Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 5/14/2018 (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 (May-Oct)	N/A	N/A	2.15	Very Wet	2.57	Very Wet	2.27	Very Wet
Multi Seasonal (May-Apr)	N/A	N/A	2.61	Wet	3.00	Wet	1.96	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:

-3720 cfs 14-day running average for Lake Okeechobee Net Inflow through 5/13/2018.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

-1.84 for Palmer Index on 5/12/2018.
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 5/14/2018

Lake Okeechobee Stage: **12.83 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		16.39	
Operational Band	High sub-band	15.81	
	Intermediate sub-band	15.15	
	Low sub-band	13.20	
Base Flow sub-band		12.60	← 12.83
Beneficial Use sub-band		10.76	
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.

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LORS2008 Implementation on 5/14/2018 (ENSO La Nina Condition):

Status for week ending 5/14/2018:

District wide, Raindar rainfall was 1.94 inches for the week. Lake stage on 5/14/2018 was 12.83 ft, NGVD, down 0.14 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 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	M
	Palmer Index for LOK Tributary Conditions	-1.84 (Dry)	M
	CPC Precipitation Outlook	1 month: Above Normal	L
		3 months: Normal	L
	LOK Seasonal Net Inflow Outlook	2.57 ft (Normal to Extremely Wet)	L
	ENSO La Nina Years		
	LOK Multi-Seasonal Net Inflow Outlook	3.00 ft (Normal)	M
	ENSO Conditions		
WCAs	WCA 1: Station Average (Site 1-7, Site 1-8T, Site 1-9)	Above Line 1 (16.00 ft)	L
	WCA 2A: Site 2-17	Above Line 1 (12.01 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (8.77 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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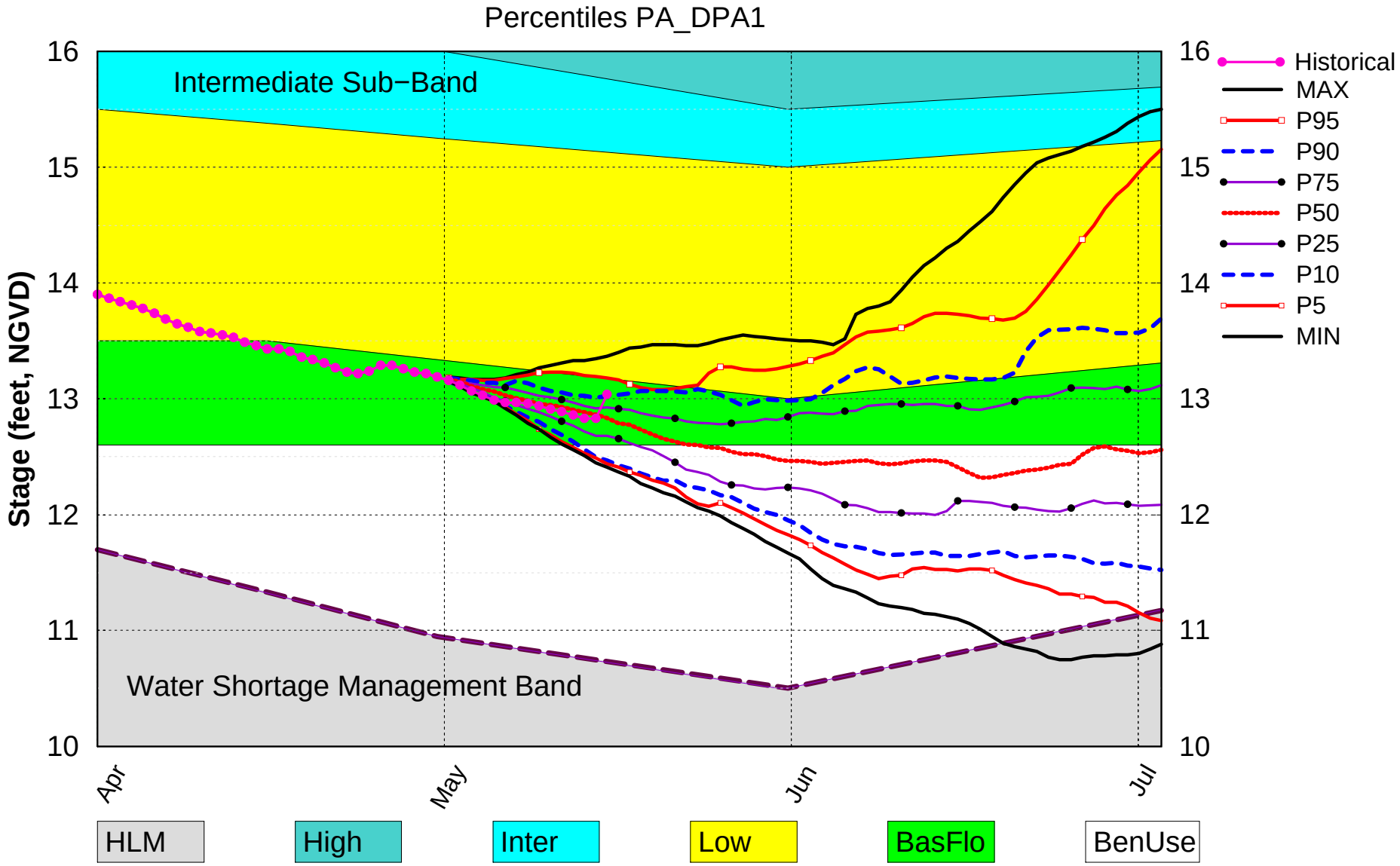
Lake Okeechobee SFWMM May 2018 Position Analysis

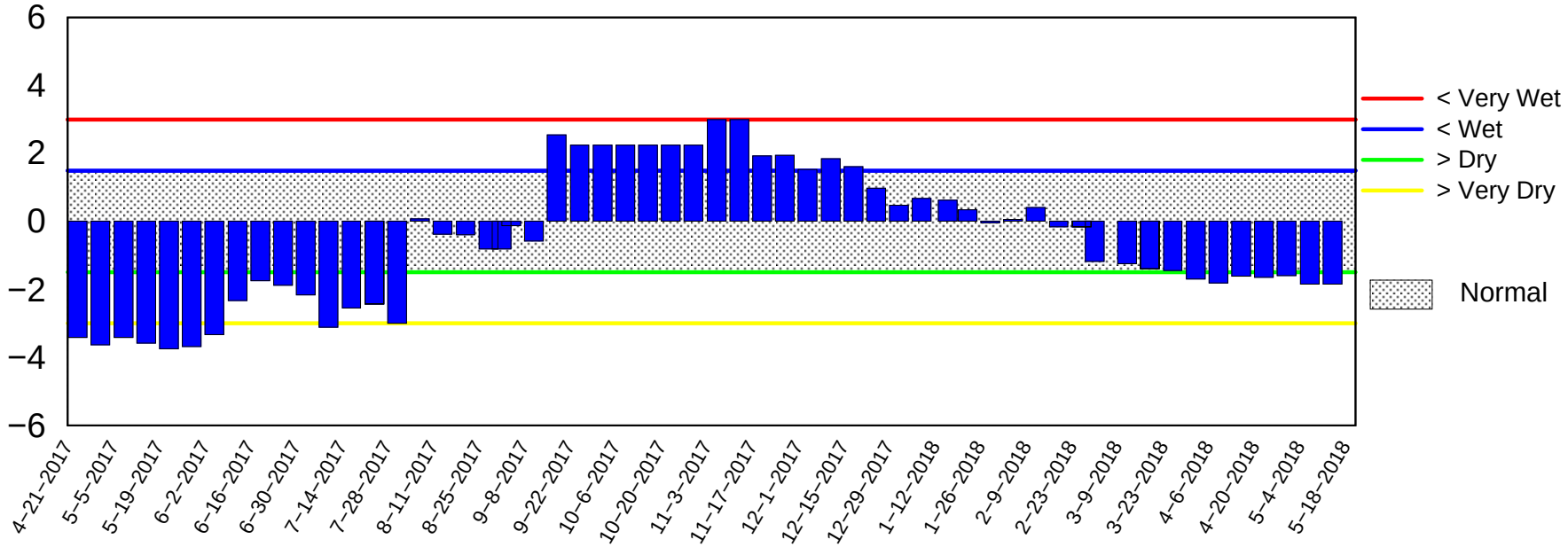


(See assumptions on the Position Analysis Results website)

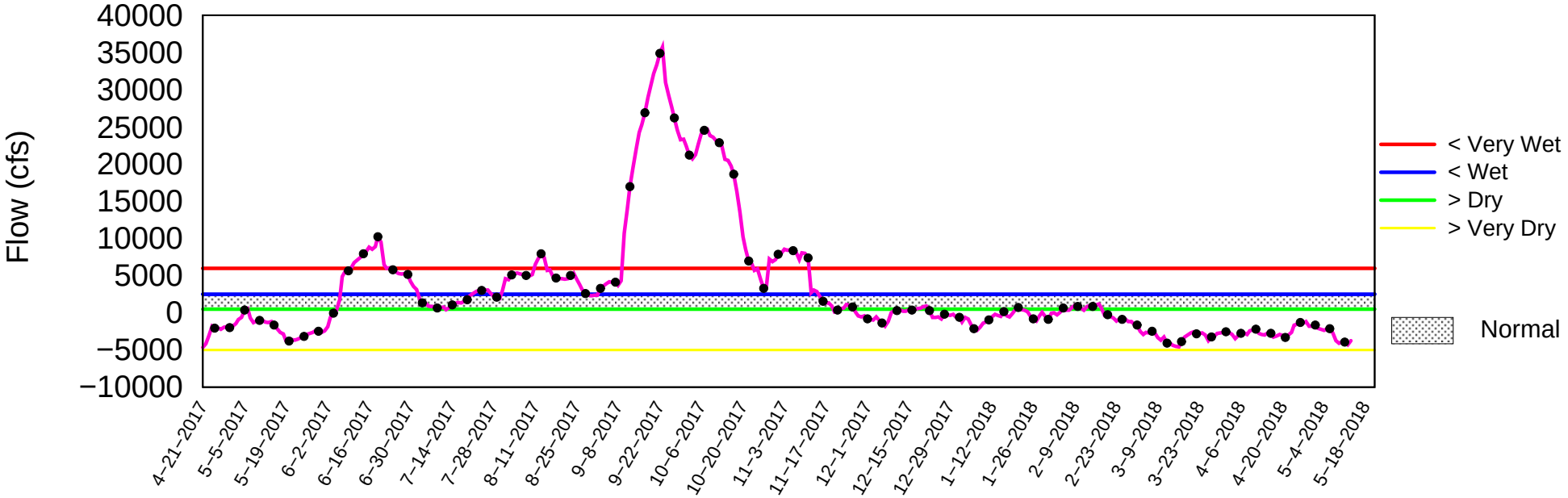
Tue May 15 09:11:38 2018

Tributary Basin Condition Indicators as of May 14 2018

Palmer Index



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



Mon May 14 12:11:31 EDT 2018

2008 LORS

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

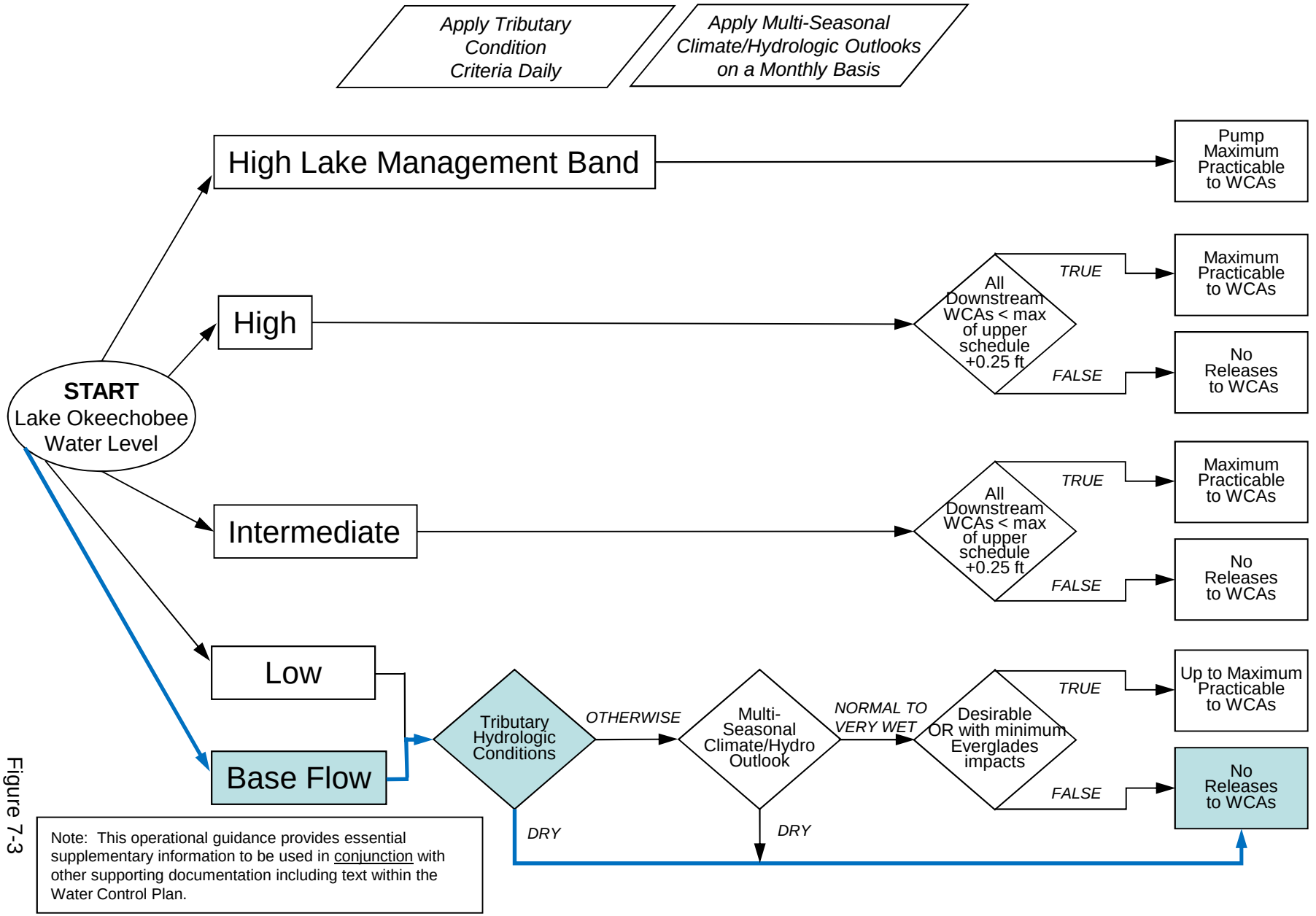


Figure 7-3

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

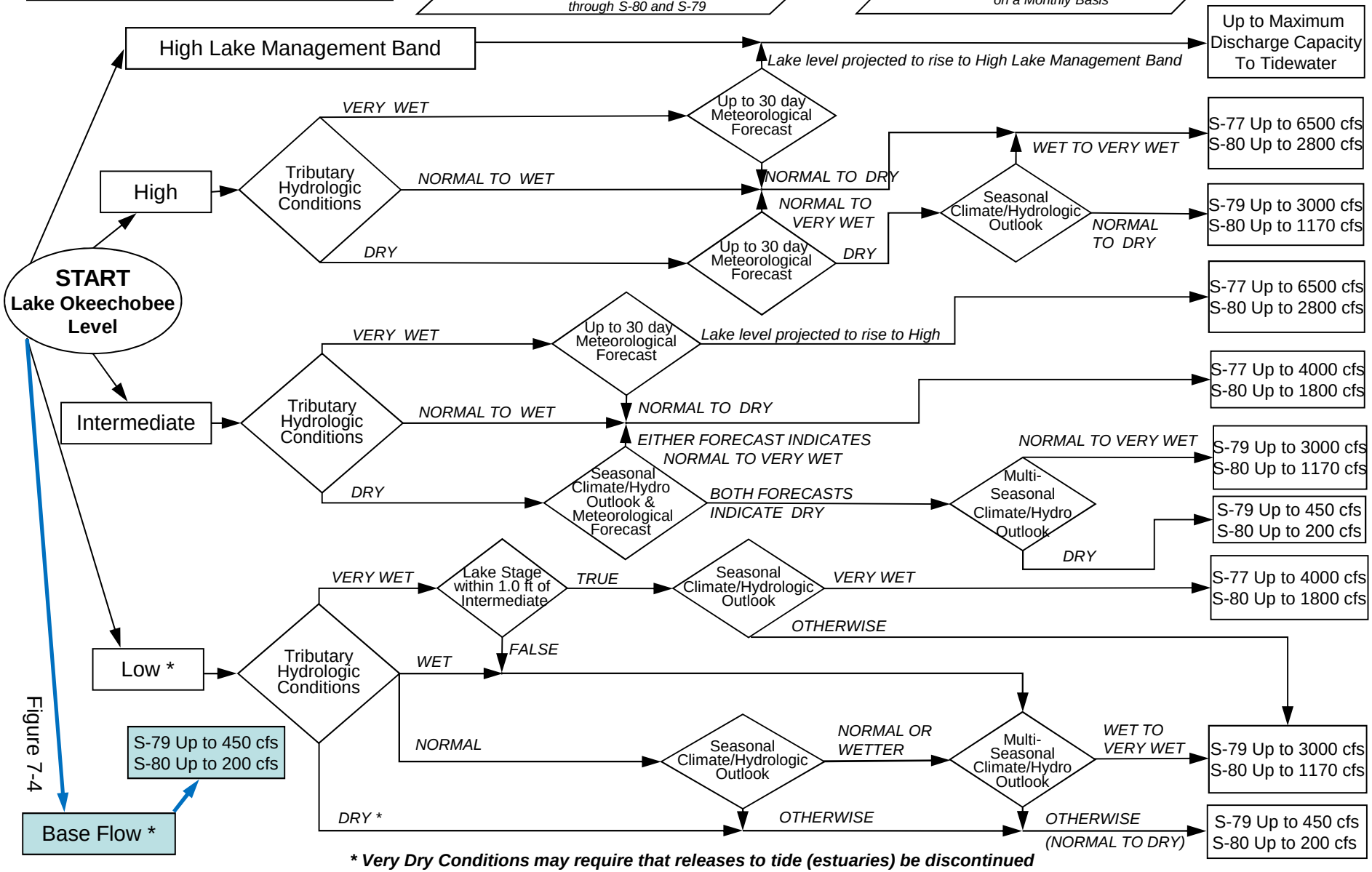
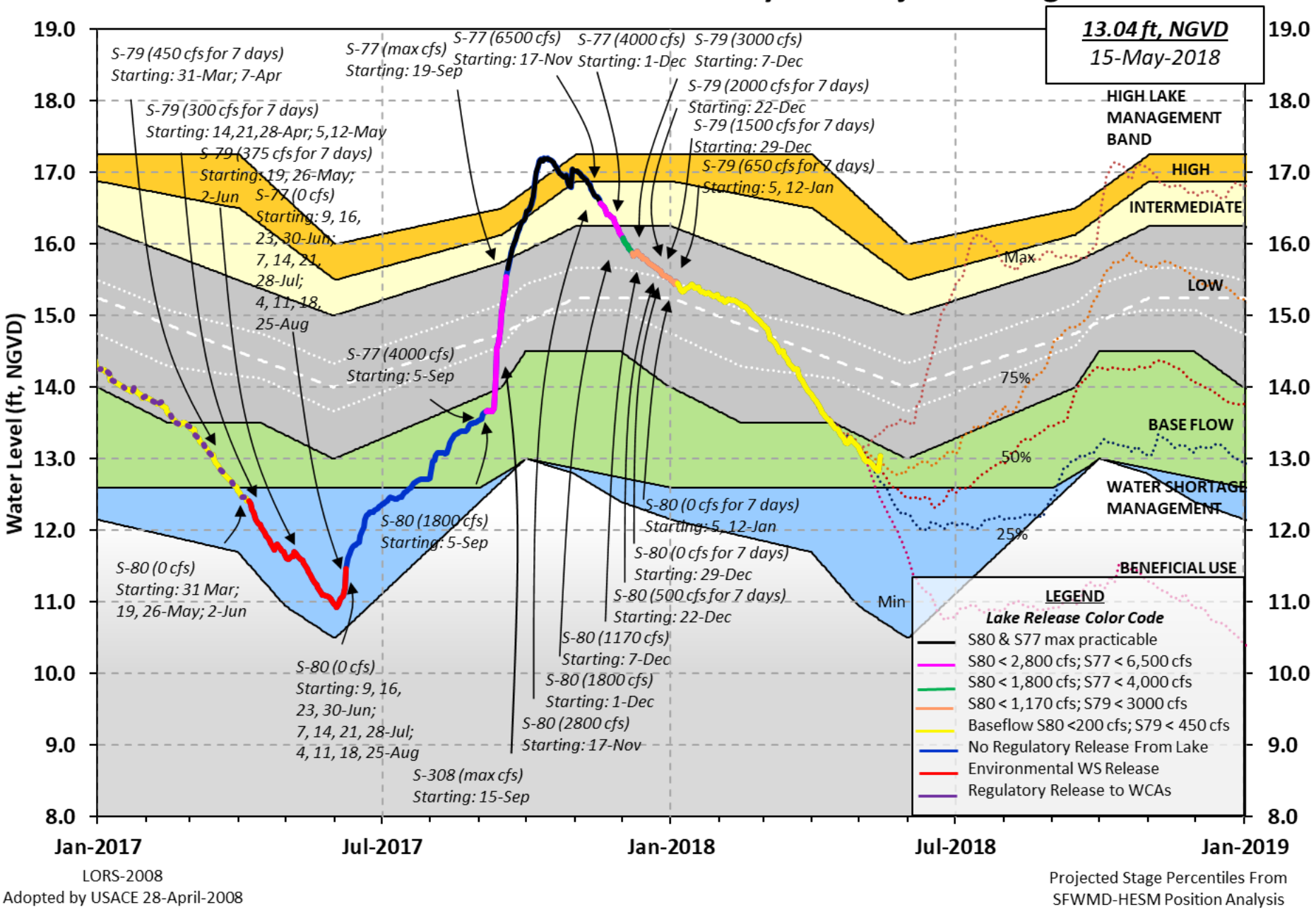


Figure 7-4

**** 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 13 MAY 2018

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	12.83	11.47	13.75 (Official Elv)

Bottom of High Lake Mngmt= 16.39 Top of Water Short Mngmt= 10.76
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 12.12
Difference from Average LORS2008 0.71

13MAY (1965-2007) Period of Record Average 13.32
Difference from POR Average -0.49

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 6.77'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 4.97'
Bridge Clearance = 50.72'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
12.80	12.95	12.84	12.78	12.95	12.90	12.71	12.71

*Combination Okeechobee Avg-Daily Lake Average = 12.83 (*See Note)

Okeechobee Inflows (cfs):

S65E	117	S65EX1	280	Fisheating Cr	0
S154	47	S191	64	S135 Pumps	0
S84	130	S133 Pumps	0	S2 Pumps	0
S84X	327	S127 Pumps	0	S3 Pumps	0
S71	0	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0	C5	0

Total Inflows: 965

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	485
S127 Culverts	0	S351	0	S308	234
S129 Culverts	0	S352	0		
S131 Culverts	0	L8 Canal Pt	18		

Total Outflows: 737

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

Okeechobee Pan Evaporation (inches):
  S77 0.00 S308 0.65
  Average Pan Evap x 0.75 Pan Coefficient = 0.24" = 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:	13.47	12.68	0	0	0	0	0	0	(cfs)		
S193:											
S191:	18.57	12.65	64	0.0	0.3	0.0					
S135 Pumps:	12.31	12.52	0	0	0	0	0		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	20.89	12.73	117	0.0	0.0	0.0	0.1	0.0	0.0		
S65EX1:	20.89	12.73	280								
S127 Pumps:	12.59	12.92	0	0	0	0	0	0	(cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	12.47	12.87	0	0	0	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	12.64	13.44	0	0	0				(cfs)		
S131 Culvert:			0								
Fisheating Creek											
nr Palmdale		27.61	0								
nr Lakeport											
C5:		-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	13.08	13.13	0	0	0	0			(cfs)		
S169:	13.12	13.08	67	4.9	4.9	4.9					
S310:	13.03		22								

```
  S3 Pumps:      9.24     12.86        0       0    0    0            (cfs)
  S354:         12.86      9.24        0     0.0  0.0
  S2 Pumps:      9.21     12.76        0       0    0    0    0       (cfs)
  S351:         12.76      9.21        0     0.0  0.0  0.0
  S352:         12.75      9.32        0     0.0  0.0
  C10A:          -NR-     12.81             8.0   8.0   8.0   0.0   0.0
  L8 Canal PT            12.64       18
```

S351 and S352 Temporary Pumps/S354 Spillway

```
  S351:          9.21     12.76        0  -NR--NR--NR--NR--NR--NR-
  S352:          9.32     12.75        0  -NR--NR--NR--NR-
  S354:          9.24     12.86        0  -NR--NR--NR--NR-
```

```
Caloosahatchee River (S77, S78, S79)
  S47B:         13.31     11.16             0.3  0.8
  S47D:         11.16     11.16       18    6.5
  S77:
    Spillway and Sector Flow:
                13.25     11.03   482.30  0.5  2.0  2.0  0.5
    Flow Due to Lockages+:             3

  S77 Below USGS Flow Gage           482

  S78:
    Spillway and Sector Flow:
                10.98      2.88     919    1.5  0.0  0.0  1.0
    Flow Due to Lockages+:            11

  S79:
    Spillway and Sector Flow:
                 3.05      0.35    1561    1.0  1.0  1.0  1.0  1.0  1.0  1.0
0.0
    Flow Due to Lockages+:            10
    Percent of flow from S77          31%
    Chloride              (ppm)       56


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Flow:
                12.56     12.78   234.00  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:             0

  S308 Below USGS Flow Gage           56
  S153:         18.68     12.60        0    0.0  0.0
  S80:
    Spillway and Sector Flow:
                12.79      1.23        0    0.0  0.0  0.0  0.0  0.0  0.0  0.0
    Flow Due to Lockages+:            16
    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:	3.25	3.25	3.61	82	12
S78:	3.05	3.05	3.05	83	12
S79:	-42.24	-42.24	-42.24	178	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:	0.24	0.24	0.28	93	6
S80:	0.00	0.00	0.00	109	3
Okeechobee Average (Sites S78, S79 and S80 not included)	1.75	0.27	0.30		
Oke Nexrad Basin Avg	-NR-	0.00	0.00		

Okeechobee Lake Elevations	13 MAY 2018	12.83	Difference from 13MAY18
13MAY18 -1 Day =	12 MAY 2018	12.83	0.00
13MAY18 -2 Days =	11 MAY 2018	12.86	0.03
13MAY18 -3 Days =	10 MAY 2018	12.89	0.06
13MAY18 -4 Days =	09 MAY 2018	12.91	0.08
13MAY18 -5 Days =	08 MAY 2018	12.94	0.11
13MAY18 -6 Days =	07 MAY 2018	12.96	0.13
13MAY18 -7 Days =	06 MAY 2018	12.97	0.14
13MAY18 -30 Days =	13 APR 2018	13.46	0.63
13MAY18 -1 Year =	13 MAY 2017	11.47	-1.36
13MAY18 -2 Year =	13 MAY 2016	13.75	0.92

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 4.89

Lake Okeechobee Net Inflow (LONIN)

		Average Flow over the previous 14 days			Avg-Daily Flow
13MAY18	Today =	13 MAY 2018	-3719	MON	734
13MAY18	-1 Day =	12 MAY 2018	-4070	SUN	-4774
13MAY18	-2 Days =	11 MAY 2018	-3709	SAT	-4265
13MAY18	-3 Days =	10 MAY 2018	-3682	FRI	-2126
13MAY18	-4 Days =	09 MAY 2018	-3866	THU	-4479
13MAY18	-5 Days =	08 MAY 2018	-3468	WED	-2948
13MAY18	-6 Days =	07 MAY 2018	-2433	TUE	-1266
13MAY18	-7 Days =	06 MAY 2018	-1955	MON	953
13MAY18	-8 Days =	05 MAY 2018	-1950	SUN	-2447
13MAY18	-9 Days =	04 MAY 2018	-2089	SAT	-6240
13MAY18	-10 Days =	03 MAY 2018	-2008	FRI	-6071
13MAY18	-11 Days =	02 MAY 2018	-1823	THU	-7925
13MAY18	-12 Days =	01 MAY 2018	-1373	WED	-6687
13MAY18	-13 Days =	30 APR 2018	-1510	TUE	-4525

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
13MAY18	Today=	13 MAY 2018	11	MON	147
13MAY18	-1 Day =	12 MAY 2018	0	SUN	4
13MAY18	-2 Days =	11 MAY 2018	0	SAT	0
13MAY18	-3 Days =	10 MAY 2018	0	FRI	0
13MAY18	-4 Days =	09 MAY 2018	0	THU	0
13MAY18	-5 Days =	08 MAY 2018	0	WED	0
13MAY18	-6 Days =	07 MAY 2018	0	TUE	0
13MAY18	-7 Days =	06 MAY 2018	0	MON	0
13MAY18	-8 Days =	05 MAY 2018	0	SUN	0
13MAY18	-9 Days =	04 MAY 2018	0	SAT	0
13MAY18	-10 Days =	03 MAY 2018	0	FRI	0
13MAY18	-11 Days =	02 MAY 2018	0	THU	0
13MAY18	-12 Days =	01 MAY 2018	0	WED	0
13MAY18	-13 Days =	30 APR 2018	0	TUE	0

S65EX1

		Average Flow over previous 14 days			Avg-Daily Flow
13MAY18	Today=	13 MAY 2018	268	MON	280
13MAY18	-1 Day =	12 MAY 2018	267	SUN	283
13MAY18	-2 Days =	11 MAY 2018	268	SAT	282
13MAY18	-3 Days =	10 MAY 2018	268	FRI	257
13MAY18	-4 Days =	09 MAY 2018	268	THU	241
13MAY18	-5 Days =	08 MAY 2018	271	WED	201
13MAY18	-6 Days =	07 MAY 2018	285	TUE	361
13MAY18	-7 Days =	06 MAY 2018	284	MON	446
13MAY18	-8 Days =	05 MAY 2018	273	SUN	229
13MAY18	-9 Days =	04 MAY 2018	277	SAT	229
13MAY18	-10 Days =	03 MAY 2018	282	FRI	203
13MAY18	-11 Days =	02 MAY 2018	288	THU	232
13MAY18	-12 Days =	01 MAY 2018	292	WED	253
13MAY18	-13 Days =	30 APR 2018	302	TUE	255

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)
13 MAY 2018	2262	956	1840	3158
12 MAY 2018	3021	1098	2467	3004
11 MAY 2018	2144	897	2047	2258
10 MAY 2018	798	465	736	103
09 MAY 2018	814	418	732	434
08 MAY 2018	829	450	730	807
07 MAY 2018	1663	650	1591	1392
06 MAY 2018	2864	1155	2753	2281
05 MAY 2018	3091	1314	2763	3361
04 MAY 2018	2934	1242	2477	2350
03 MAY 2018	3546	1519	2411	227
02 MAY 2018	3290	1469	2510	1295
01 MAY 2018	2534	1152	2468	1845
30 APR 2018	2437	1733	2393	1499

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)
13 MAY 2018	44	0	0	0	36
12 MAY 2018	106	74	0	32	199
11 MAY 2018	278	681	50	407	210
10 MAY 2018	246	1022	210	787	247
09 MAY 2018	31	512	178	708	246
08 MAY 2018	252	208	12	543	197
07 MAY 2018	227	0	0	0	247
06 MAY 2018	71	0	0	4	224
05 MAY 2018	81	188	52	432	262
04 MAY 2018	89	607	331	1005	250
03 MAY 2018	94	607	0	1630	240
02 MAY 2018	118	937	0	1989	237
01 MAY 2018	115	0	0	1450	254
30 APR 2018	111	0	0	1083	183

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
13 MAY 2018	406	110	31
12 MAY 2018	511	16	59
11 MAY 2018	550	398	48
10 MAY 2018	501	185	52
09 MAY 2018	527	233	52
08 MAY 2018	447	-255	46
07 MAY 2018	420	-256	61
06 MAY 2018	539	-24	51
05 MAY 2018	576	494	52
04 MAY 2018	622	460	49
03 MAY 2018	587	450	45
02 MAY 2018	594	375	55
01 MAY 2018	583	449	51

30 APR 2018 414 -76 53

*** 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

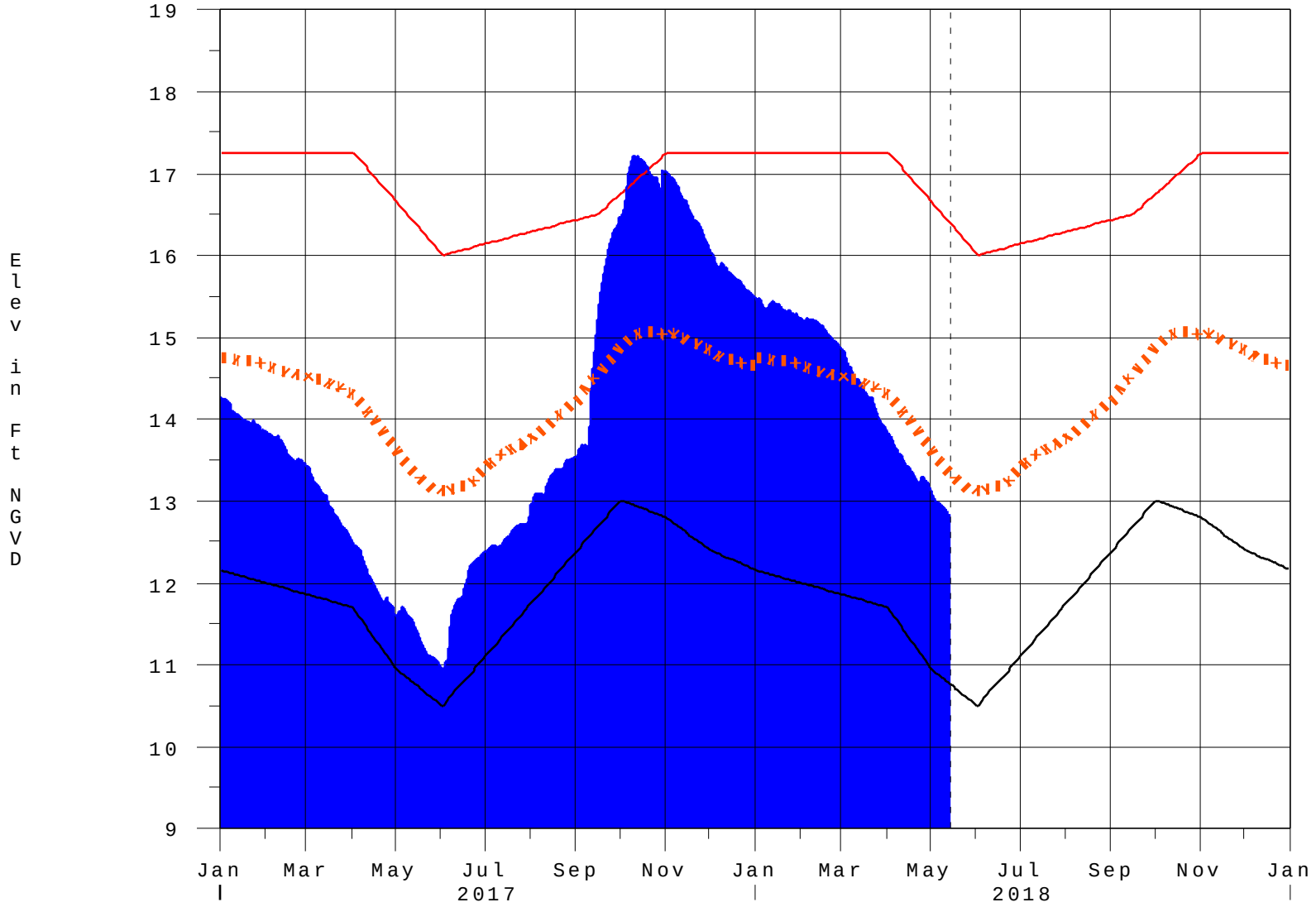
---

* 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 14MAY2018 @ 11:39 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

14MAY18 12:00:23



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