Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 07/06/2020 (ENSO Neutral Condition)

Lake Okeechobee Net Inflow Outlook:

The Lake Okeechobee Net Inflow Outlook has been computed using 4 methods: Croley's method[1], the SFWMD empirical method[2], a sub-sampling of Neutral years[3] and a sub-sampling of warm years of the Atlantic Multi-decadal Oscillation (AMO) in combination with La Nina ENSO years[4]. The results for Croley's method and the SFWMD empirical method are based on the CPC Outlook.

Table of the Lake Okeechobee Net Inflow Outlooks in feet of equivalent depth. All methods are updated on a weekly basis with observed net inflow for the current month.

Season	Croley's Method[1*]		SFWMD Empirical Method[2]		Sub-sampling of Neutral ENSO Years[3]		Sub-sampling of AMO Warm + Neutral ENSO Years[4]	
	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition
Current (Jul-Dec)	N/A	N/A	2.39	Very Wet	2.36	Very Wet	3.67	Very Wet
Multi Seasonal (Jul-Apr)	N/A	N/A	2.84	Wet	2.53	Wet	3.86	Wet

*Croley's Method Not Produced for This Report

See Seasonal and Multi-Seasonal tables for the classification of Lake Okeechobee Outlooks.

The recommended methods and values for estimating the Lake Okeechobee Net Inflow Outlook are shaded and should be used in the LORS2008 Release Guidance Flow Charts.

**Sub-sampling is a weighted average of ENSO conditions based on the ENSO forecast used.

Tributary Hydrologic Conditions Graph:

213 cfs 14-day running average for Lake Okeechobee Net Inflow through 07/06/2020.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

-2.27 for Palmer Drought Index on 07/04/2020.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

The wetter of the two conditions above is **Dry**.

LORS2008 Classification Tables:

Lake Okeechobee Stage on 07/06/2020

Lake Okeechobee Stage: **12.29 feet**

Lake Okeechobee Management Zone/Band		Bottom Elevation (feet, NGVD)	Current Lake Stage
High Lake Management Band		16.16	
Operational Band	High sub-band	15.70	
	Intermediate sub-band	15.25	
	Low sub-band	13.33	
Base Flow sub-band		12.60	
Beneficial Use sub-band		11.20	← 12.29 ft
Water Shortage Management Band			

Part C and Part D of LORS2008:

With Lake Okeechobee stage below the Base-Flow Sub-Band, Part C **nor** Part D of the 2008 LORS suggest releases to the WCAs or Estuaries required to manage lake stages.

Adaptive Protocol's Release Guidance: Caloosahatchee Estuary

The SFWMD's Lake Okeechobee Adaptive Protocol's Release Guidance suggests no S-77 release to the Caloosahatchee Estuary unless the Governing Board recommends otherwise.

LORS2008 Implementation on 07/06/2020 (ENSO Neutral Condition):

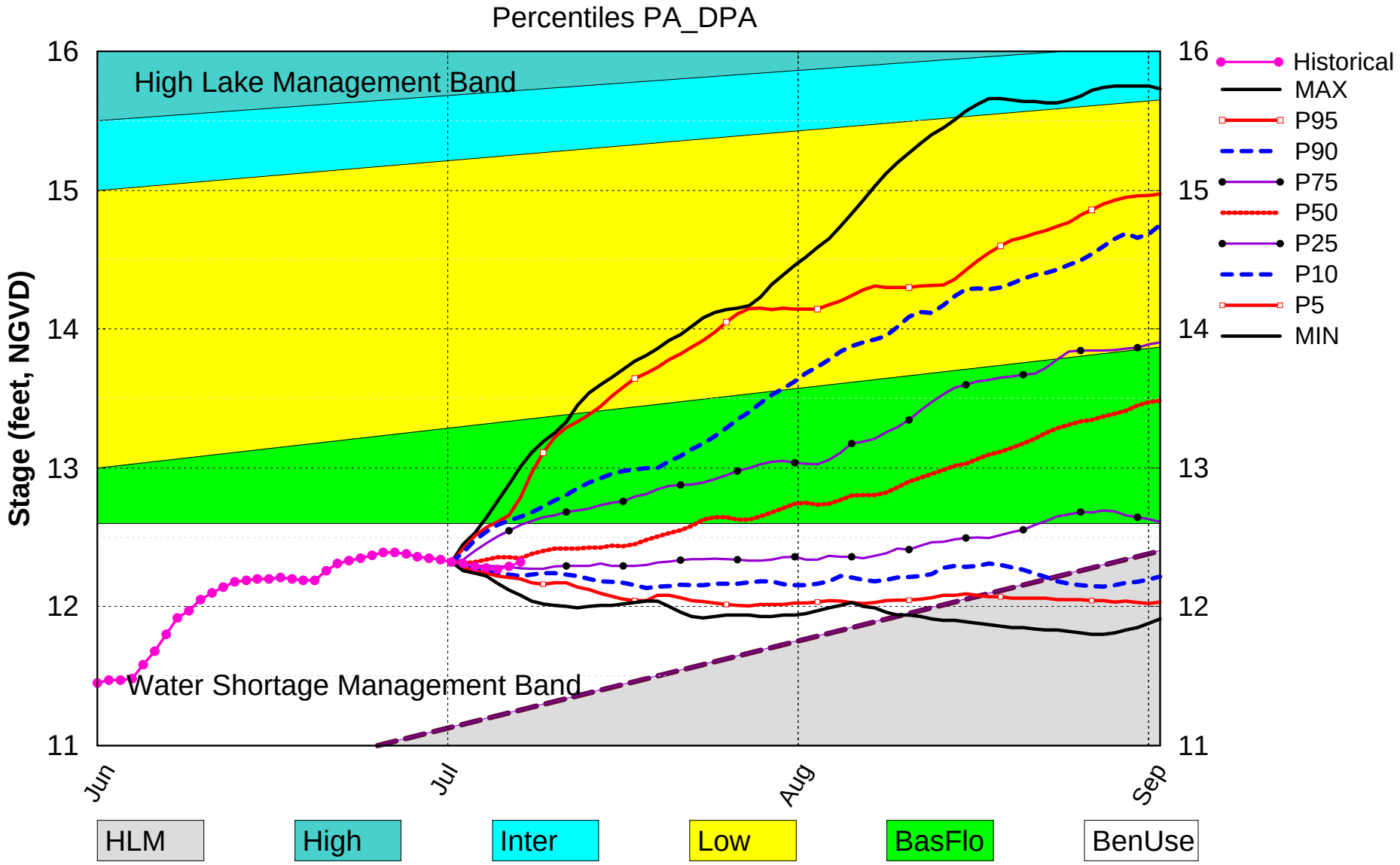
Status for week ending 7/6/2020:

Water Supply Risk Evaluation

Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Base Flow sub band	M
	Palmer Index for LOK Tributary Conditions	-2.27 (Extremely Dry)	H
	CPC Precipitation Outlook	1 month: Above Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Outlook	2.36 ft	L
	ENSO Forecast (positive)	Normal to Extremely Wet	
	LOK Multi-Seasonal Net Inflow Outlook	2.53 ft	M
	ENSO Forecast (positive)	Normal	
WCAs	WCA 1: 3 Station Average (Site 1-7, 1-8T and 1-9)	Above Line 1 (16.10 ft)	L
	WCA 2A: Site 2-17	Above Line 1 (12.16 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.30 ft)	L
LEC	Service Area 1	Year-Round Irrigation Rule in effect	L
	Service Area 2	Year-Round Irrigation Rule in effect	L
	Service Area 3	Year-Round Irrigation Rule in effect	L

Note: The water supply risk classification based on the Palmer index, as well as the LOK seasonal and multi-seasonal net inflow outlooks use slightly different classification intervals than those used by the 2008-LORS.

Lake Okeechobee SFWMM July 2020 Position Analysis



(See assumptions on the Position Analysis Results website)

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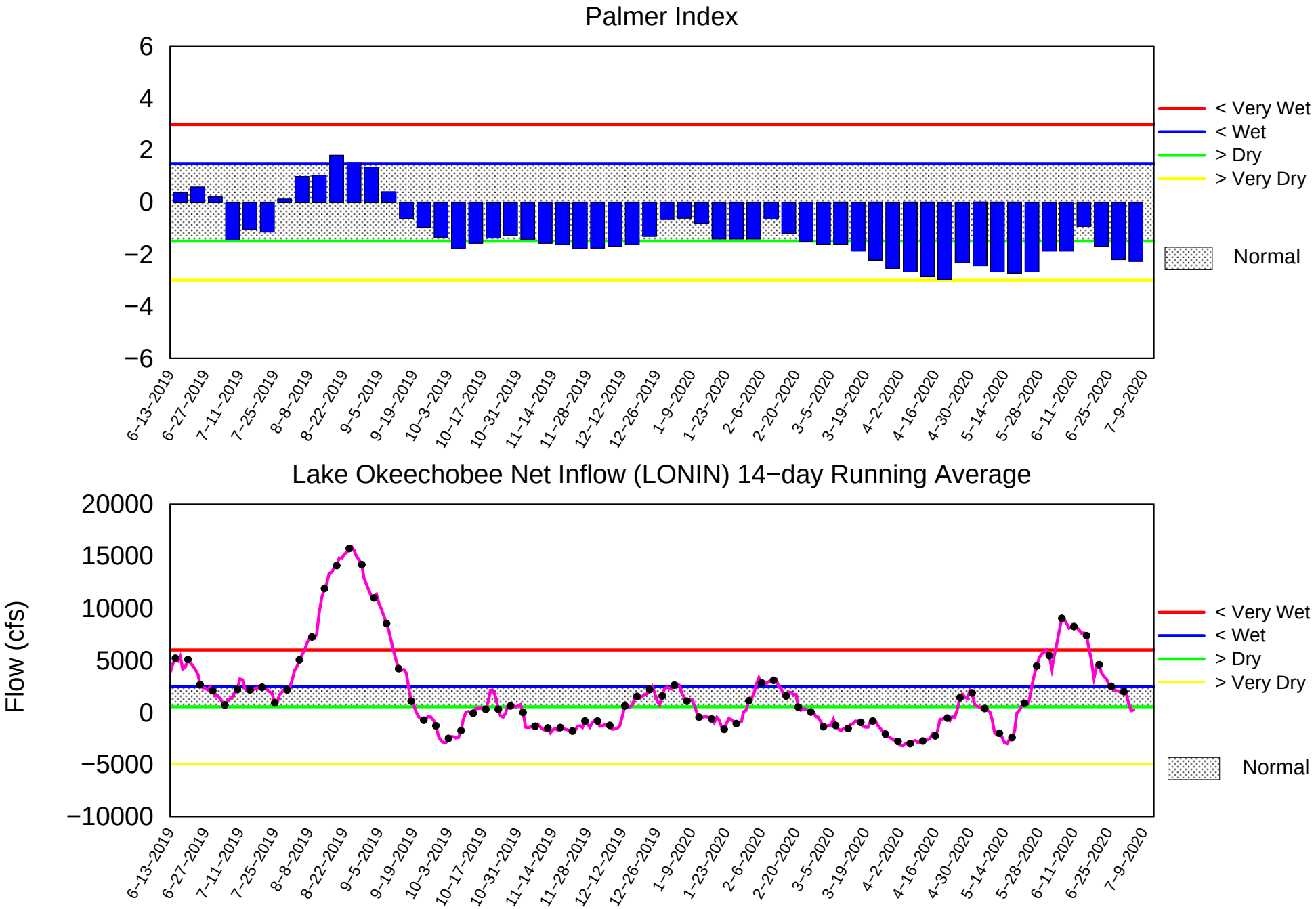
Tributary Basin Condition Indicators as of July 6 2020



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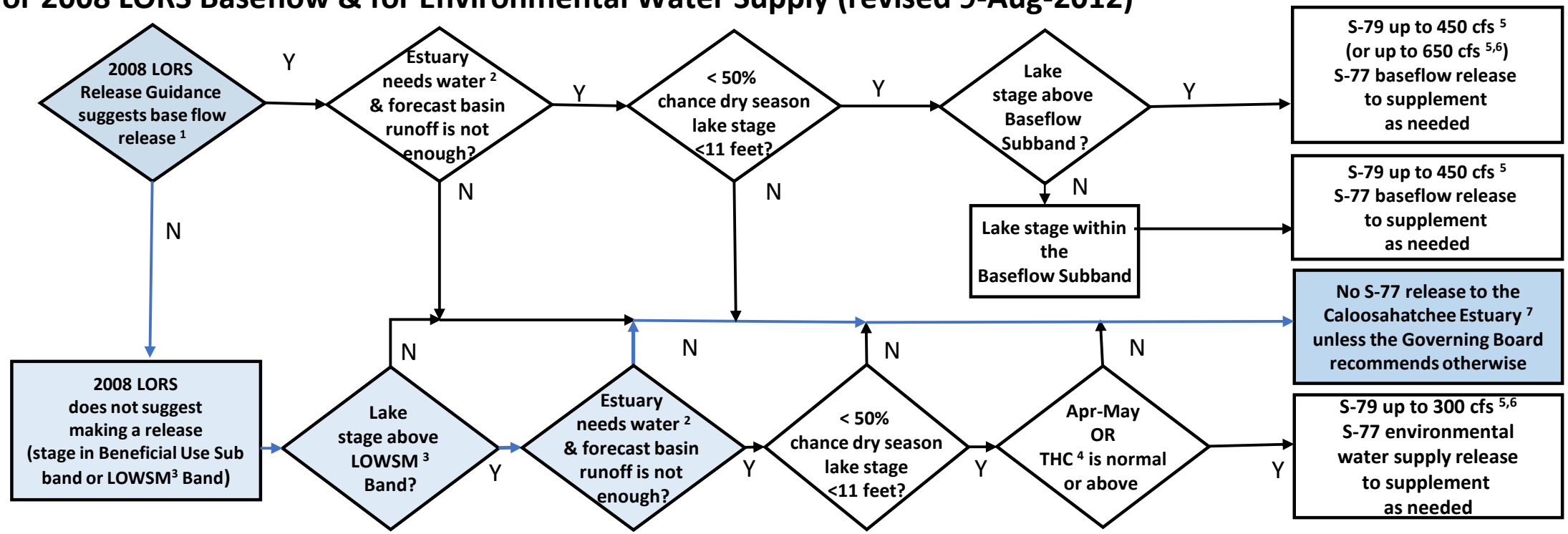
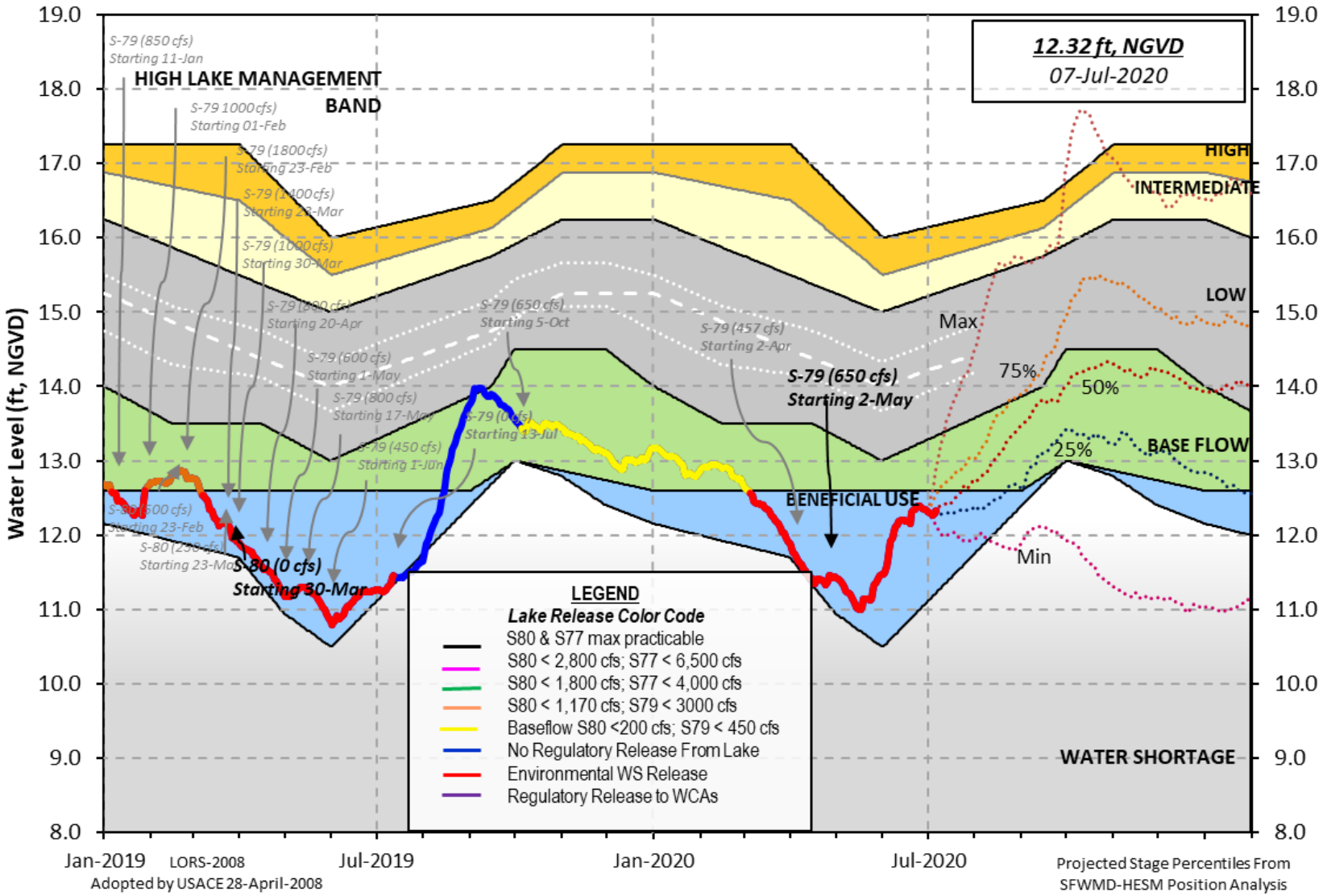
Flowchart to Guide Recommendations for Lake Okeechobee Releases to the Caloosahatchee Estuary for 2008 LORS Baseflow & for Environmental Water Supply (revised 9-Aug-2012)



[1]The 2008 LORS Release Guidance (Part D) can suggest baseflow releases in the Intermediate, Low, or Baseflow Subbands.
[2]Estuary "needs" water when the 30-day moving average salinity at I-75 bridge is projected to exceed 5 practical salinity units (psu) within 2 weeks.
[3]LOWSM = Lake Okeechobee Water Shortage Management.
[4]Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee Net Inflow and Palmer Index.
[5]Can release less than the "up to" limit if lower release is sufficient to reach or sustain desired estuary salinity; cfs = cubic feet per second.
[6]After reviewing conditions in Water Conservation Areas (WCAs), Stormwater Treatment Areas (STAs), ENP, St. Lucie Estuary and Lake Okeechobee.
[7]Should this condition be reached, the Governing Board will be briefed at their next regularly scheduled meeting as part of the State of the Water Resources agenda item.

Lake Okeechobee Water Level History and Projected Stages



U. S. Army Corps of Engineers, Jacksonville District
Lake Okeechobee and Vicinity Report
** Preliminary Data - Subject to Revision **

Data Ending 2400 hours 05 JUL 2020

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	12.29	11.23	14.33 (Official Elv)

Bottom of High Lake Mngmt= 16.16 Top of Water Short Mngmt= 11.20
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 12.37
Difference from Average LORS2008 -0.08

05JUL (1965-2007) Period of Record Average 13.50
Difference from POR Average -1.21

Today Lake Okeechobee elevation is determined from the 4 Int & 4 Edge stations

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 6.23'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 4.43'
Bridge Clearance = 51.23'

---

4 Interior and 4 Edge Okeechobee Lake Average (Avg-Daily values):

L001	L005	L006	LZ40	S4	S352	S308	S133
12.31	12.33	12.27	12.27	12.23	12.38	12.29	12.26

*Combination Okeechobee Avg-Daily Lake Average = 12.29 (*See Note)

Okeechobee Inflows (cfs):

S65E	796	S65EX1	433	Fisheating Cr	78
S154	0	S191	0	S135 Pumps	0
S84	119	S133 Pumps	0	S2 Pumps	0
S84X	18	S127 Pumps	0	S3 Pumps	0
S71	112	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	38	C5	0

Total Inflows: 1593

Okeechobee Outflows (cfs):

S135 Culverts	1	S354	0	S77	428
S127 Culverts	0	S351	0	S308	-154
S129 Culverts	0	S352	143		
S131 Culverts	0	L8 Canal Pt	-32		

Total Outflows: 386

****S77 structure flow is being used to compute Total Outflow.
****S308 below flow meter is being used to compute Total Outflow.

Okeechobee Pan Evaporation (inches):

S77	0.30	S308	0.24

Average Pan Evap x 0.75 Pan Coefficient = 0.20" = 0.02'

Lake Average Precipitation using NEXRAD: = 0.60" = 0.05'

Evaporation - Precipitation: = -0.40" = -0.03'
Evaporation - Precipitation using Lake Area of 730 square miles
is equal to 7802 cfs into the lake.
Lake Okeechobee (Change in Storage) Flow is 3933 cfs or 7800 AC-FT

	Headwater Elevation (ft-msl)	Tailwater Elevation (ft-msl)	Disch (cfs) (I) see note at bottom	Gate Positions #1 (ft)	#2 (ft)	#3 (ft)	#4 (ft)	#5 (ft)	#6 (ft)	#7 (ft)	#8 (ft)
North East Shore											
S133 Pumps:	13.02	12.23	0	0	0	0	0	0	0 (cfs)		
S193:											
S191:	17.98	12.23	0	0.0	0.0	0.0					
S135 Pumps:	13.14	12.17	0	0	0	0	0		(cfs)		
S135 Culverts:			1	0.1	0.0						
North West Shore											
S65E:	20.86	12.24	796	0.6	0.0	0.0	0.5	0.0	0.5		
S65EX1:	20.86	12.24	433								
S127 Pumps:	13.49	12.42	0	0	0	0	0	0	0 (cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	12.84	12.58	0	0	0	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	13.05	12.36	38	0	-NR-				(cfs)		
S131 Culvert:			0								
Fisheating Creek											
nr Palmdale		30.15	78								
nr Lakeport											
C5:		-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	12.24	12.22	0	0	0	0			(cfs)		
S169:	12.23	12.23	58	5.0	5.0	5.0					
S310:	12.14		105								
S3 Pumps:	9.97	12.11	0	0	0	0			(cfs)		
S354:	12.11	9.97	0	0.0	0.0						
S2 Pumps:	9.89	-NR-	0	0	0	0	0		(cfs)		
S351:	-NR-	9.89	0	0.0	0.0	0.0					
S352:	12.38	9.69	143	0.0	0.0						
C10A:	-NR-	12.46		8.0	8.0	8.0	0.0	0.0			
L8 Canal PT		12.24	-32								

S351 and S352 Temporary Pumps/S354 Spillway

S351:	9.89	-NR-	0	-NR--NR--NR--NR--NR--NR--NR-	
S352:	9.69	12.38	143	-NR--NR--NR--NR-	
S354:	9.97	12.11	0	-NR--NR--NR--NR-	

Caloosahatchee River (S77, S78, S79)					
S47B:	12.16	10.90		0.0	0.0
S47D:	10.90	10.91	-32	4.6	

```
  S77:
    Spillway and Sector Preferred Flow:
               12.10     10.80     426  0.0  0.0  3.0  0.0
    Flow Due to Lockages+:           2

  S78:
    Spillway and Sector Flow:
               10.86      2.93     470    0.5  0.0  0.0  0.5
    Flow Due to Lockages+:           15

  S79:
    Spillway and Sector Flow:
                3.18      1.03     870    0.0  1.0  1.0  1.5  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:           9
    Percent of flow from S77         49%
    Chloride             (ppm)       0


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Preferred Flow:
               12.29     12.27    -154  3.0  3.0  3.0  3.0
    Flow Due to Lockages+:           0

  S153:        18.81     12.09       0    0.0  0.0
  S80:
    Spillway and Sector Flow:
               12.33      1.80       0    0.0  0.0  0.0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:           18
    Percent of flow from S308   NA  %

  Steele Point Top Salinity    (mg/ml) ****
  Steele Point Bottom Salinity (mg/ml) ****

  Speedy Point Top Salinity    (mg/ml) ****
  Speedy Point Bottom Salinity (mg/ml) ****

 + Flow Due to lockages is computed utilizing average daily headwater and
   tailwater along with total number of lockages for the day to calculate
   a volume which is then converted to an average discharge in cfs.
++ Preferred flow is determined from either the spillway discharge or the below flow meter daily
```

Daily Precipitation Totals	1-Day (inches)	3-Day (inches)	7-Day (inches)	----- Wind ---- Direction (Degø)	Speed (mph)
S133 Pump Station:	-NR-	0.00	0.00		
S193:	-NR-	0.00	0.00	-NR-	-NR-
Okeechobee Field Station:	-NR-	0.00	0.00		
S135 Pump Station:	-NR-	0.00	0.00		
S127 Pump Station:	-NR-	0.00	0.00		
S129 Pump Station:	-NR-	0.00	0.00		
S131 Pump Station:	-NR-	0.00	0.00		
S77:	32.23	32.23	32.24	179	4
S78:	16.22	16.23	16.92	186	2
S79:	-0.64	-0.64	-1.28	94	5
S4 Pump Station:	-NR-	0.00	0.00		
Clewiston Field Station:	-NR-	0.00	0.00		
S3 Pump Station:	-NR-	0.00	0.00		
S2 Pump Station:	-NR-	0.00	0.00		
S308:	0.20	0.20	0.20	89	4
S80:	38.57	41.80	41.80	108	1
Okeechobee Average	16.22	2.49	2.50		

(Sites S78, S79 and S80 not included)

Oke Nexrad Basin Avg	0.60	0.84	1.18

Okeechobee Lake Elevations		05 JUL 2020	12.29	Difference from 05JUL20
05JUL20	-1 Day =	04 JUL 2020	12.27	-0.02
05JUL20	-2 Days =	03 JUL 2020	12.28	-0.01
05JUL20	-3 Days =	02 JUL 2020	12.29	0.00
05JUL20	-4 Days =	01 JUL 2020	12.31	0.02
05JUL20	-5 Days =	30 JUN 2020	12.32	0.03
05JUL20	-6 Days =	29 JUN 2020	12.34	0.05
05JUL20	-7 Days =	28 JUN 2020	12.35	0.06
05JUL20	-30 Days =	05 JUN 2020	11.80	-0.49
05JUL20	-1 Year =	05 JUL 2019	11.23	-1.06
05JUL20	-2 Year =	05 JUL 2018	14.33	2.04

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = -NR-

Lake Okeechobee Net Inflow (LONIN)

			Average Flow over the previous 14 days		Avg-Daily Flow
05JUL20	Today =	05 JUL 2020	145	MON	4502
05JUL20	-1 Day =	04 JUL 2020	94	SUN	-581
05JUL20	-2 Days =	03 JUL 2020	891	SAT	-618
05JUL20	-3 Days =	02 JUL 2020	1993	FRI	-1992
05JUL20	-4 Days =	01 JUL 2020	2168	THU	274
05JUL20	-5 Days =	30 JUN 2020	2059	WED	-2351
05JUL20	-6 Days =	29 JUN 2020	2118	TUE	-812
05JUL20	-7 Days =	28 JUN 2020	2339	MON	-900
05JUL20	-8 Days =	27 JUN 2020	2408	SUN	-2965
05JUL20	-9 Days =	26 JUN 2020	2784	SAT	-1366
05JUL20	-10 Days =	25 JUN 2020	3045	FRI	784
05JUL20	-11 Days =	24 JUN 2020	3603	THU	-NR-
05JUL20	-12 Days =	23 JUN 2020	3893	WED	4083
05JUL20	-13 Days =	22 JUN 2020	4304	TUE	3832

S65E

			Average Flow over previous 14 days		Avg-Daily Flow
05JUL20	Today=	05 JUL 2020	1049	MON	917
05JUL20	-1 Day =	04 JUL 2020	1075	SUN	914
05JUL20	-2 Days =	03 JUL 2020	1109	SAT	919
05JUL20	-3 Days =	02 JUL 2020	1145	FRI	897
05JUL20	-4 Days =	01 JUL 2020	1143	THU	882
05JUL20	-5 Days =	30 JUN 2020	1151	WED	902
05JUL20	-6 Days =	29 JUN 2020	1144	TUE	1001
05JUL20	-7 Days =	28 JUN 2020	1147	MON	971
05JUL20	-8 Days =	27 JUN 2020	1157	SUN	1094
05JUL20	-9 Days =	26 JUN 2020	1166	SAT	1202
05JUL20	-10 Days =	25 JUN 2020	1175	FRI	1144
05JUL20	-11 Days =	24 JUN 2020	1200	THU	1252
05JUL20	-12 Days =	23 JUN 2020	1204	WED	1355
05JUL20	-13 Days =	22 JUN 2020	1213	TUE	1239

S65EX1

			Average Flow over previous 14 days		Avg-Daily Flow
05JUL20	Today=	05 JUL 2020	411	MON	433
05JUL20	-1 Day =	04 JUL 2020	423	SUN	453
05JUL20	-2 Days =	03 JUL 2020	438	SAT	513

05JUL20	-3 Days =	02 JUL 2020	439	FRI	485
05JUL20	-4 Days =	01 JUL 2020	436	THU	515
05JUL20	-5 Days =	30 JUN 2020	443	WED	308
05JUL20	-6 Days =	29 JUN 2020	465	TUE	401
05JUL20	-7 Days =	28 JUN 2020	480	MON	317
05JUL20	-8 Days =	27 JUN 2020	502	SUN	271
05JUL20	-9 Days =	26 JUN 2020	528	SAT	359
05JUL20	-10 Days =	25 JUN 2020	538	FRI	302
05JUL20	-11 Days =	24 JUN 2020	561	THU	391
05JUL20	-12 Days =	23 JUN 2020	581	WED	491
05JUL20	-13 Days =	22 JUN 2020	607	TUE	510

Lake Okeechobee Outlets Last 14 Days

DATE	S-77 Discharge (ALL DAY) (AC-FT)	Below S-77 Discharge (ALL-DAY) (AC-FT)	S-78 Discharge (ALL DAY) (AC-FT)	S-79 Discharge (ALL DAY) (AC-FT)
05 JUL 2020	847	1503	953	1752
04 JUL 2020	1584	1712	1163	1441
03 JUL 2020	1587	1713	953	991
02 JUL 2020	1617	1859	889	905
01 JUL 2020	1794	1552	529	896
30 JUN 2020	985	1211	663	1117
29 JUN 2020	912	1386	660	1451
28 JUN 2020	920	1515	665	1784
27 JUN 2020	966	1814	600	1570
26 JUN 2020	440	779	363	1575
25 JUN 2020	3	142	356	1433
24 JUN 2020	205	404	424	1852
23 JUN 2020	519	854	685	1803
22 JUN 2020	2	617	1095	2703

DATE	S-310 Discharge (ALL DAY) (AC-FT)	S-351 Discharge (ALL DAY) (AC-FT)	S-352 Discharge (ALL DAY) (AC-FT)	S-354 Discharge (ALL DAY) (AC-FT)	L8 Canal Pt Discharge (ALL DAY) (AC-FT)
05 JUL 2020	208	0	284	0	-63
04 JUL 2020	325	90	700	373	10
03 JUL 2020	351	122	543	307	120
02 JUL 2020	498	785	633	588	128
01 JUL 2020	712	816	618	945	174
30 JUN 2020	611	0	712	1034	217
29 JUN 2020	294	0	303	773	200
28 JUN 2020	169	0	484	452	163
27 JUN 2020	96	0	275	394	91
26 JUN 2020	211	0	476	177	11
25 JUN 2020	122	415	497	642	-59
24 JUN 2020	-8	0	0	0	-160
23 JUN 2020	-184	0	0	0	-39
22 JUN 2020	-316	0	0	0	-89

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
05 JUL 2020	1123	-306	36
04 JUL 2020	799	-280	43
03 JUL 2020	1053	-198	43
02 JUL 2020	1284	-113	46
01 JUL 2020	1229	-210	40
30 JUN 2020	1226	-194	50

29 JUN 2020	1367	-79	-NR-
28 JUN 2020	1442	-510	27
27 JUN 2020	1480	-321	24
26 JUN 2020	1613	-387	41
25 JUN 2020	1227	-342	41
24 JUN 2020	8208	-NR-	24
23 JUN 2020	-NR-	-942	38
22 JUN 2020	-NR-	-695	27

*** NOTE: Discharge (ALL DAY) is computed using Spillway, Sector Gate and Lockages Discharges from 0015 hrs to 2400 hrs.

(I) - Flows preceeded by "I" signify an instantaneous flow computed from the single value reported for the day

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* On 11 May 1999, Lake Okeechobee Elevation was switched from Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the standard 10 stations, the average of the interior 4 station gages was used as the Lake Okeechobee Elevation.
On 05 November 2010, Lake Okeechobee Elevation was switched to a 9 gage mix of interior and edge gages to obtain a more reliable representation of the lake level.
On 09 May 2011, Lake Okeechobee Elevation was switched to a 8 gage mix of interior and edge gages to obtain a more reliable representation of the lake level due to isolation of S135 from low lake levels.
Today Lake Okechobee elevation is determined from the 4 Int & 4 Edge stations
++ For more information see the Jacksonville District Navigation website at http://www.saj.usace.army.mil/
$ For information regarding Lake Okeechobee Service Area water restrictions please refer to www.sfwmd.gov

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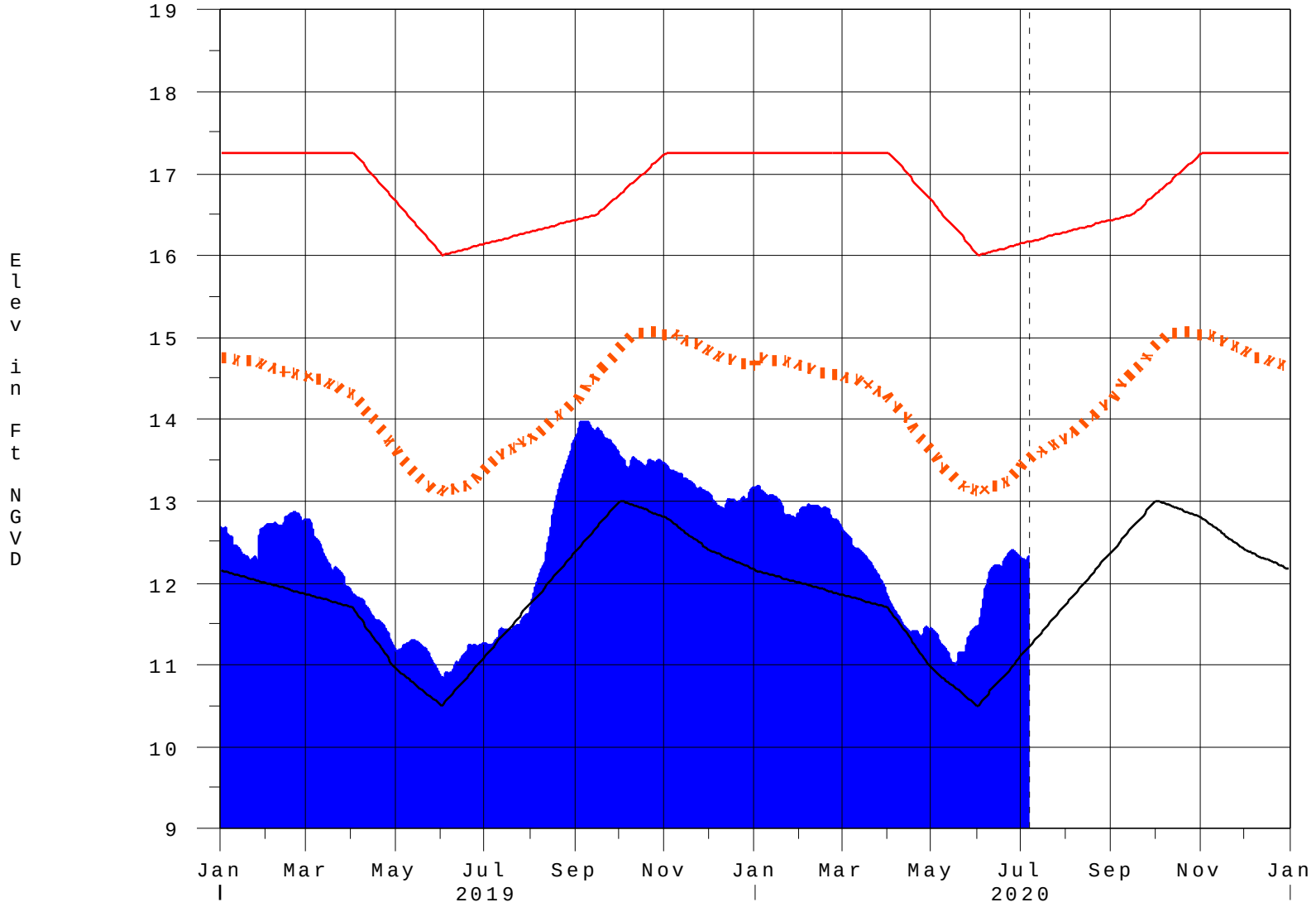
Report Generated 06JUL2020 @ 13:39 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

07JUL20 08:17:24



High Lake Management
Okeechobee Avg Elev
Average Elev [1965-2007]
Water Shortage Management

Classification Tables

Supplemental Tables used in conjunction with the LORS2008 Release

Guidance Flow Charts

- Class Limits for Tributary Hydrologic Conditions

Table K-2 in the Lake Okeechobee Water Control Plan

- 6-15 Day Precipitation Outlook Categories

Table ?? in the Lake Okeechobee Water Control Plan

- Classification of Lake Okeechobee Net Inflow for Seasonal Outlook

Table K-3 in the Lake Okeechobee Water Control Plan

- Classification of Lake Okeechobee Net Inflow for Multi-Seasonal Outlook

Table K-4 in the Lake Okeechobee Water Control Plan

Back to Lake Okeechobee Operations Main Page

Back to U.S. Army Corps of Engineers Lake Okeechobee Operations Homepage

Tributary Hydrologic Classification*	Palmer Index Class Limits	2-wk Mean L.O. Net Inflow Class Limits
Very Wet	3.0 or greater	Greater >= 6000 cfs
Wet	1.5 to 2.99	2500 - 5999 cfs
Near Normal	-1.49 to 1.49	500 - 2499 cfs
Dry	-2.99 to -1.5	-5000 – 500 cfs
Very Dry	-3.0 or less	Less than -5000 cfs

* use the wettest of the two indicators

Classification of Lake Okeechobee Net Inflow Seasonal Outlook*

Lake Net Inflow Prediction [million acre-feet]	Equivalent Depth** [feet]	Lake Okeechobee Net Inflow Seasonal Outlook
> 0.93	> 2.0	Very Wet
0.71 to 0.93	1.51 to 2.0	Wet
0.35 to 0.70	0.75 to 1.5	Normal
< 0.35	< 0.75	Dry

****Volume-depth conversion based on average lake surface area of 467,000 acres**

Classification of Lake Okeechobee Net Inflow Multi-Seasonal Outlook*

Lake Net Inflow Prediction [million acre-feet]	**Equivalent Depth** [feet]**	**Lake Okeechobee Net Inflow Multi-Seasonal Outlook**
> 2.0	> 4.3	Very Wet
1.18 to 2.0	2.51 to 4.3	Wet
0.5 to 1.17	1.1 to 2.5	Normal
< 0.5	< 1.1	Dry

****Volume-depth conversion based on average lake surface area of 467,000 acres**

6-15 Day Precipitation Outlook Categories*

6-15 Day Precipitation Outlook Categories	WSE Decision Tree Categories
Above Normal	Wet to Very Wet
Normal	Normal
Below Normal	Dry

*** Corresponds to Table 7-6 in the Lake Okeechobee Water Control Plan**

Under Construction