# Application of the Lake Okeechobee Regulation Schedule (LORS2008) on 10/02/2023 (ENSO Condition: El Niño)

#### **Lake Okeechobee Net Inflow Outlook:**

The Lake Okeechobee Net Inflow Outlook has been computed using methods described in the LORS2008 Water Control Plan: Croley's method, the SFWMD empirical method, a subsampling of El Niño years and a sub-sampling of warm years of the Atlantic Multi-decadal Oscillation (AMO) in combination with El Niño ENSO years. 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	Croley's Method*		SFWMD Empirical Method		Sub-sampling of El Niño ENSO Years**		Sub-sampling of AMO Warm + EI Niño ENSO Years***	
	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	Value (ft)	Condition	
Current (Oct-Mar)	N/A	N/A	1.49	Normal	2.07	Very Wet	2.74	Very Wet	
Multi Seasonal**** (Nov-Oct)	N/A	N/A	3.49	Wet	4.30	Wet	5.79	Very Wet	

<sup>\*</sup>Croley's Method Not Produced for This Report

See <u>Seasonal</u> and <u>Multi-Seasonal</u> 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.

\*\*\*\* LORS 2008 Water Control Plan calls for the forcing of a 12-month window to evaluate the multi-seasonal Lake Okeechobee Net Inflow Outlook which has been done this week has we are in a transitional period of seasons with above normal rainfall forecasted.

<sup>\*\*</sup>Sub-sampling is a weighted average of ENSO conditions based on the IRI ENSO forecast published.

<sup>\*\*\*</sup>Sub-sampling based on combination of ENSO and AMO conditions. For this predominant ENSO categorization is used instead of weights.

#### **Tributary Hydrologic Conditions:**

**6540 cfs** 14-day running average for Lake Okeechobee Net Inflow through 10/01/2023. According to the classification in <u>Tributary Hydrologic Conditions</u> table, this condition is Very Wet.

**-3.12** for Palmer Drought Index on 09/30/2023. According to the classification in <u>Tributary Hydrologic Conditions</u> table, this condition is Very Dry.

The wetter of the two conditions above is Very Wet.

## **LORS2008 Classification Tables:**

#### Lake Okeechobee Stage on 10/02/2023:

Lake Okeechobee Stage: 15.82 feet

Lake Okeechobee Management Zone/Band		Bottom Elevation (feet, NGVD)	Current Lake Stage
High Lake Manage	ement Band	16.76	
	High sub-band	16.39	
Operational Band	Intermediate sub-band	15.92	
	Low sub-band	14.50	← 15.82 ft
Base Flow sub-band		13.00	
Beneficial Use sub-band		13.00	
Water Shortage M	lanagement Band		

#### Part C of LORS2008: Discharge to WCAs

Up to Maximum Practicable to the WCAs if desirable or with minimum Everglades impact; otherwise no releases to WCAs.

## Part D of LORS2008: Discharge to Tide

Up to 4000 cfs at S-77 and up to 1800 cfs at S-80.

## LORS2008 Implementation on 10/02/2023 (ENSO Condition- El Niño):

Status for week ending 10/02/2023\*:

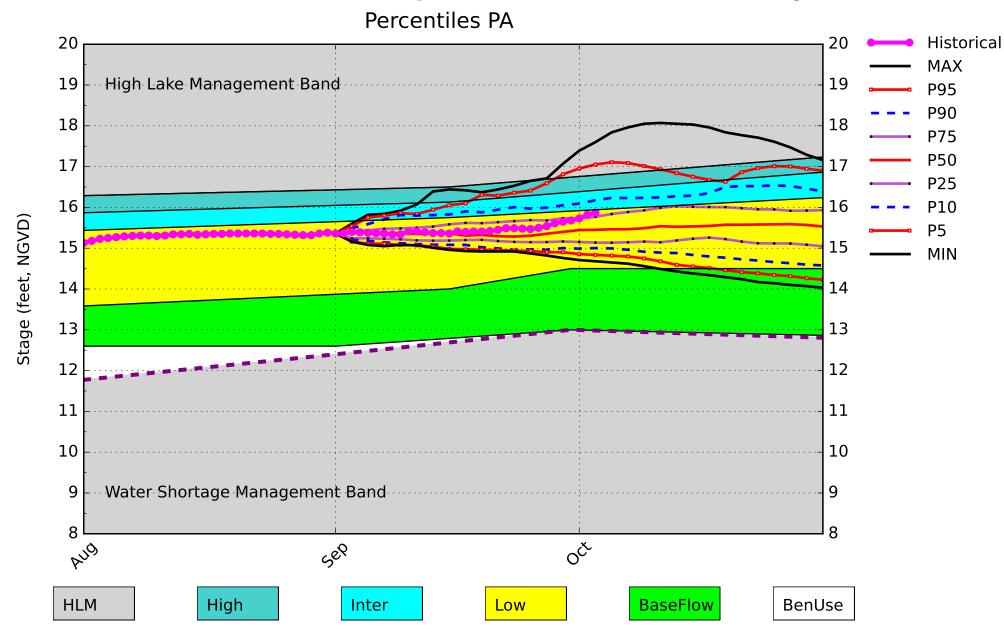
**Water Supply Risk Evaluation** 

Area	Indicator	Value	Color Coded Scoring Scheme
	Projected LOK Stage for the next two months	Low Sub-band	L
	Palmer Drought Index for LOK Tributary Conditions	-3.12 (Extremely Dry)	Н
	CDC Procinitation Outlook	1 month: Equal Chances	L
LOK	CPC Precipitation Outlook	3 months: Above Normal	L
	LOK Seasonal Net Inflow Outlook	2.07 ft	
	ENSO Forecast	Normal to Extremely Wet	_
	LOK Multi-Seasonal Net Inflow Outlook	2.15 ft	
	ENSO Forecast	Normal	M
	WCA 1: 3 Station Average (Sites 1-7, 1-8T, and 1-9)	Above Line 1 (17.46 ft)	L
WCAs	WCA 2A: Site 2-17	Above Line 1 (13.82 ft)	L
	WCA-3A: 3 Station Average (Sites 63, 64, and 65)	Above Line 1 (11.33 ft)	L
	Service Area 1	Year-Round Irrigation Rule in effect	L
LEC	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 outlooks use slightly different classification intervals than those used by the 2008-LORS.

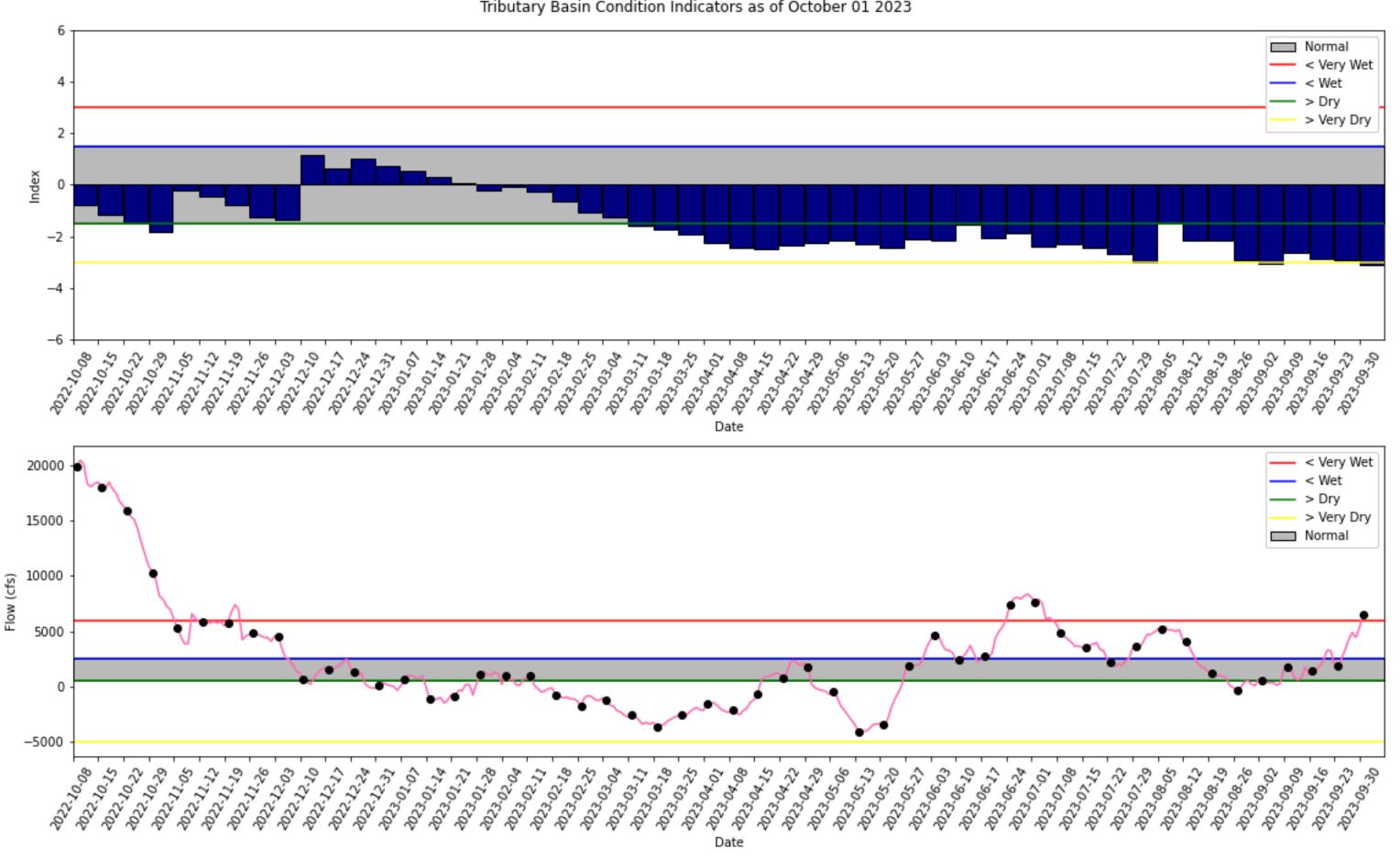
<sup>\*-</sup> S-80 flow data for 9/29-9/30 is not available from USACE Daily Reports and was assumed to be 0. Water Supply Risk Evaluation LOK Multi-Seasonal Net Inflow Outlook is based on 7-month window. LORS2008 release guidance is using a 12-month window for evaluation.

## Lake Okeechobee SFWMM September 2023 Position Analysis



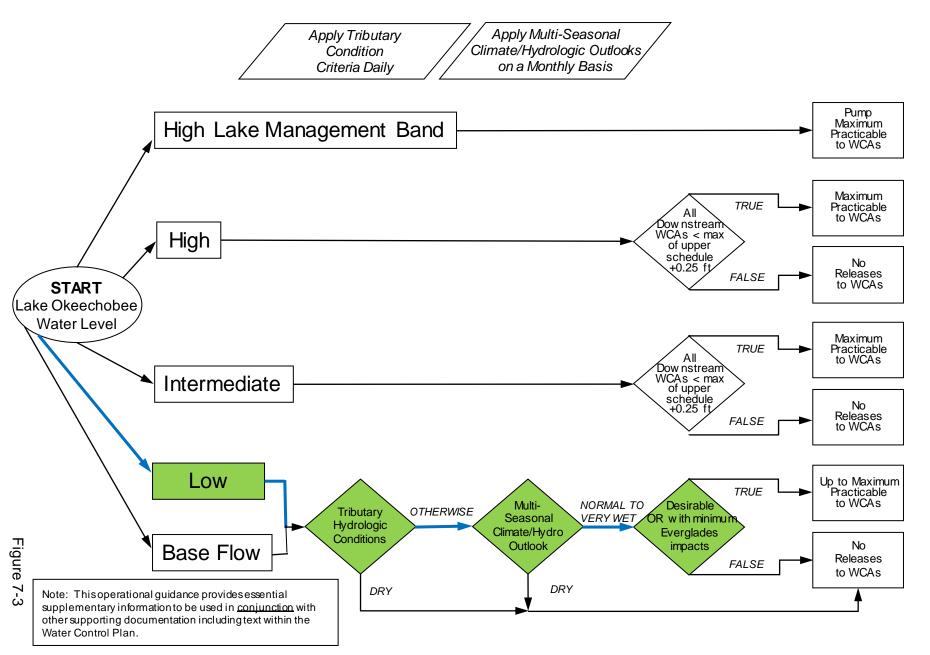
(See assumptions on the Position Analysis Results website)

Tributary Basin Condition Indicators as of October 01 2023



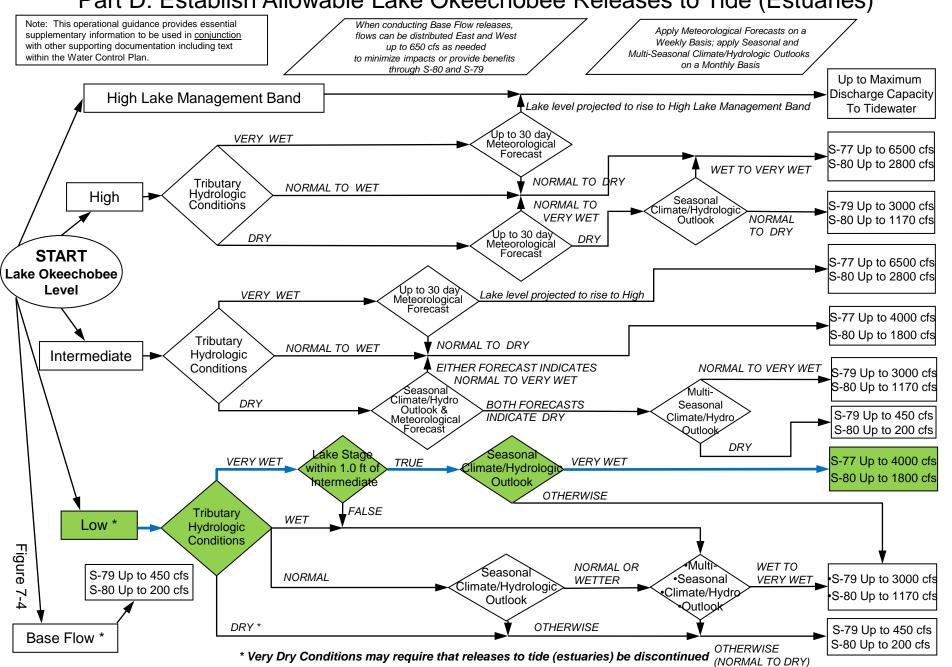
### **2008 LORS**

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

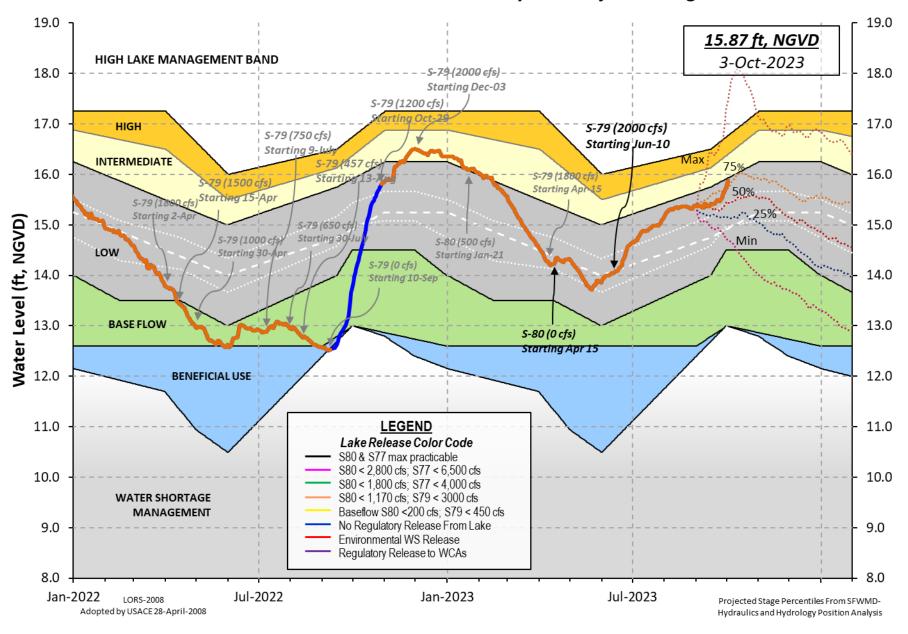


#### **2008 LORS**

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



#### **Lake Okeechobee Water Level History and Projected Stages**



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Data Ending 2400 hours 01 OCT 2023

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Okeechobee Lake Regulation Elevation Last Year 2YRS Ago (ft-NGVD) (ft-NGVD) (ft-NGVD)

\*Okeechobee Lake Elevation 15.82 13.87 15.57 (Official Elv)

Bottom of High Lake Mngmt= 16.76 Top of Water Short Mngmt= 13.00

Currently in Operational Management Band

Simulated Average LORS2008 [1965-2000] 13.79 Difference from Average LORS2008 2.03

010CT (1965-2007) Period of Record Average 14.89 Difference from POR Average 0.93

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

++Navigation Depth (Based on 2007 Channel Condition Survey) Route 1 ◆ 9.76' ++Navigation Depth (Based on 2008 Channel Condition Survey) Route 2 ◆ 7.96' Bridge Clearance = 49.34'

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

L001 L005 L006 LZ40 S4 S352 S308 S133 15.80 15.87 15.85 15.80 15.89 15.93 15.80 15.62

\*Combination Okeechobee Avg-Daily Lake Average = 15.82 (\*See Note)

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J	05	-, •			
S65E	2811	S65EX1	0	Fisheating Cr	2279
S154	252	S191	696	S135 Pumps	184
S84	2974	S133 Pumps	224	S2 Pumps	0
S84X	721	S127 Pumps	97	S3 Pumps	0
S71	744	S129 Pumps	158	S4 Pumps	222
S72	343	S131 Pumps	142	C5	0
Total Inflows:	11845				

10tal 111110ws. 11645

Okeechobee Inflows (cfs):

Okeechobee Outflows (cfs): S135 Culverts 0 S354 0 S77 S127 Culverts 0 S351 0 S308 S129 Culverts 0 S352 0 S131 Culverts 0 L8 Canal Pt 106

Total Outflows: 112

\*\*\*\*S77 structure flow is being used to compute Total Outflow.
\*\*\*\*S308 structure flow is being used to compute Total Outflow.

Okeechobee Pan Evaporation (inches):

S77 0.19 S308 0.10

Average Pan Evap x 0.75 Pan Coefficient = 0.11" = 0.01'

Lake Average Precipitation using NEXRAD: = -NR-" = -NR-"

Evaporation - Precipitation: = -NR-" = -NR-"

Evaporation - Precipitation using Lake Area of 730 square miles

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is equal to -NR-

Lake Okeechobee (Change in Storage) Flow is 19511 cfs or 38700 AC-FT

```
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)
                              (I) see note at bottom
North East Shore
                                  224
                                         48
                                              43
 S133 Pumps: 13.57
                        15.72
                                                   54
                                                        54
                                                             43 (cfs)
 S193:
 S191:
              18.85
                        15.70
                                  696
                                         0.5 1.0
                                                  1.0
 S135 Pumps: 13.49
                        15.63
                                  184
                                         49
                                             49
                                                   43
                                                        43
                                                                 (cfs)
                                    0
                                         0.0 0.0
 S135 Culverts:
North West Shore
 S65E:
              20.87
                        15.56
                                 2811
                                         1.1 1.8 1.5 1.3 1.6 1.6
 S65EX1:
              20.87
                        15.56
                                 0
                                   97
                                              24
                                                    0
 S127 Pumps: 13.58
                        15.77
                                         18
                                                        61
                                                              0 (cfs)
 S127 Culvert:
                                   0
                                         0.0
                                         55
  S129 Pumps: 12.89
                                  158
                        15.91
                                              39
                                                   58
                                                                 (cfs)
 S129 Culvert:
                                   0
                                         0.0
 S131 Pumps: 12.99
                         -NR-
                                  142
                                        -NR- -NR-
                                                                 (cfs)
 S131 Culvert:
                                    0
 Fisheating Creek
   nr Palmdale
                        34.11
                                 2279
   nr Lakeport
  S282
              15.91
                        15.97
                                          0.0 0.0 0.1
South Shore
 S4 Pumps:
                       -NR-
                                  222
                                       -NR- -NR- -NR-
              13.31
                                                                 (cfs)
 S169:
              15.45
                        -NR-
                                 -NR-
                                        -NR- -NR- -NR-
 S310:
              15.92
                                   0
              11.46
                        16.01
                                          0
                                               0
 S3 Pumps:
                                    0
                                                    0
                                                                 (cfs)
                                         0.0 0.0
  S354:
              16.01
                        11.46
                                    0
              11.64
                        16.03
                                    0
                                          0
                                                    0
  S2 Pumps:
                                               0
                                                                 (cfs)
              16.03
                        11.64
                                    0
                                         0.0 0.0 0.0
 S351:
 S352:
                        10.37
                                    0
                                         0.0 0.0
              16.02
 S271:
              16.14
                        15.23
                                         0.0 0.9
                                                    0.0
                                                          0.0
 L8 Canal PT
                        14.90
                                  106
                  S351 and S352 Temporary Pumps/S354 Spillway
                        16.03
                                   0 -NR--NR--NR--NR--NR-
 S351:
              11.64
                        16.02
  S352:
              10.37
                                   0 -NR--NR--NR--NR-
  S354:
              11.46
                        16.01
                                   0 -NR--NR--NR--NR-
Caloosahatchee River (S77, S78, S79)
 S47B:
              12.79
                        12.59
                                         3.5 4.0
  S47D:
              12.43
                        11.62
                                  234
                                         2.0
 S77:
   Spillway and Sector Preferred Flow:
              15.87
                       11.46
                                   0 0.0 0.0 0.0 0.0
   Flow Due to Lockages+:
```

S78:

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Spillway and Sector Flow:

11.43 3.81 3309 2.0 5.0 5.5 0.0

Flow Due to Lockages+: 8

S79:

Spillway and Sector Flow:

3.51 1.84 9042 0.0 5.0 6.0 7.0 7.0 6.0 5.0 0.0

Flow Due to Lockages+: 3
Percent of flow from S77 0%
Chloride (ppm) 0

St. Lucie Canal (S308, S80)

S308:

Spillway and Sector Preferred Flow:

15.91 14.16 0 0.0 0.0 0.0 0.0

Flow Due to Lockages+: 2

S153: 18.95 13.96 82 0.0 0.0

S80:

Spillway and Sector Flow:

14.28 3.23 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

Flow Due to Lockages+: -NR-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.

++ Preferred flow is determined from either the spillway discharge or the below flow meter daily

				Wi	nd
Daily Precipitation Totals	1-Day	3-Day	7-Day	Directio	n Speed
	(inches)	(inches)	(inches)	(Deg�)	(mph)
S133 Pump Station:	-NR-	0.00	0.00		
S193:	-NR-	0.00	0.00	-NR-	-NR-
Okeechobee Field Station:	-NR-	0.00	0.00		
S135 Pump Station:	-NR-	0.00	0.00		
S127 Pump Station:	-NR-	0.00	0.00		
S129 Pump Station:	-NR-	0.00	0.00		
S131 Pump Station:		0.00	0.00		
S77:	-NR-	0.00	0.00	54	7
S78:	-NR-	0.00	0.00	72	3
S79:	-NR-	0.00	0.00	305	7
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:	-NR-	0.00	0.00	338	4
S80:		0.00		107	4
Okeechobee Average	-NR-	0.00	0.00		
(Sites S78, S79 and					
Oke Nexrad Basin Avg	-NR-	0.00	0.00		

Okeechobee Lake Elevations 01 OCT 2023 01OCT23 -1 Day = 30 SEP 2023

15.82 Difference from 010CT23 15.73 -0.09 10/2/23, 1:34 PM oke

```
010CT23 -2 Days =
                        29 SEP 2023
                                             15.68
                                                              -0.14
                       28 SEP 2023
010CT23 -3 Days =
                                            15.65
                                                              -0.17
010CT23 -4 Days =
                        27 SEP 2023
                                            15.61
                                                              -0.21
010CT23 -5 Days =
                                            15.54
                        26 SEP 2023
                                                              -0.28
010CT23 -6 Days =
                        25 SEP 2023
                                            15.50
                                                              -0.32
010CT23 -7 Days =
                        24 SEP 2023
                                            15.47
                                                              -0.35
                       01 SEP 2023
                                            15.36
                                                              -0.46
010CT23 -30 Days =
                        01 OCT 2022
                                                              -1.95
010CT23 -1 Year =
                                             13.87
010CT23 -2 Year =
                        01 OCT 2021
                                             15.57
                                                              -0.25
```

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

	L	ake Okee	chobee	Net Inflo	w (LONIN)	
	Average	Flow ov	er the	previous	14 days	Avg-Daily Flow
010CT23 To	day =	01 OCT	2023	6542	MON	19511
010CT23 -1 D	ay =	30 SEP	2023	5319	SUN	10872
010CT23 -2 D	ays =	29 SEP	2023	4450	SAT	6543
010CT23 -3 D	ays =	28 SEP	2023	4884	FRI	8672
010CT23 -4 D	ays =	27 SEP	2023	4241	THU	15175
010CT23 -5 D	ays =	26 SEP	2023	3316	WED	8720
010CT23 -6 D	ays =	25 SEP	2023	2900	TUE	6665
010CT23 -7 D	ays =	24 SEP	2023	2175	MON	-1896
010CT23 -8 D	ays =	23 SEP	2023	2398	SUN	-1557
010CT23 -9 D	ays =	22 SEP	2023	3697	SAT	0
010CT23 -10 D	ays =	21 SEP	2023	3741	FRI	8744
010CT23 -11 D	ays =	20 SEP	2023	2791	THU	6519
010CT23 -12 D	ays =	19 SEP	2023	2184	WED	2535
010CT23 -13 D	ays =	18 SEP	2023	1889	TUE	1086
	-					-

			S65E			
		Average	Flow over	previous	14 days	Avg-Daily Flow
010CT23	Today=	01	OCT 2023	1432	MON	3011
010CT23	-1 Day =	30	SEP 2023	1267	SUN	2326
010CT23	-2 Days =	29	SEP 2023	1147	SAT	2053
010CT23	-3 Days =	28	SEP 2023	1042	FRI	2138
010CT23	-4 Days =	27	SEP 2023	923	THU	1505
010CT23	-5 Days =	26	SEP 2023	852	WED	1255
010CT23	-6 Days =	25	SEP 2023	803	TUE	1232
010CT23	-7 Days =	24	SEP 2023	759	MON	1205
010CT23	-8 Days =	23	SEP 2023	721	SUN	1112
010CT23	-9 Days =	22	SEP 2023	682	SAT	1063
010CT23	-10 Days =	21	SEP 2023	660	FRI	1169
010CT23	-11 Days =	20	SEP 2023	620	THU	651
010CT23	-12 Days =	19	SEP 2023	605	WED	618
010CT23	-13 Days =	18	SEP 2023	598	TUE	717

S65EX1 Average Flow over previous 14 days Avg-Daily Flow MON 010CT23 Today= 01 OCT 2023 0 0 010CT23 -1 Day = 30 SEP 2023 SUN 0 0 010CT23 -2 Days = 29 SEP 2023 SAT 0 010CT23 -3 Days = 28 SEP 2023 FRI 0 010CT23 -4 Days = 27 SEP 2023 THU 0 010CT23 -5 Days = 26 SEP 2023 0 WED 0 010CT23 -6 Days = 25 SEP 2023 0 TUE 0 010CT23 -7 Days = 24 SEP 2023 MON 0 010CT23 -8 Days = 23 SEP 2023 SUN 0 0 22 SEP 2023 0 SAT 0 010CT23 -9 Days = FRI 010CT23 -10 Days = 21 SEP 2023 0 010CT23 -11 Days = 20 SEP 2023 THU 0 19 SEP 2023 WED 010CT23 -12 Days = 0 0 010CT23 -13 Days = 18 SEP 2023 TUE 0

oke

Lake Okeechobee Outlets Last 14 Days

(	S-77 ischarge ALL DAY) (AC-FT) 8 67 85 9 2 98 239 522 527 2 -NR- 883 717 -NR-	Below S-77 Discharge (ALL-DAY) (AC-FT) 528 839 416 422 761 1049 904 1155 1016 345 186 31 1181 2126	S-78 Discharge (ALL DAY) (AC-FT) 6586 4328 3488 3671 4500 3107 2665 3384 3206 2914 2588 2454 3414 2332	S-79 Discharge (ALL DAY) (AC-FT) 18090 12187 8046 8326 10153 6512 5854 5751 6399 6935 4701 7386 6676 3812	
(	S-310 ischarge ALL DAY) (AC-FT) 0 -7 -137 -119 -166 -151 -86 -131 -241 -256 -246 -289 -259 -300	S-351 Discharge (ALL DAY) (AC-FT) 0 0 0 0 85 20 0 0 0	S-352 Discharge (ALL DAY) (AC-FT) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S-354 Discharge (ALL DAY) (AC-FT) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	L8 Canal Pt Discharge (ALL DAY) (AC-FT) 210 214 203 228 214 184 184 183 184 185 192 203 193 174
(,	S-308 ischarge ALL DAY) (AC-FT) 3 2 6 2 1 5 4 1 728 0 3 6 -NR-	Below S-308 Discharge (ALL-DAY) (AC-FT) -NRNRNRNRNRNRNRNR	Discharge		

\*\*\* NOTE: Discharge (ALL DAY) is computed using Spillway, Sector Gate and Lockages Discharges from 0015 hrs to 2400 hrs.

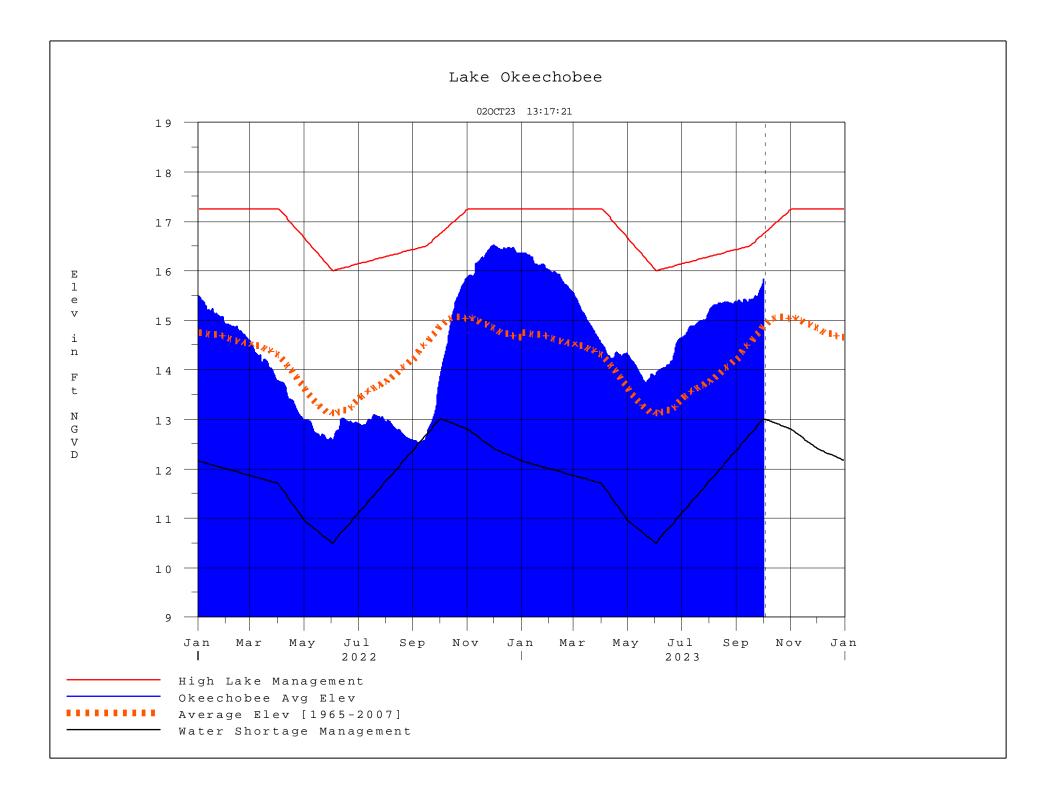
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<sup>(</sup>I) - Flows preceded by "I" signify an instantaneous flow computed from the single value reported for the day

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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 020CT2023 @ 13:15 \*\* Preliminary Data - Subject to Revision \*\*



## **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	Palmer Index	2-wk Mean L.O. Net
Classification*	Class Limits	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

<sup>\*</sup> use the wettest of the two indicators

## Classification of Lake Okeechobee Net Inflow Seasonal Outlook\*

Lake Net Inflow Prediction	Equivalent Depth**	Lake Okeechobee
[million acre-feet]		
[	[]	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

<sup>\*\*</sup>Volume-depth conversion based on average lake surface area of 467,000 acres

# <u>Classification of Lake Okeechobee Net Inflow Multi-Seasonal Outlook</u>\*

Lake Net Inflow Prediction	Equivalent Depth**	Lake Okeechobee
[million acre-feet]	[feet]	Net Inflow
[	[root]	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

<sup>\*\*</sup>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

<sup>\*</sup> Corresponds to Table 7-6 in the Lake Okeechobee Water Control Plan