

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 10/10/2016 (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 (Oct-Mar)	N/A	N/A	1.36	Normal	1.68	Wet	2.20	Very Wet
Multi Seasonal (Oct-Apr)	N/A	N/A	1.29	Normal	1.60	Normal	2.14	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.

[Tributary Hydrologic Conditions Graph:](#)

12773 cfs 14-day running average for Lake Okeechobee Net Inflow through 10/9/2016. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Very Wet.

-0.72 for Palmer Index on 10/8/2016.

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 10/10/2016

Lake Okeechobee Stage: **16.04 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		16.88	
Operational Band	High sub-band	16.51	
	Intermediate sub-band	16.01	← 16.04
	Low sub-band	14.50	
Base Flow sub-band		12.96	
Beneficial Use sub-band		12.95	
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-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 10/10/2016 (ENSO Neutral Condition):

Status for week ending 10/10/2016:

District wide, Raindar rainfall was 2.14 inches for the week. Lake stage on 10/10/2016 was 16.04 ft, up 0.28 ft from last week.

The updated October 2016 SFWMM Dynamic Position Analysis [percentile graph](#) for Lake Okeechobee show that the current lake stage is in the Intermediate 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

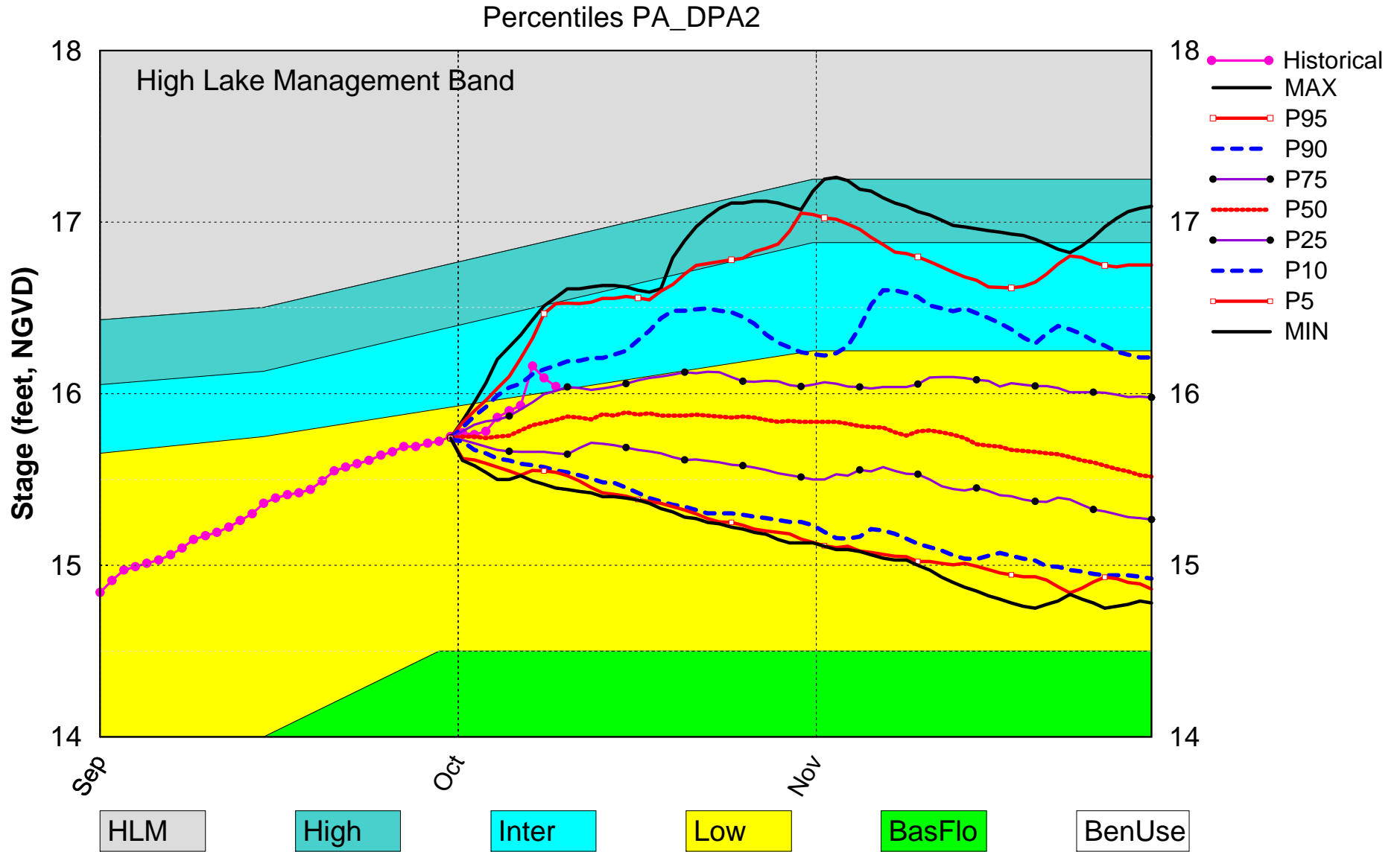
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Low Sub-Band	L
	Palmer Index for LOK Tributary Conditions	-0.72 (Normal)	L
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Below Normal	M
	LOK Seasonal Net Inflow Outlook	1.68 ft (Normal to Extremely Wet)	L
	ENSO Neutral Years		
	LOK Multi-Seasonal Net Inflow Outlook	1.60 ft (Normal)	M
ENSO Neutral Years			
WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Above Line 1 (16.98 ft)	L
	WCA 2A: Site 2-17 HW	Above Line1 (13.35 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Above Line 1 (10.80 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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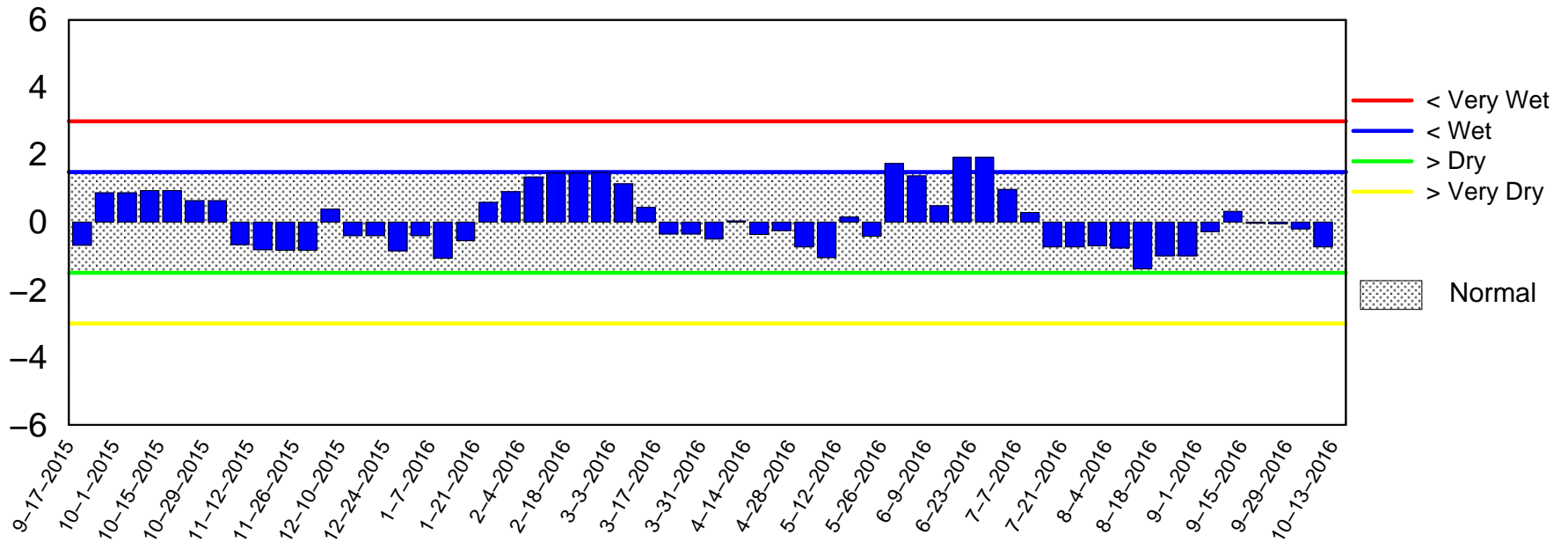
Lake Okeechobee SFWMM October 2016 Position Analysis



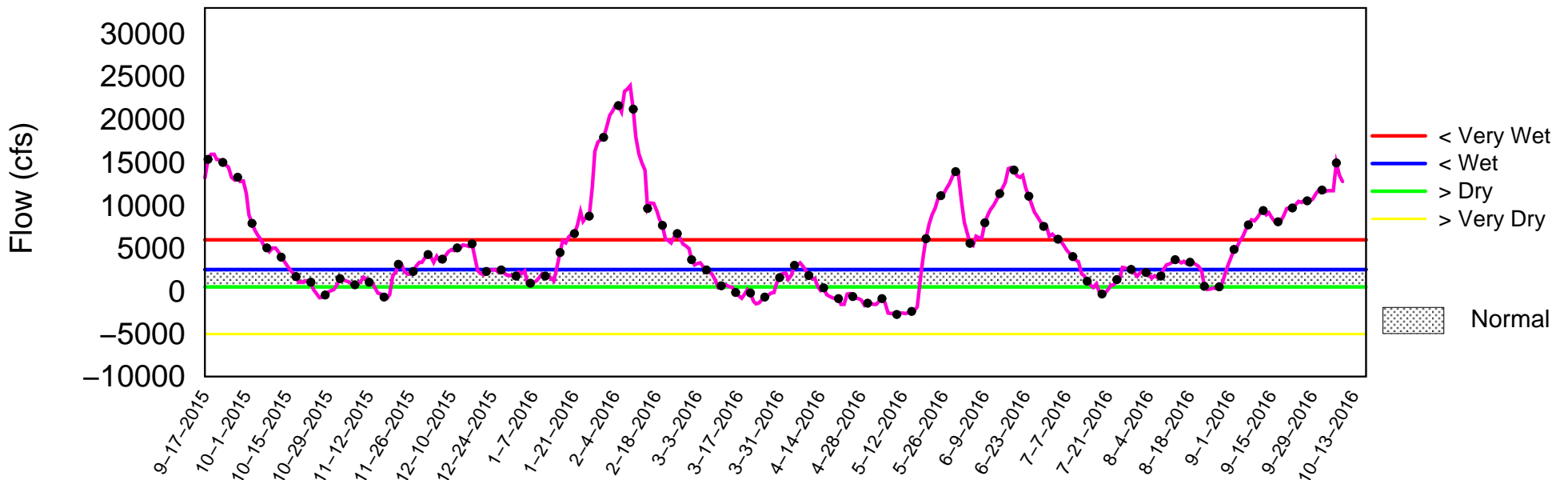
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of October 10 2016

Palmer Index



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



2008 LORS

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

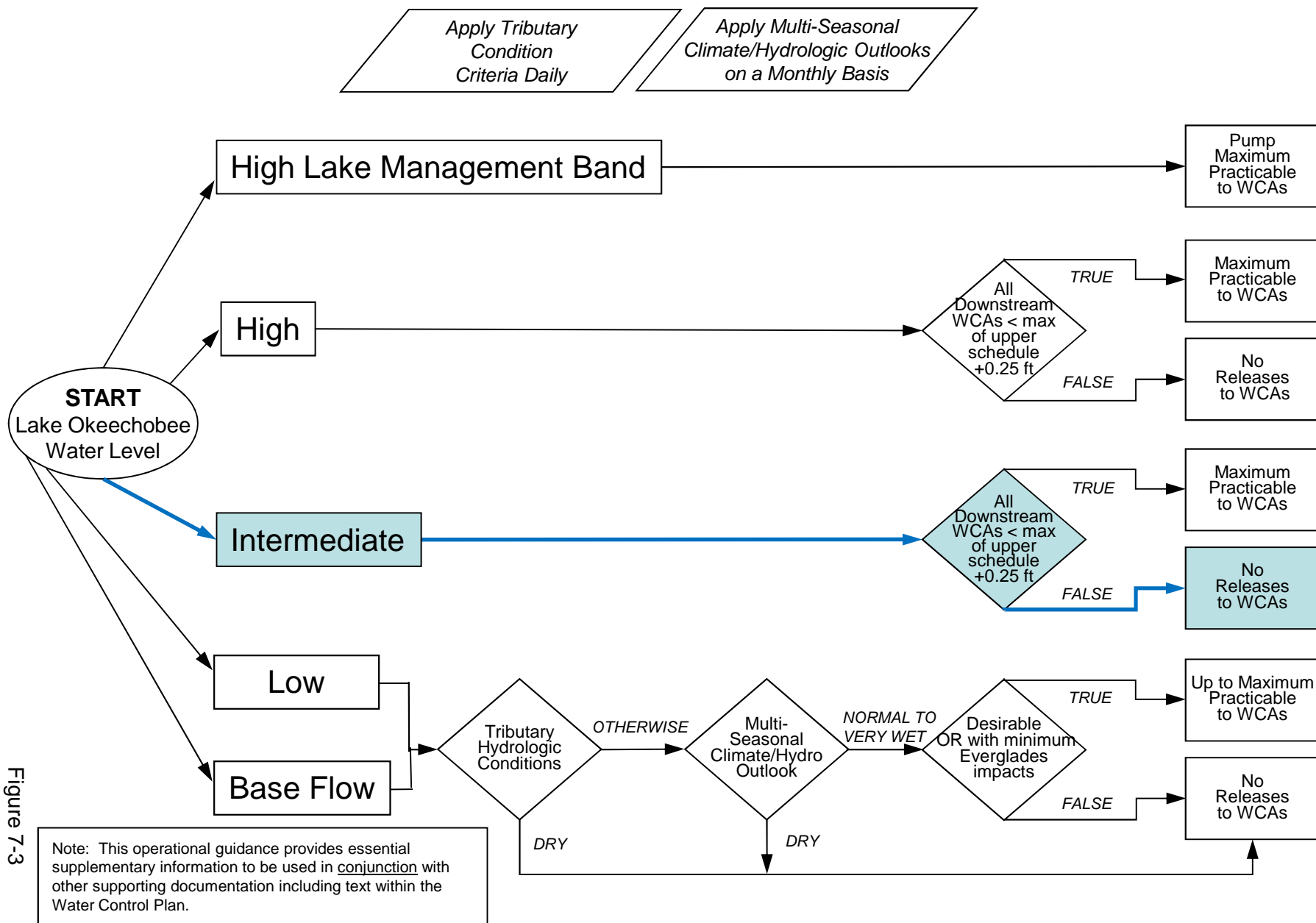


Figure 7-3

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

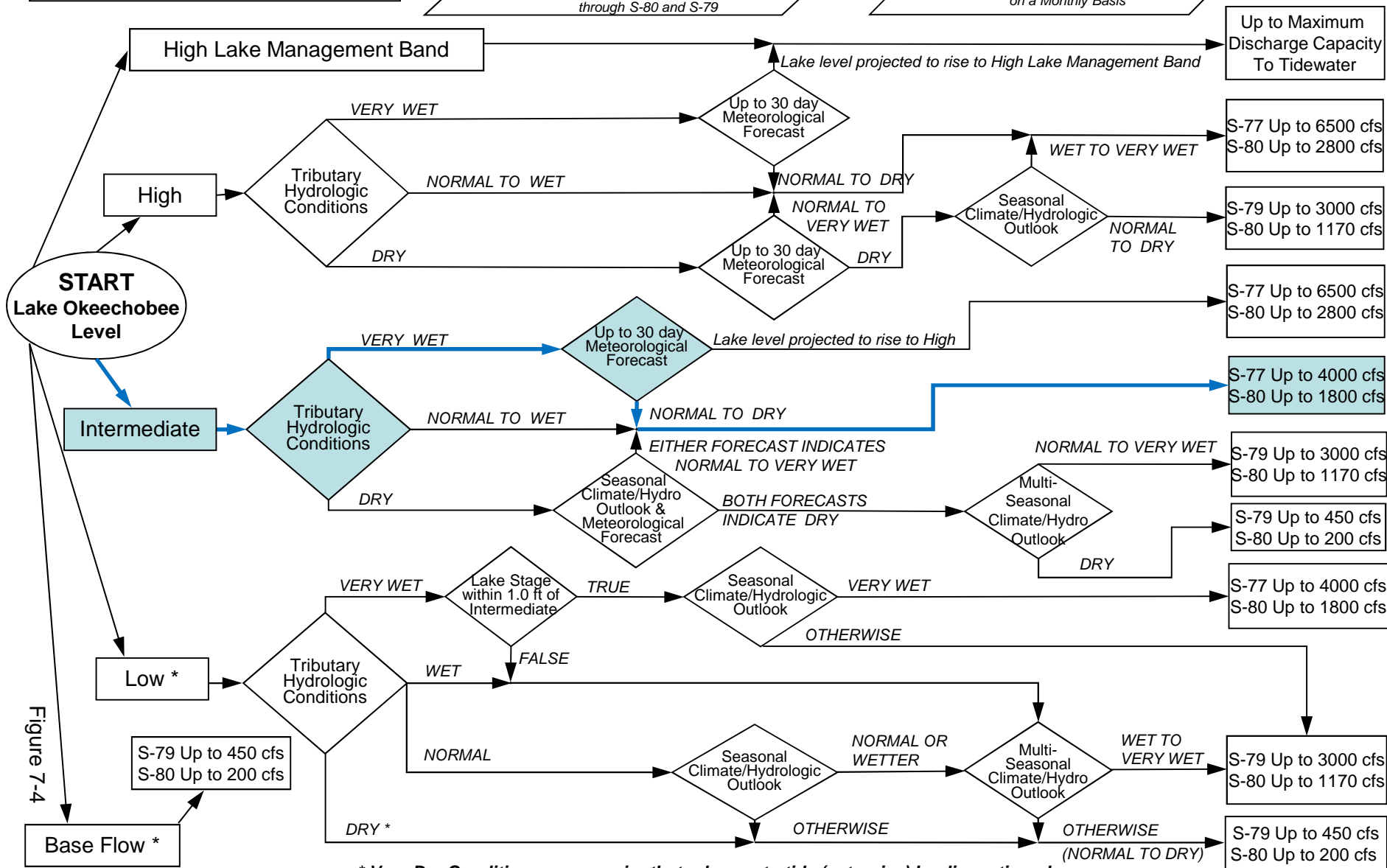
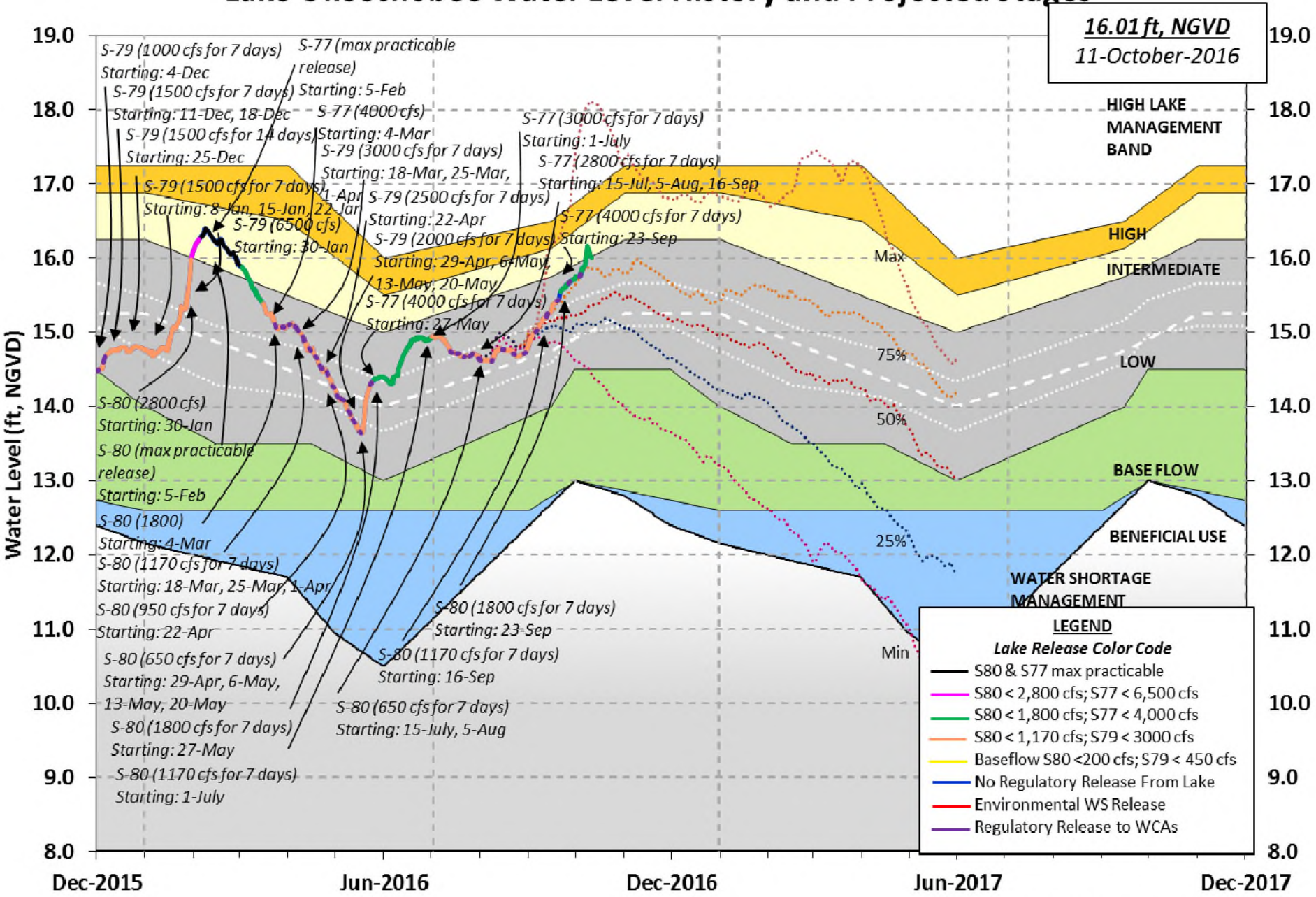


Figure 7-4

Lake Okeechobee Water Level History and Projected Stages



U. S. Army Corps of Engineers, Jacksonville District
 Lake Okeechobee and Vicinity Report
 ** Preliminary Data - Subject to Revision **

Data Ending 2400 hours 09 OCT 2016

Okeechobee Lake Regulation Elevation Last Year 2YRS Ago
 (ft-NGVD) (ft-NGVD) (ft-NGVD)

*Okeechobee Lake Elevation 16.04 14.75 15.69 (Official Elv)

Bottom of High Lake Mngmt= 16.88 Top of Water Short Mngmt= 12.95

Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 13.93
 Difference from Average LORS2008 2.11

09OCT (1965-2007) Period of Record Average 15.02
 Difference from POR Average 1.03

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷
 9.98'

++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷
 8.18'

Bridge Clearance = 48.60'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
15.82	16.11	16.12	16.06	16.18	16.25	15.97	15.82

*Combination Okeechobee Avg-Daily Lake Average = 16.04
 (*See Note)

Okeechobee Inflows (cfs):

S65E	3886	C5	0	Fisheating Cr	955
S154	194	S191	1169	S135 Pumps	177
S84	214	S133 Pumps	125	S2 Pumps	0
S84X	683	S127 Pumps	71	S3 Pumps	0
S71	472	S129 Pumps	46	S4 Pumps	0
S72	168	S131 Pumps	16		
Total Inflows:		8176			

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	7307
S127 Culverts	0	S351	0	S77Below	6154
S129 Culverts	0	S352	0	S308	2940
S131 Culverts	0	L8 Canal Pt	9	S308Below	2654
Total Outflows:		10256			

****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 0.25 S308 0.30
 Average Pan Evap x 0.75 Pan Coefficient = 0.21" = 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 -11344 cfs or -22500 AC-FT

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

---	Headwater Tailwater		Disch	----- Gate Positions -----						
	Elevation	Elevation		#1	#2	#3	#4	#5	#6	#7
#8	(ft-msl)	(ft-msl)	(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
				(I) see note at bottom						
North East Shore										
S133 Pumps:	13.34	15.68	125	24	0	41	0	53	(cfs)	
S193:										
S191:	18.02	15.69	1169	1.5	1.0	1.5				
S135 Pumps:	13.34	15.81	177	61	0	55	67		(cfs)	
S135 Culverts:			0	0.0	0.0					
North West Shore										
S65E:	21.04	15.61	3886	1.8	1.8	1.8	1.8	1.8	1.3	
S127 Pumps:	13.38	15.88	71	-NR-	0	34	52	0	(cfs)	
S127 Culvert:			0	0.0						
S129 Pumps:	12.86	16.04	46	42	0	0			(cfs)	
S129 Culvert:			0	0.0						
S131 Pumps:	12.82	16.06	16	0	18				(cfs)	
S131 Culvert:			0							
Fisheating Creek										
nr Palmdale		32.78	955							
nr Lakeport										
C5:	16.42	15.97	0	0.0	0.0	0.0				
South Shore										
S4 Pumps:	10.93	16.29	0	0	0	0			(cfs)	
S169:	14.60	10.94	0	0.0	0.0	0.0				

S310:	16.27		2						
S3 Pumps:	10.64	16.49	0	0	0	0			(cfs)
S354:	16.49	10.64	0	0.0	0.0				
S2 Pumps:	9.84	16.41	0	0	0	0	0		(cfs)
S351:	16.41	9.84	0	0.0	0.0	0.0			
S352:	16.31	9.29	0	0.0	0.0				
C10A:	-NR-	14.75		0.0	0.0	3.0	0.0	0.0	
L8 Canal PT		14.56	9						

S351 and S352 Temporary Pumps/S354 Spillway

S351:	9.84	16.41	0	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-
S352:	9.29	16.31	0	-NR-	-NR-	-NR-	-NR-		
S354:	10.64	16.49	0	-NR-	-NR-	-NR-	-NR-		

Caloosahatchee River (S77, S78, S79)

S47B:	12.82	10.73		0.9	1.4				
S47D:	10.52	10.49	101	6.0					

S77:

Spillway and Sector Flow:									
	15.74	10.84	7300	6.0	6.0	6.0	6.0		
Flow Due to Lockages+:			7						

S77 Below USGS Flow Gage 6154

S78:

Spillway and Sector Flow:									
	10.31	3.13	7017	6.5	5.0	5.5	5.5		
Flow Due to Lockages+:			9						

S79:

Spillway and Sector Flow:									
	-NR-	-NR-	7845	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-

NR-

Flow Due to Lockages+:	-NR-
Percent of flow from S77	93%
Chloride (ppm)	-N

St. Lucie Canal (S308, S80)

S308:

Spillway and Sector Flow:									
	15.99	14.90	2937	5.0	2.8	2.8	2.8		
Flow Due to Lockages+:			3						

S308 Below USGS Flow Gage 2654

S153:	18.96	14.67	102	0.5	0.6				
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S80:

Spillway and Sector Flow:									
	13.77	2.04	3086	0.8	0.8	0.8	0.8	0.8	0.8
Flow Due to Lockages+:			21						
Percent of flow from S308			95%						

Steele Point Top Salinity (mg/ml) 3690
 Steele Point Bottom Salinity (mg/ml) ****

Speedy Point Top Salinity (mg/ml) 838
 Speedy Point Bottom Salinity (mg/ml) 545

+ 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.

				----- Wind ---	
Daily Precipitation Totals	1-Day	3-Day	7-Day	Direction	
Speed	(inches)	(inches)	(inches)	(Degø)	
(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	1.01	49	3
S78:	0.00	0.00	1.37	5	1
S79:	-NR-	0.00	0.00	-NR-	-NR-
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	1.70	67	5
S80:	0.01	0.02	2.52	12	3
Okeechobee Average	0.00	0.00	0.21		
(Sites S78, S79 and S80 not included)					

Oke Nexrad Basin Avg	-NR-	0.00	2.69		

Okeechobee Lake Elevations	09 OCT 2016	16.04	Difference from
09OCT16			09OCT16
09OCT16 -1 Day =	08 OCT 2016	16.09	0.05
09OCT16 -2 Days =	07 OCT 2016	16.16	0.12
09OCT16 -3 Days =	06 OCT 2016	15.93	-0.11
09OCT16 -4 Days =	05 OCT 2016	15.90	-0.14
09OCT16 -5 Days =	04 OCT 2016	15.86	-0.18
09OCT16 -6 Days =	03 OCT 2016	15.78	-0.26
09OCT16 -7 Days =	02 OCT 2016	15.75	-0.29
09OCT16 -30 Days =	09 SEP 2016	15.17	-0.87
09OCT16 -1 Year =	09 OCT 2015	14.75	-1.29
09OCT16 -2 Year =	09 OCT 2014	15.69	-0.35

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
09OCT16	Today =	09 OCT 2016	12813	MON	-2527
09OCT16	-1 Day =	08 OCT 2016	13528	SUN	-8181
09OCT16	-2 Days =	07 OCT 2016	14964	SAT	56118
09OCT16	-3 Days =	06 OCT 2016	11754	FRI	10695
09OCT16	-4 Days =	05 OCT 2016	11740	THU	10725
09OCT16	-5 Days =	04 OCT 2016	11734	WED	20321
09OCT16	-6 Days =	03 OCT 2016	11608	TUE	14838
09OCT16	-7 Days =	02 OCT 2016	11639	MON	6340
09OCT16	-8 Days =	01 OCT 2016	11700	SUN	10397
09OCT16	-9 Days =	30 SEP 2016	11349	SAT	14828
09OCT16	-10 Days =	29 SEP 2016	10783	FRI	11300
09OCT16	-11 Days =	28 SEP 2016	10506	THU	12947
09OCT16	-12 Days =	27 SEP 2016	10527	WED	8785
09OCT16	-13 Days =	26 SEP 2016	10571	TUE	12793

S65E

Average Flow over previous 14 days					Avg-Daily Flow
09OCT16	Today=	09 OCT 2016	4608	MON	4112
09OCT16	-1 Day =	08 OCT 2016	4719	SUN	4036
09OCT16	-2 Days =	07 OCT 2016	4863	SAT	3848
09OCT16	-3 Days =	06 OCT 2016	5026	FRI	4045
09OCT16	-4 Days =	05 OCT 2016	5173	THU	3956
09OCT16	-5 Days =	04 OCT 2016	5346	WED	4066
09OCT16	-6 Days =	03 OCT 2016	5482	TUE	4313
09OCT16	-7 Days =	02 OCT 2016	5576	MON	4267
09OCT16	-8 Days =	01 OCT 2016	5648	SUN	4743
09OCT16	-9 Days =	30 SEP 2016	5694	SAT	5317
09OCT16	-10 Days =	29 SEP 2016	5723	FRI	5334
09OCT16	-11 Days =	28 SEP 2016	5729	THU	5454
09OCT16	-12 Days =	27 SEP 2016	5745	WED	5494
09OCT16	-13 Days =	26 SEP 2016	5730	TUE	5533

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)
09 OCT 2016	14490	12203	13933	-NR-
08 OCT 2016	14341	11109	15004	-NR-
07 OCT 2016	9344	7801	11476	-NR-
06 OCT 2016	6788	8272	10437	-NR-
05 OCT 2016	2707	3928	8043	-NR-
04 OCT 2016	2789	4610	6392	-NR-
03 OCT 2016	7813	12257	12330	-NR-
02 OCT 2016	7620	12274	12544	-NR-
01 OCT 2016	7692	12228	12816	-NR-
30 SEP 2016	6617	11468	13725	-NR-
29 SEP 2016	6156	12111	11867	-NR-
28 SEP 2016	7081	10739	9633	-NR-
27 SEP 2016	7589	10784	8891	-NR-

26 SEP 2016 6963 9228 7411 -NR-

	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)
09 OCT 2016	4	0	0	0	17
08 OCT 2016	10	0	0	0	-34
07 OCT 2016	94	0	0	0	-18
06 OCT 2016	17	0	0	0	2
05 OCT 2016	8	0	0	0	21
04 OCT 2016	-2	0	0	0	80
03 OCT 2016	-1	0	93	0	237
02 OCT 2016	-8	0	420	0	250
01 OCT 2016	-37	0	0	0	248
30 SEP 2016	-9	0	0	0	234
29 SEP 2016	32	0	12	0	249
28 SEP 2016	16	0	103	0	264
27 SEP 2016	18	0	250	0	261
26 SEP 2016	14	0	16	0	249

	S-308	Below S-308	S-80
	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)
09 OCT 2016	5830	5262	5215
08 OCT 2016	4923	4161	6210
07 OCT 2016	-NR-	1405	-NR-
06 OCT 2016	24	37	850
05 OCT 2016	36	124	1396
04 OCT 2016	1194	1214	3348
03 OCT 2016	4277	3938	2936
02 OCT 2016	4343	3927	2844
01 OCT 2016	4232	3842	2815
30 SEP 2016	4974	4804	3218
29 SEP 2016	5504	5737	4226
28 SEP 2016	5943	5970	4650
27 SEP 2016	6183	6125	4748
26 SEP 2016	3197	2978	3250

*** 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

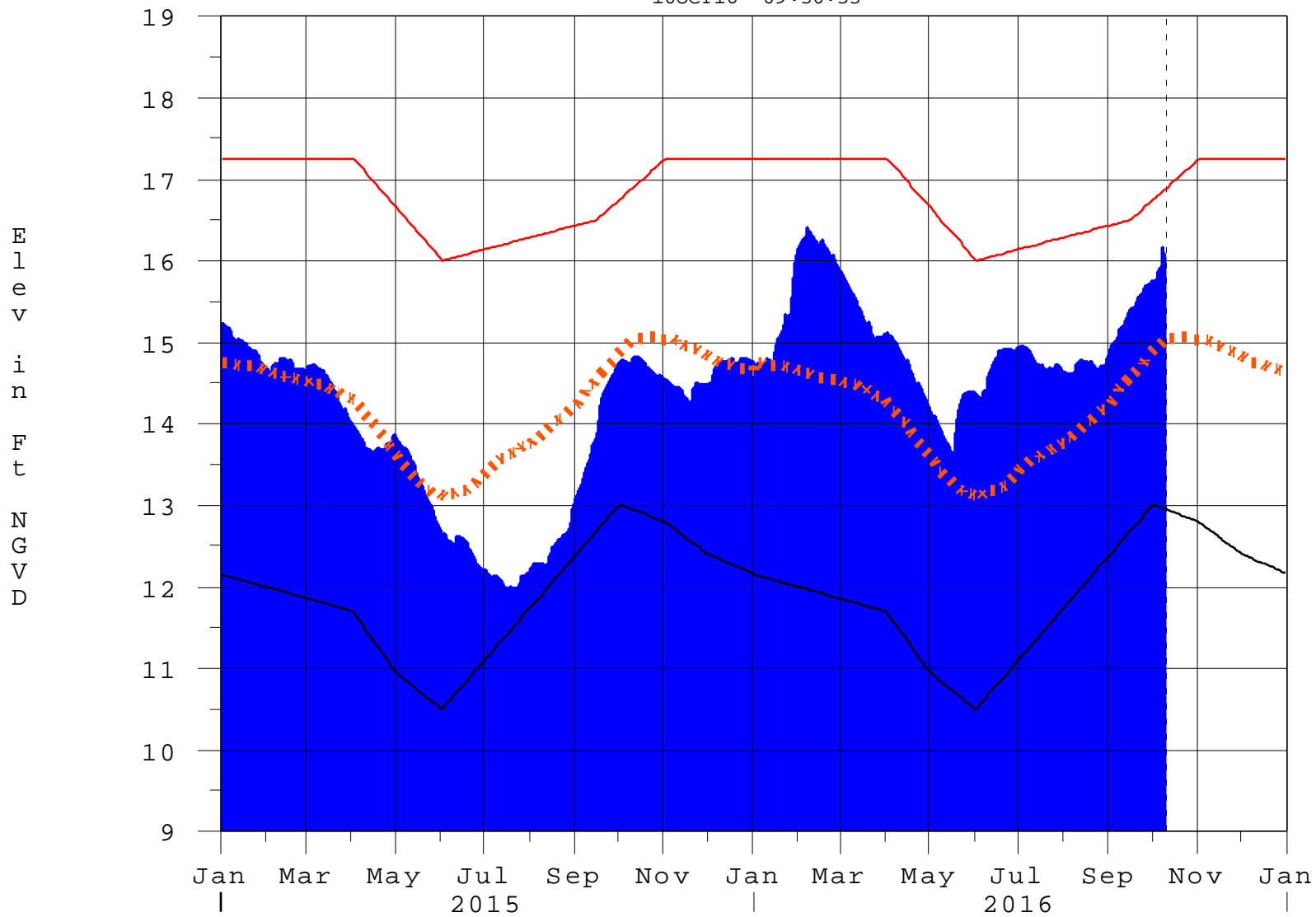
++ For more information see the Jacksonville District Navigation website at <http://www.saj.usace.army.mil/>

\$ For information regarding Lake Okeechobee Service Area water restrictions please refer to www.sfwmd.gov

—
Report Generated 10OCT2016 @ 09:45 ** Preliminary Data - Subject to Revision
**

Lake Okeechobee

10OCT16 09:30:33



- 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