

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 5/20/2019 (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 (May-Oct)	N/A	N/A	2.63	Very Wet	2.88	Very Wet	3.95	Very Wet
Multi Seasonal (May-Apr)	N/A	N/A	3.19	Wet	3.57	Wet	5.81	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:](#)

169 cfs 14-day running average for Lake Okeechobee Net Inflow through 5/19/2019. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Dry.

-0.51 for Palmer Index on 5/18/2019.

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 5/20/2019

Lake Okeechobee Stage: **11.22 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		16.27	
Operational Band	High sub-band	15.71	
	Intermediate sub-band	15.10	
	Low sub-band	13.13	
Base Flow sub-band		12.60	
Beneficial Use sub-band			← 11.22
Water Shortage Management Band		10.67	

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 05/20/2019 (ENSO El Niño Condition):

Status for week ending 05/20/2019:

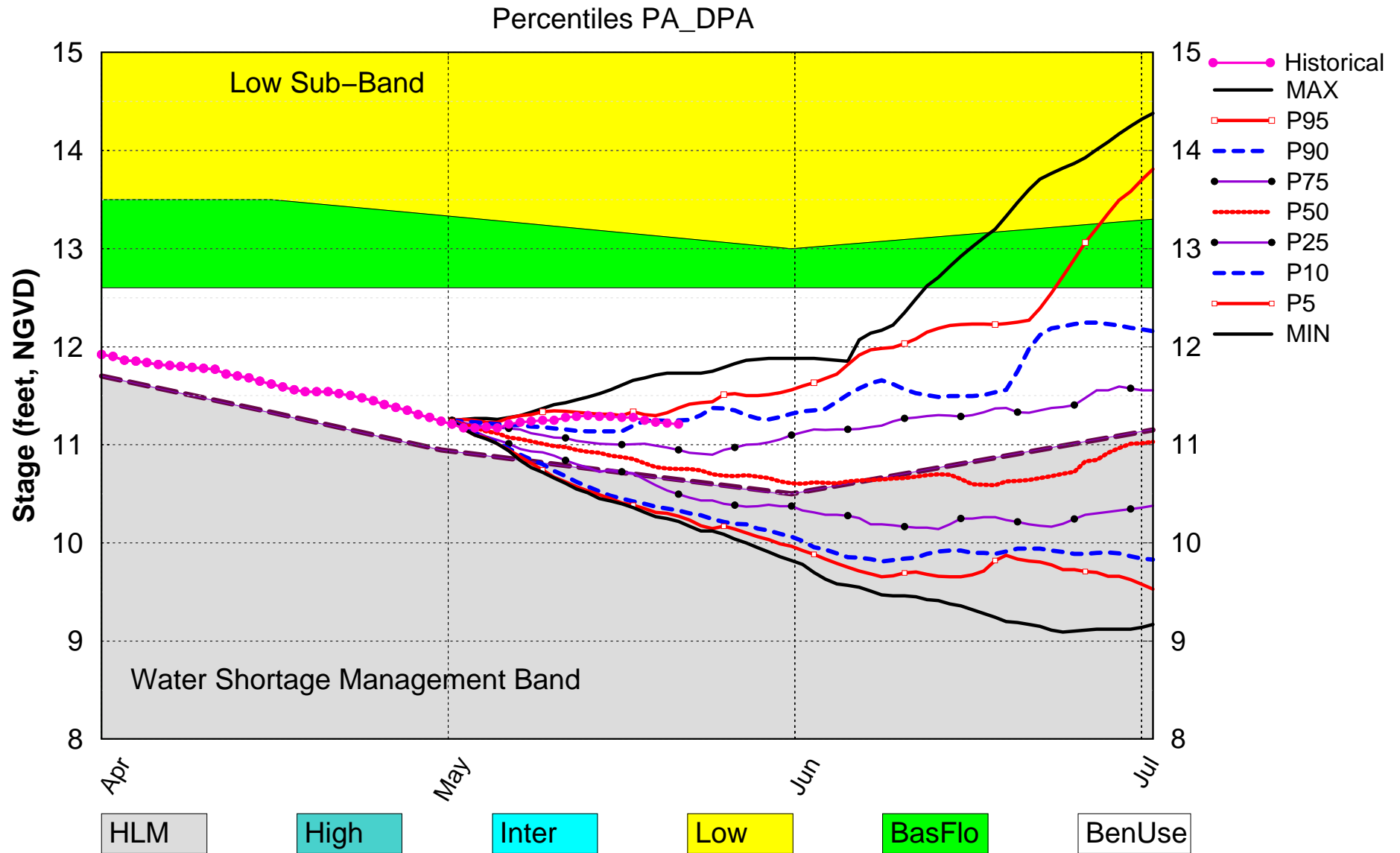
District wide, Raindar rainfall was 0.39 inches for the week. Lake stage on 5/20/2019 was 11.22ft, NGVD, down 0.08 ft from last week .The updated May 2019 SFWMM Dynamic Position Analysis [percentile graph](#) for Lake Okeechobee show that the current lake stage is in the Beneficial Use Sub-band. The 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	-0.51 (Normal to Extremely Wet)	L
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Normal	L
	LOK Seasonal Net Inflow Outlook	2.88 ft	L
	ENSO Forecast (positive)	(Normal to Extremely Wet)	
	LOK Multi-Seasonal Net Inflow Outlook	3.57 ft (Wet)	L
	ENSO Forecast (positive)		
WCAs	WCA 1: 3 Station Average (Site 1-7, 1-8T, & 1-9)	Above Line 1 (16.10 ft)	L
	WCA 2A: Site 2-17 HW	Above Line 1 (11.68 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64, and 65)	Above Line 1 (9.27 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.

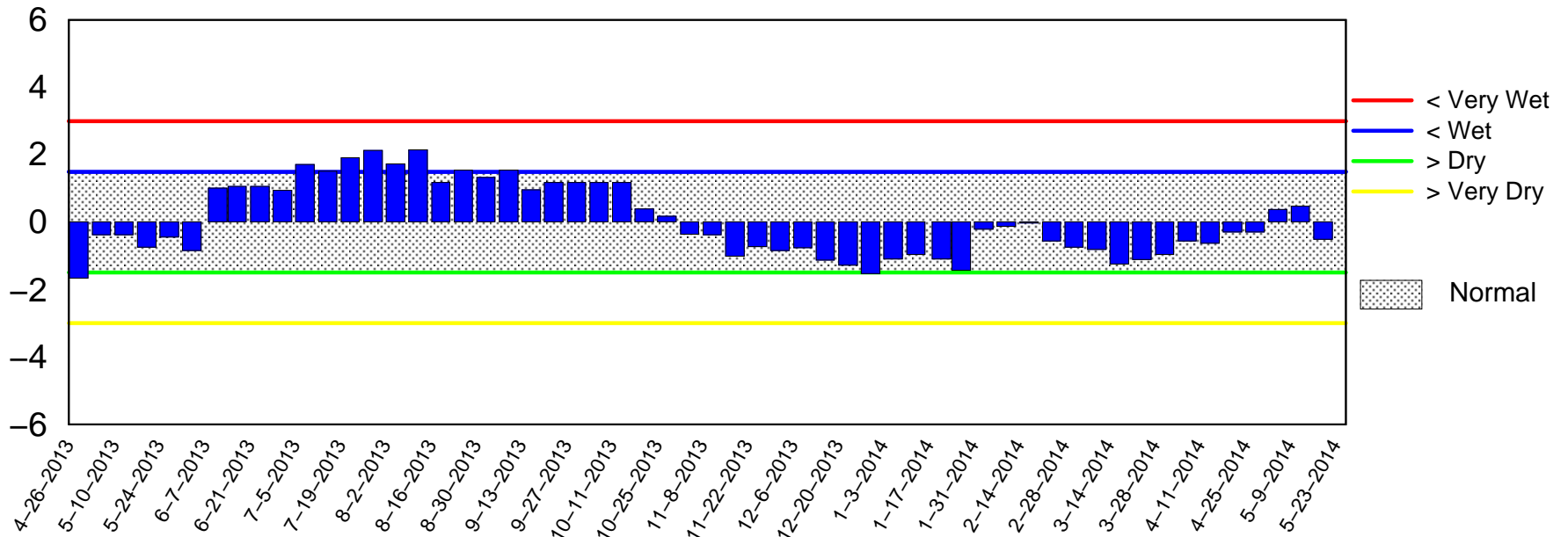
Lake Okeechobee SFWMM May 2019 Position Analysis



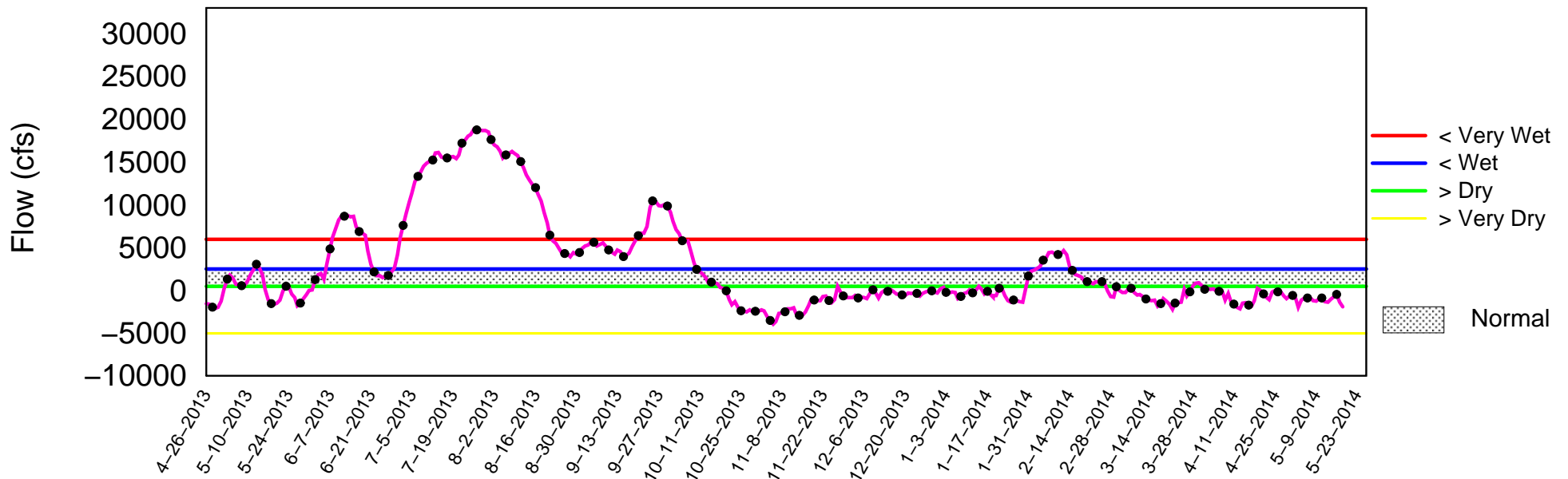
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of May 19 2014

Palmer Index



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



Tue May 20 08:48:58 EDT 2014

2008 LORS

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

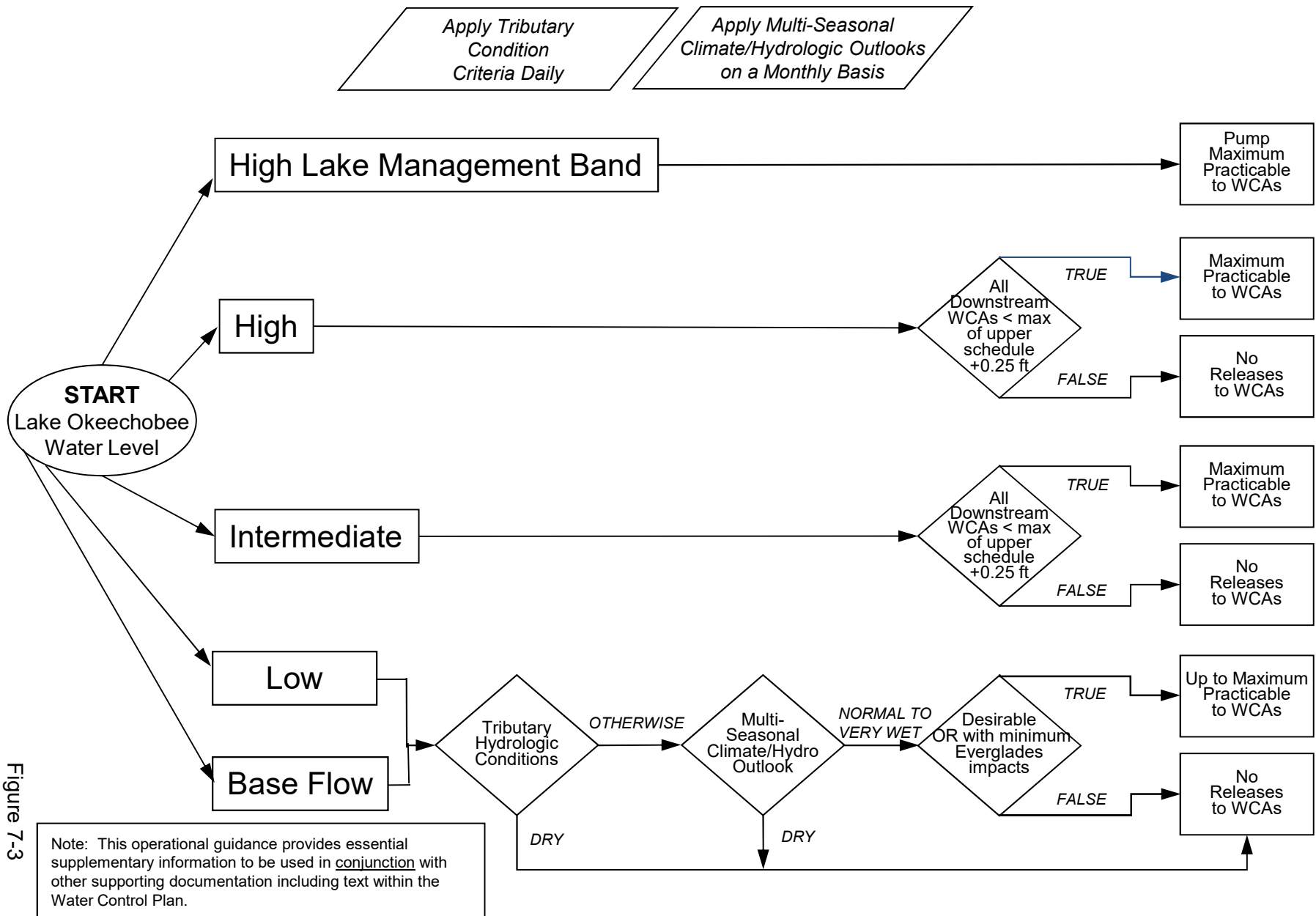


Figure 7-3

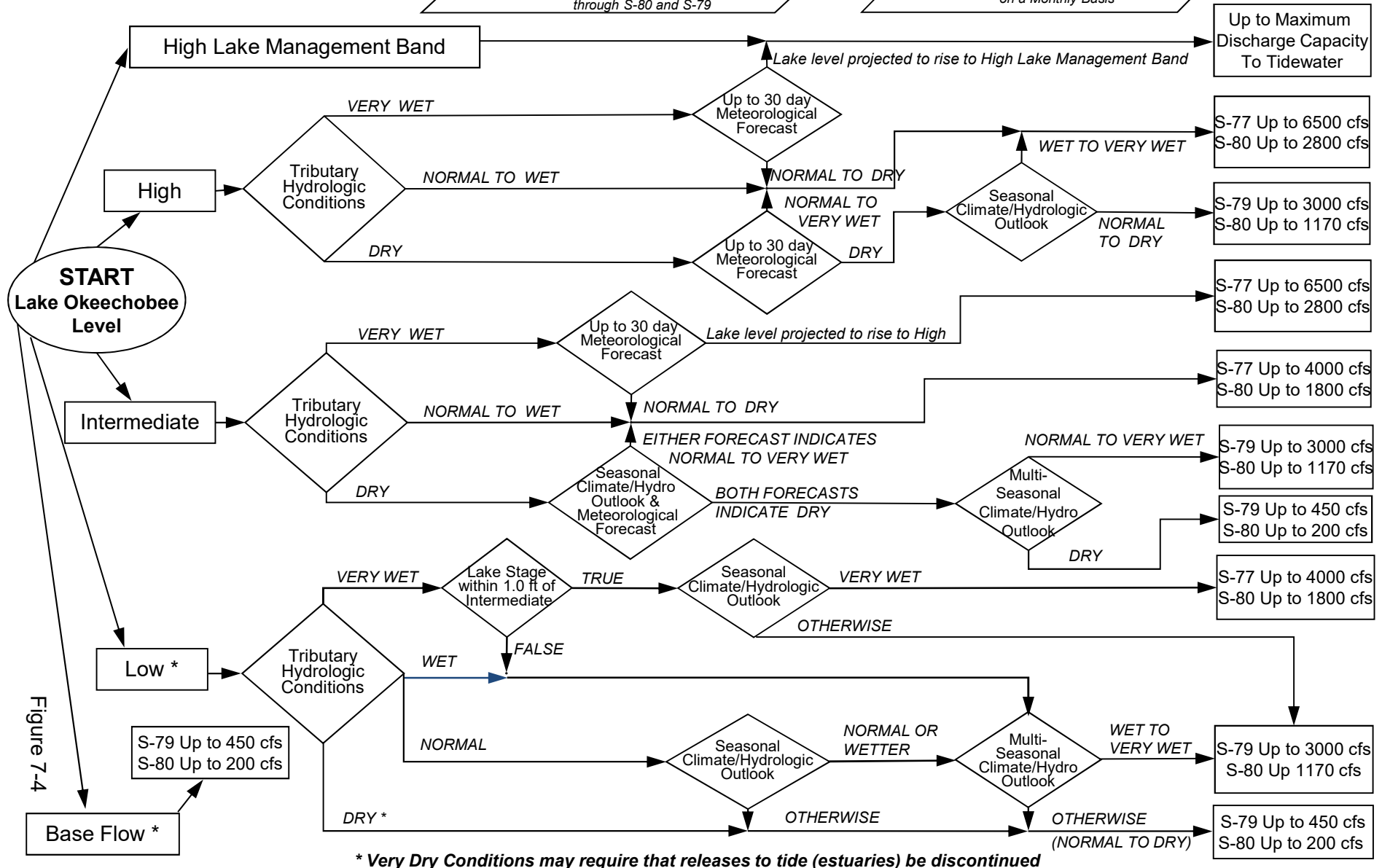
2008 LORS

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

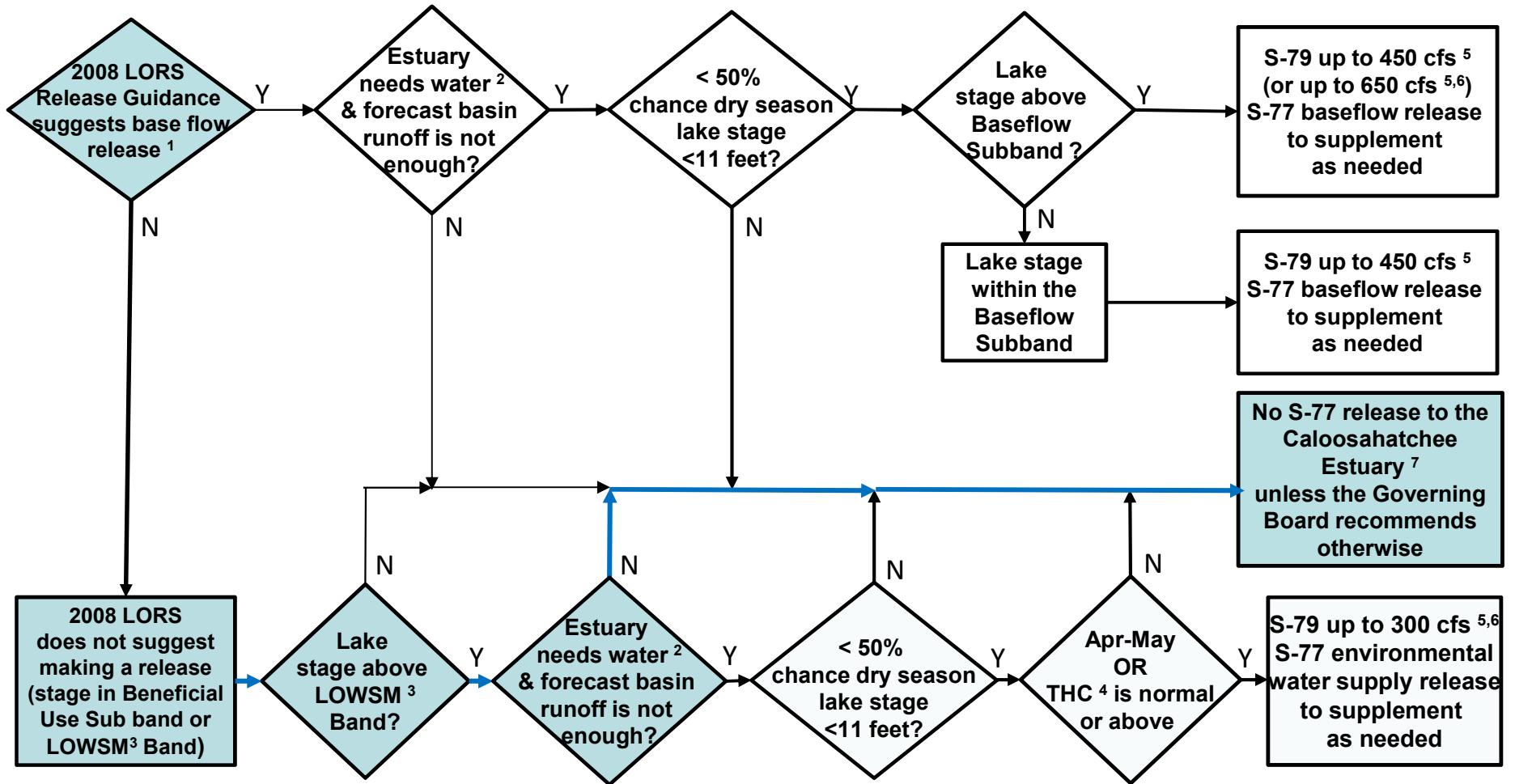
Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

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



**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.

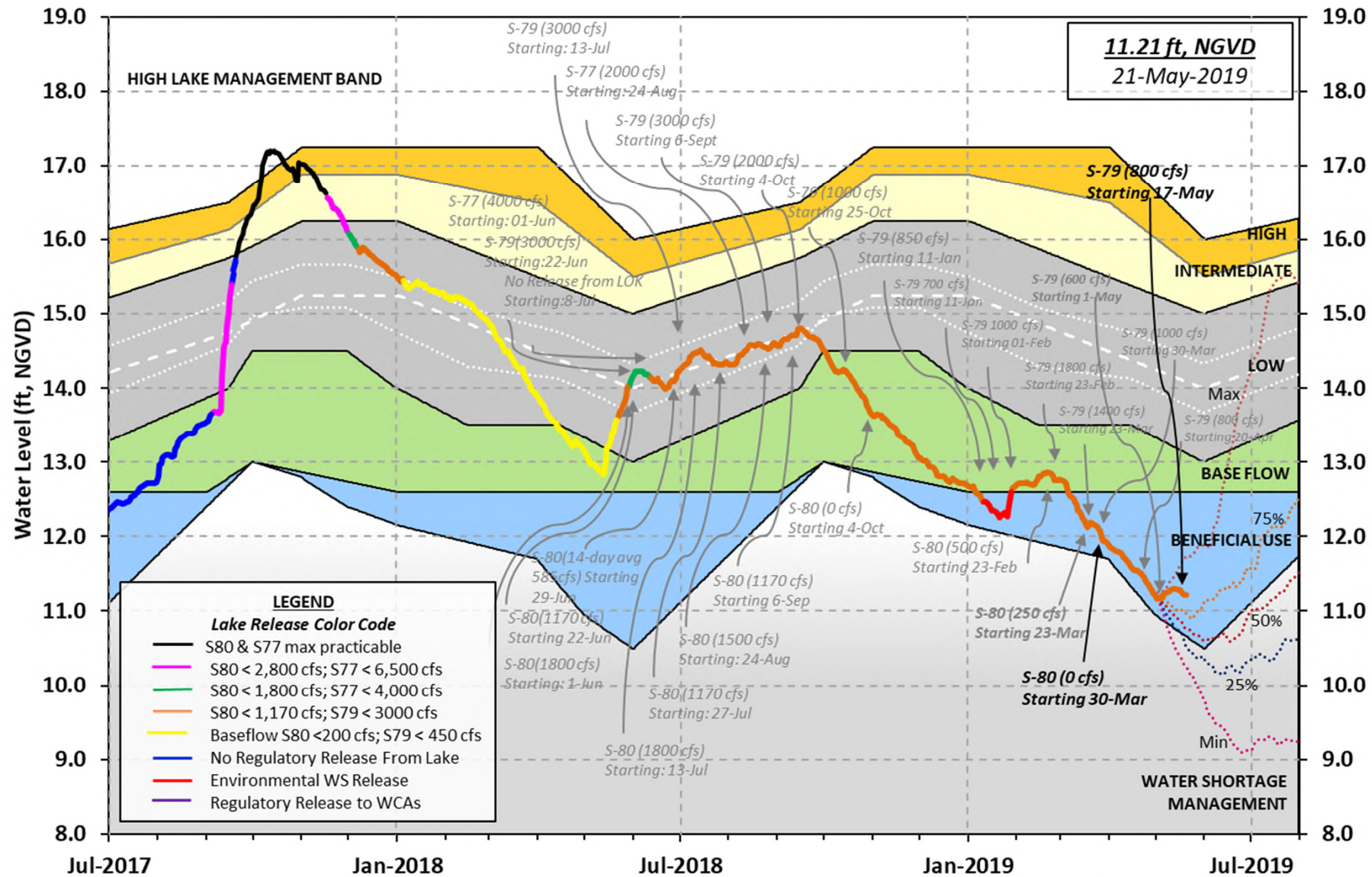
⁴Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee Net Inflow and Palmer Index.

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 19 MAY 2019

Okeechobee Lake Regulation	Elevation	Last Year	2YRS Ago
	(ft-NGVD)	(ft-NGVD)	(ft-NGVD)
*Okeechobee Lake Elevation	11.22	13.41	-NR- (Official Elv)
Bottom of High Lake Mngmt= 16.27 Top of Water Short Mngmt= 10.67			
Currently in Operational Management Band			

Simulated Average LORS2008 [1965-2000]	12.04
Difference from Average LORS2008	-0.82

19MAY (1965-2007) Period of Record Average	13.24
Difference from POR Average	-2.02

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 5.16'

++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 3.36'

Bridge Clearance = -NR-'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
11.16	11.36	11.26	11.20	11.31	-NR-	11.11	11.14

*Combination Okeechobee Avg-Daily Lake Average = 11.22
(*See Note)

Okeechobee Inflows (cfs):

S65E	448	S65EX1	287	Fisheating Cr	1
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:		737			

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	358
S127 Culverts	0	S351	0	S308	-NR-
S129 Culverts	0	S352	0		
S131 Culverts	0	L8 Canal Pt	-1		
Total Outflows: No Report Due To Missing S77 or S308 Discharge Data					

S3 Pumps:	9.22	11.12	0	0	0	0		(cfs)
S354:	11.12	9.22	0	0.0	0.0			
S2 Pumps:	9.05	-NR-	0	0	0	0	0	(cfs)
S351:	-NR-	9.05	0	0.0	0.0	0.0		
S352:		9.15	0	0.0	0.0			
C10A:	-NR-	11.43		8.0	8.0	8.0	0.0	0.0
L8 Canal PT		11.13	-1					

S351 and S352 Temporary Pumps/S354 Spillway

S351:	9.05	-NR-	0	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-
S352:	9.15		0	-NR-	-NR-	-NR-	-NR-		
S354:	9.22	11.12	0	-NR-	-NR-	-NR-	-NR-		

Caloosahatchee River (S77, S78, S79)

S47B:	11.30	10.66		0.0	0.0
S47D:	10.69	10.69	5	5.7	

S77:

Spillway and Sector Preferred Flow:

11.18	10.59	357	0.0	4.5	0.0	0.0
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Flow Due to Lockages+: 1

S78:

Spillway and Sector Flow:

10.51	3.14	854	0.0	0.0	2.5	0.0
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Flow Due to Lockages+: 17

S79:

Spillway and Sector Flow:

3.31	0.94	968	0.0	1.0	1.0	1.5	1.0	0.0	0.0
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0.0

Flow Due to Lockages+: 13

Percent of flow from S77 37%

Chloride (ppm) 57

St. Lucie Canal (S308, S80)

S308:

Spillway and Sector Preferred Flow:

11.08	-NR-	0	0.0	0.0	0.0	0.0
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Flow Due to Lockages+: -NR-

S153:	18.87	13.64	0	0.0	0.0
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S80:

Spillway and Sector Flow:

13.85	1.53	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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Flow Due to Lockages+: 27

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:	5.24	5.24	5.46	165	3	
S78:	3.24	3.24	3.40	120	3	
S79:	4.09	4.09	4.11	192	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:	4.20	4.20	4.29	89	4	
S80:	7.35	7.35	7.86	128	0	
Okeechobee Average	4.72	0.73	0.75			
(Sites S78, S79 and S80 not included)						

Oke Nexrad Basin Avg	-NR-	0.00	0.00			

Okeechobee Lake Elevations	19 MAY 2019	11.22 Difference from	
19MAY19			
19MAY19 -1 Day =	18 MAY 2019	11.23	0.01
19MAY19 -2 Days =	17 MAY 2019	11.25	0.03
19MAY19 -3 Days =	16 MAY 2019	11.28	0.06
19MAY19 -4 Days =	15 MAY 2019	11.28	0.06
19MAY19 -5 Days =	14 MAY 2019	11.29	0.07
19MAY19 -6 Days =	13 MAY 2019	11.29	0.07
19MAY19 -7 Days =	12 MAY 2019	11.30	0.08
19MAY19 -30 Days =	19 APR 2019	11.54	0.32
19MAY19 -1 Year =	19 MAY 2018	13.41	2.19
19MAY19 -2 Year =	19 MAY 2017	-NR-	-NR-

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 4.99

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

19MAY19	Today =	19 MAY 2019	252	MON	-1458
19MAY19	-1 Day =	18 MAY 2019	910	SUN	-3204
19MAY19	-2 Days =	17 MAY 2019	1064	SAT	-5445
19MAY19	-3 Days =	16 MAY 2019	1642	FRI	0
19MAY19	-4 Days =	15 MAY 2019	1712	THU	-1815
19MAY19	-5 Days =	14 MAY 2019	1599	WED	0
19MAY19	-6 Days =	13 MAY 2019	1581	TUE	-1815
19MAY19	-7 Days =	12 MAY 2019	1491	MON	1999
19MAY19	-8 Days =	11 MAY 2019	1194	SUN	1815
19MAY19	-9 Days =	10 MAY 2019	802	SAT	5445
19MAY19	-10 Days =	09 MAY 2019	212	FRI	0
19MAY19	-11 Days =	08 MAY 2019	48	THU	1959
19MAY19	-12 Days =	07 MAY 2019	-341	WED	1991
19MAY19	-13 Days =	06 MAY 2019	-636	TUE	4055

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S65E					
Average Flow over previous 14 days					Avg-Daily Flow
19MAY19	Today=	19 MAY 2019	464	MON	527
19MAY19	-1 Day =	18 MAY 2019	426	SUN	560
19MAY19	-2 Days =	17 MAY 2019	386	SAT	643
19MAY19	-3 Days =	16 MAY 2019	340	FRI	662
19MAY19	-4 Days =	15 MAY 2019	293	THU	561
19MAY19	-5 Days =	14 MAY 2019	253	WED	552
19MAY19	-6 Days =	13 MAY 2019	213	TUE	499
19MAY19	-7 Days =	12 MAY 2019	178	MON	511
19MAY19	-8 Days =	11 MAY 2019	141	SUN	471
19MAY19	-9 Days =	10 MAY 2019	107	SAT	412
19MAY19	-10 Days =	09 MAY 2019	78	FRI	376
19MAY19	-11 Days =	08 MAY 2019	51	THU	552
19MAY19	-12 Days =	07 MAY 2019	12	WED	163
19MAY19	-13 Days =	06 MAY 2019	0	TUE	0

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S65EX1					
Average Flow over previous 14 days					Avg-Daily Flow
19MAY19	Today=	19 MAY 2019	362	MON	287
19MAY19	-1 Day =	18 MAY 2019	370	SUN	286
19MAY19	-2 Days =	17 MAY 2019	376	SAT	286
19MAY19	-3 Days =	16 MAY 2019	378	FRI	288
19MAY19	-4 Days =	15 MAY 2019	381	THU	315
19MAY19	-5 Days =	14 MAY 2019	384	WED	404
19MAY19	-6 Days =	13 MAY 2019	376	TUE	402
19MAY19	-7 Days =	12 MAY 2019	376	MON	398
19MAY19	-8 Days =	11 MAY 2019	377	SUN	400
19MAY19	-9 Days =	10 MAY 2019	375	SAT	398
19MAY19	-10 Days =	09 MAY 2019	379	FRI	398
19MAY19	-11 Days =	08 MAY 2019	388	THU	400
19MAY19	-12 Days =	07 MAY 2019	387	WED	405
19MAY19	-13 Days =	06 MAY 2019	391	TUE	403

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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)
19 MAY 2019			696	1076	1728	1953
18 MAY 2019			876	1056	1633	2285
17 MAY 2019			1	11	1741	4101
16 MAY 2019			-1	209	1802	3566
15 MAY 2019			-2	-8	337	2262
14 MAY 2019			-1	139	519	1251
13 MAY 2019			0	209	629	1796
12 MAY 2019			405	645	893	3070
11 MAY 2019			0	272	1590	3056
10 MAY 2019			0	-267	1441	4196
09 MAY 2019			-948	-993	331	662
08 MAY 2019			402	652	589	1207
07 MAY 2019			300	692	1201	1276
06 MAY 2019			84	889	1184	1836

			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)
19 MAY 2019			48	0	0	0	-2
18 MAY 2019			47	0	0	0	-25
17 MAY 2019			-85	0	0	0	-39
16 MAY 2019			-249	0	0	0	-72
15 MAY 2019			-209	0	0	0	-186
14 MAY 2019			-354	0	0	0	-212
13 MAY 2019			-338	0	0	0	-226
12 MAY 2019			-299	0	0	0	-280
11 MAY 2019			-182	0	0	0	-227
10 MAY 2019			-166	0	0	0	-50
09 MAY 2019			-128	0	0	0	-13
08 MAY 2019			-155	0	0	0	-1
07 MAY 2019			-236	0	0	0	-6
06 MAY 2019			-249	93	528	0	-14

			S-308	Below S-308	S-80
			Discharge	Discharge	Discharge
			(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE			(AC-FT)	(AC-FT)	(AC-FT)
19 MAY 2019			-NR-	-105	53
18 MAY 2019			-NR-	183	56
17 MAY 2019			-NR-	203	29
16 MAY 2019			-NR-	166	57
15 MAY 2019			-NR-	74	56
14 MAY 2019			-NR-	-222	760
13 MAY 2019			-NR-	-287	712
12 MAY 2019			-NR-	-189	52
11 MAY 2019			-8	-79	47
10 MAY 2019			-7	-56	649
09 MAY 2019			-13	-28	44
08 MAY 2019			-11	99	49
07 MAY 2019			-5	-68	45
06 MAY 2019			-2	32	37

*** 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

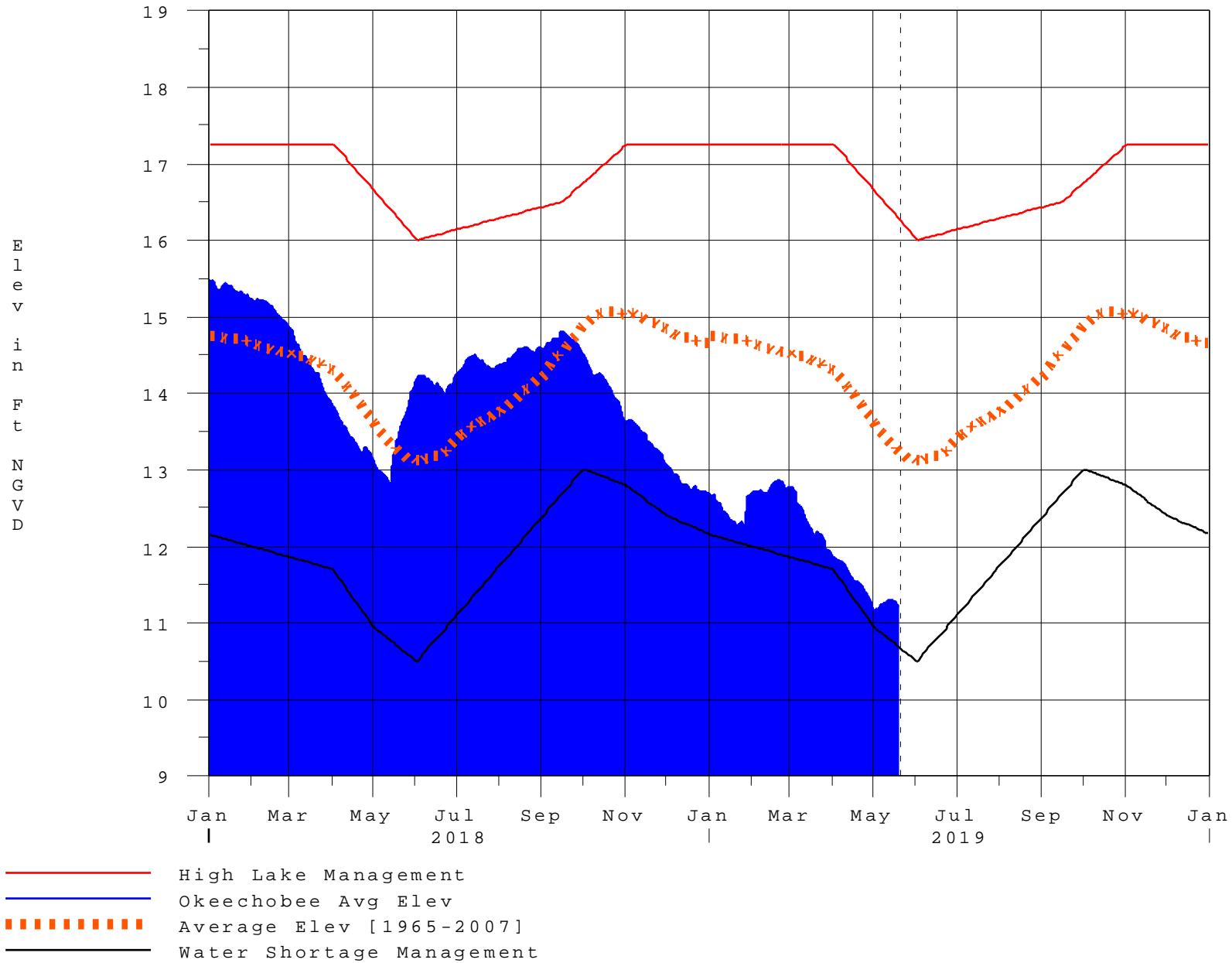
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* On 11 May 1999, Lake Okeechobee Elevation was switched from
Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the
standard
10 stations, the average of the interior 4 station gages 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 20MAY2019 @ 13:39 ** Preliminary Data - Subject to Revision
**

Lake Okeechobee

20MAY19 23:45:24



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