

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 9/12/2016 (ENSO Neutral Condition)

Lake Okeechobee Net Inflow Outlook:

The Lake Okeechobee Net Inflow Outlook has been computed using 4 methods: Croley's method¹, the SFWMD empirical method², a sub-sampling of Neutral years³ and a sub-sampling of warm years of the Atlantic Multi-decadal Oscillation (AMO) in combination with Neutral ENSO years⁴. 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 (Sep-Feb)	N/A	N/A	1.64	Wet	2.08	Very Wet	3.13	Very Wet
Multi Seasonal (Sep-Apr)	N/A	N/A	1.60	Normal	2.05	Normal	3.13	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:](#)

9062 cfs 14-day running average for Lake Okeechobee Net Inflow through 9/11/2016. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Very Wet.

0.32 for Palmer Index on 9/10/2016.

According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Normal.

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

[LORS2008 Classification Tables:](#)

Lake Okeechobee Stage on 9/12/2016

Lake Okeechobee Stage: **15.22 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		16.48	
Operational Band	High sub-band	16.11	
	Intermediate sub-band	15.72	
	Low sub-band	13.96	← 15.22
Base Flow sub-band		12.73	
Beneficial Use sub-band		12.61	
Water Shortage Management Band			

[Part C of LORS2008: Discharge to WCA's](#)

Release Guidance Flow Chart Outcome: Up to Maximum Releases to the WCAs if Desirable or with Minimum Everglades Impacts

[Part D of LORS2008: Discharge to Tidewater](#)

Release Guidance Flow Chart Outcome: S-77 up to 4000 cfs and S-80 up to 1800 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](#)

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LORS2008 Implementation on 9/12/2016 (ENSO Neutral Condition):

Status for week ending **9/13/2016**:

District wide, Raindar rainfall was 1.08 inches for the week. Lake stage on 9/5/2016 was 15.22 ft, up 0.21 ft from last week.

The updated August 2016 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 **Very Wet**. The PDSI indicates normal condition and the LONIN is Very Wet. The classification is based on the wetter of the two.

Water Supply Risk Evaluation

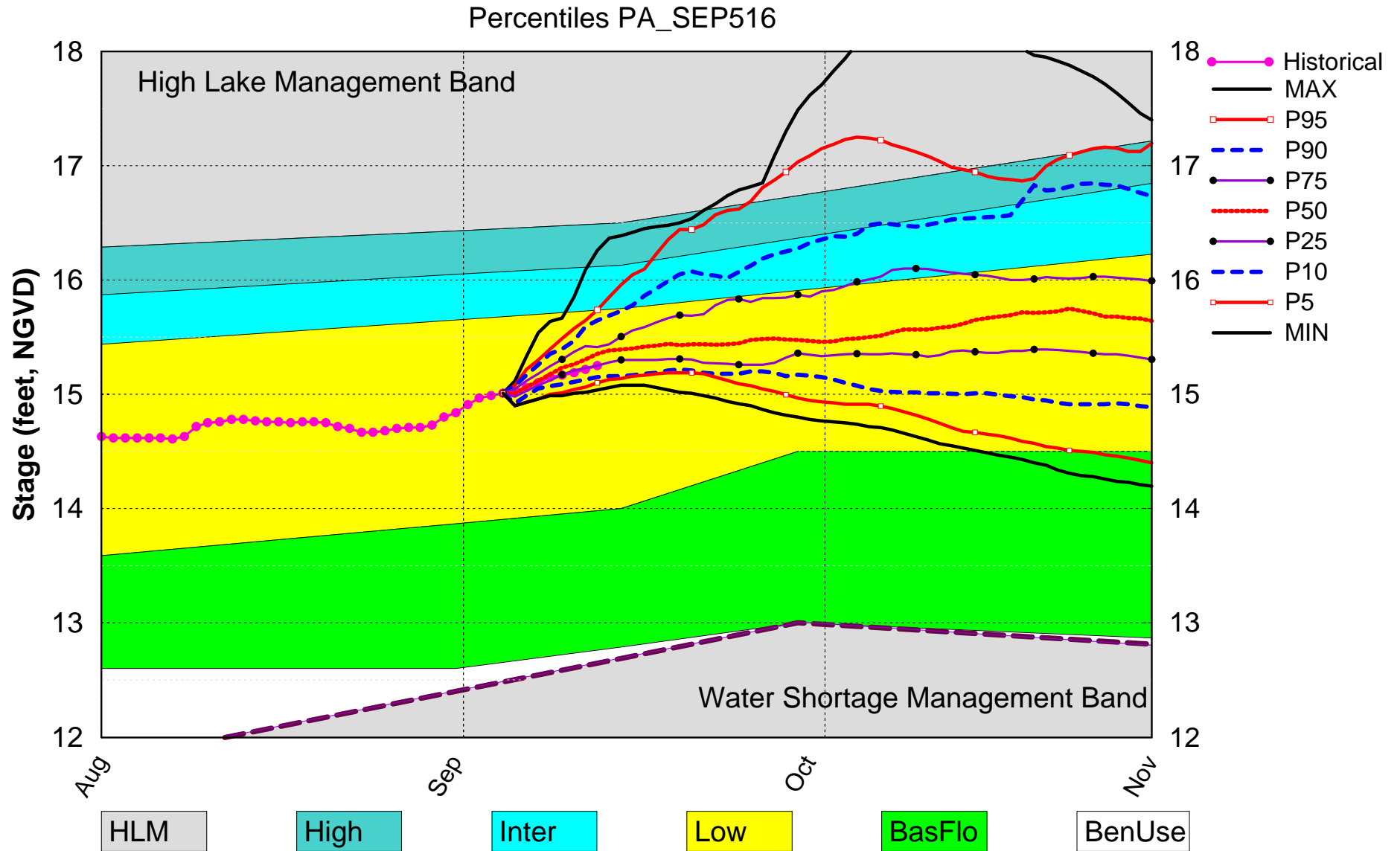
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Low Sub-Band	L
	Palmer Index for LOK Tributary Conditions	0.32 (Normal)	L
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Normal	L
	LOK Seasonal Net Inflow Forecast ENSO Neutral Years	2.08 ft (Normal to Extremely Wet)	L
	LOK Multi-Seasonal Net Inflow Forecast ENSO Neutral Years	2.05 ft (Normal)	M
WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Above Line 1 (16.61 ft)	L
	WCA 2A: Site 2-17 HW	Above Line1 (12.84 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.74 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 forecasts use slightly different classification intervals than those used by the 2008-LORS.

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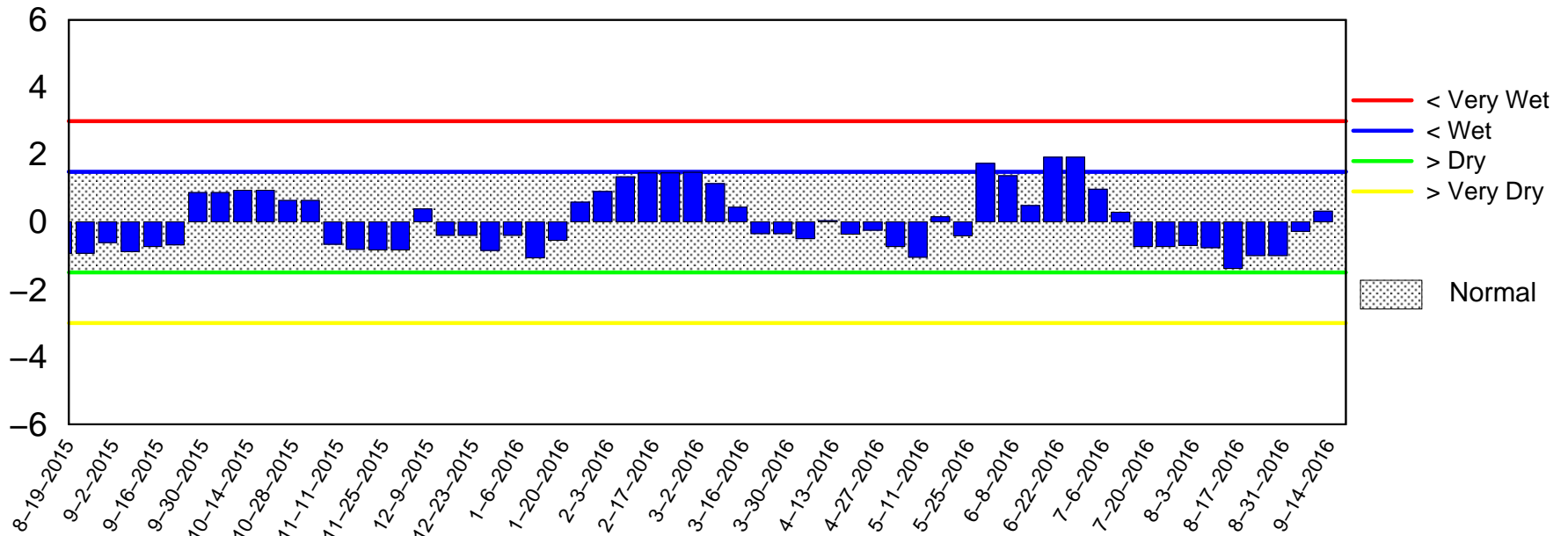
Lake Okeechobee SFWMM Sept 2016 Dynamic Position Analysis



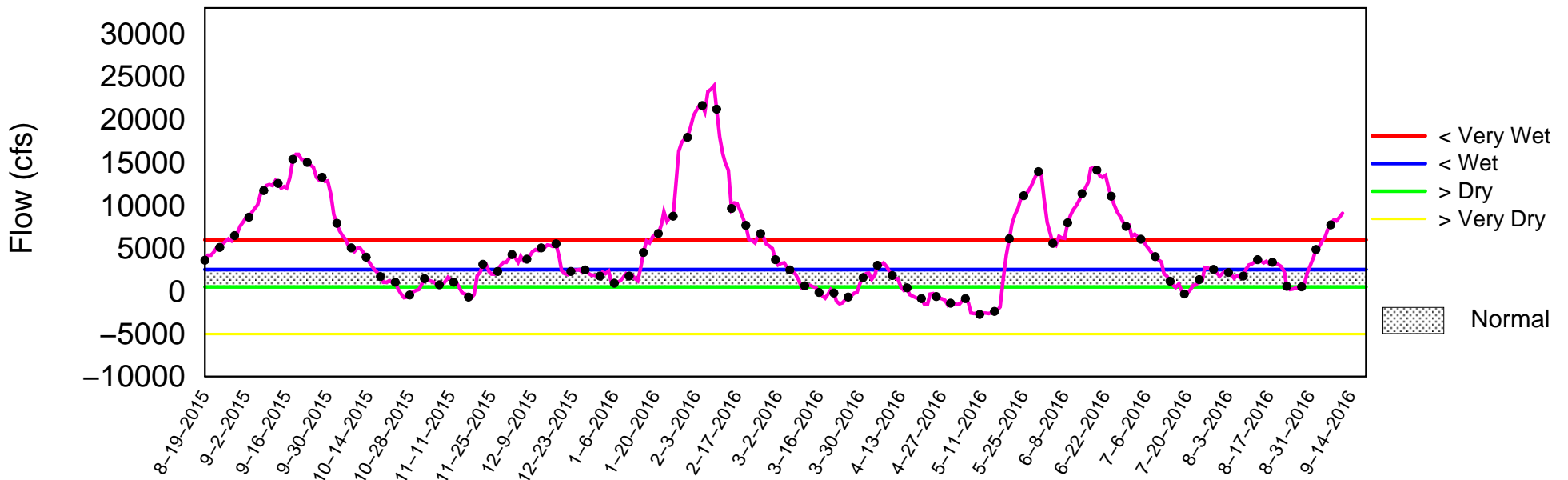
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of September 12 2016

Palmer Index



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



Tue Sep 13 10:47:36 2016

2008 LORS

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

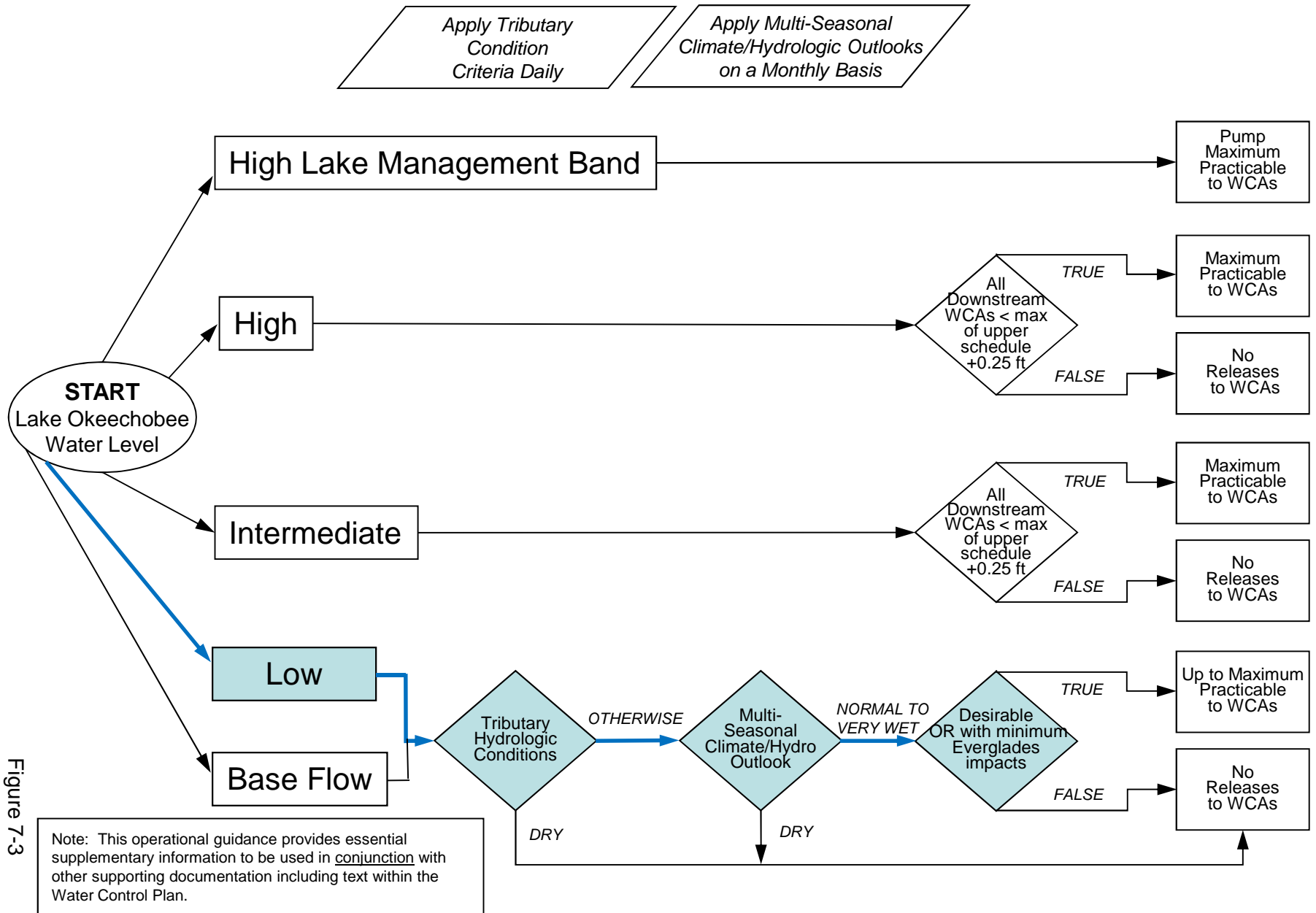


Figure 7-3

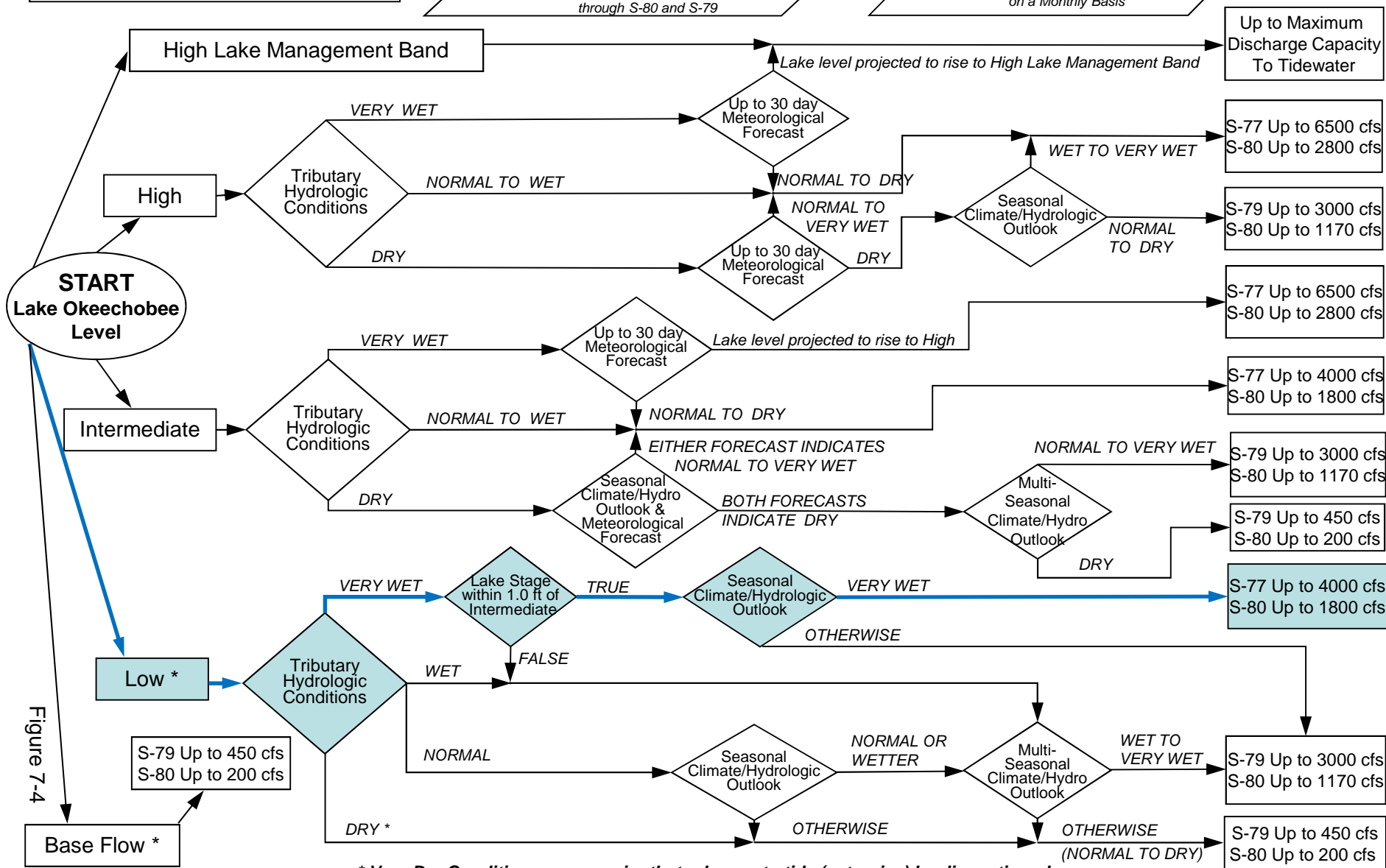
2008 LORS

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

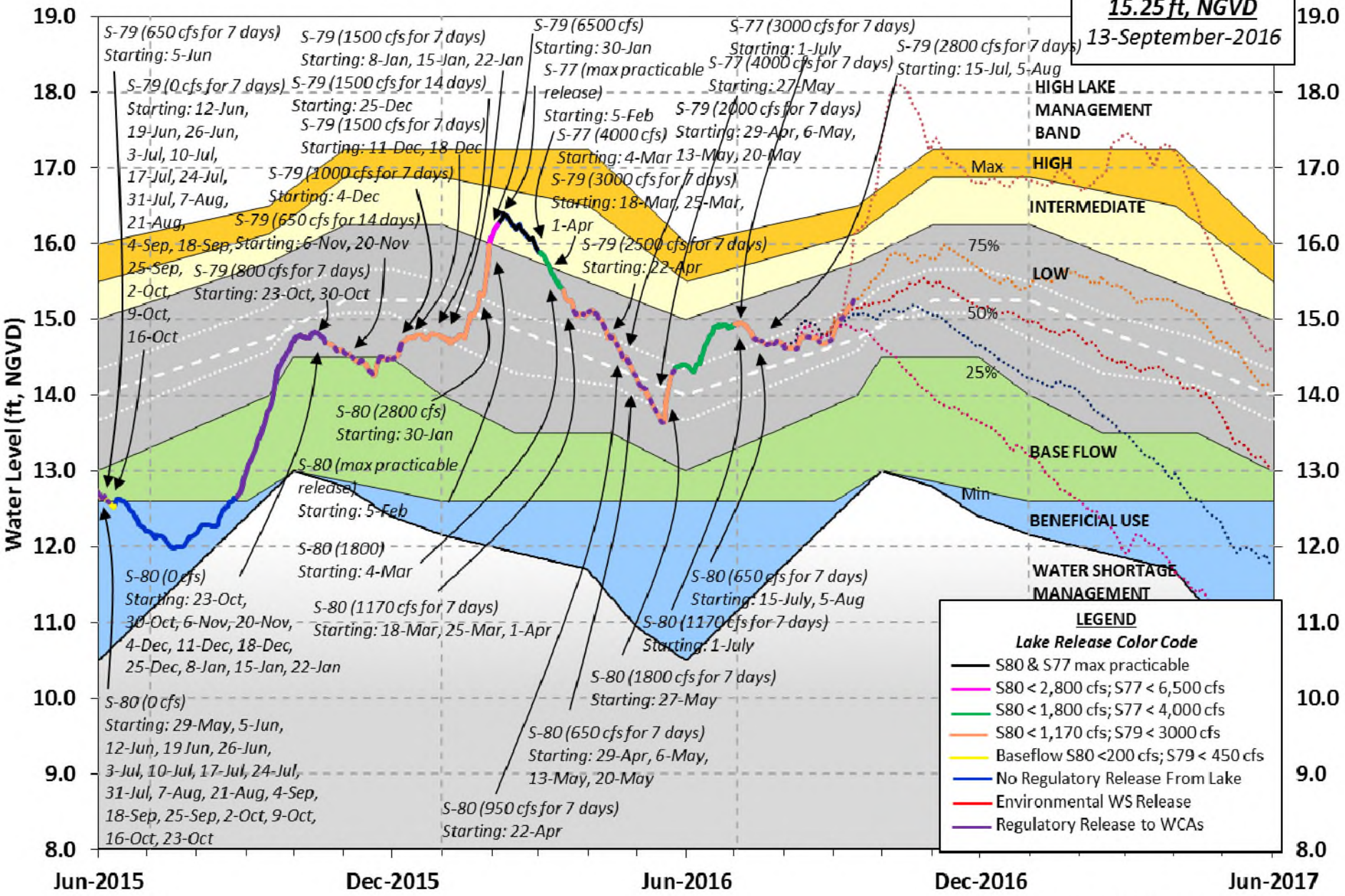


* Very Dry Conditions may require that releases to tide (estuaries) be discontinued

Figure 7-4

Lake Okeechobee Water Level History and Projected Stages

15.25 ft, NGVD
13-September-2016



Jun-2015

Dec-2015

Jun-2016

Dec-2016

Jun-2017

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 11 SEP 2016

Okeechobee Lake Regulation	Elevation	Last Year	2YRS Ago
	(ft-NGVD)	(ft-NGVD)	(ft-NGVD)
*Okeechobee Lake Elevation	15.22	13.62	14.51 (Official Elv)
Bottom of High Lake Mngmt=	16.48	Top of Water Short Mngmt=	12.61
Currently in Operational Management Band			

Simulated Average LORS2008 [1965-2000]	13.45
Difference from Average LORS2008	1.77

11SEP (1965-2007) Period of Record Average	14.49
Difference from POR Average	0.73

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 9.16'
 ++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 7.36'
 Bridge Clearance = 48.95'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
15.12	15.31	15.19	15.20	15.25	15.36	15.17	15.19

*Combination Okeechobee Avg-Daily Lake Average = 15.22
 (*See Note)

Okeechobee Inflows (cfs):

S65E	5155	C5	-103	Fisheating Cr	916
S154	103	S191	300	S135 Pumps	0
S84	0	S133 Pumps	102	S2 Pumps	0
S84X	771	S127 Pumps	92	S3 Pumps	0
S71	281	S129 Pumps	0	S4 Pumps	0
S72	44	S131 Pumps	0		
Total Inflows:	7660				

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	(Not Used)
S127 Culverts	0	S351	0	S77Below	557
(USED)					
S129 Culverts	0	S352	109	S308	(Not Used)

South Shore

S4 Pumps:	11.23	15.27	0	0	0	0				(cfs)
S169:	15.25	11.22	0	0.0	0.0	0.0				
S310:	15.18		1							
S3 Pumps:	10.60	15.32	0	0	0	0				(cfs)
S354:	15.32	10.60	0	0.0	0.0					
S2 Pumps:	9.94	15.32	0	0	0	0	0			(cfs)
S351:	15.32	9.94	0	0.0	0.0	0.0				
S352:	15.39	10.56	109	0.0	0.0					
C10A:	-NR-	14.24		0.0	0.0	8.0	0.0	0.0		
L8 Canal PT		14.07	220							

S351 and S352 Temporary Pumps/S354 Spillway

S351:	9.94	15.32	0	-NR--NR--NR--NR--NR--NR-
S352:	10.56	15.39	109	-NR--NR--NR--NR-
S354:	10.60	15.32	0	-NR--NR--NR--NR-

Caloosahatchee River (S77, S78, S79)

S47B:	13.10	11.20		1.0	1.0					
S47D:	11.12	11.11	88	6.0						
S77:										
Spillway and Sector Flow:										
15.33	11.17	557	0.0	0.0	2.5	0.0				
Flow Due to Lockages+:		5								
S77 Below USGS Flow Gage		557								
S78:										
Spillway and Sector Flow:										
11.21	2.90	1224	0.0	0.0	1.0	2.5				
Flow Due to Lockages+:		18								
S79:										
Spillway and Sector Flow:										
3.03	1.53	3844	1.0	1.0	2.0	2.0	2.0	2.0	2.0	
2.0										
Flow Due to Lockages+:		10								
Percent of flow from S77		17%								
Chloride (ppm)		44								

St. Lucie Canal (S308, S80)

S308:										
Spillway and Sector Flow:										
15.18	14.55	976	1.7	1.7	1.7	1.7				
Flow Due to Lockages+:		2								
S308 Below USGS Flow Gage		976								
S153:	19.08	14.32	176	0.0	0.0					
S80:										
Spillway and Sector Flow:										
14.48	0.73	1040	0.0	0.5	0.5	0.0	0.5	0.5	0.0	
Flow Due to Lockages+:		21								
Percent of flow from S308		65%								

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

Speedy Point Top Salinity (mg/ml) 2847
 Speedy Point Bottom Salinity (mg/ml) 5310

+ 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 Speed (mph)	1-Day (inches)	3-Day (inches)	7-Day (inches)	Direction (Degø)	Wind ---
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:	0.03	0.03	0.46	155	0
S78:	0.07	0.07	1.05	12	1
S79:	0.43	0.43	3.22	141	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:	0.34	0.34	0.53	60	1
S80:	0.35	0.35	0.58	154	2
Okeechobee Average (Sites S78, S79 and S80 not included)	0.19	0.03	0.08		

Oke Nexrad Basin Avg	0.35	0.36	0.83		

Okeechobee Lake Elevations	11 SEP 2016	15.22	Difference from
11SEP16			
11SEP16 -1 Day =	10 SEP 2016	15.19	-0.03
11SEP16 -2 Days =	09 SEP 2016	15.17	-0.05
11SEP16 -3 Days =	08 SEP 2016	15.15	-0.07
11SEP16 -4 Days =	07 SEP 2016	15.10	-0.12
11SEP16 -5 Days =	06 SEP 2016	15.06	-0.16
11SEP16 -6 Days =	05 SEP 2016	15.03	-0.19
11SEP16 -7 Days =	04 SEP 2016	15.01	-0.21
11SEP16 -30 Days =	12 AUG 2016	14.78	-0.44
11SEP16 -1 Year =	11 SEP 2015	13.62	-1.60
11SEP16 -2 Year =	11 SEP 2014	14.51	-0.71

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
11SEP16	Today =	11 SEP 2016	9070 MON	8366
11SEP16	-1 Day =	10 SEP 2016	8605 SUN	6507
11SEP16	-2 Days =	09 SEP 2016	8360 SAT	5959
11SEP16	-3 Days =	08 SEP 2016	8288 FRI	11215
11SEP16	-4 Days =	07 SEP 2016	7713 THU	9120
11SEP16	-5 Days =	06 SEP 2016	7158 WED	7100
11SEP16	-6 Days =	05 SEP 2016	6332 TUE	5719
11SEP16	-7 Days =	04 SEP 2016	5829 MON	6529
11SEP16	-8 Days =	03 SEP 2016	5157 SUN	5733
11SEP16	-9 Days =	02 SEP 2016	4836 SAT	13678
11SEP16	-10 Days =	01 SEP 2016	4156 FRI	15566
11SEP16	-11 Days =	31 AUG 2016	3159 THU	9605
11SEP16	-12 Days =	30 AUG 2016	2295 WED	16148
11SEP16	-13 Days =	29 AUG 2016	1135 TUE	5738

S65E

Average Flow over previous 14 days				Avg-Daily Flow
11SEP16	Today=	11 SEP 2016	3369 MON	5420
11SEP16	-1 Day =	10 SEP 2016	3057 SUN	5243
11SEP16	-2 Days =	09 SEP 2016	2766 SAT	4634
11SEP16	-3 Days =	08 SEP 2016	2511 FRI	3879
11SEP16	-4 Days =	07 SEP 2016	2304 THU	3786
11SEP16	-5 Days =	06 SEP 2016	2104 WED	3812
11SEP16	-6 Days =	05 SEP 2016	1904 TUE	3386
11SEP16	-7 Days =	04 SEP 2016	1733 MON	3304
11SEP16	-8 Days =	03 SEP 2016	1570 SUN	3374
11SEP16	-9 Days =	02 SEP 2016	1411 SAT	3181
11SEP16	-10 Days =	01 SEP 2016	1281 FRI	2585
11SEP16	-11 Days =	31 AUG 2016	1182 THU	1686
11SEP16	-12 Days =	30 AUG 2016	1146 WED	1543
11SEP16	-13 Days =	29 AUG 2016	1126 TUE	1335

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)
11 SEP 2016		1104	2462	7642
10 SEP 2016		1197	2491	7603
09 SEP 2016		1635	2995	7993
08 SEP 2016		313	4180	11433
07 SEP 2016		358	4316	11572
06 SEP 2016		316	3744	11488
05 SEP 2016		1184	2344	7650
04 SEP 2016		1406	2602	8119
03 SEP 2016		322	2402	8743
02 SEP 2016		357	2615	8214

01 SEP 2016	827	2848	7138
31 AUG 2016	1744	2328	5170
30 AUG 2016	1757	1756	-NR-
29 AUG 2016	945	2046	3877

	S-310	S-351	S-352	S-354	L8 Canal Pt
	Discharge	Discharge	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL DAY)	(ALL DAY)	(ALL DAY)	(ALL DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)
11 SEP 2016	2	0	216	0	437
10 SEP 2016	-56	0	999	0	431
09 SEP 2016	-121	0	0	0	429
08 SEP 2016	-251	0	0	0	394
07 SEP 2016	-238	0	0	0	364
06 SEP 2016	-194	0	83	0	277
05 SEP 2016	-81	0	656	0	8
04 SEP 2016	8	0	1063	0	1
03 SEP 2016	-86	0	734	0	1
02 SEP 2016	-152	0	387	0	-9
01 SEP 2016	-128	0	44	0	5
31 AUG 2016	-113	0	0	0	17
30 AUG 2016	18	0	468	0	14
29 AUG 2016	0	0	1003	0	13

	S-308	Below S-308	S-80
	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)
11 SEP 2016		1936	1242
10 SEP 2016		1677	1542
09 SEP 2016		1155	929
08 SEP 2016		38	758
07 SEP 2016		167	1004
06 SEP 2016		507	-NR-
05 SEP 2016		894	1024
04 SEP 2016		1980	1235
03 SEP 2016		1915	1554
02 SEP 2016		1186	1007
01 SEP 2016		-193	620
31 AUG 2016		89	164
30 AUG 2016		391	633
29 AUG 2016		1019	843

*** NOTE: Discharge (ALL DAY) is computed using Spillway, Sector Gate and Lockages Discharges from 0015 hrs to 2400 hrs.

(I) - Flows preceded 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 Okeechobee 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/>

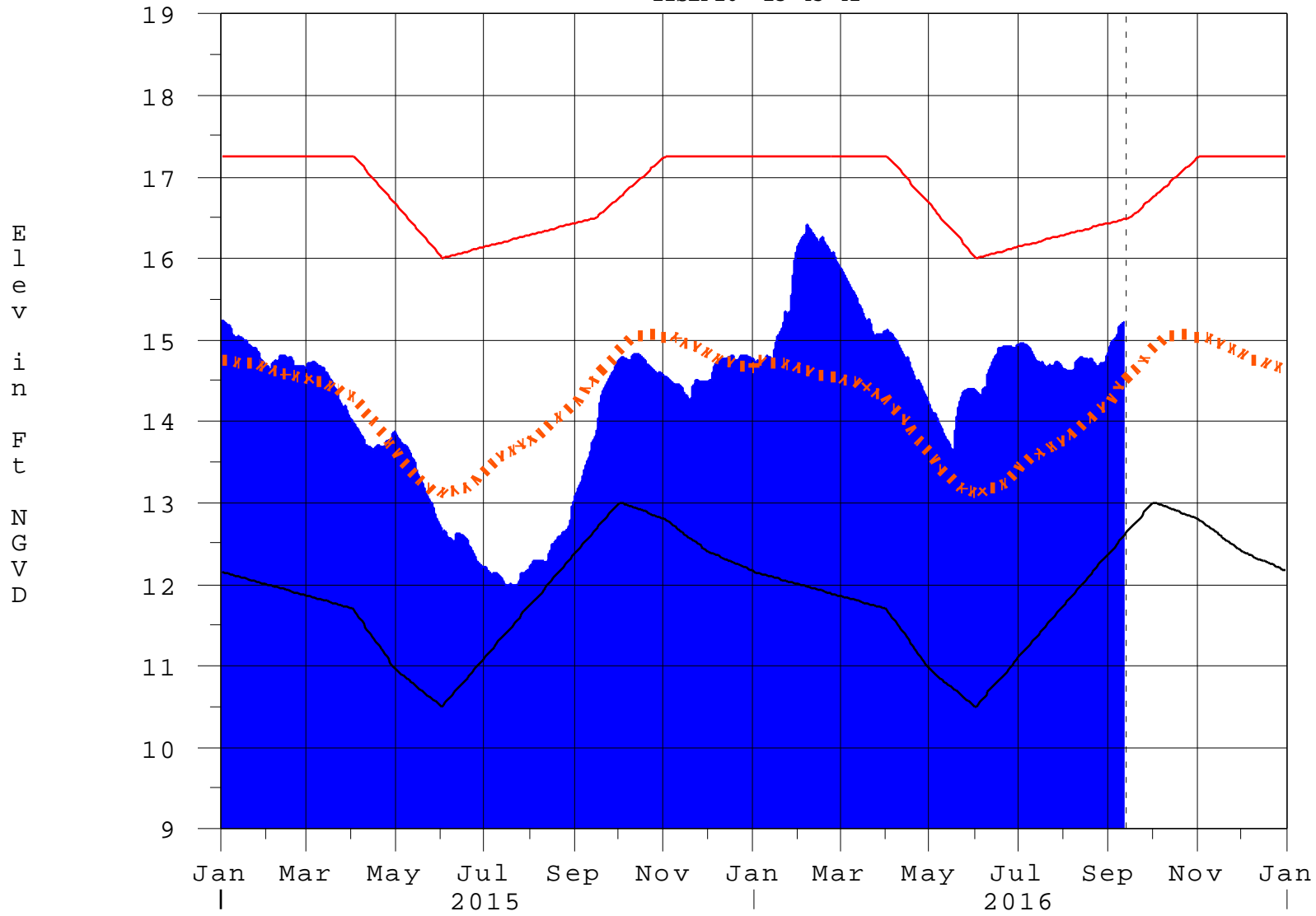
\$ For information regarding Lake Okeechobee Service Area water restrictions

please refer to www.sfwmd.gov

Report Generated 12SEP2016 @ 13:40 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

12SEP16 13:45:42



- 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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Tributary Hydrologic Classification*	Palmer Index Class Limits	2-wk Mean L.O. Net Inflow Class Limits
Very Wet	3.0 or greater	Greater \geq 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