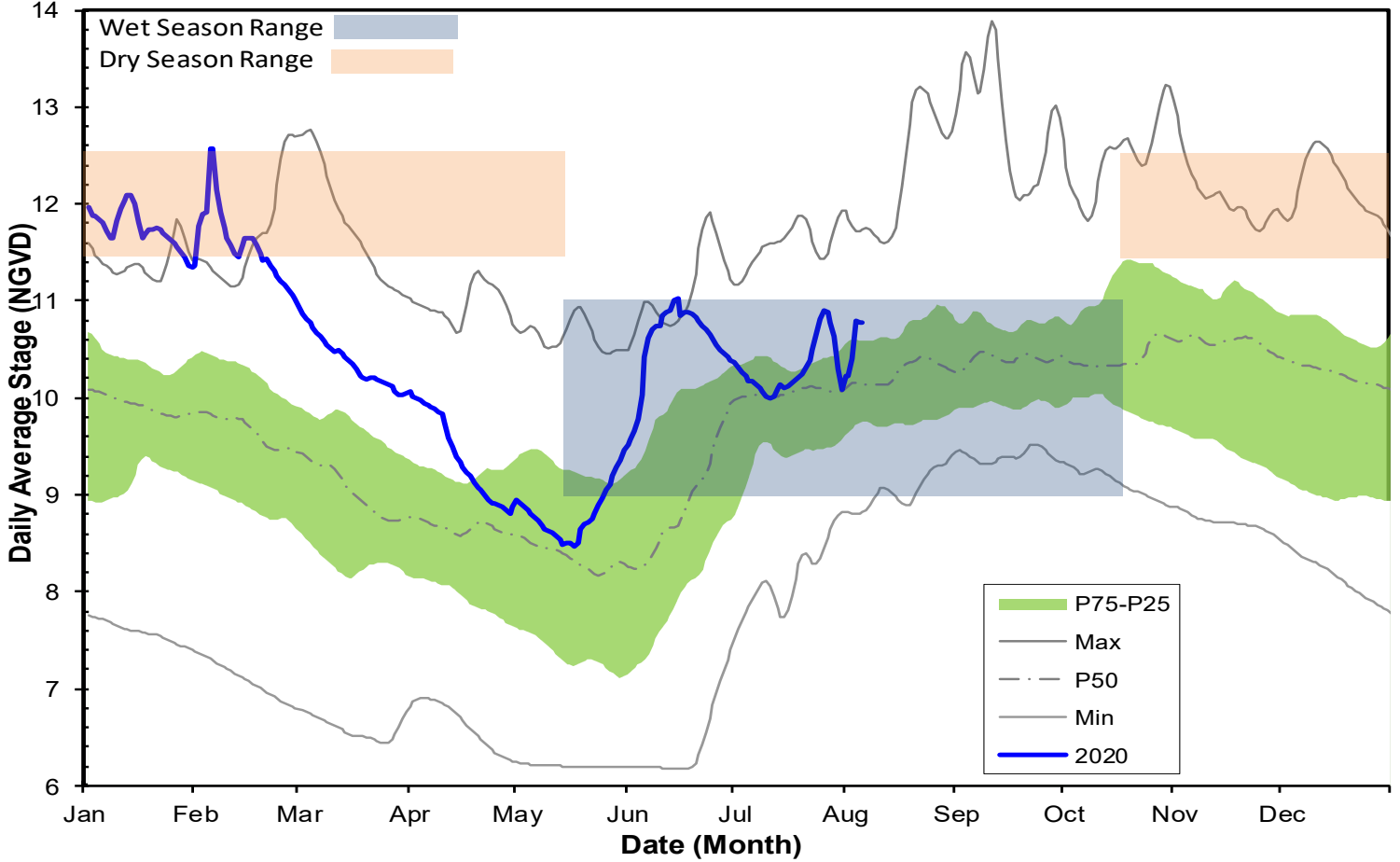
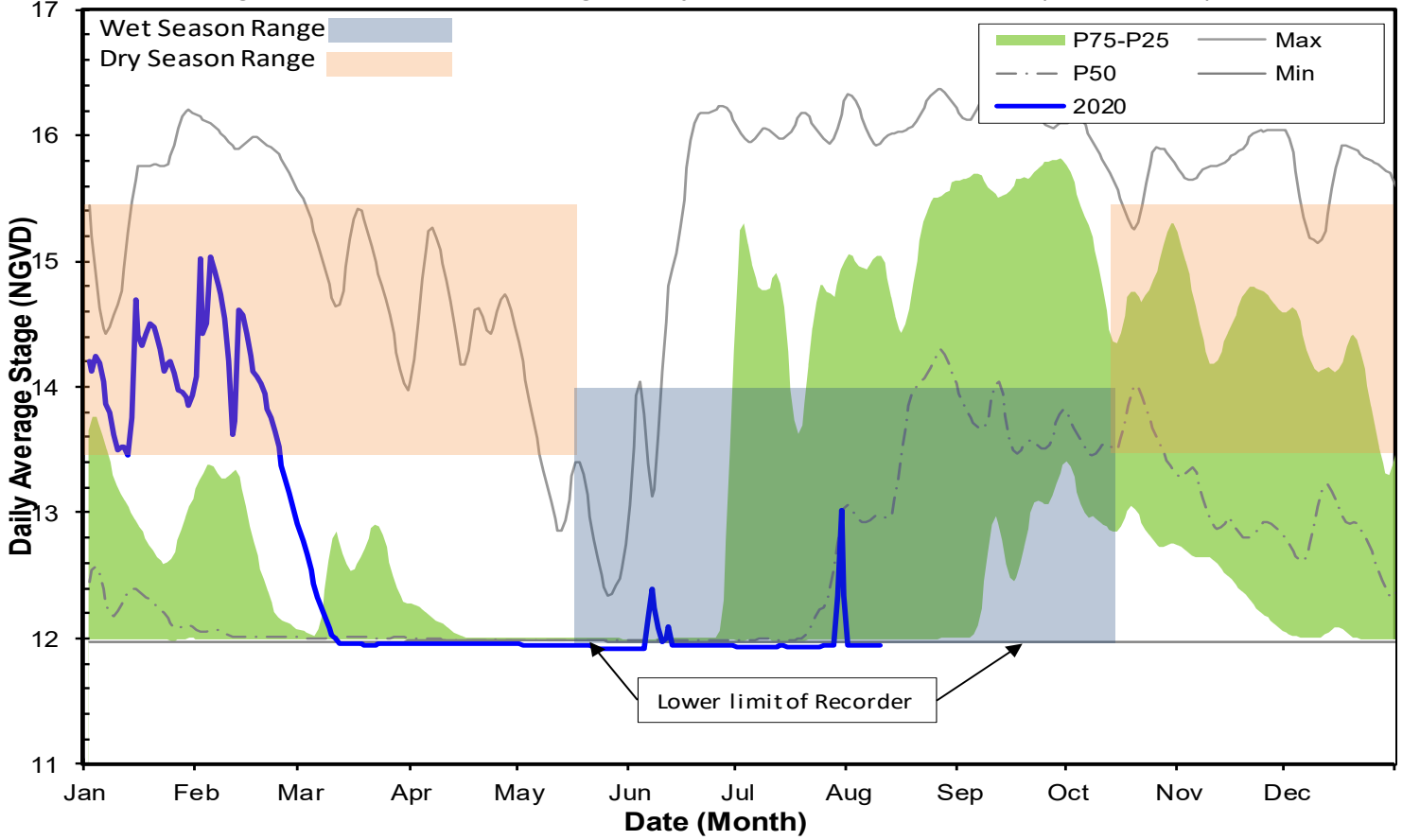
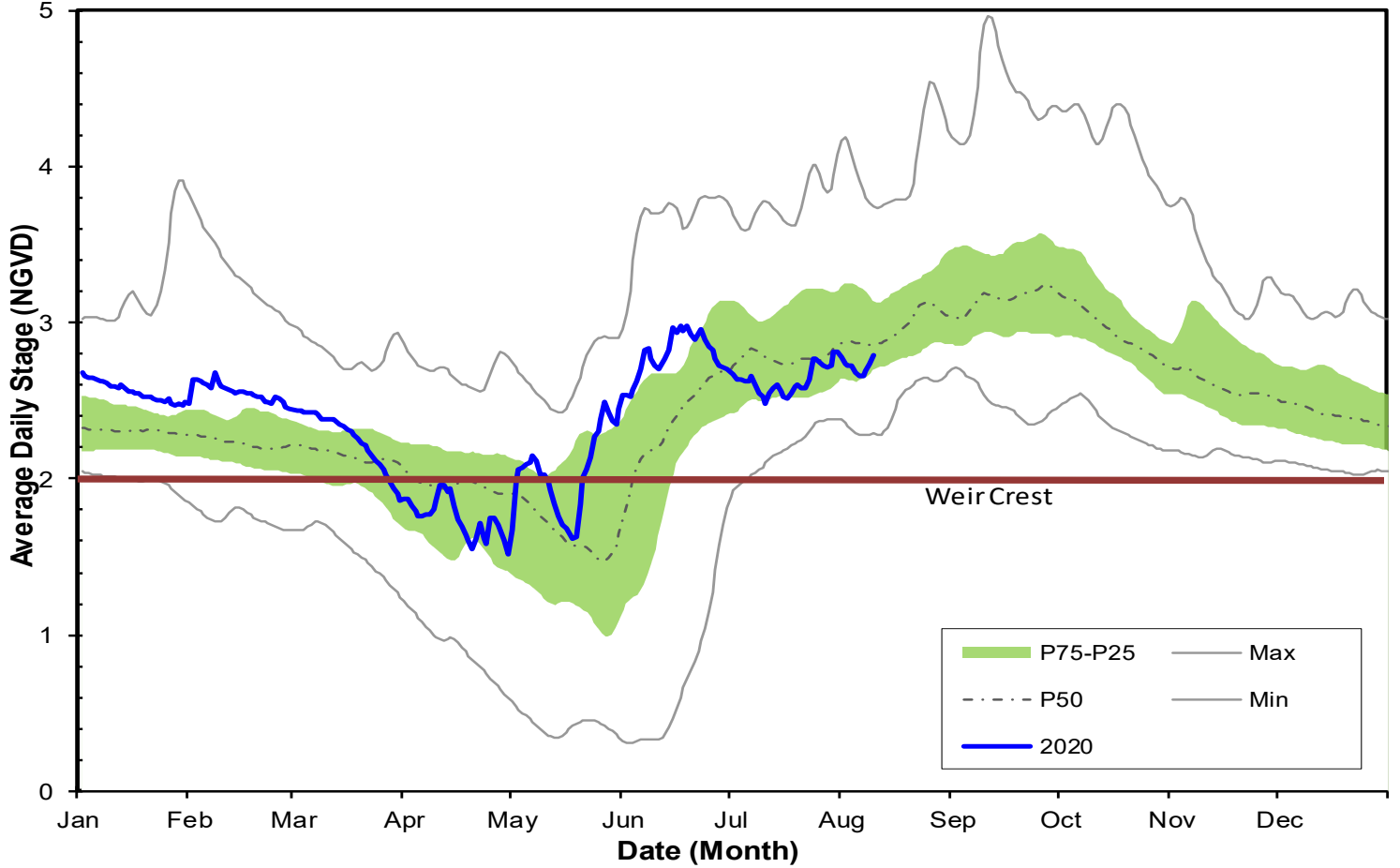


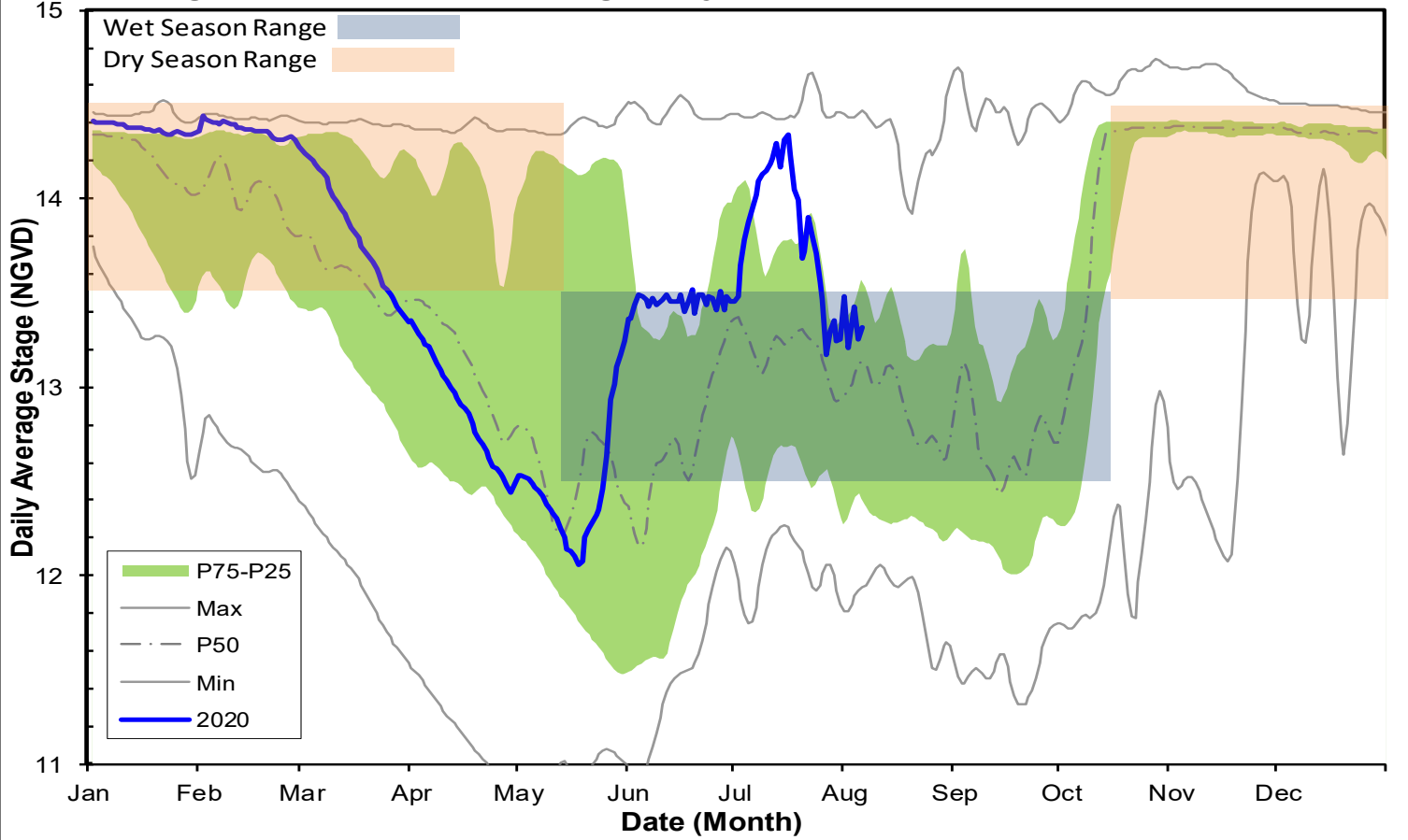
Figure 6D - CORK3 Average Daily Headwater Percentiles (2004-2018)



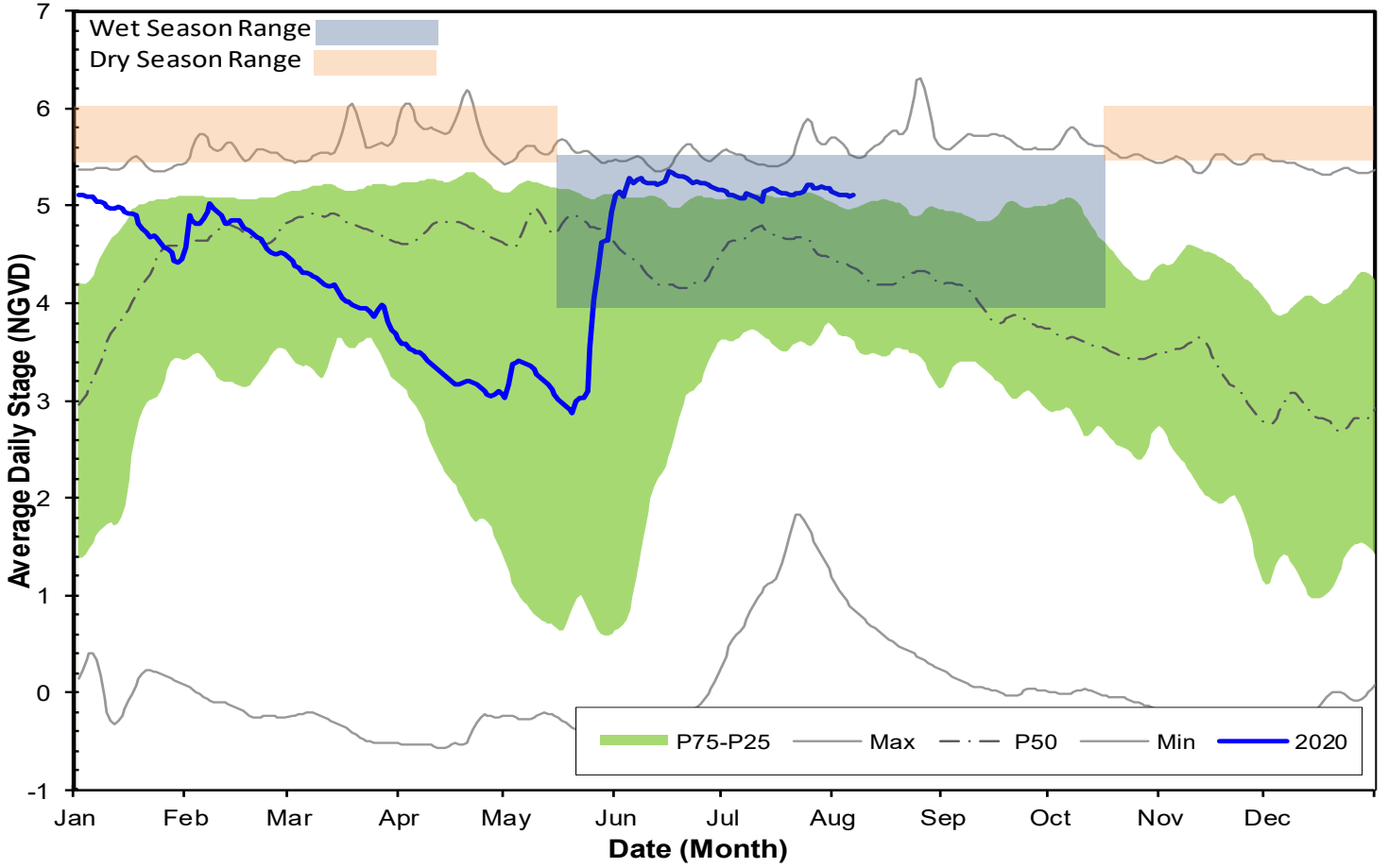
**Figure 7A - FU1 Historic Average Daily Headwater Percentiles (1984-2018)**



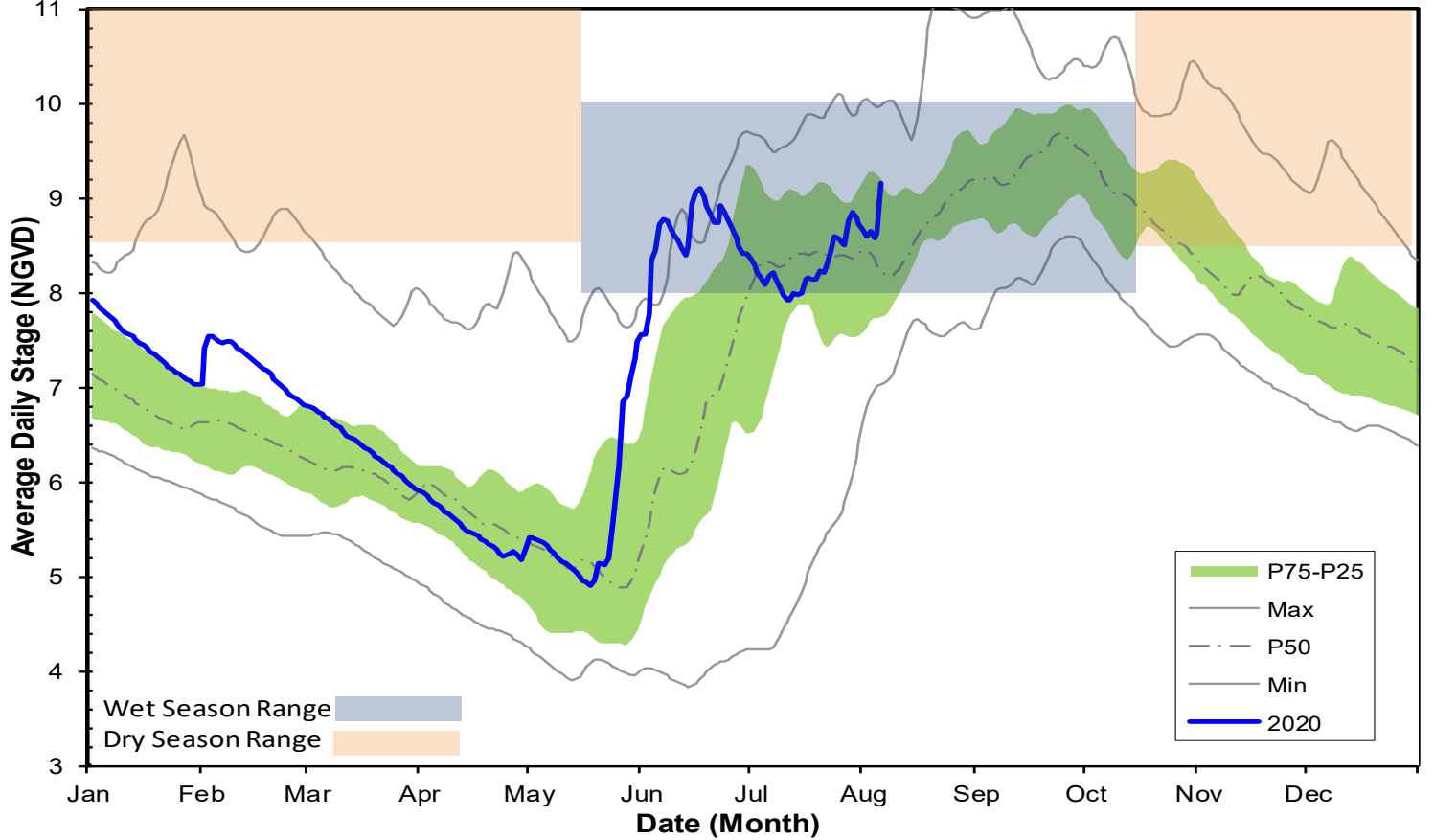
**Figure 7B-FU5 Historic Average Daily Headwater Percentiles (2003-2018)**



**Figure 8A - HC1 Historic Average Daily Headwater Percentiles (1997-2018)**



**Figure 8B - HC2 Historic Average Daily Headwater Percentiles (2005-2018)**





## WATER CONDITIONS SUMMARY - July 2020

### SELECTED STATIONS for BCB AREA / SW FLORIDA

Last Reading Date :		August 6, 2020					
Previous Period Reading Date:		July 1, 2020					
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	1.93	28.08	30.01	↑	GREEN
C-1004R	Naples	Lower Tamiami Aquifer	0.11	0.92	1.03	↑	YELLOW
C-1224	Marco Lakes	Lower Tamiami Aquifer	-0.13	4.22	4.09	↓	GREEN
L-2194	Bonita Springs	Sandstone Aquifer	1.29	3.95	5.24	↑	GREEN
L-2195	Bonita Springs	Surficial Aquifer System	0.59	9.44	10.03	↑	GREEN
L-738	Bonita Springs	Lower Tamiami Aquifer	-0.40	0.25	-0.15	↓	GREEN

**TABLE 2  
BCB WATER CONDITIONS SUMMARY  
JULY 2020**

BIG CYPRESS BASIN

JULY 2020

GROUNDWATER LEVEL DAILY TRENDS COMPARED TO HISTORICAL AVERAGE

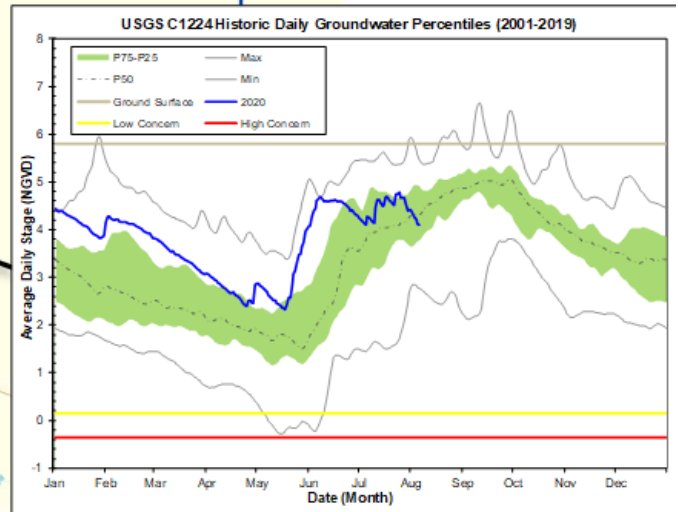
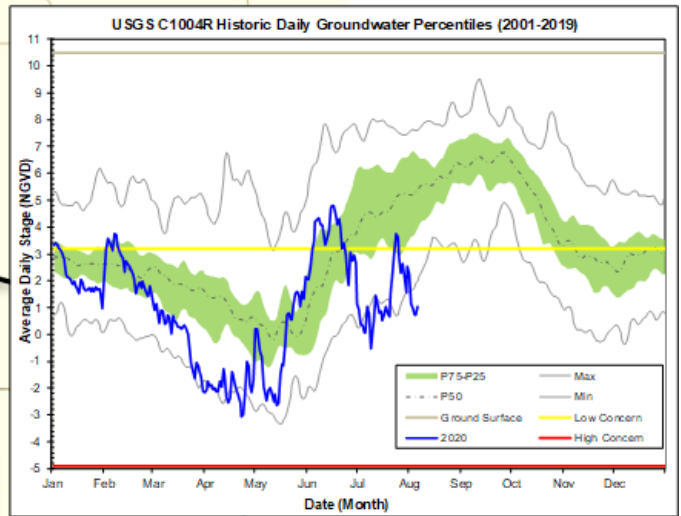
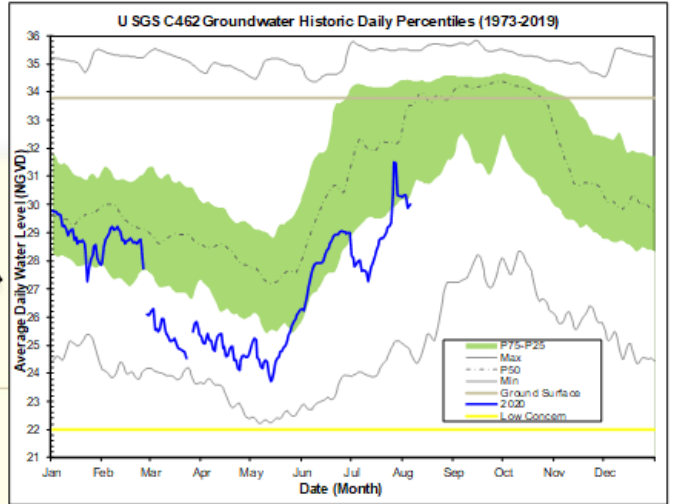
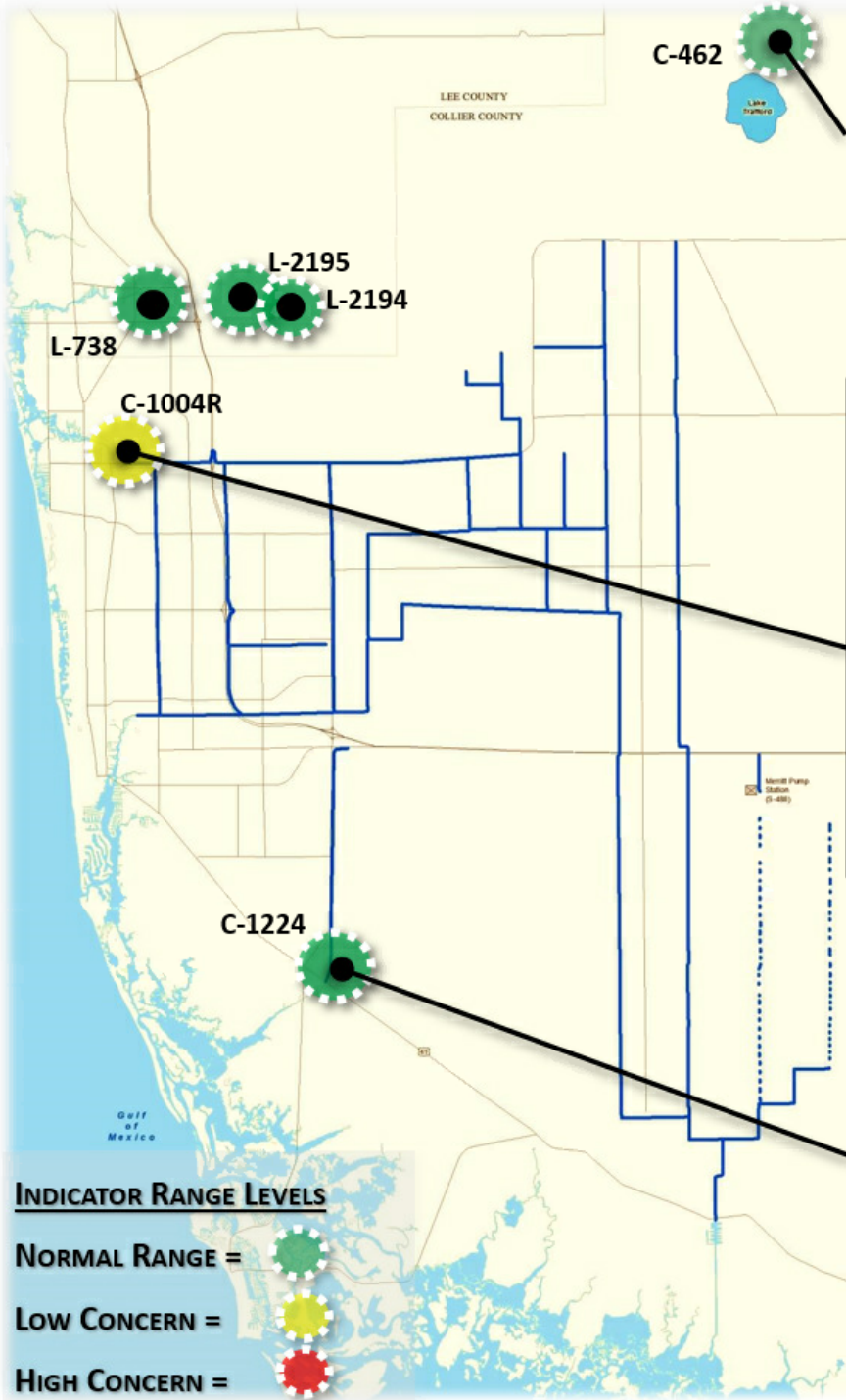


FIGURE 9

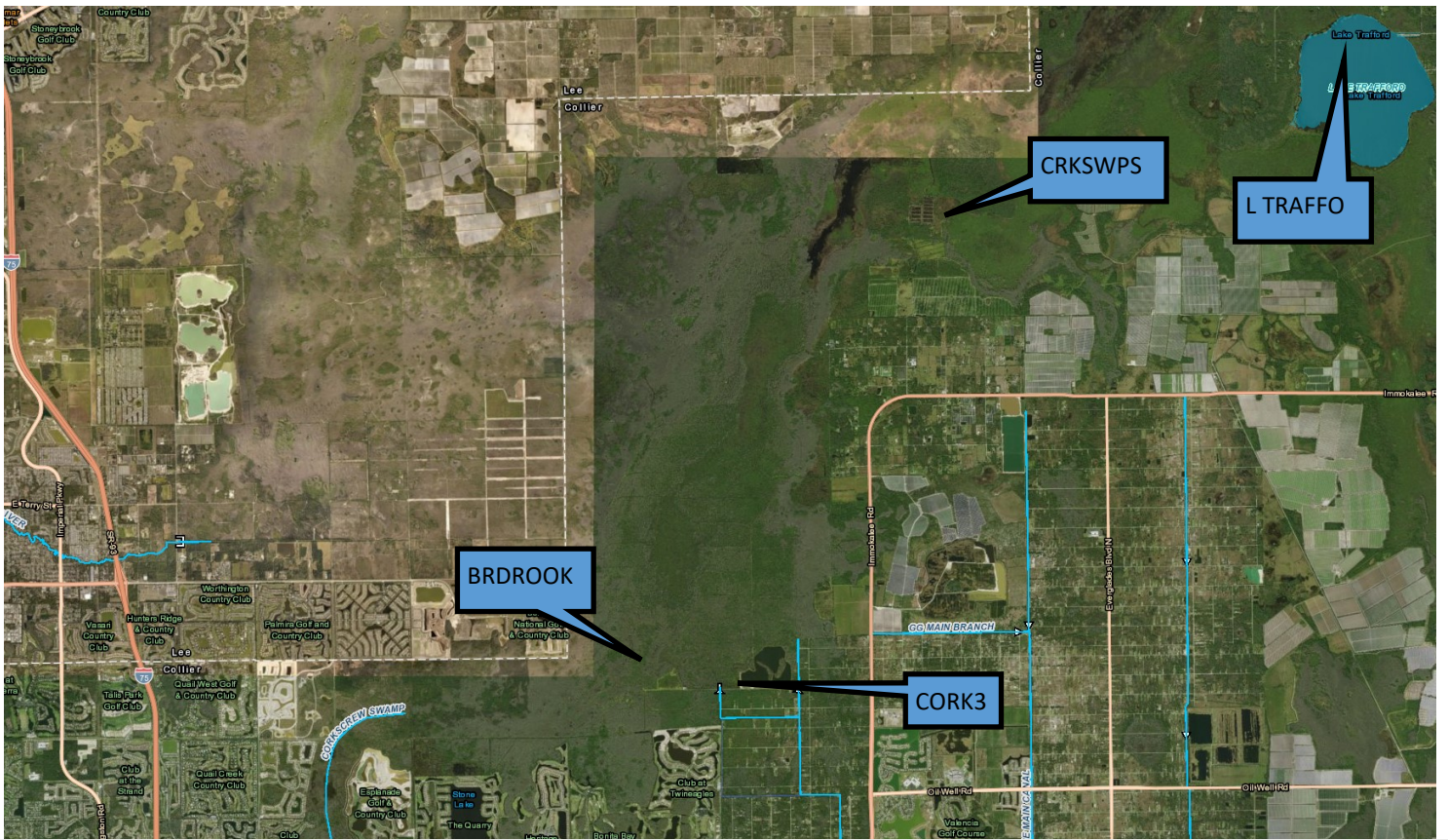


Figure 10-Corkscrew Historic Average Daily Headwater Percentiles(1984-2019)

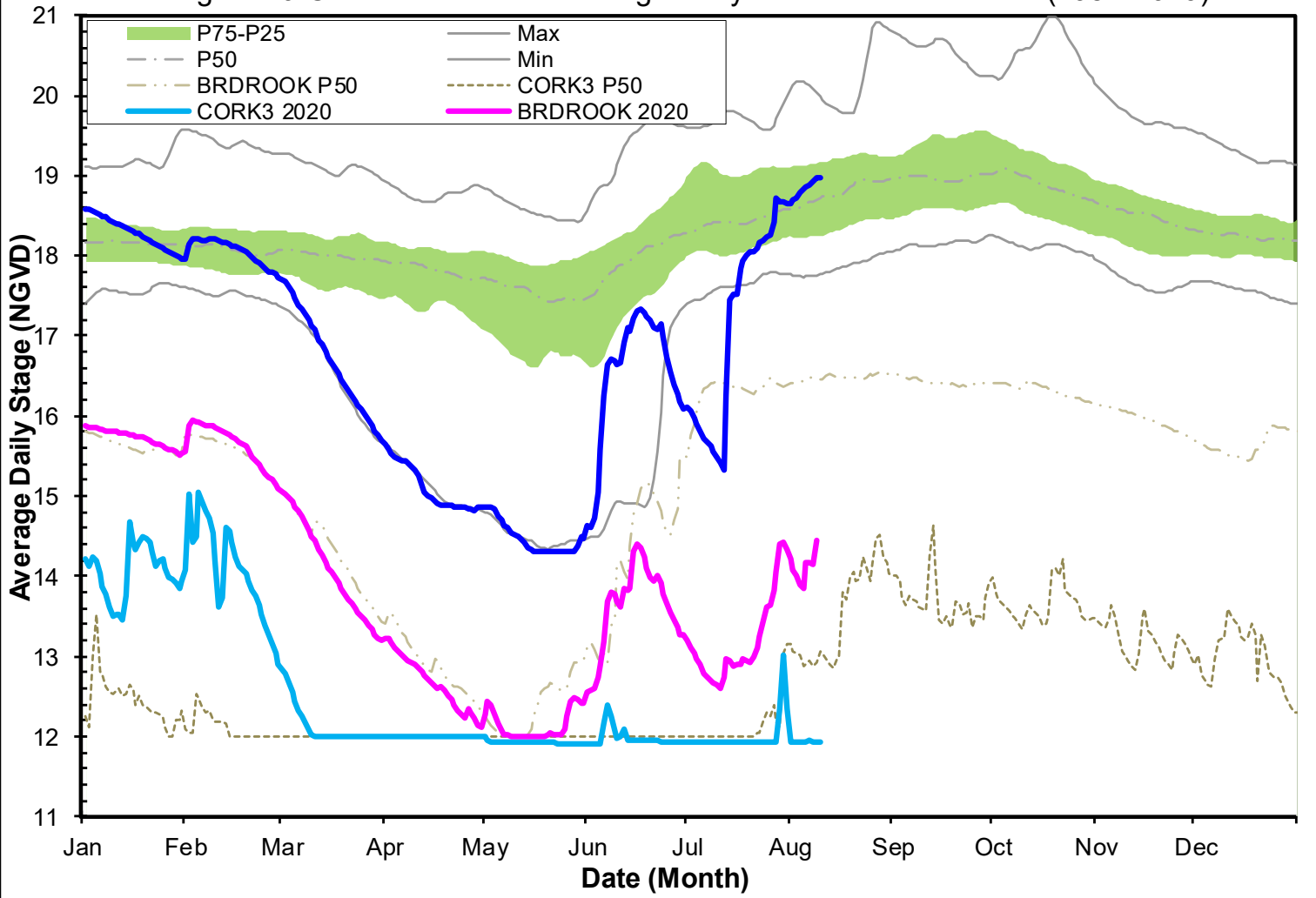


Fig 10A Lake Trafford Historic Daily Water Level Percentiles (1941-2019)

