Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 6/11/2018 (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	2.84	Very Wet	3.31	Very Wet	2.62	Very Wet
Multi Seasonal (Jun-Apr)	N/A	N/A	3.19	Wet	3.80	Wet	2.26	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:

7,339 cfs 14-day running average for Lake Okeechobee Net Inflow through 6/10/2018.
According to the classification in Tributary Hydrologic Conditions table, this condition is Very Wet.

2.06 for Palmer Index on 6/9/2018.
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 6/11/2018

Lake Okeechobee Stage: **14.18 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		16.04	
Operational Band	High sub-band	15.55	
	Intermediate sub-band	15.07	
	Low sub-band	13.09	← 14.18
Base Flow sub-band		12.60	
Beneficial Use sub-band		10.69	
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 6/11/2018 (ENSO Neutral Condition):

Status for week ending 6/11/2018:

District wide, Raindar rainfall was 1.82 inches for the week. Lake stage on 6/11/2018 was 14.18 ft, NGVD, down 0.05 ft from last week.

The updated June 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	2.06 (Normal to Extremely Wet)	L
	CPC Precipitation Outlook	1 month: Above Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Outlook	3.31 ft (Normal to Extremely Wet)	L
	ENSO Years		
	LOK Multi-Seasonal Net Inflow Outlook	3.80 ft (Wet)	L
	ENSO Conditions		
WCAs	WCA 1: Station Average (Site 1-7, Site 1-8T, Site 1-9)	Above Line 1 (16.63 ft)	L
	WCA 2A: Site 2-17	Above Line 1 (13.90 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.71 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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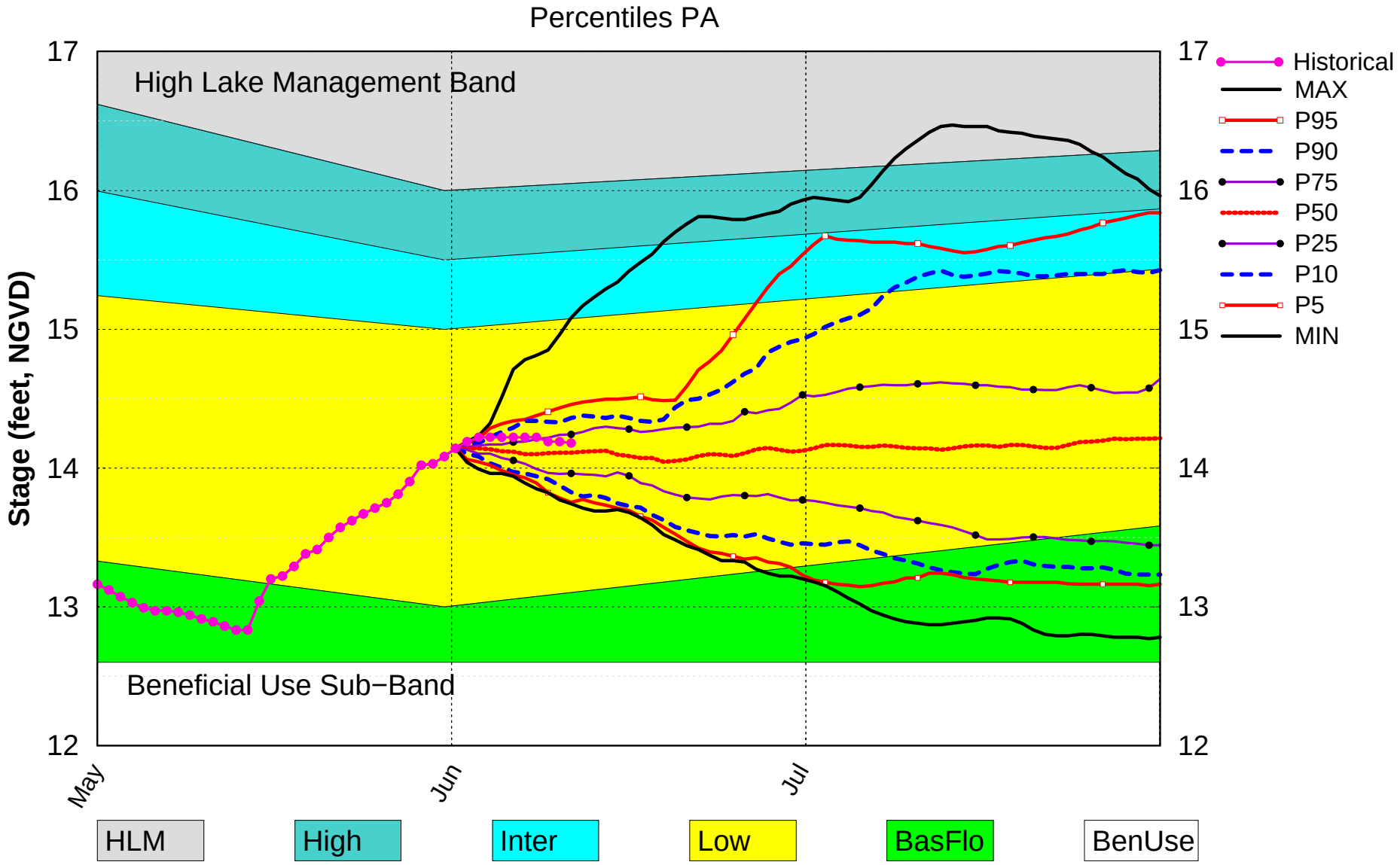
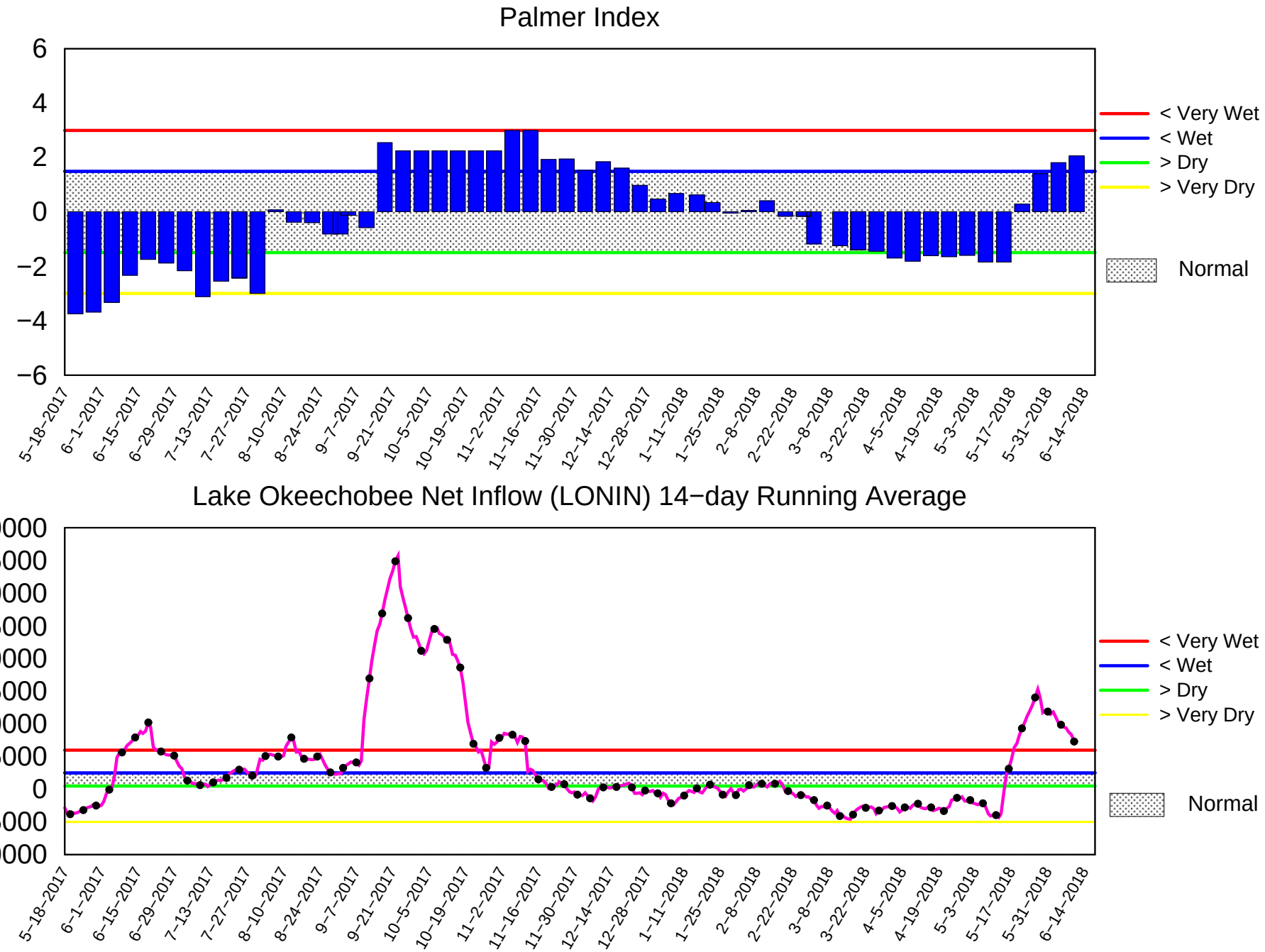
Lake Okeechobee SFWMM Jun 2018 Position Analysis



(See assumptions on the Position Analysis Results website)

Mon Jun 11 14:19:04 EDT 2018

Tributary Basin Condition Indicators as of June 11 2018



Mon Jun 11 14:16:10 EDT 2018

2008 LORS

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

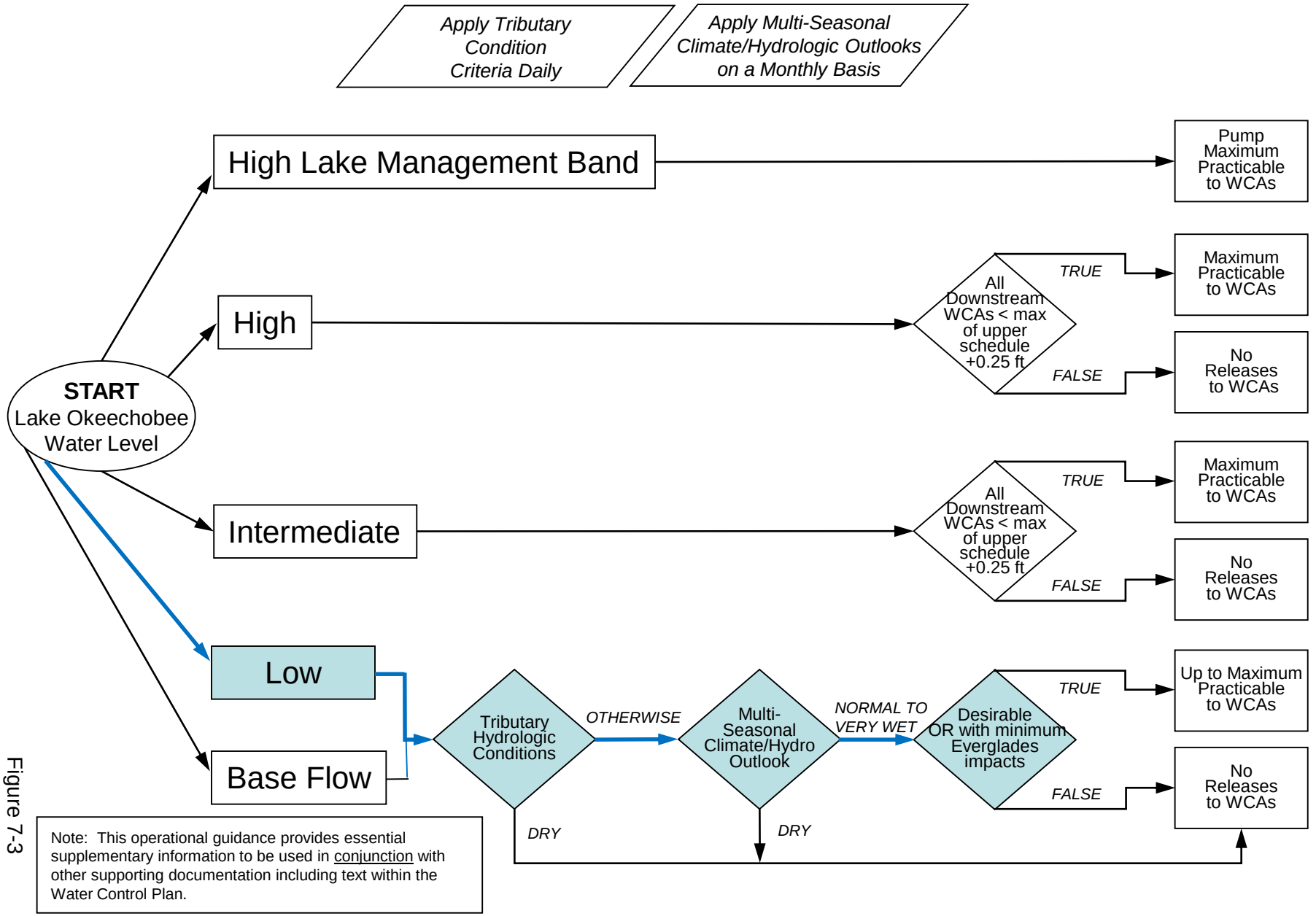


Figure 7-3

2008 LORS

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

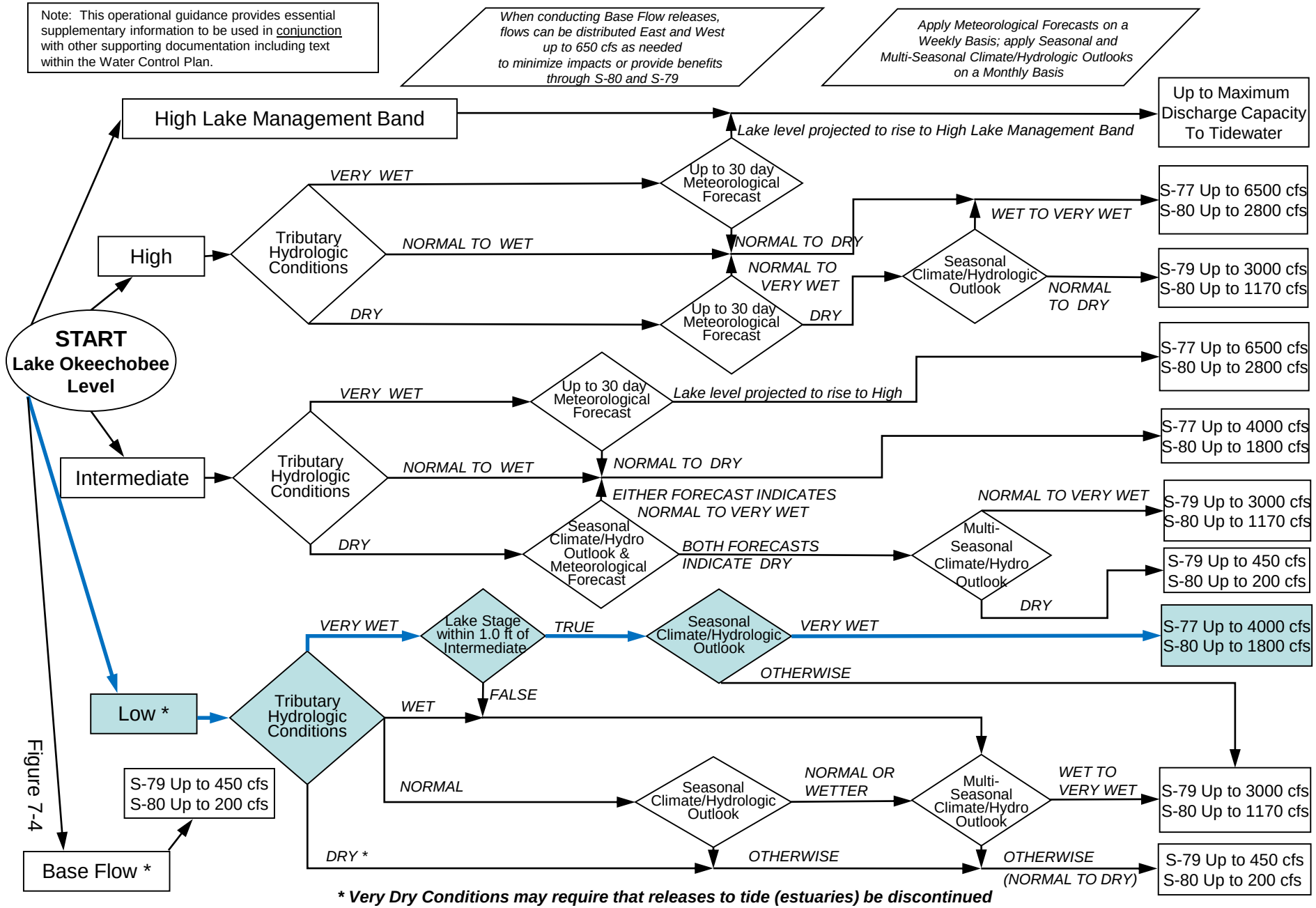
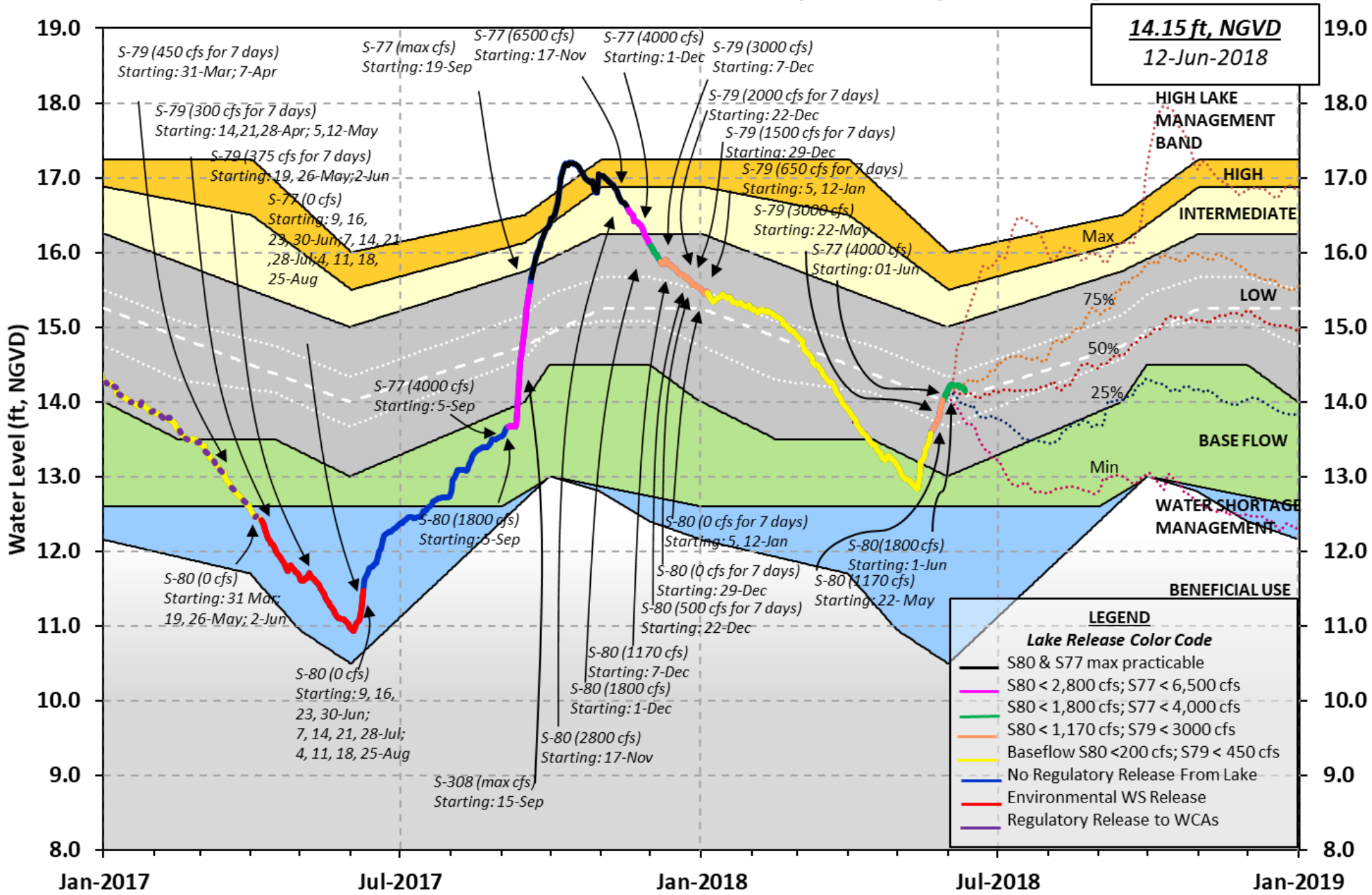


Figure 7-4

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 10 JUN 2018

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	14.18	11.72	14.58 (Official Elv)

Bottom of High Lake Mngmt= 16.04 Top of Water Short Mngmt= 10.69
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 12.00
Difference from Average LORS2008 2.18

10JUN (1965-2007) Period of Record Average 13.15
Difference from POR Average 1.03

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 8.12'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 6.32'
Bridge Clearance = 49.54'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
14.23	14.23	14.19	14.12	14.03	14.32	14.15	14.14

*Combination Okeechobee Avg-Daily Lake Average = 14.18 (*See Note)

Okeechobee Inflows (cfs):

S65E	0	S65EX1	2133	Fisheating Cr	626
S154	76	S191	246	S135 Pumps	0
S84	401	S133 Pumps	85	S2 Pumps	0
S84X	743	S127 Pumps	0	S3 Pumps	0
S71	235	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0	C5	0

Total Inflows: 4544

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	4233
S127 Culverts	0	S351	0	S308	1352
S129 Culverts	0	S352	0		
S131 Culverts	0	L8 Canal Pt	-305		

Total Outflows: 5281

****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 0.23
  Average Pan Evap x 0.75 Pan Coefficient = 0.17" = 0.01'

Lake Average Precipitation using NEXRAD: = 0.04" = 0.00'

Evaporation - Precipitation: = 0.13" = 0.01'
Evaporation - Precipitation using Lake Area of 730 square miles
  is equal to 2527 cfs out of the lake.
Lake Okeechobee (Change in Storage) Flow is -2168 cfs or -4300 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:	13.34	14.31	85	0	0	0	31	57	(cfs)		
S193:											
S191:	18.16	14.28	246	0.0	0.0	0.5					
S135 Pumps:	13.32	14.17	0	0	0	0	0		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	21.03	14.82	0	0.0	0.0	0.0	0.0	0.0	0.0		
S65EX1:	21.03	14.82	2133								
S127 Pumps:	13.48	14.24	0	0	0	0	0	0	(cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	13.11	14.18	0	0	0	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	12.85	14.00	0	0	0				(cfs)		
S131 Culvert:			0								
Fisheating Creek nr Palmdale		32.48	626								
nr Lakeport C5:	-NR-	-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	11.59	13.99	0	0	0	0			(cfs)		
S169:	14.09	11.61	0	0.0	0.0	0.0					
S310:	14.02		-38								

```
  S3 Pumps:    10.47     14.15       0      0    0    0            (cfs)
  S354:        14.15     10.47       0    0.0  0.0
  S2 Pumps:    10.33     14.27       0      0    0    0    0       (cfs)
  S351:        14.27     10.33       0    0.0  0.0  0.0
  S352:        14.11     10.17       0    0.0  0.0
  C10A:         -NR-     14.46           8.0   8.0   8.0   0.0   0.0
  L8 Canal PT            14.30    -305
```

S351 and S352 Temporary Pumps/S354 Spillway

```
  S351:        10.33     14.27       0  -NR--NR--NR--NR--NR--NR-
  S352:        10.17     14.11       0  -NR--NR--NR--NR-
  S354:        10.47     14.15       0  -NR--NR--NR--NR-
```

```
Caloosahatchee River (S77, S78, S79)
  S47B:        13.20     10.80           0.0  0.0
  S47D:        10.80     10.80       0    6.5
  S77:
    Spillway and Sector Flow:
                13.36     10.82  ******  5.0  5.0  5.0  5.0
    Flow Due to Lockages+:           1

  S77 Below USGS Flow Gage        4637

  S78:
    Spillway and Sector Flow:
                10.37      3.18    5201    4.0  4.0  4.5  4.0
    Flow Due to Lockages+:        -NR-

  S79:
    Spillway and Sector Flow:
                 2.97      0.99    6904    3.0  3.0  3.0  3.0  4.0  3.0  3.0
3.0
    Flow Due to Lockages+:        -NR-
    Percent of flow from S77        61%
    Chloride            (ppm)     -N


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Flow:
                14.05     13.96  ******  4.5  4.5  4.5  4.5
    Flow Due to Lockages+:           0

  S308 Below USGS Flow Gage       1554
  S153:        19.03     13.75     117    0.5  0.0
  S80:
    Spillway and Sector Flow:
                13.32      1.26    1813    2.0  1.5  0.0  0.0  0.0  0.0  1.5
    Flow Due to Lockages+:           7
    Percent of flow from S308       75%

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

Speedy Point Top Salinity (mg/ml) 2467
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:	0.42	0.52	1.09	168	3
S78:	9.27	9.55	9.80	229	3
S79:	-35.84	-35.38	-35.10	270	0
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:	0.68	0.68	0.73	102	2
S80:	0.00	0.00	0.00	103	1
Okeechobee Average (Sites S78, S79 and S80 not included)	0.55	0.09	0.14		
Oke Nexrad Basin Avg	0.04	0.19	1.55		

Okeechobee Lake Elevations	10 JUN 2018	14.18	Difference from 10JUN18
10JUN18 -1 Day =	09 JUN 2018	14.19	0.01
10JUN18 -2 Days =	08 JUN 2018	14.19	0.01
10JUN18 -3 Days =	07 JUN 2018	14.22	0.04
10JUN18 -4 Days =	06 JUN 2018	14.22	0.04
10JUN18 -5 Days =	05 JUN 2018	14.22	0.04
10JUN18 -6 Days =	04 JUN 2018	14.22	0.04
10JUN18 -7 Days =	03 JUN 2018	14.22	0.04
10JUN18 -30 Days =	11 MAY 2018	12.86	-1.32
10JUN18 -1 Year =	10 JUN 2017	11.72	-2.46
10JUN18 -2 Year =	10 JUN 2016	14.58	0.40

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 5.03

Lake Okeechobee Net Inflow (LONIN)

		Average Flow over the previous 14 days			Avg-Daily Flow
10JUN18	Today =	10 JUN 2018	7805	MON	3416
10JUN18	-1 Day =	09 JUN 2018	8923	SUN	5596
10JUN18	-2 Days =	08 JUN 2018	9430	SAT	-935
10JUN18	-3 Days =	07 JUN 2018	10102	FRI	5308
10JUN18	-4 Days =	06 JUN 2018	10328	THU	5460
10JUN18	-5 Days =	05 JUN 2018	10694	WED	4776
10JUN18	-6 Days =	04 JUN 2018	11109	TUE	5192
10JUN18	-7 Days =	03 JUN 2018	11797	MON	5060
10JUN18	-8 Days =	02 JUN 2018	12765	SUN	11219
10JUN18	-9 Days =	01 JUN 2018	12432	SAT	13159
10JUN18	-10 Days =	31 MAY 2018	12854	FRI	12907
10JUN18	-11 Days =	30 MAY 2018	12991	THU	10588
10JUN18	-12 Days =	29 MAY 2018	12537	WED	2118
10JUN18	-13 Days =	28 MAY 2018	14806	TUE	25410

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
10JUN18	Today=	10 JUN 2018	24	MON	0
10JUN18	-1 Day =	09 JUN 2018	27	SUN	0
10JUN18	-2 Days =	08 JUN 2018	30	SAT	0
10JUN18	-3 Days =	07 JUN 2018	33	FRI	0
10JUN18	-4 Days =	06 JUN 2018	36	THU	0
10JUN18	-5 Days =	05 JUN 2018	39	WED	0
10JUN18	-6 Days =	04 JUN 2018	42	TUE	24
10JUN18	-7 Days =	03 JUN 2018	44	MON	46
10JUN18	-8 Days =	02 JUN 2018	44	SUN	44
10JUN18	-9 Days =	01 JUN 2018	44	SAT	43
10JUN18	-10 Days =	31 MAY 2018	44	FRI	43
10JUN18	-11 Days =	30 MAY 2018	44	THU	43
10JUN18	-12 Days =	29 MAY 2018	44	WED	43
10JUN18	-13 Days =	28 MAY 2018	45	TUE	43

S65EX1

		Average Flow over previous 14 days			Avg-Daily Flow
10JUN18	Today=	10 JUN 2018	2076	MON	2133
10JUN18	-1 Day =	09 JUN 2018	2041	SUN	2114
10JUN18	-2 Days =	08 JUN 2018	2008	SAT	2209
10JUN18	-3 Days =	07 JUN 2018	1972	FRI	2011
10JUN18	-4 Days =	06 JUN 2018	1943	THU	2070
10JUN18	-5 Days =	05 JUN 2018	1908	WED	2073
10JUN18	-6 Days =	04 JUN 2018	1866	TUE	2113
10JUN18	-7 Days =	03 JUN 2018	1816	MON	2040
10JUN18	-8 Days =	02 JUN 2018	1747	SUN	2237
10JUN18	-9 Days =	01 JUN 2018	1651	SAT	2095
10JUN18	-10 Days =	31 MAY 2018	1568	FRI	2088
10JUN18	-11 Days =	30 MAY 2018	1483	THU	2114
10JUN18	-12 Days =	29 MAY 2018	1373	WED	1910
10JUN18	-13 Days =	28 MAY 2018	1270	TUE	1864

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)
10 JUN 2018	8403	9195	-NR-	-NR-
09 JUN 2018	8340	9366	10320	-NR-
08 JUN 2018	8141	9400	10287	-NR-
07 JUN 2018	7889	9217	10264	15441
06 JUN 2018	8235	8298	10716	13876
05 JUN 2018	6879	7993	9915	13251
04 JUN 2018	7927	9194	11477	15857
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

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)
10 JUN 2018	-75	0	0	0	-604
09 JUN 2018	-97	0	0	0	-719
08 JUN 2018	-132	0	0	0	-823
07 JUN 2018	-173	0	0	0	-1050
06 JUN 2018	-221	0	0	0	-1129
05 JUN 2018	-291	0	0	0	-1282
04 JUN 2018	-354	0	0	0	-1489
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

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
10 JUN 2018	2665	3082	3611
09 JUN 2018	2757	3082	3611
08 JUN 2018	2723	2864	3598
07 JUN 2018	2623	2850	3620
06 JUN 2018	2541	2637	3631
05 JUN 2018	2532	2524	3642
04 JUN 2018	2356	2233	3669
03 JUN 2018	2191	2129	3715
02 JUN 2018	1926	1716	3728
01 JUN 2018	1541	1496	3725
31 MAY 2018	3	-35	3681
30 MAY 2018	3	37	3639
29 MAY 2018	3	-68	5596

28 MAY 2018 -2 -273 7555

*** 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

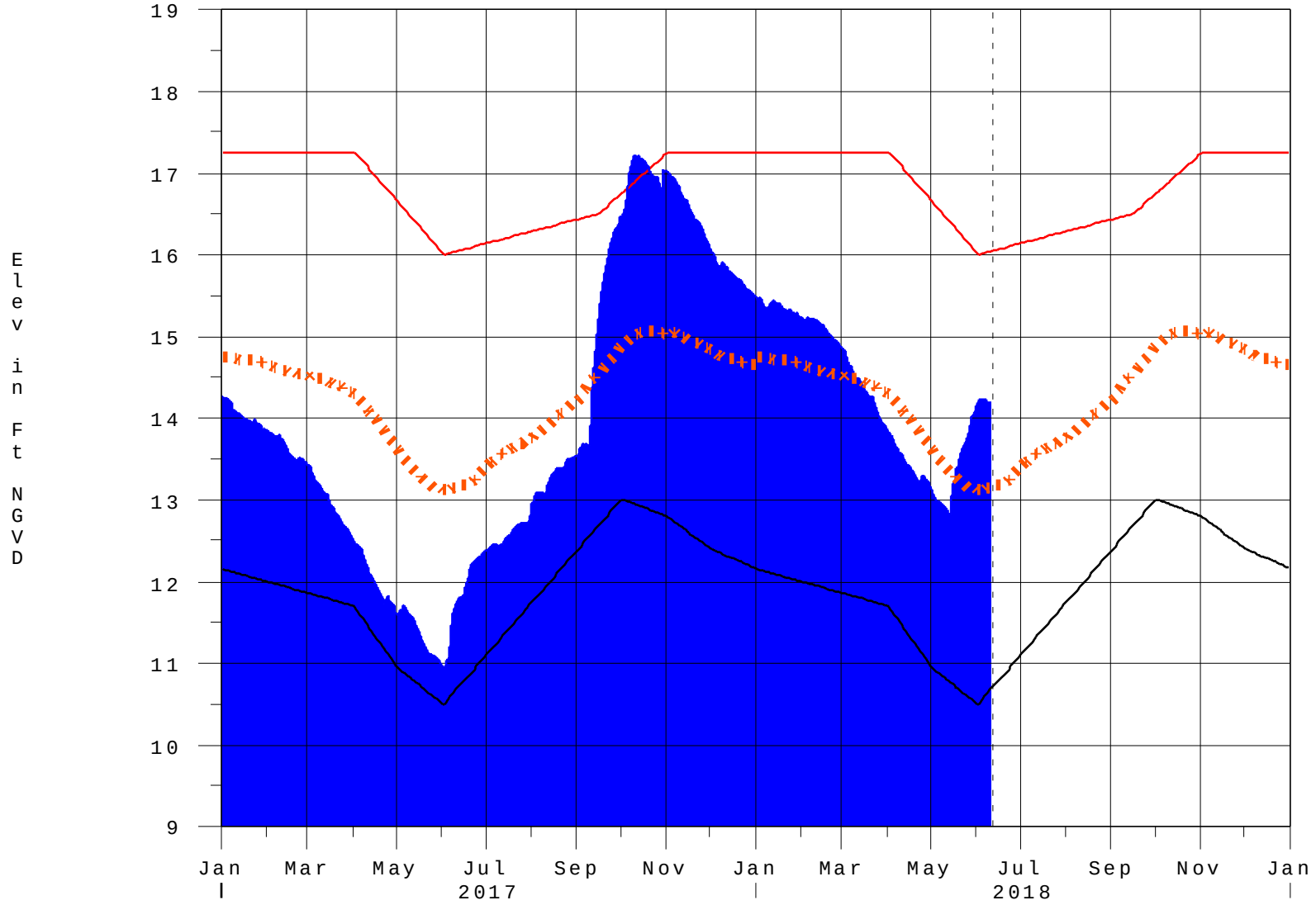
---

* 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 11JUN2018 @ 13:38 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

11JUN18 14:00:21



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