

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 7/6/2015 (Developing El Nino 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 El Nino years³ and a sub-sampling of warm years of the Atlantic Multi-decadal Oscillation (AMO) in combination with ENSO El Nino 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 ENSO El Nino Years ³		Sub-sampling of AMO Warm + ENSO El Nino Years ⁴	
	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition
Current (Jul-Dec)	N/A	N/A	2.39	Very Wet	2.37	Very Wet	2.64	Very Wet
Multi Seasonal (Jul-Apr)	N/A	N/A	2.86	Wet	3.67	Wet	4.37	Very 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:](#)

-**2225 cfs** 14-day running average for Lake Okeechobee Net Inflow through 7/5/2015. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Dry.

- **2.07** for Palmer Index on 7/4/2015.

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 7/6/2015

Lake Okeechobee Stage: **12.11 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		16.16	
Operational Band	High sub-band	15.71	
	Intermediate sub-band	15.25	
	Low sub-band	13.33	
Base Flow sub-band		12.60	
Beneficial Use sub-band		11.22	← 12.11
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: No Releases to the Estuaries

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 7/6/2015 (ENSO Neutral Condition):

Water Supply Department Technical Input

Water Supply Outlook:

District wide, Raindar rainfall 1.62 inches for the week ending 7/6/2015. Lake stage on 7/6/2015 is 12.11 ft, down 0.13 ft from last week.

The updated June 2015 SFWMM Dynamic Position Analysis [percentile graph](#) and [tracking chart](#) for Lake Okeechobee show that the lake stage is in the Low Flow Operational Sub-Band.

The LORS2008 tributary [indices](#) are classified as **Dry**. The PDSI indicates dry condition and the LONIN is Dry. The classification is based on the wetter of the two.

Water Supply Risk Evaluation

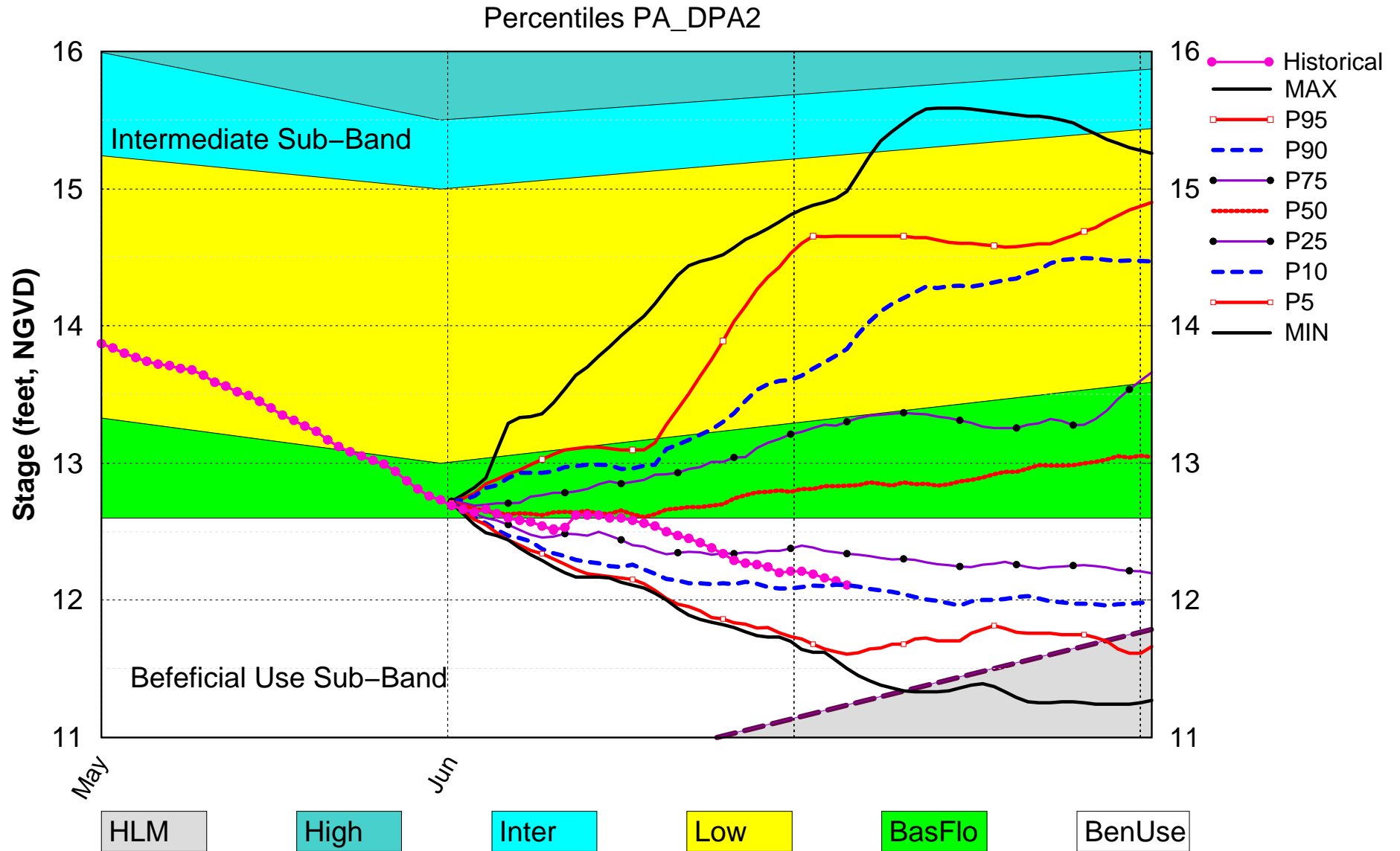
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Base Flow Sub-Band	M
	Palmer Index for LOK Tributary Conditions	-2.07 (Dry)	M
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Normal	L
	LOK Seasonal Net Inflow Forecast	2.64 ft (Normal to Extremely Wet)	L
	AMO warm/El Nino		
	LOK Multi-Seasonal Net Inflow Forecast	4.37 ft (Wet)	L
AMO warm/El Nino			
WCAs	WCA 1: Site 1-7, Site 1-8T, & Site 1-9 Average	Between Line 1 & 2 (14.59 ft)	M
	WCA 2A: Site 2-17 HW	Below Line 2 (10.31 ft)	H
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Between Line 1 & 2 (8.71 ft)	M
LEC	Service Area 1	Year-Round Irrigation Rule in effect	L
	Service Area 2	50% or more of USGS wells are within the lowest 10% to 30% of past water elevations and not more than 25% are in the lowest 10% of past water elevations	M
	Service Area 3	50% or more of USGS wells are within the lowest 10% to 30% of past water elevations and more than 25% are in the lowest 10% of past water elevations	H

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 for classifying the tributary hydrologic condition (THC).

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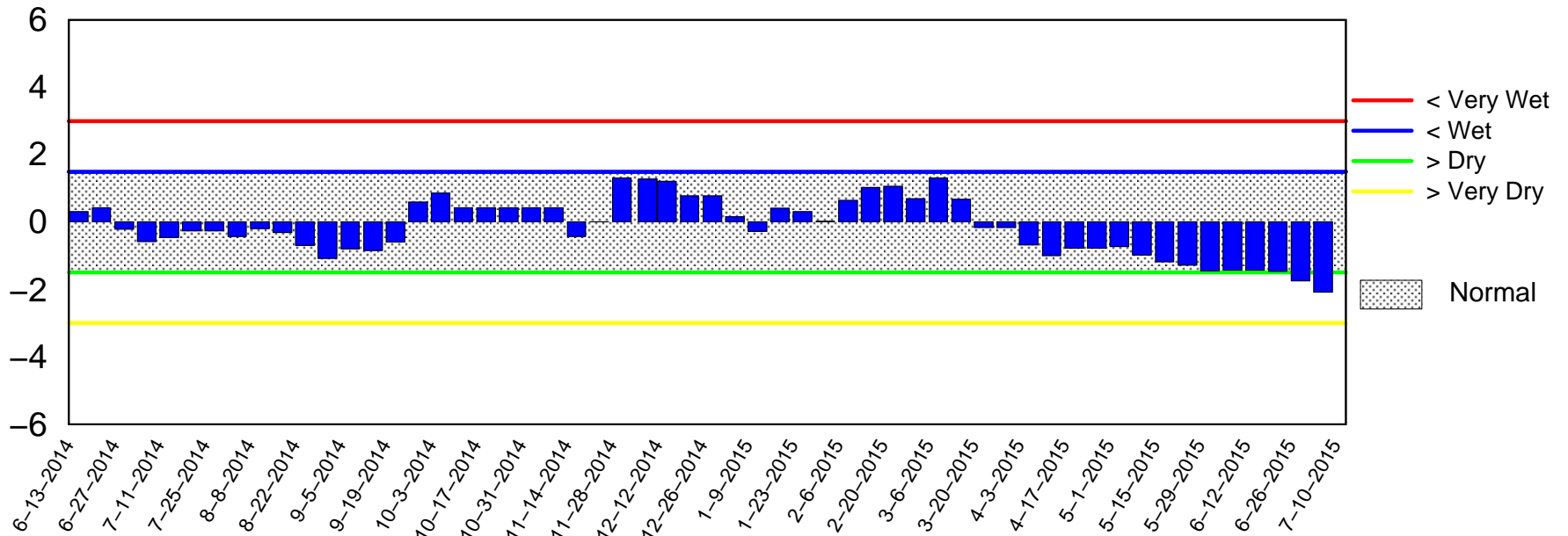
Lake Okeechobee SFWMM June 2015 Dynamic Position Analysis



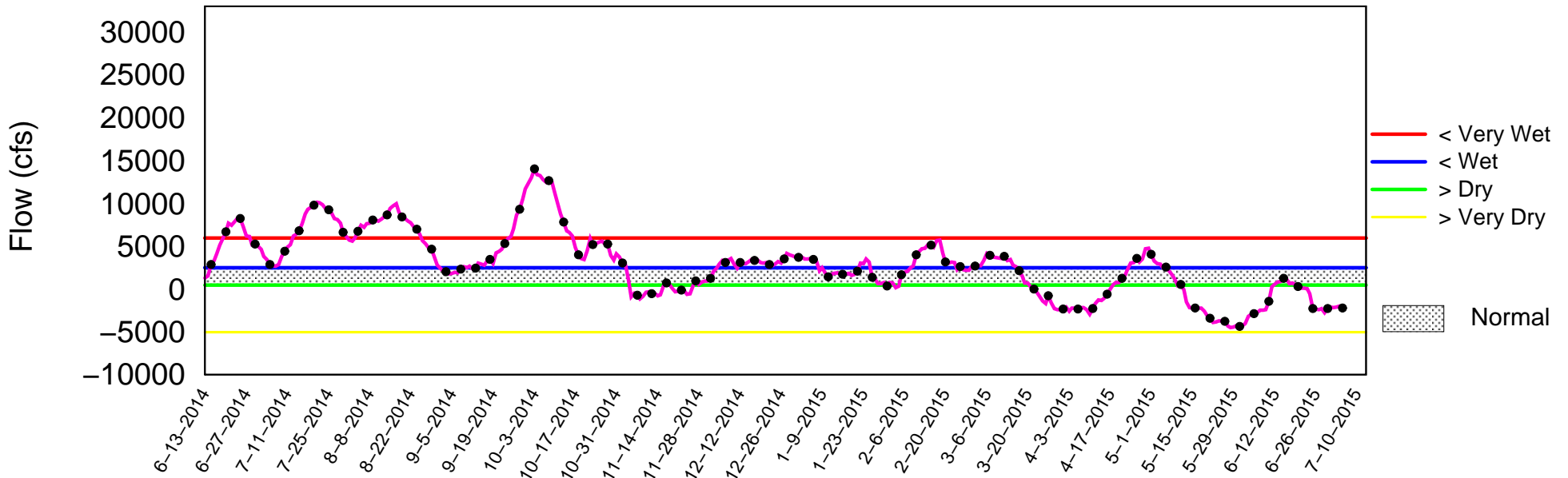
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of July 6 2015

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

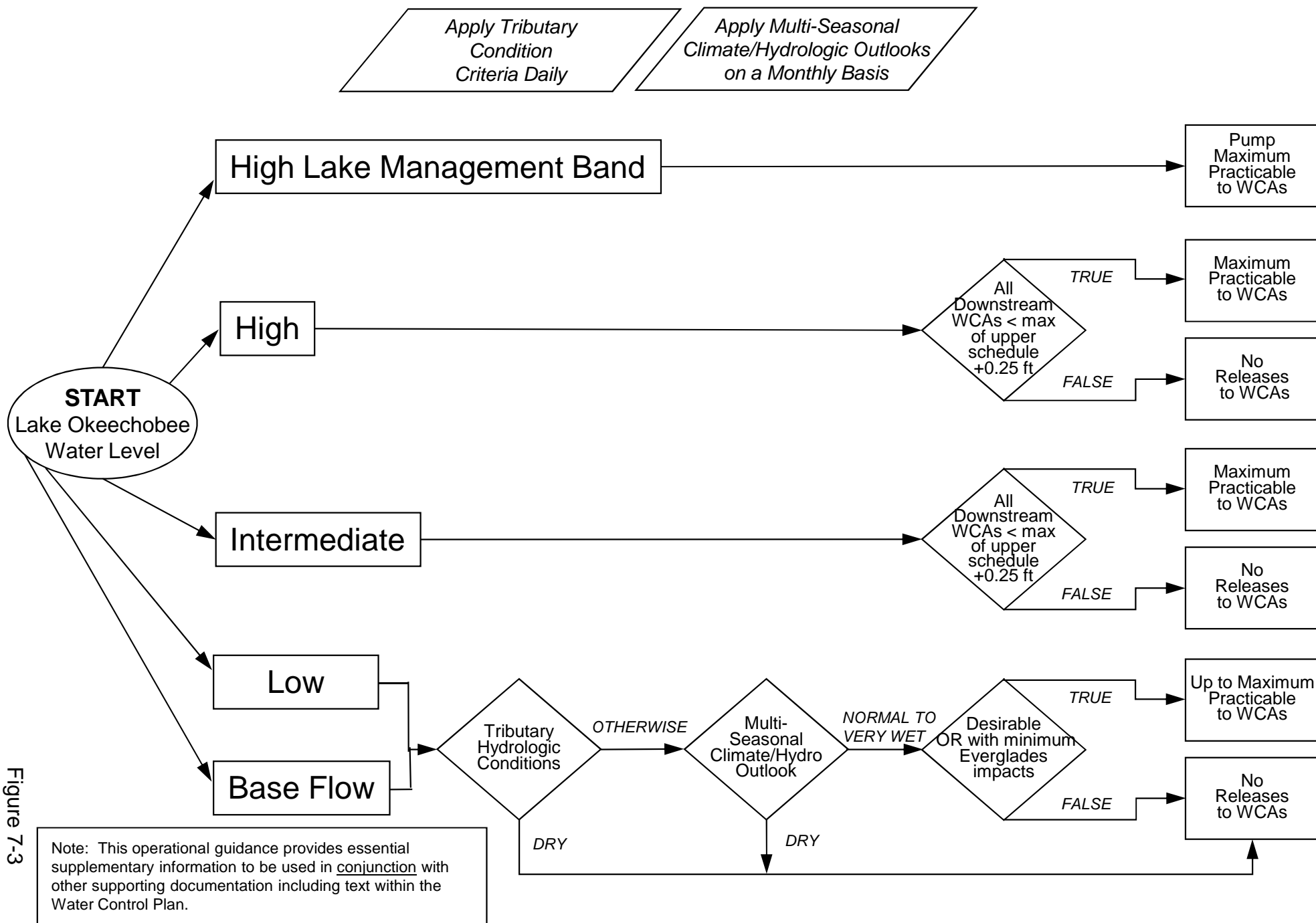


Figure 7-3

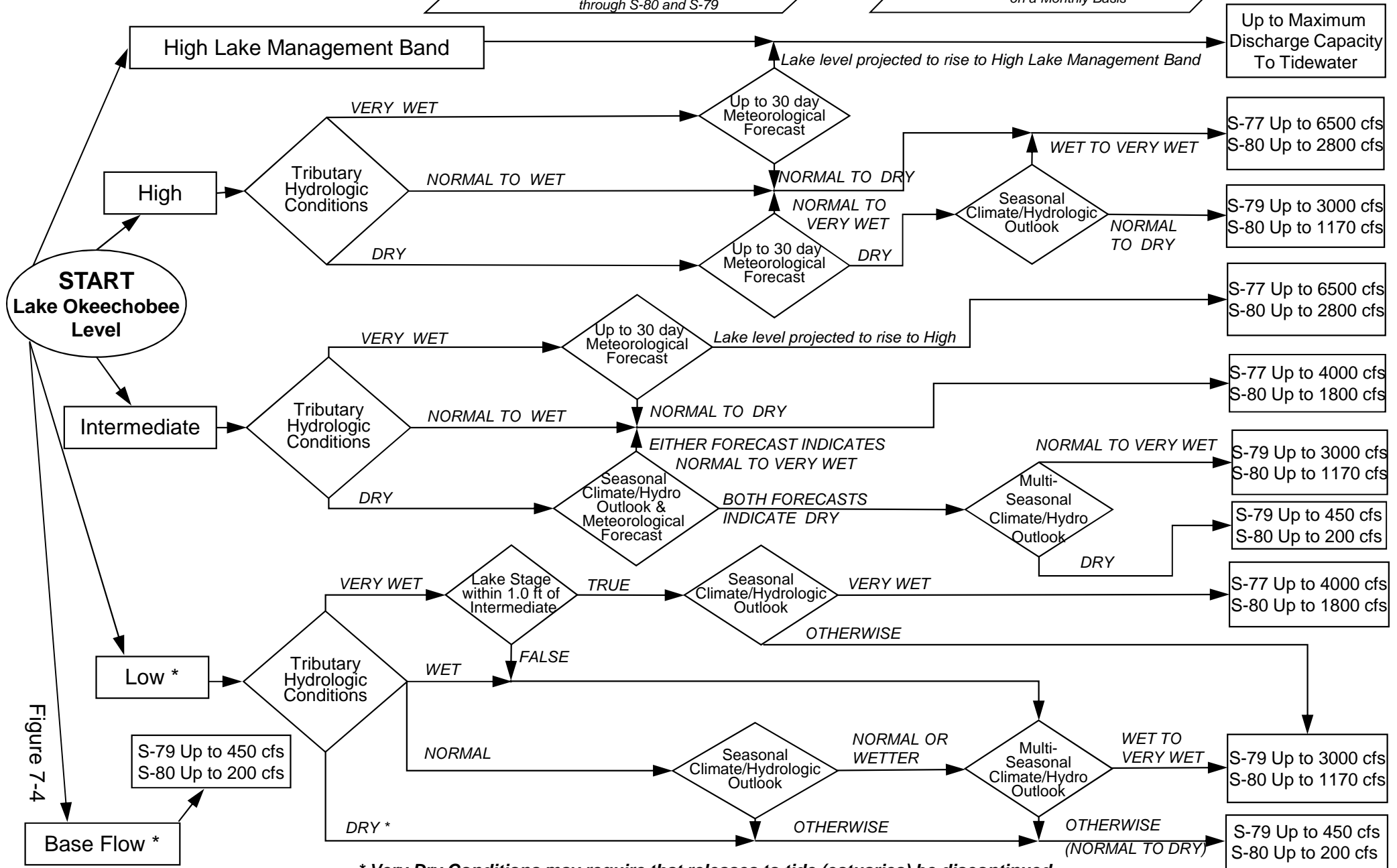
2008 LORS

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

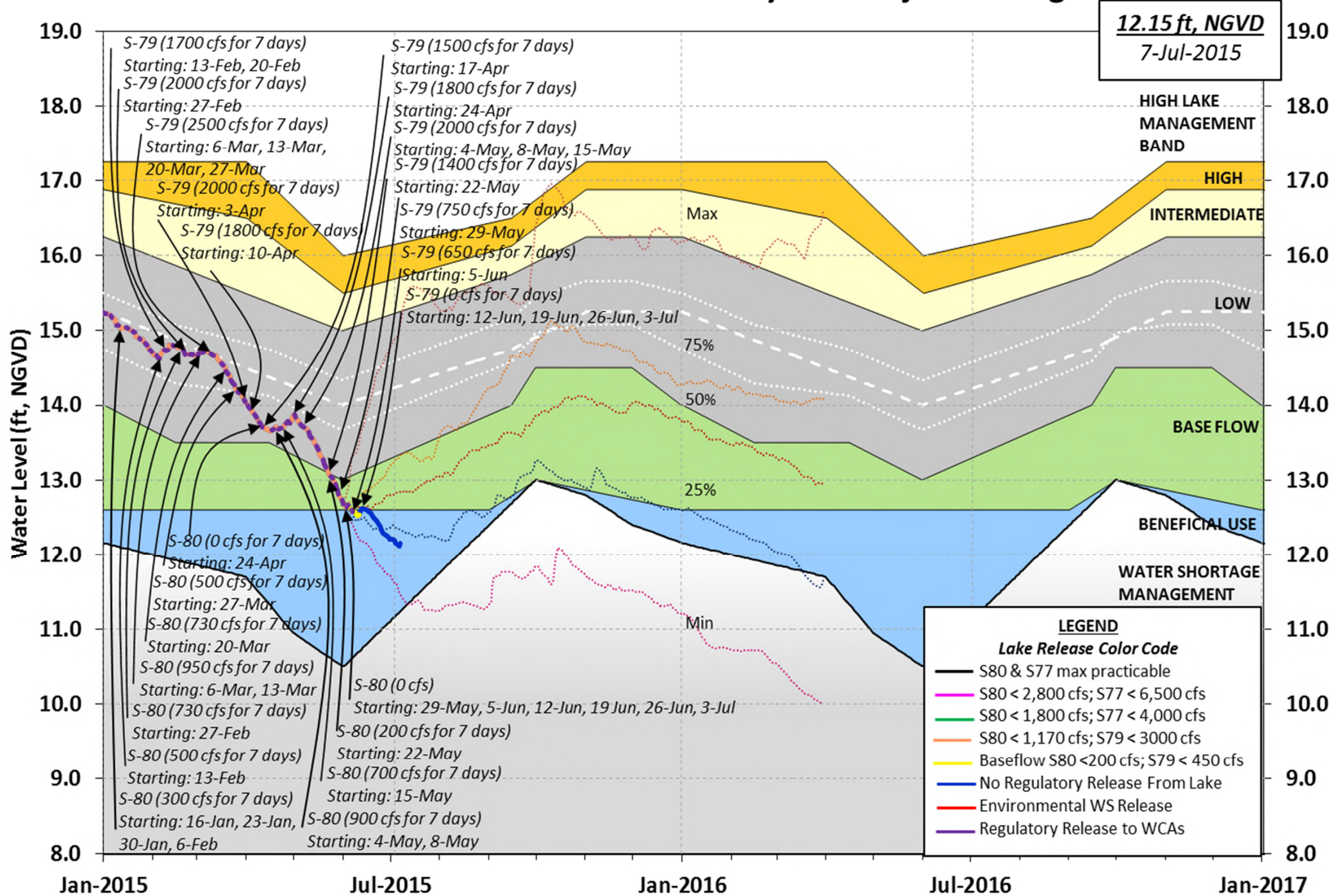
Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis



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

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 05 JUL 2015

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	12.11	13.02	14.60 (Official Elv)
Bottom of High Lake Mngmt=	16.16	Top of Water Short Mngmt=	11.20
Currently in Operational Management Band			

Simulated Average LORS2008 [1965-2000] 12.35
 Difference from Average LORS2008 -0.24

05JUL (1965-2007) Period of Record Average 13.48
 Difference from POR Average -1.38

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 6.05'
 ++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 4.25'
 Bridge Clearance = 50.31'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
11.93	12.21	12.20	-NR-	12.21	12.22	12.03	12.02

*Combination Okeechobee Avg-Daily Lake Average = 12.11
 (*See Note)

Okeechobee Inflows (cfs):

S65E	508	S191	0	Fisheating Cr	232
S154	0	S133 Pumps	0	S135 Pumps	0
S84	-NR-	S127 Pumps	0	S2 Pumps	0
S71	290	S129 Pumps	0	S3 Pumps	0
S72	66	S131 Pumps	0	S4 Pumps	0
C5	0				
Total Inflows:	1096				

Okeechobee Outflows (cfs):

S135 Culverts (Used)	-NR-	S354	406	S77	126
S127 Culverts USED)	0	S351	541	S77Below	132 (NOT

C5:	13.39	12.31	0	0.0	0.0	0.0			
South Shore									
S4 Pumps:	12.23	12.71	0	0	0	0			(cfs)
S169:	12.72	12.53	13	5.0	5.0	5.0			
S310:	12.83		109						
S3 Pumps:	10.82	13.40	0	0	0	0			(cfs)
S354:	13.40	10.82	406	0.0	0.0				
S2 Pumps:	10.40	13.18	0	0	0	0	0		(cfs)
S351:	13.18	10.40	541	0.0	0.0	0.0			
S352:	12.42	10.60	393	0.2	0.2				
C10A:	-NR-	12.44		8.5	8.5	8.5	8.5	8.5	
L8 Canal PT		12.23	-138						

S351 and S352 Temporary Pumps/S354 Spillway									
S351:	10.40	13.18	541	-NR-	-NR-	-NR-	-NR-	-NR-	-NR-
S352:	10.60	12.42	393	-NR-	-NR-	-NR-	-NR-		
S354:	10.82	13.40	406	-NR-	-NR-	-NR-	-NR-		

Caloosahatchee River (S77, S78, S79)									
S47B:	13.47	10.73		0.0	0.0				
S47D:	10.92	10.92	-46	5.0					
S77:									
Spillway and Sector Flow:									
	12.11	10.99	124	0.0	0.5	0.5	0.0		
Flow Due to Lockages+:			2						
S77 Below USGS Flow Gage			132						
S78:									
Spillway and Sector Flow:									
	10.75	3.36	0	0.0	0.0	0.0	0.0		
Flow Due to Lockages+:			11						
S79:									
Spillway and Sector Flow:									
	3.38	1.21	56	0.0	0.0	0.0	0.0	1.0	1.0
Flow Due to Lockages+:			6						
Percent of flow from S77			221%						
Chloride (ppm)			72						
1.0									
St. Lucie Canal (S308, S80)									
S308:									
Spillway and Sector Flow:									
	11.87	13.19	0	0.0	0.0	0.0	0.0		
Flow Due to Lockages+:			-4						
S308 Below USGS Flow Gage			-6						
S153:	18.75	13.02	34	1.0	1.0				
S80:									
Spillway and Sector Flow:									
	-NR-	-NR-	-NR-	0.0	0.0	0.0	0.0	0.0	0.0

Flow Due to Lockages+: -NR-
 Percent of flow from S308 -NR-%

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.

					----- Wind ---	
Daily Precipitation Totals	1-Day	3-Day	7-Day	Direction		
Speed	(inches)	(inches)	(inches)	(Degø)		
(mph)						
S133 Pump Station:	-NR-	0.00	1.14			
S193:	-NR-	0.00	0.00	-NR-	-NR-	
Okeechobee Field Station:	-NR-	0.00	0.00			
S135 Pump Station:	-NR-	0.00	0.83			
S127 Pump Station:	-NR-	0.00	0.77			
S129 Pump Station:	-NR-	0.00	0.09			
S131 Pump Station:	-NR-	0.00	0.83			
S77:	1.62	2.33	3.28	48	1	
S78:	2.53	2.56	2.81	238	2	
S79:	0.39	0.81	0.87	170	6	
S4 Pump Station:	-NR-	0.00	0.00			
Clewiston Field Station:	-NR-	0.00	0.00			
S3 Pump Station:	-NR-	0.00	0.27			
S2 Pump Station:	-NR-	0.00	0.15			
S308:	0.00	1.58	2.47	318	14	
S80:	-NR-	0.48	0.78	-NR-	-NR-	
Okeechobee Average	0.81	0.30	0.76			
(Sites S78, S79 and S80 not included)						

Oke Nexrad Basin Avg	-NR-	0.11	1.95			

Okeechobee Lake Elevations	05 JUL 2015	12.11 Difference from
05JUL15		05JUL15
05JUL15 -1 Day =	04 JUL 2015	12.14 0.03
05JUL15 -2 Days =	03 JUL 2015	12.16 0.05
05JUL15 -3 Days =	02 JUL 2015	12.19 0.08
05JUL15 -4 Days =	01 JUL 2015	12.21 0.10
05JUL15 -5 Days =	30 JUN 2015	12.21 0.10
05JUL15 -6 Days =	29 JUN 2015	12.20 0.09
05JUL15 -7 Days =	28 JUN 2015	12.24 0.13
05JUL15 -30 Days =	05 JUN 2015	12.60 0.49
05JUL15 -1 Year =	05 JUL 2014	13.02 0.91
05JUL15 -2 Year =	05 JUL 2013	14.60 2.49

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	
05JUL15	Today =	05 JUL 2015	-1579	MON	-4284	
05JUL15	-1 Day =	04 JUL 2015	-1277	SUN	-2434	
05JUL15	-2 Days =	03 JUL 2015	-2226	SAT	-4261	
05JUL15	-3 Days =	02 JUL 2015	-1971	FRI	-NR-	
05JUL15	-4 Days =	01 JUL 2015	-1906	THU	-NR-	
05JUL15	-5 Days =	30 JUN 2015	-1906	WED	4926	
05JUL15	-6 Days =	29 JUN 2015	-2677	TUE	-4853	
05JUL15	-7 Days =	28 JUN 2015	-2015	MON	-997	
05JUL15	-8 Days =	27 JUN 2015	-2206	SUN	1038	
05JUL15	-9 Days =	26 JUN 2015	-2265	SAT	-459	
05JUL15	-10 Days =	25 JUN 2015	-2181	FRI	-NR-	
05JUL15	-11 Days =	24 JUN 2015	-155	THU	-NR-	
05JUL15	-12 Days =	23 JUN 2015	263	WED	-NR-	
05JUL15	-13 Days =	22 JUN 2015	219	TUE	-2889	

S65E						
Average Flow over previous 14 days					Avg-Daily Flow	
05JUL15	Today=	05 JUL 2015	420	MON	508	
05JUL15	-1 Day =	04 JUL 2015	416	SUN	330	
05JUL15	-2 Days =	03 JUL 2015	410	SAT	469	
05JUL15	-3 Days =	02 JUL 2015	409	FRI	-NR-	
05JUL15	-4 Days =	01 JUL 2015	419	THU	-NR-	
05JUL15	-5 Days =	30 JUN 2015	419	WED	334	
05JUL15	-6 Days =	29 JUN 2015	433	TUE	227	
05JUL15	-7 Days =	28 JUN 2015	476	MON	480	
05JUL15	-8 Days =	27 JUN 2015	480	SUN	488	
05JUL15	-9 Days =	26 JUN 2015	505	SAT	507	
05JUL15	-10 Days =	25 JUN 2015	539	FRI	-NR-	
05JUL15	-11 Days =	24 JUN 2015	547	THU	-NR-	
05JUL15	-12 Days =	23 JUN 2015	550	WED	-NR-	
05JUL15	-13 Days =	22 JUN 2015	518	TUE	439	

Lake Okeechobee Outlets Last 14 Days

DATE	S-77	S-77	Below S-77	S-78	S-78	S-79
	Discharge	Discharge	Discharge	Discharge	Discharge	Discharge
	(0700-2100)	(ALL DAY)	(ALL-DAY)	(0700-2100)	(ALL DAY)	(ALL DAY)
	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)	(AC-FT)
05 JUL 2015	148	250	263	0	22	122
04 JUL 2015	153	224	220	0	13	12
03 JUL 2015	72	-NA-	72	0	7	625
02 JUL 2015	0	2	-118	0	18	434
01 JUL 2015	9	44	-62	0	20	595
30 JUN 2015	40	56	72	0	22	279
29 JUN 2015	0	3	-130	122	316	833
28 JUN 2015	0	2	-62	343	608	2508

27 JUN 2015	0	2	-66	340	584	2588
26 JUN 2015	0	2	-34	263	602	2412
25 JUN 2015	38	-NA-	86	189	-NR-	2302
24 JUN 2015	167	404	395	0	23	1074
23 JUN 2015	230	414	537	0	22	258
22 JUN 2015	133	-NA-	213	0	22	671

	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)
05 JUL 2015	217	1073	779	805	-273
04 JUL 2015	256	940	873	740	-287
03 JUL 2015	222	1364	845	652	-200
02 JUL 2015	-3	-NR-	-NR-	-NR-	-164
01 JUL 2015	-191	-NR-	-NR-	-NR-	-178
30 JUN 2015	-118	2905	1110	1801	-96
29 JUN 2015	359	2965	1225	1783	-2
28 JUN 2015	438	2927	1352	1543	-37
27 JUN 2015	382	3068	1311	1578	-70
26 JUN 2015	527	3518	1311	2060	-4
25 JUN 2015	557	-NR-	-NR-	-NR-	77
24 JUN 2015	149	-NR-	-NR-	-NR-	-66
23 JUN 2015	166	-NR-	-NR-	-NR-	13
22 JUN 2015	248	2741	1047	1898	-28

	S-308	Below S-308	S-80
	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)
05 JUL 2015	-8	-11	-NR-
04 JUL 2015	-4	146	31
03 JUL 2015	-4	20	27
02 JUL 2015	-7	21	19
01 JUL 2015	-8	132	32
30 JUN 2015	-11	97	41
29 JUN 2015	-7	-72	33
28 JUN 2015	-8	17	41
27 JUN 2015	-11	-204	36
26 JUN 2015	-6	-108	20
25 JUN 2015	-5	-97	36
24 JUN 2015	-8	-144	32
23 JUN 2015	-5	-66	28
22 JUN 2015	-5	-115	20

*** NOTE: 1) Discharge from (0700-2100) is computed using Spillway and Sector Gate Discharges from 0700 hrs to 2100 hrs.

2) 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

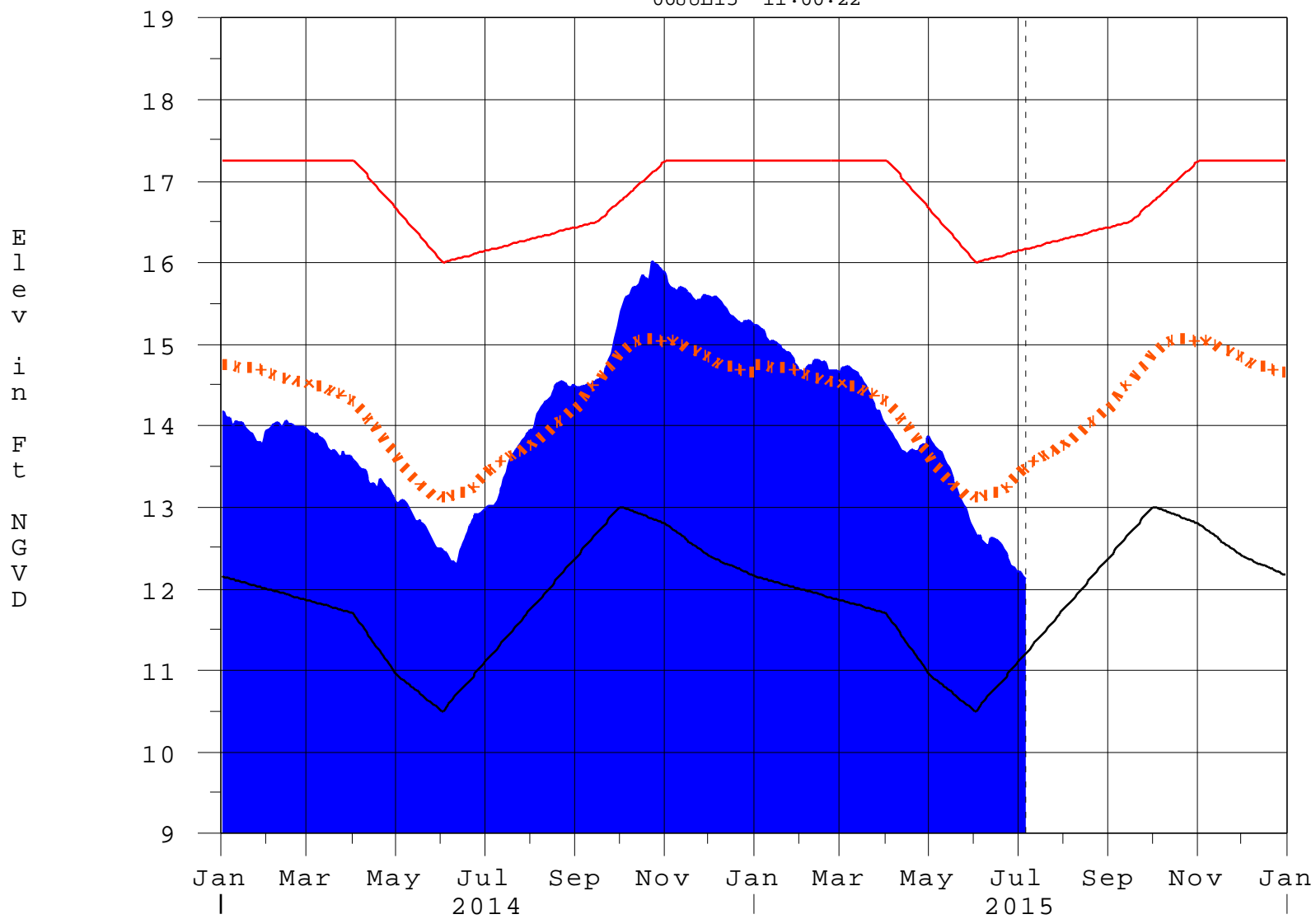
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* On 11 May 1999, Lake Okeechobee Elevation was switched from Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the standard
10 stations, the average of the interior 4 station gages 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 06JUL2015 @ 11:06 ** Preliminary Data - Subject to Revision
**

Lake Okeechobee

06JUL15 11:00:22



- 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