Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 6/4/2018 (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 ENSO Years[3]		Sub-sampling of AMO Warm + ENSO Years[4]	
	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition
Current (Jun-Nov)	N/A	N/A	2.79	Very Wet	3.15	Very Wet	2.63	Very Wet
Multi Seasonal (Jun-Apr)	N/A	N/A	3.14	Wet	3.64	Wet	2.27	Normal

*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:

11,016 cfs 14-day running average for Lake Okeechobee Net Inflow through 6/3/2018.
According to the classification in Tributary Hydrologic Conditions table, this condition is Very Wet.

1.81 for Palmer Index on 6/4/2018.
According to the classification in Tributary Hydrologic Conditions table, this condition is Wet.

The wetter of the two conditions above is **Very Wet**.

LORS2008 Classification Tables:

Lake Okeechobee Stage on 6/4/2018

Lake Okeechobee Stage: **14.23 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		16.01	
Operational Band	High sub-band	15.51	
	Intermediate sub-band	15.02	
	Low sub-band	13.03	← 14.23
Base Flow sub-band		12.60	
Beneficial Use sub-band		10.54	
Water Shortage Management Band			

Part C of LORS2008: Discharge to WCA's

Release Guidance Flow Chart Outcome: Up to maximum practicable releases to the WCAs if desirable or with minimum everglades impacts; otherwise no releases.

Part D of LORS2008: Discharge to Tidewater

Release Guidance Flow Chart Outcome: S-77 Up to 4000 cfs & S-80 Up to 1800 cfs.

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LORS2008 Implementation on 6/4/2018 (ENSO Neutral Condition):

Status for week ending 6/4/2018:

District wide, Raindar rainfall was 1.64 inches for the week. Lake stage on 6/4/2018 was 14.23 ft, NGVD, up 0.33 ft from last week.

The updated May 2018 SFWMM Dynamic Position Analysis percentile graph for Lake Okeechobee show that the current lake stage is in the Low Flow Sub-Band.

The 2008 LORS Tributary Hydrologic Condition (THC) is classified as **Very Wet**. The PDSI indicates wet conditions and the LONIN is very wet. 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	Low Flow Sub Band	L
	Palmer Index for LOK Tributary Conditions	1.81 (Normal to Extremely Wet)	L
	CPC Precipitation Outlook	1 month: Above Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Outlook	3.15 ft (Normal to Extremely Wet)	L
	ENSO Years		
	LOK Multi-Seasonal Net Inflow Outlook	3.64 ft (Wet)	L
	ENSO Conditions		
WCAs	WCA 1: Station Average (Site 1-7, Site 1-8T, Site 1-9)	Above Line 1 (16.80 ft)	L
	WCA 2A: Site 2-17	Above Line 1 (14.03 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.46 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.

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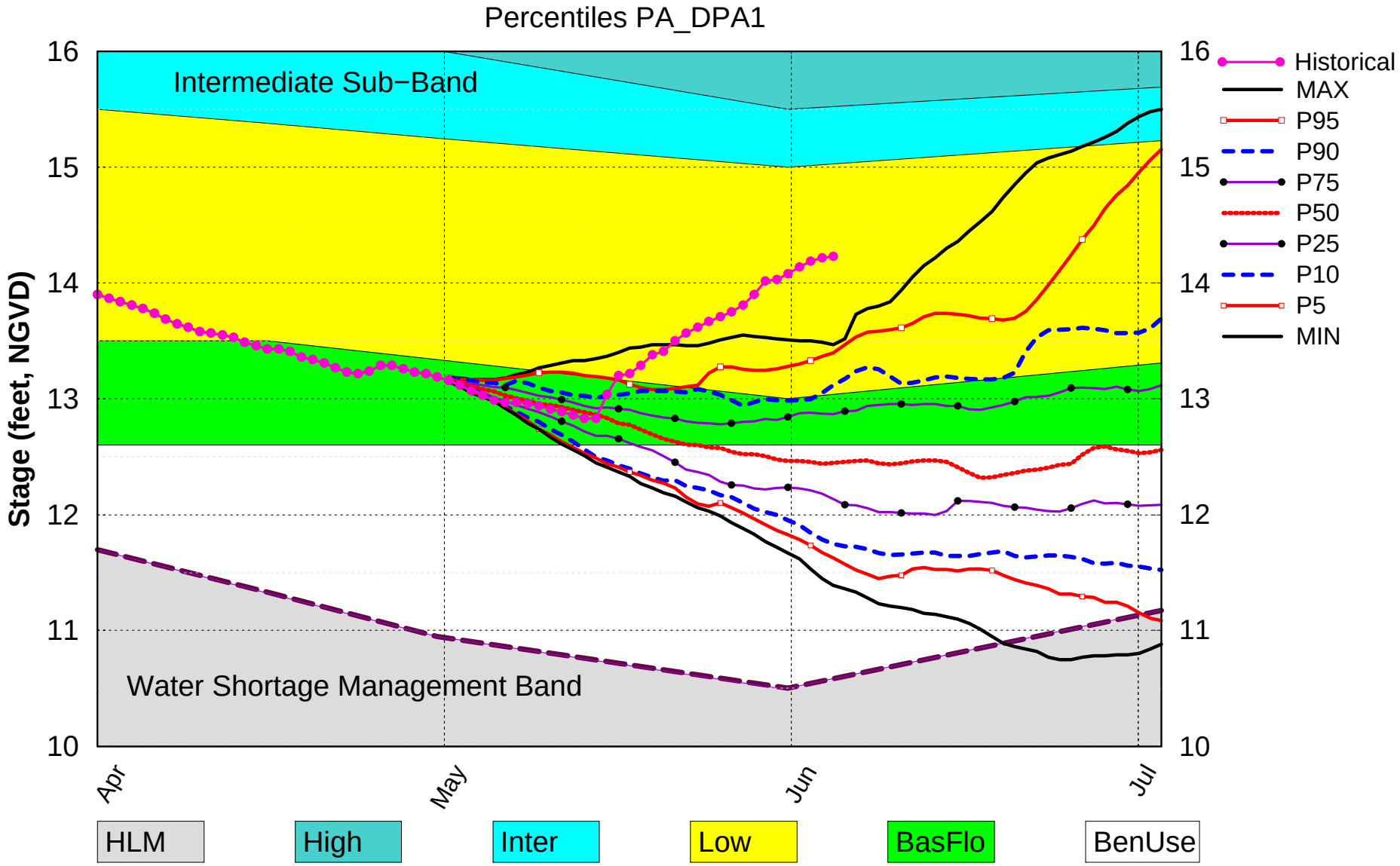
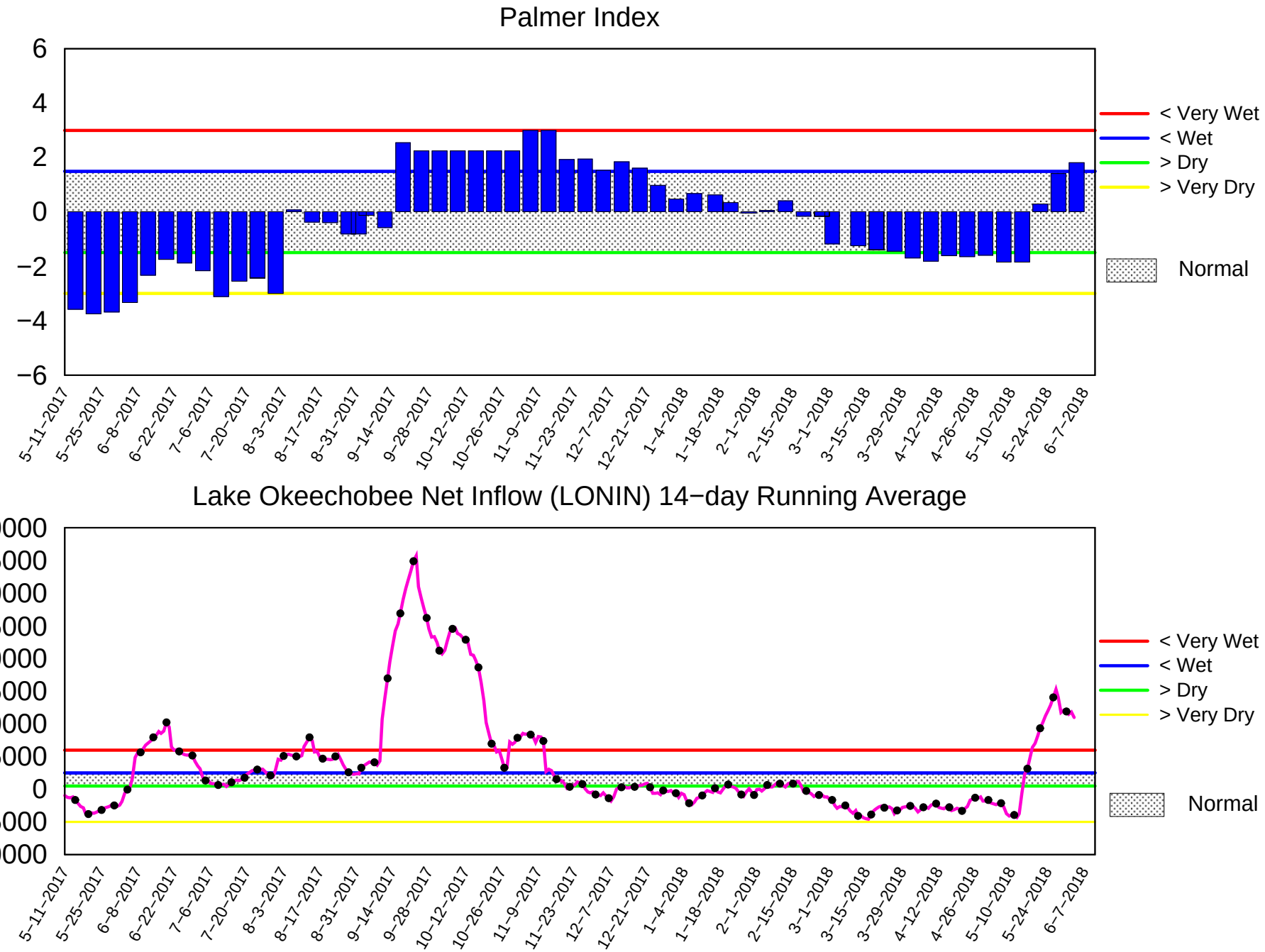
Lake Okeechobee SFWMM May 2018 Position Analysis



(See assumptions on the Position Analysis Results website)

Mon Jun 4 18:19:14 2018

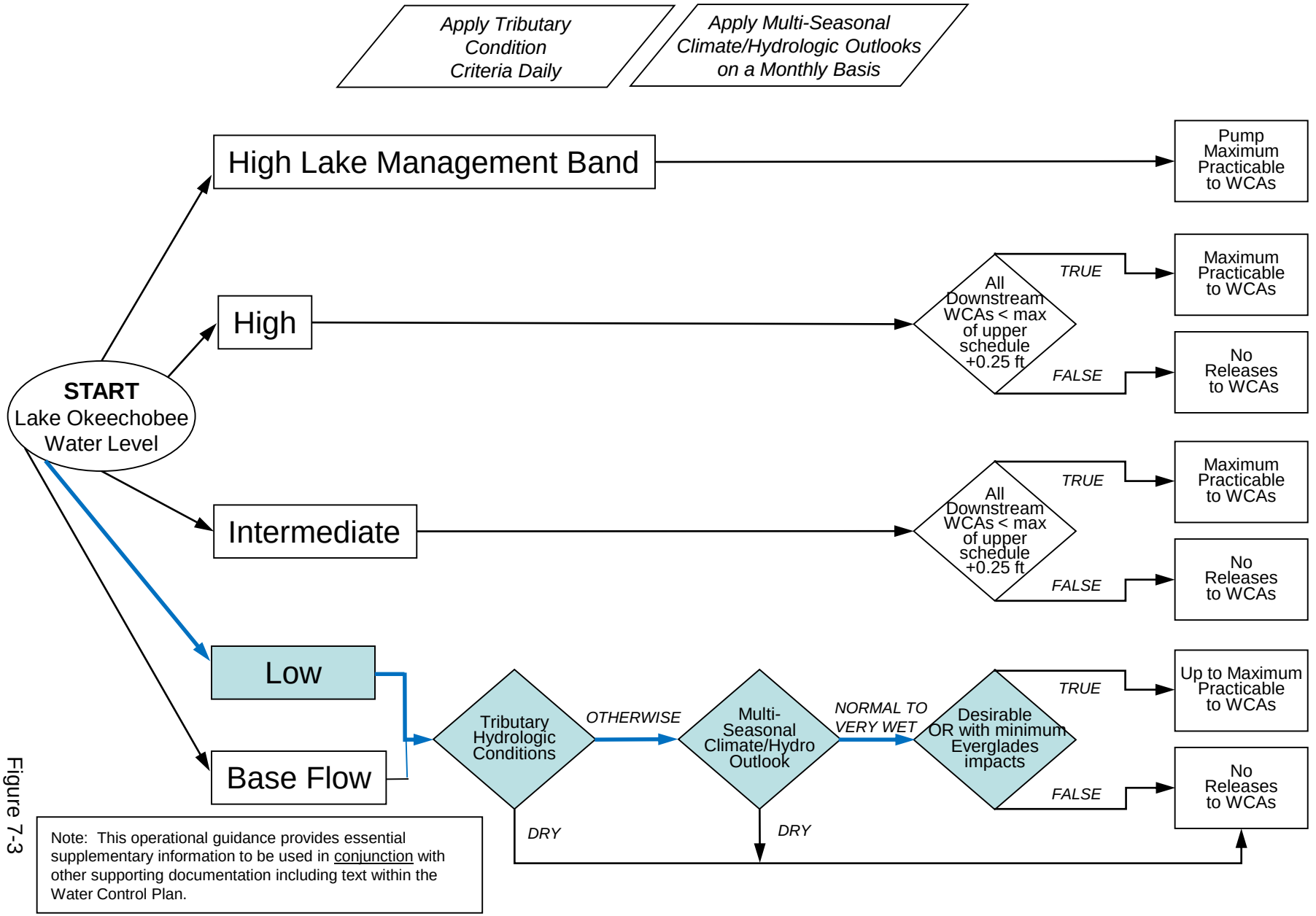
Tributary Basin Condition Indicators as of June 4 2018



Mon Jun 04 18:06:44 EDT 2018

2008 LORS

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



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

Figure 7-3

2008 LORS

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

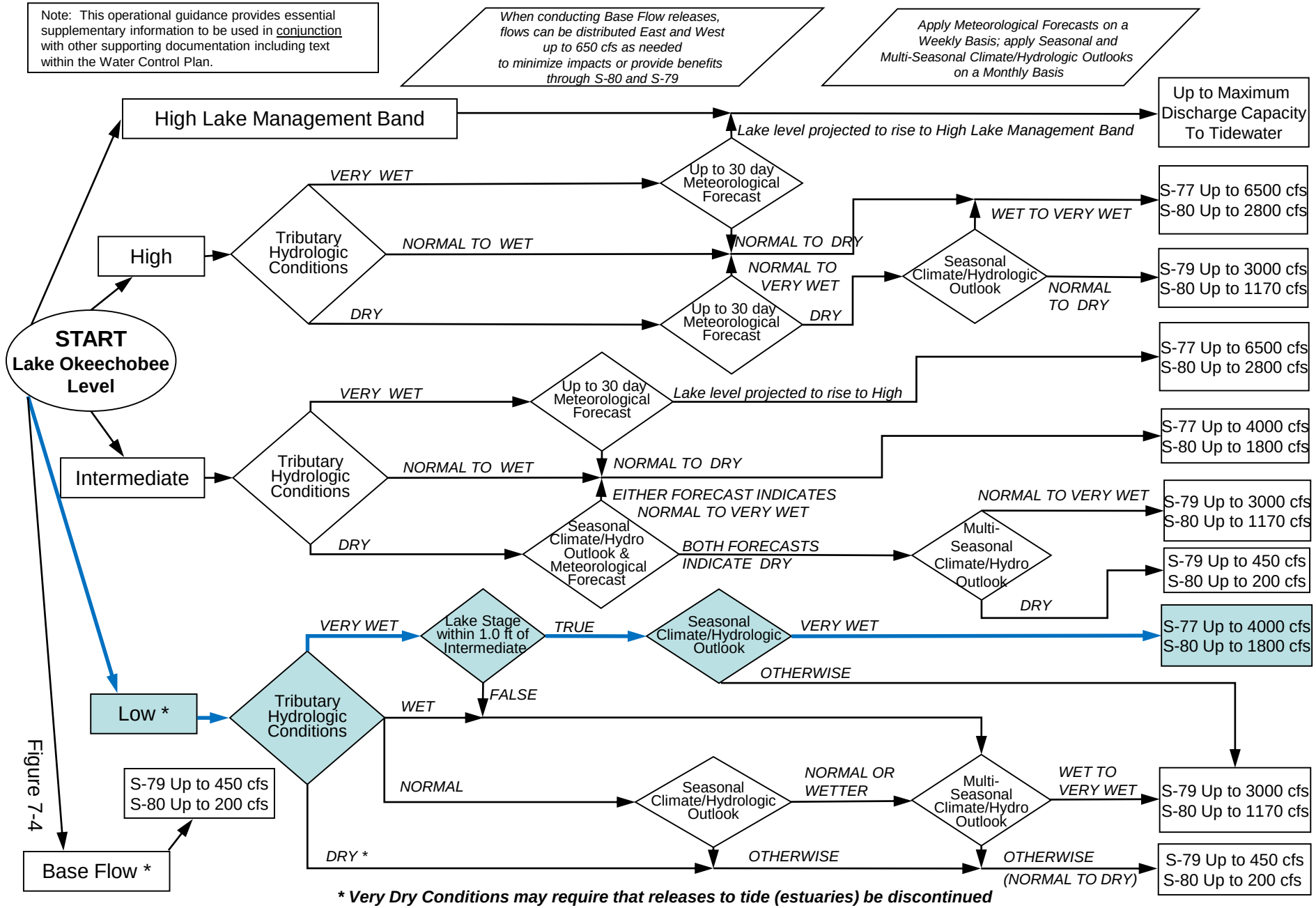
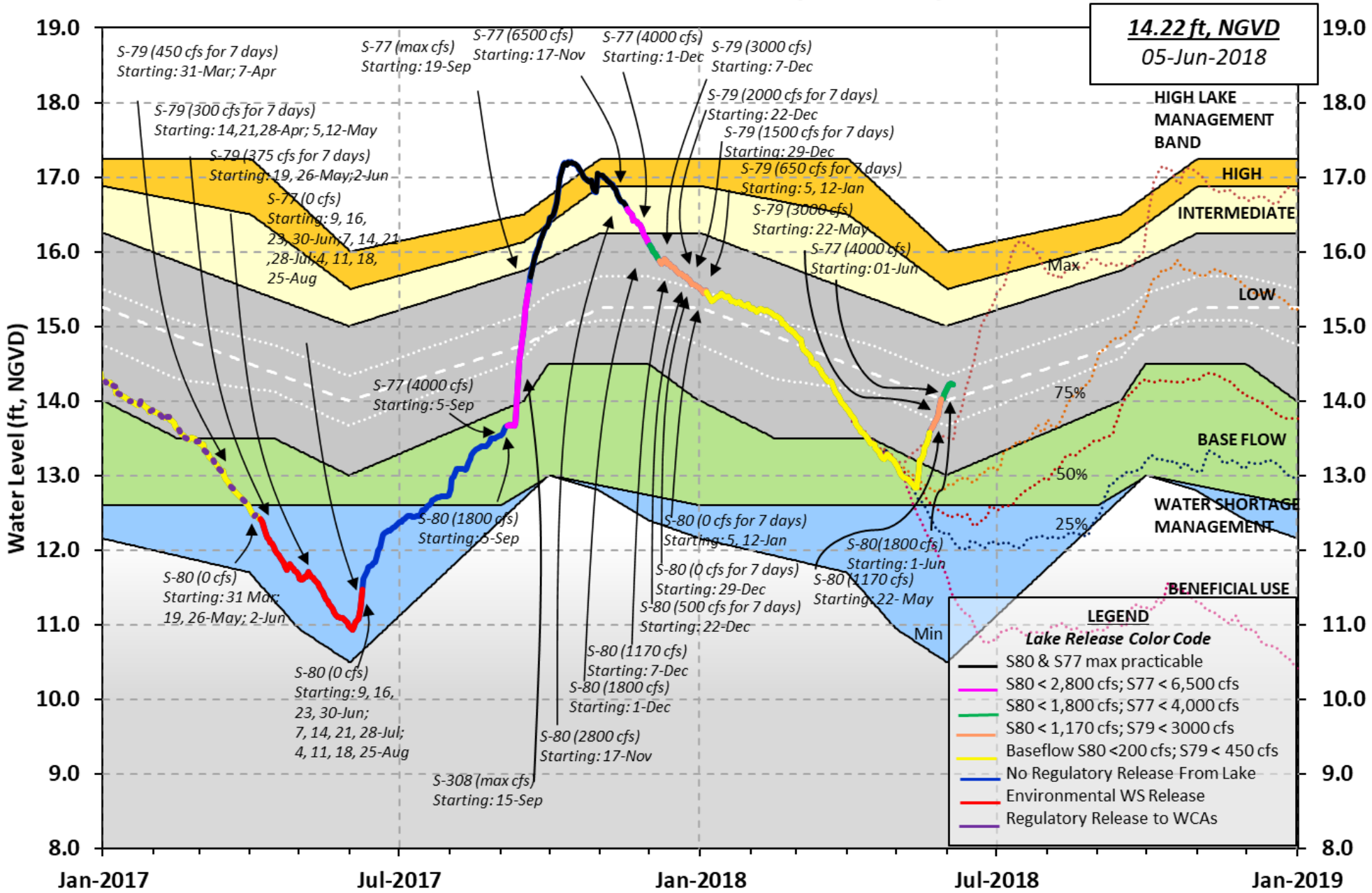


Figure 7-4

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 03 JUN 2018

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	14.23	11.04	14.33 (Official Elv)

Bottom of High Lake Mngmt= 16.01 Top of Water Short Mngmt= 10.54
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 11.95
Difference from Average LORS2008 2.27

03JUN (1965-2007) Period of Record Average 13.11
Difference from POR Average 1.12

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 8.17'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 6.37'
Bridge Clearance = 49.34'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
14.26	14.19	14.24	14.18	14.08	14.43	14.25	14.19

*Combination Okeechobee Avg-Daily Lake Average = 14.23 (*See Note)

Okeechobee Inflows (cfs):

S65E	37	S65EX1	2038	Fisheating Cr	680
S154	114	S191	414	S135 Pumps	62
S84	635	S133 Pumps	169	S2 Pumps	0
S84X	749	S127 Pumps	53	S3 Pumps	0
S71	148	S129 Pumps	70	S4 Pumps	366
S72	3	S131 Pumps	23	C5	0

Total Inflows: 5560

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	3945
S127 Culverts	0	S351	0	S308	1121
S129 Culverts	0	S352	0		
S131 Culverts	0	L8 Canal Pt	-846		

Total Outflows: 4220

****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 0.33
  Average Pan Evap x 0.75 Pan Coefficient = 0.21" = 0.02'

Lake Average Precipitation using NEXRAD: = 0.00" = 0.00'

Evaporation - Precipitation: = 0.21" = 0.02'
Evaporation - Precipitation using Lake Area of 730 square miles
  is equal to 4048 cfs out of the lake.
Lake Okeechobee (Change in Storage) Flow is 2118 cfs or 4200 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:	13.45	14.26	169	50	31	12	49	25	(cfs)		
S193:											
S191:	18.46	14.27	414	0.5	0.5	0.5					
S135 Pumps:	13.25	14.30	62	19	12	12	19		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	21.07	14.12	37	0.0	-0.0	0.0	0.1	-0.0	0.0		
S65EX1:	21.07	14.12	2038								
S127 Pumps:	13.38	14.18	53	0	0	42	0	12	(cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	12.94	14.11	70	25	37	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	12.84	14.01	23	0	25				(cfs)		
S131 Culvert:			0								
Fisheating Creek											
nr Palmdale		32.66	680								
nr Lakeport											
C5:		-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	12.76	13.93	366	0	337	40			(cfs)		
S169:	14.03	12.77	0	0.0	0.0	0.0					
S310:	13.96		-176								

S3 Pumps:	10.52	14.12	0	0	0	0				(cfs)
S354:	14.12	10.52	0	0.0	0.0					
S2 Pumps:	9.38	14.22	0	0	0	0	0			(cfs)
S351:	14.22	9.38	0	0.0	0.0	0.0				
S352:	14.54	9.74	0	0.0	0.0					
C10A:	-NR-	15.24		8.0	8.0	8.0	0.0	0.0		
L8 Canal PT		15.06	-846							

S351 and S352 Temporary Pumps/S354 Spillway

S351:	9.38	14.22	0	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-	
S352:	9.74	14.54	0	-NR-	-NR-	-NR-	-NR-			
S354:	10.52	14.12	0	-NR-	-NR-	-NR-	-NR-			

Caloosahatchee River (S77, S78, S79)

S47B:	13.04	11.22		0.8	1.3						
S47D:	11.17	11.16	9	6.5							
S77:											
Spillway and Sector Flow:											
	13.33	11.17	******	5.0	5.0	5.0	5.0				
Flow Due to Lockages+:			5								
S77 Below USGS Flow Gage			4633								
S78:											
Spillway and Sector Flow:											
	10.68	3.53	6036	5.0	5.0	4.5	4.5				
Flow Due to Lockages+:			18								
S79:											
Spillway and Sector Flow:											
	3.19	1.48	8260	3.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0
Flow Due to Lockages+:			9								
Percent of flow from S77			48%								
Chloride		(ppm)	66								

St. Lucie Canal (S308, S80)

S308:											
Spillway and Sector Flow:											
	14.39	14.16	******	4.0	4.0	4.0	4.0				
Flow Due to Lockages+:			1								
S308 Below USGS Flow Gage			1073								
S153:	19.02	13.98	255	0.5	0.6						
S80:											
Spillway and Sector Flow:											
	13.78	0.60	1845	2.0	1.5	0.0	0.0	0.0	0.0	1.5	
Flow Due to Lockages+:			28								
Percent of flow from S308			61%								
Steele Point Top Salinity		(mg/ml)	4336								
Steele Point Bottom Salinity		(mg/ml)	****								

Speedy Point Top Salinity (mg/ml) 577
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.

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:	11.98	13.86	15.15	235	3
S78:	8.74	8.80	9.67	258	3
S79:	-36.58	-36.46	-36.08	236	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:	0.63	0.63	0.69	260	16
S80:	0.00	0.00	0.00	267	3
Okeechobee Average (Sites S78, S79 and S80 not included)	6.30	1.11	1.22		
Oke Nexrad Basin Avg	0.00	0.38	1.55		

Okeechobee Lake Elevations 03 JUN 2018 14.23 Difference from 03JUN18

03JUN18 -1 Day =	02 JUN 2018	14.22	-0.01
03JUN18 -2 Days =	01 JUN 2018	14.19	-0.04
03JUN18 -3 Days =	31 MAY 2018	14.14	-0.09
03JUN18 -4 Days =	30 MAY 2018	14.08	-0.15
03JUN18 -5 Days =	29 MAY 2018	14.03	-0.20
03JUN18 -6 Days =	28 MAY 2018	14.02	-0.21
03JUN18 -7 Days =	27 MAY 2018	13.90	-0.33
03JUN18 -30 Days =	04 MAY 2018	12.99	-1.24
03JUN18 -1 Year =	03 JUN 2017	11.04	-3.19
03JUN18 -2 Year =	03 JUN 2016	14.33	0.10

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
03JUN18	Today =	03 JUN 2018	11949	MON	7178
03JUN18	-1 Day =	02 JUN 2018	12765	SUN	11219
03JUN18	-2 Days =	01 JUN 2018	12432	SAT	13159
03JUN18	-3 Days =	31 MAY 2018	12854	FRI	12907
03JUN18	-4 Days =	30 MAY 2018	12991	THU	10588
03JUN18	-5 Days =	29 MAY 2018	12537	WED	2118
03JUN18	-6 Days =	28 MAY 2018	14806	TUE	25410
03JUN18	-7 Days =	27 MAY 2018	15986	MON	19058
03JUN18	-8 Days =	26 MAY 2018	14677	SUN	12705
03JUN18	-9 Days =	25 MAY 2018	13428	SAT	8470
03JUN18	-10 Days =	24 MAY 2018	12519	FRI	8470
03JUN18	-11 Days =	23 MAY 2018	11762	THU	10588
03JUN18	-12 Days =	22 MAY 2018	10686	WED	10588
03JUN18	-13 Days =	21 MAY 2018	9719	TUE	14823

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
03JUN18	Today=	03 JUN 2018	44	MON	46
03JUN18	-1 Day =	02 JUN 2018	44	SUN	44
03JUN18	-2 Days =	01 JUN 2018	44	SAT	43
03JUN18	-3 Days =	31 MAY 2018	44	FRI	43
03JUN18	-4 Days =	30 MAY 2018	44	THU	43
03JUN18	-5 Days =	29 MAY 2018	44	WED	43
03JUN18	-6 Days =	28 MAY 2018	45	TUE	43
03JUN18	-7 Days =	27 MAY 2018	80	MON	43
03JUN18	-8 Days =	26 MAY 2018	87	SUN	44
03JUN18	-9 Days =	25 MAY 2018	84	SAT	44
03JUN18	-10 Days =	24 MAY 2018	81	FRI	44
03JUN18	-11 Days =	23 MAY 2018	78	THU	44
03JUN18	-12 Days =	22 MAY 2018	75	WED	44
03JUN18	-13 Days =	21 MAY 2018	72	TUE	44

S65EX1

		Average Flow over previous 14 days			Avg-Daily Flow
03JUN18	Today=	03 JUN 2018	1814	MON	2038
03JUN18	-1 Day =	02 JUN 2018	1745	SUN	2210
03JUN18	-2 Days =	01 JUN 2018	1651	SAT	2095
03JUN18	-3 Days =	31 MAY 2018	1568	FRI	2088
03JUN18	-4 Days =	30 MAY 2018	1483	THU	2114
03JUN18	-5 Days =	29 MAY 2018	1373	WED	1910
03JUN18	-6 Days =	28 MAY 2018	1270	TUE	1864
03JUN18	-7 Days =	27 MAY 2018	1151	MON	1641
03JUN18	-8 Days =	26 MAY 2018	1054	SUN	1644
03JUN18	-9 Days =	25 MAY 2018	957	SAT	1704
03JUN18	-10 Days =	24 MAY 2018	855	FRI	1608
03JUN18	-11 Days =	23 MAY 2018	759	THU	1577
03JUN18	-12 Days =	22 MAY 2018	663	WED	1498
03JUN18	-13 Days =	21 MAY 2018	571	TUE	1413

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)
03 JUN 2018	7819	9186	11998	16395
02 JUN 2018	7651	8874	12165	16455
01 JUN 2018	4616	3026	8574	12532
31 MAY 2018	12	239	2095	6525
30 MAY 2018	11	320	1675	4022
29 MAY 2018	8	365	3034	5696
28 MAY 2018	8	213	3259	6194
27 MAY 2018	-NR-	279	2995	6651
26 MAY 2018	-NR-	329	2877	5880
25 MAY 2018	-NR-	523	3043	5749
24 MAY 2018	-NR-	572	2544	4190
23 MAY 2018	-NR-	561	3223	5610
22 MAY 2018	-NR-	466	4478	7198
21 MAY 2018	-NR-	436	3973	6473

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)
03 JUN 2018	-350	0	0	0	-1678
02 JUN 2018	-403	0	0	0	-2007
01 JUN 2018	-380	0	0	0	-2272
31 MAY 2018	-252	0	0	0	-2413
30 MAY 2018	-205	0	0	0	-2482
29 MAY 2018	-364	0	0	0	-2829
28 MAY 2018	-382	0	0	0	-2983
27 MAY 2018	-265	0	0	0	-2195
26 MAY 2018	-175	0	0	0	-1672
25 MAY 2018	-267	0	0	0	-1721
24 MAY 2018	-264	0	0	0	-2359
23 MAY 2018	-287	0	0	0	-2625
22 MAY 2018	-341	0	0	0	-2589
21 MAY 2018	-291	0	0	0	-2414

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
03 JUN 2018	2191	2129	3715
02 JUN 2018	1926	1716	3728
01 JUN 2018	1541	1496	3724
31 MAY 2018	3	-35	3681
30 MAY 2018	3	37	3639
29 MAY 2018	3	-68	5596
28 MAY 2018	-2	-273	7555
27 MAY 2018	1	159	6088
26 MAY 2018	3	107	3934
25 MAY 2018	2	-21	2931
24 MAY 2018	4	-7	3578
23 MAY 2018	2	-72	4261
22 MAY 2018	0	-38	5435

21 MAY 2018 -2 25 6999

*** 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

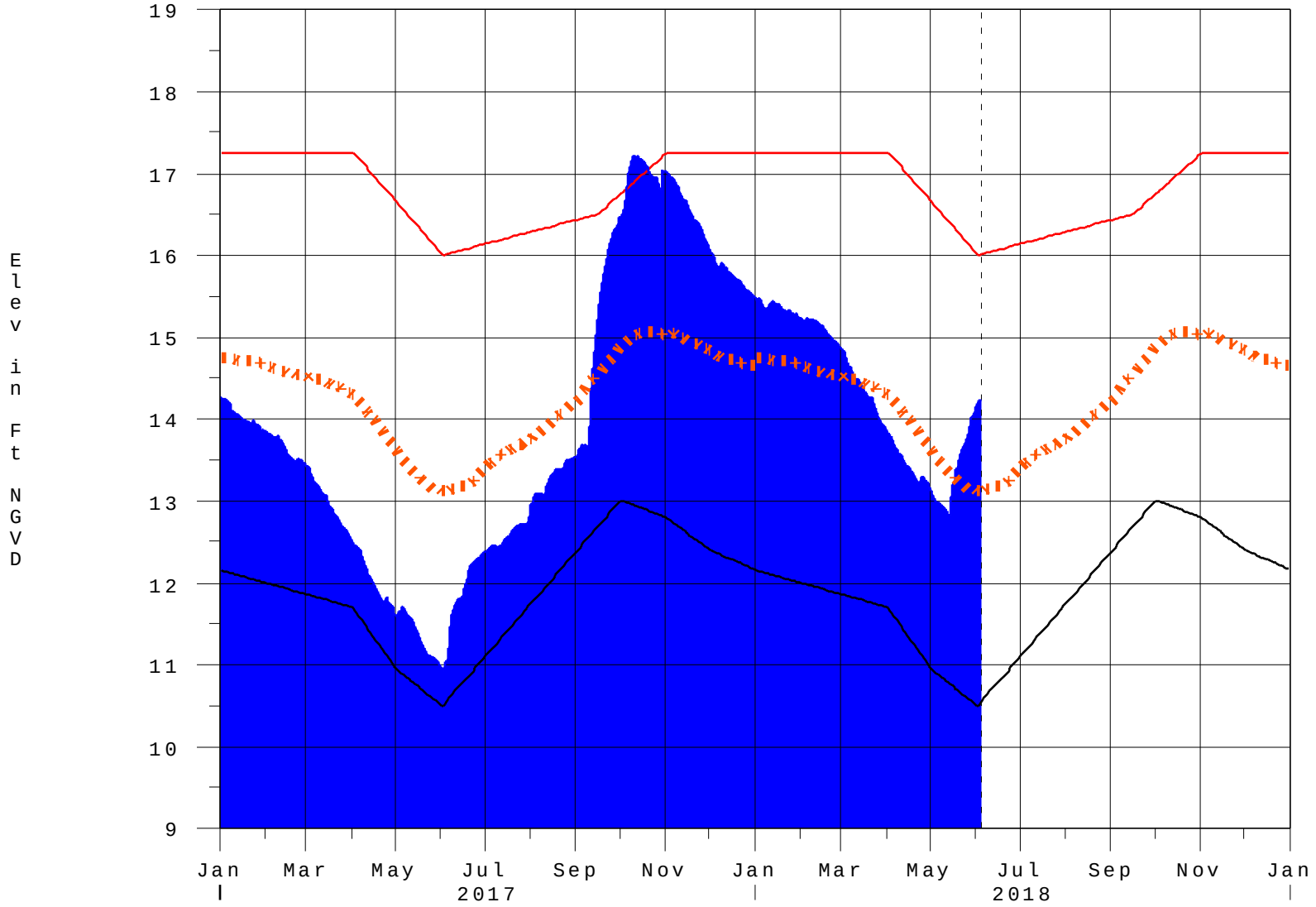
---

* 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

Report Generated 04JUN2018 @ 17:38 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

04JUN18 17:45:23



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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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