

Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 11/16/2015 (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 (Nov-Apr)	N/A	N/A	0.92	Normal	1.59	Wet	2.03	Very Wet
Multi Seasonal (Nov-Oct)	N/A	N/A	3.49	Wet	3.99	Wet	6.06	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:](#)

-257 cfs 14-day running average for Lake Okeechobee Net Inflow through 11/16/2015. According to the classification in [Tributary Hydrologic Conditions](#) table, this condition is Dry.

-0.80 for Palmer Index on 11/15/2015.

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 11/16/2015

Lake Okeechobee Stage: **14.32 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	14.50	
Base Flow sub-band		12.80	← 14.32
Beneficial Use sub-band		12.60	
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 450 cfs and S-80 up to 200 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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[Back to U.S. Army Corps of Engineers LORSS Homepage](#)

LORS2008 Implementation on 11/16/2015 (ENSO Neutral Condition):

Water Supply Department Technical Input

Water Supply Outlook:

District wide, Raindar rainfall 0.51 inches for the week ending 11/16/2015. Lake stage on 11/16/2015 is 14.32 ft, down 0.12 ft from last week.

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

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

Water Supply Risk Evaluation

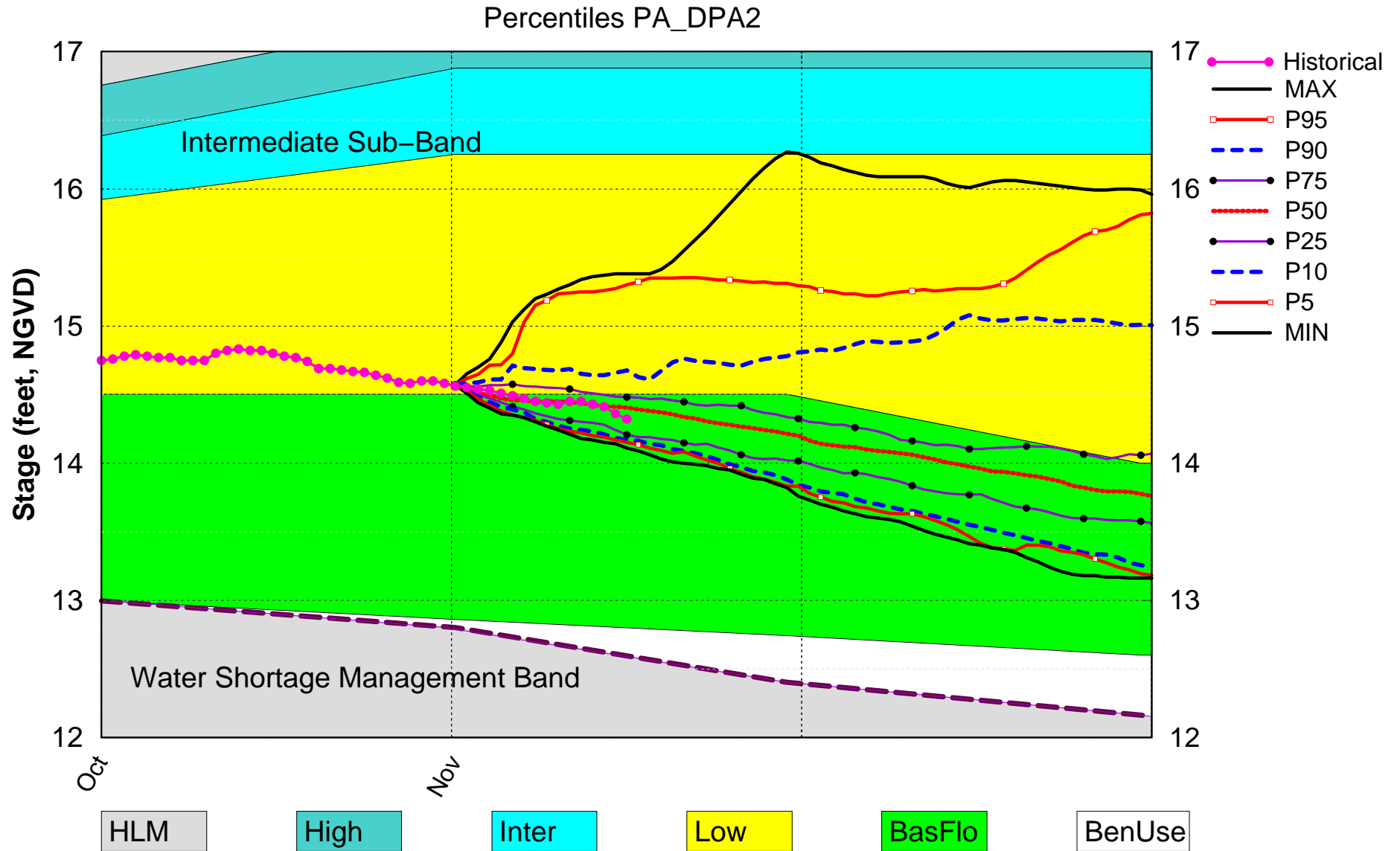
Area	Indicator	Value	Color Coded Scoring Scheme
LOK	Projected LOK Stage for the next two months	Base Flow Sub-Band	M
	Palmer Index for LOK Tributary Conditions	-0.80 (Normal)	L
	CPC Precipitation Outlook	1 month: Above Normal	L
		3 months: Above Normal	L
	LOK Seasonal Net Inflow Forecast	1.59 ft (Normal to Extremely Wet)	L
	AMO warm/El Nino		
	LOK Multi-Seasonal Net Inflow Forecast	3.99 ft (Wet)	L
AMO warm/El Nino			
WCAs	WCA 1: Site 1-7,1-8T, & 1-9	(16.84 ft)	L
	WCA 2A: Site 2-17 HW	(12.46 ft)	L
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	(10.10 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).

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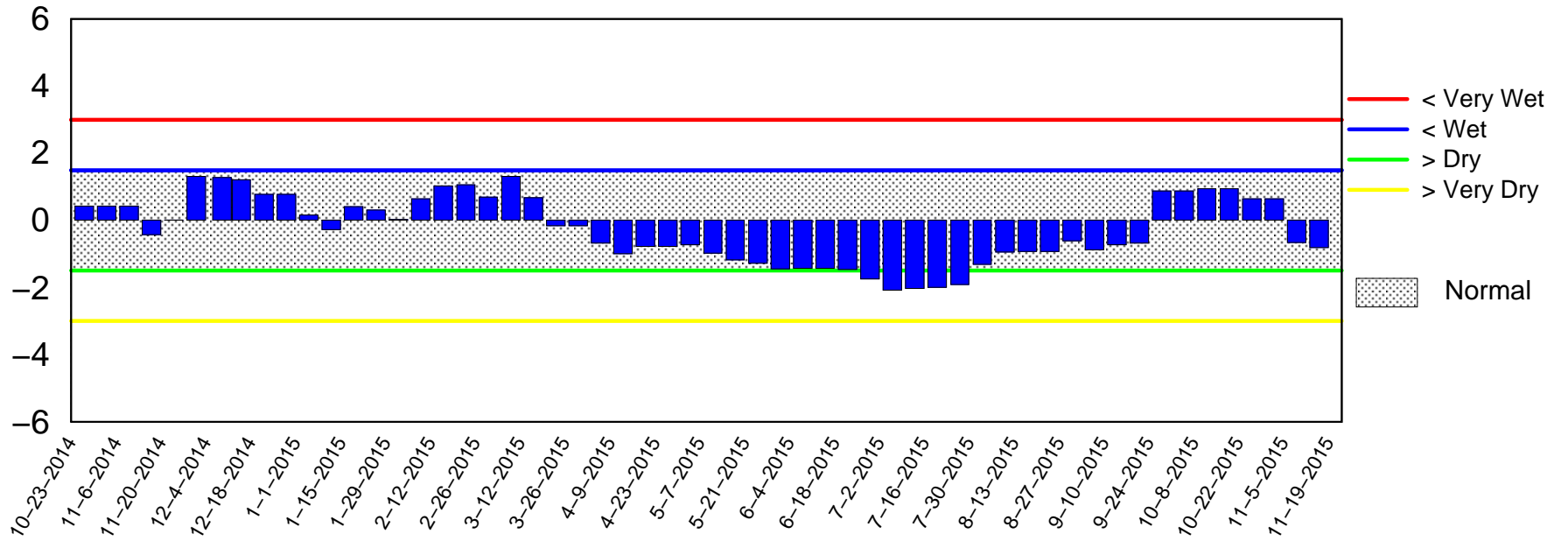
Lake Okeechobee SFWMM Nov 2015 Dynamic Position Analysis



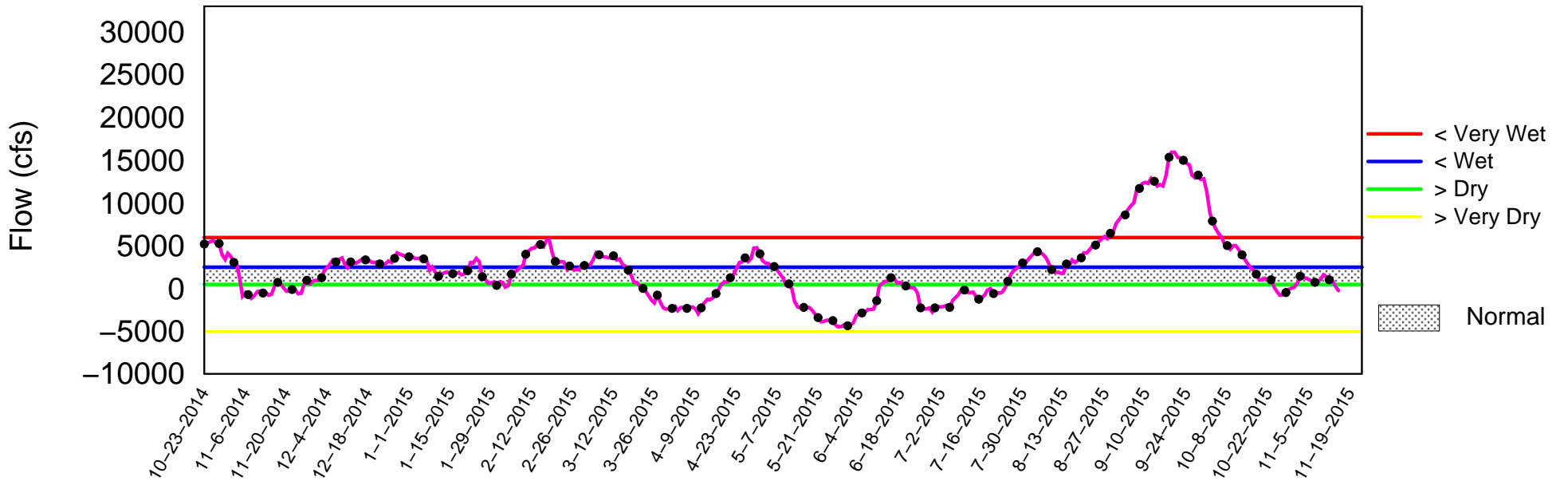
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of November 16 2015

Palmer Index



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



Mon Nov 16 11:51:17 EST 2015

2008 LORS

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

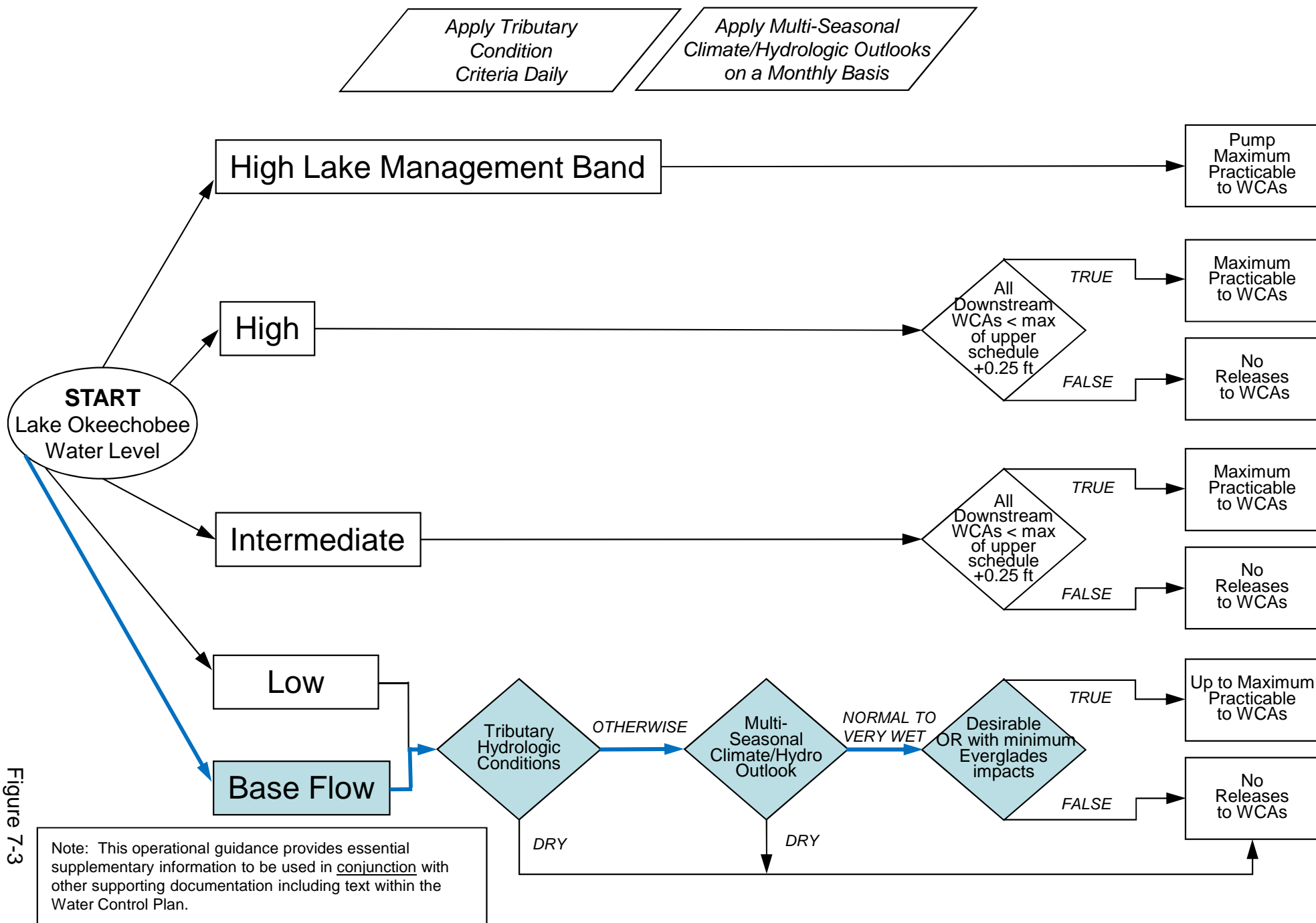


Figure 7-3

2008 LORS FORECAST

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

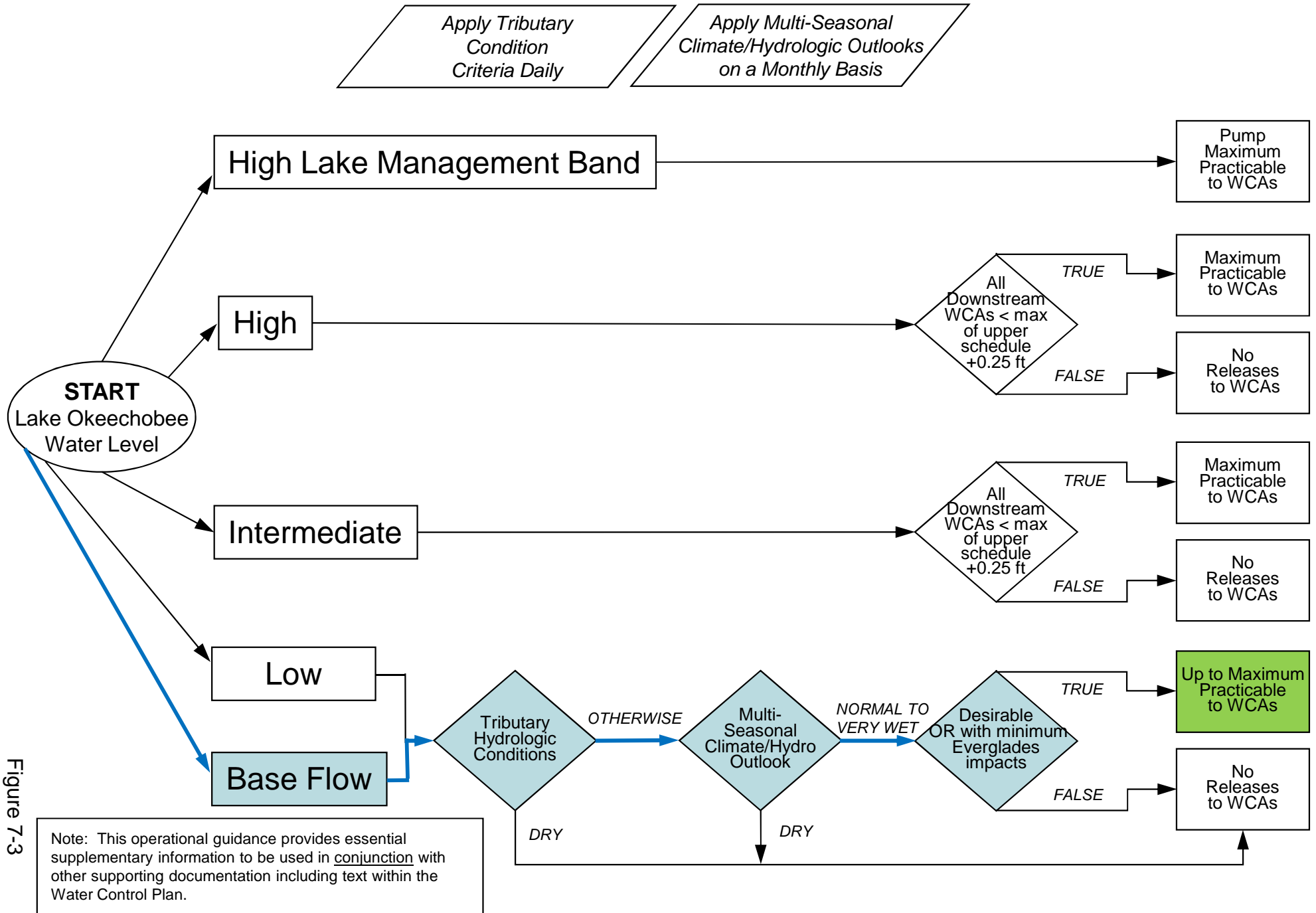


Figure 7-3

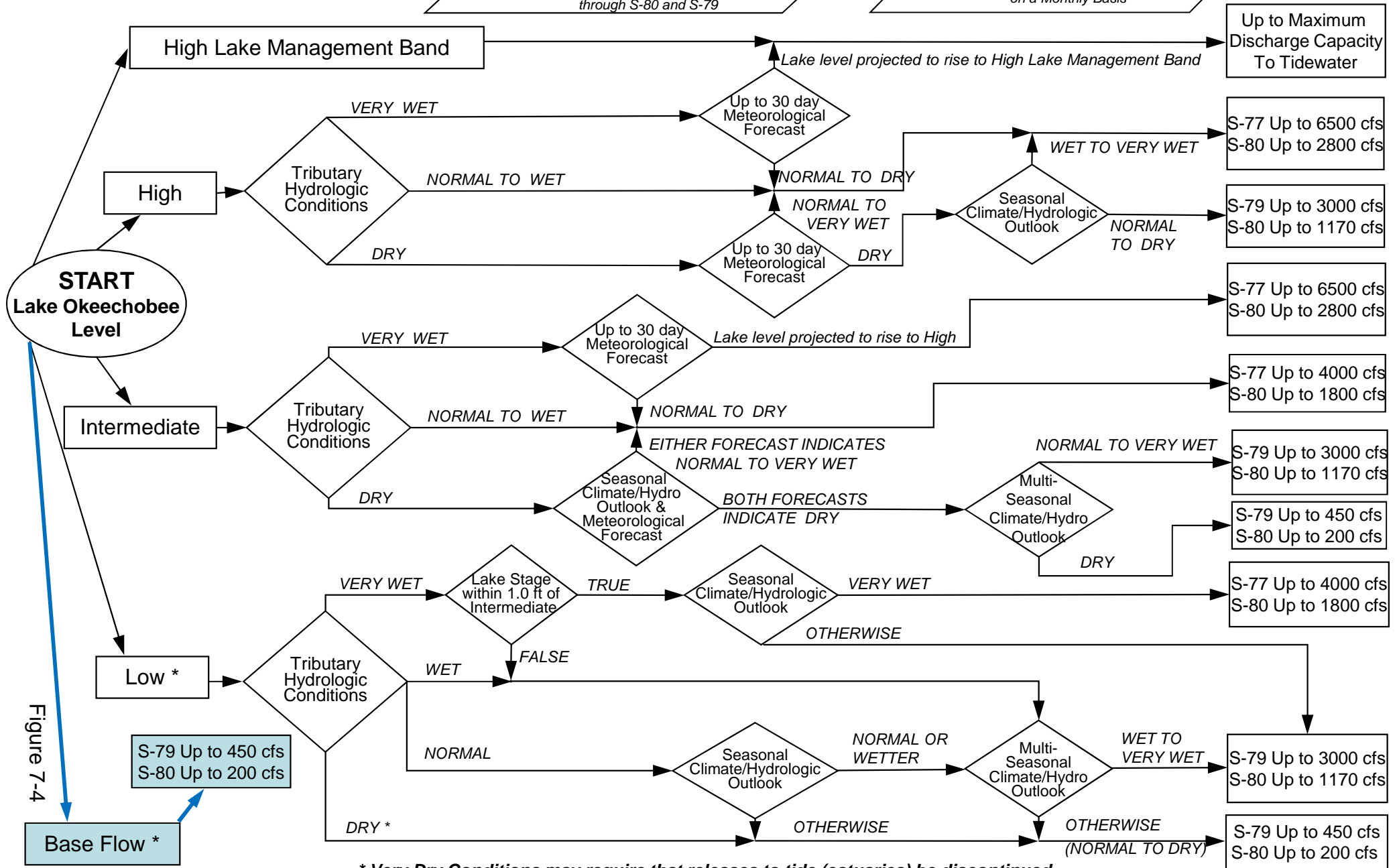
2008 LORS

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

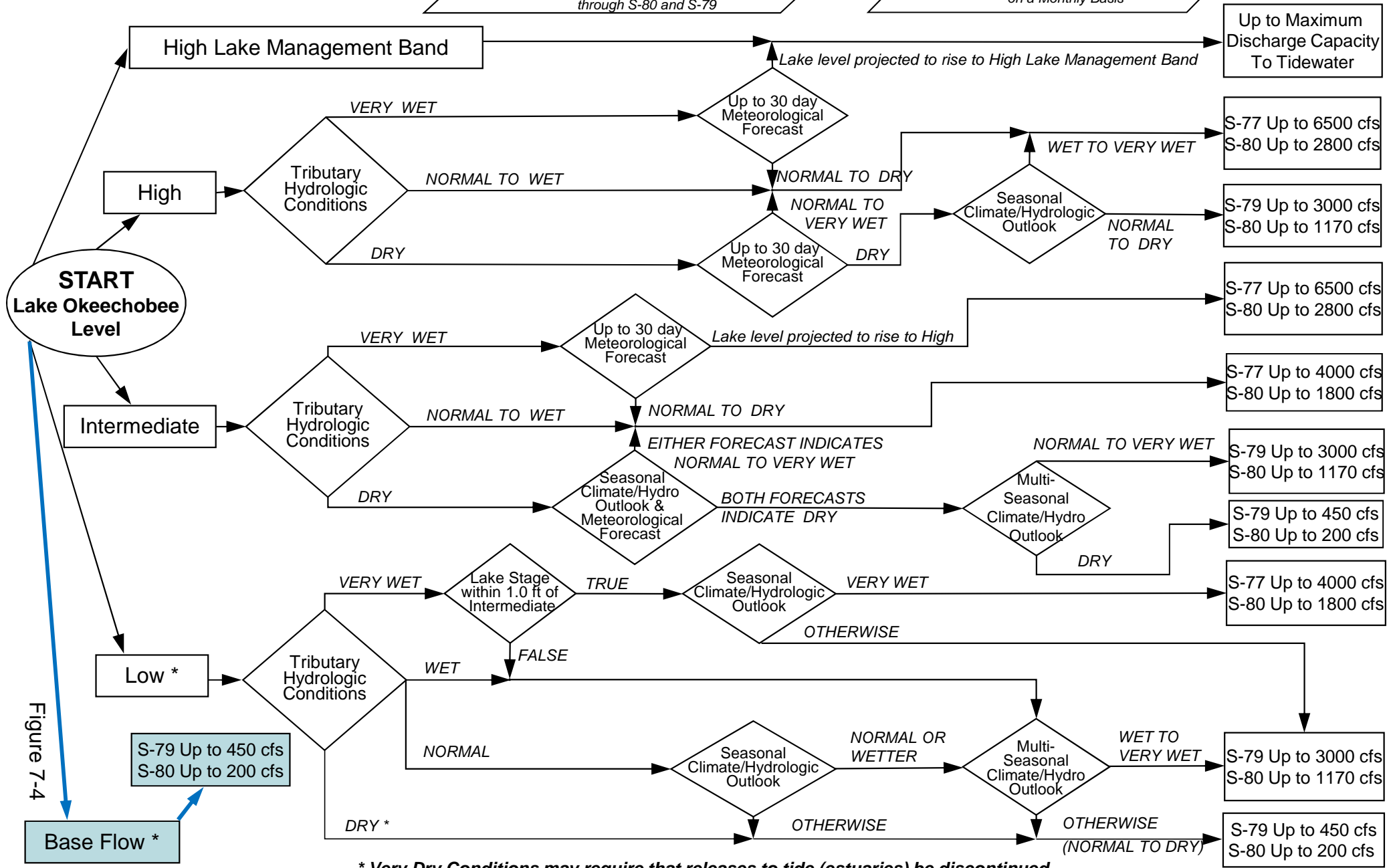
2008 LORS FORECAST

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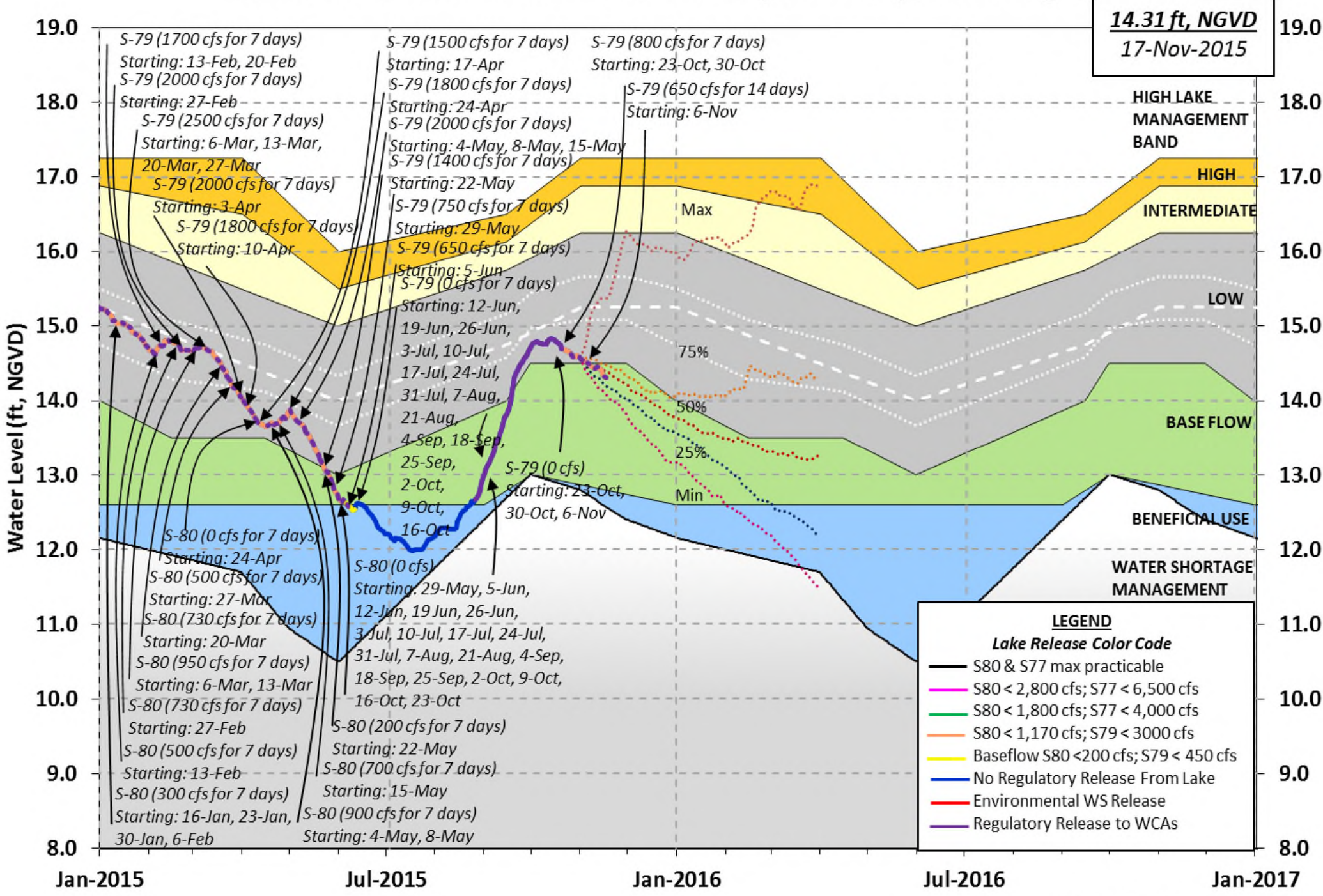
Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate/Hydrologic Outlooks on a Monthly Basis



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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 15 NOV 2015

Okeechobee Lake Regulation	Elevation	Last Year	2YRS Ago
	(ft-NGVD)	(ft-NGVD)	(ft-NGVD)
*Okeechobee Lake Elevation	14.32	15.64	14.84 (Official Elv)
Bottom of High Lake Mngmt=	17.25	Top of Water Short Mngmt=	12.60
Currently in Operational Management Band			

Simulated Average LORS2008 [1965-2000]	13.88
Difference from Average LORS2008	0.44

15NOV (1965-2007) Period of Record Average	14.95
Difference from POR Average	-0.64

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 8.26'

++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 6.46'

Bridge Clearance = 49.70'

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

L001	L005	L006	LZ40	S4	S352	S308	S133
14.04	14.50	14.65	14.26	14.60	14.35	14.06	14.10

*Combination Okeechobee Avg-Daily Lake Average = 14.32
 (*See Note)

Okeechobee Inflows (cfs):

S65E	618	C5	0	Fisheating Cr	45
S154	0	S191	0	S135 Pumps	0
S84	0	S133 Pumps	0	S2 Pumps	0
S84X	484	S127 Pumps	0	S3 Pumps	0
S71	0	S129 Pumps	0	S4 Pumps	0
S72	0	S131 Pumps	0		
Total Inflows:	1147				

Okeechobee Outflows (cfs):

S135 Culverts	0	S354	245	S77	1082
(Used)					
S127 Culverts	-NR-	S351	534	S77Below	1101 (NOT USED)

C5: 14.54 14.60 0 0.0 0.0 0.0

South Shore

S4 Pumps: 10.86 14.52 0 0 0 0 (cfs)
 S169: 14.52 10.84 0 0.0 0.0 0.0
 S310: 14.42 35
 S3 Pumps: 10.70 14.48 0 0 0 0 (cfs)
 S354: 14.48 10.70 245 0.3 0.6
 S2 Pumps: 10.02 14.39 0 0 0 0 0 (cfs)
 S351: 14.39 10.02 534 3.6 3.6 3.6
 S352: 14.40 10.51 237 0.2 0.5
 C10A: -NR- 13.56 0.0 8.5 8.5 8.5 8.5
 L8 Canal PT 13.34 189

S351 and S352 Temporary Pumps/S354 Spillway

S351: 10.02 14.39 534 -NR--NR--NR--NR--NR--NR--
 S352: 10.51 14.40 237 -NR--NR--NR--NR--
 S354: 10.70 14.48 245 -NR--NR--NR--NR--

Caloosahatchee River (S77, S78, S79)

S47B: 14.76 10.85 0.5 0.5
 S47D: 10.83 10.83 -44 5.0
 S77:
 Spillway and Sector Flow:
 14.23 10.88 1075 1.5 2.5 0.0 1.0
 Flow Due to Lockages+: 7
 S77 Below USGS Flow Gage 1101
 S78:
 Spillway and Sector Flow:
 10.73 3.01 805 0.5 0.5 1.0 0.5
 Flow Due to Lockages+: 16
 S79:
 Spillway and Sector Flow:
 3.19 0.74 1067 0.0 0.0 1.0 1.0 1.0 0.0 0.0
 0.0
 Flow Due to Lockages+: 12
 Percent of flow from S77 101%
 Chloride (ppm) 62

St. Lucie Canal (S308, S80)

S308:
 Spillway and Sector Flow:
 14.11 13.80 0 0.0 0.0 0.0 0.0
 Flow Due to Lockages+: 0
 S308 Below USGS Flow Gage 174
 S153: 18.70 13.64 0 0.0 0.0
 S80:
 Spillway and Sector Flow:
 13.90 1.75 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Flow Due to Lockages+: 16
 Percent of flow from S308 NA %

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-	0.03	0.13			
S193:	-NR-	0.00	0.00	-NR-	-NR-	
Okeechobee Field Station:	-NR-	0.00	0.00			
S135 Pump Station:	-NR-	0.00	0.14			
S127 Pump Station:	-NR-	1.31	1.38			
S129 Pump Station:	-NR-	0.00	0.03			
S131 Pump Station:	-NR-	0.00	0.34			
S77:	0.00	0.04	0.19	111	1	
S78:	0.00	5086.06	*****	96	4	
S79:	0.00	0.00	0.14	135	4	
S4 Pump Station:	-NR-	0.00	0.00			
Clewiston Field Station:	-NR-	0.00	0.00			
S3 Pump Station:	-NR-	0.00	0.24			
S2 Pump Station:	-NR-	0.00	0.02			
S308:	0.00	0.00	0.04	64	1	
S80:	0.00	0.96	0.96	191	3	
Okeechobee Average	0.00	0.11	0.19			
(Sites S78, S79 and S80 not included)						

Oke Nexrad Basin Avg	-NR-	0.06	0.29			

Okeechobee Lake Elevations	15 NOV 2015	14.32	Difference from
15NOV15			15NOV15
15NOV15 -1 Day =	14 NOV 2015	14.36	0.04
15NOV15 -2 Days =	13 NOV 2015	14.41	0.09
15NOV15 -3 Days =	12 NOV 2015	14.43	0.11
15NOV15 -4 Days =	11 NOV 2015	14.45	0.13
15NOV15 -5 Days =	10 NOV 2015	14.45	0.13
15NOV15 -6 Days =	09 NOV 2015	14.43	0.11
15NOV15 -7 Days =	08 NOV 2015	14.44	0.12
15NOV15 -30 Days =	16 OCT 2015	14.78	0.46
15NOV15 -1 Year =	15 NOV 2014	15.64	1.32
15NOV15 -2 Year =	15 NOV 2013	14.84	0.52

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	
15NOV15	Today =	15 NOV 2015	-658	MON	-6190	
15NOV15	-1 Day =	14 NOV 2015	-82	SUN	-8314	
15NOV15	-2 Days =	13 NOV 2015	495	SAT	-1556	
15NOV15	-3 Days =	12 NOV 2015	533	FRI	-2002	
15NOV15	-4 Days =	11 NOV 2015	864	THU	2324	
15NOV15	-5 Days =	10 NOV 2015	1146	WED	7669	
15NOV15	-6 Days =	09 NOV 2015	687	TUE	921	
15NOV15	-7 Days =	08 NOV 2015	429	MON	605	
15NOV15	-8 Days =	07 NOV 2015	363	SUN	-1353	
15NOV15	-9 Days =	06 NOV 2015	456	SAT	-1171	
15NOV15	-10 Days =	05 NOV 2015	706	FRI	-1105	
15NOV15	-11 Days =	04 NOV 2015	873	THU	-1152	
15NOV15	-12 Days =	03 NOV 2015	1029	WED	647	
15NOV15	-13 Days =	02 NOV 2015	1060	TUE	1468	

S65E						
Average Flow over previous 14 days					Avg-Daily Flow	
15NOV15	Today=	15 NOV 2015	1086	MON	618	
15NOV15	-1 Day =	14 NOV 2015	1172	SUN	717	
15NOV15	-2 Days =	13 NOV 2015	1258	SAT	766	
15NOV15	-3 Days =	12 NOV 2015	1343	FRI	711	
15NOV15	-4 Days =	11 NOV 2015	1440	THU	979	
15NOV15	-5 Days =	10 NOV 2015	1524	WED	1140	
15NOV15	-6 Days =	09 NOV 2015	1573	TUE	1192	
15NOV15	-7 Days =	08 NOV 2015	1630	MON	1007	
15NOV15	-8 Days =	07 NOV 2015	1675	SUN	947	
15NOV15	-9 Days =	06 NOV 2015	1732	SAT	1077	
15NOV15	-10 Days =	05 NOV 2015	1803	FRI	1246	
15NOV15	-11 Days =	04 NOV 2015	1855	THU	1464	
15NOV15	-12 Days =	03 NOV 2015	1873	WED	1595	
15NOV15	-13 Days =	02 NOV 2015	1888	TUE	1752	

Lake Okeechobee Outlets Last 14 Days

DATE	S-77 Discharge (0700-2100) (AC-FT)	S-77 Discharge (ALL DAY) (AC-FT)	Below S-77 Discharge (ALL-DAY) (AC-FT)	S-78 Discharge (0700-2100) (AC-FT)	S-78 Discharge (ALL DAY) (AC-FT)	S-79 Discharge (ALL DAY) (AC-FT)
15 NOV 2015	1273	2146	2183	947	1628	2139
14 NOV 2015	1002	-NA-	1315	889	1201	2211
13 NOV 2015	508	-NA-	455	172	307	1229
12 NOV 2015	4	30	147	197	446	1099
11 NOV 2015	225	731	853	381	680	945
10 NOV 2015	1176	-NA-	1498	417	880	1335
09 NOV 2015	1331	-NA-	1826	756	1384	1636
08 NOV 2015	1354	-NA-	1612	927	1595	1885

07 NOV 2015	1337	-NA-	1632	924	1323	1926
06 NOV 2015	906	-NA-	1009	288	485	942
05 NOV 2015	536	-NA-	1023	20	319	95
04 NOV 2015	925	-NA-	1263	292	563	434
03 NOV 2015	606	-NA-	794	136	330	949
02 NOV 2015	644	-NA-	1366	176	800	1857

	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)
15 NOV 2015	69	1059	470	486	374
14 NOV 2015	121	1160	573	863	392
13 NOV 2015	116	1420	1430	1610	386
12 NOV 2015	55	1664	1170	1406	365
11 NOV 2015	42	1931	902	672	384
10 NOV 2015	54	1761	1184	1237	401
09 NOV 2015	71	1842	884	827	331
08 NOV 2015	48	1668	462	752	342
07 NOV 2015	99	1565	942	797	354
06 NOV 2015	175	2054	1130	1192	353
05 NOV 2015	201	2350	619	1465	353
04 NOV 2015	184	2088	692	1152	360
03 NOV 2015	141	1995	984	813	370
02 NOV 2015	106	2598	1529	660	355

	S-308	Below S-308	S-80
	Discharge	Discharge	Discharge
	(ALL DAY)	(ALL-DAY)	(ALL-DAY)
DATE	(AC-FT)	(AC-FT)	(AC-FT)
15 NOV 2015	0	344	32
14 NOV 2015	0	27	51
13 NOV 2015	0	316	64
12 NOV 2015	1	442	63
11 NOV 2015	1	343	61
10 NOV 2015	1	-199	47
09 NOV 2015	1	-2	33
08 NOV 2015	0	117	45
07 NOV 2015	0	148	38
06 NOV 2015	1	386	56
05 NOV 2015	0	79	60
04 NOV 2015	-0	346	46
03 NOV 2015	-0	58	54
02 NOV 2015	-0	73	46

*** 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

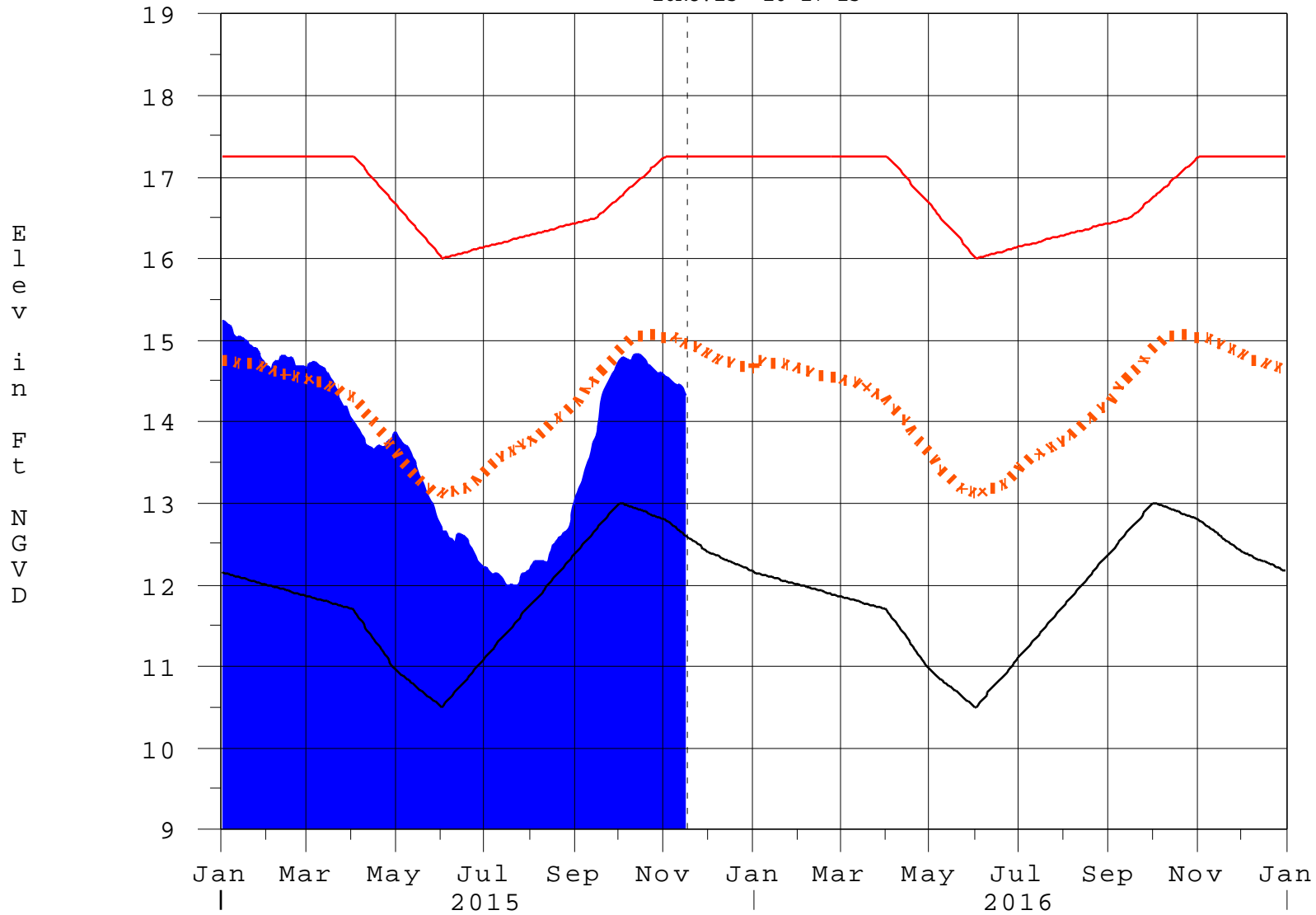
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* On 11 May 1999, Lake Okeechobee Elevation was switched from Instantaneous 2400 value to an average-daily lake average.
On 14 Mar 2001, due to the isolation of various gages within the standard
10 stations, the average of the interior 4 station gages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

—
Report Generated 16NOV2015 @ 10:15 ** Preliminary Data - Subject to Revision
**

Lake Okeechobee

16NOV15 10:17:25



- 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