Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 4/16/2018 (La Nina 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 La Nina Years[3]		Sub-sampling of AMO Warm + La Nina Years[4]	
	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition
Current (Apr-Sep)	N/A	N/A	1.71	Wet	1.89	Wet	1.64	Wet
Multi Seasonal (Apr-Oct)	N/A	N/A	2.19	Normal	2.46	Normal	2.28	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:

-2697 cfs 14-day running average for Lake Okeechobee Net Inflow through 4/15/2018.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

-1.61 for Palmer Index on 4/14/2018.
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 4/16/2018

Lake Okeechobee Stage: **13.43 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		16.94	
Operational Band	High sub-band	16.25	
	Intermediate sub-band	15.38	
	Low sub-band	13.50	
Base Flow sub-band		12.60	← 13.43
Beneficial Use sub-band		11.32	
Water Shortage Management Band			

Part C of LORS2008: Discharge to WCA's

Release Guidance Flow Chart Outcome: No releases to the WCAs.

Part D of LORS2008: Discharge to Tidewater

Release Guidance Flow Chart Outcome: S-79 Up to 450 cfs & S-80 Up to 200 cfs.

Technical Input Summaries from:

- **Lake Okeechobee Division**
- **Coastal Ecosystems**
- **Everglades Ecosystems Division**
- **Water Supply Department**
- **Water Resource Management Release Recommendation**
- **Kissimmee Watershed Environmental Conditions**
- **Operations Department**

Back to Lake Okeechobee Operations Main Page

Back to U.S. Army Corps of Engineers LORSS Homepage

LORS2008 Implementation on 4/16/2018 (ENSO La Nina Condition):

Status for week ending 4/16/2018:

District wide, Raindar rainfall was 1.06 inches for the week. Lake stage on 4/16/2018 was 13.43 ft, NGVD, down 0.15 ft from last week.

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

The 2008 LORS Tributary Hydrologic Condition (THC) tributary is classified as **Dry**. The PDSI indicates dry condition and the LONIN is Dry. The THC classification is based on the wetter of the two indices .

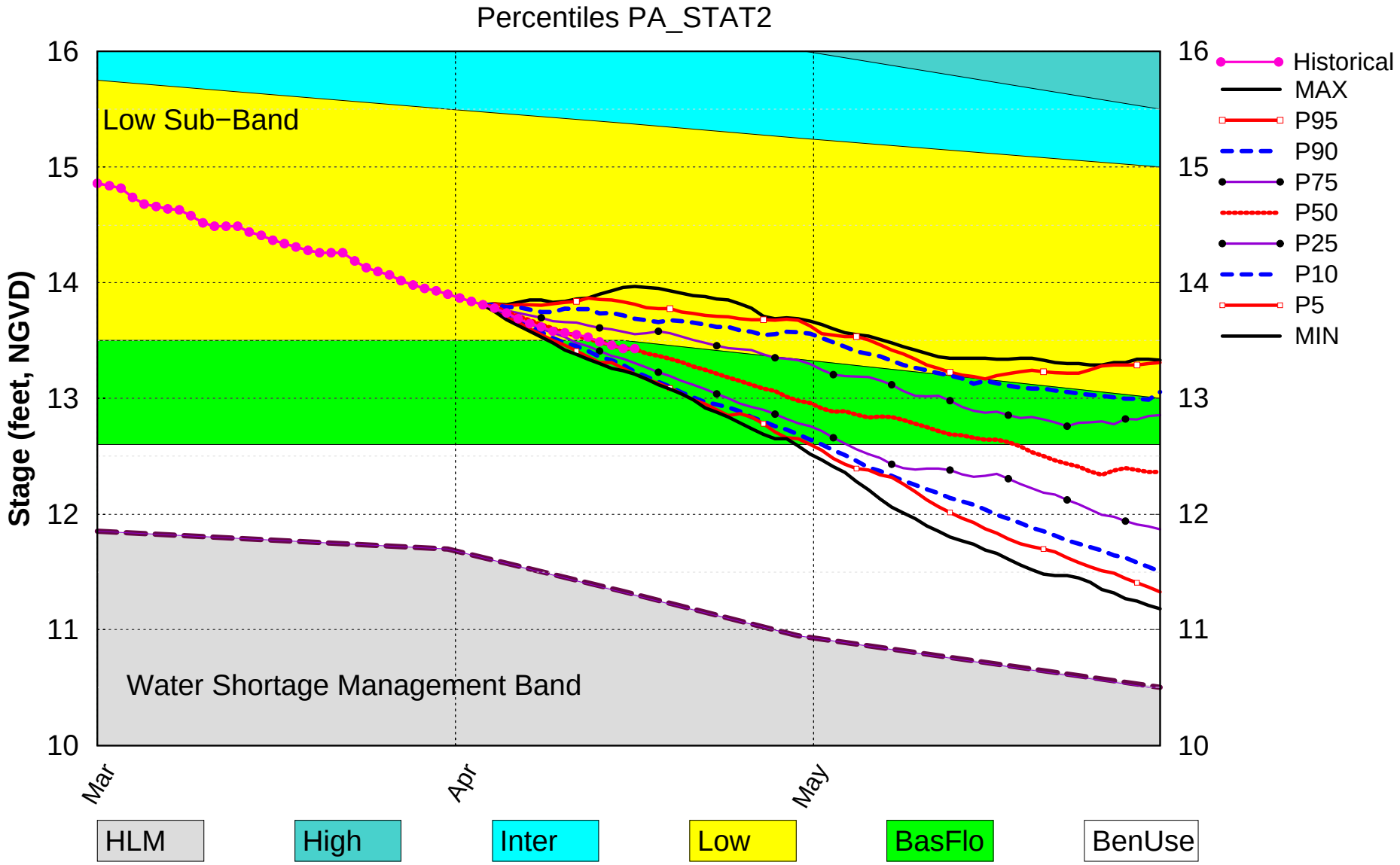
Water Supply Risk Evaluation

Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Beneficial Use Sub Band	H
	Palmer Index for LOK Tributary Conditions	-1.61 (Dry)	M
	CPC Precipitation Outlook	1 month: Below Normal	M
		3 months: Normal	L
	LOK Seasonal Net Inflow Outlook	1.89 ft (Normal to Extremely Wet)	L
	ENSO La Nina Years		
	LOK Multi-Seasonal Net Inflow Outlook	2.46 ft (Normal)	M
	ENSO Conditions		
WCAs	WCA 1: Station Average (Site 1-7, Site 1-8T, Site 1-9)	Above Line 1 (16.11 ft)	L
	WCA 2A: Site S11BHW	Below Line 2 10.02 ft)	H
	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.

Back to Lake Okeechobee Operations Main Page
Back to U.S. Army Corps of Engineers LORSS Homepage

Lake Okeechobee SFWMM Apr 2018 Position Analysis

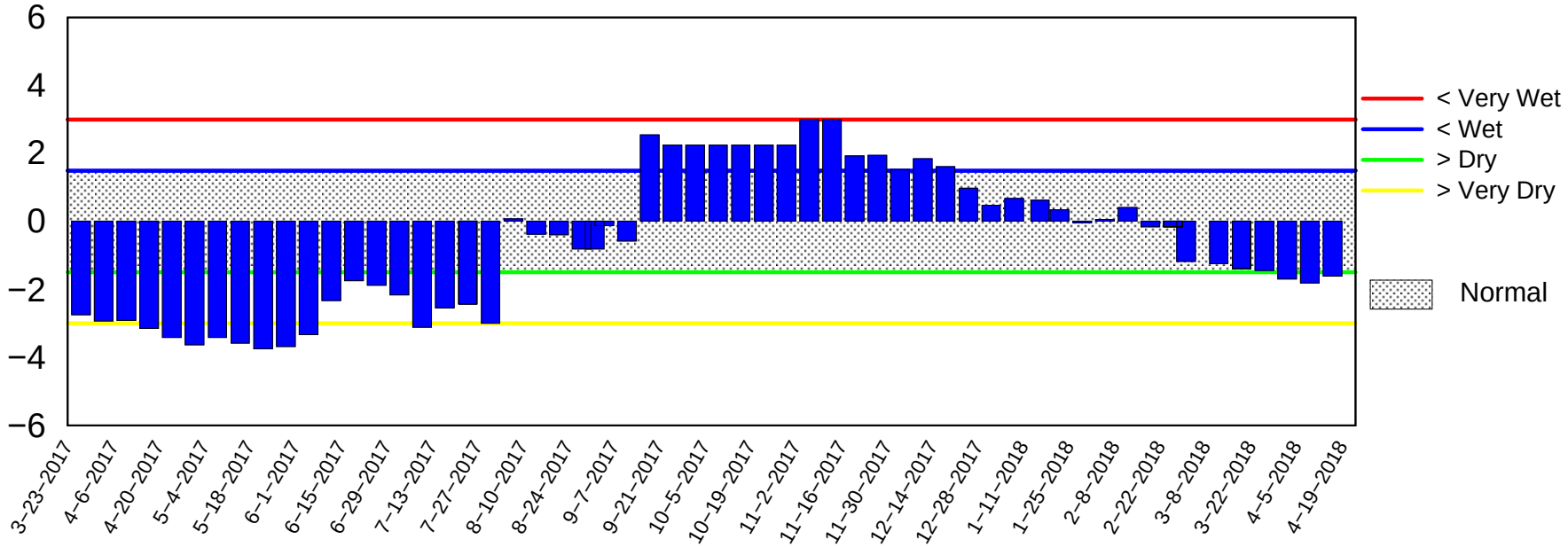


(See assumptions on the Position Analysis Results website)

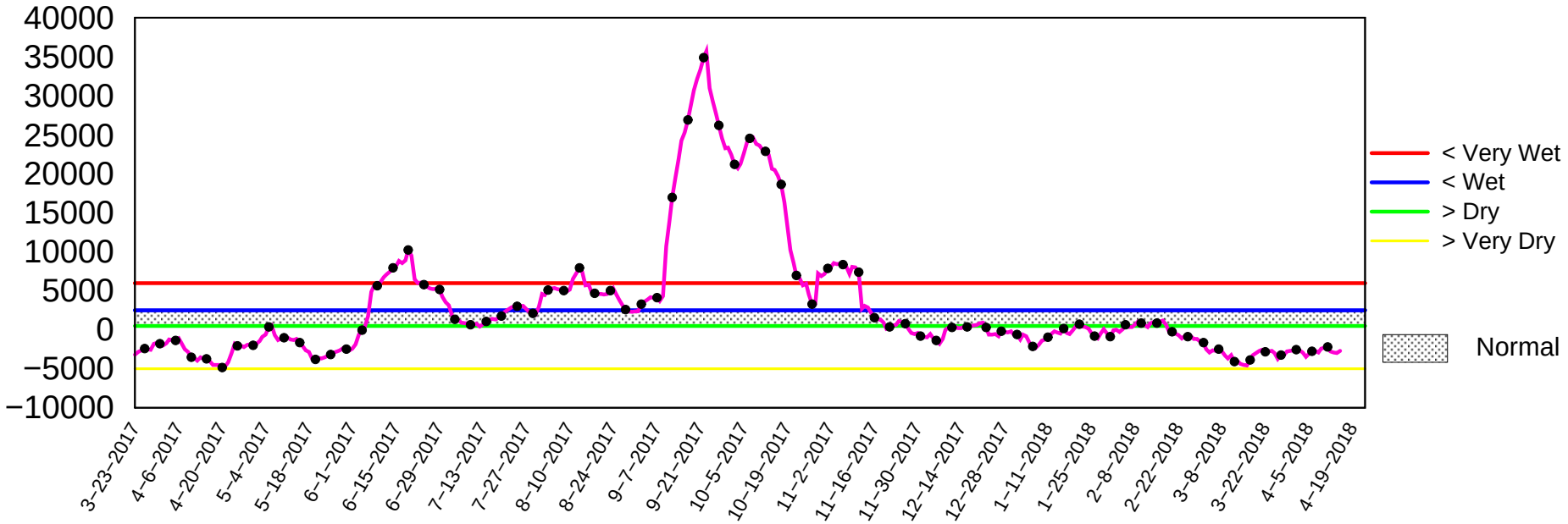
Mon Apr 16 14:41:20 EDT 2018

Tributary Basin Condition Indicators as of April 16 2018

Palmer Index



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



Mon Apr 16 14:40:57 EDT 2018

2008 LORS

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

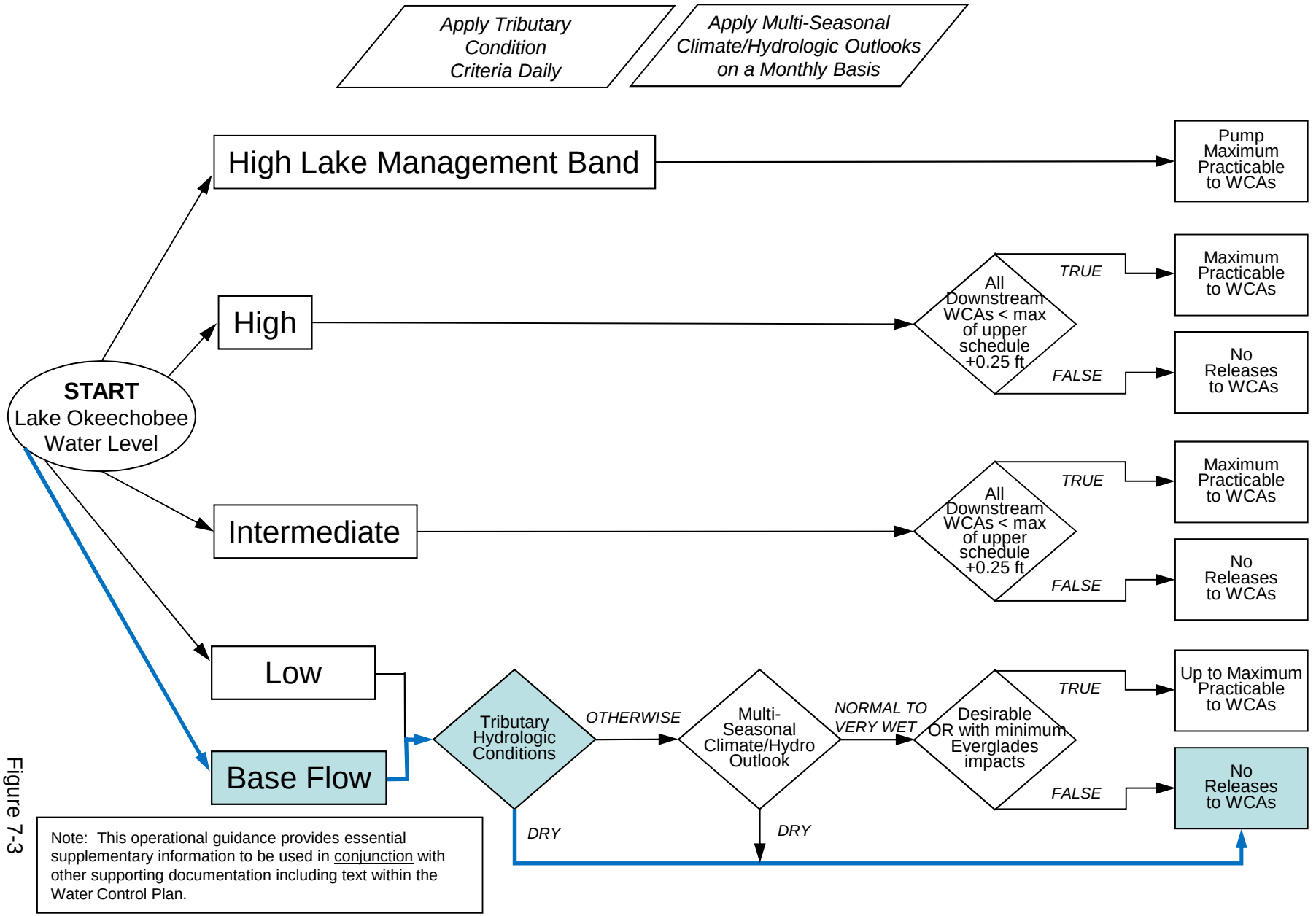


Figure 7-3

2008 LORS

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

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

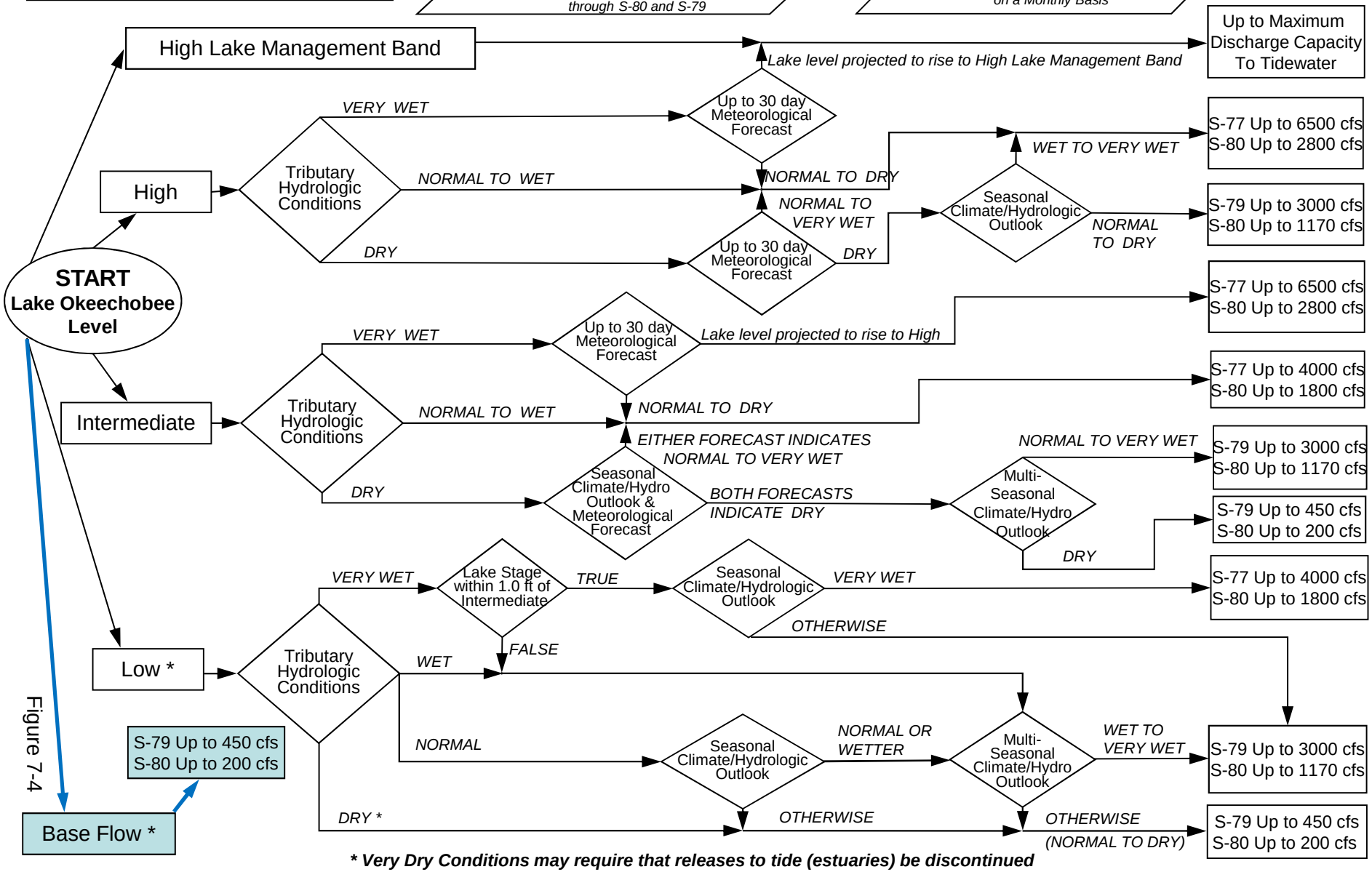
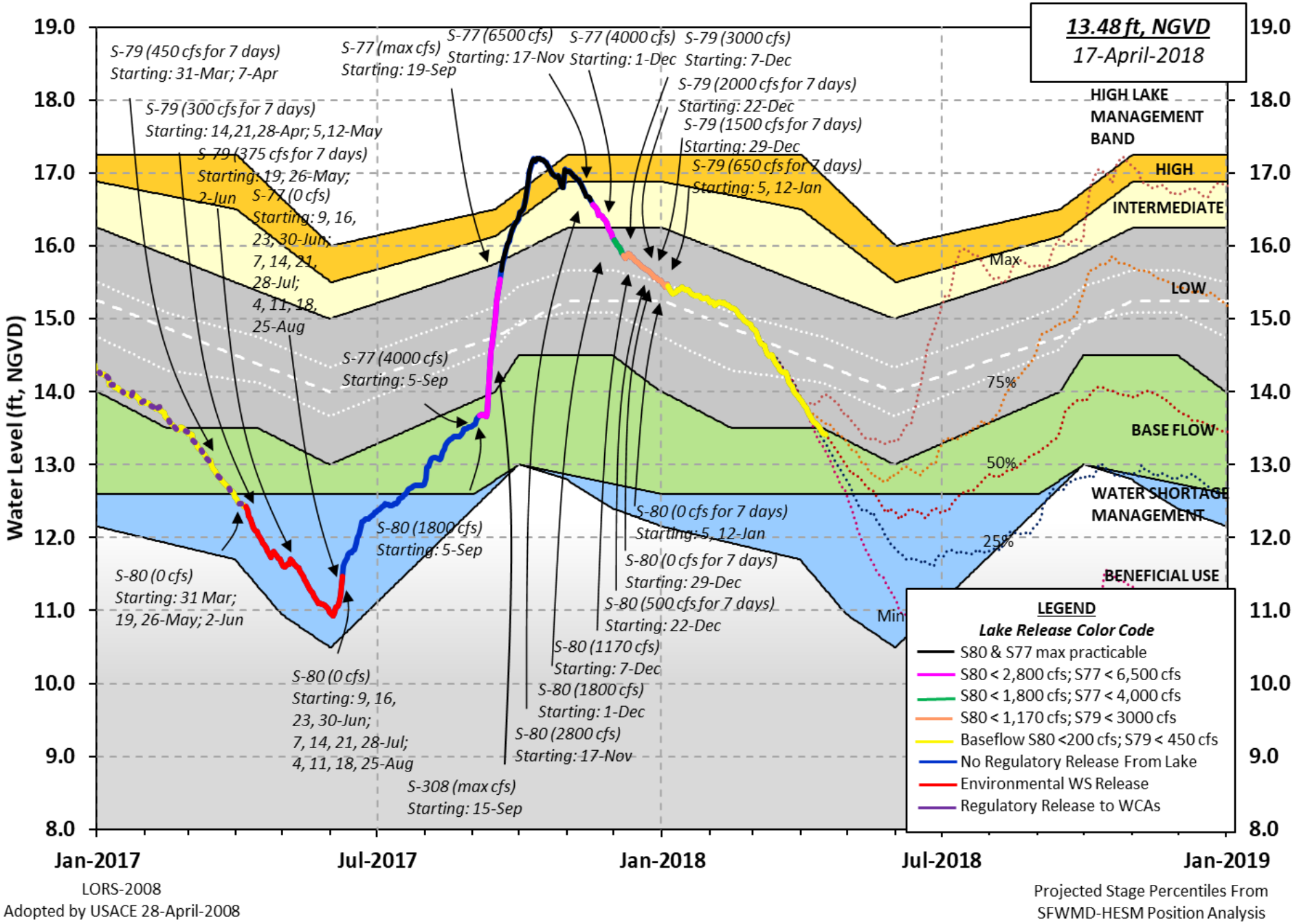


Figure 7-4

**** Very Dry Conditions may require that releases to tide (estuaries) be discontinued***

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 15 APR 2018

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	13.43	12.00	14.78 (Official Elv)

Bottom of High Lake Mngmt= 16.96 Top of Water Short Mngmt= 11.33
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 12.75
Difference from Average LORS2008 0.68

15APR (1965-2007) Period of Record Average 13.99
Difference from POR Average -0.56

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 7.37'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 5.57'
Bridge Clearance = 50.05'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
13.62	13.47	13.31	13.36	13.15	13.48	13.44	13.61

*Combination Okeechobee Avg-Daily Lake Average = 13.43 (*See Note)

Okeechobee Inflows (cfs):

S65E	0	S65EX1	483	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	182	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0	C5	0

Total Inflows: 665

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	144	S77	1050
S127 Culverts	0	S351	122	S308	100
S129 Culverts	0	S352	85		
S131 Culverts	0	L8 Canal Pt	199		

Total Outflows: 1700

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

Okeechobee Pan Evaporation (inches):
  S77 0.00 S308 0.50
  Average Pan Evap x 0.75 Pan Coefficient = 0.19" = 0.02'

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 0 cfs or 0 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:	13.70	13.01	0	0	0	0	0	0	(cfs)		
S193:											
S191:	18.27	13.17	0	0.0	0.0	0.0					
S135 Pumps:	12.96	13.43	0	0	0	0	0		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	21.01	12.73	0	0.0	0.0	0.0	0.0	0.0	0.0		
S65EX1:	21.01	12.73	483								
S127 Pumps:	13.08	13.17	0	0	0	0	0	0	(cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	12.91	13.51	0	0	0	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	13.00	13.06	0	0	0				(cfs)		
S131 Culvert:			0								
Fisheating Creek nr Palmdale		28.06	0								
nr Lakeport C5:	-NR-	-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	12.20	13.17	0	0	0	0			(cfs)		
S169:	13.35	12.20	0	0.0	0.0	0.0					
S310:	13.27		40								

```
  S3 Pumps:      9.68     13.47        0      0    0    0            (cfs)
  S354:         13.47      9.68      144    0.0  0.0
  S2 Pumps:     10.17     13.34        0      0    0    0    0       (cfs)
  S351:         13.34     10.17      122    0.0  0.0  0.0
  S352:         13.85      9.66       85    0.0  0.0
  C10A:          -NR-     13.82             8.0   8.0   8.0   0.0   0.0
  L8 Canal PT            13.66      199

_____________________________________________________________________
                 S351 and S352 Temporary Pumps/S354 Spillway

  S351:         10.17     13.34      122  -NR--NR--NR--NR--NR--NR-
  S352:          9.66     13.85       85  -NR--NR--NR--NR-
  S354:          9.68     13.47      144  -NR--NR--NR--NR-
_____________________________________________________________________

Caloosahatchee River (S77, S78, S79)
  S47B:         13.41     11.22            0.0  0.0
  S47D:         11.22     11.22       48   6.6
  S77:
    Spillway and Sector Flow:
                13.04     11.29  ******  1.5  0.0  2.5  1.5
    Flow Due to Lockages+:             3

  S77 Below USGS Flow Gage         1097

  S78:
    Spillway and Sector Flow:
                11.13      3.07      890    0.5  2.5  0.0  0.0
    Flow Due to Lockages+:            18

  S79:
    Spillway and Sector Flow:
                 3.19      1.51     1104    0.0  1.0  1.0  1.0  1.0  1.0  1.0
0.0
    Flow Due to Lockages+:             6
    Percent of flow from S77          95%
    Chloride             (ppm)      -N


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Flow:
                13.73     13.45   99.95  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:             0

  S308 Below USGS Flow Gage         100
  S153:         18.63     13.27        0    0.0  0.0
  S80:
    Spillway and Sector Flow:
                13.48      1.06        0    0.0  0.0  0.0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:            15
    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.

Daily Precipitation Totals	1-Day (inches)	3-Day (inches)	7-Day (inches)	Wind Direction (Degø)	Wind 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:	1.10	1.16	1.16	247	5
S78:	2.55	2.55	2.61	315	4
S79:	-45.61	-45.61	-45.40	297	9
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:	0.09	0.09	0.16	295	20
S80:	0.00	0.00	0.00	281	9
Okeechobee Average (Sites S78, S79 and S80 not included)	0.60	0.10	0.10		
Oke Nexrad Basin Avg	-NR-	0.00	0.37		

Okeechobee Lake Elevations	15 APR 2018	13.43	Difference from 15APR18
15APR18 -1 Day =	14 APR 2018	13.43	0.00
15APR18 -2 Days =	13 APR 2018	13.46	0.03
15APR18 -3 Days =	12 APR 2018	13.49	0.06
15APR18 -4 Days =	11 APR 2018	13.53	0.10
15APR18 -5 Days =	10 APR 2018	13.55	0.12
15APR18 -6 Days =	09 APR 2018	13.57	0.14
15APR18 -7 Days =	08 APR 2018	13.58	0.15
15APR18 -30 Days =	16 MAR 2018	14.34	0.91
15APR18 -1 Year =	15 APR 2017	12.00	-1.43
15APR18 -2 Year =	15 APR 2016	14.78	1.35

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 4.13

Lake Okeechobee Net Inflow (LONIN)

		Average Flow over the previous 14 days			Avg-Daily Flow
15APR18	Today =	15 APR 2018	-2527	MON	1697
15APR18	-1 Day =	14 APR 2018	-2783	SUN	-2783
15APR18	-2 Days =	13 APR 2018	-2672	SAT	-3914
15APR18	-3 Days =	12 APR 2018	-2489	FRI	-7286
15APR18	-4 Days =	11 APR 2018	-1906	THU	-1140
15APR18	-5 Days =	10 APR 2018	-1983	WED	-NR-
15APR18	-6 Days =	09 APR 2018	-2166	TUE	1342
15APR18	-7 Days =	08 APR 2018	-2687	MON	-3635
15APR18	-8 Days =	07 APR 2018	-2536	SUN	-763
15APR18	-9 Days =	06 APR 2018	-2584	SAT	-2862
15APR18	-10 Days =	05 APR 2018	-2978	FRI	-6692
15APR18	-11 Days =	04 APR 2018	-3270	THU	-4134
15APR18	-12 Days =	03 APR 2018	-2745	WED	-1176
15APR18	-13 Days =	02 APR 2018	-2440	TUE	-1502

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
15APR18	Today=	15 APR 2018	104	MON	0
15APR18	-1 Day =	14 APR 2018	116	SUN	0
15APR18	-2 Days =	13 APR 2018	131	SAT	0
15APR18	-3 Days =	12 APR 2018	148	FRI	0
15APR18	-4 Days =	11 APR 2018	166	THU	92
15APR18	-5 Days =	10 APR 2018	176	WED	126
15APR18	-6 Days =	09 APR 2018	184	TUE	125
15APR18	-7 Days =	08 APR 2018	192	MON	126
15APR18	-8 Days =	07 APR 2018	200	SUN	127
15APR18	-9 Days =	06 APR 2018	208	SAT	159
15APR18	-10 Days =	05 APR 2018	213	FRI	174
15APR18	-11 Days =	04 APR 2018	217	THU	173
15APR18	-12 Days =	03 APR 2018	212	WED	174
15APR18	-13 Days =	02 APR 2018	199	TUE	175

S65EX1

		Average Flow over previous 14 days			Avg-Daily Flow
15APR18	Today=	15 APR 2018	237	MON	483
15APR18	-1 Day =	14 APR 2018	214	SUN	389
15APR18	-2 Days =	13 APR 2018	197	SAT	391
15APR18	-3 Days =	12 APR 2018	179	FRI	278
15APR18	-4 Days =	11 APR 2018	167	THU	268
15APR18	-5 Days =	10 APR 2018	156	WED	196
15APR18	-6 Days =	09 APR 2018	150	TUE	189
15APR18	-7 Days =	08 APR 2018	144	MON	190
15APR18	-8 Days =	07 APR 2018	138	SUN	177
15APR18	-9 Days =	06 APR 2018	138	SAT	153
15APR18	-10 Days =	05 APR 2018	135	FRI	154
15APR18	-11 Days =	04 APR 2018	129	THU	153
15APR18	-12 Days =	03 APR 2018	144	WED	152
15APR18	-13 Days =	02 APR 2018	154	TUE	152

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)
15 APR 2018	2077	2176	1801	2216
14 APR 2018	3120	2865	2188	3056
13 APR 2018	3092	2221	2097	2114
12 APR 2018	442	734	240	22
11 APR 2018	1466	1360	618	160
10 APR 2018	2217	1796	613	691
09 APR 2018	1606	1491	793	1269
08 APR 2018	2606	2353	1429	2620
07 APR 2018	3624	3349	2265	2673
06 APR 2018	3070	2670	3158	1887
05 APR 2018	1297	944	328	107
04 APR 2018	1222	1488	528	345
03 APR 2018	2184	1843	1039	693
02 APR 2018	2518	2022	1219	1244

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)
15 APR 2018	80	242	149	228	395
14 APR 2018	297	461	785	1043	404
13 APR 2018	279	0	329	758	492
12 APR 2018	232	98	5	773	406
11 APR 2018	139	1752	525	1267	442
10 APR 2018	111	455	22	486	479
09 APR 2018	107	2471	549	992	495
08 APR 2018	148	3145	1386	1194	487
07 APR 2018	130	3241	1442	1400	532
06 APR 2018	91	3528	1701	1461	513
05 APR 2018	137	2948	1202	1434	527
04 APR 2018	135	3199	1422	1352	605
03 APR 2018	137	3424	1721	1582	624
02 APR 2018	79	3048	1378	1360	581

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
15 APR 2018	751	198	30
14 APR 2018	576	519	80
13 APR 2018	1354	513	68
12 APR 2018	348	219	59
11 APR 2018	288	-130	57
10 APR 2018	-NR-	-152	37
09 APR 2018	448	-40	60
08 APR 2018	422	-106	60
07 APR 2018	508	-49	56
06 APR 2018	481	608	47
05 APR 2018	291	132	51
04 APR 2018	357	223	63
03 APR 2018	295	123	48

02 APR 2018 349 205 59

*** 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

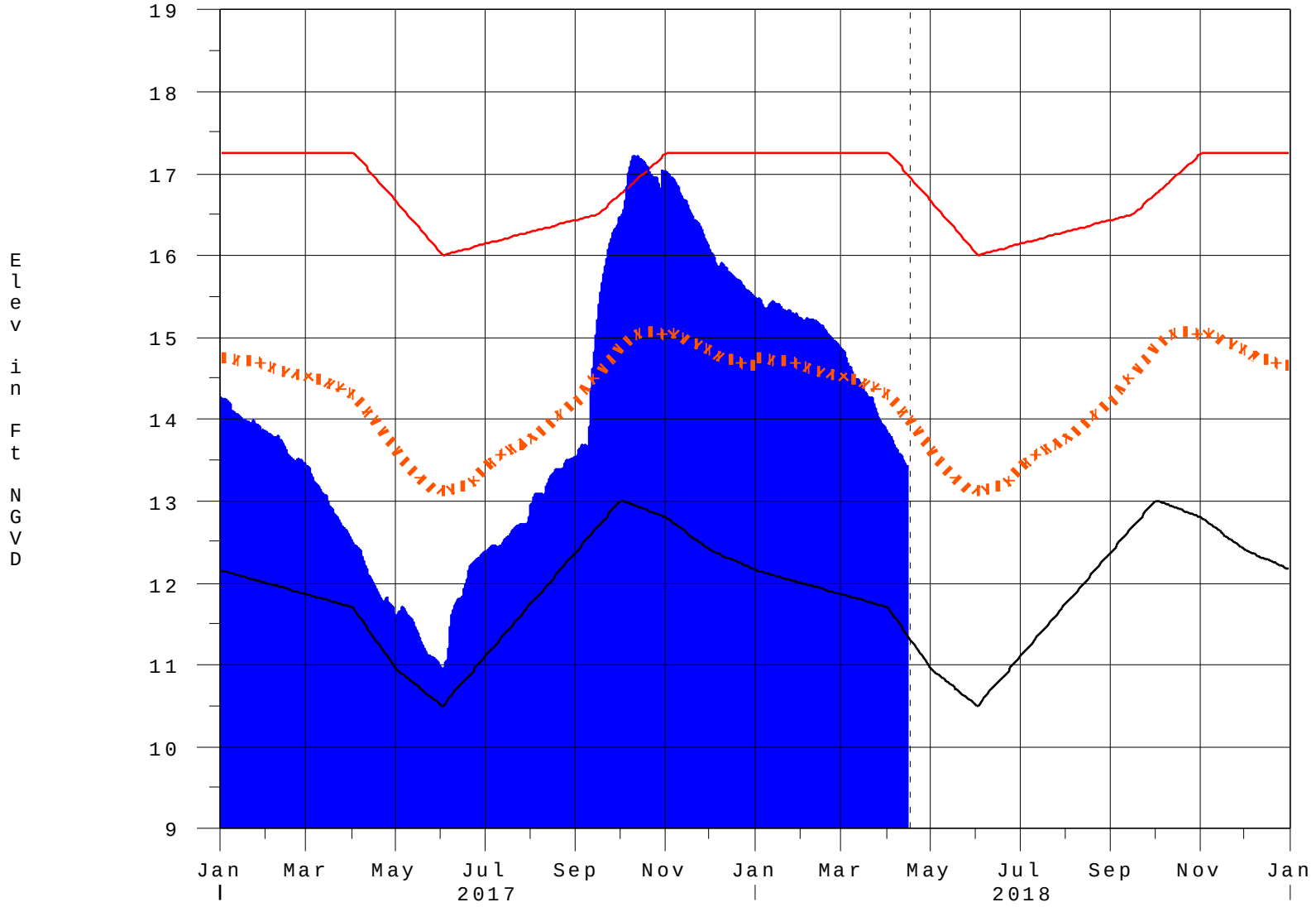
---

* 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 16APR2018 @ 14:15 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

16APR18 14:30:23



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

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