Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 8/27/2018 (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 (Aug-Jan)	N/A	N/A	2.19	Very Wet	3.01	Very Wet	1.94	Wet
Multi Seasonal (Aug-Apr)	N/A	N/A	2.56	Wet	3.60	Wet	1.62	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:

4045 cfs 14-day running average for Lake Okeechobee Net Inflow through 8/27/2018.
According to the classification in Tributary Hydrologic Conditions table, this condition is Wet.

1.29 for Palmer Index on 8/25/2018.
According to the classification in Tributary Hydrologic Conditions table, this condition is Normal.

The wetter of the two conditions above is **Wet**.

LORS2008 Classification Tables:

Lake Okeechobee Stage on 8/27/2018

Lake Okeechobee Stage: **14.53 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		16.41	
Operational Band	High sub-band	16.01	
	Intermediate sub-band	15.61	
	Low sub-band	13.81	← 14.53
Base Flow sub-band		12.60	
Beneficial Use sub-band		12.28	
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-79 Up to 3000 cfs & S-80 Up to 1170 cfs.

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LORS2008 Implementation on 8/27/2018 (ENSO Neutral Condition):

Water Supply Risk Evaluation

Status for week ending 8/27/2018:

District wide, Raindar rainfall was 1.50 inches for the week. Lake stage on 8/27/2018 was 14.53 ft, NGVD, down 0.06 ft from last week.

The updated August 2018 Mid-Month SFWMM Dynamic Position Analysis percentile graph for Lake Okeechobee show that the current lake stage is in the Low Sub-Band.

The 2008 LORS Tributary Hydrologic Condition (THC) is classified as **Wet**. The PDSI indicates normal conditions and the LONIN is wet. The THC classification is based on the wetter of the two indices .

Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Low Sub Band	L
	Palmer Index for LOK Tributary Conditions	1.29 (Normal to Extremely Wet)	L
	CPC Precipitation Outlook	1 month: Above Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Outlook	3.01 ft (Normal to Extremely Wet)	L
	ENSO Years		
	LOK Multi-Seasonal Net Inflow Outlook	3.60 ft (Wet)	L
	ENSO Conditions		
WCAs	WCA 1: Station Average (Site 1-7, Site 1-8T, Site 1-9)	Above Line 1 (16.41 ft)	L
	WCA 2A: Site 2-17	Above Line 1 (13.24 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.48 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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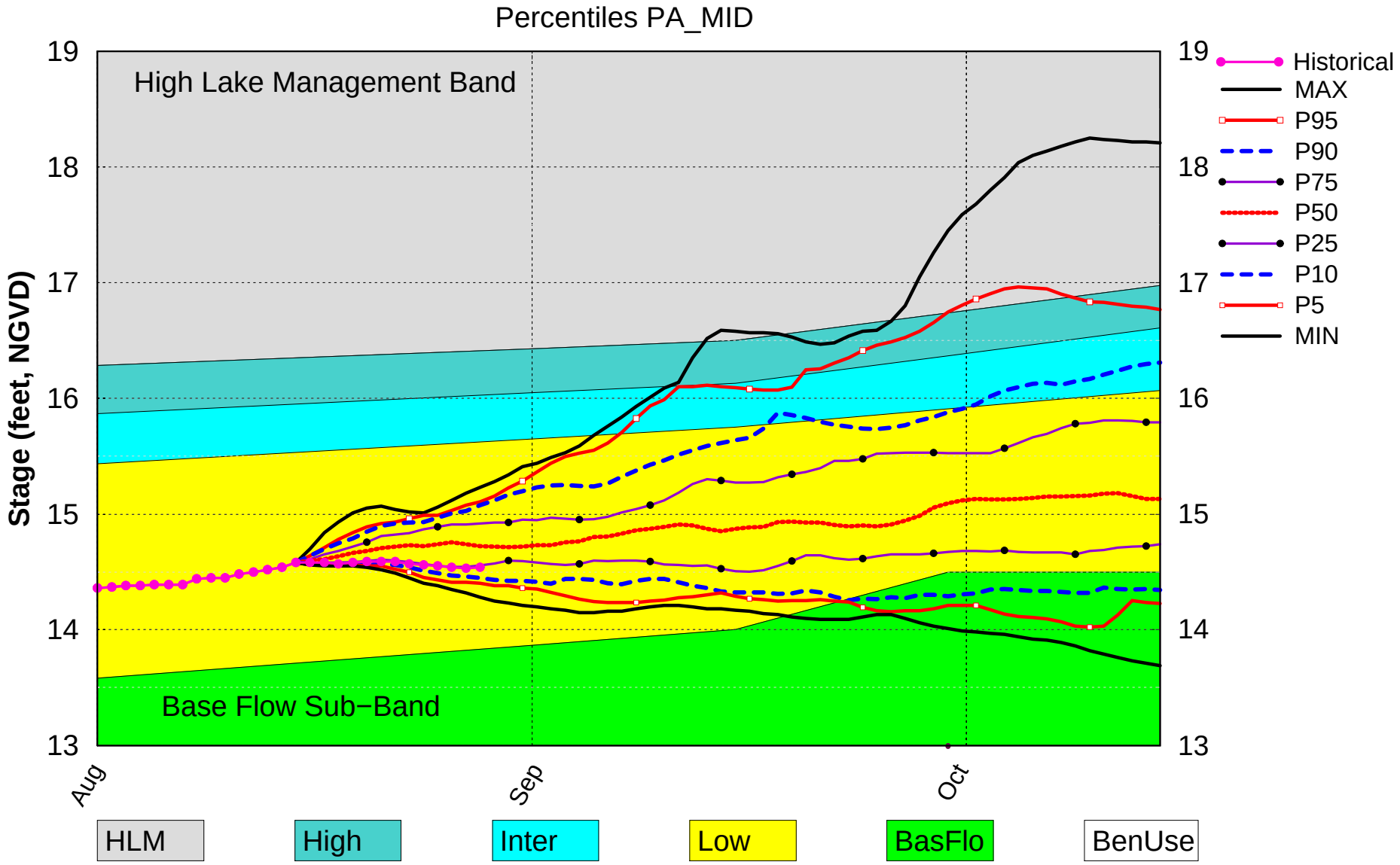
Lake Okeechobee SFWMM Aug 2018 Mid−MonthPosition Analysis

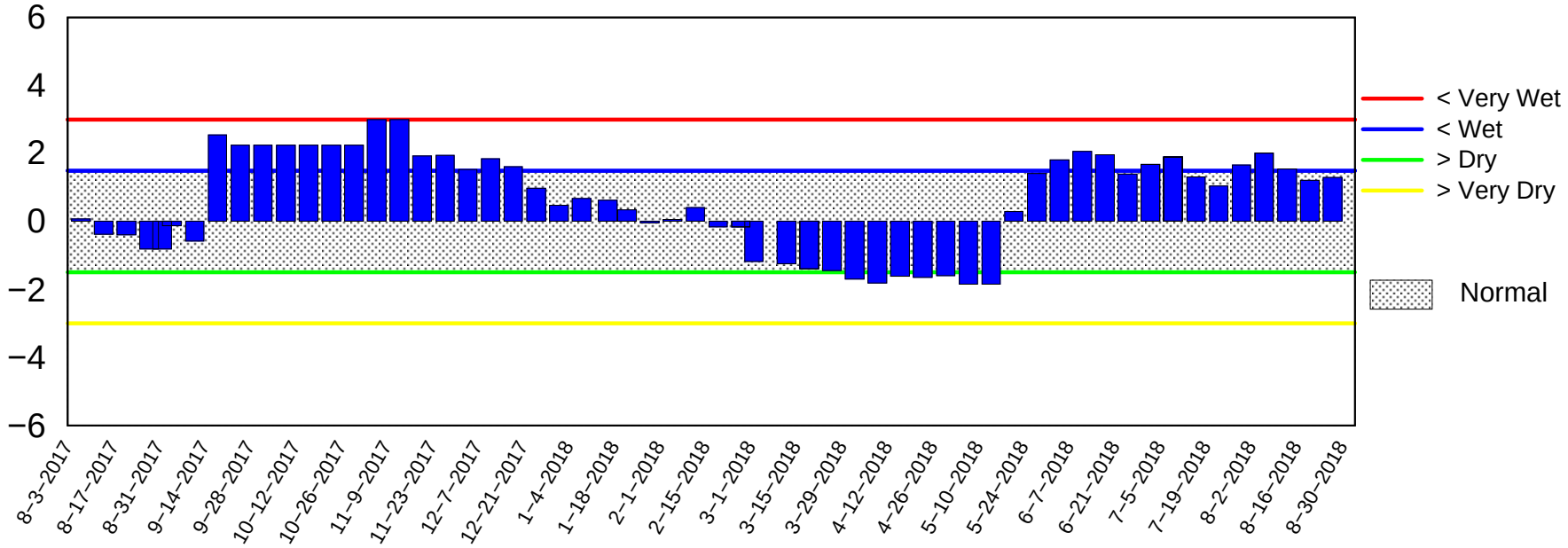


(See assumptions on the Position Analysis Results website)

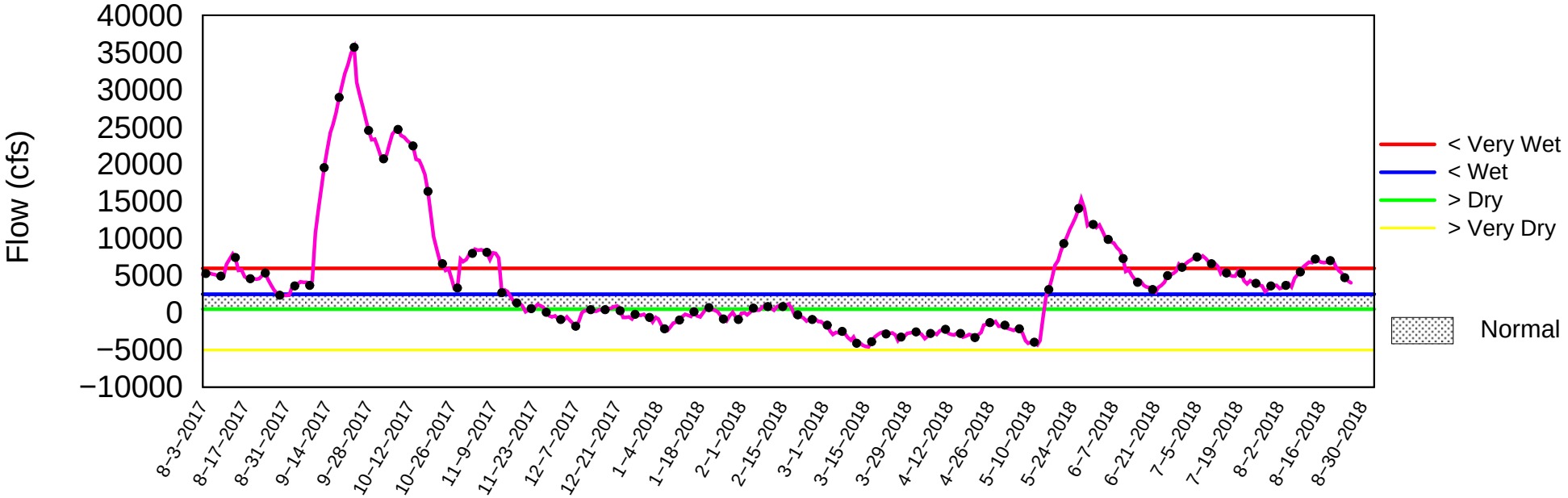
Tue Aug 28 09:52:12 2018

Tributary Basin Condition Indicators as of August 27 2018

Palmer Index



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



Mon Aug 27 14:59:02 EDT 2018

2008 LORS

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

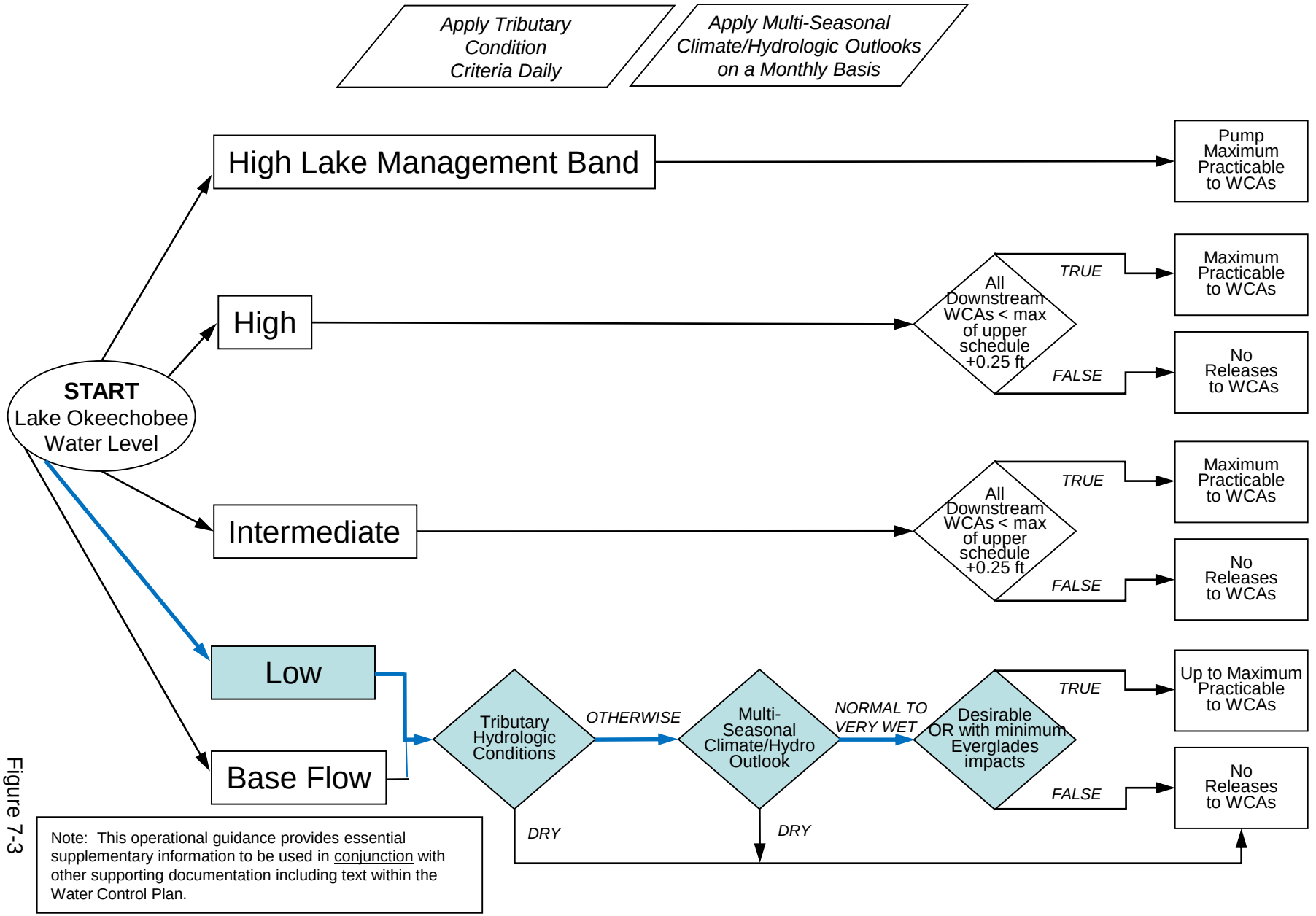


Figure 7-3

2008 LORS

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

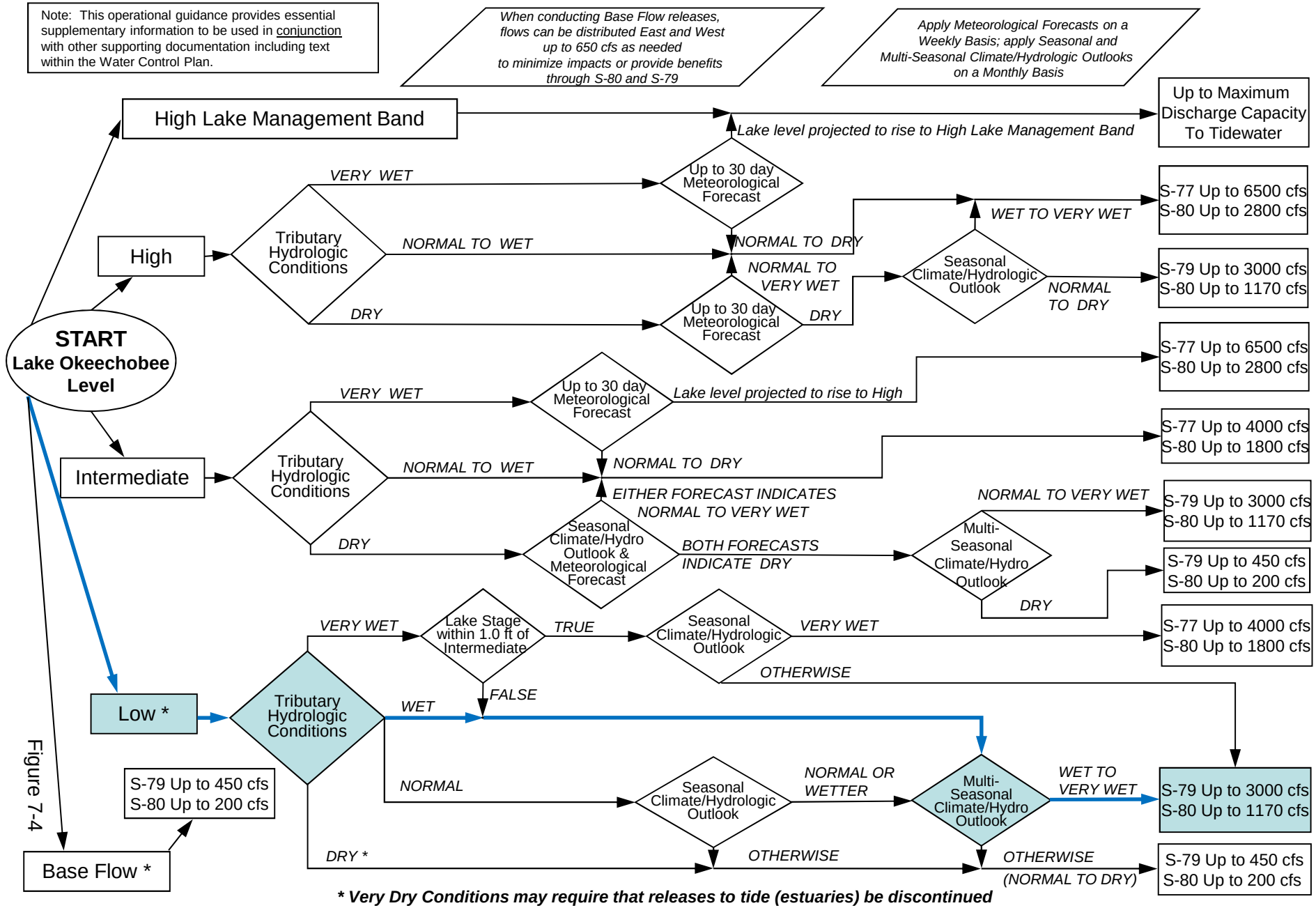
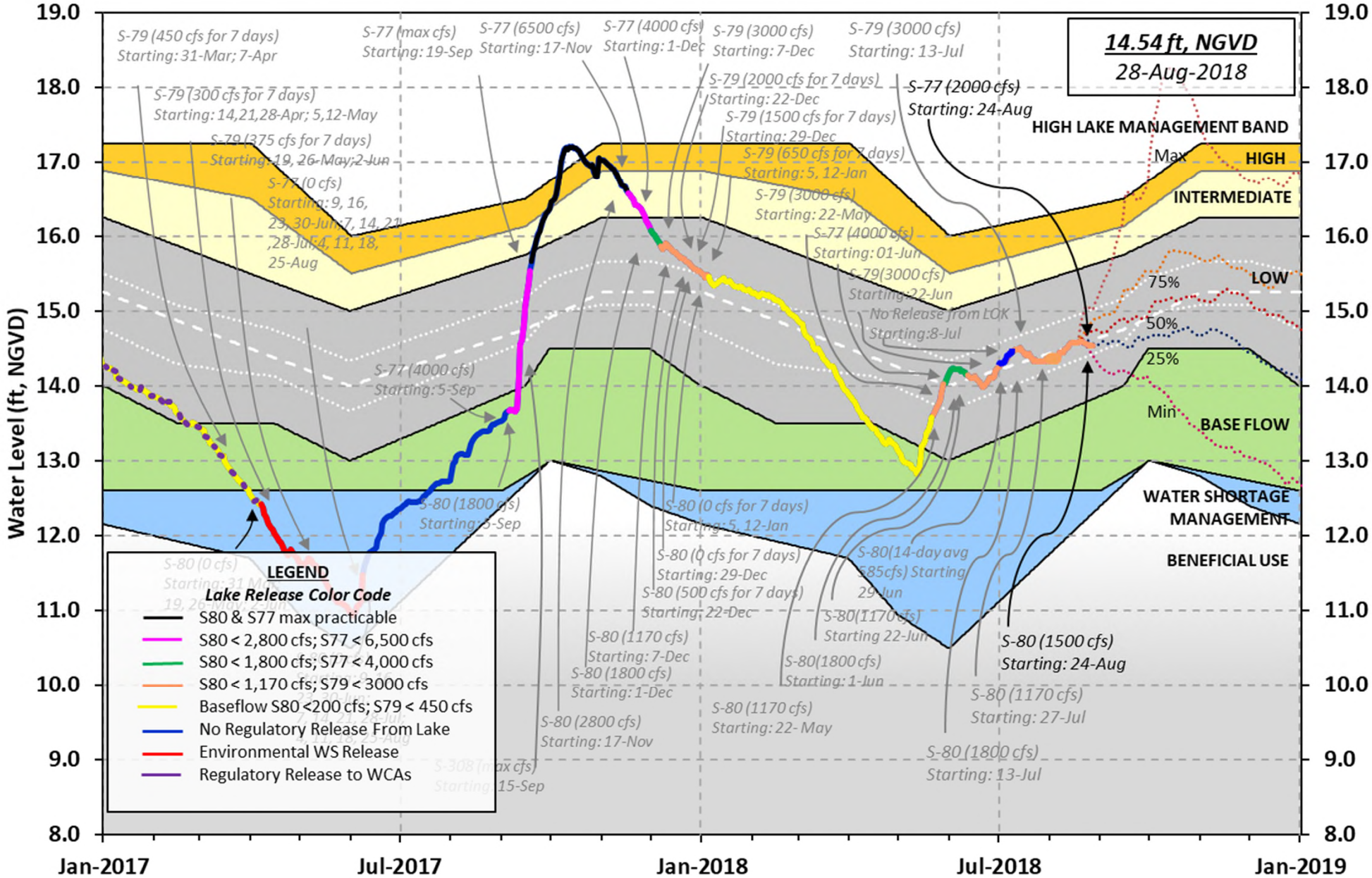


Figure 7-4

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 26 AUG 2018

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	14.53	13.49	14.70 (Official Elv)

Bottom of High Lake Mngmt= 16.41 Top of Water Short Mngmt= 12.28
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 13.14
Difference from Average LORS2008 1.39

26AUG (1965-2007) Period of Record Average 14.14
Difference from POR Average 0.39

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 8.47'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 6.67'
Bridge Clearance = 48.92'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
14.51	14.63	14.55	14.52	14.56	14.63	14.41	14.46

*Combination Okeechobee Avg-Daily Lake Average = 14.53 (*See Note)

Okeechobee Inflows (cfs):

S65E	0	S65EX1	2658	Fisheating Cr	237
S154	0	S191	0	S135 Pumps	0
S84	582	S133 Pumps	0	S2 Pumps	0
S84X	484	S127 Pumps	0	S3 Pumps	0
S71	182	S129 Pumps	0	S4 Pumps	0
S72	70	S131 Pumps	0	C5	0

Total Inflows: 4213

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	1097	S77	2072
S127 Culverts	0	S351	998	S308	874
S129 Culverts	0	S352	304		
S131 Culverts	0	L8 Canal Pt	5		

Total Outflows: 5349

****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	0.10	S308	0.21

Average Pan Evap x 0.75 Pan Coefficient = 0.12" = 0.01'

Lake Average Precipitation using NEXRAD: = 0.23" = 0.02'

Evaporation - Precipitation: = -0.11" = -0.01'
Evaporation - Precipitation using Lake Area of 730 square miles
is equal to 2233 cfs into the lake.
Lake Okeechobee (Change in Storage) Flow is -2118 cfs or -4200 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	14.39	0	0	0	0	0	0	(cfs)		
S193:											
S191:	18.96	14.39	0	0.0	0.0	0.0					
S135 Pumps:	13.39	14.36	0	0	0	0	0		(cfs)		
S135 Culverts:			0	0.0	0.0						
North West Shore											
S65E:	21.08	14.31	0	0.0	0.0	0.0	0.0	0.0	0.0		
S65EX1:	21.08	14.31	2658								
S127 Pumps:	13.25	14.48	0	0	0	0	0	0	(cfs)		
S127 Culvert:			0	0.0							
S129 Pumps:	12.84	14.59	0	0	0	0			(cfs)		
S129 Culvert:			0	0.0							
S131 Pumps:	12.88	14.82	0	0	0				(cfs)		
S131 Culvert:			0								
Fisheating Creek											
nr Palmdale		31.87	237								
nr Lakeport											
C5:		-NR-	0	-NR-	-NR-	-NR-					
South Shore											
S4 Pumps:	13.02	14.63	0	0	0	0			(cfs)		
S169:	14.64	13.01	0	0.0	0.0	0.0					
S310:	14.56		-94								
S3 Pumps:	9.42	14.58	0	0	0	0			(cfs)		
S354:	14.58	9.42	1097	1.7	1.7						
S2 Pumps:	10.34	14.54	0	0	0	0	0		(cfs)		
S351:	14.54	10.34	998	1.0	1.0	1.1					
S352:	14.64	10.02	304	0.2	0.4						
C10A:	-NR-	14.23		8.0	8.0	8.0	0.0	0.0			
L8 Canal PT		14.06	5								

S351 and S352 Temporary Pumps/S354 Spillway

S351:	10.34	14.54	998	-NR--NR--NR--NR--NR--NR-
S352:	10.02	14.64	304	-NR--NR--NR--NR-
S354:	9.42	14.58	1097	-NR--NR--NR--NR-

Caloosahatchee River (S77, S78, S79)

S47B:	13.53	13.03		2.5	2.5						
S47D:	11.54	11.50	-5	6.5							
S77:											
Spillway and Sector Flow:	14.61	11.40	******	3.0	3.0	3.0	0.0				
Flow Due to Lockages+:			2								
S77 Below USGS Flow Gage			1992								
S78:											
Spillway and Sector Flow:	11.19	3.21	3149	2.5	2.5	3.0	2.5				
Flow Due to Lockages+:			9								
S79:											
Spillway and Sector Flow:	3.07	1.16	5112	3.0	3.0	4.0	4.0	4.0	3.0	1.0	0.0
Flow Due to Lockages+:			5								
Percent of flow from S77			40%								
Chloride (ppm)			40								

St. Lucie Canal (S308, S80)

S308:											
Spillway and Sector Flow:	14.40	14.58	874.00	0.0	0.0	0.0	0.0				
Flow Due to Lockages+:			0								
S308 Below USGS Flow Gage			874								
S153:	18.67	14.40	114	0.4	0.0						
S80:											
Spillway and Sector Flow:	14.56	1.90	1542	0.0	1.0	0.0	0.0	0.1	0.0	3.1	
Flow Due to Lockages+:			13								
Percent of flow from S308			57%								

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

Speedy Point Top Salinity (mg/ml) 8850
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:	12.83	13.43	13.99	98	4
S78:	1.62	1.71	1.88	87	6
S79:	-13.10	-11.03	-10.36	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:	0.83	1.16	1.16	83	1
S80:	0.00	0.00	0.00	76	2
Okeechobee Average (Sites S78, S79 and S80 not included)	6.83	1.12	1.17		
Oke Nexrad Basin Avg	0.23	0.63	0.86		

Okeechobee Lake Elevations				14.53 Difference from 26AUG18
26AUG18	-1 Day =	25 AUG 2018	14.54	0.01
26AUG18	-2 Days =	24 AUG 2018	14.55	0.02
26AUG18	-3 Days =	23 AUG 2018	14.56	0.03
26AUG18	-4 Days =	22 AUG 2018	14.57	0.04
26AUG18	-5 Days =	21 AUG 2018	14.59	0.06
26AUG18	-6 Days =	20 AUG 2018	14.59	0.06
26AUG18	-7 Days =	19 AUG 2018	14.59	0.06
26AUG18	-30 Days =	27 JUL 2018	14.32	-0.21
26AUG18	-1 Year =	26 AUG 2017	13.49	-1.04
26AUG18	-2 Year =	26 AUG 2016	14.70	0.17

Long Term Mean 30day Avearge ET for Lake Alfred (Inches) = 4.37

Lake Okeechobee Net Inflow (LONIN)

			Average Flow over the previous 14 days		Avg-Daily Flow
26AUG18	Today =	26 AUG 2018	3888	MON	3229
26AUG18	-1 Day =	25 AUG 2018	4177	SUN	1907
26AUG18	-2 Days =	24 AUG 2018	4608	SAT	3084
26AUG18	-3 Days =	23 AUG 2018	5238	FRI	2516
26AUG18	-4 Days =	22 AUG 2018	5490	THU	321
26AUG18	-5 Days =	21 AUG 2018	6087	WED	3716
26AUG18	-6 Days =	20 AUG 2018	7013	TUE	2987
26AUG18	-7 Days =	19 AUG 2018	6984	MON	4940
26AUG18	-8 Days =	18 AUG 2018	6766	SUN	5418
26AUG18	-9 Days =	17 AUG 2018	6694	SAT	1583
26AUG18	-10 Days =	16 AUG 2018	6802	FRI	3482
26AUG18	-11 Days =	15 AUG 2018	6980	THU	3156
26AUG18	-12 Days =	14 AUG 2018	7185	WED	10461
26AUG18	-13 Days =	13 AUG 2018	6644	TUE	7625

S65E

			Average Flow over previous 14 days		Avg-Daily Flow
26AUG18	Today=	26 AUG 2018	0	MON	0
26AUG18	-1 Day =	25 AUG 2018	0	SUN	0
26AUG18	-2 Days =	24 AUG 2018	0	SAT	0
26AUG18	-3 Days =	23 AUG 2018	0	FRI	0
26AUG18	-4 Days =	22 AUG 2018	0	THU	0
26AUG18	-5 Days =	21 AUG 2018	0	WED	0
26AUG18	-6 Days =	20 AUG 2018	0	TUE	0
26AUG18	-7 Days =	19 AUG 2018	0	MON	0
26AUG18	-8 Days =	18 AUG 2018	0	SUN	0
26AUG18	-9 Days =	17 AUG 2018	0	SAT	0
26AUG18	-10 Days =	16 AUG 2018	0	FRI	0
26AUG18	-11 Days =	15 AUG 2018	0	THU	0

26AUG18 -12 Days =	14 AUG 2018	0	WED	|	0
26AUG18 -13 Days =	13 AUG 2018	0	TUE	|	0

S65EX1

		Average Flow over previous 14 days			Avg-Daily Flow
26AUG18	Today=	26 AUG 2018	3779	MON	2658
26AUG18	-1 Day =	25 AUG 2018	3935	SUN	2700
26AUG18	-2 Days =	24 AUG 2018	4090	SAT	2951
26AUG18	-3 Days =	23 AUG 2018	4223	FRI	3196
26AUG18	-4 Days =	22 AUG 2018	4337	THU	3390
26AUG18	-5 Days =	21 AUG 2018	4436	WED	3752
26AUG18	-6 Days =	20 AUG 2018	4513	TUE	3936
26AUG18	-7 Days =	19 AUG 2018	4586	MON	4101
26AUG18	-8 Days =	18 AUG 2018	4651	SUN	3947
26AUG18	-9 Days =	17 AUG 2018	4727	SAT	4070
26AUG18	-10 Days =	16 AUG 2018	4795	FRI	4199
26AUG18	-11 Days =	15 AUG 2018	4836	THU	4416
26AUG18	-12 Days =	14 AUG 2018	4847	WED	4707
26AUG18	-13 Days =	13 AUG 2018	4808	TUE	4878

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)
26 AUG 2018	4102	3950	6287	10264
25 AUG 2018	4035	3806	5913	9470
24 AUG 2018	3442	3340	5057	9623
23 AUG 2018	1787	1794	3115	6501
22 AUG 2018	1891	2036	3190	6711
21 AUG 2018	2276	2414	3210	6662
20 AUG 2018	2173	2467	3182	6638
19 AUG 2018	1792	2171	3204	6556
18 AUG 2018	1794	2117	3229	6655
17 AUG 2018	1791	2183	3181	7154
16 AUG 2018	1956	2150	3187	6658
15 AUG 2018	1507	1524	3175	6408
14 AUG 2018	636	1497	3219	8000
13 AUG 2018	2562	2632	3168	6827

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)
26 AUG 2018	-187	1978	510	894	10
25 AUG 2018	-15	1192	389	1253	9
24 AUG 2018	51	2292	740	1267	9
23 AUG 2018	99	1918	809	1273	-4
22 AUG 2018	74	1563	639	1222	3
21 AUG 2018	-33	1111	379	974	-3
20 AUG 2018	-14	782	3	1279	-2
19 AUG 2018	11	1851	190	1533	1
18 AUG 2018	75	2094	605	1224	2
17 AUG 2018	38	1857	591	771	15
16 AUG 2018	51	1303	230	173	-2
15 AUG 2018	71	811	0	748	-134
14 AUG 2018	5	748	36	399	-68
13 AUG 2018	19	1912	581	492	-15

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
26 AUG 2018	1736	1733	3087
25 AUG 2018	623	927	3107
24 AUG 2018	2166	2175	3239
23 AUG 2018	3015	3272	3560
22 AUG 2018	3389	3740	4049
21 AUG 2018	2333	2350	3676
20 AUG 2018	1361	1666	1925
19 AUG 2018	2	121	16
18 AUG 2018	553	614	744
17 AUG 2018	2122	2459	2752
16 AUG 2018	3148	3601	3587
15 AUG 2018	3172	3640	4091
14 AUG 2018	2079	2218	3640
13 AUG 2018	1213	655	1812

*** 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

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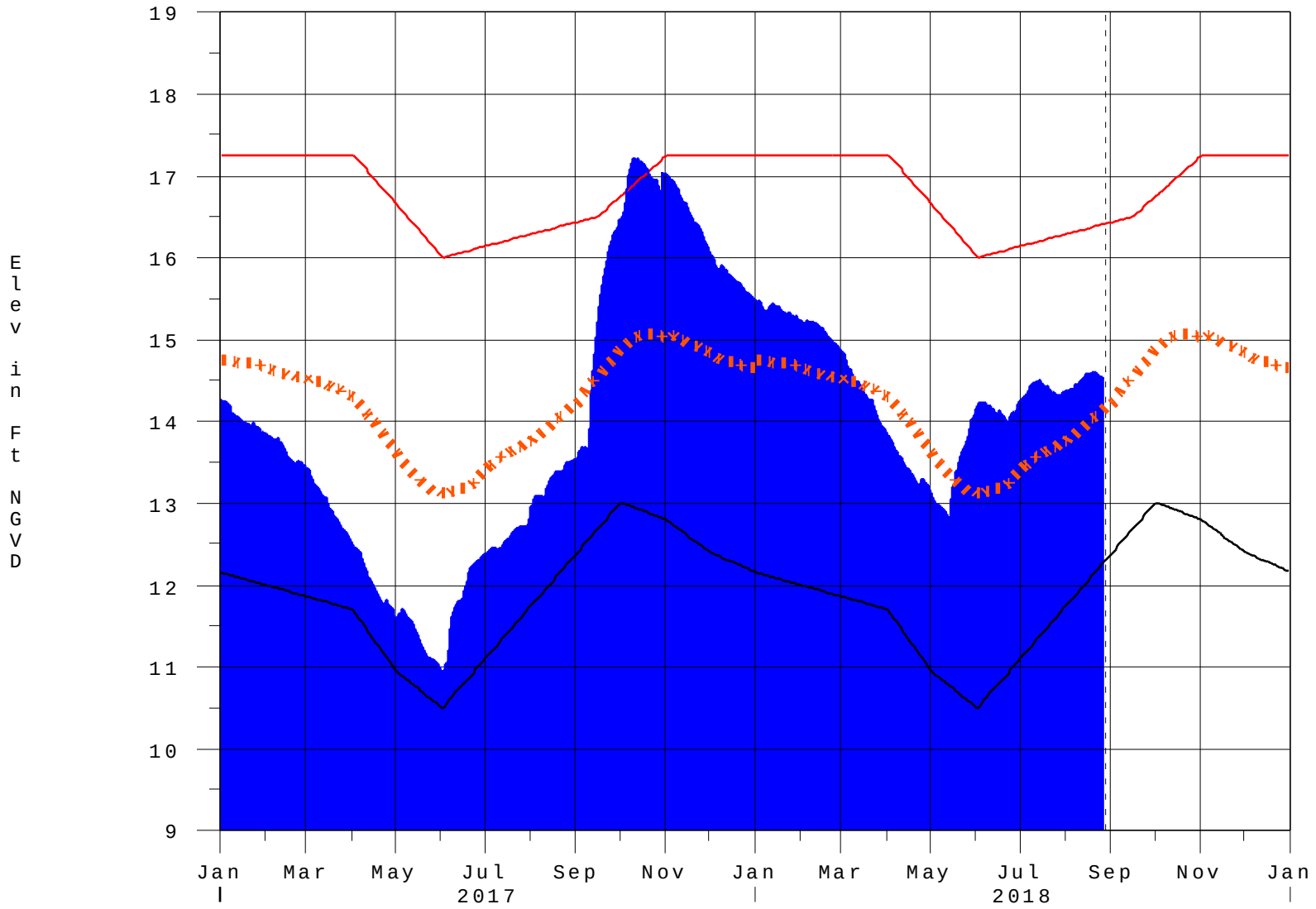
Report Generated 27AUG2018 @ 14:38 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

27AUG18 14:45:23



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