

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 6/3/2019 (ENSO Neutral Condition)

Lake Okeechobee Net Inflow Outlook:

The Lake Okeechobee Net Inflow Outlook has been computed using 4 methods: Croley's method¹, the SFWMD empirical method², a sub-sampling of Neutral years³ and a sub-sampling of warm years of the Atlantic Multi-decadal Oscillation (AMO) in combination with La Nina ENSO years⁴. 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 (Jun-Nov)	N/A	N/A	2.73	Very Wet	2.97	Very Wet	4.05	Very Wet
Multi Seasonal (Jun-Apr)	N/A	N/A	3.15	Wet	3.49	Wet	5.69	Very 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:](#)

-2206 cfs 14-day running average for Lake Okeechobee Net Inflow through 6/2/2019. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Dry.

-1.13 for Palmer Index on 6/1/2019.

According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Normal.

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

[LORS2008 Classification Tables:](#)

Lake Okeechobee Stage on 6/3/2019

Lake Okeechobee Stage: **10.84 feet**

[USACE Report for Lake Okeechobee](#)

[Lake Okeechobee Stage Hydrograph](#)

Lake Okeechobee Management Zone/Band		Bottom Elevation (feet, NGVD)	Current Lake Stage
High Lake Management Band		16.00	
Operational Band	High sub-band	15.51	
	Intermediate sub-band	15.01	
	Low sub-band	13.02	
Base Flow sub-band		12.60	
Beneficial Use sub-band			← 10.84
Water Shortage Management Band		10.52	

Part C of LORS2008: Discharge to WCA's

Lake Okeechobee stage is within the Beneficial Use Sub-band therefore, no releases to the WCAs to manage lake stages

Part D of LORS2008: Discharge to Tidewater

Lake Okeechobee stage is within the Beneficial Use Sub-band therefore, no releases to the St. Lucie or Caloosahatchee Estuaries to manage lake stages.

Adaptive Protocol's Release Guidance: Caloosahatchee Estuary

Release Guidance Flow Chart Outcome: No releases.

[Back to Lake Okeechobee Operations Main Page](#)

[Back to U.S. Army Corps of Engineers LORSS Homepage](#)

LORS2008 Implementation on 06/3/2019 (ENSO El Niño Condition):

Status for week ending 06/3/2019:

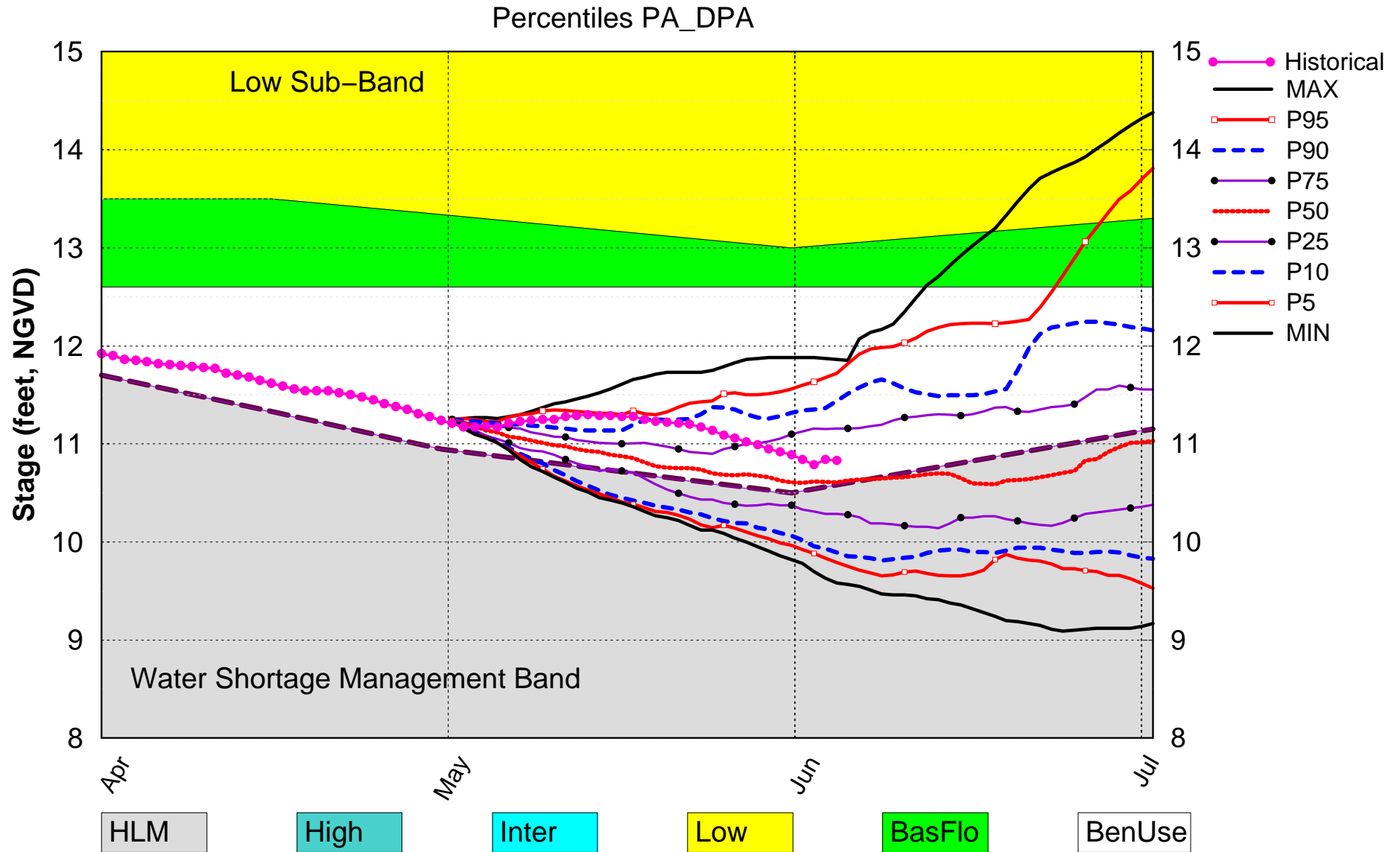
District wide, Raindar rainfall was 0.75 inches for the week. Lake stage on 6/3/2019 was 10.84 ft, NGVD, down 0.18 ft from last week. The updated May 2019 SFWMM Dynamic Position Analysis [percentile graph](#) for Lake Okeechobee show that the current lake stage is in the Beneficial Use Sub-band. The LORS2008 Tributary Hydrologic Conditions (THC) are classified as **Normal**. The PDSI indicates normal conditions and the LONIN is dry. The THC classification is based on the wetter of the two [indices](#).

Water Supply Risk Evaluation

Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Water Shortage Management Band	H
	Palmer Index for LOK Tributary Conditions	-1.13 (Dry)	M
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Normal	L
	LOK Seasonal Net Inflow Outlook	2.97 ft	L
	ENSO Forecast (positive)	(Normal to Extremely Wet)	
	LOK Multi-Seasonal Net Inflow Outlook	3.49 ft (Wet)	L
	ENSO Forecast (positive)		
WCAs	WCA 1: Canal Gauge (Site 1-8C)	Above Line 1 (15.66 ft)	L
	WCA 2A: Site 2-17 HW	Above Line 1 (11.88 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64, and 65)	Above Line 1 (9.01 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.

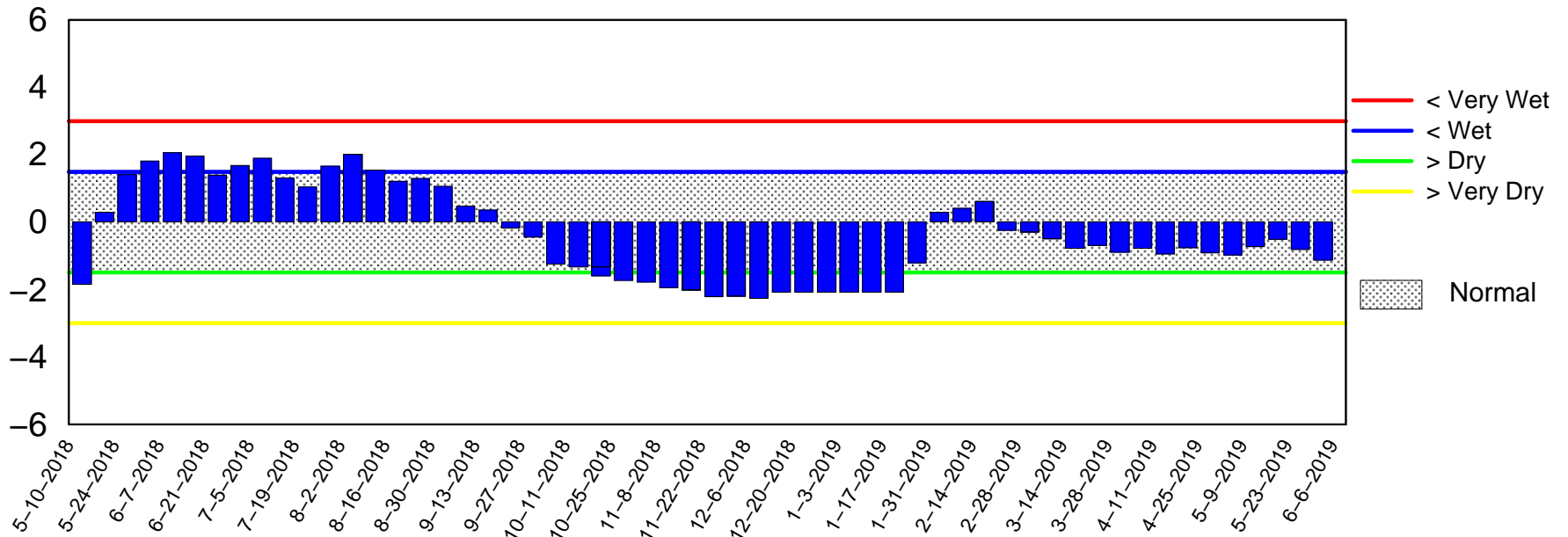
Lake Okeechobee SFWMM May 2019 Position Analysis



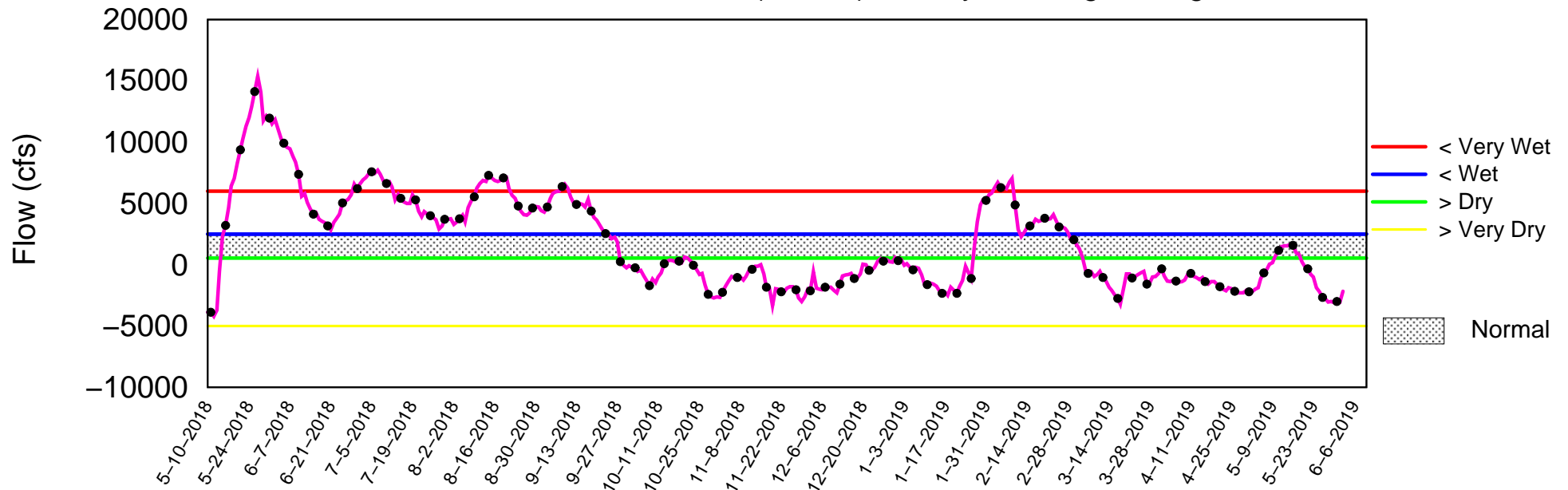
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of June 3 2019

Palmer Index



Lake Okeechobee Net Inflow (LONIN) 14-day Running Average



Mon Jun 03 23:10:27 EDT 2019

2008 LORS

Part C: Establish Allowable Lake Okeechobee Releases to the Water Conservation Areas

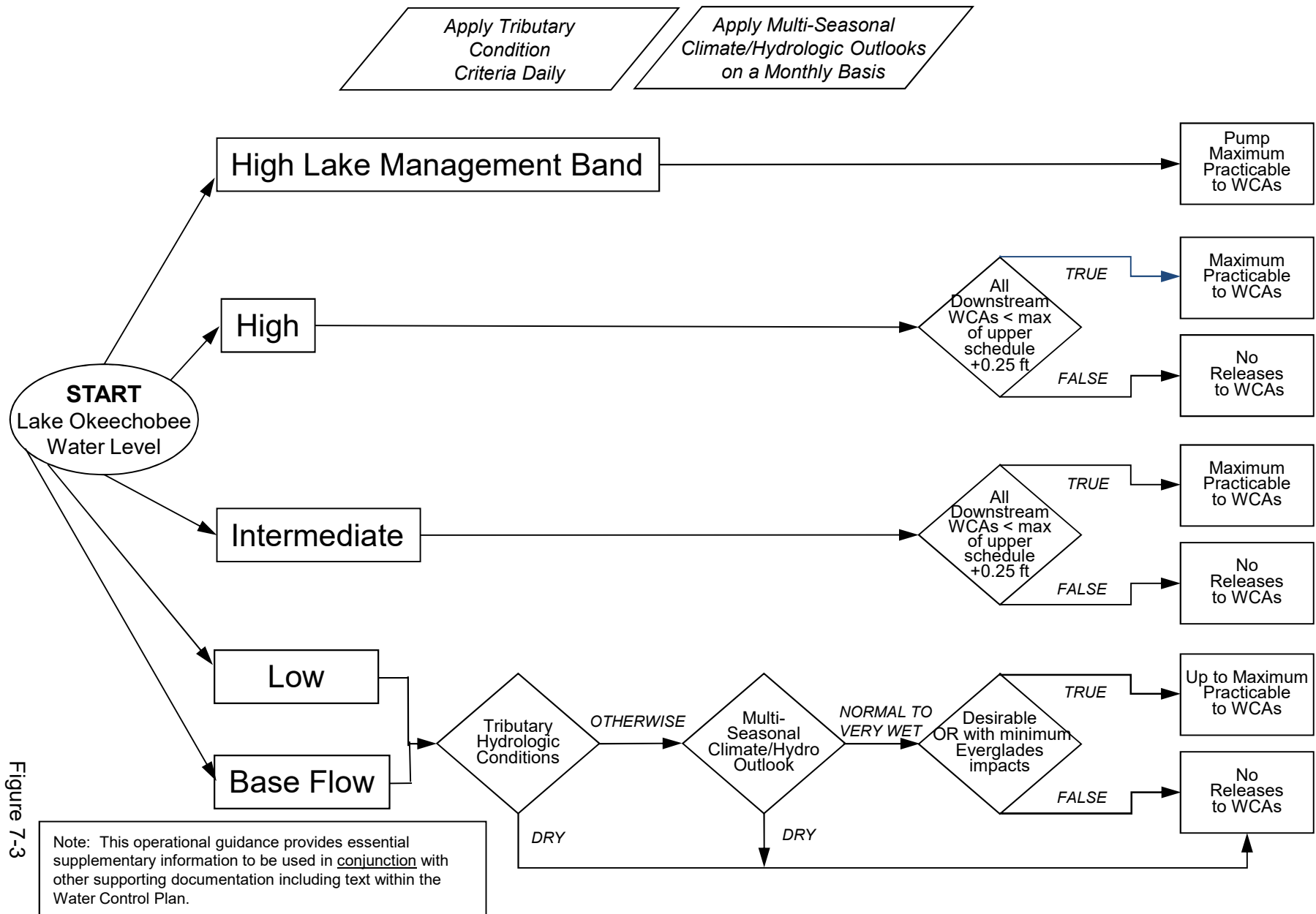


Figure 7-3

2008 LORS

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

When conducting Base Flow releases, flows can be distributed East and West up to 650 cfs as needed to minimize impacts or provide benefits through S-80 and S-79

Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis

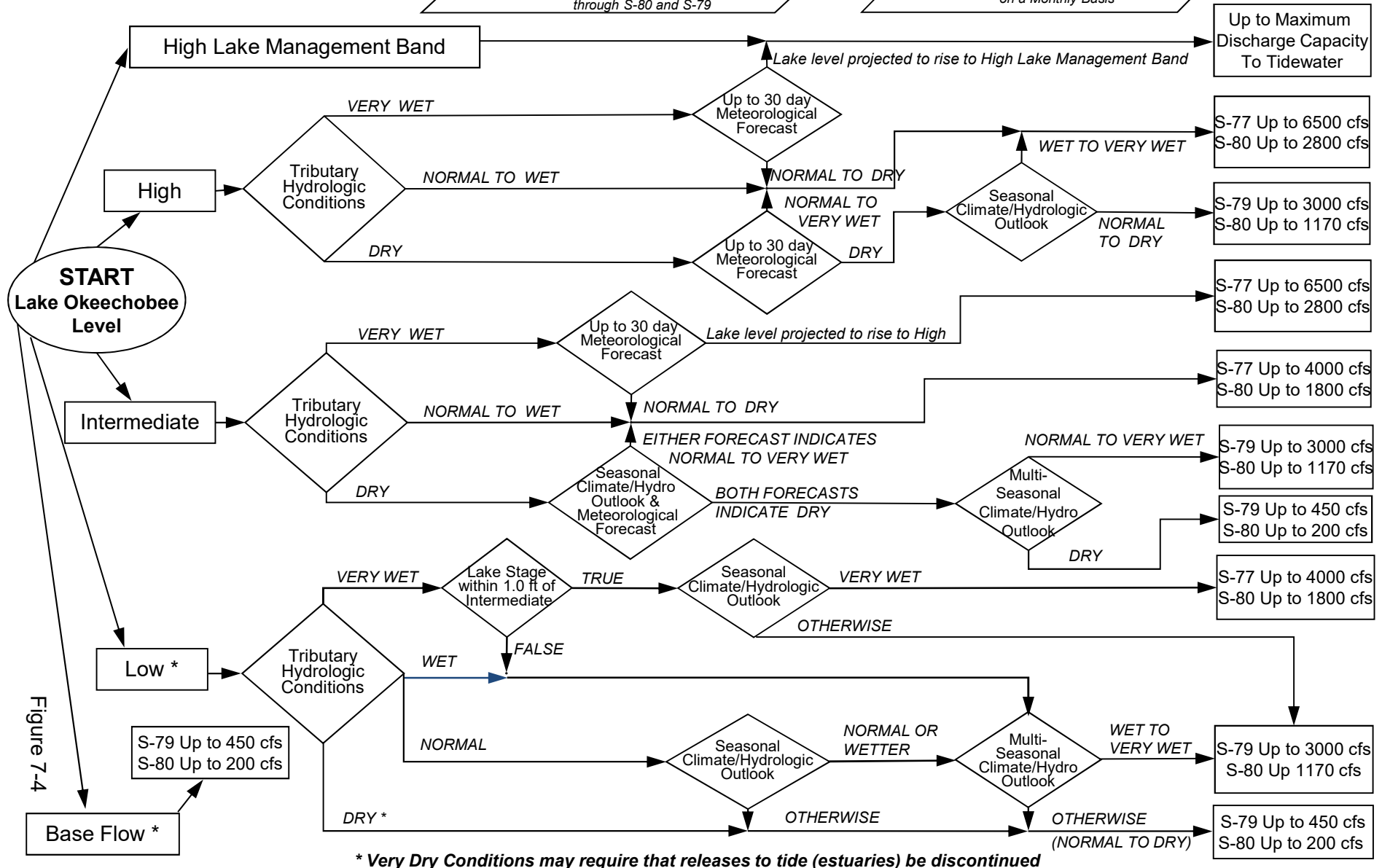
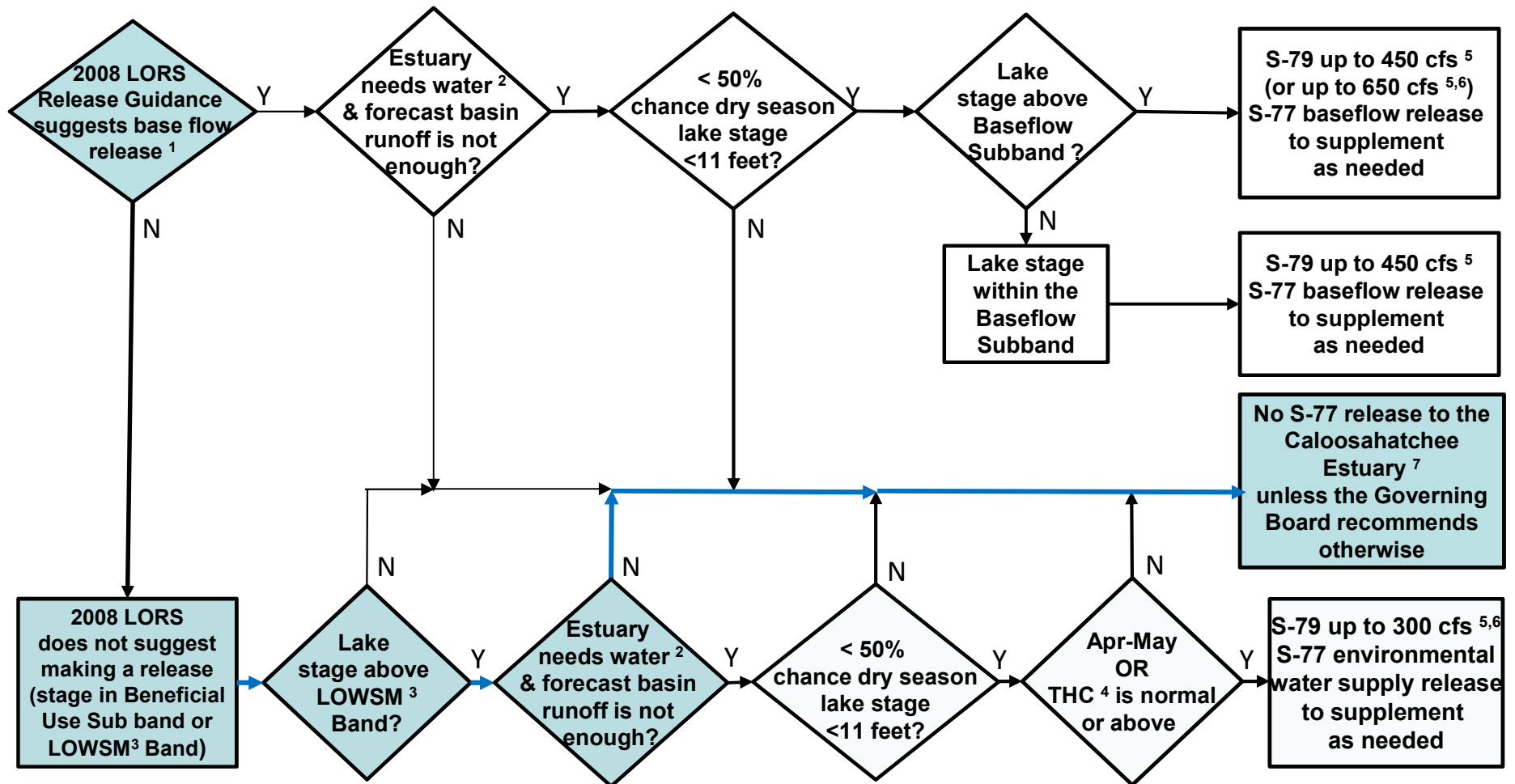


Figure 7-4

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



¹The 2008 LORS Release Guidance (Part D) can suggest baseflow releases in the Intermediate, Low, or Baseflow Subbands.

²Estuary "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.

³LOWSM = Lake Okeechobee Water Shortage Management.

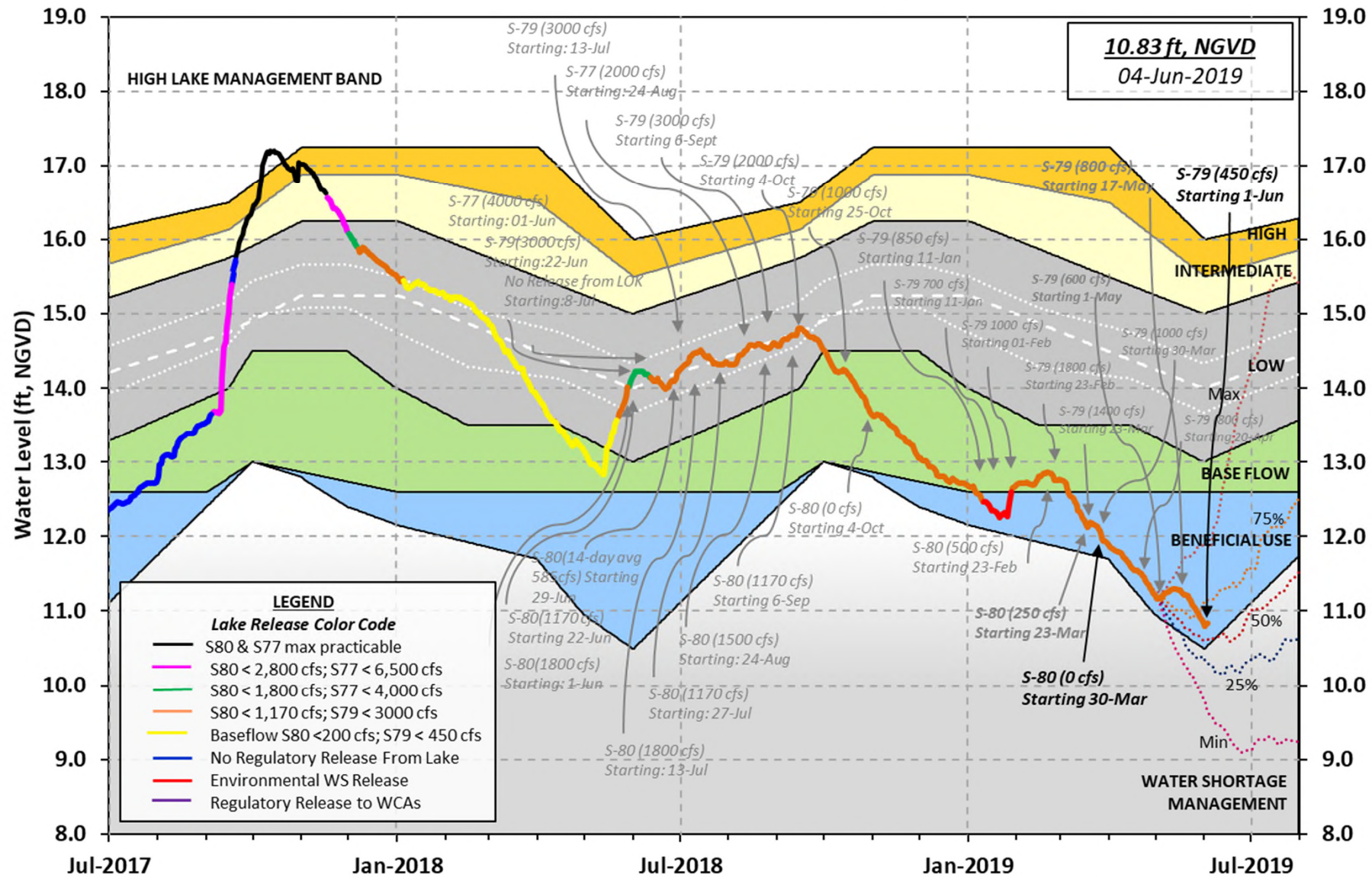
⁴Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee Net Inflow and Palmer Index.

⁵Can release less than the "up to" limit if lower release is sufficient to reach or sustain desired estuary salinity; cfs = cubic feet per second.

⁶After reviewing conditions in Water Conservation Areas (WCAs), Stormwater Treatment Areas (STAs), ENP, St. Lucie Estuary and Lake Okeechobee.

⁷Should 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 02 JUN 2019

Okeechobee Lake Regulation	Elevation	Last Year	2YRS Ago
	(ft-NGVD)	(ft-NGVD)	(ft-NGVD)
*Okeechobee Lake Elevation	10.84	14.22	-NR- (Official Elv)
Bottom of High Lake Mngmt= 16.00 Top of Water Short Mngmt= 10.52			
Currently in Operational Management Band			

Simulated Average LORS2008 [1965-2000] 11.95
 Difference from Average LORS2008 -1.11

02JUN (1965-2007) Period of Record Average 13.12
 Difference from POR Average -2.28

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷
 4.78'

++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷
 2.98'

Bridge Clearance = 52.63'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
10.89	10.87	10.81	10.88	10.77	-NR-	10.82	10.87

*Combination Okeechobee Avg-Daily Lake Average = 10.84
 (*See Note)

Okeechobee Inflows (cfs):

S65E	38	S65EX1	169	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:	207				

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	571	S77	253
S127 Culverts	0	S351	1225	S308	-367
S129 Culverts	0	S352	844		
S131 Culverts	0	L8 Canal Pt	12		
Total Outflows:	2538				

S3 Pumps:	10.61	10.61	0	0	0	0		(cfs)
S354:	10.61	10.61	571	5.2	5.4			
S2 Pumps:	10.53	-NR-	0	0	0	0	0	(cfs)
S351:	-NR-	10.53	1225	8.0	8.0	8.0		
S352:		10.72	844	6.0	6.0			
C10A:	-NR-	10.99		8.0	8.0	8.0	0.0	0.0
L8 Canal PT		10.89	12					

S351 and S352 Temporary Pumps/S354 Spillway

S351:	10.53	-NR-	1225	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-
S352:	10.72		844	-NR-	-NR-	-NR-	-NR-		
S354:	10.61	10.61	571	-NR-	-NR-	-NR-	-NR-		

Caloosahatchee River (S77, S78, S79)

S47B:	10.67	10.62		0.0	0.0
S47D:	10.63	10.62	-16	5.7	

S77:

Spillway and Sector Preferred Flow:

	10.57	10.57	253	4.5	4.5	4.5	4.5
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Flow Due to Lockages+: 0

S78:

Spillway and Sector Flow:

	10.46	2.99	290	1.5	0.0	0.0	0.0
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Flow Due to Lockages+: 12

S79:

Spillway and Sector Flow:

	3.09	0.92	366	0.0	0.0	0.0	1.0	1.0	0.0	0.0
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0.0

Flow Due to Lockages+: 9

Percent of flow from S77 69%

Chloride (ppm) 60

St. Lucie Canal (S308, S80)

S308:

Spillway and Sector Preferred Flow:

	10.86	10.87	-367	0.0	0.0	0.0	0.0
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Flow Due to Lockages+: -0

S153:	18.77	10.73	0	0.0	0.0
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S80:

Spillway and Sector Flow:

	11.07	1.67	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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Flow Due to Lockages+: 25

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

----- Wind -----					

Daily Precipitation Totals	1-Day	3-Day	7-Day	Direction	
Speed	(inches)	(inches)	(inches)	(Degø)	
(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:	6.76	8.27	8.27	224	4
S78:	3.36	3.48	3.48	239	1
S79:	4.48	4.86	4.86	131	2
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:	4.74	4.90	4.90	189	8
S80:	7.94	8.53	8.53	193	3
Okeechobee Average	5.75	1.01	1.01		
(Sites S78, S79 and S80 not included)					

Oke Nexrad Basin Avg	-NR-	0.00	0.00		

Okeechobee Lake Elevations	02 JUN 2019	10.84	Difference from
02JUN19			
02JUN19 -1 Day =	01 JUN 2019	10.79	-0.05
02JUN19 -2 Days =	31 MAY 2019	10.84	0.00
02JUN19 -3 Days =	30 MAY 2019	10.89	0.05
02JUN19 -4 Days =	29 MAY 2019	10.92	0.08
02JUN19 -5 Days =	28 MAY 2019	10.95	0.11
02JUN19 -6 Days =	27 MAY 2019	10.99	0.15
02JUN19 -7 Days =	26 MAY 2019	11.02	0.18
02JUN19 -30 Days =	03 MAY 2019	11.18	0.34
02JUN19 -1 Year =	02 JUN 2018	14.22	3.38
02JUN19 -2 Year =	02 JUN 2017	-NR-	-NR-

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 5.06

Lake Okeechobee Net Inflow (LONIN)
 Average Flow over the previous 14 days | Avg-Daily Flow

02JUN19	Today =	02 JUN 2019	-2138	MON	10972
02JUN19	-1 Day =	01 JUN 2019	-3025	SUN	-4070
02JUN19	-2 Days =	31 MAY 2019	-2956	SAT	-4204
02JUN19	-3 Days =	30 MAY 2019	-3045	FRI	-921
02JUN19	-4 Days =	29 MAY 2019	-2979	THU	-1502
02JUN19	-5 Days =	28 MAY 2019	-3002	WED	-4259
02JUN19	-6 Days =	27 MAY 2019	-2697	TUE	-2638
02JUN19	-7 Days =	26 MAY 2019	-2638	MON	-4655
02JUN19	-8 Days =	25 MAY 2019	-2163	SUN	-3081
02JUN19	-9 Days =	24 MAY 2019	-1814	SAT	-6707
02JUN19	-10 Days =	23 MAY 2019	-946	FRI	-3188
02JUN19	-11 Days =	22 MAY 2019	-718	THU	-4205
02JUN19	-12 Days =	21 MAY 2019	-278	WED	-995
02JUN19	-13 Days =	20 MAY 2019	-64	TUE	-474

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S65E					
Average Flow over previous 14 days					Avg-Daily Flow
02JUN19	Today=	02 JUN 2019	287	MON	39
02JUN19	-1 Day =	01 JUN 2019	322	SUN	33
02JUN19	-2 Days =	31 MAY 2019	360	SAT	178
02JUN19	-3 Days =	30 MAY 2019	393	FRI	279
02JUN19	-4 Days =	29 MAY 2019	420	THU	270
02JUN19	-5 Days =	28 MAY 2019	441	WED	108
02JUN19	-6 Days =	27 MAY 2019	473	TUE	119
02JUN19	-7 Days =	26 MAY 2019	500	MON	120
02JUN19	-8 Days =	25 MAY 2019	528	SUN	395
02JUN19	-9 Days =	24 MAY 2019	534	SAT	398
02JUN19	-10 Days =	23 MAY 2019	534	FRI	436
02JUN19	-11 Days =	22 MAY 2019	530	THU	551
02JUN19	-12 Days =	21 MAY 2019	530	WED	546
02JUN19	-13 Days =	20 MAY 2019	503	TUE	547

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S65EX1					
Average Flow over previous 14 days					Avg-Daily Flow
02JUN19	Today=	02 JUN 2019	205	MON	169
02JUN19	-1 Day =	01 JUN 2019	213	SUN	273
02JUN19	-2 Days =	31 MAY 2019	214	SAT	237
02JUN19	-3 Days =	30 MAY 2019	218	FRI	28
02JUN19	-4 Days =	29 MAY 2019	236	THU	0
02JUN19	-5 Days =	28 MAY 2019	259	WED	264
02JUN19	-6 Days =	27 MAY 2019	269	TUE	323
02JUN19	-7 Days =	26 MAY 2019	275	MON	109
02JUN19	-8 Days =	25 MAY 2019	295	SUN	211
02JUN19	-9 Days =	24 MAY 2019	309	SAT	213
02JUN19	-10 Days =	23 MAY 2019	322	FRI	213
02JUN19	-11 Days =	22 MAY 2019	335	THU	229
02JUN19	-12 Days =	21 MAY 2019	347	WED	313
02JUN19	-13 Days =	20 MAY 2019	354	TUE	288

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Lake Okeechobee Outlets Last 14 Days

			S-77	Below S-77	S-78	S-79
			Discharge	Discharge	Discharge	Discharge
			(ALL DAY)	(ALL-DAY)	(ALL DAY)	(ALL DAY)
DATE			(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)
02 JUN 2019			465	998	605	755
01 JUN 2019			894	1366	459	1075
31 MAY 2019			1289	1669	871	468
30 MAY 2019			1435	1761	889	434
29 MAY 2019			1507	1821	903	797
28 MAY 2019			1220	1693	891	1541
27 MAY 2019			1602	1970	1134	1954
26 MAY 2019			1506	2040	1788	1693
25 MAY 2019			1466	2154	1584	1945
24 MAY 2019			1553	1743	1203	883
23 MAY 2019			1731	1921	985	742
22 MAY 2019			1223	1655	544	552
21 MAY 2019			386	930	229	850
20 MAY 2019			1281	1725	502	1968

			S-310	S-351	S-352	S-354	L8 Canal Pt
			Discharge	Discharge	Discharge	Discharge	Discharge
			(ALL DAY)	(ALL DAY)	(ALL DAY)	(ALL DAY)	(ALL DAY)
DATE			(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)
02 JUN 2019			140	2430	1674	1741	24
01 JUN 2019			425	2753	1506	1465	33
31 MAY 2019			421	2472	2024	1279	55
30 MAY 2019			447	2529	2268	1390	53
29 MAY 2019			433	2361	1577	1255	53
28 MAY 2019			416	1224	1118	1027	25
27 MAY 2019			417	1371	1060	1009	-2
26 MAY 2019			396	1111	1180	920	-4
25 MAY 2019			475	726	1150	993	-4
24 MAY 2019			449	404	1068	976	-9
23 MAY 2019			460	282	928	898	-15
22 MAY 2019			436	0	1002	0	-17
21 MAY 2019			276	0	1114	81	-18
20 MAY 2019			145	0	843	357	-1

			S-308	Below S-308	S-80
			Discharge	Discharge	Discharge
			(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE			(AC-FT)	(AC-FT)	(AC-FT)
02 JUN 2019			-726	1611	51
01 JUN 2019			756	5040	44
31 MAY 2019			329	-2	44
30 MAY 2019			-3237	-74	43
29 MAY 2019			-4744	-8	22
28 MAY 2019			-5575	-62	29
27 MAY 2019			-5974	-16	42
26 MAY 2019			-6290	237	52
25 MAY 2019			-6718	136	59
24 MAY 2019			-7375	86	47
23 MAY 2019			-8250	101	49
22 MAY 2019			-8950	27	44
21 MAY 2019			-9431	58	52
20 MAY 2019			-9954	-248	53

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

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

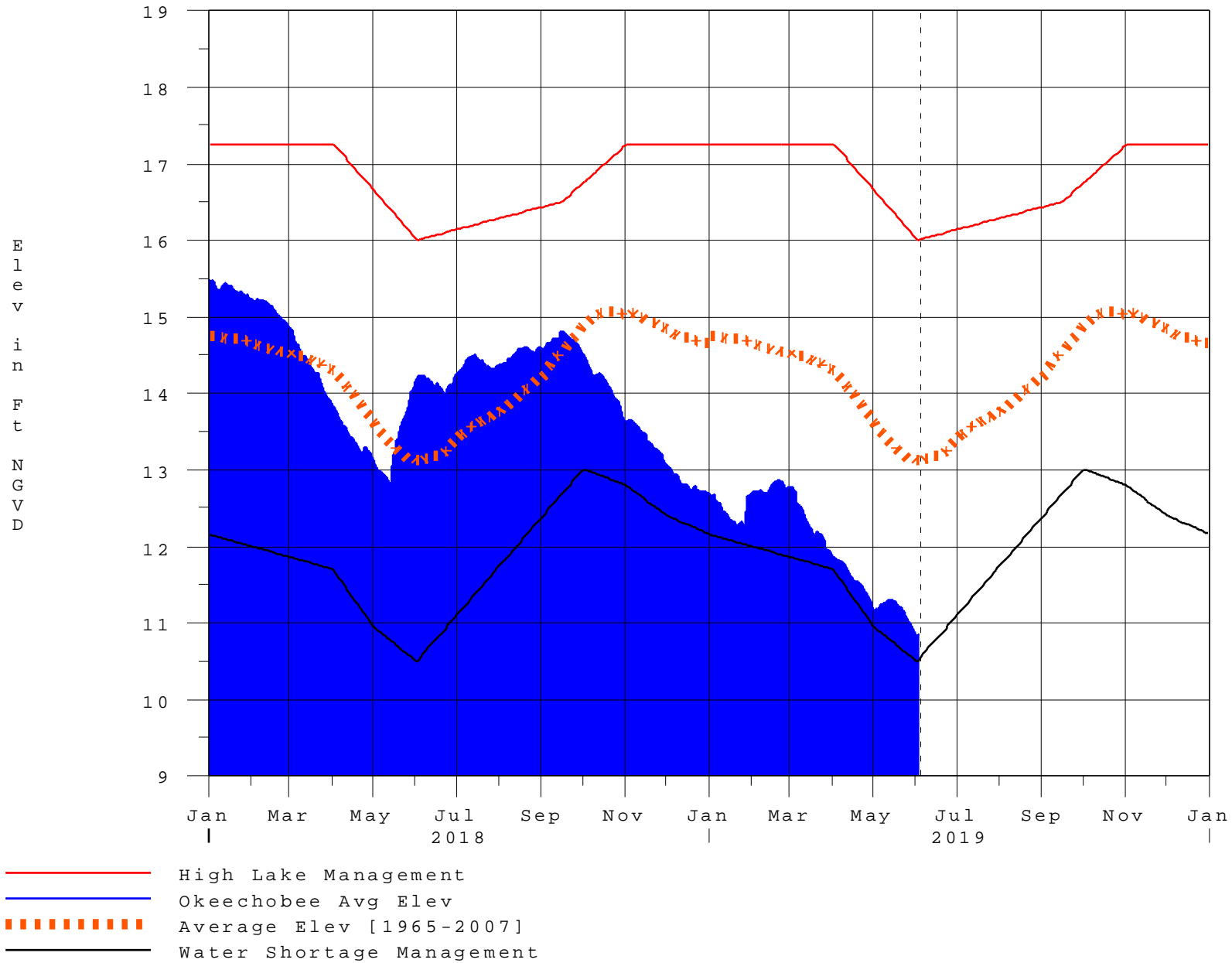
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* On 11 May 1999, Lake Okeechobee Elevation was switched from
Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the
standard
10 stations, the average of the interior 4 station gages 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 03JUN2019 @ 22:39 ** Preliminary Data - Subject to Revision
**

Lake Okeechobee

03JUN19 22:45:26



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

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Tributary Hydrologic Classification*	Palmer Index Class Limits	2-wk Mean L.O. Net Inflow Class Limits
Very Wet	3.0 or greater	Greater \geq 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