

# Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 12/21/2015 (Developing El Nino Condition)

## Lake Okeechobee Net Inflow Outlook:

The Lake Okeechobee Net Inflow Outlook has been computed using 4 methods: Croley's method<sup>1</sup>, the SFWMD empirical method<sup>2</sup>, a sub-sampling of El Nino years<sup>3</sup> and a sub-sampling of cold years of the Atlantic Multi-decadal Oscillation (AMO) in combination with ENSO El Nino years<sup>4</sup>. 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 <sup>1*</sup>		SFWMD Empirical Method <sup>2</sup>		Sub-sampling of ENSO El Nino Years <sup>3</sup>		Sub-sampling of AMO Warm + ENSO El Nino Years <sup>4</sup>	
	Value (ft)	<a href="#">Condition</a>	Value (ft)	<a href="#">Condition</a>	Value (ft)	<a href="#">Condition</a>	Value (ft)	<a href="#">Condition</a>
Current (Dec-May)	N/A	N/A	0.65	Dry	1.82	Wet	2.31	Very Wet
Multi Seasonal (Dec-Oct)	N/A	N/A	3.22	Wet	4.02	Wet	6.16	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:](#)

**2014 cfs** 14-day running average for Lake Okeechobee Net Inflow through 12/21/2015. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Normal.

**-0.40** for Palmer Index on 12/20/2015.

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

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

## [LORS2008 Classification Tables:](#)

### Lake Okeechobee Stage on 12/21/2015

Lake Okeechobee Stage: **14.74 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		17.25	
Operational Band	High sub-band	16.88	
	Intermediate sub-band	16.25	
	Low sub-band	14.18	← 14.74
Base Flow sub-band		12.65	
Beneficial Use sub-band		12.25	
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-79 up to 3000 cfs and S-80 up to 1170 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 12/21/2015 (ENSO El Nino Condition):

### Water Supply Department Technical Input

#### Water Supply Outlook:

District wide, Raindar rainfall 0.22 inches for the week ending **12/22/2015**. Lake stage on 12/21/2015 is 14.74 ft, down 0.02 ft from last week.

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

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

#### Water Supply Risk Evaluation

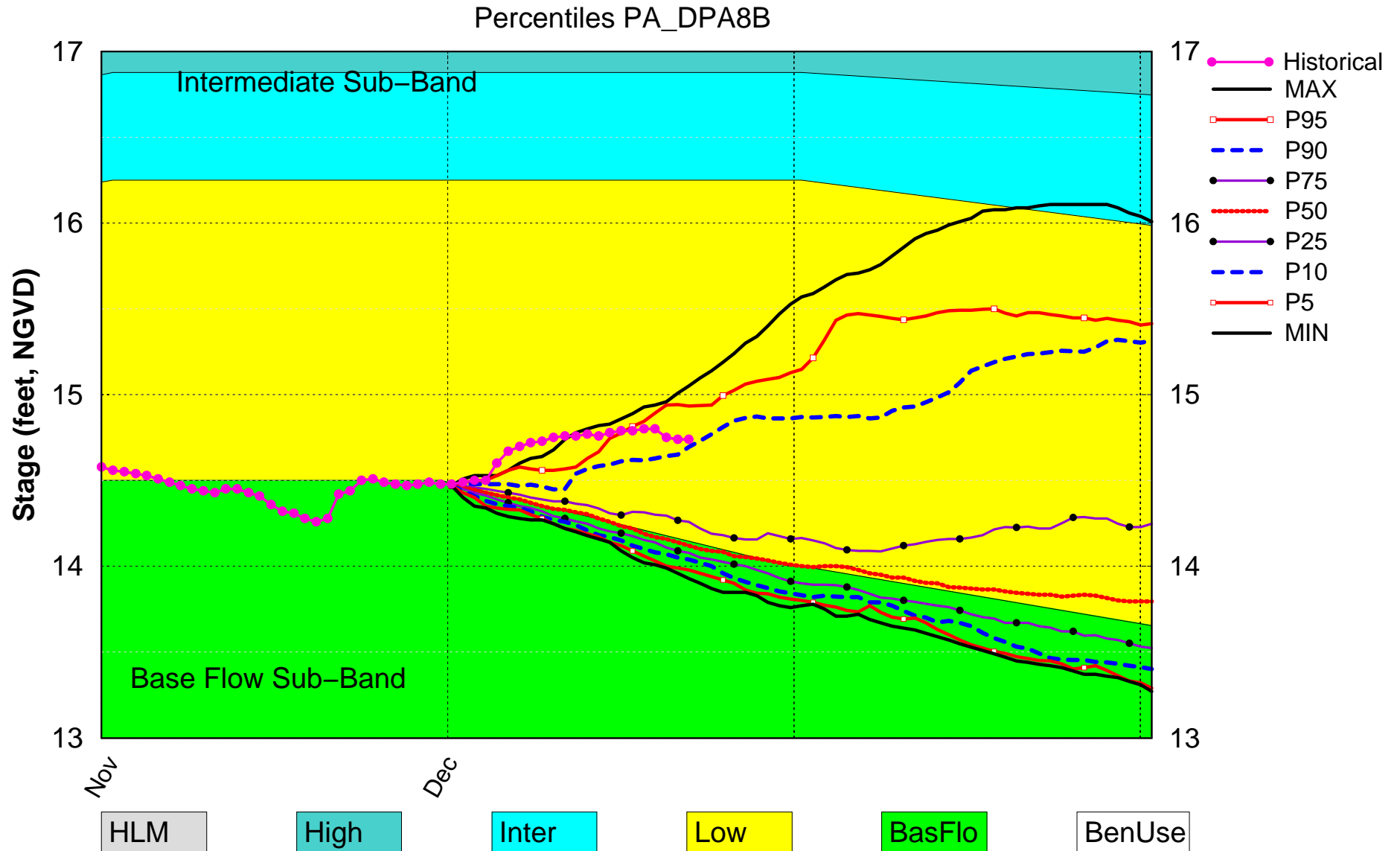
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Low Sub-Band	M
	Palmer Index for LOK Tributary Conditions	-0.40 (Normal)	L
	CPC Precipitation Outlook	1 month: Above Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Forecast	1.82 ft (Normal to Extremely Wet)	L
	AMO warm/El Nino		
	LOK Multi-Seasonal Net Inflow Forecast	4.02 ft (Wet)	L
AMO warm/El Nino			
WCAs	WCA 1: Site 1-7,1-8T, & 1-9	(17.10 ft)	L
	WCA 2A: Site 2-17 HW	(12.74 ft)	L
	WCA-3A: 3 Station Average (Site 63 and 65)	(10.59 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 for classifying the tributary hydrologic condition (THC).

[Back to Lake Okeechobee Operations Main Page](#)

[Back to U.S. Army Corps of Engineers LORSS Homepage](#)

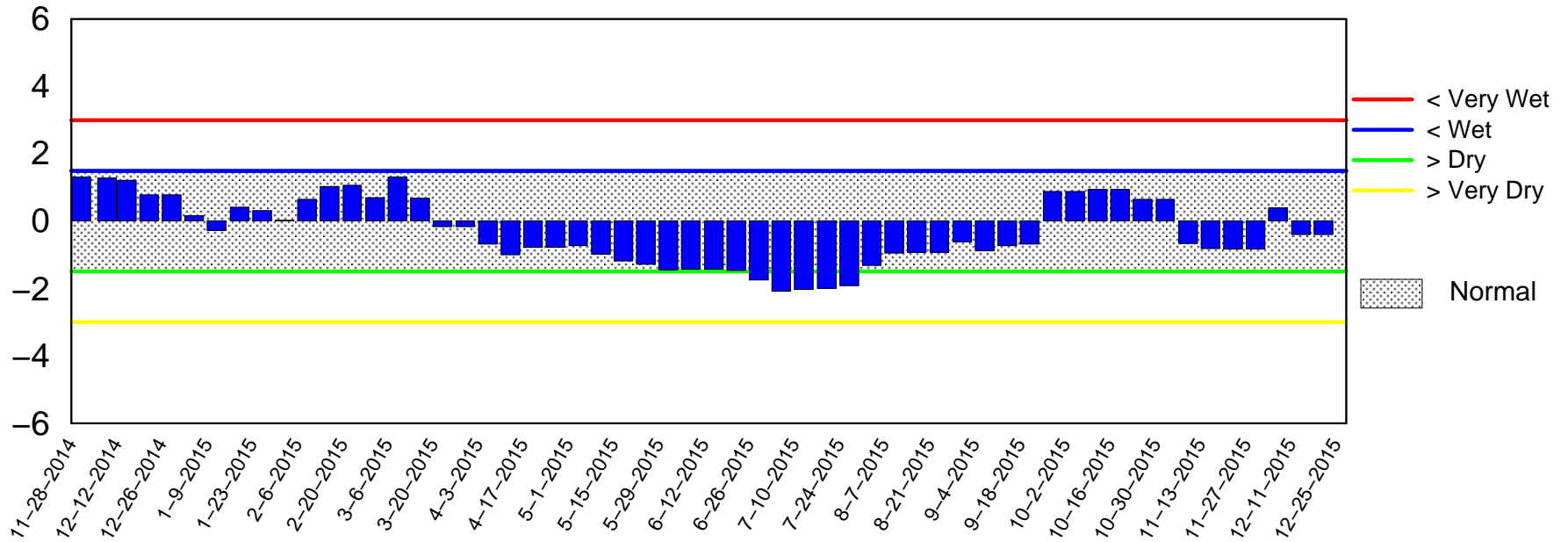
# Lake Okeechobee SFWMM Dec 2015 Dynamic Position Analysis



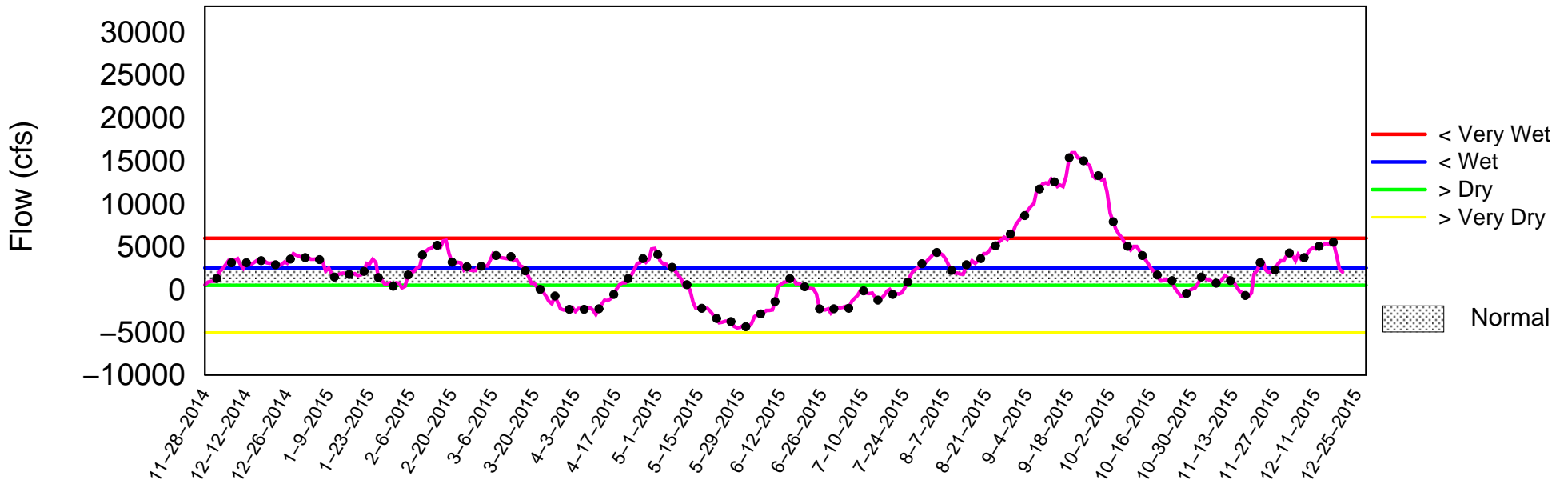
(See assumptions on the Position Analysis Results website)

# Tributary Basin Condition Indicators as of December 21 2015

## Palmer Index



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



Mon Dec 21 17:50:09 EST 2015

# 2008 LORS

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

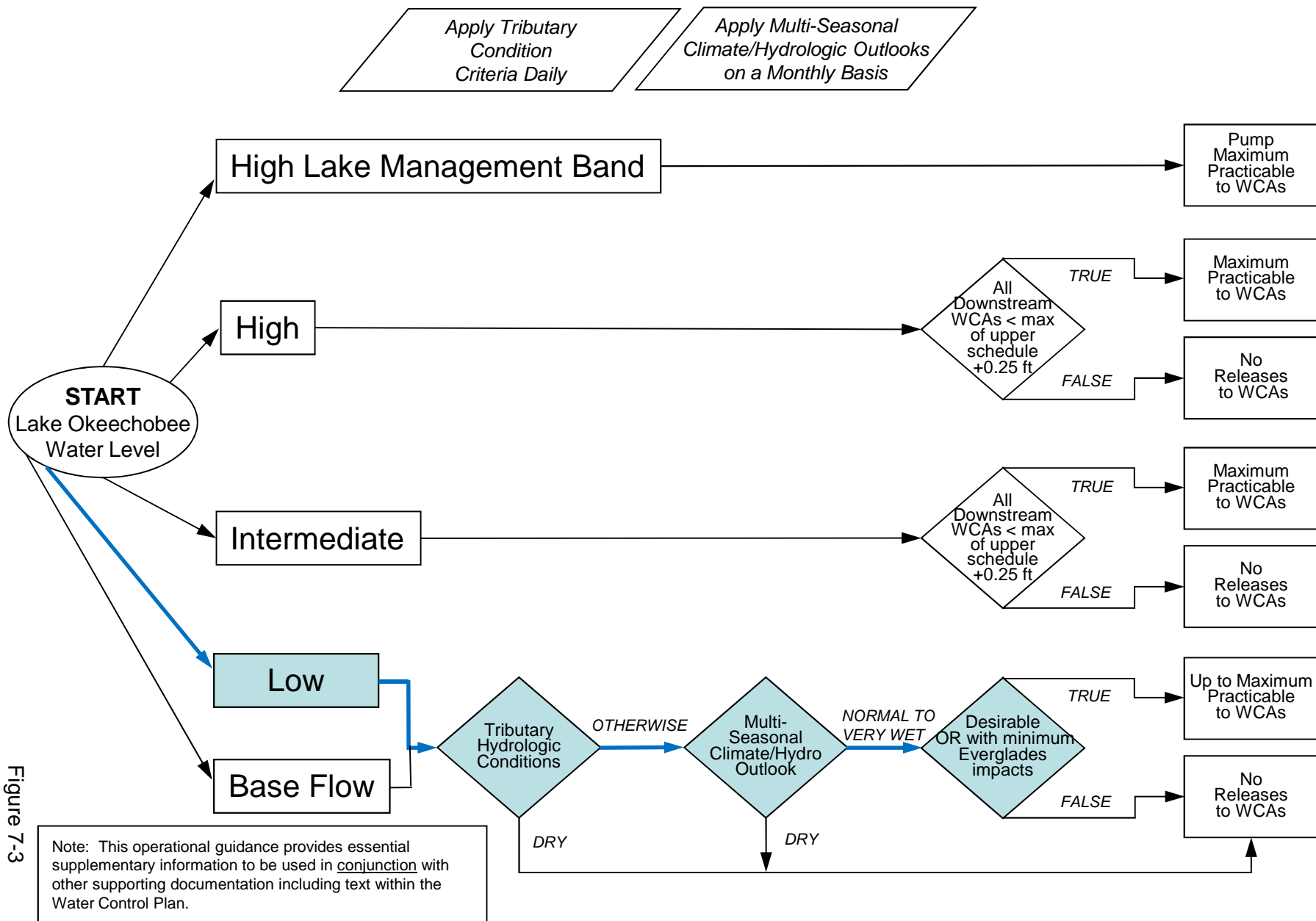


Figure 7-3

# 2008 LORS FORECAST

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

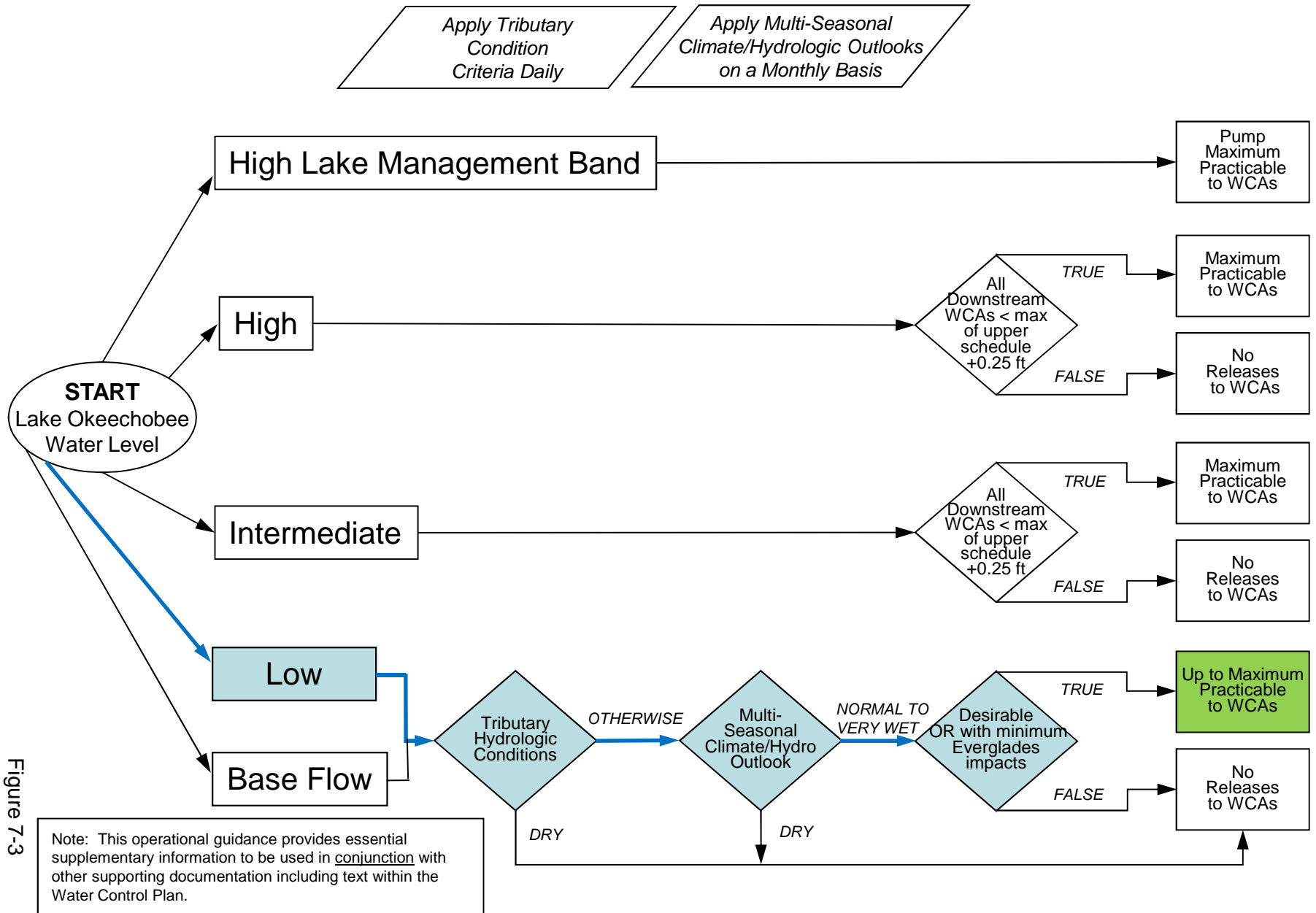


Figure 7-3



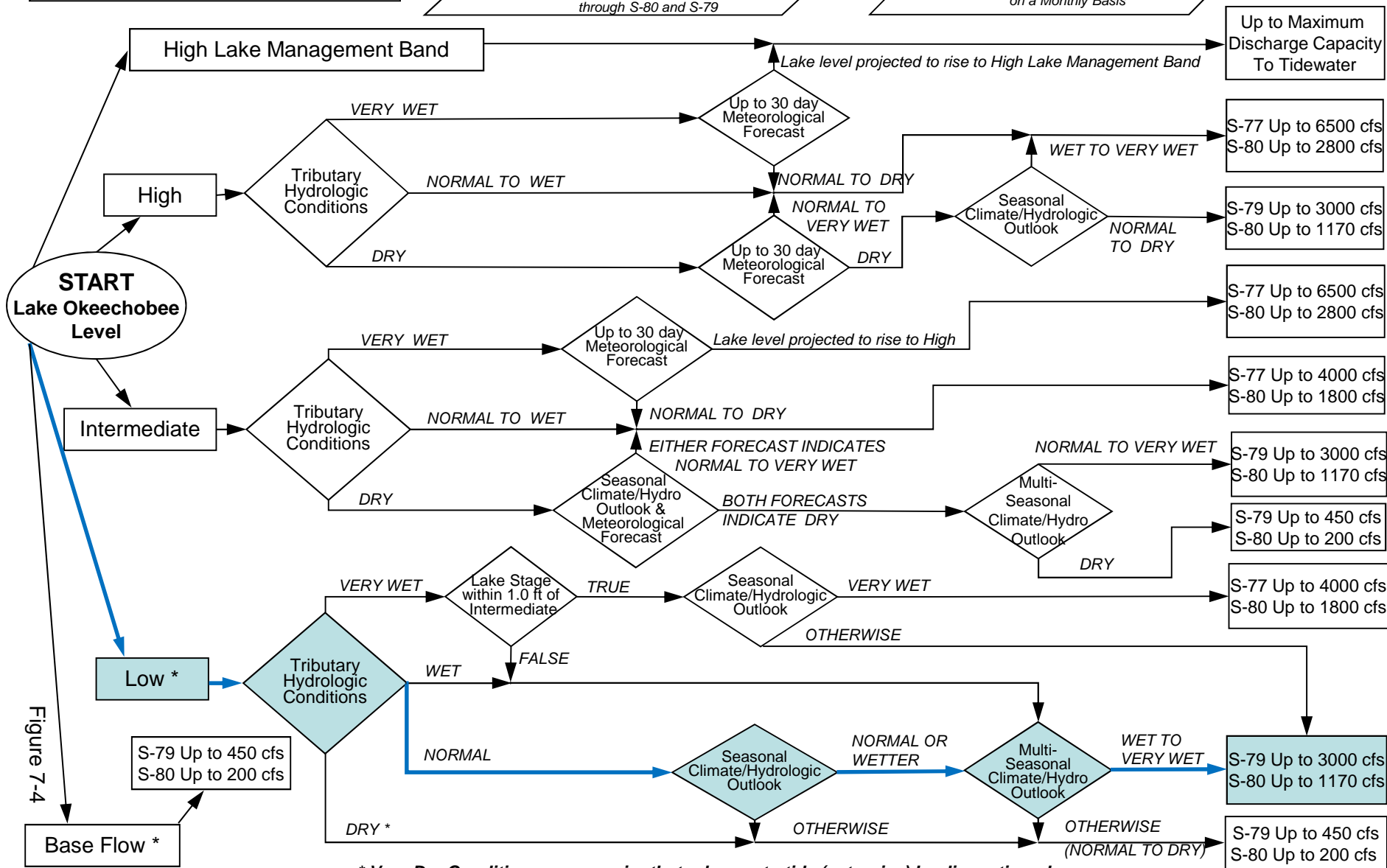
# 2008 LORS

## 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

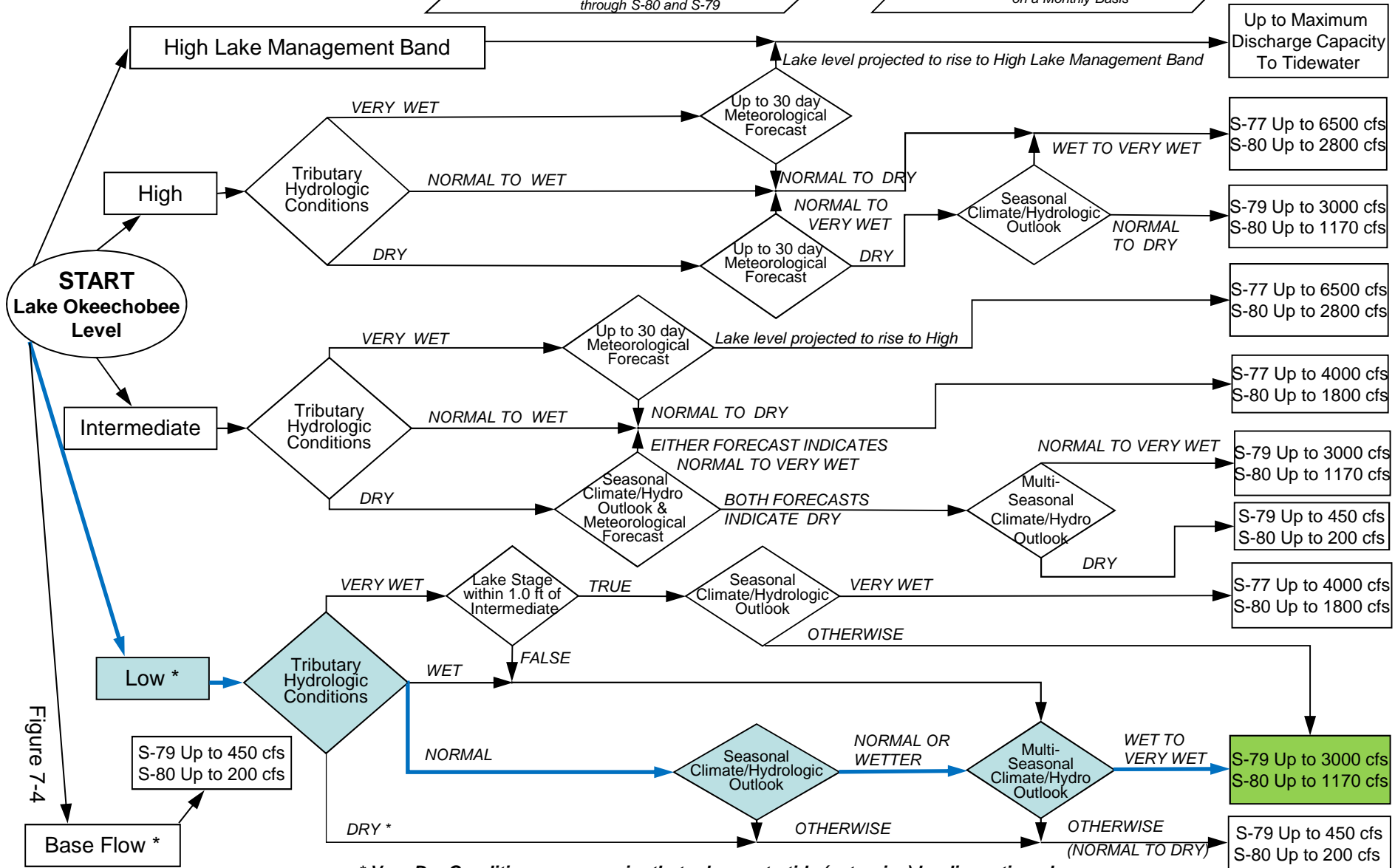
# 2008 LORS FORECAST

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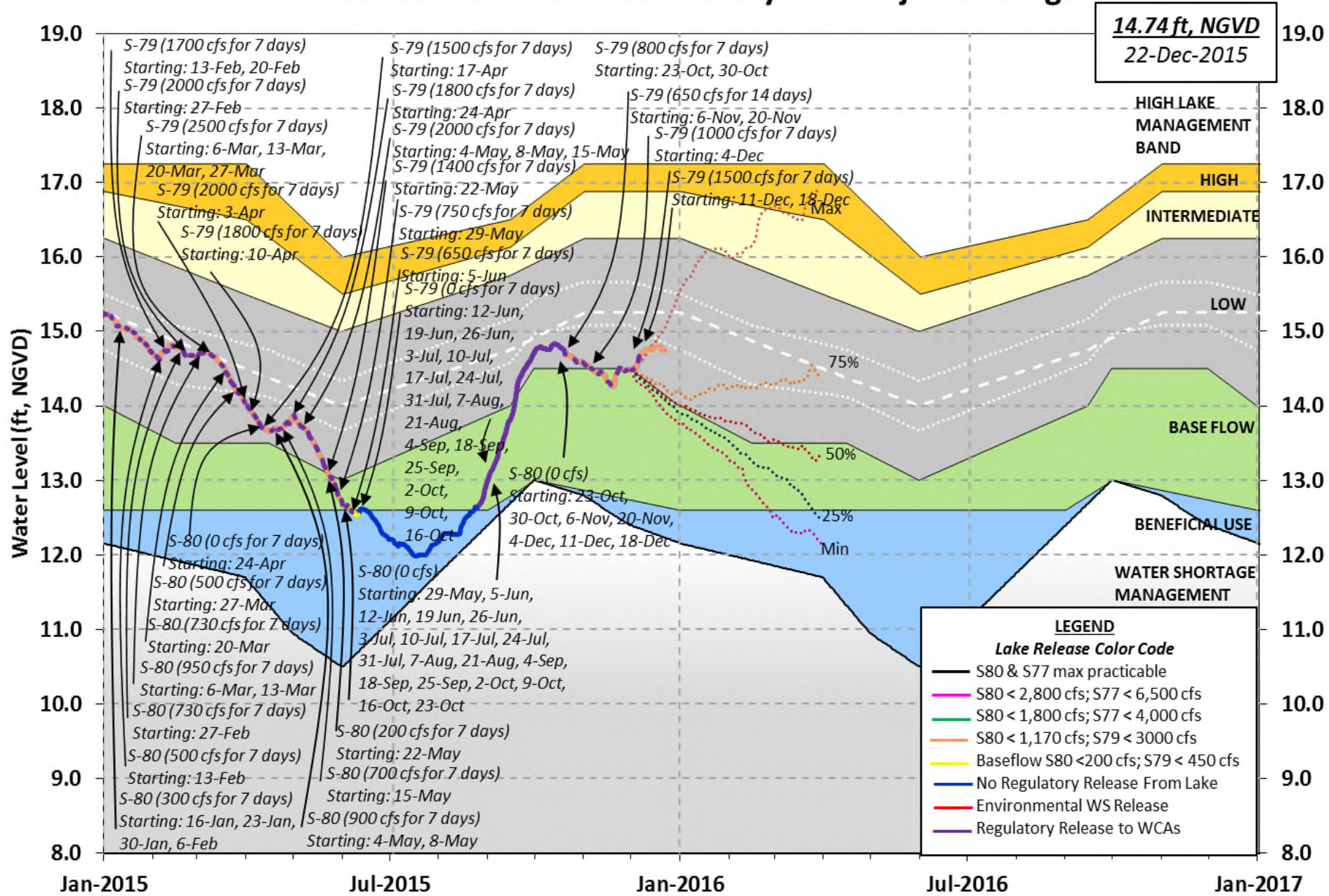
Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis



\* 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 20 DEC 2015

Okeechobee Lake Regulation	Elevation	Last Year	2YRS Ago
	(ft-NGVD)	(ft-NGVD)	(ft-NGVD)
*Okeechobee Lake Elevation	14.74	15.27	14.32 (Official Elv)
Bottom of High Lake Mngmt= 17.25 Top of Water Short Mngmt= 12.25			
Currently in Operational Management Band			
Simulated Average LORS2008 [1965-2000]		13.59	
Difference from Average LORS2008		1.15	
20DEC (1965-2007) Period of Record Average		14.69	
Difference from POR Average		0.05	

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 8.68'  
 ++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 6.88'  
 Bridge Clearance = 49.49'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
14.52	14.84	14.80	14.71	14.95	14.86	14.63	14.62

\*Combination Okeechobee Avg-Daily Lake Average = 14.74  
 (\*See Note)

Okeechobee Inflows (cfs):

S65E	666	C5	-168	Fisheating Cr	279
S154	27	S191	0	S135 Pumps	0
S84	0	S133 Pumps	0	S2 Pumps	0
S84X	415	S127 Pumps	0	S3 Pumps	0
S71	183	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0		
Total Inflows:		1402			

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	0	S77	1751
(Used)					
S127 Culverts	-NR-	S351	0	S77Below	1691 (NOT USED)



C5: 14.50 14.86 -168 0.0 5.6 0.0

South Shore

S4 Pumps: 10.94 14.84 0 0 0 0 (cfs)  
 S169: 14.83 10.92 0 0.0 0.0 0.0  
 S310: 14.75 2  
 S3 Pumps: 10.19 14.83 0 0 0 0 (cfs)  
 S354: 14.83 10.19 0 0.0 0.0  
 S2 Pumps: 9.88 14.76 0 0 0 0 0 (cfs)  
 S351: 14.76 9.88 0 0.0 0.0 0.0  
 S352: 14.88 9.74 0 0.0 0.0  
 C10A: -NR- 14.42 0.0 8.5 8.5 8.5 8.5  
 L8 Canal PT 14.22 147

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S351 and S352 Temporary Pumps/S354 Spillway

S351: 9.88 14.76 0 -NR--NR--NR--NR--NR--NR-  
 S352: 9.74 14.88 0 -NR--NR--NR--NR-  
 S354: 10.19 14.83 0 -NR--NR--NR--NR-

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Caloosahatchee River (S77, S78, S79)

S47B: 14.91 11.12 0.0 0.0  
 S47D: 10.86 10.87 22 5.0  
 S77:  
 Spillway and Sector Flow:  
 14.63 10.94 1748 1.0 2.5 2.5 1.0  
 Flow Due to Lockages+: 3  
 S77 Below USGS Flow Gage 1691  
 S78:  
 Spillway and Sector Flow:  
 10.74 2.97 2117 1.5 2.0 1.5 1.5  
 Flow Due to Lockages+: 10  
 S79:  
 Spillway and Sector Flow:  
 3.11 1.48 2850 1.0 1.0 1.0 2.0 2.0 1.0 1.0  
 1.0  
 Flow Due to Lockages+: 8  
 Percent of flow from S77 61%  
 Chloride (ppm) 59

St. Lucie Canal (S308, S80)

S308:  
 Spillway and Sector Flow:  
 14.68 14.01 0 0.0 0.0 0.0 0.0  
 Flow Due to Lockages+: 2  
 S308 Below USGS Flow Gage 33  
 S153: 18.83 13.82 24 0.5 0.0  
 S80:  
 Spillway and Sector Flow:  
 14.10 0.68 105 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Flow Due to Lockages+: 13  
 Percent of flow from S308 0%

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.

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	1-Day	3-Day	7-Day	----- Wind ---	
Daily Precipitation Totals				Direction	
Speed	(inches)	(inches)	(inches)	(Degø)	
(mph)					
S133 Pump Station:	-NR-	0.00	0.01		
S193:	-NR-	0.00	0.00	-NR-	-NR-
Okeechobee Field Station:	-NR-	0.00	0.00		
S135 Pump Station:	-NR-	0.00	0.01		
S127 Pump Station:	-NR-	0.00	0.00		
S129 Pump Station:	-NR-	0.00	0.06		
S131 Pump Station:	-NR-	0.00	0.17		
S77:	0.00	0.42	0.42	115	2
S78:	0.00	663.89	1057.01	65	4
S79:	0.00	0.43	0.43	142	6
S4 Pump Station:	-NR-	0.00	0.00		
Clewiston Field Station:	-NR-	0.00	0.00		
S3 Pump Station:	-NR-	0.00	0.01		
S2 Pump Station:	-NR-	0.00	0.12		
S308:	*****	*****	*****	39	0
S80:	0.00	0.02	0.07	94	9
Okeechobee Average	*****	6657.03	*****		
(Sites S78, S79 and S80 not included)					
-----					
Oke Nexrad Basin Avg	-NR-	0.18	0.20		
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Okeechobee Lake Elevations	20 DEC 2015	14.74 Difference from
20DEC15		
20DEC15 -1 Day =	19 DEC 2015	14.75 0.01
20DEC15 -2 Days =	18 DEC 2015	14.80 0.06
20DEC15 -3 Days =	17 DEC 2015	14.80 0.06
20DEC15 -4 Days =	16 DEC 2015	14.79 0.05
20DEC15 -5 Days =	15 DEC 2015	14.79 0.05
20DEC15 -6 Days =	14 DEC 2015	14.78 0.04
20DEC15 -7 Days =	13 DEC 2015	14.76 0.02
20DEC15 -30 Days =	20 NOV 2015	14.42 -0.32
20DEC15 -1 Year =	20 DEC 2014	15.27 0.53
20DEC15 -2 Year =	20 DEC 2013	14.32 -0.42

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

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Lake Okeechobee Net Inflow (LONIN)

		Average Flow over the previous 14 days			Avg-Daily Flow
20DEC15	Today =	20 DEC 2015	1520	MON	-223
20DEC15	-1 Day =	19 DEC 2015	2034	SUN	-9016
20DEC15	-2 Days =	18 DEC 2015	3881	SAT	803
20DEC15	-3 Days =	17 DEC 2015	4137	FRI	2932
20DEC15	-4 Days =	16 DEC 2015	3908	THU	430
20DEC15	-5 Days =	15 DEC 2015	4114	WED	2587
20DEC15	-6 Days =	14 DEC 2015	4186	TUE	5402
20DEC15	-7 Days =	13 DEC 2015	3848	MON	-551
20DEC15	-8 Days =	12 DEC 2015	3782	SUN	3727
20DEC15	-9 Days =	11 DEC 2015	3714	SAT	-NR-
20DEC15	-10 Days =	10 DEC 2015	3714	FRI	2409
20DEC15	-11 Days =	09 DEC 2015	3376	THU	4570
20DEC15	-12 Days =	08 DEC 2015	2844	WED	2305
20DEC15	-13 Days =	07 DEC 2015	2312	TUE	4388

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S65E

		Average Flow over previous 14 days			Avg-Daily Flow
20DEC15	Today=	20 DEC 2015	910	MON	666
20DEC15	-1 Day =	19 DEC 2015	953	SUN	731
20DEC15	-2 Days =	18 DEC 2015	1005	SAT	740
20DEC15	-3 Days =	17 DEC 2015	1057	FRI	736
20DEC15	-4 Days =	16 DEC 2015	1067	THU	882
20DEC15	-5 Days =	15 DEC 2015	1052	WED	596
20DEC15	-6 Days =	14 DEC 2015	1057	TUE	754
20DEC15	-7 Days =	13 DEC 2015	1077	MON	943
20DEC15	-8 Days =	12 DEC 2015	1076	SUN	952
20DEC15	-9 Days =	11 DEC 2015	1054	SAT	880
20DEC15	-10 Days =	10 DEC 2015	1073	FRI	1072
20DEC15	-11 Days =	09 DEC 2015	1062	THU	1172
20DEC15	-12 Days =	08 DEC 2015	1073	WED	1340
20DEC15	-13 Days =	07 DEC 2015	1085	TUE	1277

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Lake Okeechobee Outlets Last 14 Days

DATE	S-77	S-77	Below S-77	S-78	S-78	S-79
	Discharge (0700-2100) (AC-FT)	Discharge (ALL DAY) (AC-FT)	Discharge (ALL-DAY) (AC-FT)	Discharge (0700-2100) (AC-FT)	Discharge (ALL DAY) (AC-FT)	Discharge (ALL DAY) (AC-FT)
20 DEC 2015	2028	3472	3353	2445	4218	5667
19 DEC 2015	1690	-NA-	2414	1504	2273	5017
18 DEC 2015	793	-NA-	978	856	1147	2927
17 DEC 2015	934	-NA-	972	216	540	1334
16 DEC 2015	385	-NA-	410	426	736	2130
15 DEC 2015	109	619	624	408	880	2003
14 DEC 2015	1051	-NA-	1571	871	1863	2558
13 DEC 2015	1600	2728	2711	1726	2957	4039



12 DEC 2015	1761	2800	2549	1673	2610	4586
11 DEC 2015	712	-NA-	911	886	1330	3339
10 DEC 2015	4	-NA-	71	136	324	1838
09 DEC 2015	191	-NA-	124	135	406	2419
08 DEC 2015	0	9	-68	291	936	2973
07 DEC 2015	0	9	-145	718	1591	3688

	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)
20 DEC 2015	3	0	0	0	291
19 DEC 2015	-9	0	0	0	336
18 DEC 2015	47	0	0	0	352
17 DEC 2015	34	0	0	0	343
16 DEC 2015	48	0	0	0	356
15 DEC 2015	11	0	0	0	325
14 DEC 2015	10	0	0	0	383
13 DEC 2015	84	0	0	0	390
12 DEC 2015	100	0	0	0	403
11 DEC 2015	5	0	0	-NR-	388
10 DEC 2015	-9	0	0	0	403
09 DEC 2015	-13	0	0	0	375
08 DEC 2015	-17	0	0	0	372
07 DEC 2015	-71	0	0	0	303

	S-308	Below S-308	S-80
	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)
20 DEC 2015	4	65	234
19 DEC 2015	1	71	710
18 DEC 2015	3	-157	62
17 DEC 2015	1	-206	379
16 DEC 2015	1	70	749
15 DEC 2015	1	-33	168
14 DEC 2015	3	-187	546
13 DEC 2015	1	307	504
12 DEC 2015	2	136	439
11 DEC 2015	2	201	874
10 DEC 2015	3	-39	911
09 DEC 2015	3	-NR-	1277
08 DEC 2015	0	-NR-	1374
07 DEC 2015	2	51	1660

\*\*\* NOTE: 1) Discharge from (0700-2100) is computed using Spillway and Sector

Gate Discharges from 0700 hrs to 2100 hrs.

and 2) Discharge (ALL DAY) is computed using Spillway, Sector Gate

and Lockages Discharges from 0015 hrs to 2400 hrs.

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(I) - Flows preceded by "I" signify an instantaneous flow computed from the single value reported for the day

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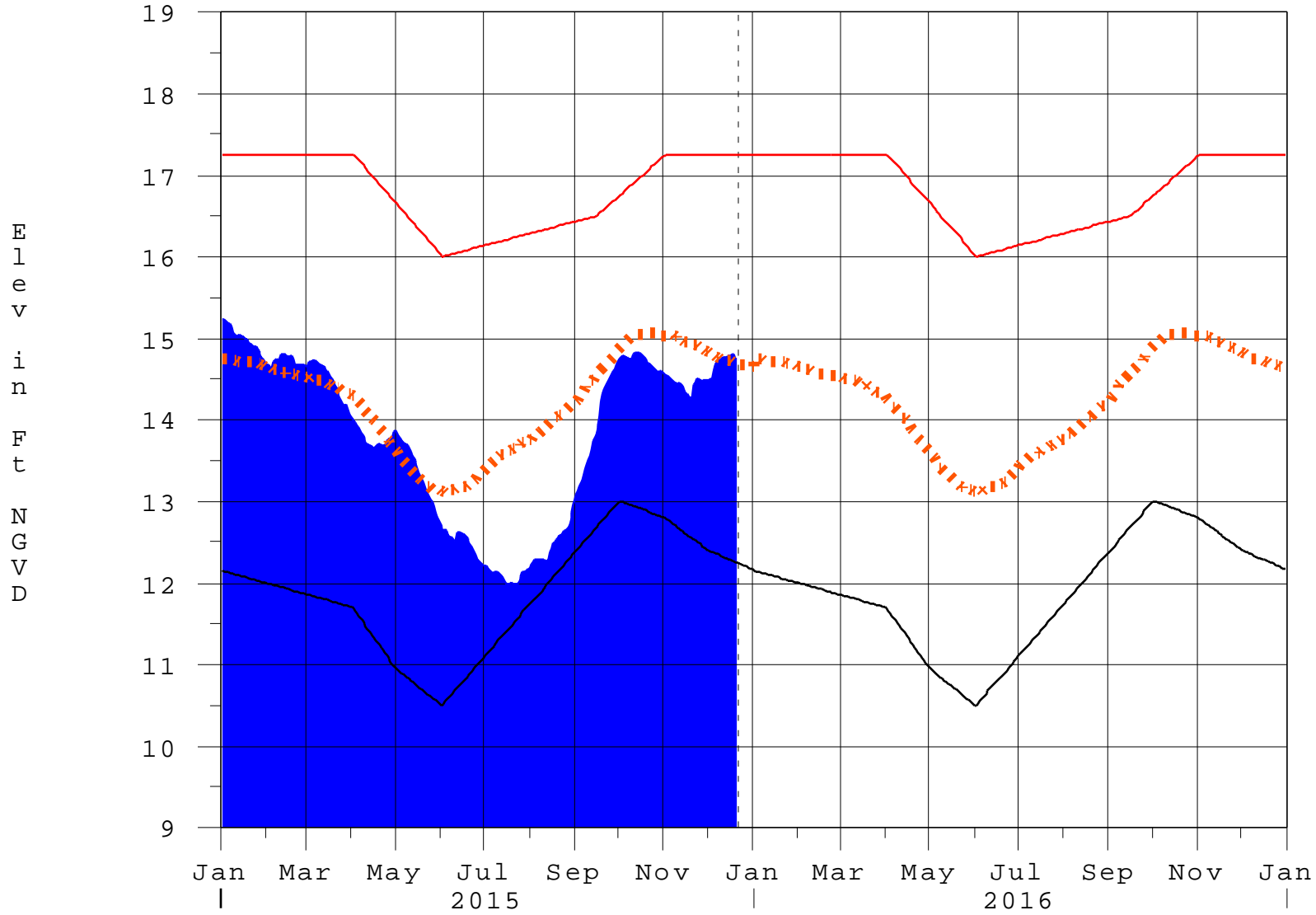
\* On 11 May 1999, Lake Okeechobee Elevation was switched from Instantaneous 2400 value to an average-daily lake average.  
On 14 Mar 2001, due to the isolation of various gages within the standard  
10 stations, the average of the interior 4 station gages was used as the Lake Okeechobee Elevation.  
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](http://www.sfwmd.gov)

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Report Generated 21DEC2015 @ 15:44 \*\* Preliminary Data - Subject to Revision  
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# Lake Okeechobee

21DEC15 15:45:50



- High Lake Management
- Okeechobee Avg Elev
- Average Elev [1965-2007]
- Water Shortage Management

# Classification Tables

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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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[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 $\geq$ 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\***

<b>Lake Net Inflow Prediction</b> <b>[million acre-feet]</b>	<b>Equivalent Depth**</b> <b>[feet]</b>	<b>Lake Okeechobee Net Inflow Seasonal Outlook</b>
> 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\*

<b>Lake Net Inflow Prediction</b> <b>[million acre-feet]</b>	<b>Equivalent Depth**</b> <b>[feet]</b>	<b>Lake Okeechobee</b> <b>Net Inflow</b> <b>Multi-Seasonal Outlook</b>
> 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\***

<b>6-15 Day Precipitation Outlook Categories</b>	<b>WSE Decision Tree Categories</b>
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