Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 3/6/2017 (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 Neutral 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 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 (Mar-Aug)	N/A	N/A	1.12	Normal	1.18	Normal	1.52	Wet
Multi Seasonal (Mar-Oct)	N/A	N/A	2.23	Normal	2.51	Wet	3.59	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.

Tributary Hydrologic Conditions Graph:

-1644 cfs 14-day running average for Lake Okeechobee Net Inflow through 3/5/2017.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

-2.23 for Palmer Index on 3/4/2017.
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 3/6/2017

Lake Okeechobee Stage: **13.28 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		17.25	
Operational Band	High sub-band	16.61	
	Intermediate sub-band	15.72	
	Low sub-band	13.50	
Base Flow sub-band		12.60	← 13.28
Beneficial Use sub-band		11.83	
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 and 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 3/6/2017 (ENSO Neutral Condition):

Status for week ending 3/6/2017:

District wide, Raindar rainfall was 0.12 inches for the week. Lake stage on 3/6/2017 was 13.28 ft, down 0.18 ft from last week.

The updated February 2017 SFWMM Dynamic Position Analysis percentile graph for Lake Okeechobee show that the current lake stage is in the Low Operational Sub-Band.

The LORS2008 tributary indices are classified as **Dry**. The PDSI indicates dry condition and the LONIN is Dry. The classification is based on the wetter of the two.

Water Supply Risk Evaluation

Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Base Flow Sub-Band	M
	Palmer Index for LOK Tributary Conditions	-2.23 (Extremely Dry)	H
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Normal	L
	LOK Seasonal Net Inflow Outlook	1.18 ft (Normal)	L
	ENSO La Nina Years		
	LOK Multi-Seasonal Net Inflow Outlook	2.51 ft (Normal)	M
	ENSO La Nina Years		
WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Above Line 1 (16.25 ft)	L
	WCA 2A: Site 2-17 HW	Above Line1 (11.63 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (9.33 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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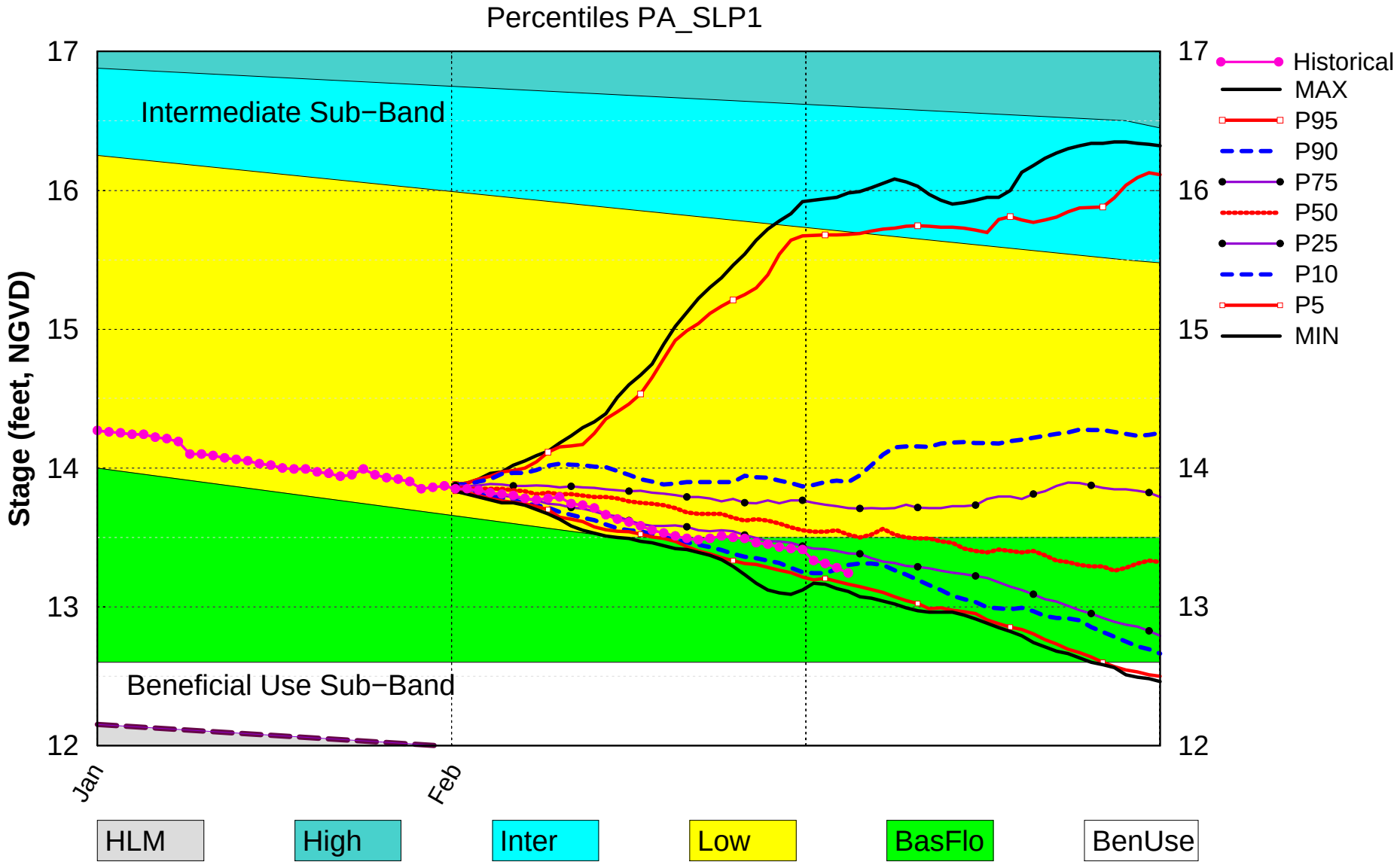
Lake Okeechobee SFWMM February 2017 Dynamic Position Analysis

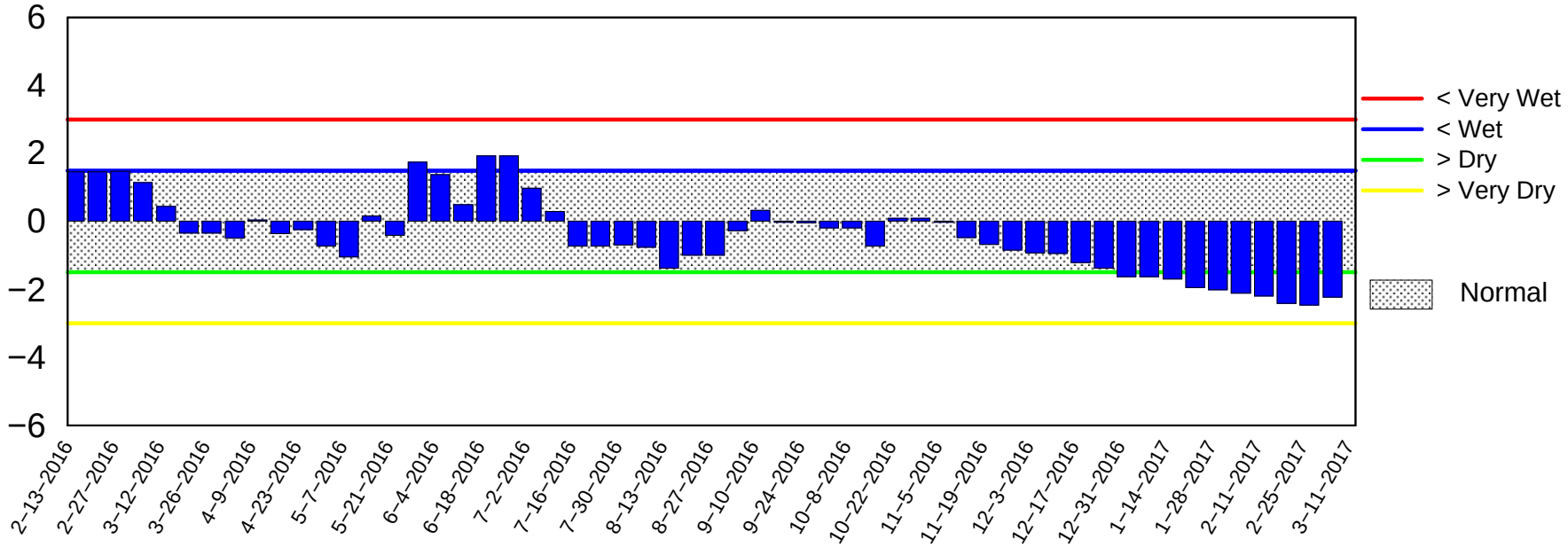


(See assumptions on the Position Analysis Results website)

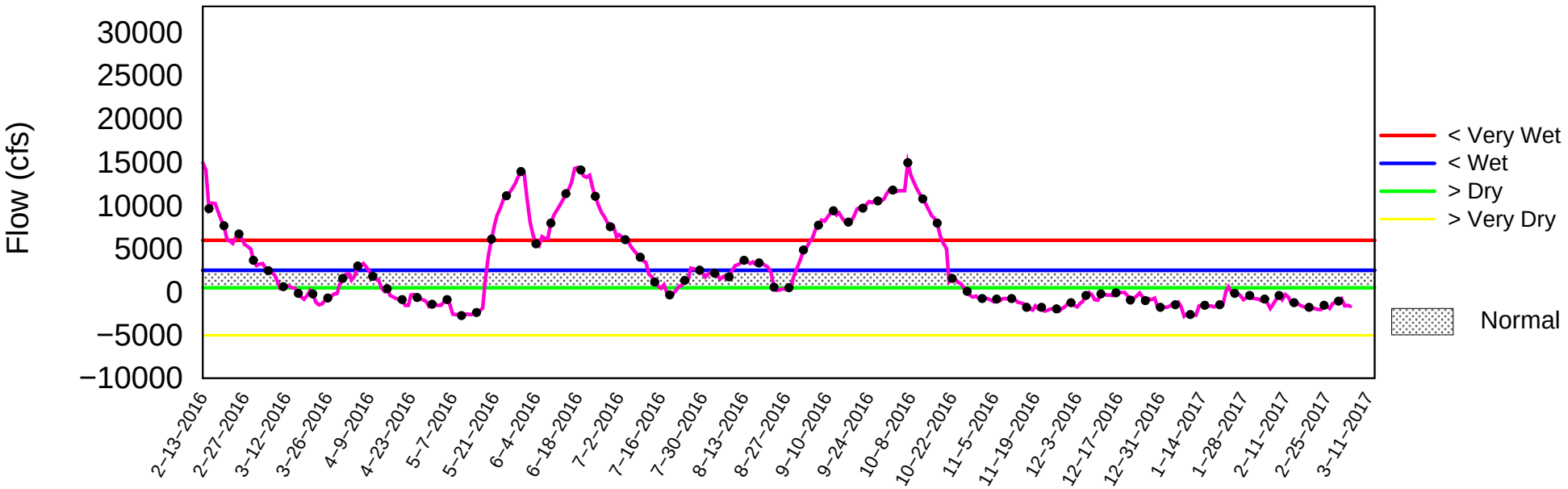
Wed Mar 7 9:30:30 EST 2017

Tributary Basin Condition Indicators as of March 6 2017

Palmer Index



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



Mon Mar 06 16:14:42 EST 2017

2008 LORS

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

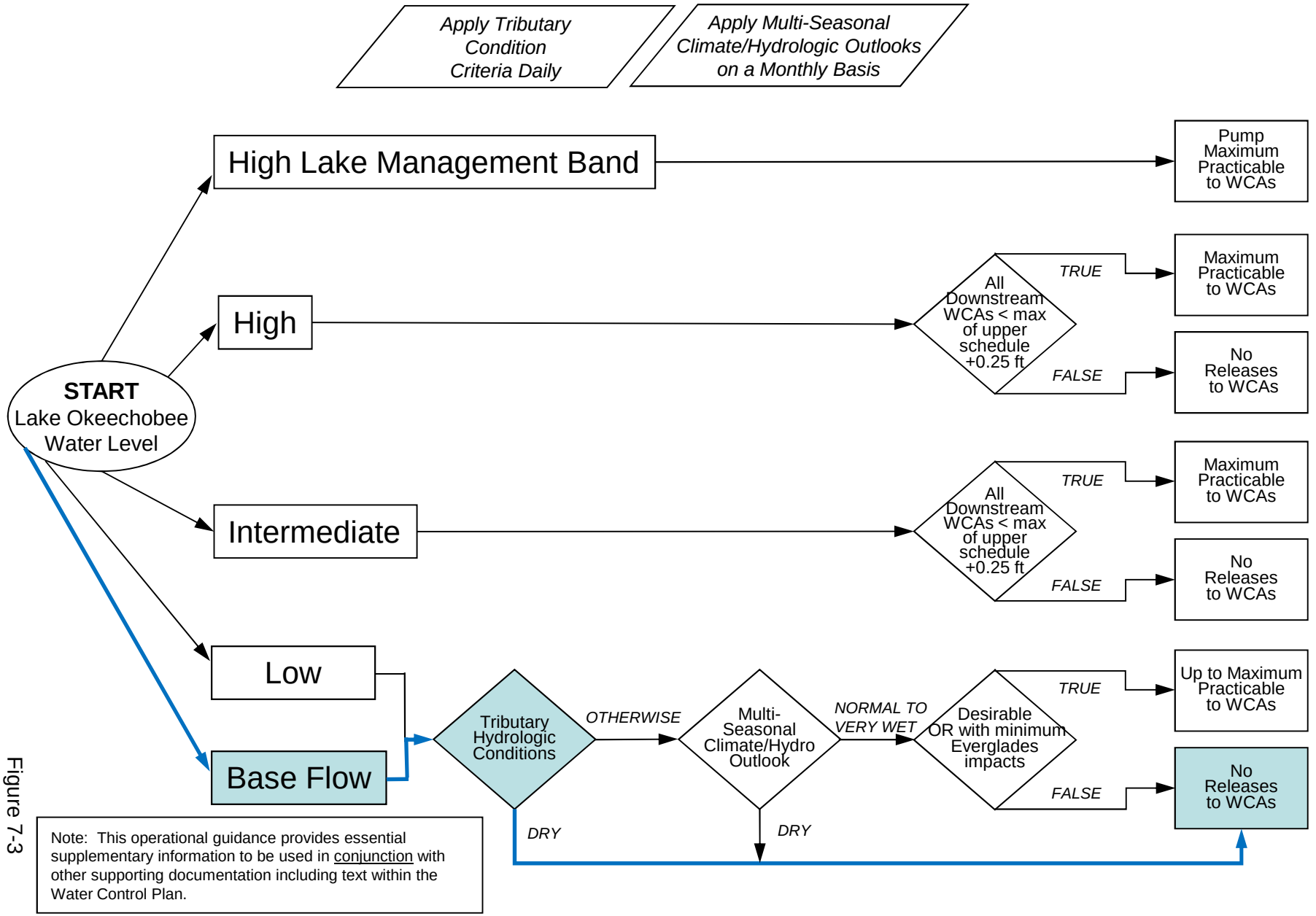


Figure 7-3

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

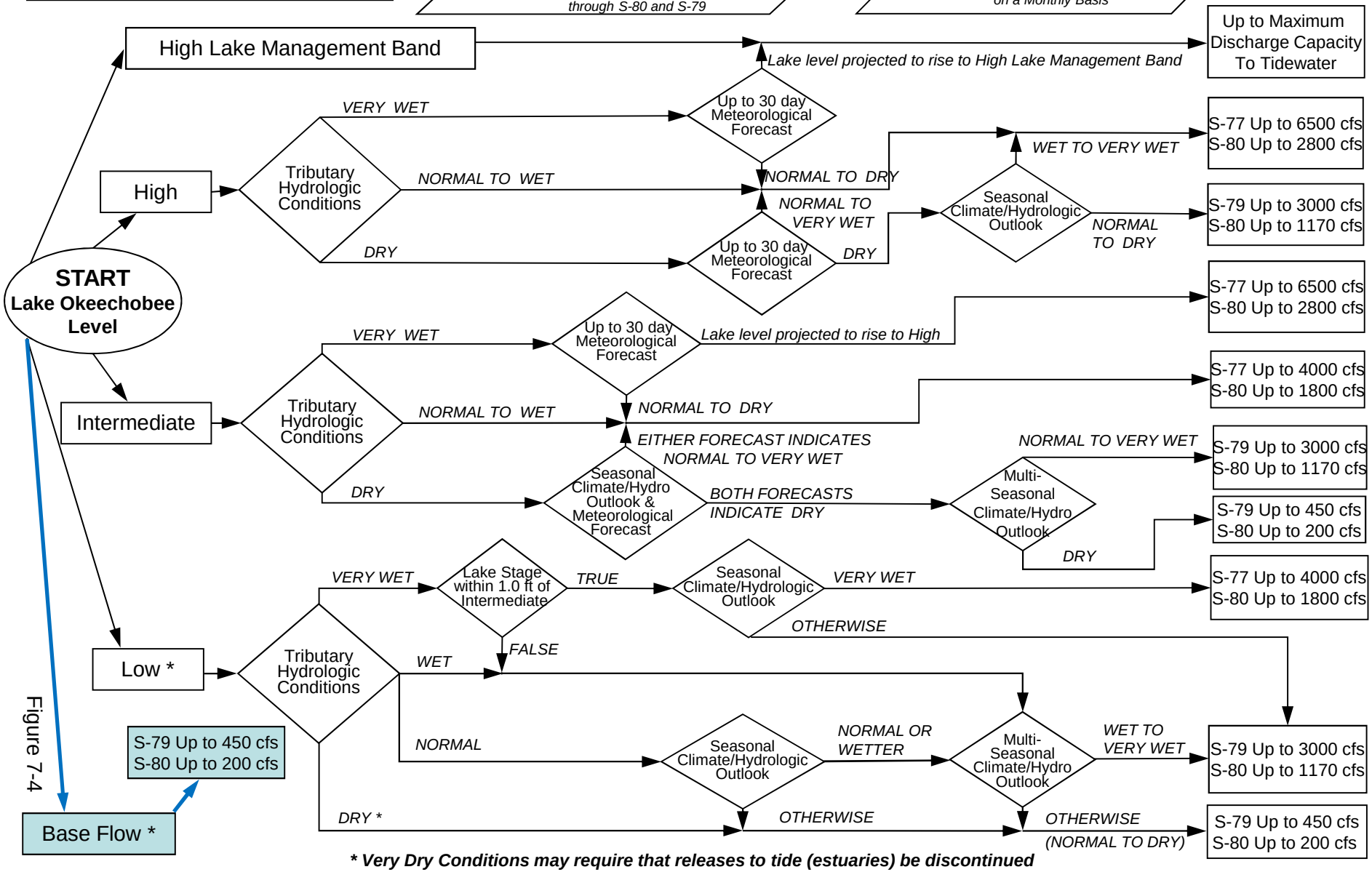
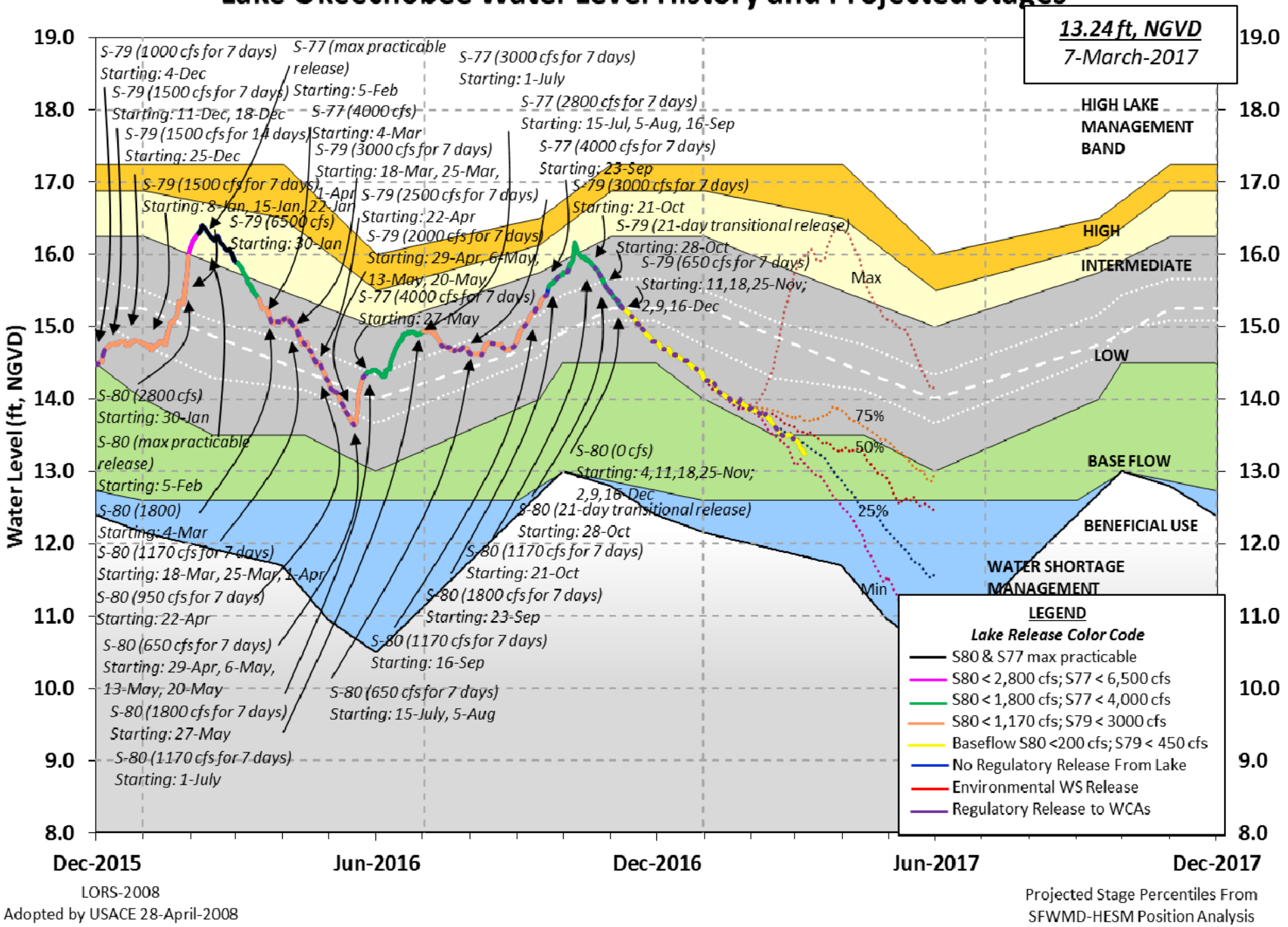


Figure 7-4

**** 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 05 MAR 2017

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	13.28	15.72	14.73 (Official Elv)

Bottom of High Lake Mngmt= 17.25 Top of Water Short Mngmt= 11.83
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 13.28
Difference from Average LORS2008 0.00

05MAR (1965-2007) Period of Record Average 14.50
Difference from POR Average -1.22

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 7.22'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 5.42'
Bridge Clearance = 51.14'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
13.02	13.67	13.23	13.22	13.62	13.23	13.16	13.08

*Combination Okeechobee Avg-Daily Lake Average = 13.28 (*See Note)

Okeechobee Inflows (cfs):

S65E	0	S65EX1	828	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	-115

Total Inflows: 713

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	285	S77	1367
S127 Culverts	0	S351	826	S77Below	1520
S129 Culverts	0	S352	199	S308	-NR-
S131 Culverts	0	L8 Canal Pt	161	S308Below	243

Total Outflows: No Report Due To Missing S77 or S308 Discharge Data

****S77 Structure outflow is being used to compute Total Outflow.
****S308 Structure outflow is being used to compute Total Outflow.

Okeechobee Pan Evaporation (inches):
  S77 0.18 S308 0.41
  Average Pan Evap x 0.75 Pan Coefficient = 0.22" = 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 -6353 cfs or -12600 AC-FT

Note: Headwater, tailwater, and stage values below are instantaneous values unless otherwise specified.

	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:	13.14	13.18	0	0	0	0	0	0	(cfs)		
S193:	_____										
S191:	18.09	13.18	0	0.0	0.0	0.0					
S135 Pumps:	13.00	13.11	0	0	0	0	0		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	20.99	13.04	0	0.0	0.0	0.0	0.0	0.0	0.0		
S65EX1:	20.99	13.04	828								
S127 Pumps:	13.10	13.24	0	0	0	0	0	0	(cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	_____	-NR-	0	0	0	0			(cfs)		
S129 Culvert:			0	-NR-							
S131 Pumps:	12.47	13.80	0	0	0				(cfs)		
S131 Culvert:			0								
Fisheating Creek											
nr Palmdale		27.89	1								
nr Lakeport		_____									
C5:	13.59	13.80	-115	5.4	5.6	5.4					
South Shore											
S4 Pumps:	10.98	13.39	0	0	0	0			(cfs)		

```
  S169:        13.39     10.95       0    0.0  0.0  0.0
  S310:        13.32                22
  S3 Pumps:    10.85     13.29       0      0    0    0            (cfs)
  S354:        13.29     10.85     285    0.5  0.8
  S2 Pumps:    11.01     13.25       0      0    0    0    0       (cfs)
  S351:        13.25     11.01     826    1.7  1.7  1.6
  S352:        13.30     10.85     199    0.6  0.6
  C10A:         -NR-     13.22           0.0   8.0   8.0   8.0   8.0
  L8 Canal PT            13.04     161
```

S351 and S352 Temporary Pumps/S354 Spillway

```
  S351:        11.01     13.25     826  -NR--NR--NR--NR--NR--NR-
  S352:        10.85     13.30     199  -NR--NR--NR--NR-
  S354:        10.85     13.29     285  -NR--NR--NR--NR-
```

```
Caloosahatchee River (S77, S78, S79)
  S47B:        13.65     10.89           0.0  0.0
  S47D:        11.00     11.00       2   6.1
  S77:
    Spillway and Sector Flow:
                13.33     11.14    1363  0.5  3.0  3.0  0.5
    Flow Due to Lockages+:              4

  S77 Below USGS Flow Gage        1520

  S78:
    Spillway and Sector Flow:
                10.90      2.89    1000    0.0  0.0  2.5  0.5
    Flow Due to Lockages+:            18

  S79:
    Spillway and Sector Flow:
                 2.94      0.68     782    0.0  0.0  0.0  1.0  1.0  0.0  0.0
0.0
    Flow Due to Lockages+:            13
    Percent of flow from S77         174%
    Chloride            (ppm)     60


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Flow:
                13.25     12.36       0 -NR- -NR- -NR- -NR-
    Flow Due to Lockages+:          -NR-

  S308 Below USGS Flow Gage         243
  S153:        18.57     12.33       0    0.0  0.0
  S80:
    Spillway and Sector Flow:
                12.53     -0.09       0    0.0  0.0  0.0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:            17
    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)	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:	0.00	0.00	0.03	117	2
S78:	0.00	0.00	0.00	80	6
S79:	0.00	0.00	0.00	168	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:	0.00	0.00	0.00	92	1
S80:	0.00	0.96	1.42	44	5
Okeechobee Average (Sites S78, S79 and S80 not included)	0.00	0.00	0.00		
Oke Nexrad Basin Avg	-NR-	0.00	0.00		

Okeechobee Lake Elevations	05 MAR 2017	13.28 Difference from 05MAR17	
05MAR17 -1 Day =	04 MAR 2017	13.31	0.03
05MAR17 -2 Days =	03 MAR 2017	13.33	0.05
05MAR17 -3 Days =	02 MAR 2017	13.41	0.13
05MAR17 -4 Days =	01 MAR 2017	13.42	0.14
05MAR17 -5 Days =	28 FEB 2017	13.43	0.15
05MAR17 -6 Days =	27 FEB 2017	13.45	0.17
05MAR17 -7 Days =	26 FEB 2017	13.46	0.18
05MAR17 -30 Days =	03 FEB 2017	13.82	0.54
05MAR17 -1 Year =	05 MAR 2016	15.72	2.44
05MAR17 -2 Year =	05 MAR 2015	14.73	1.45

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

Lake Okeechobee Net Inflow (LONIN)

		Average Flow over the previous 14 days			Avg-Daily Flow
05MAR17	Today =	05 MAR 2017	-1594	MON	-3162
05MAR17	-1 Day =	04 MAR 2017	-1496	SUN	-1386
05MAR17	-2 Days =	03 MAR 2017	-1550	SAT	-14768
05MAR17	-3 Days =	02 MAR 2017	-747	FRI	15
05MAR17	-4 Days =	01 MAR 2017	-1007	THU	380
05MAR17	-5 Days =	28 FEB 2017	-1132	WED	-1294
05MAR17	-6 Days =	27 FEB 2017	-1284	TUE	440
05MAR17	-7 Days =	26 FEB 2017	-1870	MON	-4873
05MAR17	-8 Days =	25 FEB 2017	-1610	SUN	-919
05MAR17	-9 Days =	24 FEB 2017	-1488	SAT	-1213
05MAR17	-10 Days =	23 FEB 2017	-1985	FRI	4433
05MAR17	-11 Days =	22 FEB 2017	-1985	THU	2411
05MAR17	-12 Days =	21 FEB 2017	-1862	WED	-654
05MAR17	-13 Days =	20 FEB 2017	-1853	TUE	-1725

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
05MAR17	Today=	05 MAR 2017	0	MON	0
05MAR17	-1 Day =	04 MAR 2017	0	SUN	0
05MAR17	-2 Days =	03 MAR 2017	0	SAT	0
05MAR17	-3 Days =	02 MAR 2017	0	FRI	0
05MAR17	-4 Days =	01 MAR 2017	0	THU	0
05MAR17	-5 Days =	28 FEB 2017	0	WED	0
05MAR17	-6 Days =	27 FEB 2017	0	TUE	0
05MAR17	-7 Days =	26 FEB 2017	20	MON	0
05MAR17	-8 Days =	25 FEB 2017	57	SUN	0
05MAR17	-9 Days =	24 FEB 2017	93	SAT	0
05MAR17	-10 Days =	23 FEB 2017	134	FRI	0
05MAR17	-11 Days =	22 FEB 2017	175	THU	0
05MAR17	-12 Days =	21 FEB 2017	219	WED	4
05MAR17	-13 Days =	20 FEB 2017	269	TUE	0

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)
05 MAR 2017	2711	3013	2018	1576
04 MAR 2017	2617	2660	1746	2392
03 MAR 2017	1282	952	1321	1849
02 MAR 2017	766	690	377	571
01 MAR 2017	1562	1289	506	661
28 FEB 2017	1791	1704	921	1098
27 FEB 2017	1817	1994	1586	2013
26 FEB 2017	1820	2069	2079	2441
25 FEB 2017	1027	1047	1433	2149
24 FEB 2017	177	0	727	2156
23 FEB 2017	177	218	710	903

DATE				
22 FEB 2017	655	527	718	510
21 FEB 2017	1181	933	716	923
20 FEB 2017	1760	1354	1017	1575

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)
05 MAR 2017	44	1638	395	480	320
04 MAR 2017	-4	1434	333	492	327
03 MAR 2017	24	1404	270	1297	255
02 MAR 2017	58	1428	210	1224	336
01 MAR 2017	75	1531	153	1503	378
28 FEB 2017	75	1364	373	1602	396
27 FEB 2017	39	980	89	1245	332
26 FEB 2017	23	81	0	163	322
25 FEB 2017	-11	627	109	155	339
24 FEB 2017	10	2	730	833	229
23 FEB 2017	-2	0	0	212	62
22 FEB 2017	5	0	0	0	125
21 FEB 2017	15	502	377	349	401
20 FEB 2017	72	1194	882	880	396

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
05 MAR 2017	-NR-	481	34
04 MAR 2017	-NR-	404	35
03 MAR 2017	0	29	36
02 MAR 2017	1	242	57
01 MAR 2017	0	-17	53
28 FEB 2017	0	192	48
27 FEB 2017	0	332	33
26 FEB 2017	0	-228	43
25 FEB 2017	0	-210	44
24 FEB 2017	-0	-231	54
23 FEB 2017	-0	-542	45
22 FEB 2017	0	31	48
21 FEB 2017	0	240	48
20 FEB 2017	-0	172	41

*** 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

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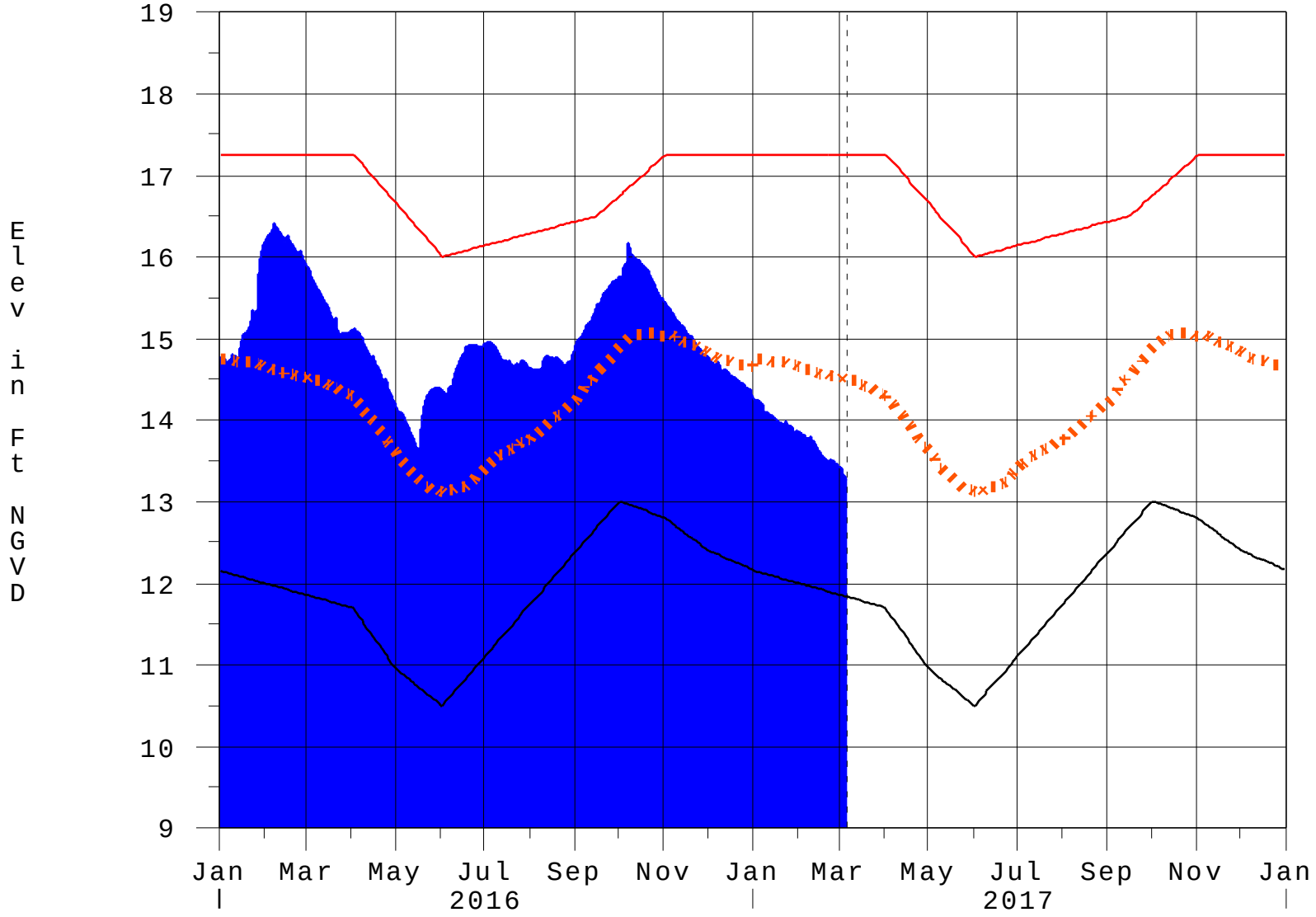
* On 11 May 1999, Lake Okeechobee Elevation was switched from
Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the standard
10 stations, the average of the interior 4 station gages was used

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

Report Generated 06MAR2017 @ 13:15 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

06MAR17 13:30:18



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

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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