Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 4/9/2018 (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	1.75	Wet	1.93	Wet	1.68	Wet
Multi Seasonal (Apr-Oct)	N/A	N/A	2.22	Normal	2.49	Normal	2.33	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:

-2882 cfs 14-day running average for Lake Okeechobee Net Inflow through 4/8/2018.
According to the classification in Tributary Hydrologic Conditions table, this condition is Dry.

-1.81 for Palmer Index on 4/7/2018.
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 4/9/2018

Lake Okeechobee Stage: **13.58 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		17.09	
Operational Band	High sub-band	16.37	
	Intermediate sub-band	15.43	
	Low sub-band	13.50	← 13.58
Base Flow sub-band		12.60	
Beneficial Use sub-band		11.50	
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 4/9/2018 (ENSO La Nina Condition):

Status for week ending 4/9/2018:

District wide, Raindar rainfall was 0.33 inches for the week. Lake stage on 4/9/2018 was 13.58 ft, NGVD, down 0.26 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 Low Operational 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 .

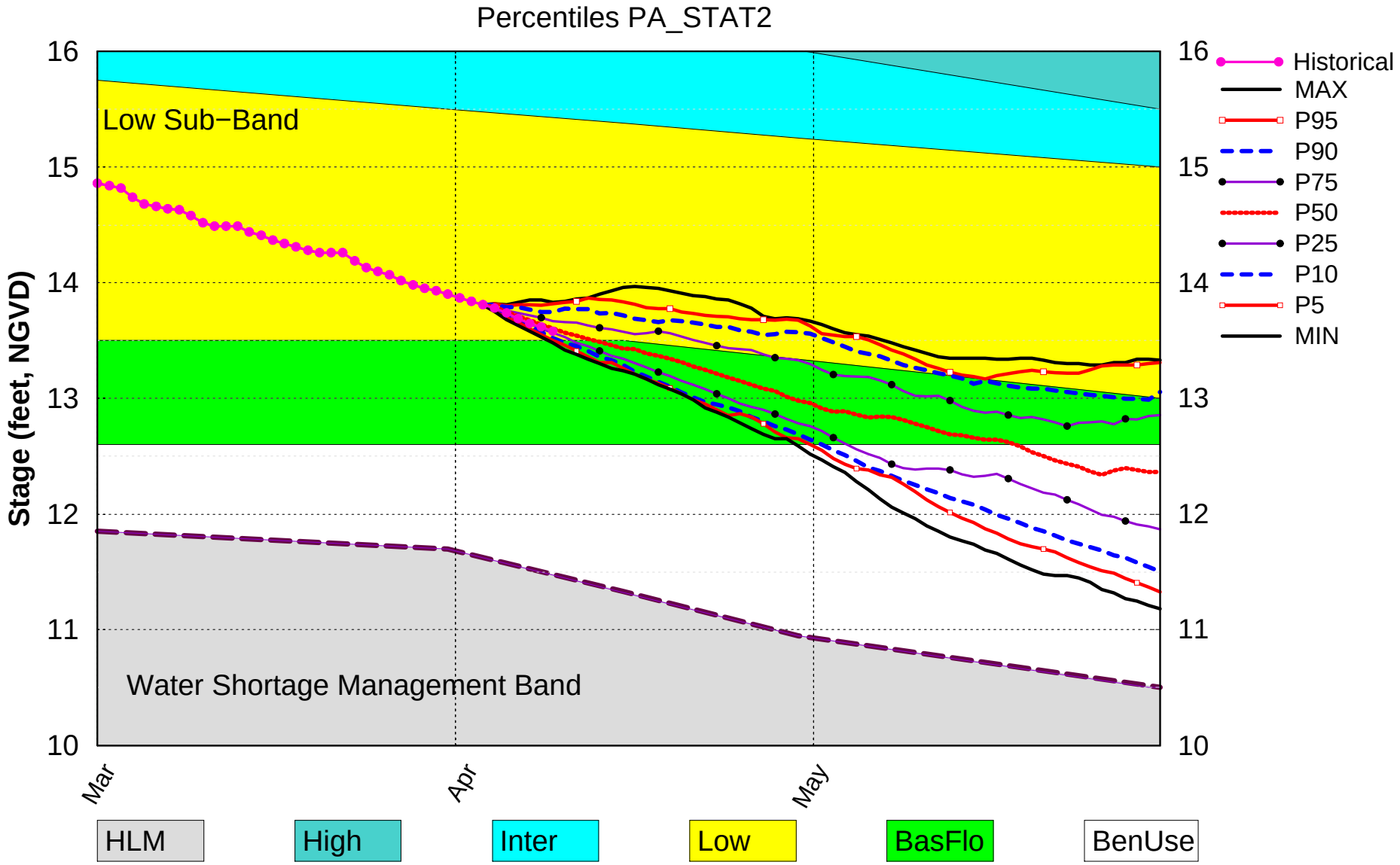
Water Supply Risk Evaluation

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	-1.81 (Dry)	M
	CPC Precipitation Outlook	1 month: Below Normal	M
		3 months: Normal	L
	LOK Seasonal Net Inflow Outlook	1.93 ft (Normal to Extremely Wet)	L
	ENSO La Nina Years		
	LOK Multi-Seasonal Net Inflow Outlook	2.49 ft (Normal)	M
	ENSO Conditions		
WCAs	WCA 1: Site 1-8C	Above Line 1 (15.76 ft)	L
	WCA 2A: Site S11BHW	Below Line 2 (9.60 ft)	H
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (9.07 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

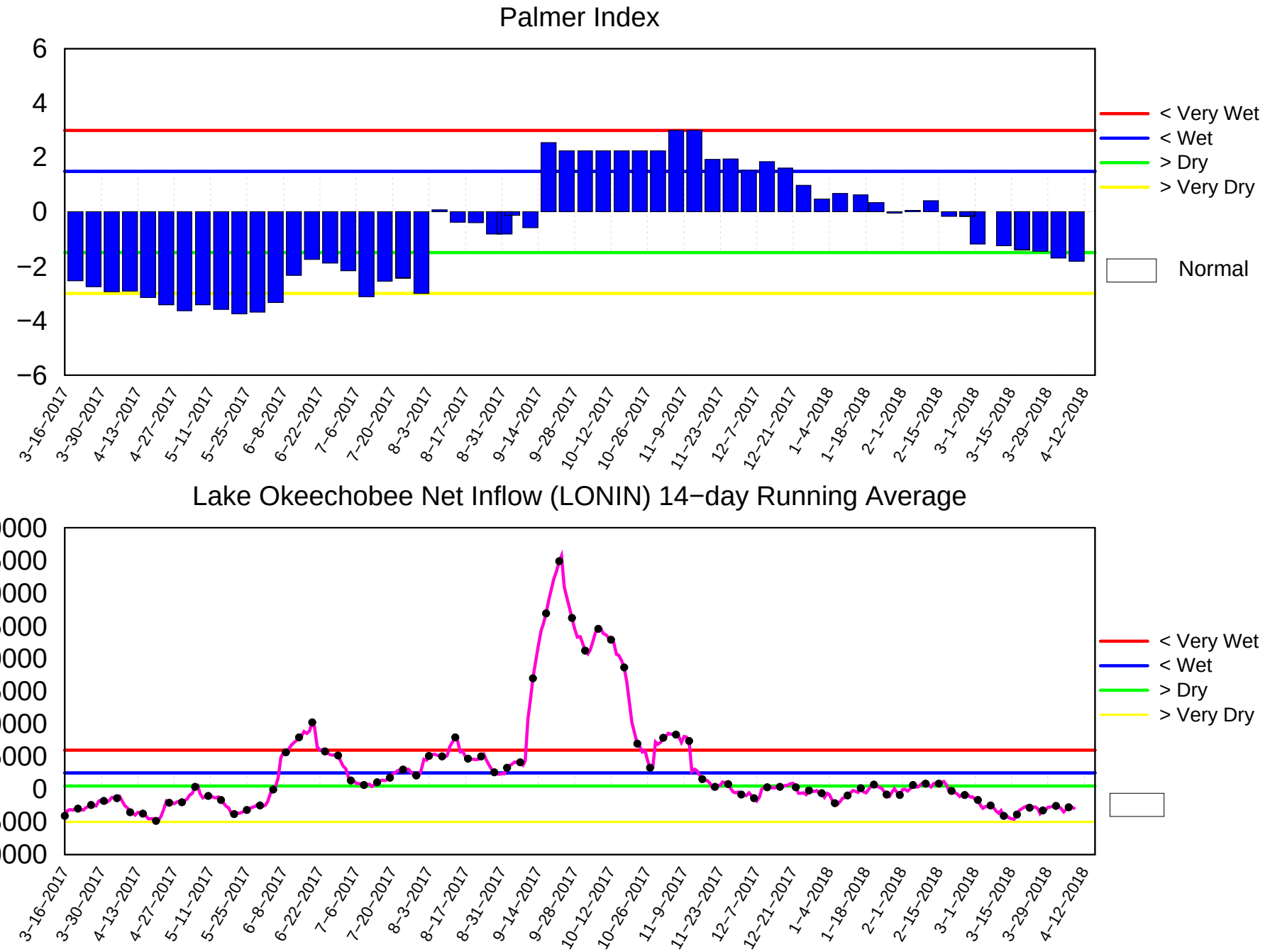
Lake Okeechobee SFWMM Apr 2018 Position Analysis



(See assumptions on the Position Analysis Results website)

Mon Apr 9 17:11:38 2018

Tributary Basin Condition Indicators as of April 9 2018



Mon Apr 09 16:52:18 EDT 2018

2008 LORS

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

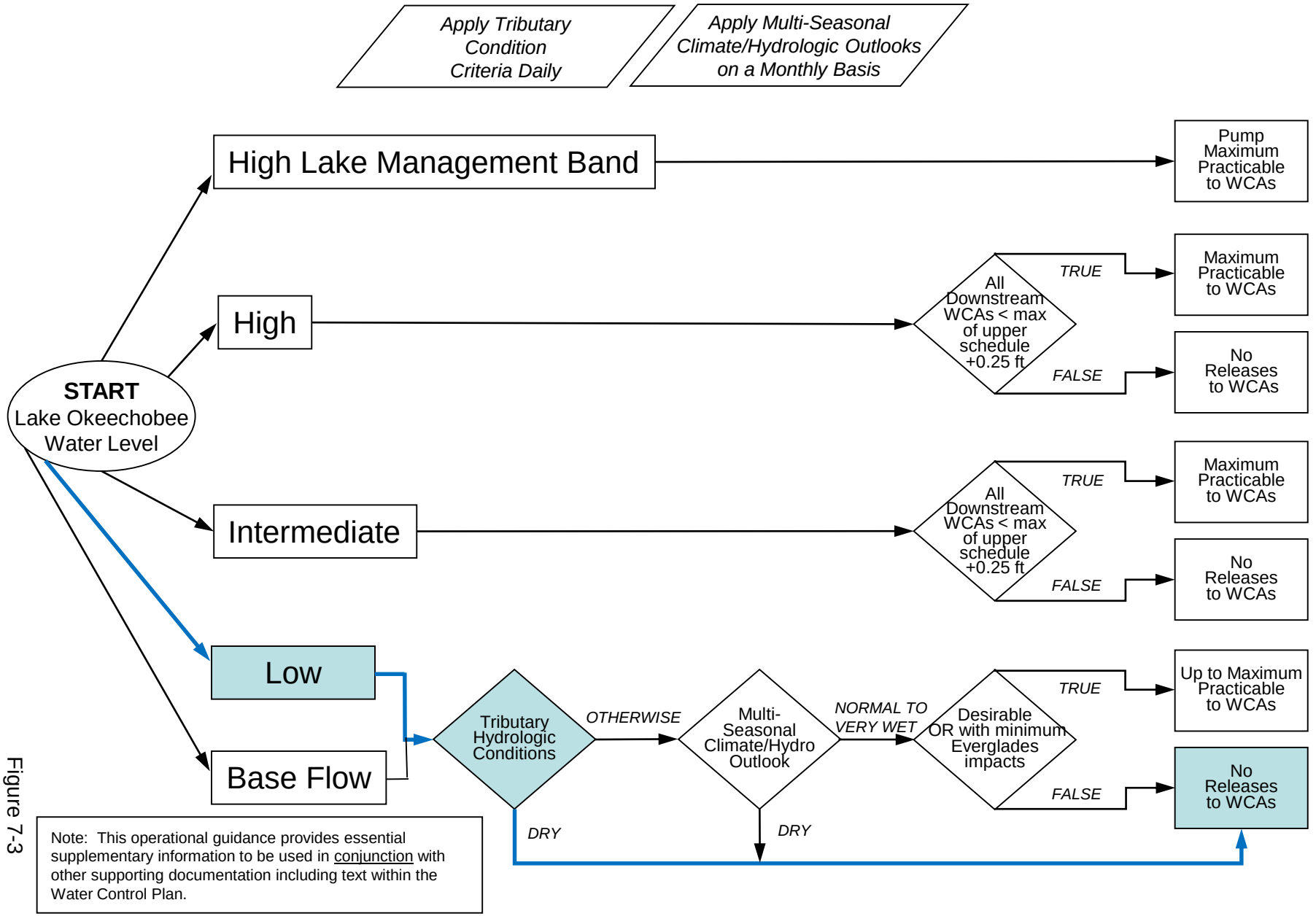


Figure 7-3

2008 LORS

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

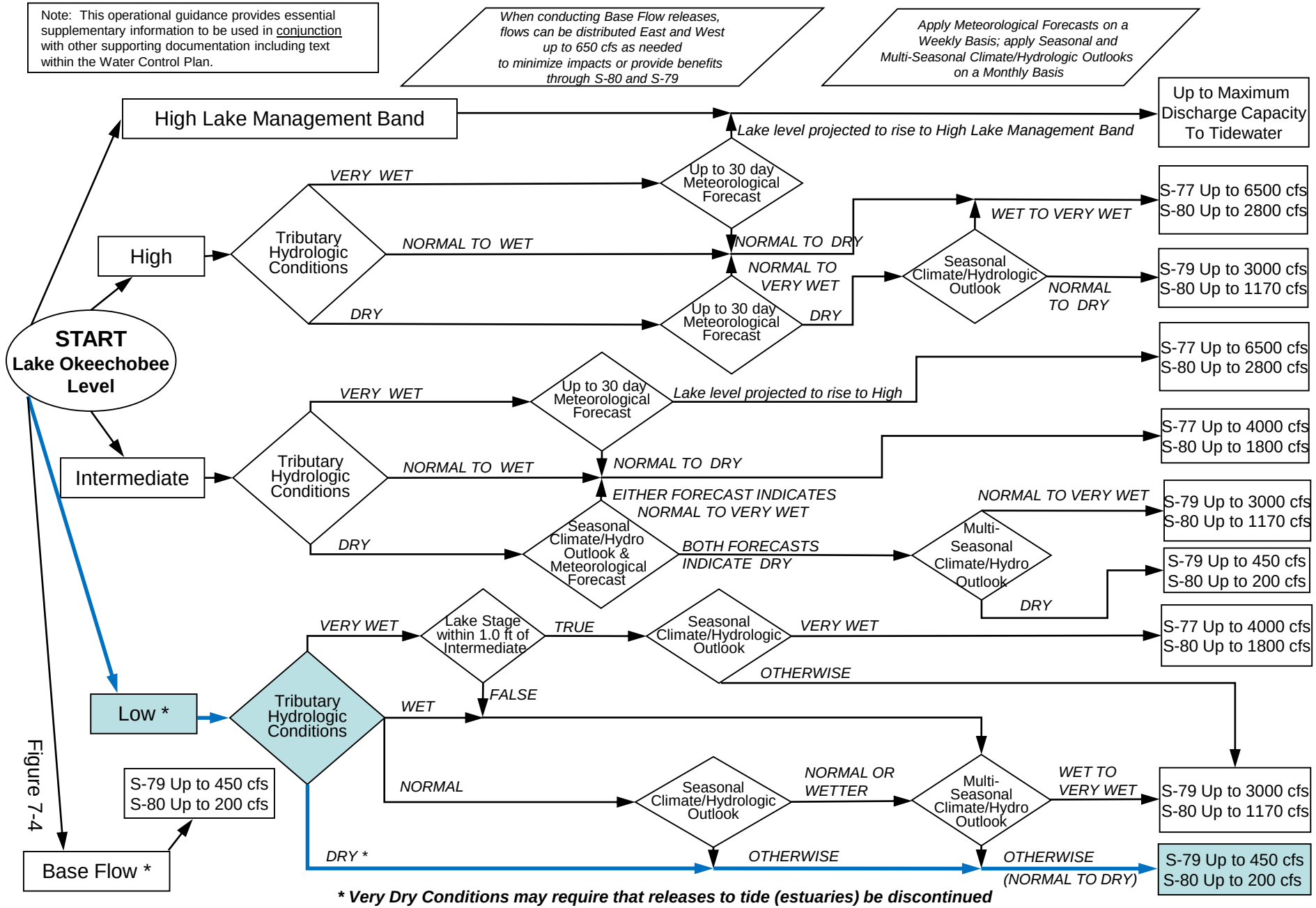
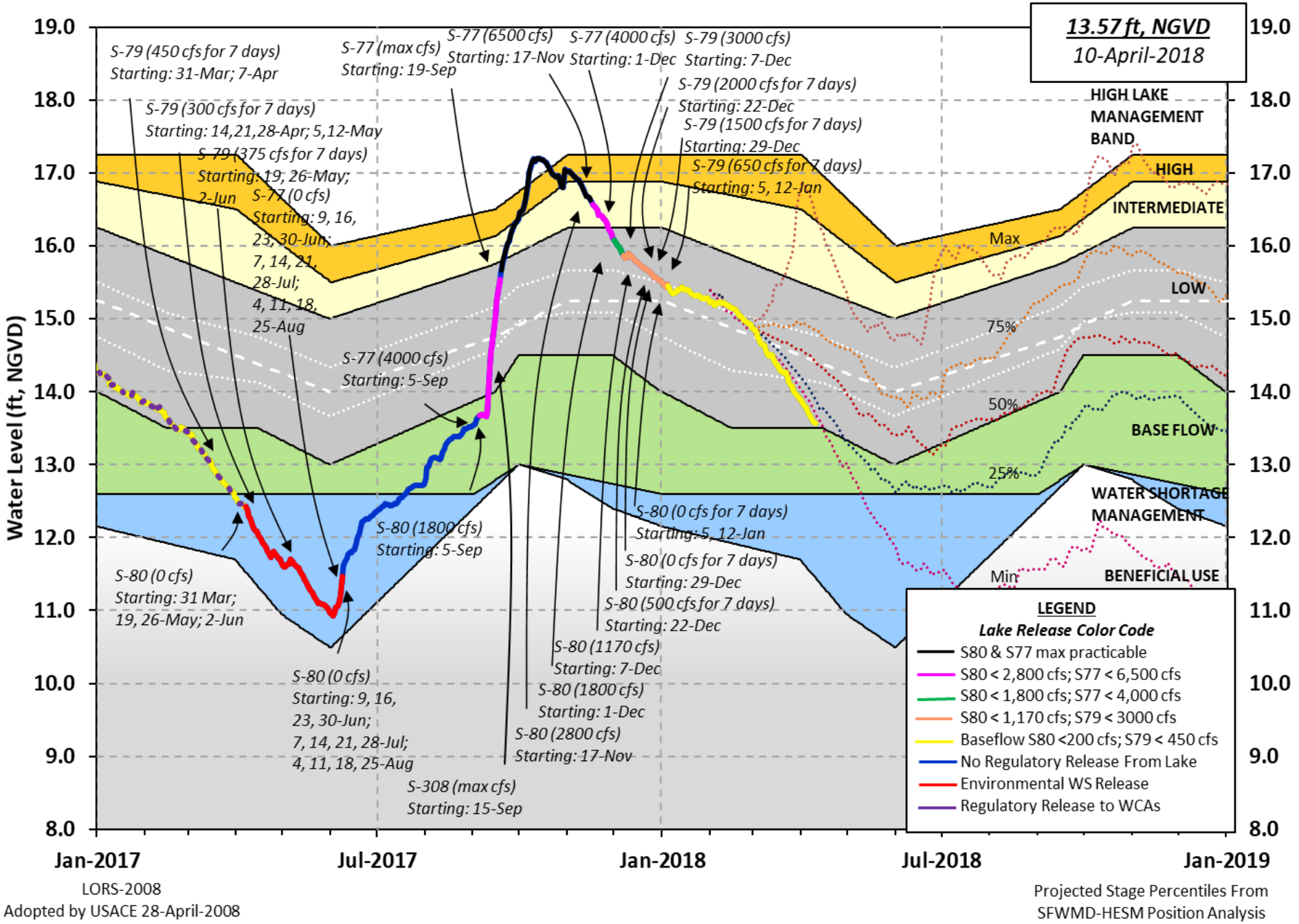


Figure 7-4

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 08 APR 2018

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)	
*Okeechobee Lake Elevation	13.58	12.26	14.99	(Official Elv)

Bottom of High Lake Mngmt= 17.11 Top of Water Short Mngmt= 11.50
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 12.88
Difference from Average LORS2008 0.70

08APR (1965-2007) Period of Record Average 14.14
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 ÷ 7.52'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 5.72'
Bridge Clearance = 50.03'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
13.58	13.62	13.59	13.55	13.56	13.70	13.56	13.50

*Combination Okeechobee Avg-Daily Lake Average = 13.58 (*See Note)

Okeechobee Inflows (cfs):

S65E	108	S65EX1	190	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	111	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0	C5	0

Total Inflows: 409

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	715	S77	1326
S127 Culverts	-3	S351	1584	S308	195
S129 Culverts	0	S352	768		
S131 Culverts	-3	L8 Canal Pt	246		

Total Outflows: 4828

****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 0.20 S308 0.40
  Average Pan Evap x 0.75 Pan Coefficient = 0.23" = 0.02'

Lake Average Precipitation using NEXRAD: = 0.17" = 0.01'

Evaporation - Precipitation: = 0.06" = 0.00'
Evaporation - Precipitation using Lake Area of 730 square miles
  is equal to 1080 cfs out of the lake.
Lake Okeechobee (Change in Storage) Flow is -8470 cfs or -16800 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:	13.59	13.35	0	0	0	0	0	0	(cfs)		
S193:											
S191:	18.17	13.34	0	0.0	0.0	0.0					
S135 Pumps:	13.22	13.35	0	0	0	0	0		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	20.99	12.93	108	0.3	0.0	0.0	0.0	0.0	0.0		
S65EX1:	20.99	12.93	190								
S127 Pumps:	13.22	13.46	0	0	0	0	0	0	(cfs)		
S127 Culvert:			-3	0.5							
S129 Pumps:	12.94	13.59	0	0	0	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	13.09	13.60	0	0	0				(cfs)		
S131 Culvert:			-3								
Fisheating Creek nr Palmdale		27.85	0								
nr Lakeport C5:		-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	11.01	13.60	0	0	0	0			(cfs)		
S169:	13.65	11.01	0	0.0	0.0	0.0					
S310:	13.58		75								

S3 Pumps:	11.57	13.61	0	0	0	0			(cfs)
S354:	13.61	11.57	715	0.9	0.9				
S2 Pumps:	11.65	13.58	0	0	0	0	0		(cfs)
S351:	13.58	11.65	1584	3.0	2.9	3.0			
S352:	13.68	11.77	768	1.8	1.7				
C10A:	-NR-	13.63		8.0	8.0	8.0	0.0	0.0	
L8 Canal PT		13.47	246						

S351 and S352 Temporary Pumps/S354 Spillway

S351:	11.65	13.58	1584	-NR--NR--NR--NR--NR--NR-
S352:	11.77	13.68	768	-NR--NR--NR--NR-
S354:	11.57	13.61	715	-NR--NR--NR--NR-

Caloosahatchee River (S77, S78, S79)

S47B:	11.97	10.98		0.0	0.0							
S47D:	10.96	10.95	-12	6.6								
S77:												
Spillway and Sector Flow:												
	13.58	11.03	******	2.0	0.0	0.0	2.0					
Flow Due to Lockages+:			6									
S77 Below USGS Flow Gage			1187									
S78:												
Spillway and Sector Flow:												
	10.83	2.88	710	1.0	0.0	0.0	1.0					
Flow Due to Lockages+:			19									
S79:												
Spillway and Sector Flow:												
	3.04	1.65	1322	0.0	0.0	1.0	1.0	1.0	1.0	0.0	0.0	
Flow Due to Lockages+:			8									
Percent of flow from S77			100%									
Chloride		(ppm)	57									

St. Lucie Canal (S308, S80)

S308:												
Spillway and Sector Flow:												
	13.49	13.47	195.00	0.0	0.0	0.0	0.0					
Flow Due to Lockages+:			0									
S308 Below USGS Flow Gage			-53									
S153:	18.57	13.25	0	0.0	0.0							
S80:												
Spillway and Sector Flow:												
	13.47	-0.11	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Flow Due to Lockages+:			30									
Percent of flow from S308			NA	%								
Steele Point Top Salinity		(mg/ml)	****									
Steele Point Bottom Salinity		(mg/ml)	****									

Speedy Point Top Salinity (mg/ml) -N
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:	0.71	0.71	0.71	40	3
S78:	1.72	1.72	1.73	351	1
S79:	-46.37	-46.37	-46.37	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:	0.01	0.01	0.01	34	1
S80:	0.00	0.00	0.00	89	1
Okeechobee Average (Sites S78, S79 and S80 not included)	0.36	0.06	0.06		
Oke Nexrad Basin Avg	0.17	0.18	0.18		

Okeechobee Lake Elevations	08 APR 2018	13.58	Difference from 08APR18
08APR18 -1 Day =	07 APR 2018	13.62	0.04
08APR18 -2 Days =	06 APR 2018	13.65	0.07
08APR18 -3 Days =	05 APR 2018	13.69	0.11
08APR18 -4 Days =	04 APR 2018	13.74	0.16
08APR18 -5 Days =	03 APR 2018	13.78	0.20
08APR18 -6 Days =	02 APR 2018	13.81	0.23
08APR18 -7 Days =	01 APR 2018	13.84	0.26
08APR18 -30 Days =	09 MAR 2018	14.52	0.94
08APR18 -1 Year =	08 APR 2017	12.26	-1.32
08APR18 -2 Year =	08 APR 2016	14.99	1.41

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 3.92

Lake Okeechobee Net Inflow (LONIN)

		Average Flow over the previous 14 days			Avg-Daily Flow
08APR18	Today =	08 APR 2018	-2688	MON	-3642
08APR18	-1 Day =	07 APR 2018	-2537	SUN	-771
08APR18	-2 Days =	06 APR 2018	-2584	SAT	-2862
08APR18	-3 Days =	05 APR 2018	-2978	FRI	-6692
08APR18	-4 Days =	04 APR 2018	-3270	THU	-4134
08APR18	-5 Days =	03 APR 2018	-2745	WED	-1176
08APR18	-6 Days =	02 APR 2018	-2440	TUE	-1502
08APR18	-7 Days =	01 APR 2018	-2405	MON	-1633
08APR18	-8 Days =	31 MAR 2018	-2489	SUN	-1345
08APR18	-9 Days =	30 MAR 2018	-2556	SAT	-1532
08APR18	-10 Days =	29 MAR 2018	-2648	FRI	289
08APR18	-11 Days =	28 MAR 2018	-3073	THU	-2140
08APR18	-12 Days =	27 MAR 2018	-3176	WED	-4535
08APR18	-13 Days =	26 MAR 2018	-3415	TUE	-5958

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
08APR18	Today=	08 APR 2018	192	MON	126
08APR18	-1 Day =	07 APR 2018	200	SUN	127
08APR18	-2 Days =	06 APR 2018	208	SAT	160
08APR18	-3 Days =	05 APR 2018	213	FRI	174
08APR18	-4 Days =	04 APR 2018	217	THU	172
08APR18	-5 Days =	03 APR 2018	212	WED	174
08APR18	-6 Days =	02 APR 2018	199	TUE	175
08APR18	-7 Days =	01 APR 2018	187	MON	175
08APR18	-8 Days =	31 MAR 2018	174	SUN	212
08APR18	-9 Days =	30 MAR 2018	159	SAT	240
08APR18	-10 Days =	29 MAR 2018	142	FRI	240
08APR18	-11 Days =	28 MAR 2018	125	THU	239
08APR18	-12 Days =	27 MAR 2018	108	WED	238
08APR18	-13 Days =	26 MAR 2018	91	TUE	236

S65EX1

		Average Flow over previous 14 days			Avg-Daily Flow
08APR18	Today=	08 APR 2018	144	MON	190
08APR18	-1 Day =	07 APR 2018	138	SUN	177
08APR18	-2 Days =	06 APR 2018	138	SAT	153
08APR18	-3 Days =	05 APR 2018	135	FRI	154
08APR18	-4 Days =	04 APR 2018	129	THU	153
08APR18	-5 Days =	03 APR 2018	144	WED	152
08APR18	-6 Days =	02 APR 2018	154	TUE	152
08APR18	-7 Days =	01 APR 2018	172	MON	152
08APR18	-8 Days =	31 MAR 2018	182	SUN	152
08APR18	-9 Days =	30 MAR 2018	189	SAT	139
08APR18	-10 Days =	29 MAR 2018	197	FRI	113
08APR18	-11 Days =	28 MAR 2018	213	THU	113
08APR18	-12 Days =	27 MAR 2018	230	WED	112
08APR18	-13 Days =	26 MAR 2018	246	TUE	112

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)
08 APR 2018	2606	2353	1429	2620
07 APR 2018	3624	3349	2265	-NR-
06 APR 2018	3070	2670	3158	-NR-
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
01 APR 2018	2987	2645	2036	2203
31 MAR 2018	3380	3061	2649	2926
30 MAR 2018	3001	2504	3054	1756
29 MAR 2018	1893	1497	635	74
28 MAR 2018	1622	1162	616	398
27 MAR 2018	1213	812	653	1042
26 MAR 2018	1466	945	882	1485

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)
08 APR 2018	148	3142	1386	1194	487
07 APR 2018	130	3241	1444	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
01 APR 2018	65	2847	1255	1005	516
31 MAR 2018	38	2905	1372	1037	546
30 MAR 2018	31	2903	1368	1158	566
29 MAR 2018	119	2904	1392	1406	526
28 MAR 2018	116	2934	1461	1160	552
27 MAR 2018	72	3035	1485	1231	585
26 MAR 2018	105	3801	1489	1549	601

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
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
01 APR 2018	433	193	55
31 MAR 2018	394	190	45
30 MAR 2018	585	269	75
29 MAR 2018	482	285	55
28 MAR 2018	725	822	50
27 MAR 2018	1128	292	45

26 MAR 2018 227 -20 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

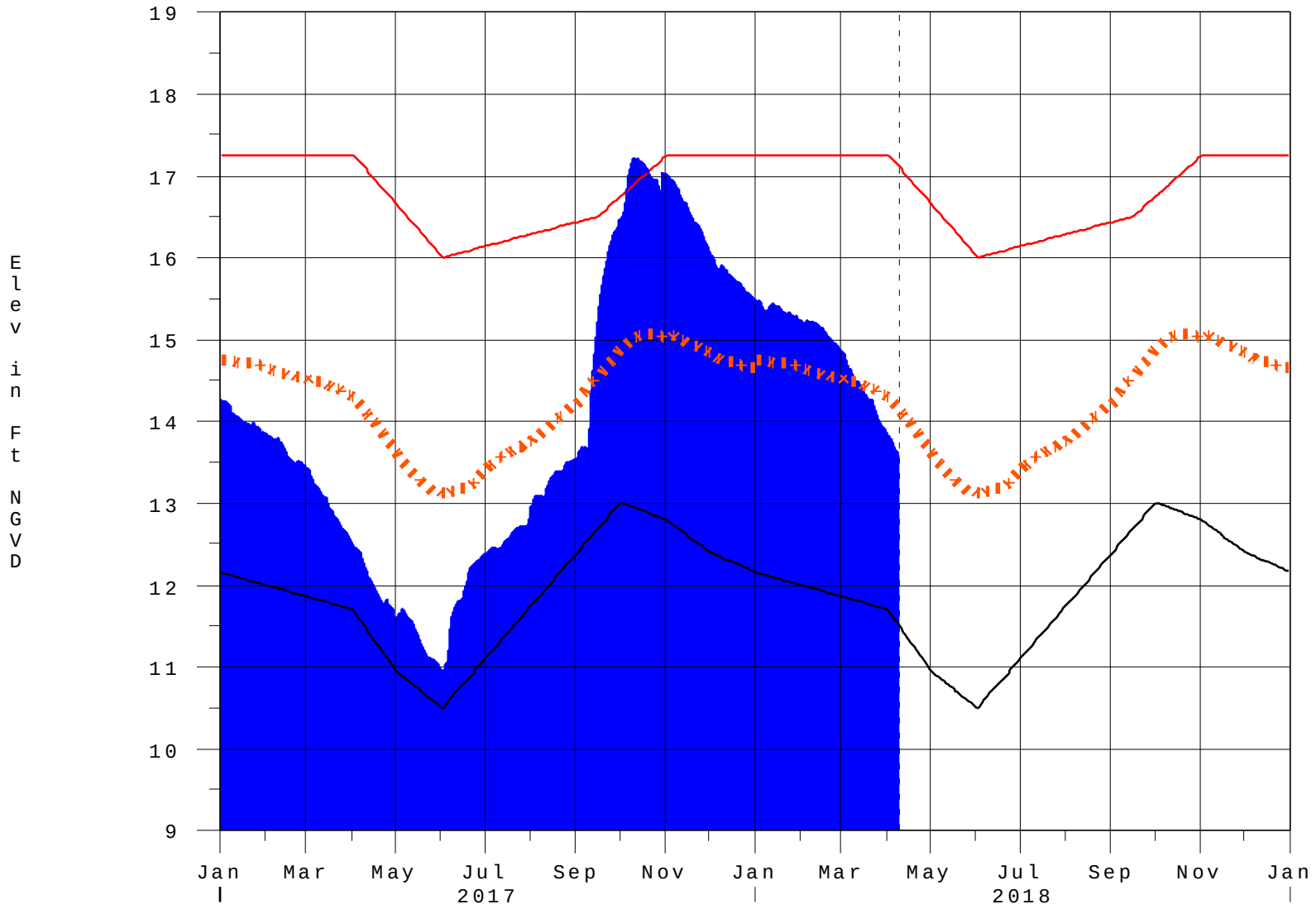
---

* 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 09APR2018 @ 16:38 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

09APR18 16:30:21



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