

# DRAFT

## Performance Measures and Indicators Used To Compare Northern Everglades Regional Simulation Model Simulations for Phase 2 Lake Okeechobee Technical Plan Alternatives 1, 2, 3 and 4

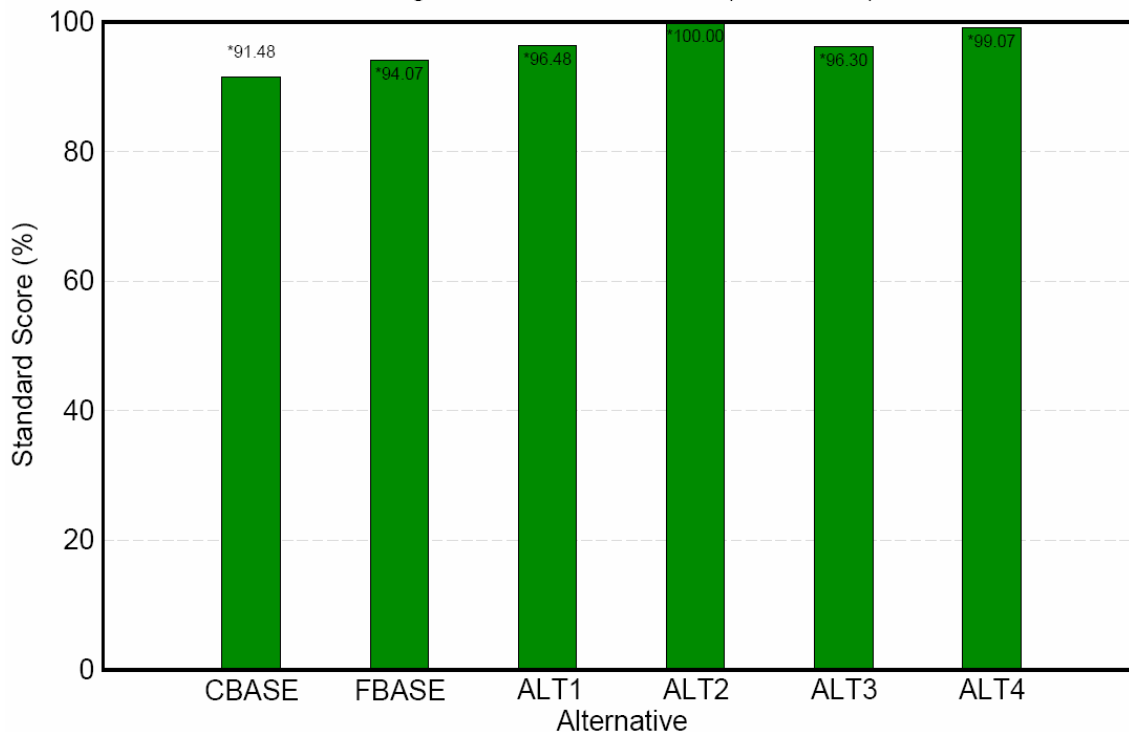
September 2007

### I. Lake Okeechobee Performance Measures

1. LOK – Lake Okeechobee Stage Envelope - Lake Okeechobee Extreme Low Lake Stage - Stage Below 10 Feet

#### Lake Okeechobee Extreme Low Lake Stage

Stage Below 10 Feet NGVD (1970-2005)



Note: A score of 0% is the worst score. The stage falls below 10 feet for an average of 15 weeks per year or more.  
A score of 100% is the best score. The stage never falls below 10 feet.

For Planning Purposes Only  
Run Date: Thu Oct 25 16:37:58 2007  
Regional Simulation Model (RSM)  
Script Used: lo\_generator.scr (ID386)  
Filename: lo1\_weekly\_low\_lake\_annualized.agr

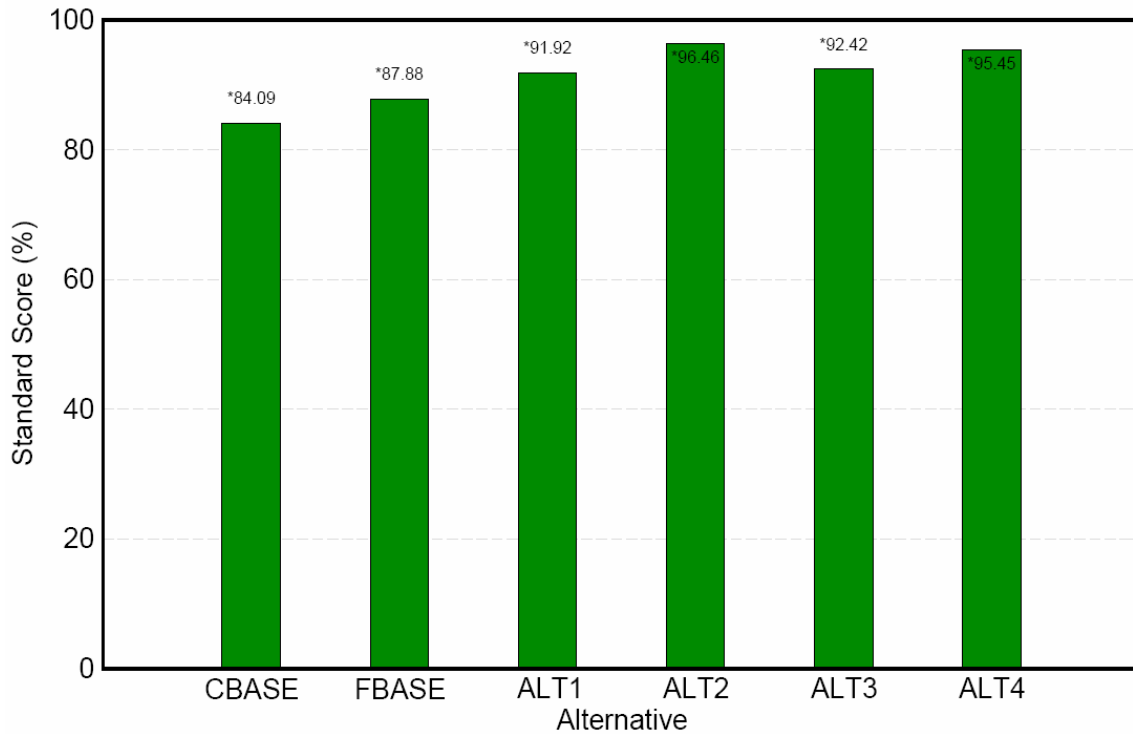
CBASE = Current Base  
FBASE = Future Base  
ALT1 = Alternative 1  
ALT2 = Alternative 2  
ALT3 = Alternative 3  
ALT4 = Alternative 4

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2. LOK – Lake Okeechobee Stage Envelope - Lake Okeechobee Extreme High Lake Stage - Stage Above 17 Feet

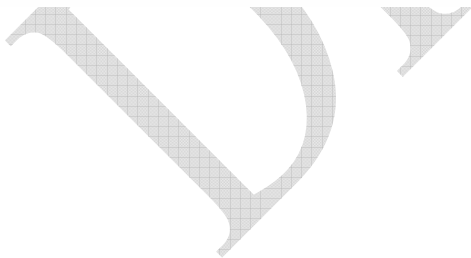
## Lake Okeechobee Extreme High Lake Stage

Stage Above 17 Feet NGVD (1970-2005)

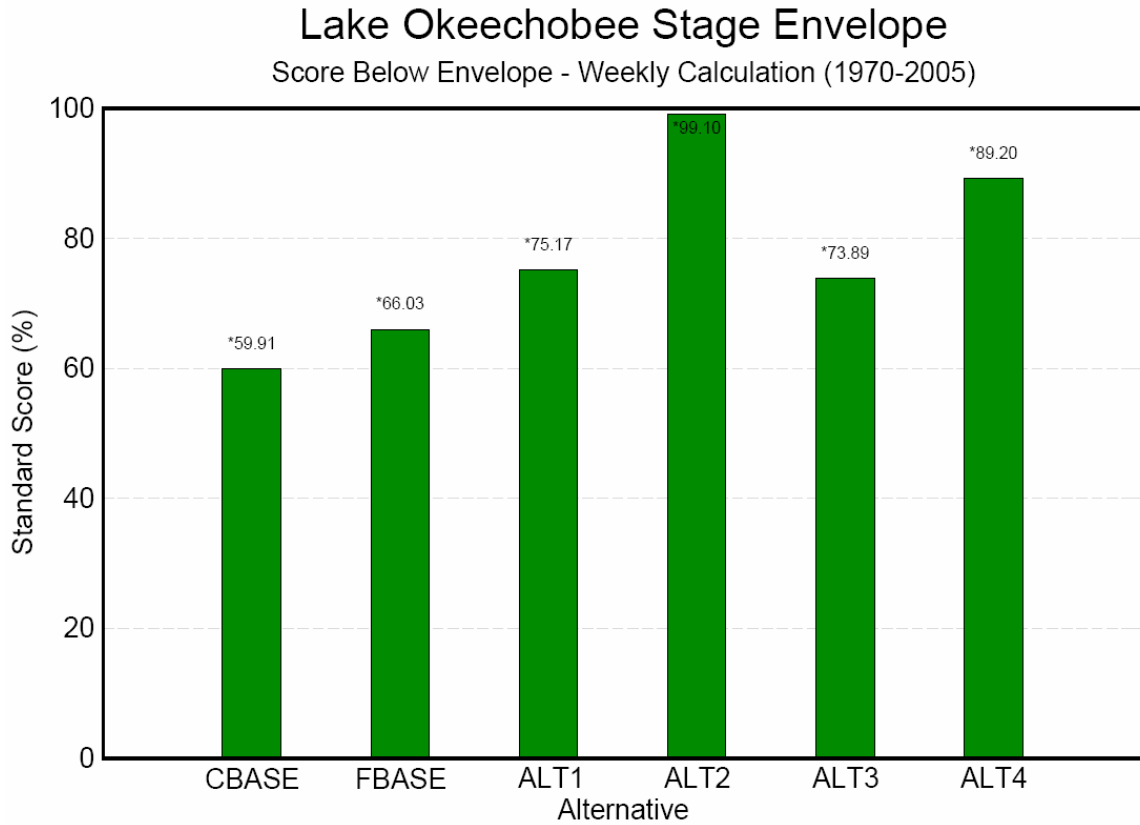


Note: A score of 0% is the worst score. The stage exceeds 17 feet for an average of 11 weeks per year or more.  
A score of 100% is the best score. The stage never exceeds 17 feet.

For Planning Purposes Only  
Run Date: Thu Oct 25 16:37:58 2007  
Regional Simulation Model (RSM)  
Script Used: lo\_generator.scr (ID386)  
Filename: lo2\_weekly\_high\_lake\_annualized.agr

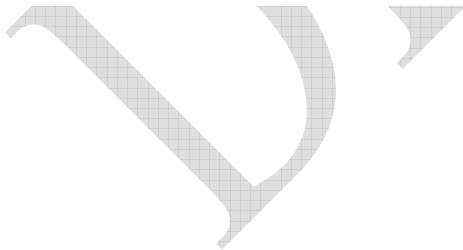


3. LOK – Lake Okeechobee Stage Envelope - Lake Okeechobee Stage Envelope -  
Score Below Envelope

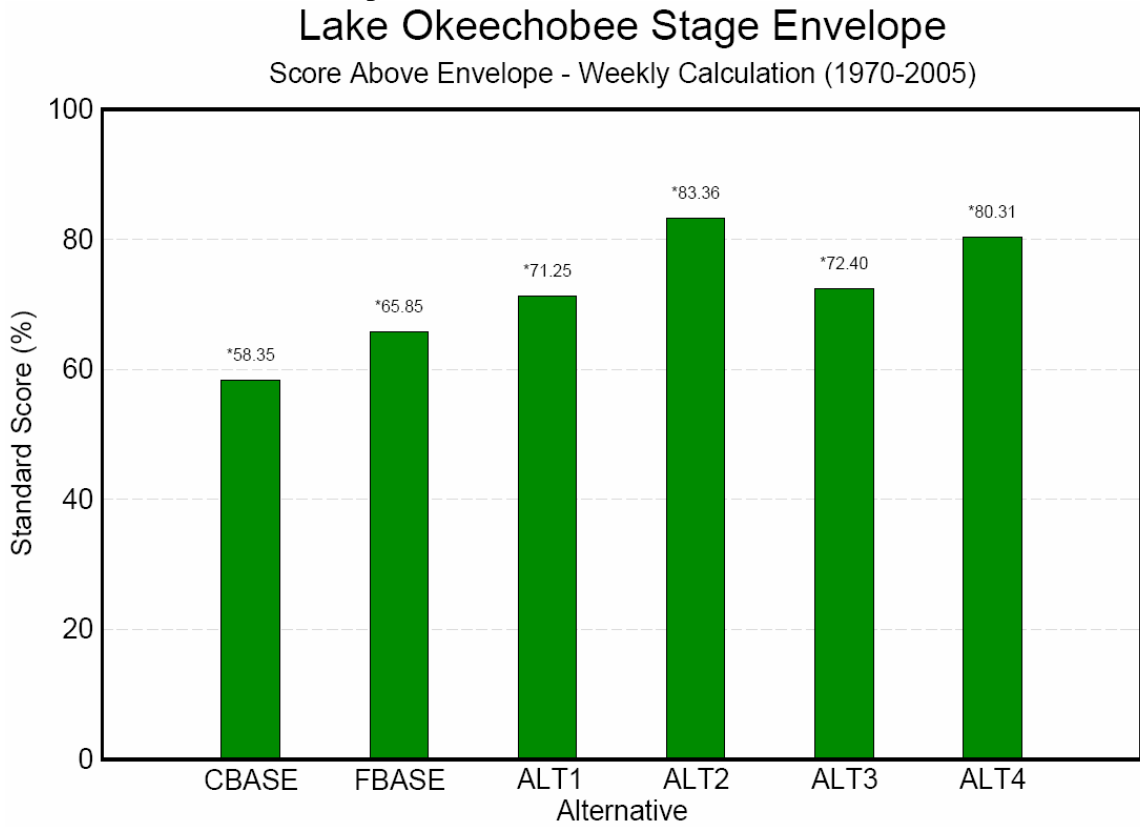


Note: A score of 0% is the worst score. The stage falls below the envelope by 1 ft or more on average.  
A score of 100% is the best score. The stage never falls below the envelope.

For Planning Purposes Only  
Run Date: Thu Oct 25 16:37:58 2007  
Regional Simulation Model (RSM)  
Script Used: lo\_generator.scr (ID386)  
Filename: lo3\_weekly\_low\_annualized.agr

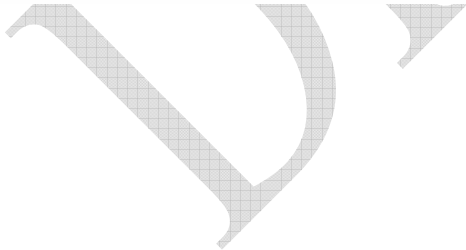


4. LOK – Lake Okeechobee Stage Envelope Lake Okeechobee Stage Envelope –  
Score Above Envelope



Note: A score of 0% is the worst score. The stage exceeds the envelope by 1 ft or more on average.  
A score of 100% is the best score. The stage never exceeds the envelope.

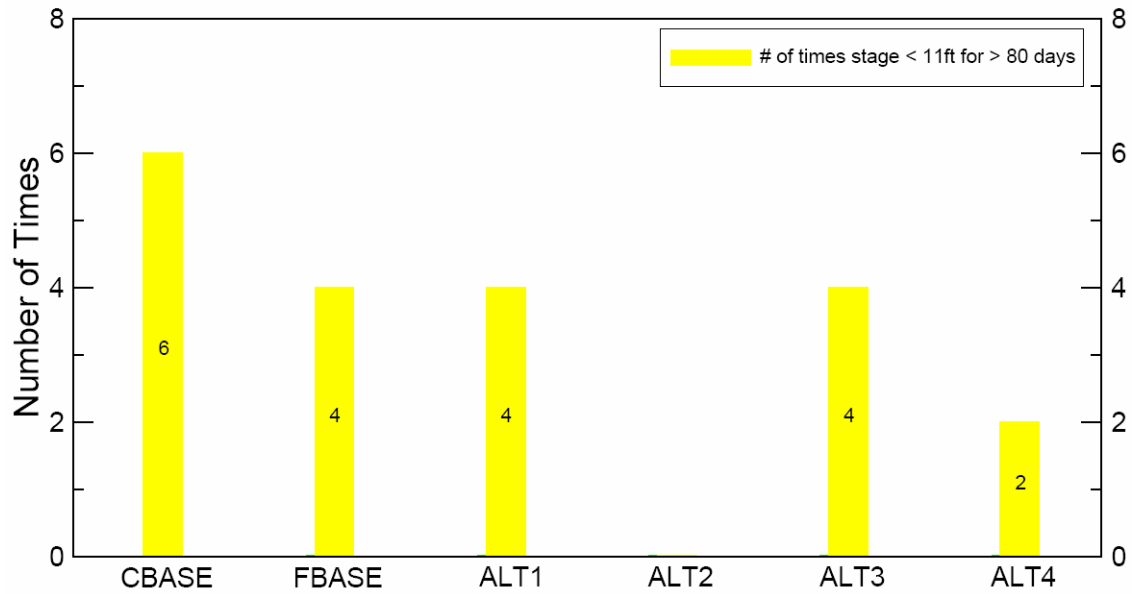
For Planning Purposes Only  
Run Date: Thu Oct 25 16:37:58 2007  
Regional Simulation Model (RSM)  
Script Used: lo\_generator.scr (ID386)  
Filename: lo3\_weekly\_high\_annualized.agr



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## 5. LOK – Lake Okeechobee MFL - # of times stage < 11ft for > 80 days

Number of Times LOK Proposed Minimum Water Level & Duration  
Criteria were Exceeded During the 1970-2005 Simulation



Note:

Target: Minimum Level, duration and Return Frequency - Water levels in Lake Okeechobee should not fall below 11ft NGVD for greater than 80 days more often than once every six years (Target derived from 1952-1995 historical stage data for Lake Okeechobee).

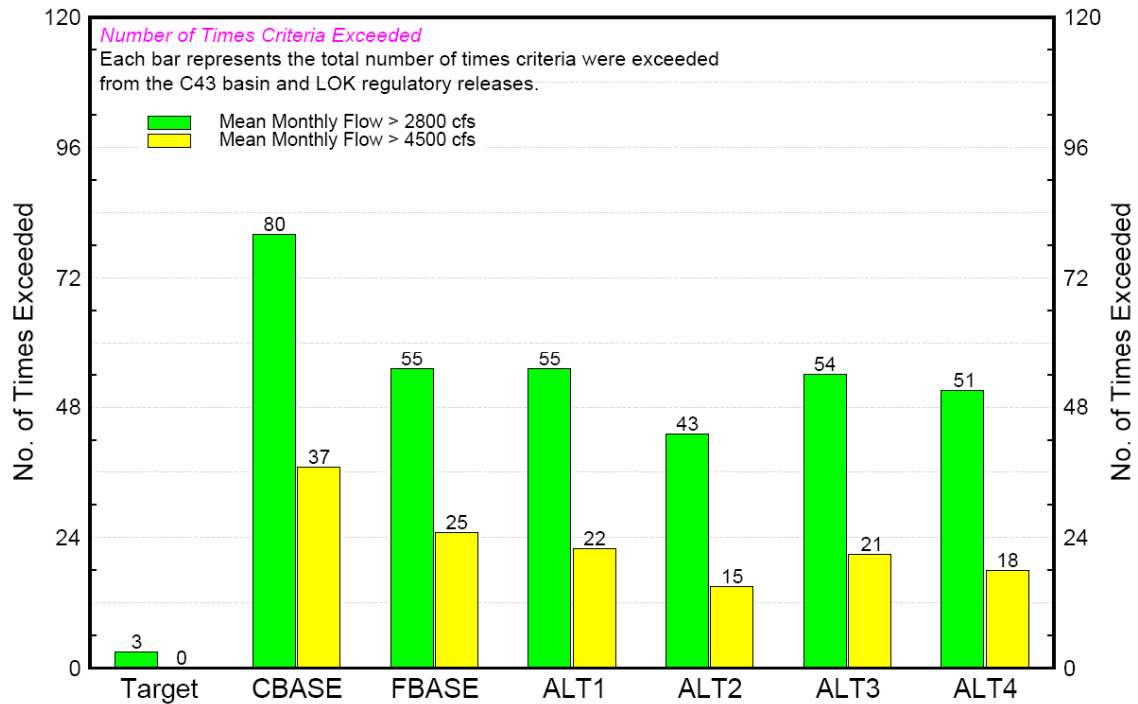
*For Planning Purposes Only*  
Script used: lok\_stage\_events.scr ID450  
Filename: lok\_minlvl\_bar.agr



## II. Estuaries Performance Measures

1. a. C43 Estuary - Number of Times Caloosahatchee Estuary High Discharge Criteria Exceeded

Number of Times Caloosahatchee Estuary High Discharge Criteria Exceeded  
(mean monthly flows > 2800 & 4500 cfs from 1970 - 2005)



For Planning Purposes Only  
Script used: estuary.scr, ID496  
Filename: caloos\_2800\_4500\_flow\_bar.out.agr

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### 1b. C43 Estuary - Number of Times Caloosahatchee Estuary High Discharge Criteria Exceeded

Number of months discharge > 2,800 cfs (432 total months of simulation)

	CBASE	FBASE	ALT1	ALT2	ALT3	ALT4
Number of months Lake Okeechobee (LOK) regulatory discharges > 2,800 cfs	21	13	13	9	13	9
Number of months Caloosahatchee (C-43) Basin > 2,800 cfs	48	28	27	26	27	26
Number of months combined (not individually) LOK and C-43 Basin runoff discharges > 2,800 cfs	11	14	15	8	14	16
<b>Number of months S-79 &gt; 2,800 cfs</b>	80	55	55	43	54	51

#### Notes:

Number of month Lake Okeechobee regulatory discharges>2800 cfs- This is the number of months that Lake Okeechobee discharges only is greater than 2800 cfs.

Number of months Caloosahatchee Basin>2800 cfs- This is the number of months that runoff originating from within the Caloosahatchee Basin only is greater than 2800 cfs.

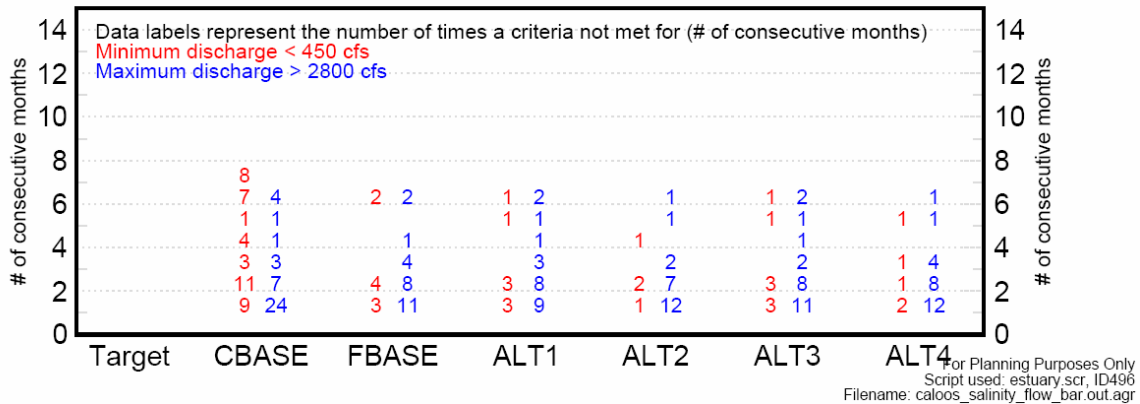
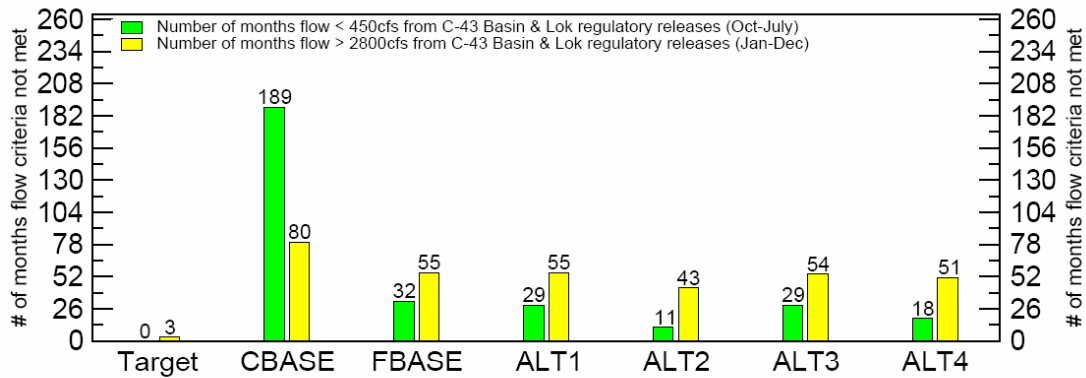
Number of months combined (not individually) LOK and C-43 Basin runoff discharges > 2,800 cfs - This is the number of months that a combination of runoff from within the Caloosahatchee Basin and Lake Okeechobee regulatory discharges are greater than 2800 cfs.

Number of months S-79 > 2800 cfs- Total number of months discharge across S-79 is greater than 2800 cfs.- These flows that are greater than 2800 cfs could be caused by runoff from within the Caloosahatchee Basin, Lake Okeechobee regulatory discharges, or a combination of runoff from within the Caloosahatchee Basin and Lake Okeechobee regulatory discharges.

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## 2. C43 Estuary - Number of times Salinity Envelope Criteria NOT Met for the Caloosahatchee Estuary

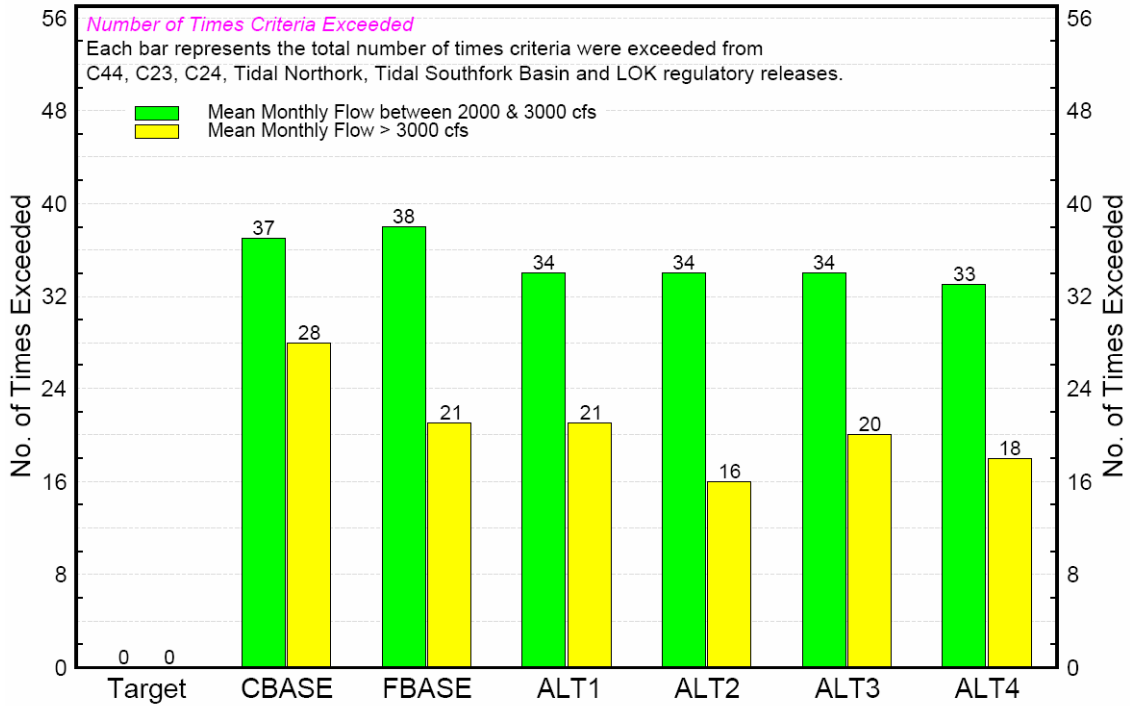
### Number of Times Salinity Envelope Criteria NOT Met for the Caloosahatchee Estuary (mean monthly flows 1970 - 2005)





### 3. C44 Estuary - Number of Times St. Lucie High Discharge Criteria Exceeded

Number of Times St. Lucie High Discharge Criteria Exceeded  
(mean monthly flows > 2000 cfs from 1970 - 2005)

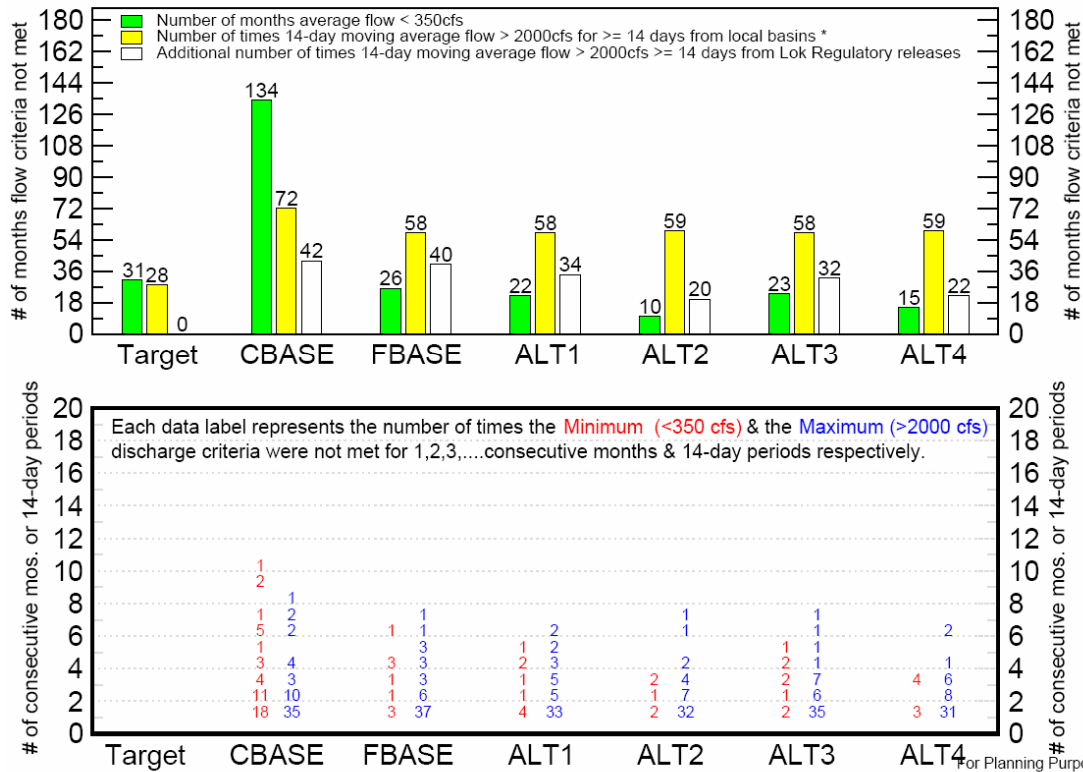


Note: A favorable maximum monthly flow was developed for the estuary (2000 cfs) that will theoretically provide suitable salinity conditions which promote the development of important benthic communities (eg. oysters & shoalgrass). Mean monthly flows above 3000 cfs result in freshwater conditions throughout the entire estuary causing severe impacts to estuarine biota.

For Planning Purposes Only  
 Script used: estuary.scr, ID496  
 Filename: stluc\_2000\_flow\_bar.out.agr

4. C44 Estuary - Number of times Salinity Envelope Criteria NOT Met for the St. Lucie Estuary

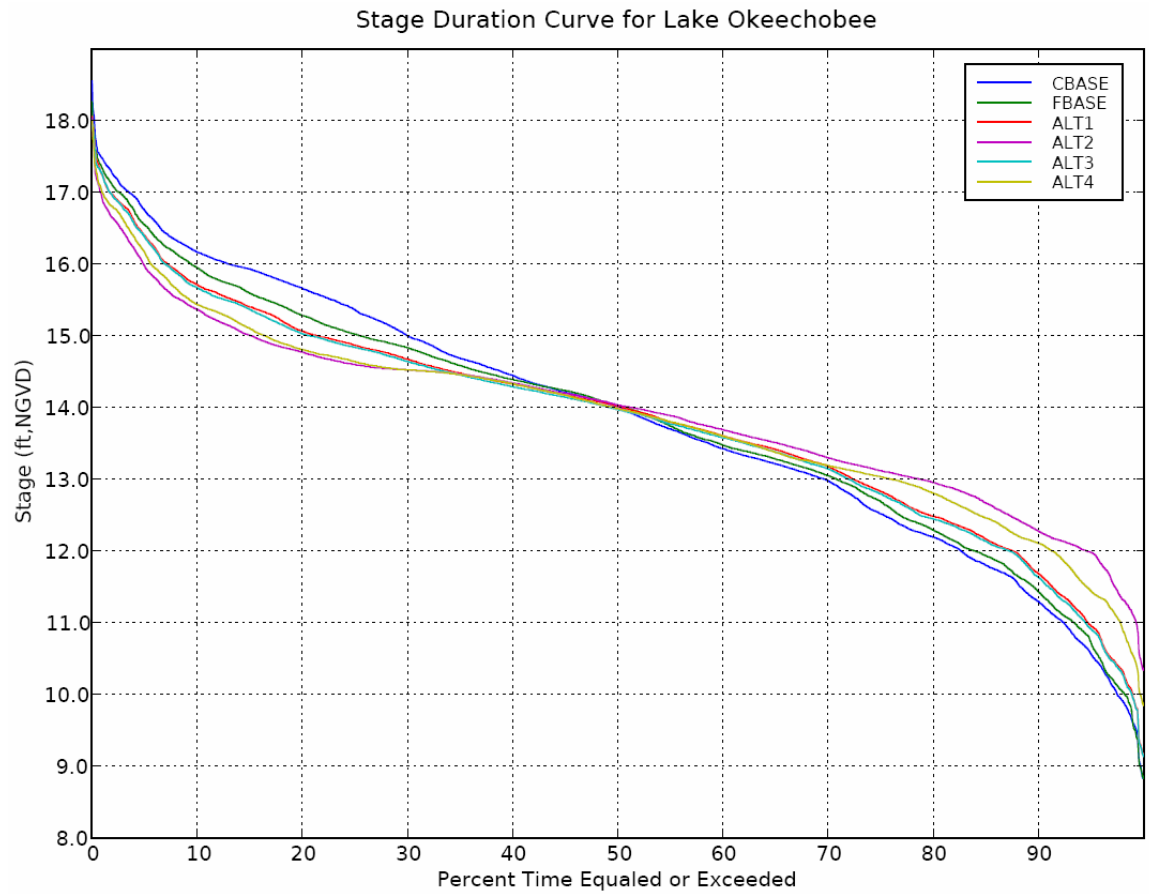
Number of Times Salinity Envelope Criteria NOT Met for the St. Lucie Estuary (mean monthly flows 1970 - 2005)



For Planning Purposes Only  
Script used: estuary\_scr\_ID496  
Filename: stluc\_salinity\_flow\_bar.out.agr

#### IV. Performance Indicators

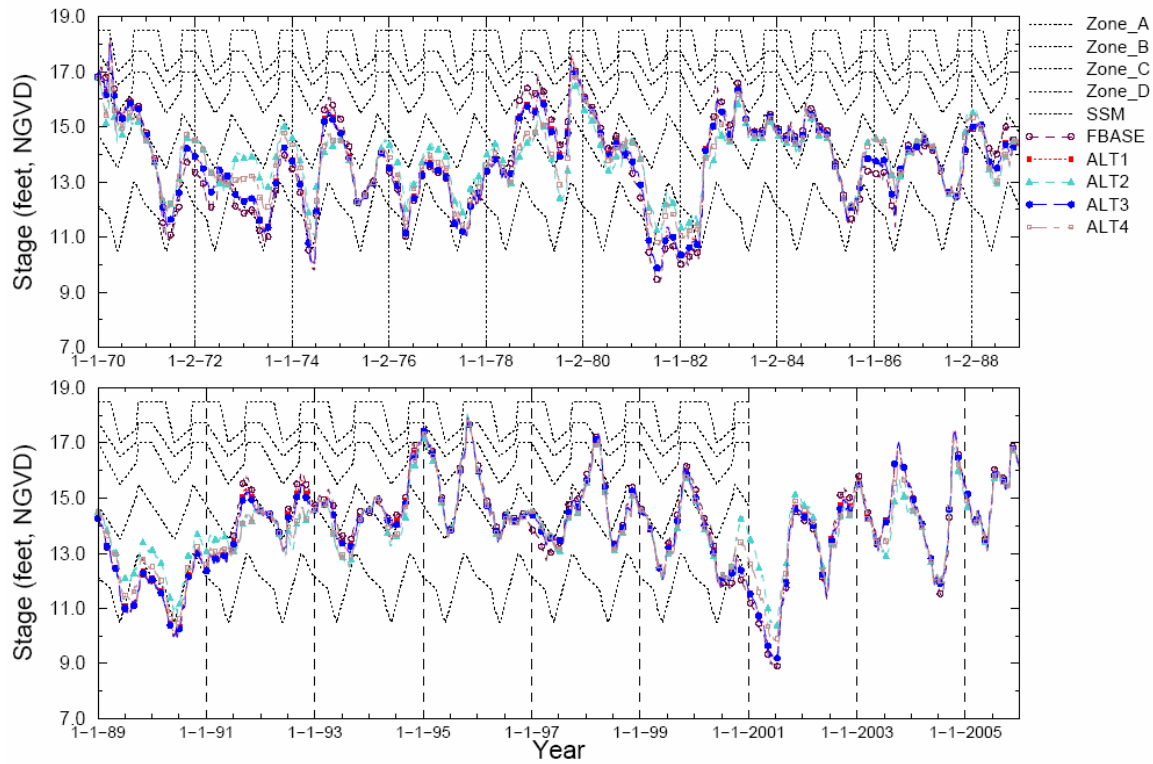
##### 1. LOK - Lake Okeechobee Stage Duration Curves



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LOK – Lake Okeechobee Stage Hydrographs

## Stage Hydrographs for Lake Okeechobee



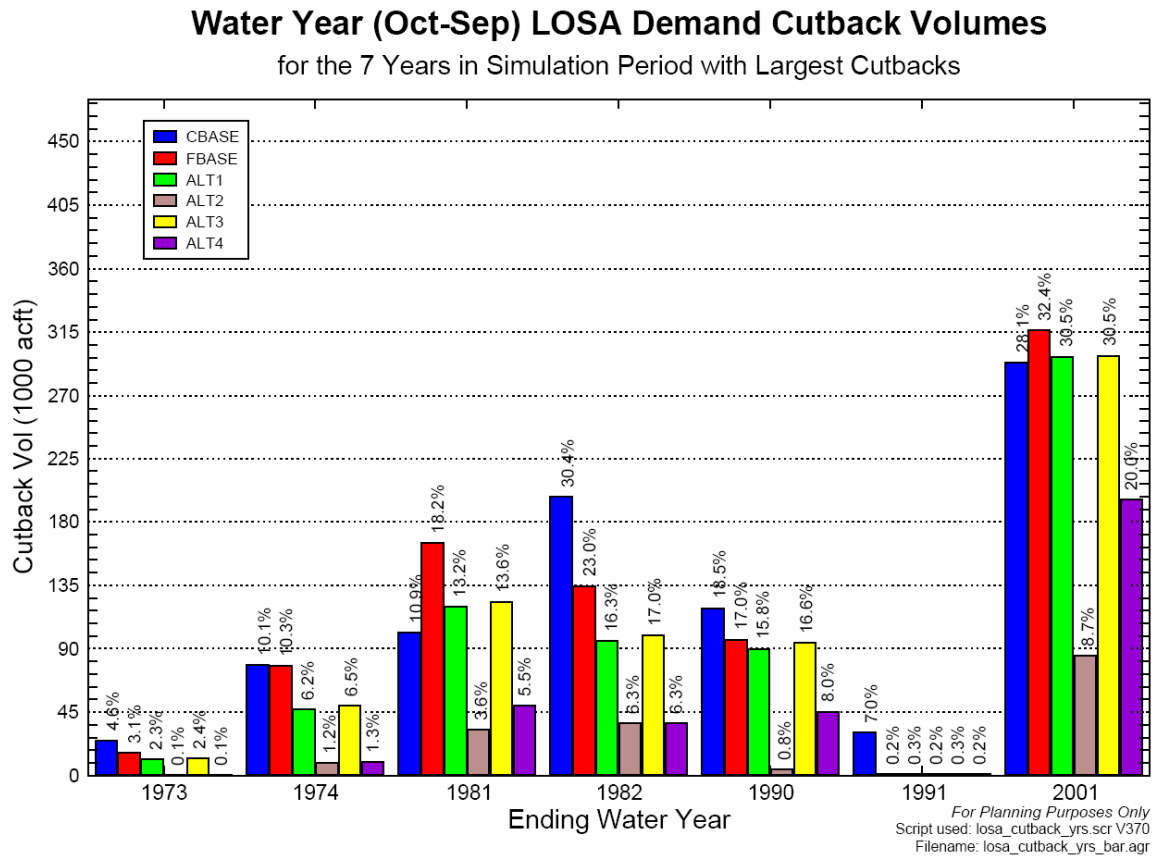
SFWMM P.O.S. 1970 – 2005

Run date: 09/26/07 14:39:37  
SFWMM VRegional Simulation Model (RSM)  
Script used: hyd\_dur.scr, V1.11  
Filename: lok\_dai\_stg.fig

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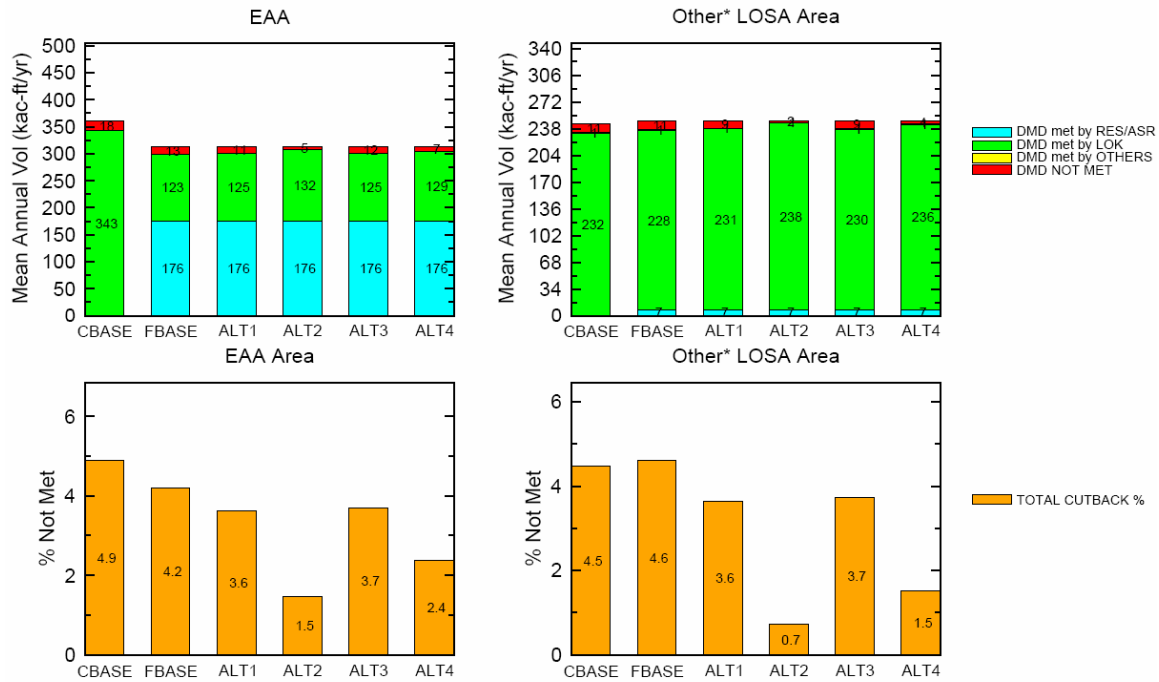
## 2. Lake Okeechobee – Water Supply Indicators a. 7 Worst Years



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- b. 4-in-1 Water Supply Indicator – Mean annual EAA/LOSA Supplemental Irrigation: Demands and Demand-Not-Met for Entire Period of Simulation

## Mean Annual EAA/LOSA Supplemental Irrigation: Demands & Demands Not Met for 1970 - 2005



Other LOSA Areas: S236, S4, L8, C43, C44, North & Northeast Lakeshore, & Lower Istokpoga

For Planning Purposes Only  
Script used: ssm\_4in1.scr, ID327  
Filename: losa\_dmd\_4in1.agr