Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 8/17/2015 (Developing El Nino Condition)

Lake Okeechobee Net Inflow Outlook:

The Lake Okeechobee Net Inflow Outlook has been computed using 4 methods: Croley's method[1], the SFWMD empirical method[2], a sub-sampling of El Nino years[3] and a sub-sampling of cold years of the Atlantic Multi-decadal Oscillation (AMO) in combination with ENSO El Nino years[4]. 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 (Aug-Jan)	N/A	N/A	2.27	Very Wet	2.61	Very Wet	1.65	Wet
Multi Seasonal (Aug-Apr)	N/A	N/A	2.50	Wet	3.55	Wet	2.31	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:

3327 cfs 14-day running average for Lake Okeechobee Net Inflow through 8/17/2015.
According to the classification in Tributary Hydrologic Conditions table, this condition is Wet.

-0.92 for Palmer Index on 8/16/2015.
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 8/17/2015

Lake Okeechobee Stage: **12.48 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		16.36	
Operational Band	High sub-band	15.95	
	Intermediate sub-band	15.54	
	Low sub-band	13.72	
Base Flow sub-band		12.60	
Beneficial Use sub-band		12.08	← 12.48
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**

Back to Lake Okeechobee Operations Main Page

Back to U.S. Army Corps of Engineers LORSS Homepage

LORS2008 Implementation on 8/17/2015 (ENSO Neutral Condition):

Water Supply Department Technical Input

Water Supply Outlook:

District wide, Raindar rainfall 2.24 inches for the week ending 8/18/2015. Lake stage on 8/17/2015 is 12.48 ft, up 0.21 ft from last week.

The updated August 2015 SFWMM Dynamic Position Analysis percentile graph and tracking chart for Lake Okeechobee show that the lake stage is in the Beneficial Use 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	Base Flow Sub-Band	M
	Palmer Index for LOK Tributary Conditions	-0.92 (Normal)	L
	CPC Precipitation Outlook	1 month: Normal	L
		3 months: Normal	L
	LOK Seasonal Net Inflow Forecast / AMO warm/El Nino	2.61 ft (Normal to Extremely Wet)	L
	LOK Multi-Seasonal Net Inflow Forecast / AMO warm/El Nino	3.55 ft (Wet)	L
WCAs	WCA 1: Site 1-8C	Between Line 1 & 2 (15.69 ft)	M
	WCA 2A: Site 2-17 HW	Between Line 1 & 2 (12.07 ft)	M
	WCA-3A: 3 Station Average (Site 63, 64 and 65)	Between Line 1 & 2 (8.77 ft)	M
LEC	Service Area 1	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 2	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
	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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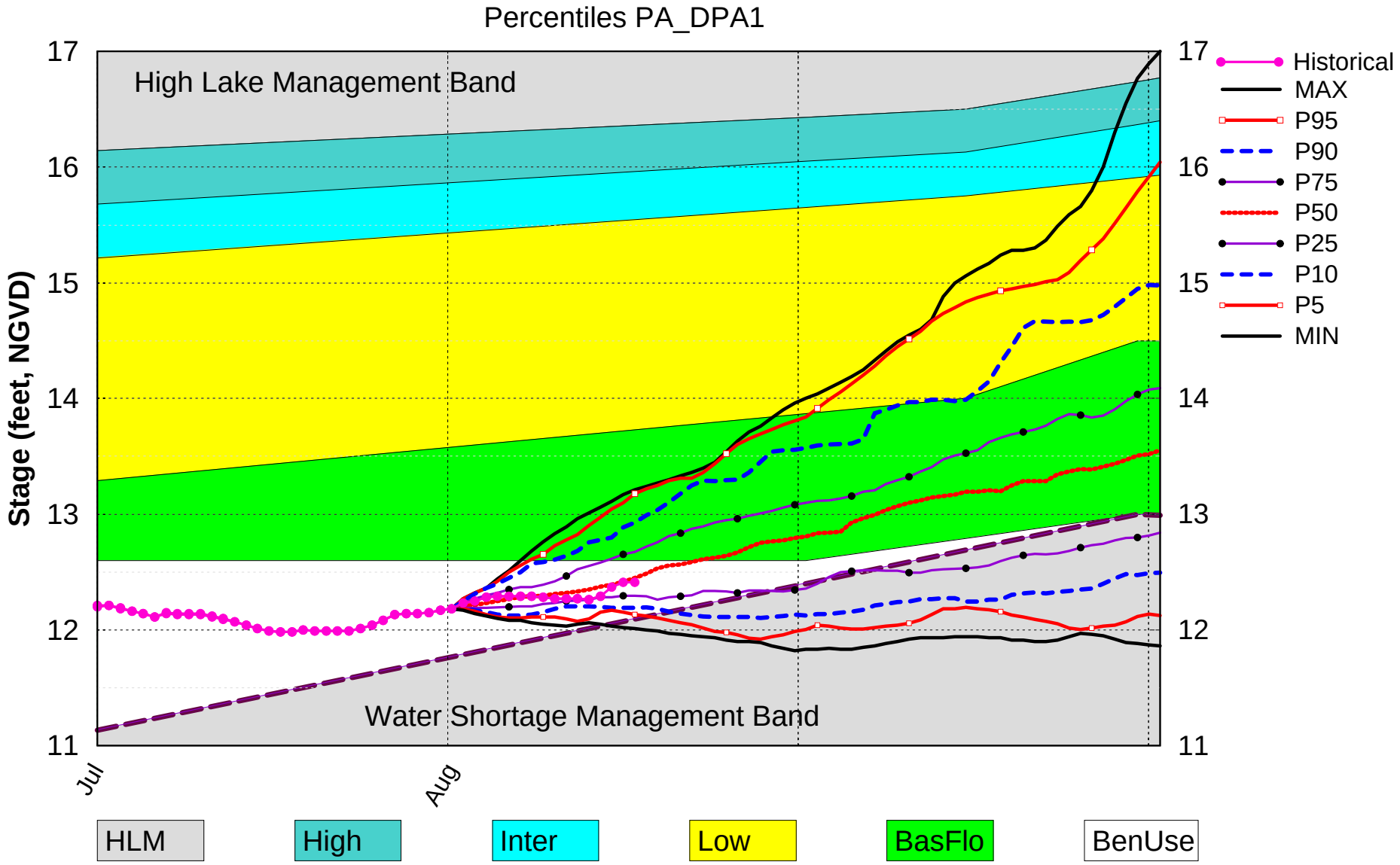
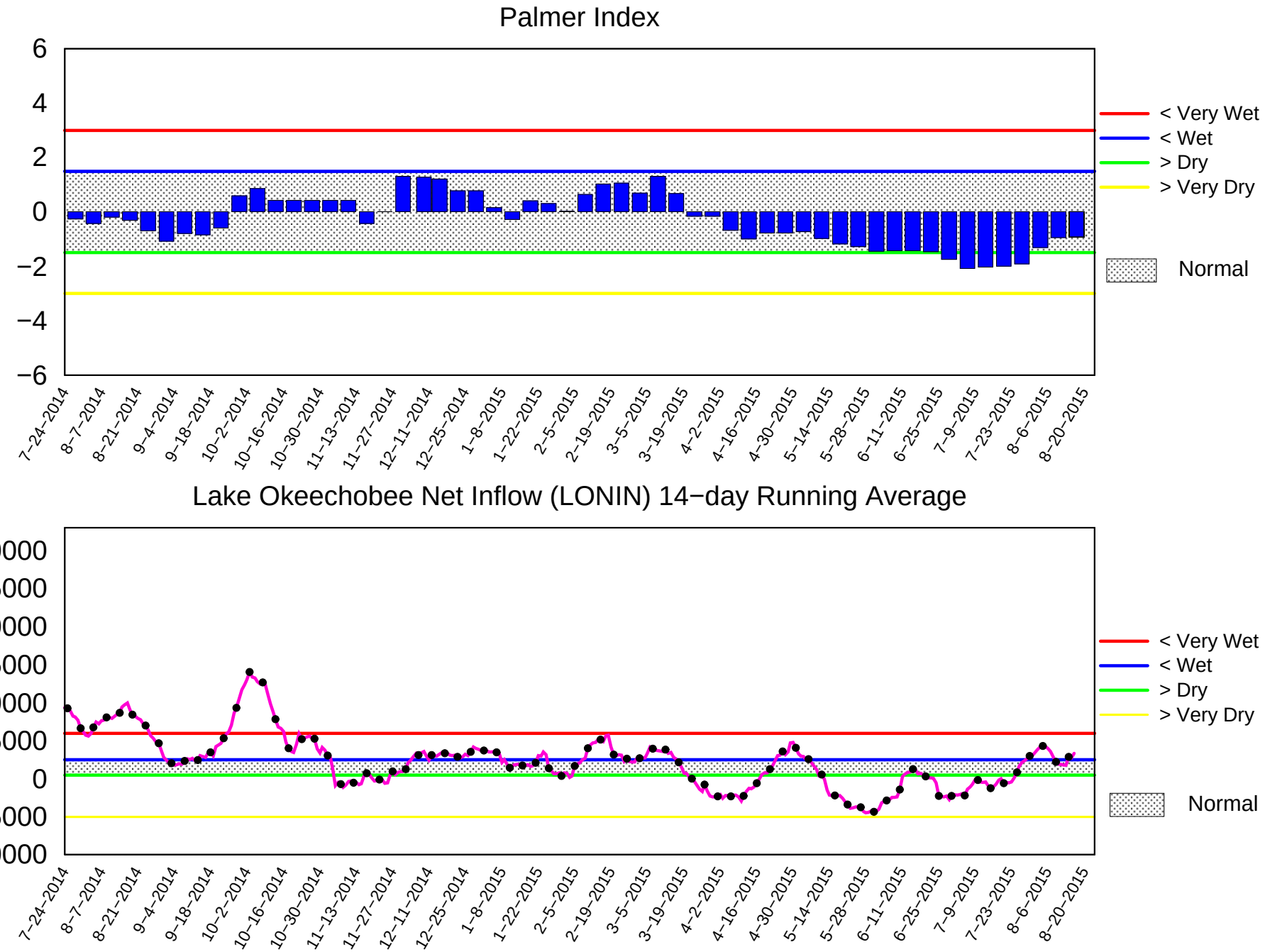
Lake Okeechobee SFWMM August 2015 Dynamic Position Analysis



(See assumptions on the Position Analysis Results website)

Mon Aug 17 16:10:23 EDT 2015

Tributary Basin Condition Indicators as of August 17 2015



Mon Aug 17 16:10:12 EDT 2015

2008 LORS

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

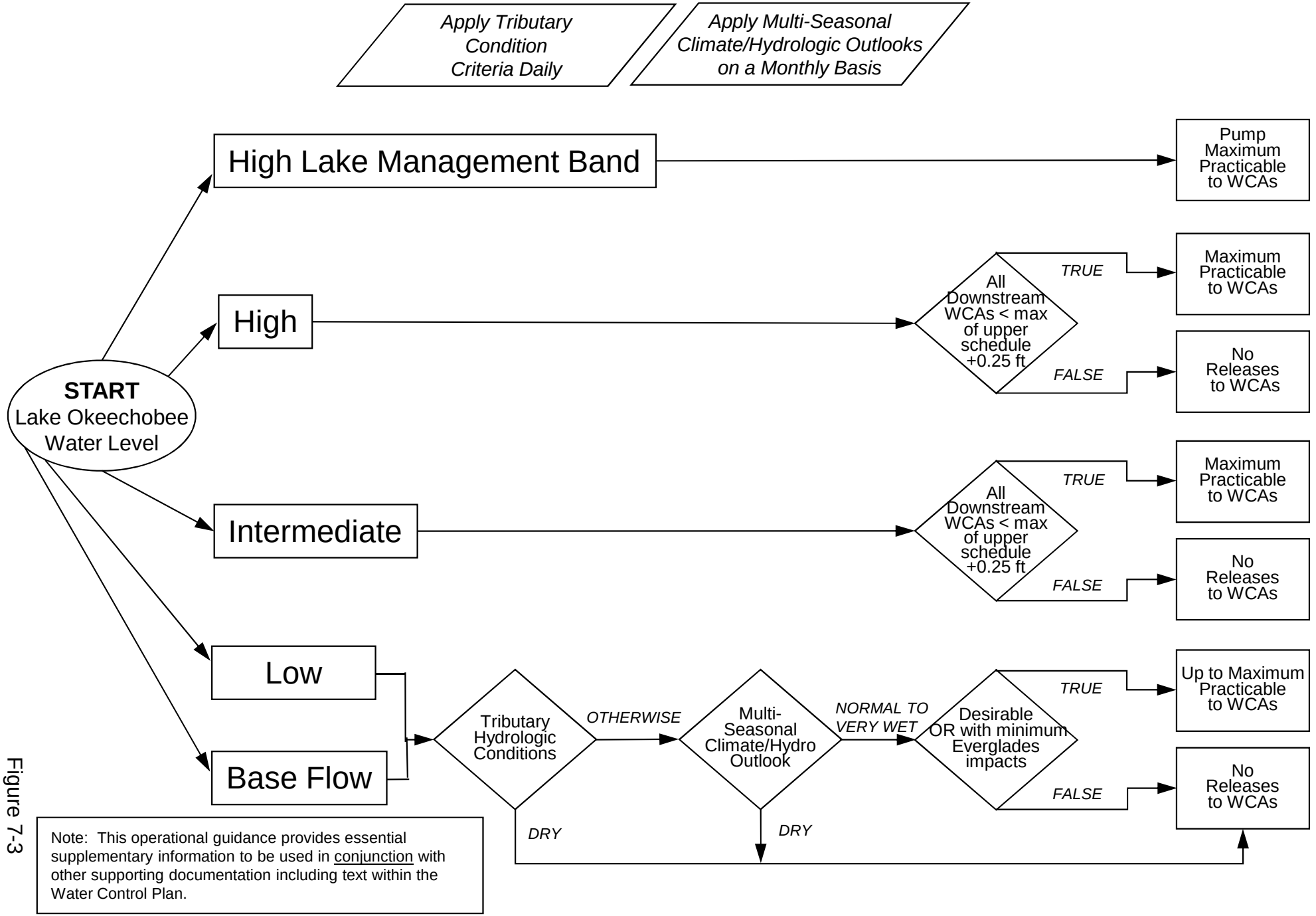


Figure 7-3

Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

2008 LORS

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

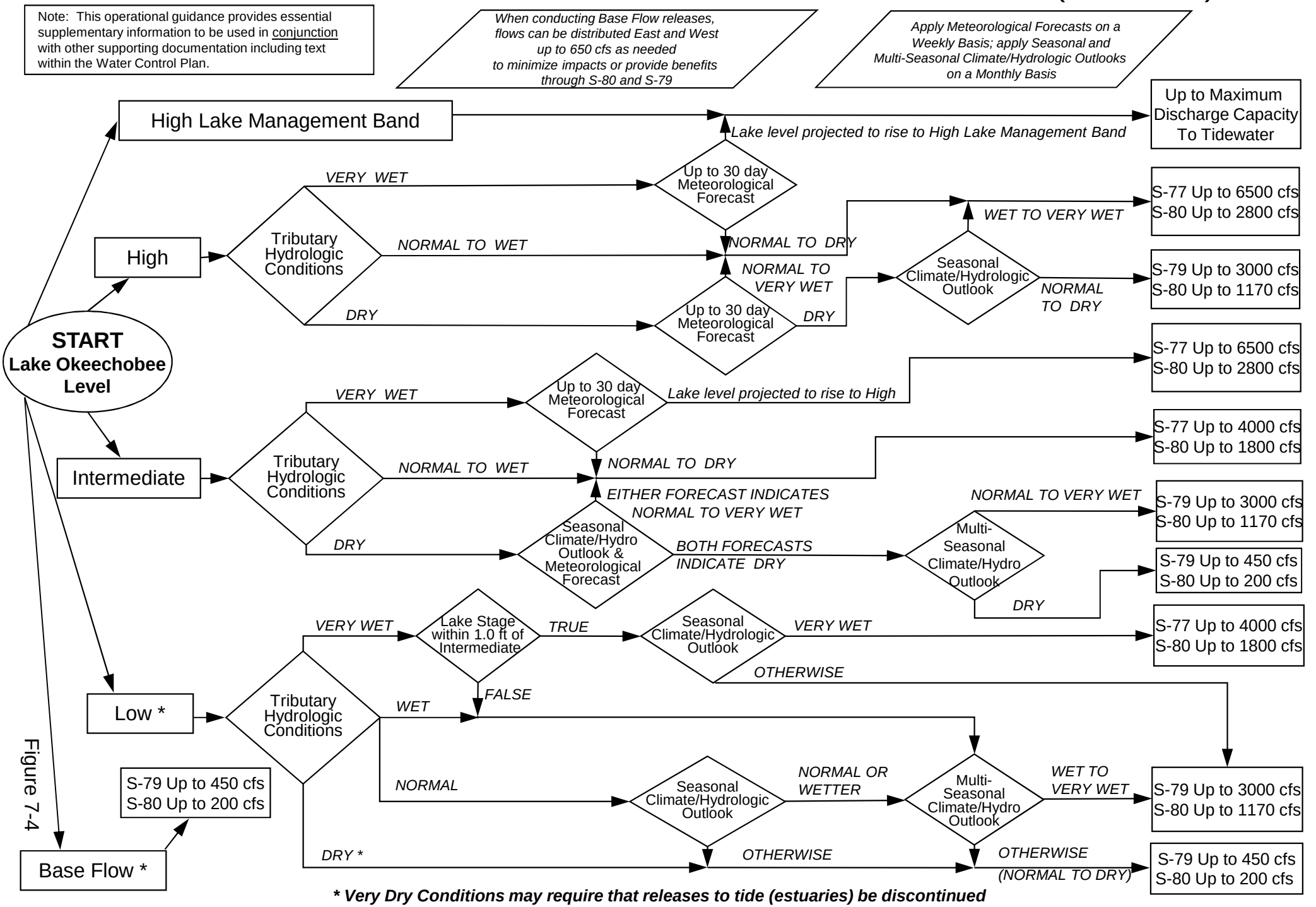
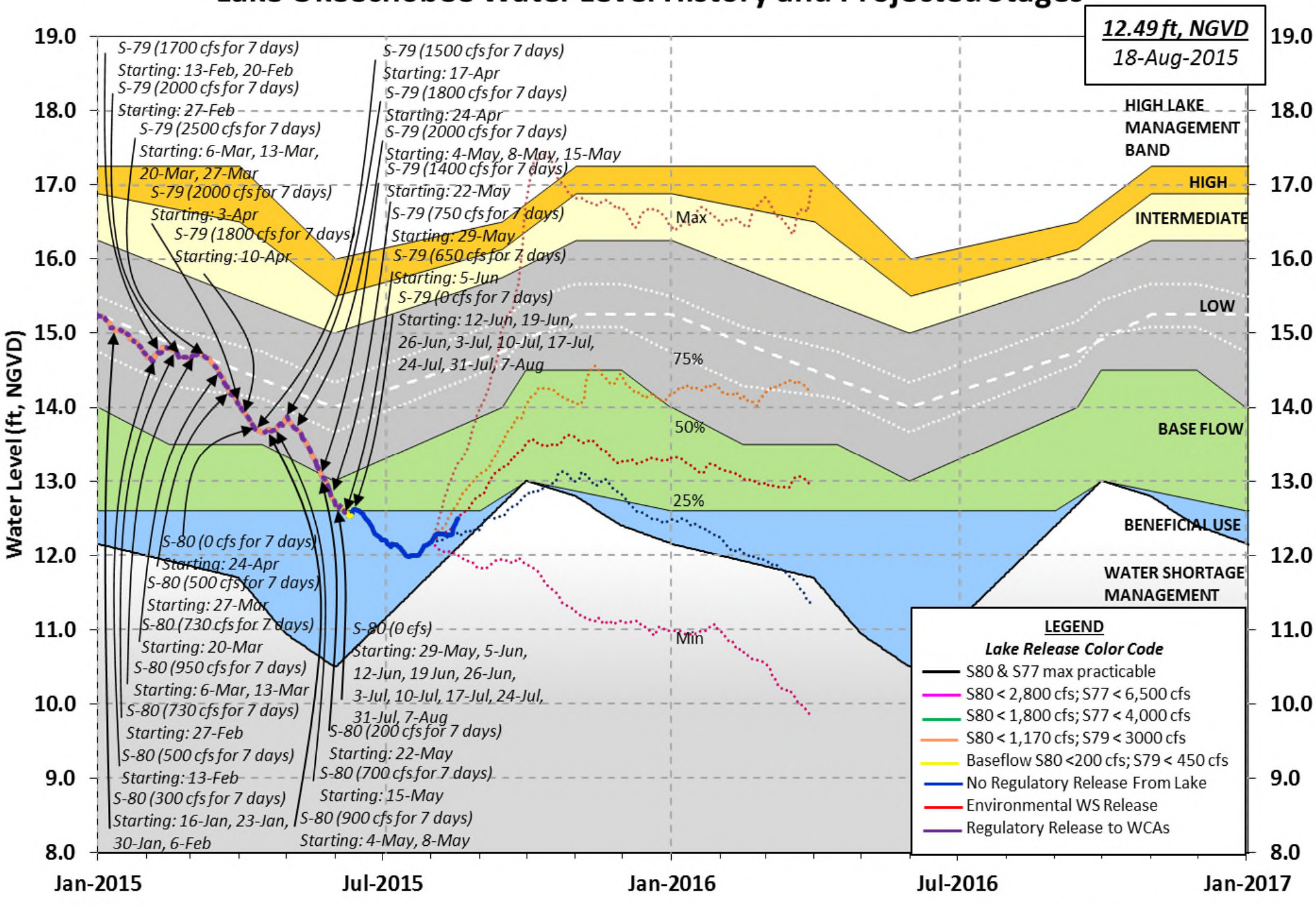


Figure 7-4

Lake Okeechobee Water Level History and Projected Stages



LORS-2008
Adopted by USACE 28-April-2008

Projected Stage Percentiles From
SFWMD-HESM Position Analysis

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

Data Ending 2400 hours 16 AUG 2015

Okeechobee Lake Regulation	Elevation (ft-NGVD)	Last Year (ft-NGVD)	2YRS Ago (ft-NGVD)
*Okeechobee Lake Elevation	12.48	14.44	15.90 (Official Elv)

Bottom of High Lake Mngmt= 16.36 Top of Water Short Mngmt= 12.07
Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 12.97
Difference from Average LORS2008 -0.49

16AUG (1965-2007) Period of Record Average 14.00
Difference from POR Average -1.52

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ÷ 6.42'
++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ÷ 4.62'
Bridge Clearance = 50.04'

---

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

L001	L005	L006	LZ40	S4	S352	S308	S133
12.35	12.62	12.47	12.42	12.61	12.59	12.34	12.42

*Combination Okeechobee Avg-Daily Lake Average = 12.48 (*See Note)

Okeechobee Inflows (cfs):

S65E	2572	C5	0	Fisheating Cr	767
S154	0	S191	267	S135 Pumps	0
S84	298	S133 Pumps	-NR-	S2 Pumps	0
S84X	810	S127 Pumps	0	S3 Pumps	0
S71	897	S129 Pumps	69	S4 Pumps	426
S72	0	S131 Pumps	0		

Total Inflows: 6106

Okeechobee Outflows (cfs):

S135 Culverts	-NR-	S354	0	S77	0 (Used)
S127 Culverts	37	S351	0	S77Below	-60 (NOT USED)

```
  S129 Culverts     0      S352              0      S308             -1
(Used)
  S131 Culverts     0      L8 Canal Pt     -68      S308Below        12 (NOT
USED)
Total Outflows:    -31

****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            0.09      S308           0.30
  Average Pan Evap x 0.75 Pan Coefficient =  0.15" =  0.01'

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  11798 cfs or  23400 AC-FT
_____________________________________________________________________________
_
_____________________________________________________________________________
_


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

             Headwater Tailwater         ----------- Gate Positions ---------
---
             Elevation Elevation  Disch   #1   #2   #3   #4   #5   #6   #7
#8
             (ft-msl)  (ft-msl)   (cfs)  (ft) (ft) (ft) (ft) (ft) (ft) (ft)
(ft)
                                (I) see note at bottom
North East Shore
  S133 Pumps:  13.27     12.44    -NR-      0 -NR-    0    0    0  (cfs)
  S193:        ______
  S191:         19.67     12.42     267    0.5  0.0  0.5
  S135 Pumps: ______       -NR-       0      0    0    0    0       (cfs)
  S135 Culverts:                   -NR-   -NR- -NR-

North West Shore
  S65E:         21.19     12.30    2572    0.7  1.0  1.0  1.0  1.0  0.0
  S127 Pumps:  13.73     12.77       0      0    0    0    0    0  (cfs)
  S127 Culvert:                       37    1.7

  S129 Pumps:  12.87     13.25      69      0   31   37            (cfs)
  S129 Culvert:                       0    0.1

  S131 Pumps:  13.29     12.77       0      0    0                 (cfs)
  S131 Culvert:                       0

  Fisheating Creek
    nr Palmdale          32.67     767
    nr Lakeport         ______
```

```
  C5:          13.10    12.68      0    0.0  0.0  0.0

South Shore
  S4 Pumps:    12.91     12.58     426    130  211   85            (cfs)
  S169:        12.54     12.88     -98    1.0  1.1  1.0
  S310:        12.47               -204
  S3 Pumps:    10.07     12.63       0      0    0    0            (cfs)
  S354:        12.63     10.07       0    0.0  0.0
  S2 Pumps:     9.56     12.50       0      0    0    0    0       (cfs)
  S351:        12.50      9.56       0    0.0  0.0  0.0
  S352:        12.62      8.97       0    0.0  0.0
  C10A:         -NR-      12.62            8.5   8.5   8.5   8.5   8.5
  L8 Canal PT             12.43     -68

_____________________________________________________________________

                 S351 and S352 Temporary Pumps/S354 Spillway

  S351:         9.56     12.50       0  -NR--NR--NR--NR--NR--NR-
  S352:         8.97     12.62       0  -NR--NR--NR--NR-
  S354:        10.07     12.63       0  -NR--NR--NR--NR-
_____________________________________________________________________

Caloosahatchee River (S77, S78, S79)
  S47B:        13.90      -NR-            0.0  0.0
  S47D:        11.09     11.09     -22    5.0
  S77:
    Spillway and Sector Flow:
               12.56     11.14       0    0.0  0.0  0.0  0.0
    Flow Due to Lockages+:             0

  S77 Below USGS Flow Gage          -60

  S78:
    Spillway and Sector Flow:
               10.92      3.27     807    0.5  0.5  0.5  1.0
    Flow Due to Lockages+:             2

  S79:
    Spillway and Sector Flow:
                -NR-      -NR-    -NR-    1.0  1.0  1.0  2.0  2.0  1.0  1.0
1.0
    Flow Due to Lockages+:         -NR-
    Percent of flow from S77       -NR-%
    Chloride            (ppm)      -N


St. Lucie Canal (S308, S80)
  S308:
    Spillway and Sector Flow:
               12.37     13.46       0    0.0  0.0  0.0  0.0
    Flow Due to Lockages+:            -1

  S308 Below USGS Flow Gage          12
  S153:        19.06     13.30       0    0.0  0.0
  S80:
    Spillway and Sector Flow:
               13.50      1.27       0    0.0  0.0  0.0  0.0  0.0  0.0  0.0
```

Flow Due to Lockages+: 13
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.

Daily Precipitation Totals	1-Day (inches)	3-Day (inches)	7-Day (inches)	----- Wind ----- Direction (Degø)	Speed (mph)
S133 Pump Station:	-NR-	0.00	0.38		
S193:	-NR-	0.00	0.00	-NR-	-NR-
Okeechobee Field Station:	-NR-	0.00	0.00		
S135 Pump Station:	-NR-	0.00	0.19		
S127 Pump Station:	-NR-	0.00	2.52		
S129 Pump Station:	-NR-	0.00	1.24		
S131 Pump Station:	-NR-	0.00	2.24		
S77:	0.21	0.88	1.48	226	1
S78:	0.00	2.50	3.14	229	2
S79:	-NR-	0.70	1.12	-NR-	-NR-
S4 Pump Station:	-NR-	0.00	0.00		
Clewiston Field Station:	-NR-	0.00	0.00		
S3 Pump Station:	-NR-	0.00	3.93		
S2 Pump Station:	-NR-	0.00	2.21		
S308:	0.00	0.58	0.95	50	2
S80:	0.00	0.20	0.67	95	2
Okeechobee Average (Sites S78, S79 and S80 not included)	0.10	0.11	1.16		
Oke Nexrad Basin Avg	-NR-	0.82	2.40		

Okeechobee Lake Elevations	16 AUG 2015	12.48	Difference from 16AUG15
16AUG15 -1 Day =	15 AUG 2015	12.42	-0.06
16AUG15 -2 Days =	14 AUG 2015	12.38	-0.10
16AUG15 -3 Days =	13 AUG 2015	12.29	-0.19
16AUG15 -4 Days =	12 AUG 2015	12.27	-0.21
16AUG15 -5 Days =	11 AUG 2015	12.27	-0.21
16AUG15 -6 Days =	10 AUG 2015	12.27	-0.21
16AUG15 -7 Days =	09 AUG 2015	12.28	-0.20
16AUG15 -30 Days =	17 JUL 2015	11.98	-0.50
16AUG15 -1 Year =	16 AUG 2014	14.44	1.96
16AUG15 -2 Year =	16 AUG 2013	15.90	3.42

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
16AUG15	Today =	16 AUG 2015	3361	MON	11798
16AUG15	-1 Day =	15 AUG 2015	2771	SUN	7764
16AUG15	-2 Days =	14 AUG 2015	2952	SAT	17335
16AUG15	-3 Days =	13 AUG 2015	1796	FRI	-NR-
16AUG15	-4 Days =	12 AUG 2015	1968	THU	470
16AUG15	-5 Days =	11 AUG 2015	2100	WED	220
16AUG15	-6 Days =	10 AUG 2015	2116	TUE	-1541
16AUG15	-7 Days =	09 AUG 2015	2391	MON	-1822
16AUG15	-8 Days =	08 AUG 2015	3232	SUN	118
16AUG15	-9 Days =	07 AUG 2015	3805	SAT	314
16AUG15	-10 Days =	06 AUG 2015	4222	FRI	422
16AUG15	-11 Days =	05 AUG 2015	4485	THU	422
16AUG15	-12 Days =	04 AUG 2015	4518	WED	2296
16AUG15	-13 Days =	03 AUG 2015	4414	TUE	5900

S65E

		Average Flow over previous 14 days			Avg-Daily Flow
16AUG15	Today=	16 AUG 2015	1383	MON	2572
16AUG15	-1 Day =	15 AUG 2015	1273	SUN	2000
16AUG15	-2 Days =	14 AUG 2015	1183	SAT	1937
16AUG15	-3 Days =	13 AUG 2015	1105	FRI	1570
16AUG15	-4 Days =	12 AUG 2015	1057	THU	1602
16AUG15	-5 Days =	11 AUG 2015	994	WED	1316
16AUG15	-6 Days =	10 AUG 2015	959	TUE	1186
16AUG15	-7 Days =	09 AUG 2015	927	MON	1035
16AUG15	-8 Days =	08 AUG 2015	899	SUN	1080
16AUG15	-9 Days =	07 AUG 2015	868	SAT	1094
16AUG15	-10 Days =	06 AUG 2015	845	FRI	1094
16AUG15	-11 Days =	05 AUG 2015	811	THU	988
16AUG15	-12 Days =	04 AUG 2015	776	WED	1081
16AUG15	-13 Days =	03 AUG 2015	739	TUE	807

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)
16 AUG 2015	0	1	-118	1162	1605	-NR-
15 AUG 2015	0	1	-313	516	722	3884
14 AUG 2015	0	1	-110	172	296	-NR-
13 AUG 2015	0	3	-209	170	307	1302
12 AUG 2015	0	2	-310	170	301	1599
11 AUG 2015	0	1	-77	196	405	1171
10 AUG 2015	4	-NA-	-56	286	362	2287
09 AUG 2015	144	-NA-	172	0	13	1275

08 AUG 2015	135	-NA-	189	0	11	1189
07 AUG 2015	51	82	113	0	20	1546
06 AUG 2015	103	296	489	0	96	2069
05 AUG 2015	220	282	348	177	478	2205
04 AUG 2015	0	2	-39	271	605	3105
03 AUG 2015	0	2	-144	267	599	3075

DATE	S-310 Discharge (ALL DAY) (AC-FT)	S-351 Discharge (ALL DAY) (AC-FT)	S-352 Discharge (ALL DAY) (AC-FT)	S-354 Discharge (ALL DAY) (AC-FT)	L8 Canal Pt Discharge (ALL DAY) (AC-FT)
16 AUG 2015	-404	0	0	0	-134
15 AUG 2015	-236	0	0	0	-117
14 AUG 2015	-304	0	0	0	84
13 AUG 2015	188	589	-NR-	0	225
12 AUG 2015	117	242	0	460	229
11 AUG 2015	183	0	0	254	182
10 AUG 2015	213	0	0	625	154
09 AUG 2015	297	0	0	0	45
08 AUG 2015	200	0	0	0	-85
07 AUG 2015	110	0	543	0	-244
06 AUG 2015	125	0	543	0	-373
05 AUG 2015	59	0	559	0	-474
04 AUG 2015	-114	0	654	0	-566
03 AUG 2015	-277	0	3	0	-419

DATE	S-308 Discharge (ALL DAY) (AC-FT)	Below S-308 Discharge (ALL-DAY) (AC-FT)	S-80 Discharge (ALL-DAY) (AC-FT)
16 AUG 2015	-2	23	25
15 AUG 2015	-2	42	11
14 AUG 2015	-2	-231	18
13 AUG 2015	-3	39	15
12 AUG 2015	-3	22	22
11 AUG 2015	-2	-72	15
10 AUG 2015	-2	96	11
09 AUG 2015	-5	225	11
08 AUG 2015	-3	-128	19
07 AUG 2015	-6	-212	38
06 AUG 2015	-5	-31	19
05 AUG 2015	-3	-92	34
04 AUG 2015	-3	159	34
03 AUG 2015	-2	-106	7

*** 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 preceeded 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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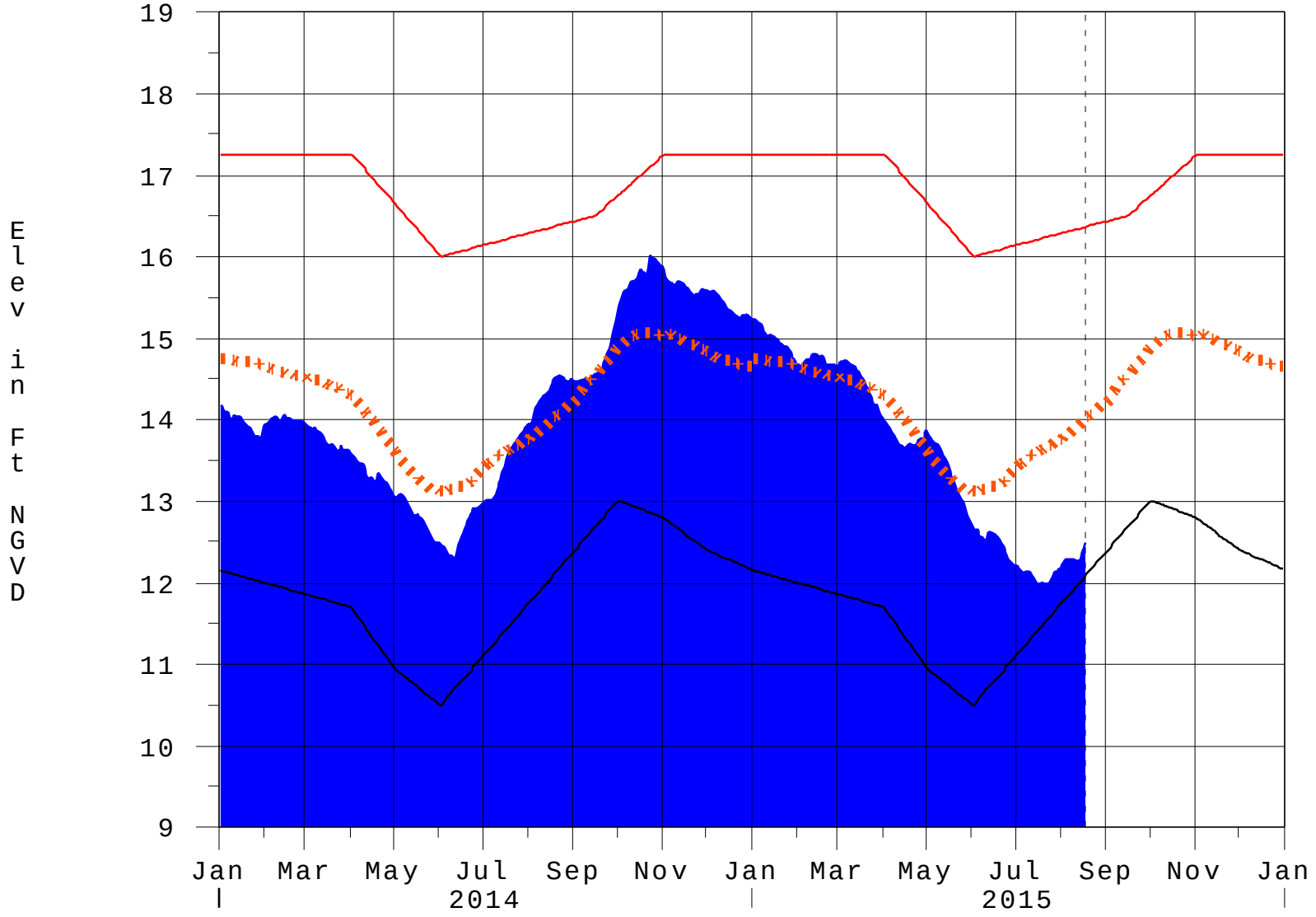
Report Generated 17AUG2015 @ 14:39 ** Preliminary Data - Subject to Revision **

Lake Okeechobee

17AUG15 13:45:27



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 >= 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