

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 12/14/2015 (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 cold 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 (Dec-May)	N/A	N/A	0.89	Normal	1.82	Wet	2.24	Very Wet
Multi Seasonal (Dec-Oct)	N/A	N/A	3.23	Wet	4.03	Wet	6.10	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:](#)

5028 cfs 14-day running average for Lake Okeechobee Net Inflow through 12/14/2015. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Wet.

-0.40 for Palmer Index on 12/13/2015.

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 12/14/2015

Lake Okeechobee Stage: **14.76 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	14.29	← 14.76
Base Flow sub-band		12.68	
Beneficial Use sub-band		12.30	
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 12/14/2015 (ENSO Neutral Condition):

Water Supply Department Technical Input

Water Supply Outlook:

District wide, Raindar rainfall 0.20 inches for the week ending 12/14/2015. Lake stage on 12/14/2015 is 14.76 ft, up 0.06 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 **Wet**. The PDSI indicates normal condition and the LONIN is Wet. The classification is based on the wetter of the two.

Water Supply Risk Evaluation

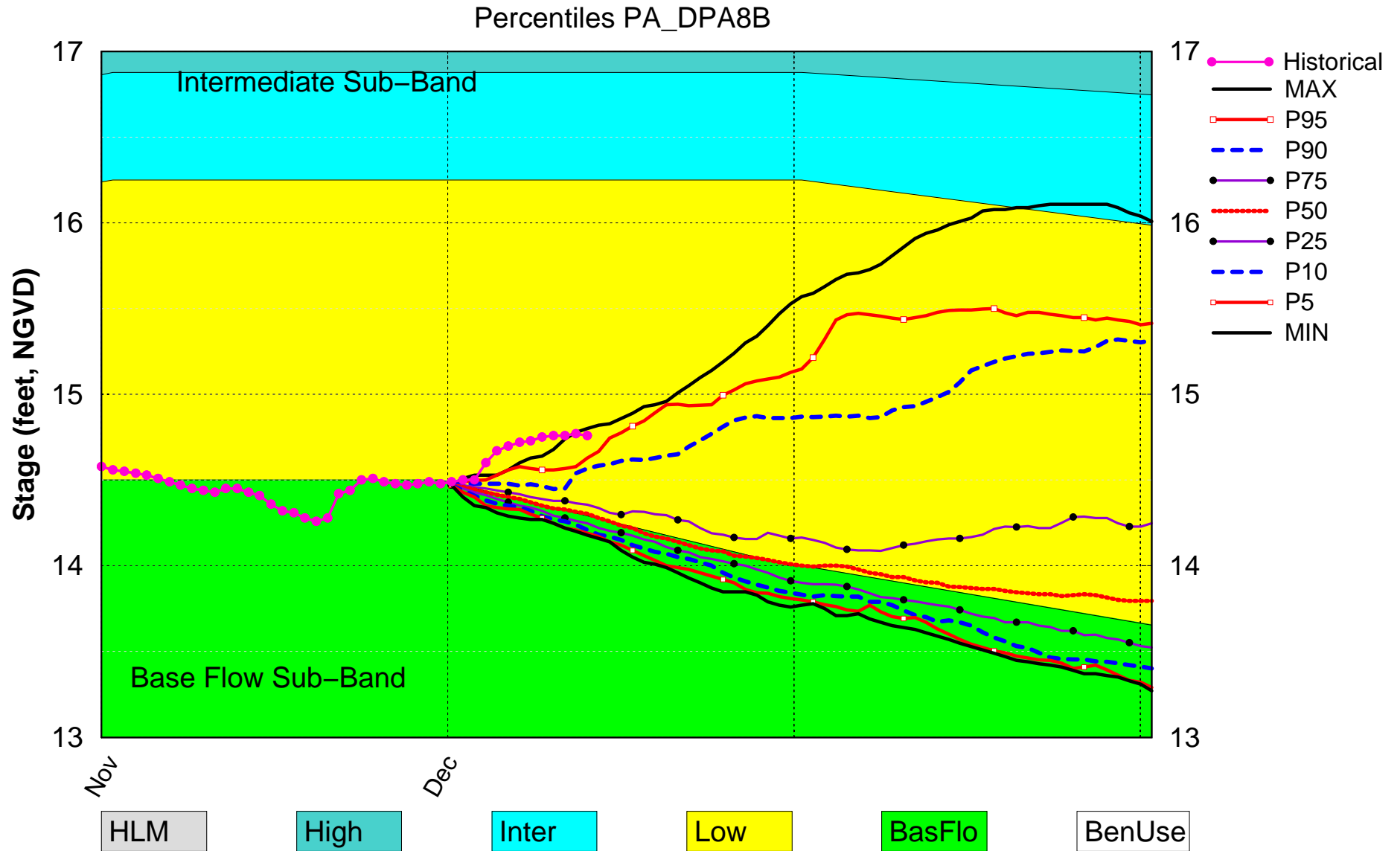
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Low Sub-Band	M
	Palmer Index for LOK Tributary Conditions	-0.40 (Normal)	L
	CPC Precipitation Outlook	1 month: Above Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Forecast	1.82 ft (Normal to Extremely Wet)	L
	AMO warm/EI Nino		
	LOK Multi-Seasonal Net Inflow Forecast	4.03 ft (Wet)	L
AMO warm/EI Nino			
WCAs	WCA 1: Site 1-7,1-8T, & 1-9	(17.22 ft)	L
	WCA 2A: Site 2-17 HW	(12.98 ft)	L
	WCA-3A: 3 Station Average (Site 63 and 65)	(10.61 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](#)

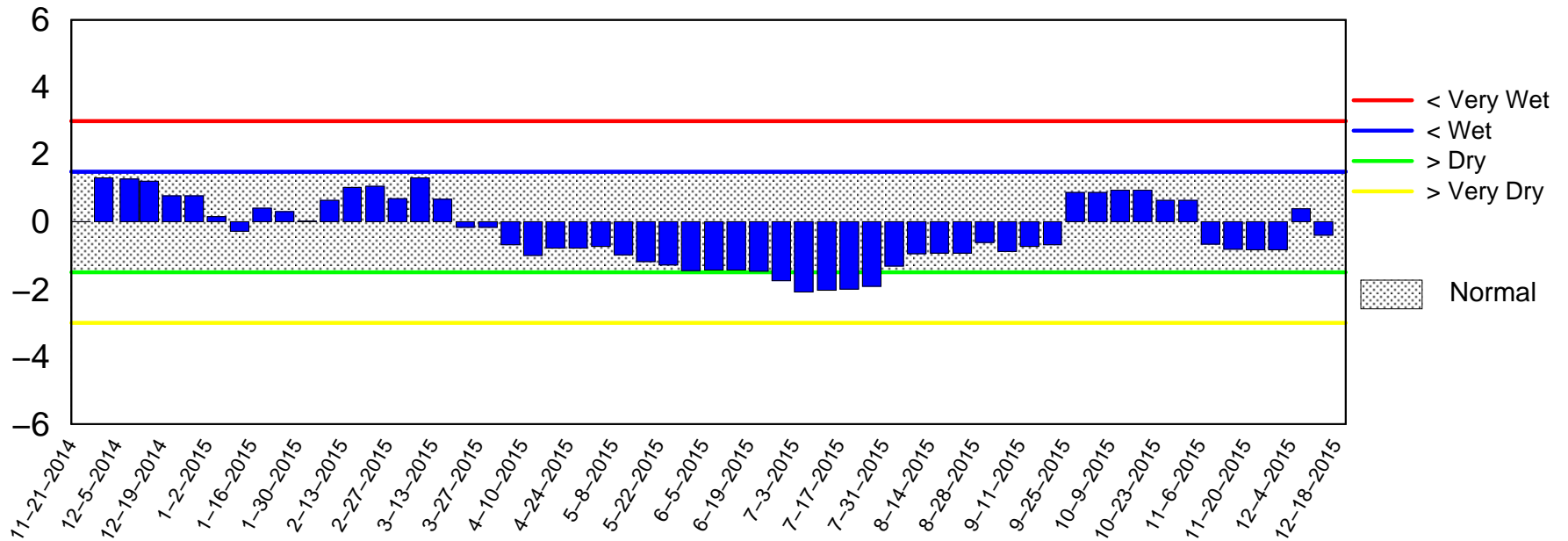
Lake Okeechobee SFWMM Dec 2015 Dynamic Position Analysis



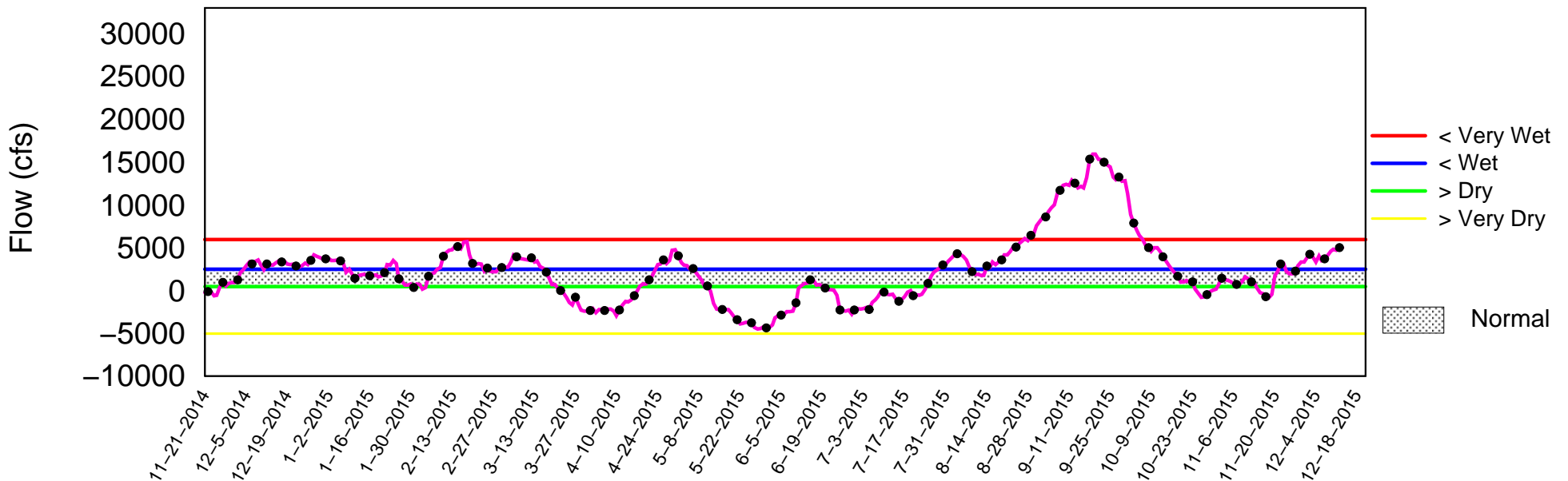
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of December 14 2015

Palmer Index



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



Mon Dec 14 14:32:06 EST 2015

2008 LORS

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

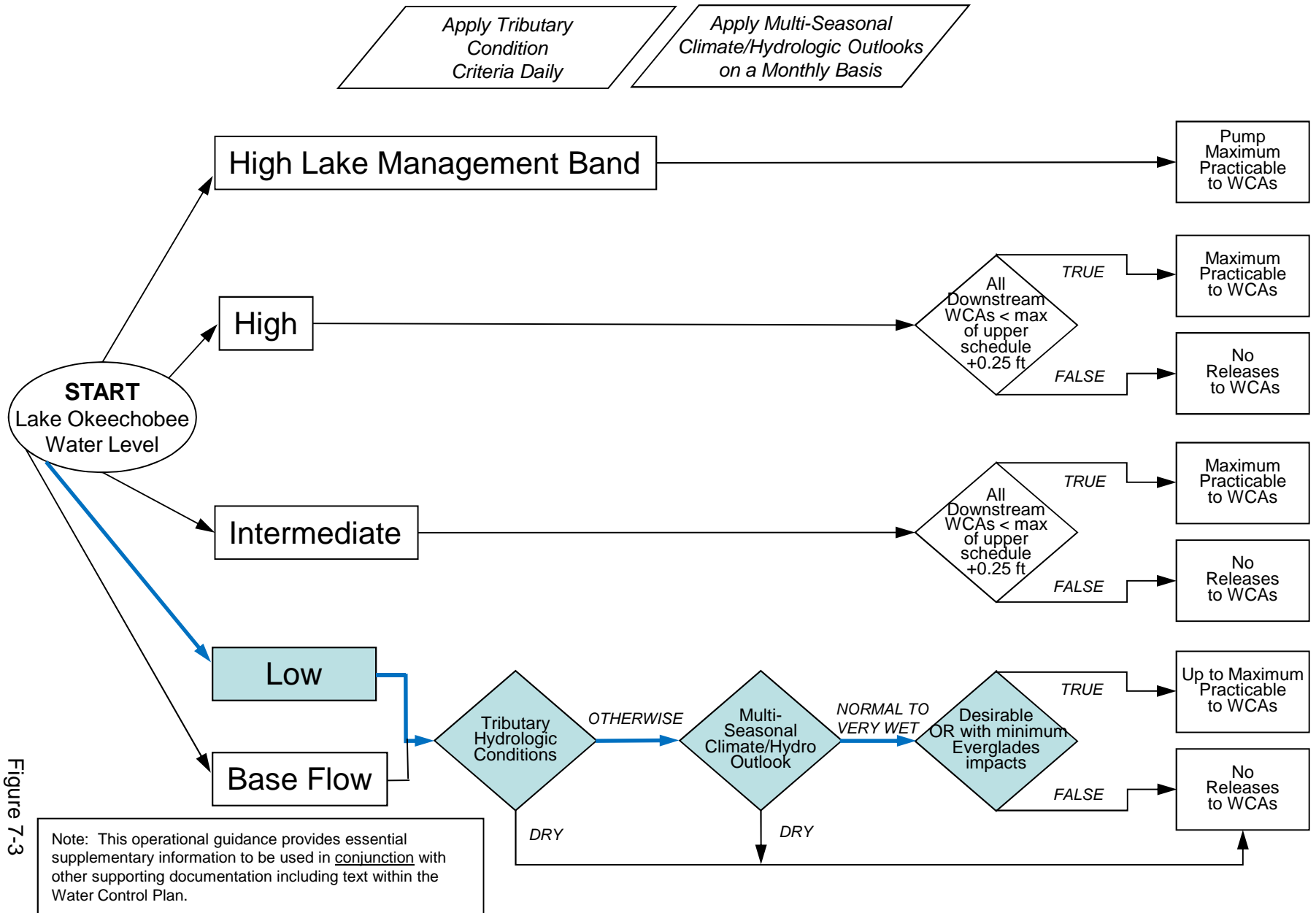


Figure 7-3

2008 LORS FORECAST

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

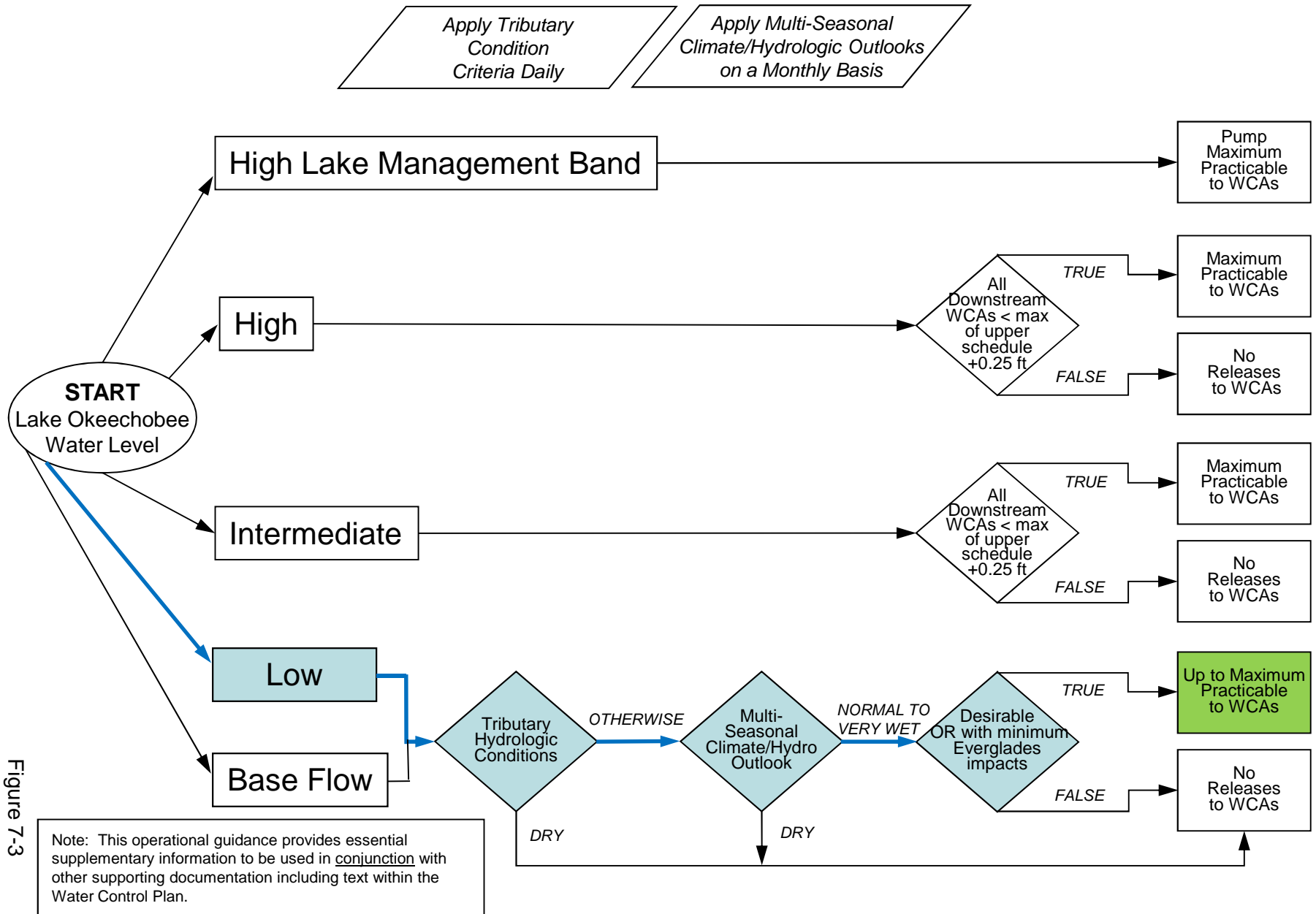


Figure 7-3

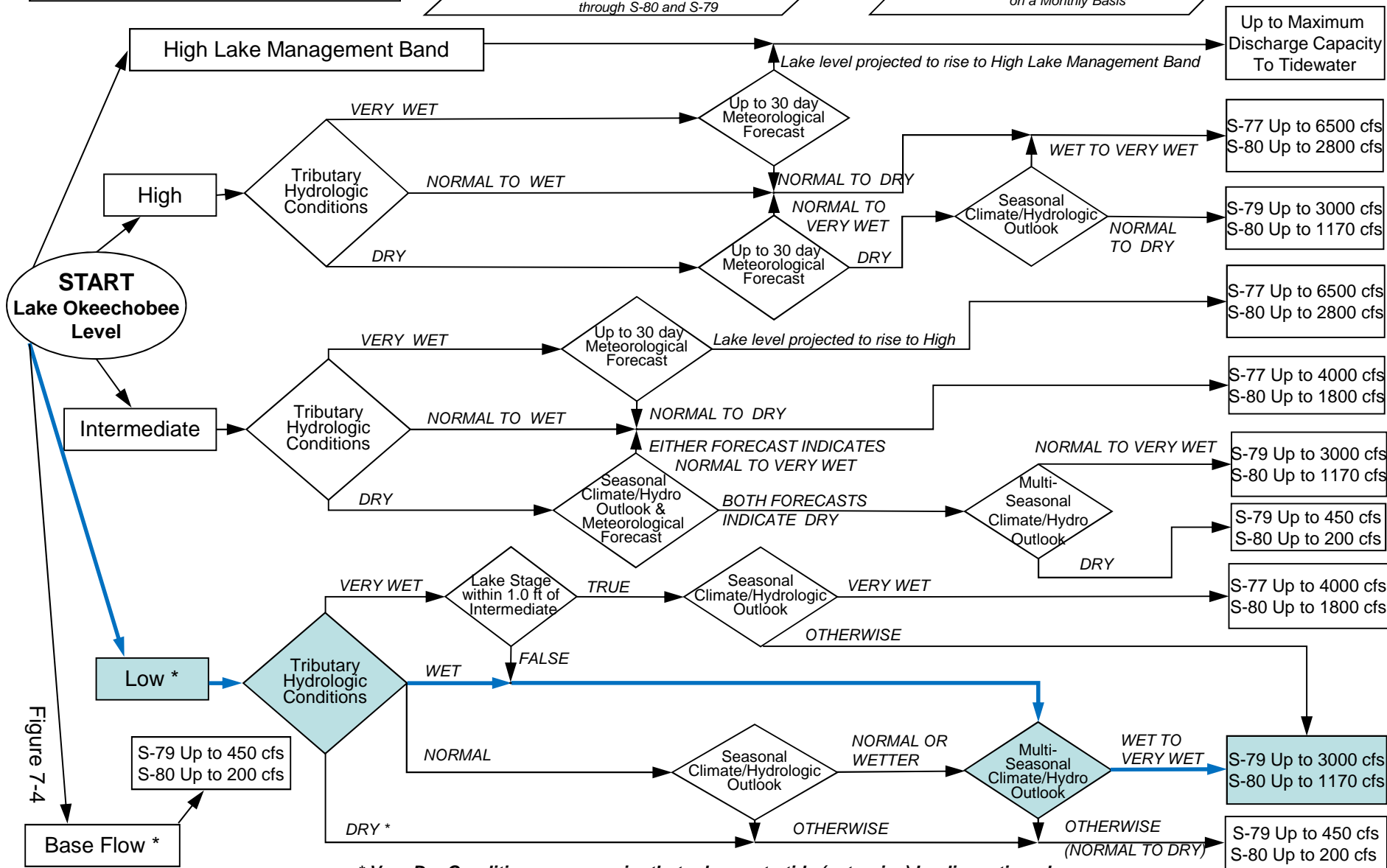
2008 LORS

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

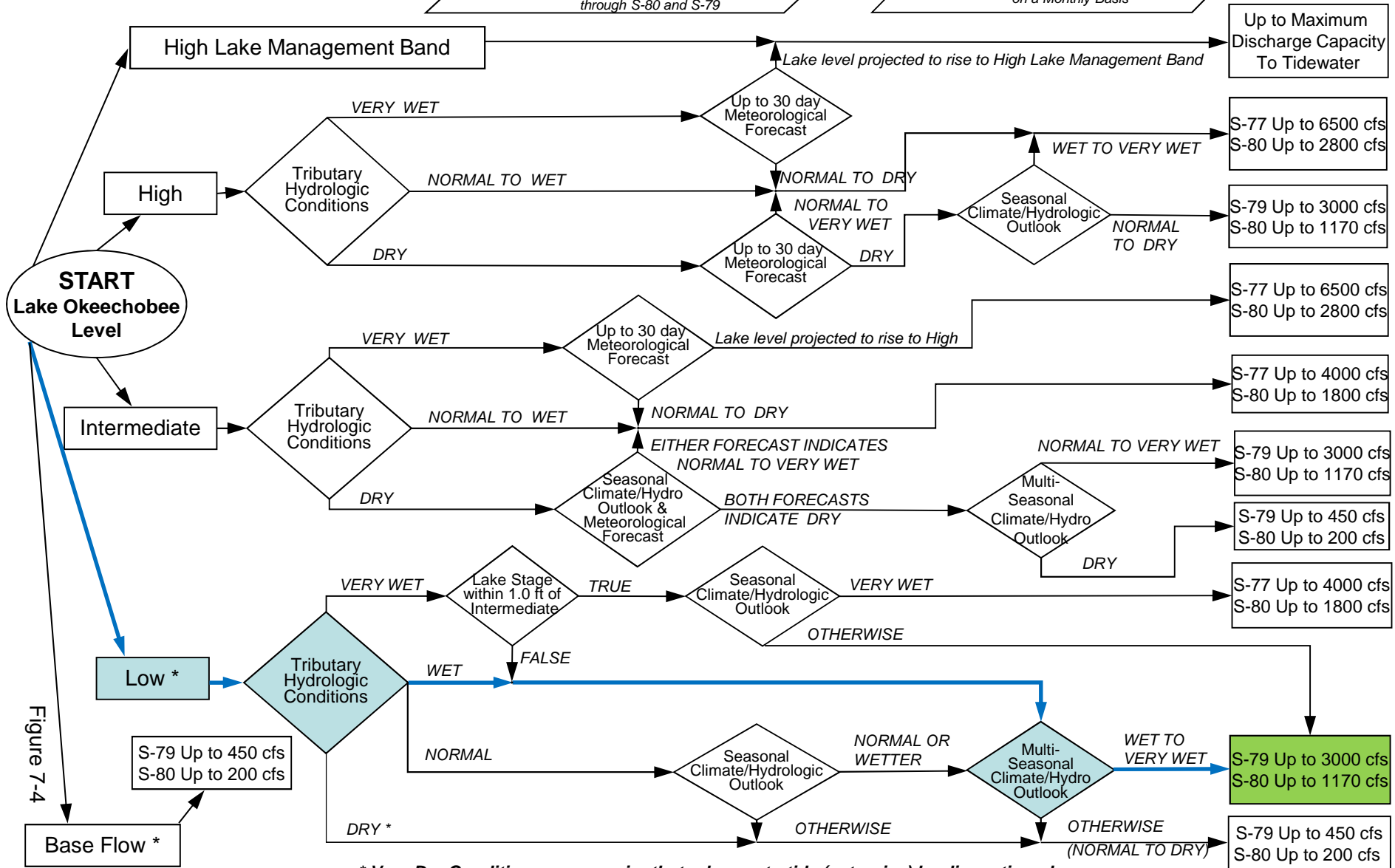
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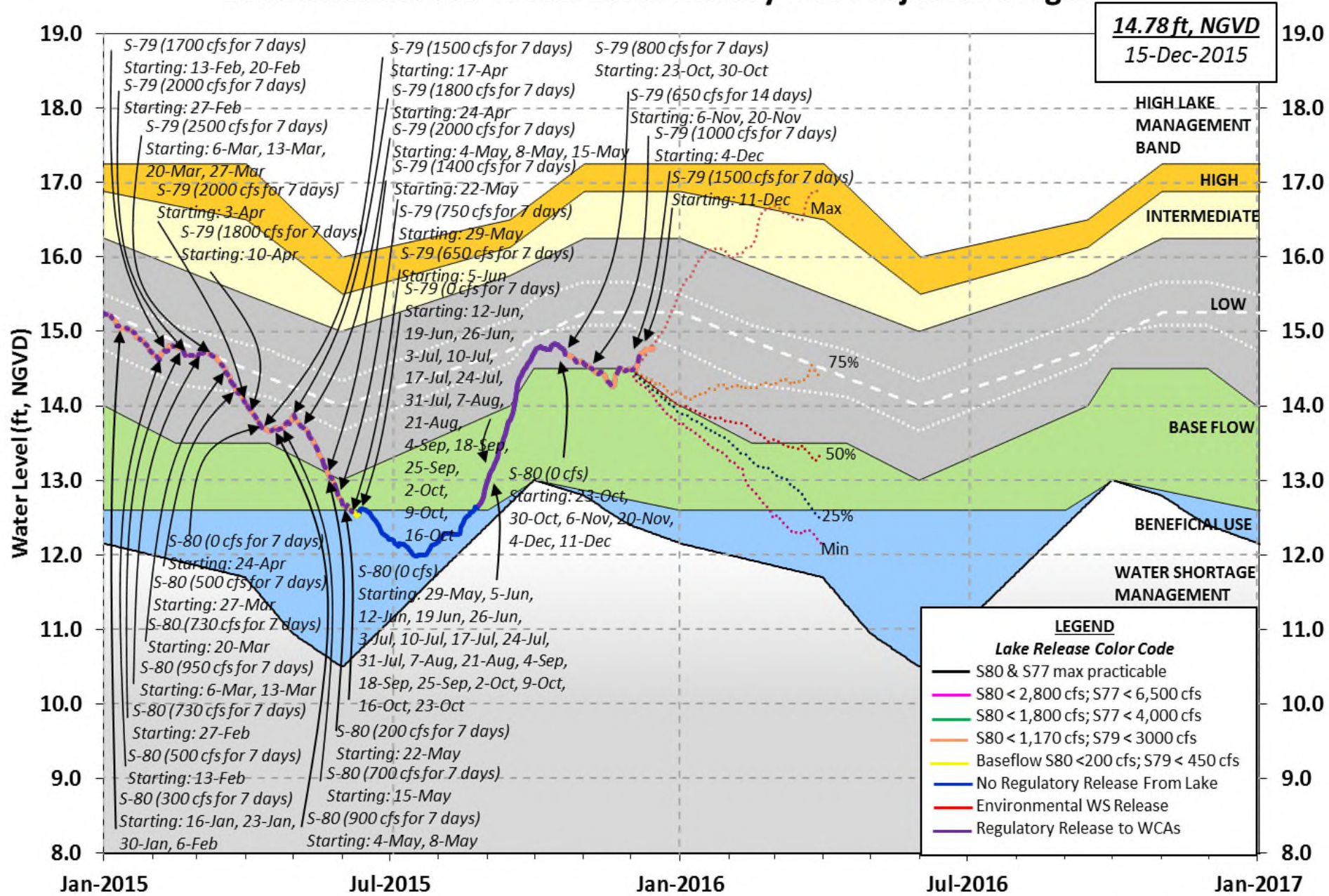
Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis



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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 13 DEC 2015

Okeechobee Lake Regulation Elevation Last Year 2YRS Ago
 (ft-NGVD) (ft-NGVD) (ft-NGVD)
 *Okeechobee Lake Elevation 14.76 15.40 14.46 (Official Elv)
 Bottom of High Lake Mngmt= 17.25 Top of Water Short Mngmt= 12.30
 Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 13.65
 Difference from Average LORS2008 1.11

13DEC (1965-2007) Period of Record Average 14.73
 Difference from POR Average 0.03

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 8.70'
 ++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 6.90'
 Bridge Clearance = 49.36'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
14.60	14.85	14.79	14.72	14.88	14.87	14.67	14.70

*Combination Okeechobee Avg-Daily Lake Average = 14.76
 (*See Note)

Okeechobee Inflows (cfs):

S65E	944	C5	0	Fisheating Cr	598
S154	92	S191	0	S135 Pumps	0
S84	-NR-	S133 Pumps	0	S2 Pumps	0
S84X	418	S127 Pumps	48	S3 Pumps	0
S71	485	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0		
Total Inflows:	2585				

Okeechobee Outflows (cfs):

S135 Culverts (Used)	0	S354	0	S77	1376
S127 Culverts (USED)	-NR-	S351	0	S77Below	1367 (NOT USED)

C5: 15.15 14.91 0 0.0 0.0 0.0

South Shore

S4 Pumps: 11.31 14.79 0 0 0 0 (cfs)
 S169: 14.73 11.29 0 0.0 0.0 0.0
 S310: 14.68 43
 S3 Pumps: 9.91 14.78 0 0 0 0 (cfs)
 S354: 14.78 9.91 0 0.0 0.0
 S2 Pumps: 9.27 14.76 0 0 0 0 0 (cfs)
 S351: 14.76 9.27 0 0.0 0.0 0.0
 S352: 14.93 10.14 0 0.0 0.0
 C10A: -NR- 14.03 0.0 8.5 8.5 8.5 8.5
 L8 Canal PT 13.82 197

S351 and S352 Temporary Pumps/S354 Spillway

S351: 9.27 14.76 0 -NR--NR--NR--NR--NR--NR--
 S352: 10.14 14.93 0 -NR--NR--NR--NR--
 S354: 9.91 14.78 0 -NR--NR--NR--NR--

Caloosahatchee River (S77, S78, S79)

S47B: 13.39 11.29 0.0 0.0
 S47D: 11.37 11.38 -17 5.0
 S77:
 Spillway and Sector Flow:
 14.60 11.45 1370 1.0 2.0 2.0 0.5
 Flow Due to Lockages+: 6
 S77 Below USGS Flow Gage 1367
 S78:
 Spillway and Sector Flow:
 11.27 2.87 1461 1.0 1.5 1.0 1.0
 Flow Due to Lockages+: 30
 S79:
 Spillway and Sector Flow:
 3.02 1.72 2028 1.0 1.0 1.0 1.0 1.0 1.0 1.0
 1.0
 Flow Due to Lockages+: 9
 Percent of flow from S77 68%
 Chloride (ppm) 56

St. Lucie Canal (S308, S80)

S308:
 Spillway and Sector Flow:
 14.77 14.14 0 0.0 0.0 0.0 0.0
 Flow Due to Lockages+: 1
 S308 Below USGS Flow Gage 155
 S153: 18.97 13.97 18 0.5 0.0
 S80:
 Spillway and Sector Flow:
 14.23 2.07 230 0.2 0.2 0.2 0.0 0.2 0.2 0.0

Flow Due to Lockages+: 24
 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.

	----- Wind ---				
Daily Precipitation Totals	1-Day	3-Day	7-Day	Direction	
Speed	(inches)	(inches)	(inches)	(Degø)	
(mph)					
S133 Pump Station:	-NR-	0.00	0.18		
S193:	-NR-	0.00	0.00	-NR-	-NR-
Okeechobee Field Station:	-NR-	0.00	0.00		
S135 Pump Station:	-NR-	0.00	0.02		
S127 Pump Station:	-NR-	0.00	0.71		
S129 Pump Station:	-NR-	0.00	0.19		
S131 Pump Station:	-NR-	0.00	0.34		
S77:	0.00	0.00	0.00	174	2
S78:	2762.94	2792.57	7701.03	111	4
S79:	0.00	0.00	0.01	170	3
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:	*****	*****	*****	97	2
S80:	0.19	0.19	0.19	124	1
Okeechobee Average	*****	6568.08	*****		
(Sites S78, S79 and S80 not included)					

Oke Nexrad Basin Avg	0.00	0.00	0.06		

Okeechobee Lake Elevations	13 DEC 2015	14.76 Difference from
13DEC15		
13DEC15 -1 Day =	12 DEC 2015	14.77 0.01
13DEC15 -2 Days =	11 DEC 2015	14.76 0.00
13DEC15 -3 Days =	10 DEC 2015	14.76 0.00
13DEC15 -4 Days =	09 DEC 2015	14.75 -0.01
13DEC15 -5 Days =	08 DEC 2015	14.73 -0.03
13DEC15 -6 Days =	07 DEC 2015	14.72 -0.04
13DEC15 -7 Days =	06 DEC 2015	14.70 -0.06
13DEC15 -30 Days =	13 NOV 2015	14.41 -0.35
13DEC15 -1 Year =	13 DEC 2014	15.40 0.64
13DEC15 -2 Year =	13 DEC 2013	14.46 -0.30

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
13DEC15	Today =	13 DEC 2015	3848	MON	-551
13DEC15	-1 Day =	12 DEC 2015	3782	SUN	3727
13DEC15	-2 Days =	11 DEC 2015	3714	SAT	-NR-
13DEC15	-3 Days =	10 DEC 2015	3714	FRI	2409
13DEC15	-4 Days =	09 DEC 2015	3376	THU	4570
13DEC15	-5 Days =	08 DEC 2015	2844	WED	2305
13DEC15	-6 Days =	07 DEC 2015	2312	TUE	4388
13DEC15	-7 Days =	06 DEC 2015	2140	MON	6463
13DEC15	-8 Days =	05 DEC 2015	2715	SUN	14984
13DEC15	-9 Days =	04 DEC 2015	1867	SAT	-NR-
13DEC15	-10 Days =	03 DEC 2015	4026	FRI	182
13DEC15	-11 Days =	02 DEC 2015	4365	THU	2900
13DEC15	-12 Days =	01 DEC 2015	3906	WED	3450
13DEC15	-13 Days =	30 NOV 2015	3298	TUE	1355

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
13DEC15	Today=	13 DEC 2015	1077	MON	944
13DEC15	-1 Day =	12 DEC 2015	1076	SUN	952
13DEC15	-2 Days =	11 DEC 2015	1054	SAT	877
13DEC15	-3 Days =	10 DEC 2015	1073	FRI	1072
13DEC15	-4 Days =	09 DEC 2015	1062	THU	1175
13DEC15	-5 Days =	08 DEC 2015	1073	WED	1338
13DEC15	-6 Days =	07 DEC 2015	1085	TUE	1277
13DEC15	-7 Days =	06 DEC 2015	1109	MON	1264
13DEC15	-8 Days =	05 DEC 2015	1149	SUN	1456
13DEC15	-9 Days =	04 DEC 2015	1123	SAT	1480
13DEC15	-10 Days =	03 DEC 2015	1084	FRI	872
13DEC15	-11 Days =	02 DEC 2015	1075	THU	673
13DEC15	-12 Days =	01 DEC 2015	1106	WED	664
13DEC15	-13 Days =	30 NOV 2015	1142	TUE	1033

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)
13 DEC 2015	1600	2728	2711	1726	2957	4039
12 DEC 2015	1761	2800	2549	1673	2610	4586
11 DEC 2015	712	-NA-	911	978	1330	3339
10 DEC 2015	58	-NA-	71	176	324	1838
09 DEC 2015	240	-NA-	124	177	406	2419
08 DEC 2015	0	9	-68	386	936	2973
07 DEC 2015	0	9	-145	931	1591	3688
06 DEC 2015	0	15	-72	940	1878	4606

05 DEC 2015	0	5	-14	1493	2392	4328
04 DEC 2015	0	-NA-	6	892	1504	5206
03 DEC 2015	0	-NA-	68	109	270	1035
02 DEC 2015	230	-NA-	714	158	550	965
01 DEC 2015	711	-NA-	1125	423	954	1604
30 NOV 2015	389	1079	1071	367	963	2015

	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)
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
06 DEC 2015	-83	0	0	0	219
05 DEC 2015	-138	0	0	0	319
04 DEC 2015	-105	0	0	-NR-	269
03 DEC 2015	-132	0	0	0	251
02 DEC 2015	-56	0	0	0	391
01 DEC 2015	26	0	0	0	397
30 NOV 2015	62	0	0	0	390

	S-308	Below S-308	S-80
	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)
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
06 DEC 2015	0	-181	2380
05 DEC 2015	0	-102	1590
04 DEC 2015	0	-4	1059
03 DEC 2015	-92	-96	775
02 DEC 2015	-NA-	198	57
01 DEC 2015	613	632	56
30 NOV 2015	-NA-	912	43

*** 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

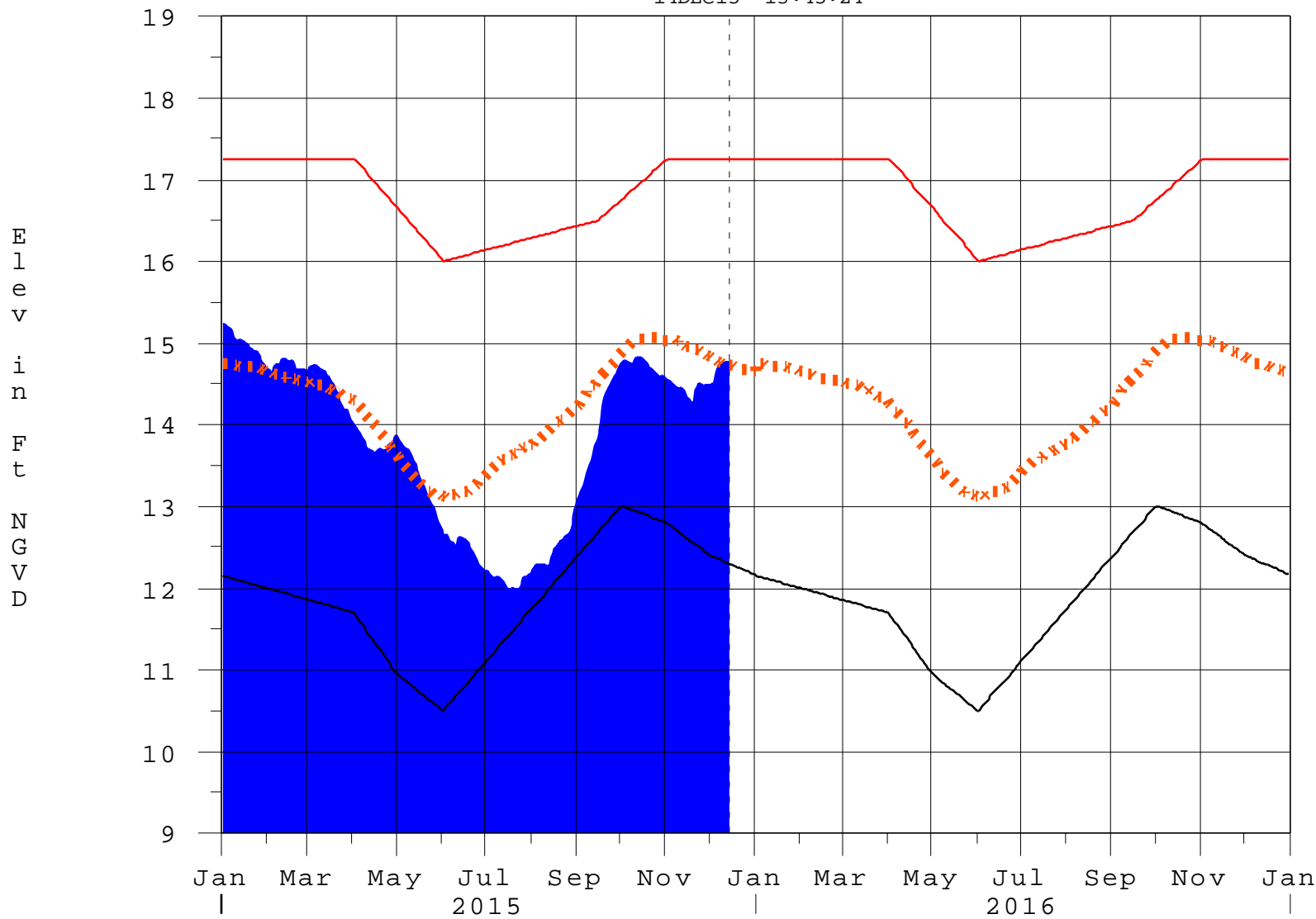
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* On 11 May 1999, Lake Okeechobee Elevation was switched from Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the standard
10 stations, the average of the interior 4 station gages 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 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 14DEC2015 @ 13:39 ** Preliminary Data - Subject to Revision
**

Lake Okeechobee

14DEC15 13:45:24



- 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

[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*

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