Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 03/30/2020 (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 (Mar-Aug)	N/A	N/A	0.94	Normal	1.06	Normal	1.77	Wet
Multi Seasonal (Mar-Oct)	N/A	N/A	2.45	Normal	2.42	Normal	3.84	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:

-2438 cfs 14-day running average for Lake Okeechobee Net Inflow through 03/29/2020.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

-2.55 for Palmer Drought Index on 3/28/2020.
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 03/30/2020

Lake Okeechobee Stage: **11.95 feet**

Lake Okeechobee Management Zone/Band		Bottom Elevation (feet, NGVD)	Current Lake Stage
High Lake Management Band		17.25	
Operational Band	High sub-band	16.51	
	Intermediate sub-band	15.52	
	Low sub-band	13.50	
Base Flow sub-band		12.60	
Beneficial Use sub-band		11.71	← 11.95 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.

LORS2008 Implementation on 3/30/2020 (ENSO Neutral Condition):

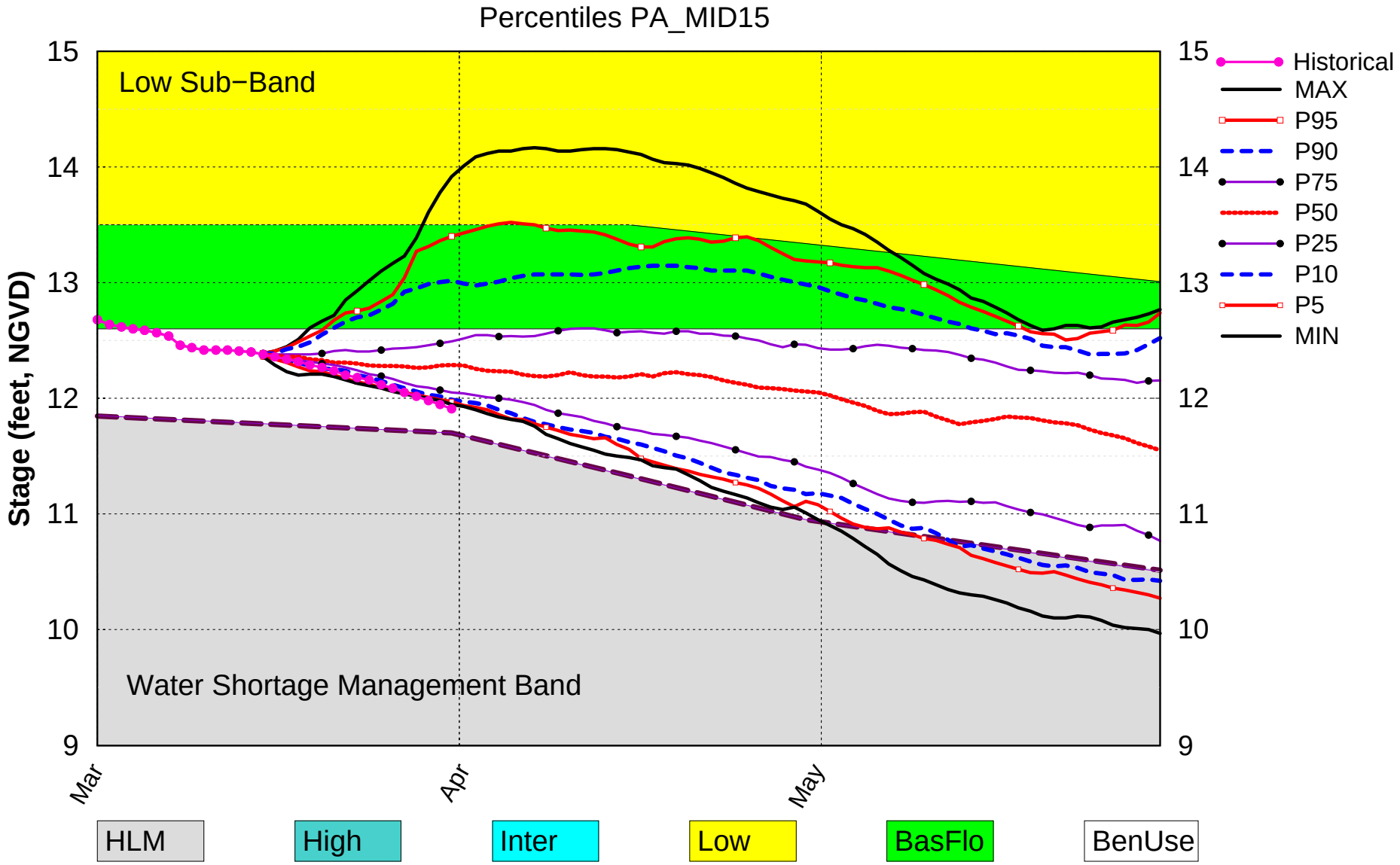
Status for week ending 3/30/2020:

Water Supply Risk Evaluation

Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Beneficial Use sub band	H
	Palmer Index for LOK Tributary Conditions	-2.55 (Extremely Dry)	H
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Outlook	1.06 ft (Dry)	M
	ENSO Forecast (positive)		
	LOK Multi-Seasonal Net Inflow Outlook	2.42 ft (Normal)	M
	ENSO Forecast (positive)		
WCAs	WCA 1: 3 Station Average (Site 1-7, Site 1-8T & Site 1-9)	Above Line 1 (16.28 ft)	L
	WCA 2A: Site S-11B	Below Line 2 (10.51 ft)	H
	WCA-3A: 3 Station Average (Site 63, 64, and 65)	Line 1- Line 2 (8.73 ft)	M
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	M

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.

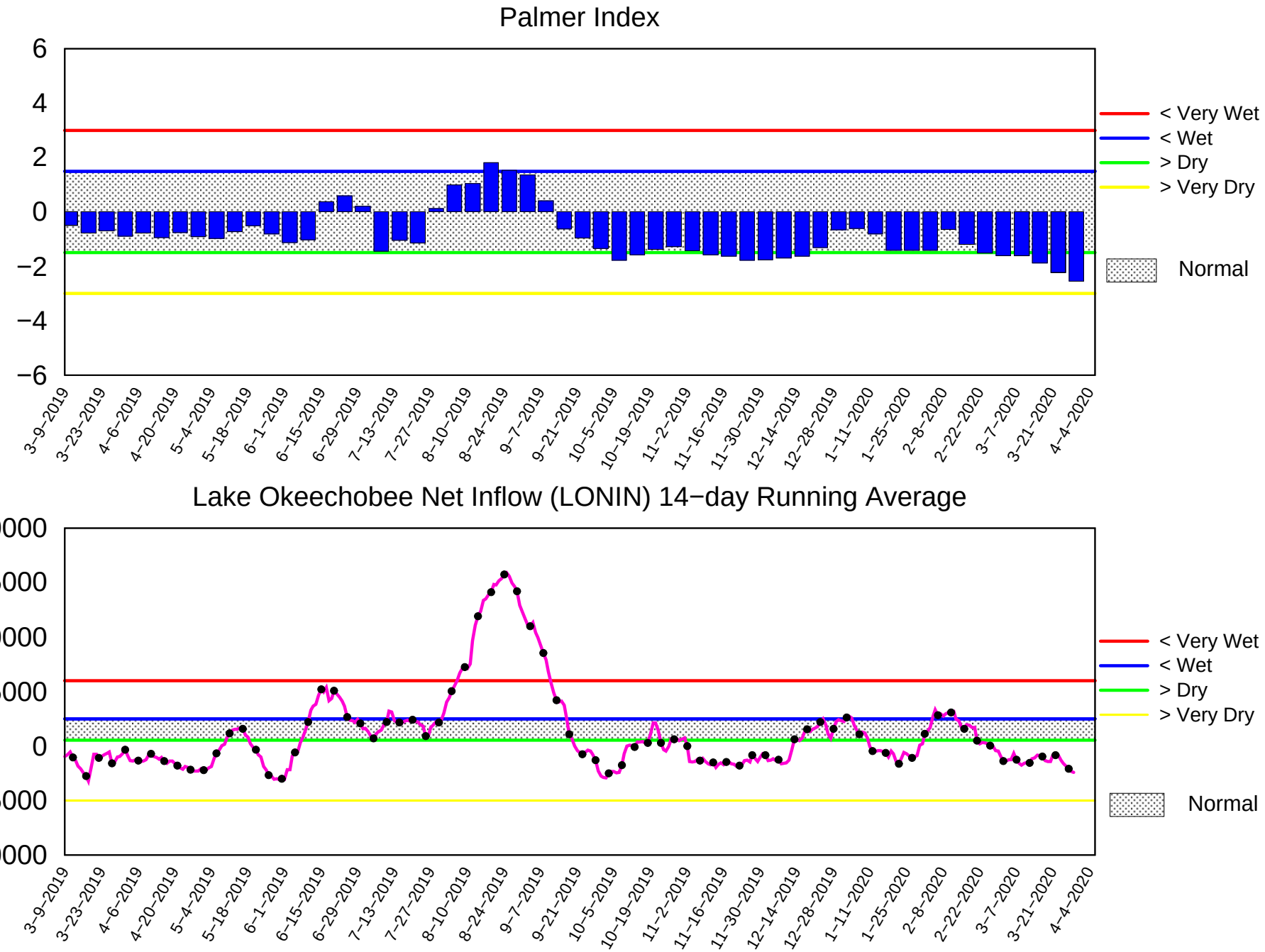
Lake Okeechobee SFWMM March 2020 Mid−Month Position Analysis



(See assumptions on the Position Analysis Results website)

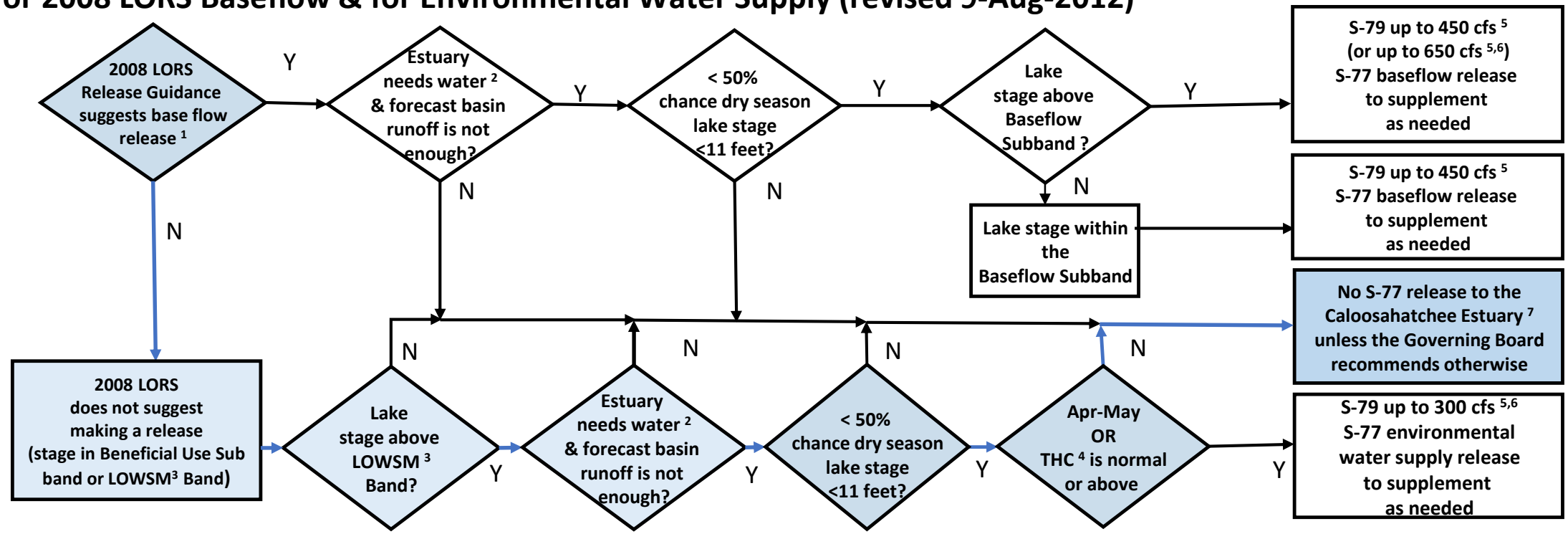
Tue Mar 31 09:50:21 EDT 2020

Tributary Basin Condition Indicators as of March 30 2020



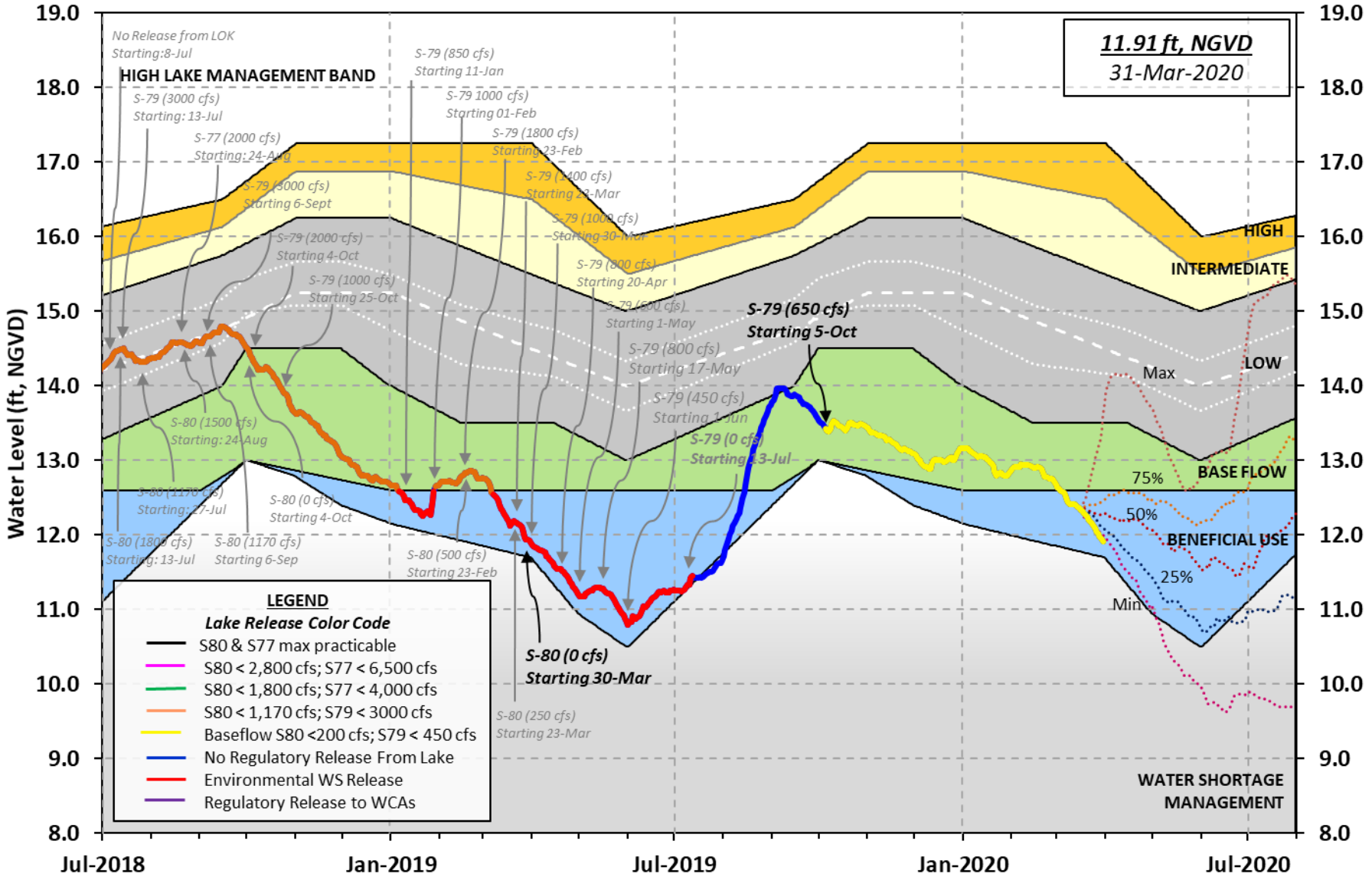
Mon Mar 30 12:50:14 EDT 2020

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



LORS-2008
Adopted by USACE 28-April-2008

Projected Stage Percentiles From
SFWMD-HESM Position Analysis

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

Data Ending 2400 hours 29 MAR 2020

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	11.95	11.94	13.93 (Official Elv)

Bottom of High Lake Mngmt= 17.25 Top of Water Short Mngmt= 11.71
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 13.06
Difference from Average LORS2008 -1.11

29MAR (1965-2007) Period of Record Average 14.32
Difference from POR Average -2.37

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 5.89'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 4.09'
Bridge Clearance = 51.72'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
11.97	11.99	11.93	11.92	11.91	12.01	11.89	11.93

*Combination Okeechobee Avg-Daily Lake Average = 11.95 (*See Note)

Okeechobee Inflows (cfs):

S65E	266	S65EX1	0	Fisheating Cr	0
S154	0	S191	0	S135 Pumps	0
S84	0	S133 Pumps	0	S2 Pumps	0
S84X	0	S127 Pumps	0	S3 Pumps	0
S71	0	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0	C5	0

Total Inflows: 266

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	603	S77	1080
S127 Culverts	0	S351	1085	S308	34
S129 Culverts	0	S352	305		
S131 Culverts	0	L8 Canal Pt	111		

Total Outflows: 3218

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

Okeechobee Pan Evaporation (inches):

S77	0.22	S308	0.26

Average Pan Evap x 0.75 Pan Coefficient = 0.18" = 0.01'

Lake Average Precipitation using NEXRAD: = -NR-" = -NR-'

Evaporation - Precipitation: = -NR-" = -NR-'
Evaporation - Precipitation using Lake Area of 730 square miles
is equal to -NR-
Lake Okeechobee (Change in Storage) Flow is -5445 cfs or -10800 AC-FT

	Headwater Elevation (ft-msl)	Tailwater Elevation (ft-msl)	Disch (cfs)	Gate Positions #1 (ft)	#2 (ft)	#3 (ft)	#4 (ft)	#5 (ft)	#6 (ft)	#7 (ft)	#8 (ft)	
			(I) see note at bottom									
North East Shore												
S133 Pumps:	12.45	12.19	0	0	0	0	0	0				(cfs)
S193:												
S191:	18.33	12.14	0	0.0	0.0	-NR-						
S135 Pumps:	11.75	11.89	0	0	0	0	0					(cfs)
S135 Culverts:			0	0.0	0.0							
North West Shore												
S65E:	20.93	12.09	266	0.0	0.0	0.5	0.2	0.0	0.0			
S65EX1:	20.93	12.09	0									
S127 Pumps:	12.51	12.11	0	0	0	0	0	0				(cfs)
S127 Culvert:			0	0.0								
S129 Pumps:	12.33	11.53	0	0	0	0						(cfs)
S129 Culvert:			0	0.0								
S131 Pumps:	12.50	12.18	0	0	0							(cfs)
S131 Culvert:			0									
Fisheating Creek												
nr Palmdale		27.66	0									
nr Lakeport												
C5:		-NR-	0	-NR-	-NR-	-NR-						
South Shore												
S4 Pumps:	11.76	11.71	0	0	0	0						(cfs)
S169:	11.77	11.75	111	5.0	5.0	5.0						
S310:	11.68		150									
S3 Pumps:	11.07	11.67	0	0	0	0						(cfs)
S354:	11.67	11.07	603	2.2	2.4							
S2 Pumps:	11.19	-NR-	0	-NR-	-NR-	-NR-	-NR-					(cfs)
S351:	-NR-	11.19	1085	3.1	3.1	3.3						
S352:	11.95	11.01	305	0.8	1.2							
C10A:	-NR-	11.99		8.0	8.0	8.0	0.0	0.0				
L8 Canal PT		11.73	111									
S351 and S352 Temporary Pumps/S354 Spillway												
S351:	11.19	-NR-	1085	-NR--NR--NR--NR--NR--NR--NR-								
S352:	11.01	11.95	305	-NR--NR--NR--NR-								
S354:	11.07	11.67	603	-NR--NR--NR--NR-								
Caloosahatchee River (S77, S78, S79)												
S47B:	11.87	11.16		0.0	0.0							
S47D:	11.15	11.15	9	6.5								

```
  S77:
    Spillway and Sector Preferred Flow:
               11.72     11.02    1079  3.0  3.5  3.5  0.0
    Flow Due to Lockages+:           1

  S78:
    Spillway and Sector Flow:
               11.08      2.84     604    1.0  0.0  0.0  1.0
    Flow Due to Lockages+:           8

  S79:
    Spillway and Sector Flow:
                3.00      1.21     888    1.0  0.8  1.0  1.0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:           11
    Percent of flow from S77       122%
    Chloride             (ppm)      0


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Preferred Flow:
               11.86     11.78      34  3.0  3.0  3.0  3.0
    Flow Due to Lockages+:           0

  S153:        18.90     11.63       0    0.0  0.0
  S80:
    Spillway and Sector Flow:
               11.77      0.27       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:	14.54	14.54	14.54	185	6
S78:	6.86	6.86	6.86	183	4
S79:	1.17	1.17	1.17	294	1
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:	38.68	38.68	38.68	123	6
S80:	0.11	0.11	0.11	167	1
Okeechobee Average	26.61	4.09	4.09		

(Sites S78, S79 and S80 not included)

Oke Nexrad Basin Avg	-NR-	0.00	0.00

Okeechobee Lake Elevations		29 MAR 2020	11.95	Difference from 29MAR20
29MAR20	-1 Day =	28 MAR 2020	11.98	0.03
29MAR20	-2 Days =	27 MAR 2020	12.02	0.07
29MAR20	-3 Days =	26 MAR 2020	12.05	0.10
29MAR20	-4 Days =	25 MAR 2020	12.09	0.14
29MAR20	-5 Days =	24 MAR 2020	12.12	0.17
29MAR20	-6 Days =	23 MAR 2020	12.16	0.21
29MAR20	-7 Days =	22 MAR 2020	12.18	0.23
29MAR20	-30 Days =	28 FEB 2020	12.71	0.76
29MAR20	-1 Year =	29 MAR 2019	11.94	-0.01
29MAR20	-2 Year =	29 MAR 2018	13.93	1.98

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
29MAR20	Today =	29 MAR 2020	-1867	MON	-2228
29MAR20	-1 Day =	28 MAR 2020	-1688	SUN	-4138
29MAR20	-2 Days =	27 MAR 2020	-1295	SAT	-NR-
29MAR20	-3 Days =	26 MAR 2020	-1058	FRI	-NR-
29MAR20	-4 Days =	25 MAR 2020	-970	THU	-NR-
29MAR20	-5 Days =	24 MAR 2020	-726	WED	-NR-
29MAR20	-6 Days =	23 MAR 2020	-474	TUE	-NR-
29MAR20	-7 Days =	22 MAR 2020	-503	MON	-1146
29MAR20	-8 Days =	21 MAR 2020	-531	SUN	-NR-
29MAR20	-9 Days =	20 MAR 2020	-1433	SAT	-2608
29MAR20	-10 Days =	19 MAR 2020	-1446	FRI	-892
29MAR20	-11 Days =	18 MAR 2020	-1372	THU	-2677
29MAR20	-12 Days =	17 MAR 2020	-997	WED	-847
29MAR20	-13 Days =	16 MAR 2020	-900	TUE	-401

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
29MAR20	Today=	29 MAR 2020	584	MON	309
29MAR20	-1 Day =	28 MAR 2020	616	SUN	369
29MAR20	-2 Days =	27 MAR 2020	644	SAT	399
29MAR20	-3 Days =	26 MAR 2020	662	FRI	517
29MAR20	-4 Days =	25 MAR 2020	677	THU	638
29MAR20	-5 Days =	24 MAR 2020	677	WED	648
29MAR20	-6 Days =	23 MAR 2020	667	TUE	516
29MAR20	-7 Days =	22 MAR 2020	666	MON	665
29MAR20	-8 Days =	21 MAR 2020	655	SUN	760
29MAR20	-9 Days =	20 MAR 2020	650	SAT	763
29MAR20	-10 Days =	19 MAR 2020	649	FRI	571
29MAR20	-11 Days =	18 MAR 2020	663	THU	688
29MAR20	-12 Days =	17 MAR 2020	664	WED	682
29MAR20	-13 Days =	16 MAR 2020	681	TUE	647

S65EX1

		Average Flow over previous 14 days			Avg-Daily Flow
29MAR20	Today=	29 MAR 2020	38	MON	0
29MAR20	-1 Day =	28 MAR 2020	53	SUN	18
29MAR20	-2 Days =	27 MAR 2020	67	SAT	45

29MAR20	-3 Days =	26 MAR 2020	79	FRI		0
29MAR20	-4 Days =	25 MAR 2020	104	THU		0
29MAR20	-5 Days =	24 MAR 2020	126	WED		0
29MAR20	-6 Days =	23 MAR 2020	156	TUE		9
29MAR20	-7 Days =	22 MAR 2020	186	MON		63
29MAR20	-8 Days =	21 MAR 2020	211	SUN		0
29MAR20	-9 Days =	20 MAR 2020	232	SAT		0
29MAR20	-10 Days =	19 MAR 2020	250	FRI		0
29MAR20	-11 Days =	18 MAR 2020	266	THU		63
29MAR20	-12 Days =	17 MAR 2020	276	WED		162
29MAR20	-13 Days =	16 MAR 2020	280	TUE		169

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)
29 MAR 2020	2147	2177	1219	1779
28 MAR 2020	2216	2280	993	1286
27 MAR 2020	2355	2423	1013	900
26 MAR 2020	2472	2516	995	868
25 MAR 2020	2312	2344	1157	819
24 MAR 2020	2548	2698	1606	1119
23 MAR 2020	2282	2405	1599	1751
22 MAR 2020	1866	1765	1410	2192
21 MAR 2020	1724	1739	919	1809
20 MAR 2020	1853	1758	990	1019
19 MAR 2020	1873	1790	1200	870
18 MAR 2020	1771	1770	1039	818
17 MAR 2020	2016	1988	724	1013
16 MAR 2020	2225	2313	1198	1651

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)
29 MAR 2020	297	2152	605	988	220
28 MAR 2020	262	2412	578	1130	209
27 MAR 2020	337	2615	590	1041	-NR-
26 MAR 2020	377	2297	793	932	-NR-
25 MAR 2020	341	2428	852	869	-NR-
24 MAR 2020	438	2266	945	916	-NR-
23 MAR 2020	176	1927	489	999	-NR-
22 MAR 2020	189	1725	419	896	247
21 MAR 2020	226	1971	473	1063	-NR-
20 MAR 2020	201	2126	417	1146	306
19 MAR 2020	254	2023	495	924	286
18 MAR 2020	8	2078	790	894	257
17 MAR 2020	150	1540	757	875	306
16 MAR 2020	168	1647	604	714	311

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
29 MAR 2020	143	-62	36
28 MAR 2020	-354	-7	42
27 MAR 2020	-19	134	38
26 MAR 2020	1081	-99	33
25 MAR 2020	-57	153	40
24 MAR 2020	-88	125	60

23 MAR 2020	-271	95	-NR-
22 MAR 2020	-407	56	58
21 MAR 2020	-348	65	55
20 MAR 2020	442	114	40
19 MAR 2020	871	206	56
18 MAR 2020	858	173	55
17 MAR 2020	586	216	49
16 MAR 2020	1114	-6	46

*** 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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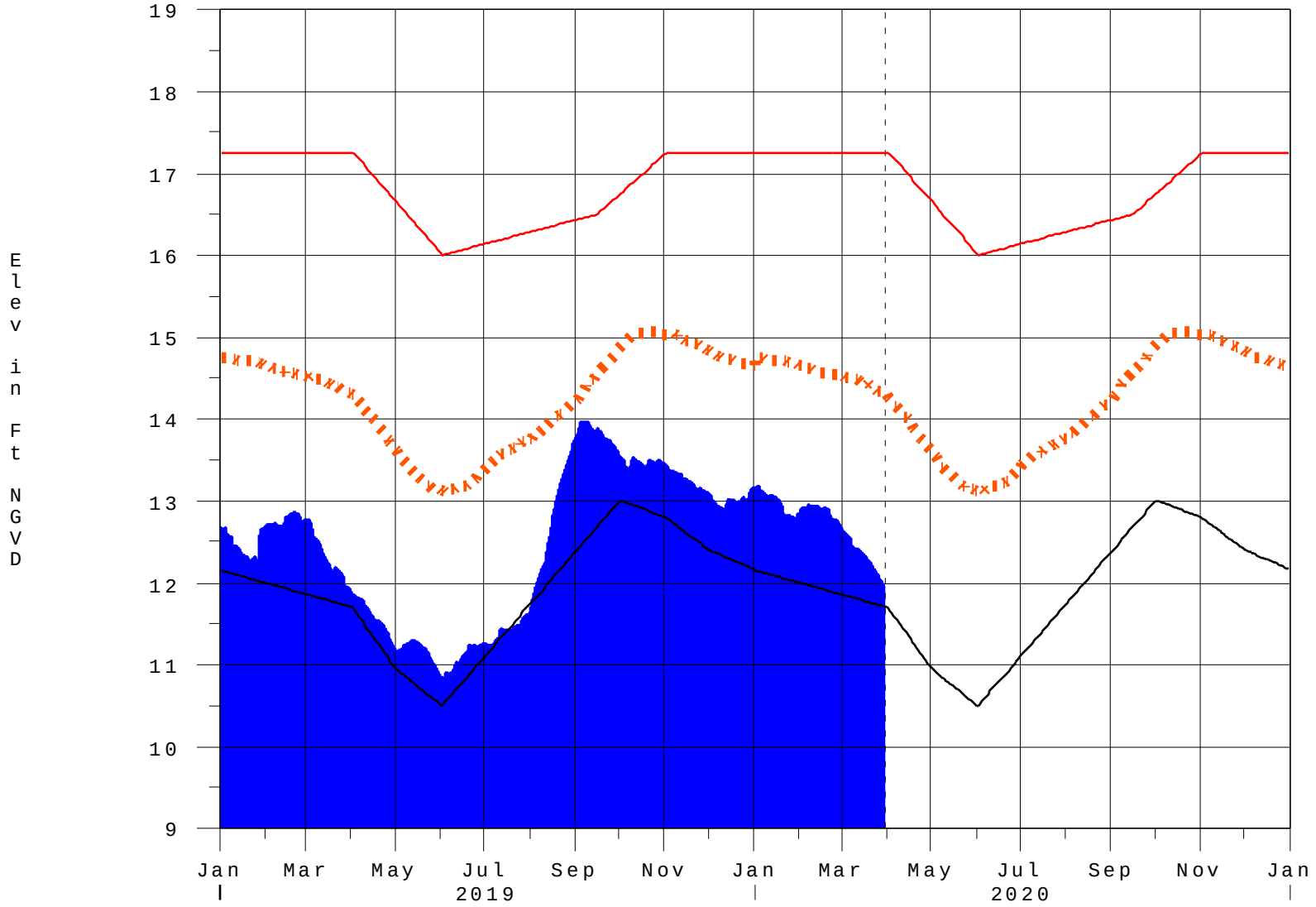
Report Generated 30MAR2020 @ 23:39 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

30MAR20 12:30:19



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