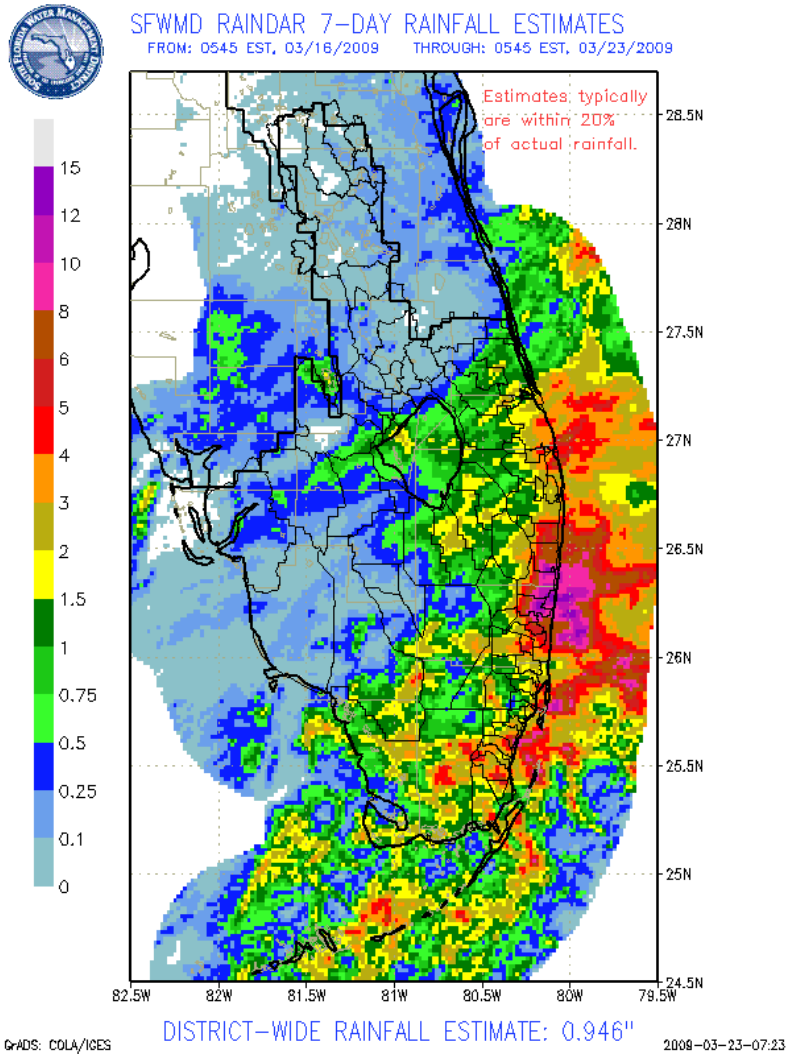
Water Conditions Summary

Governing Board Meeting
April 08, 2009 Meeting

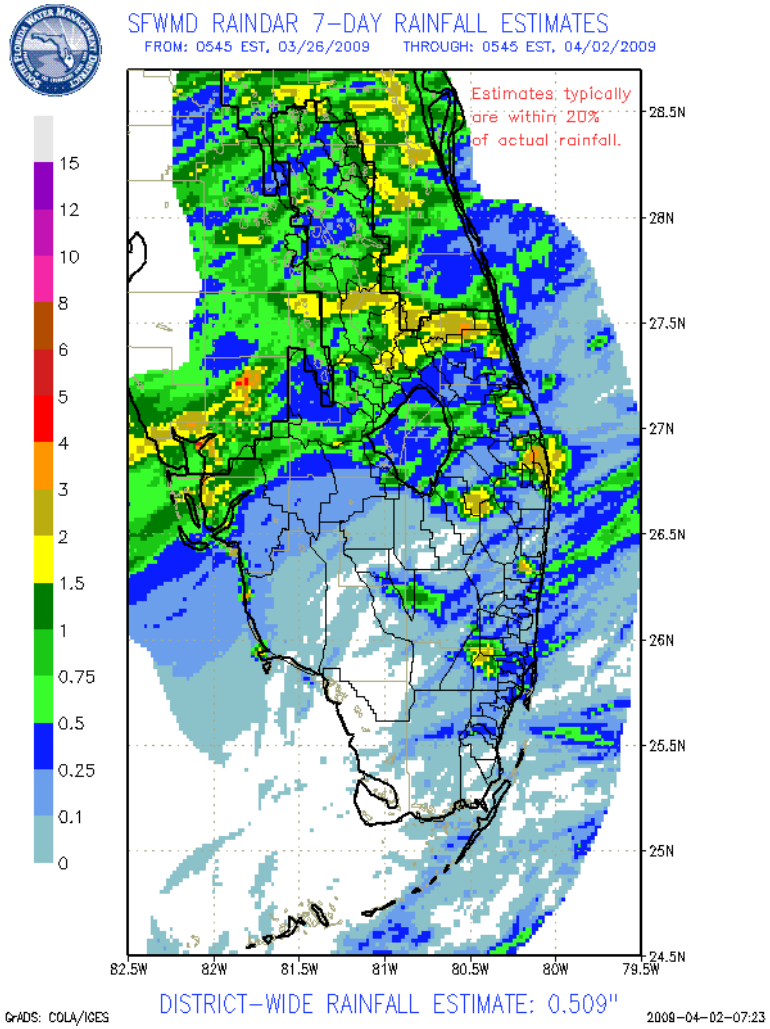
Matahel Ansar, Ph.D., P.E.
Deputy Department Director
Operations Control Department
South Florida Water Management District

Rainfall event
March 17-March 21

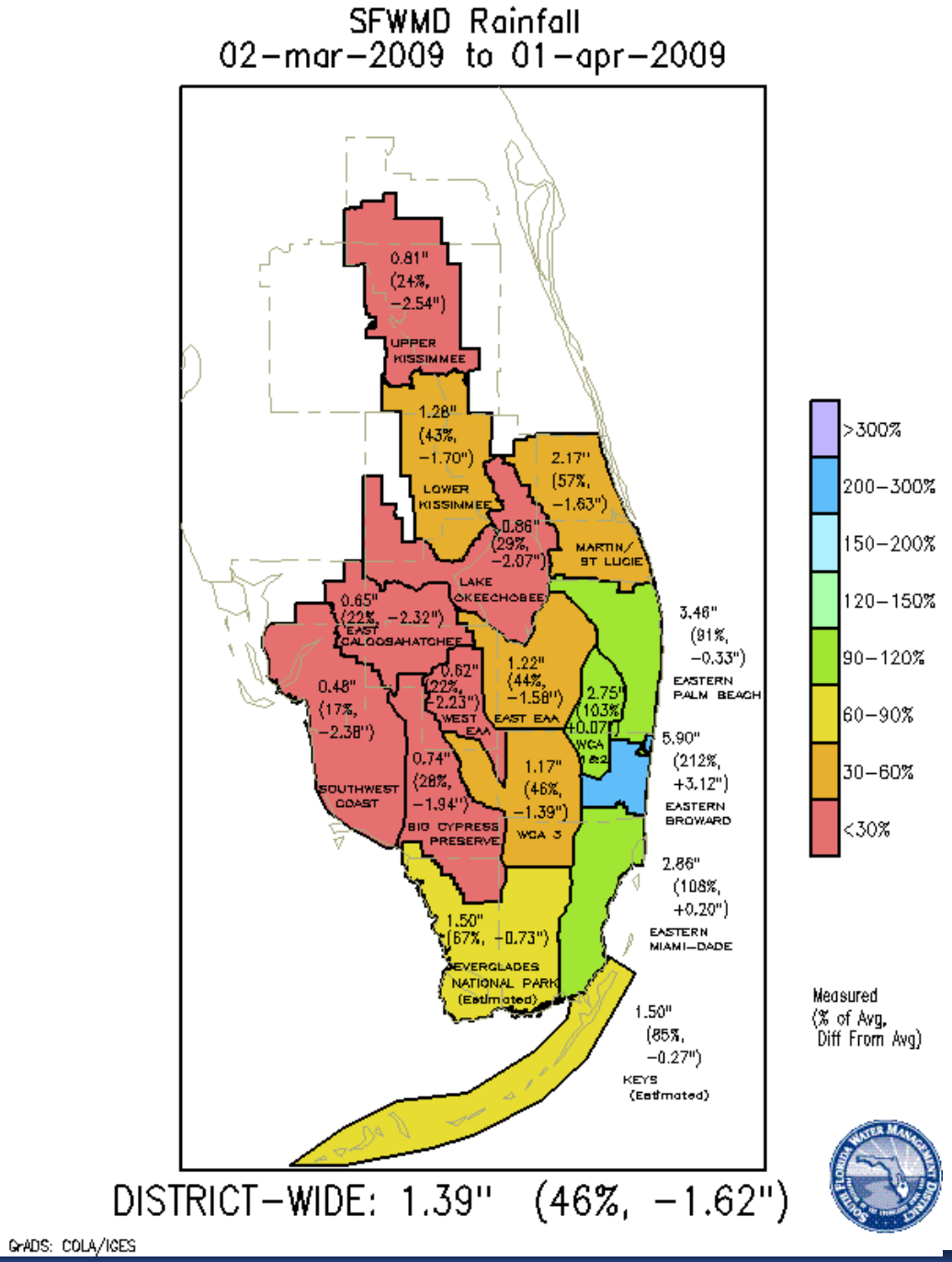


Most of this rain fell March 17 and 18

Rainfall event
March 26-April 1



Most of this rain fell March 29 and 31

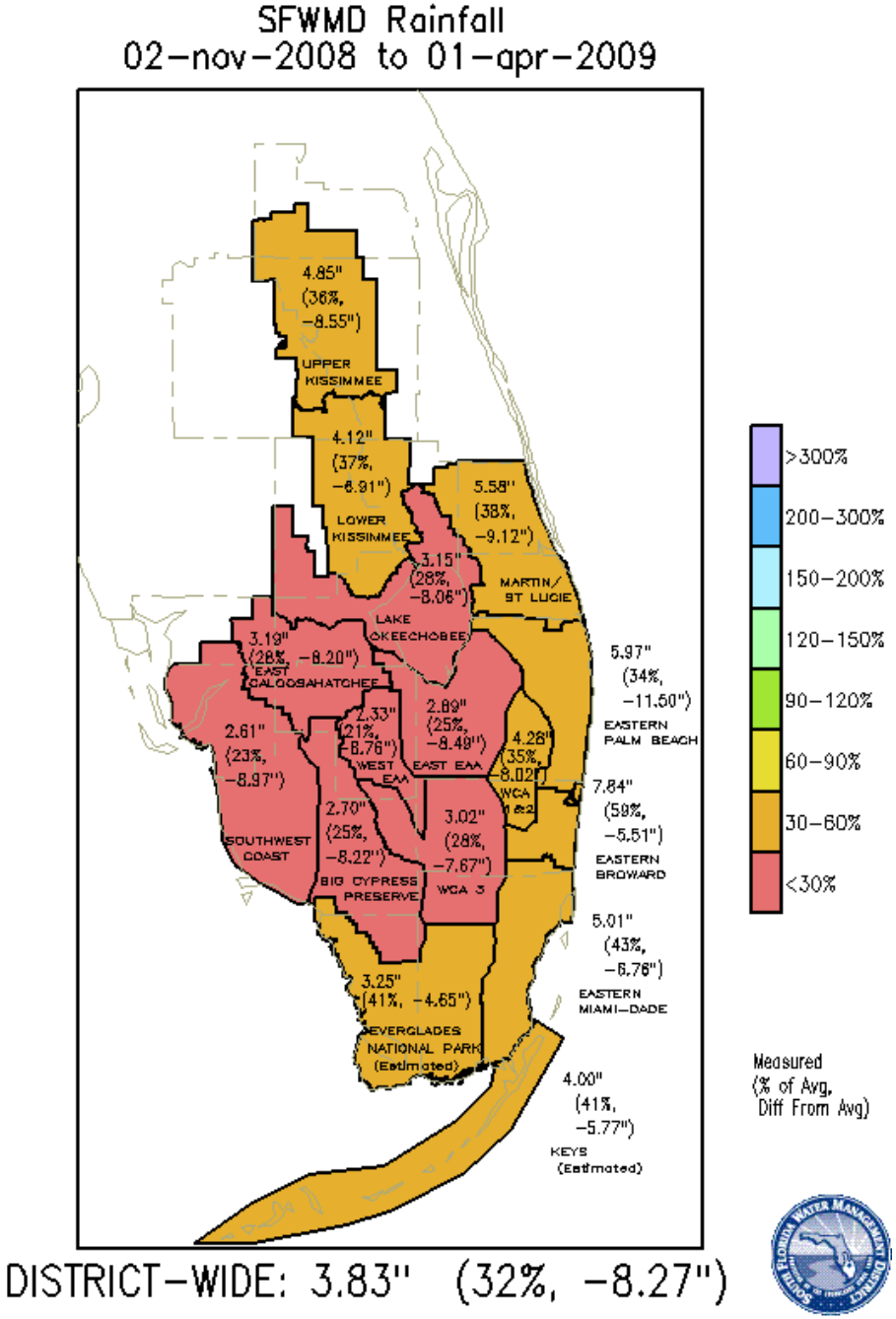


SFWMD 2009
March Rainfall
March 2nd – April 1st

DISTRICT-WIDE:
1.39" (46%, - 1.62")

Average March =3.01 "

- *Most basins < ½ average*
- *Eastern Miami Dade (1.08),WCAs1 & 2 (1.03) and Eastern Palm Beach (0.91) received about their respective March average rainfall*
- *Eastern Broward received 2.12 times its March average rainfall*
- *LOK received 0.29 times its March average rainfall*



SFWMD 2008-09

Dry Season Rainfall

02-Nov-08 to 01-Apr-09

DISTRICT-WIDE:

3.83" (32%, -8.27")

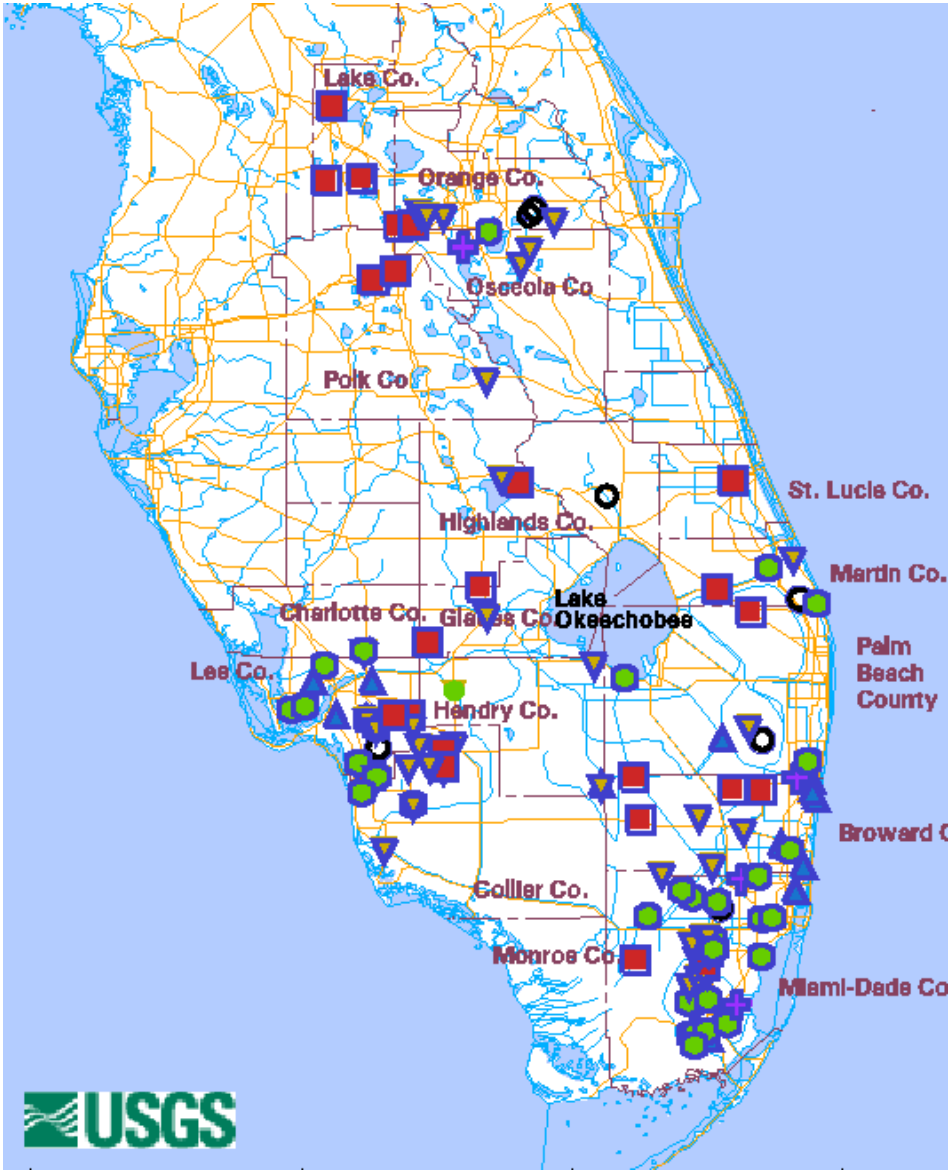
Average (Nov-March) Dry Season = 11.10"

- *WCAs1 & 2, East Coast and Upper and lower Kissimmee basins received between 30 and 60% of their dry season average*
- *The rest of the District received less than its 30% dry season average*
- *LOK received less than 30% of its dry season average*
- *Through March 31st, this is the 3rd driest dry season on records*

Groundwater Levels

Most inland wells are well below normal

Most coastal wells are at or close to normal



Water level compared to historical data, after long-term trends are remo

- Insufficient information available to compute water-level statistics
- In lowest 10 percent of past water elevations
- Within lowest 10 to 30 percent of past water elevations
- Within 20 percent of the median of past water elevations
- Within highest 10 to 30 percent of past water elevations
- In highest 10 percent of past water elevations

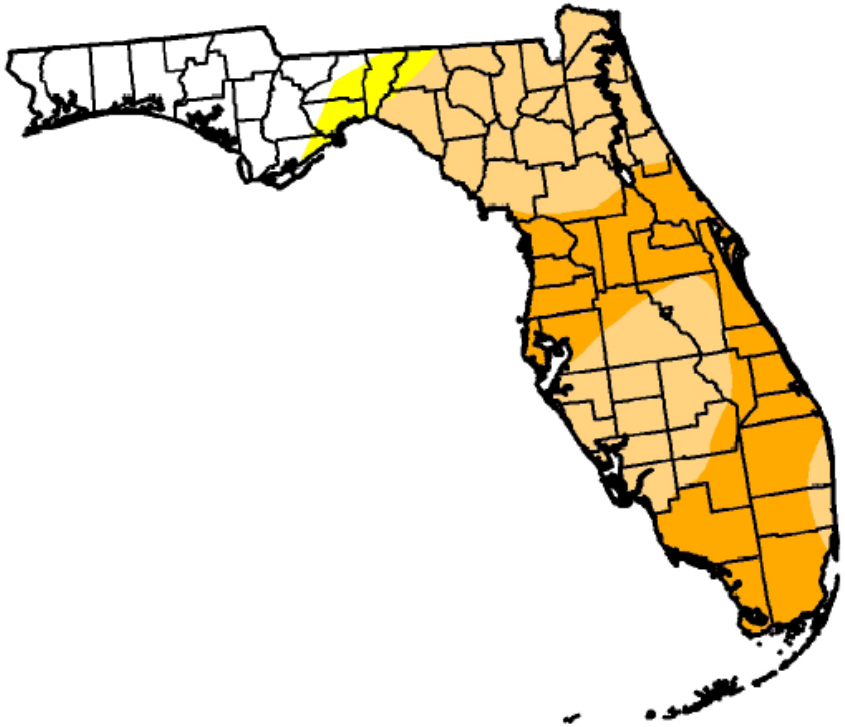
U.S. Drought Monitor

March 31, 2009
Valid 7 a.m. EST

Florida

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	17.8	82.2	78.7	36.6	0.0	0.0
Last Week (03/24/2009 map)	0.2	99.8	70.3	36.6	0.0	0.0
3 Months Ago (01/06/2009 map)	44.0	56.0	13.4	0.0	0.0	0.0
Start of Calendar Year (01/06/2009 map)	44.0	56.0	13.4	0.0	0.0	0.0
Start of Water Year (10/07/2008 map)	75.8	24.2	0.0	0.0	0.0	0.0
One Year Ago (04/01/2008 map)	47.0	53.0	22.9	14.7	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

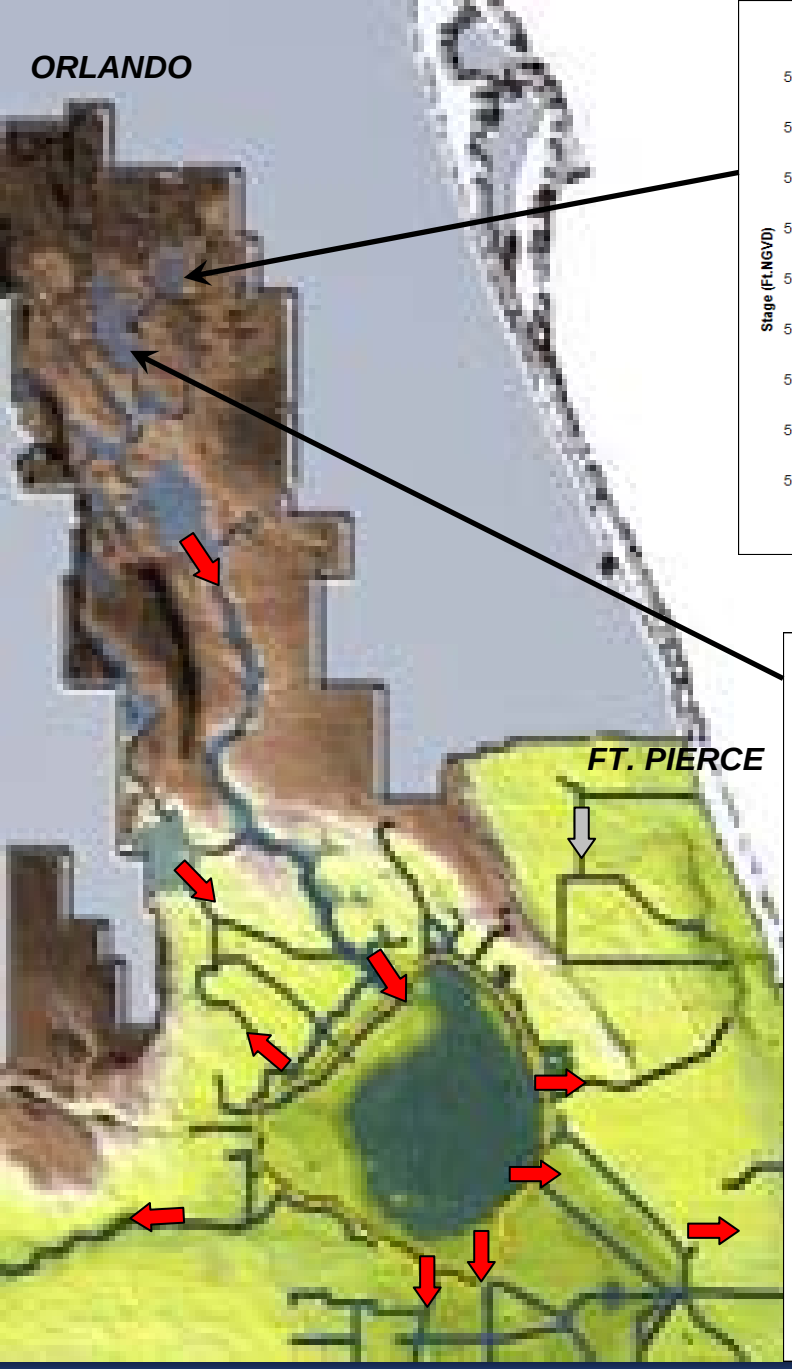
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

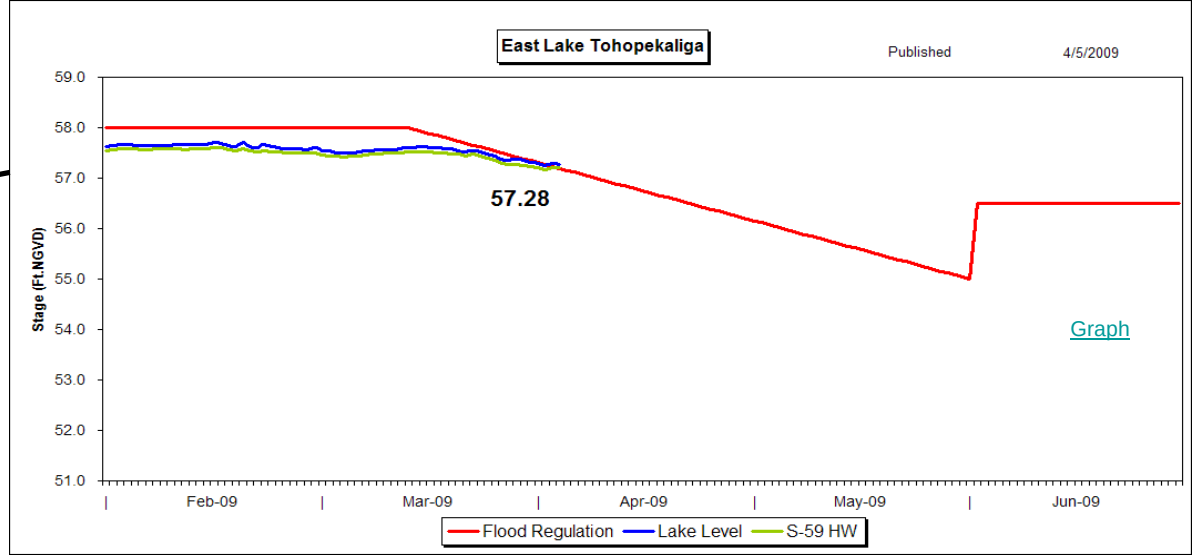
USDA National Drought Mitigation Center

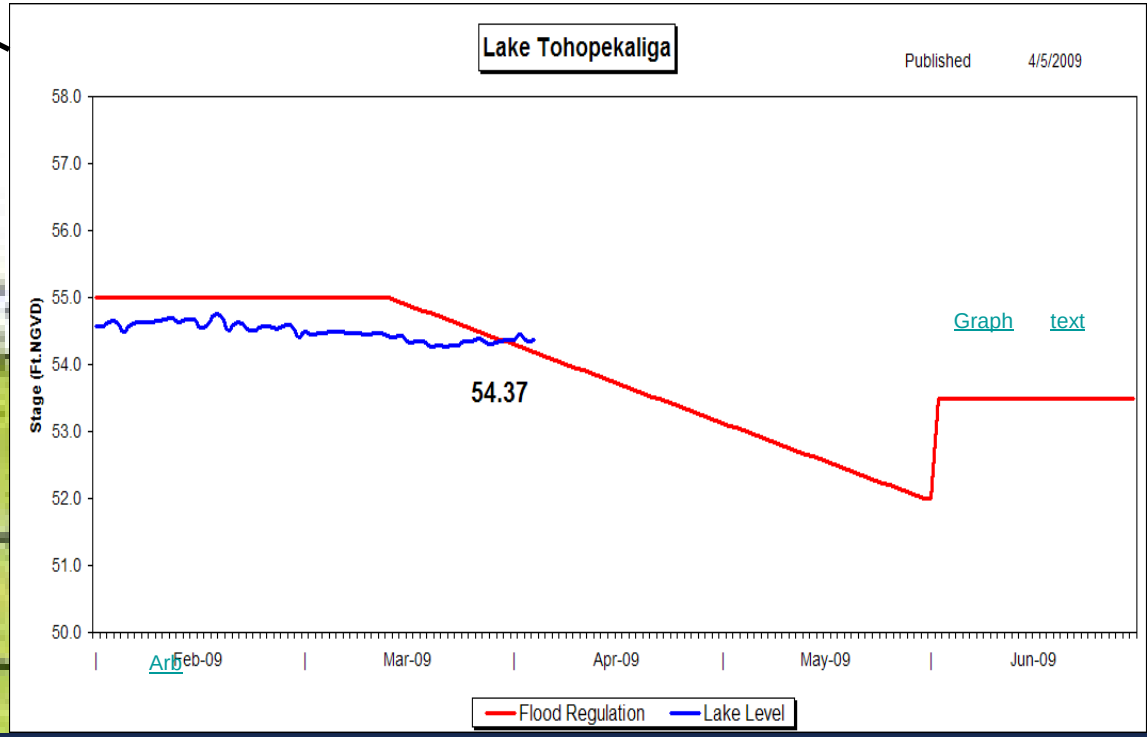
Released Thursday, April 2, 2009

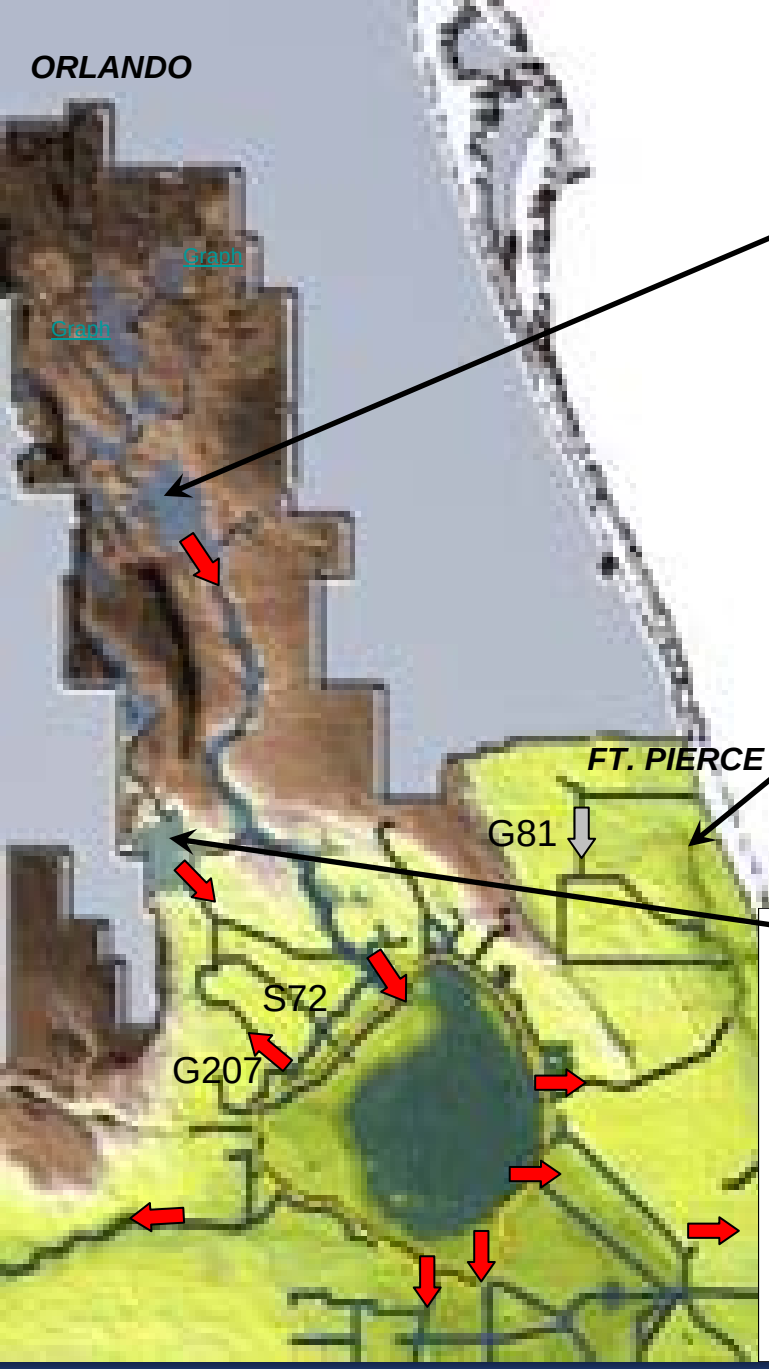
http://drought.unl.edu/dm

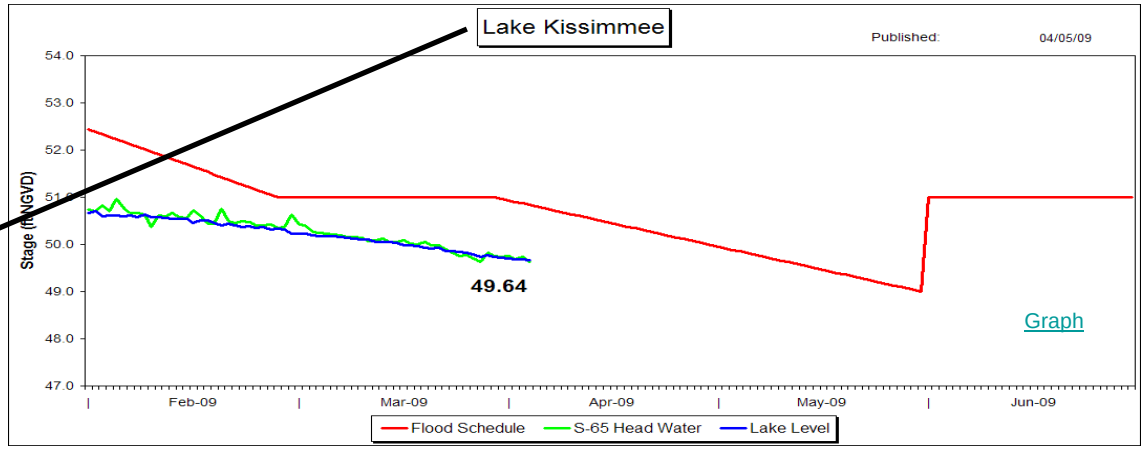
Author: Mark Svoboda, National Drought Mitigation Center

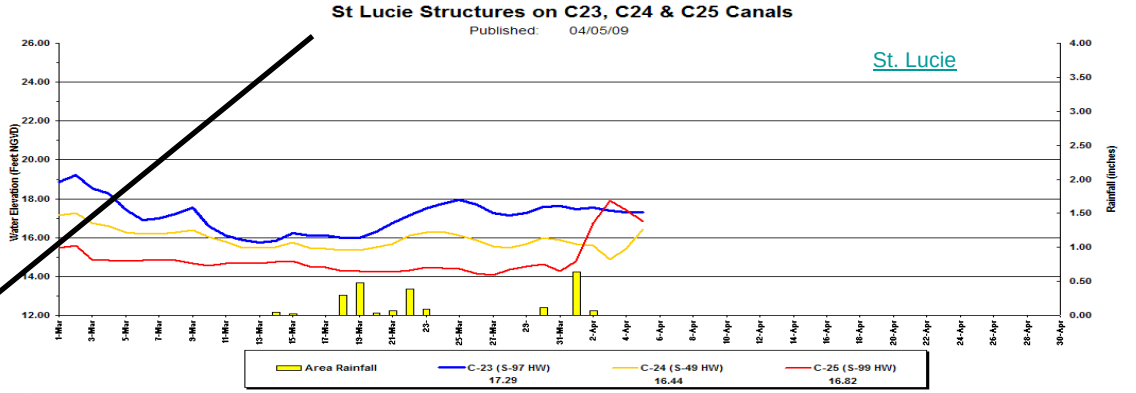

ORLANDO
FT. PIERCE

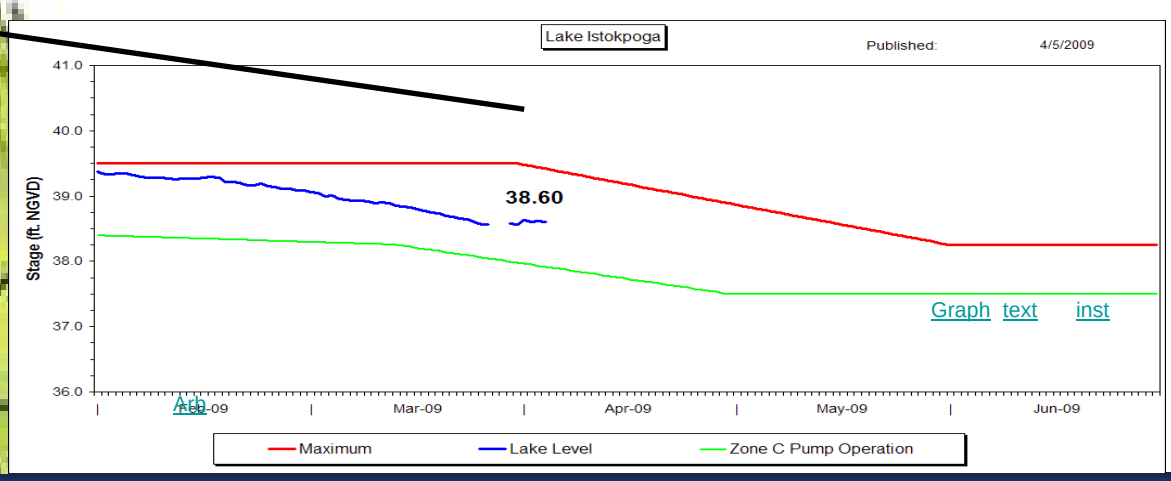

East Lake Tohopekaliga
Published
4/5/2009
Stage (Ft.NGVD)
59.0
58.0
57.0
56.0
55.0
54.0
53.0
52.0
51.0
57.28
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Graph
Flood Regulation
Lake Level
S-59 HW

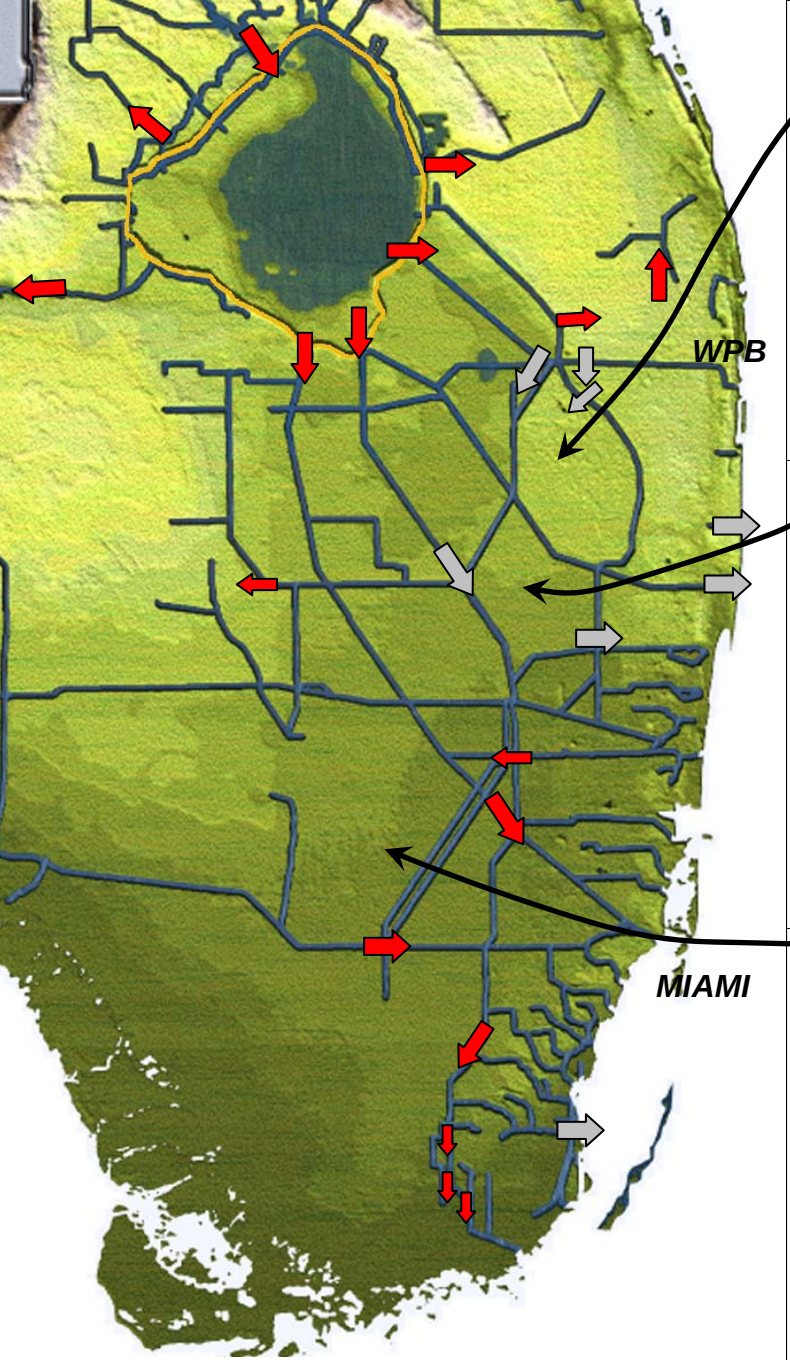

Lake Tohopekaliga
Published
4/5/2009
Stage (Ft.NGVD)
58.0
57.0
56.0
55.0
54.0
53.0
52.0
51.0
50.0
54.37
Graph
text
Arb
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Flood Regulation
Lake Level

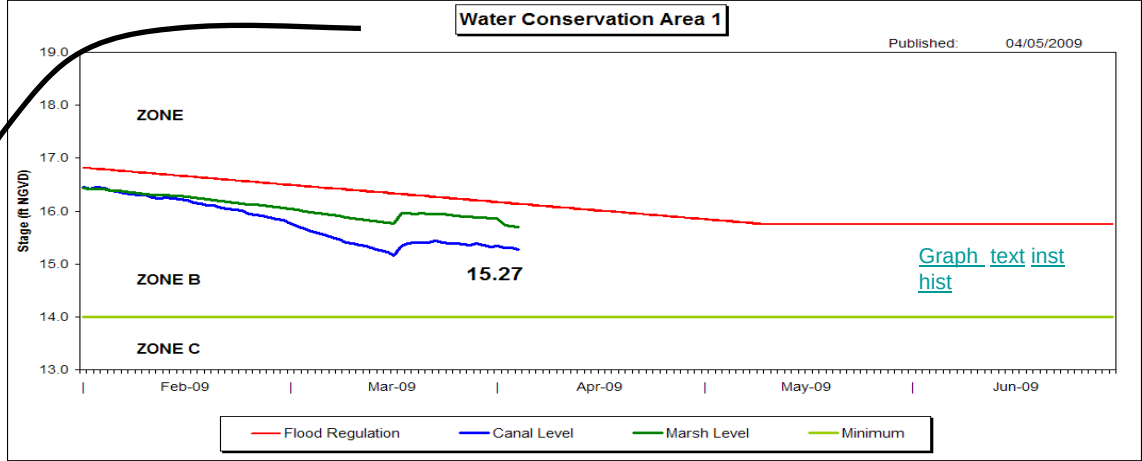

ORLANDO
Graph
Graph
FT. PIERCE
G81
S72
G207

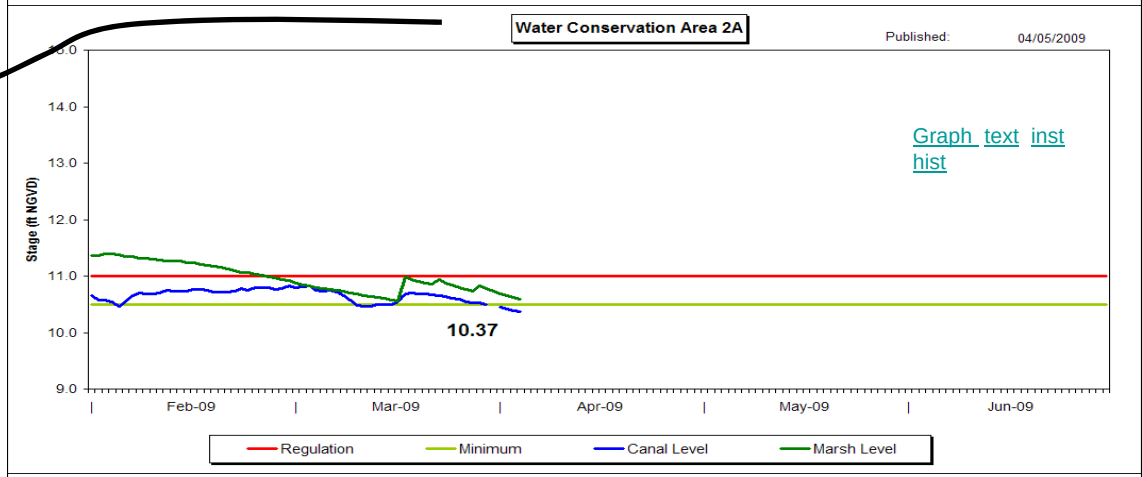

Lake Kissimmee
Published: 04/05/09
Stage (ft NGVD)
54.0
53.0
52.0
51.0
50.0
49.0
48.0
47.0
49.64
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Graph
Flood Schedule
S-65 Head Water
Lake Level

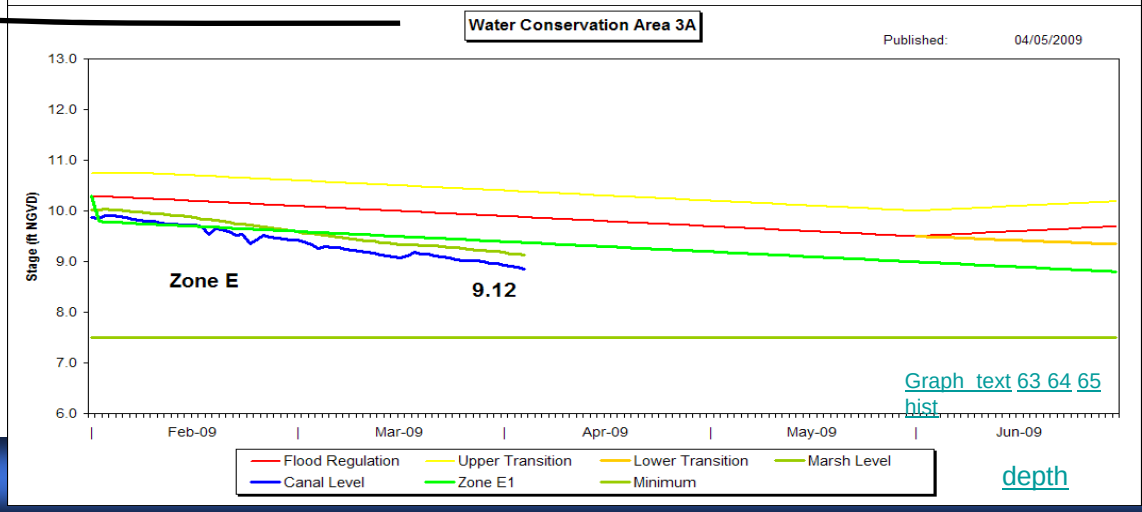

St Lucie Structures on C23, C24 & C25 Canals
Published: 04/05/09
St. Lucie
Water Elevation (Feet NGVD)
Rainfall (inches)
Area Rainfall
C-23 (S-97 HW) 17.29
C-24 (S-49 HW) 16.44
C-25 (S-99 HW) 16.82

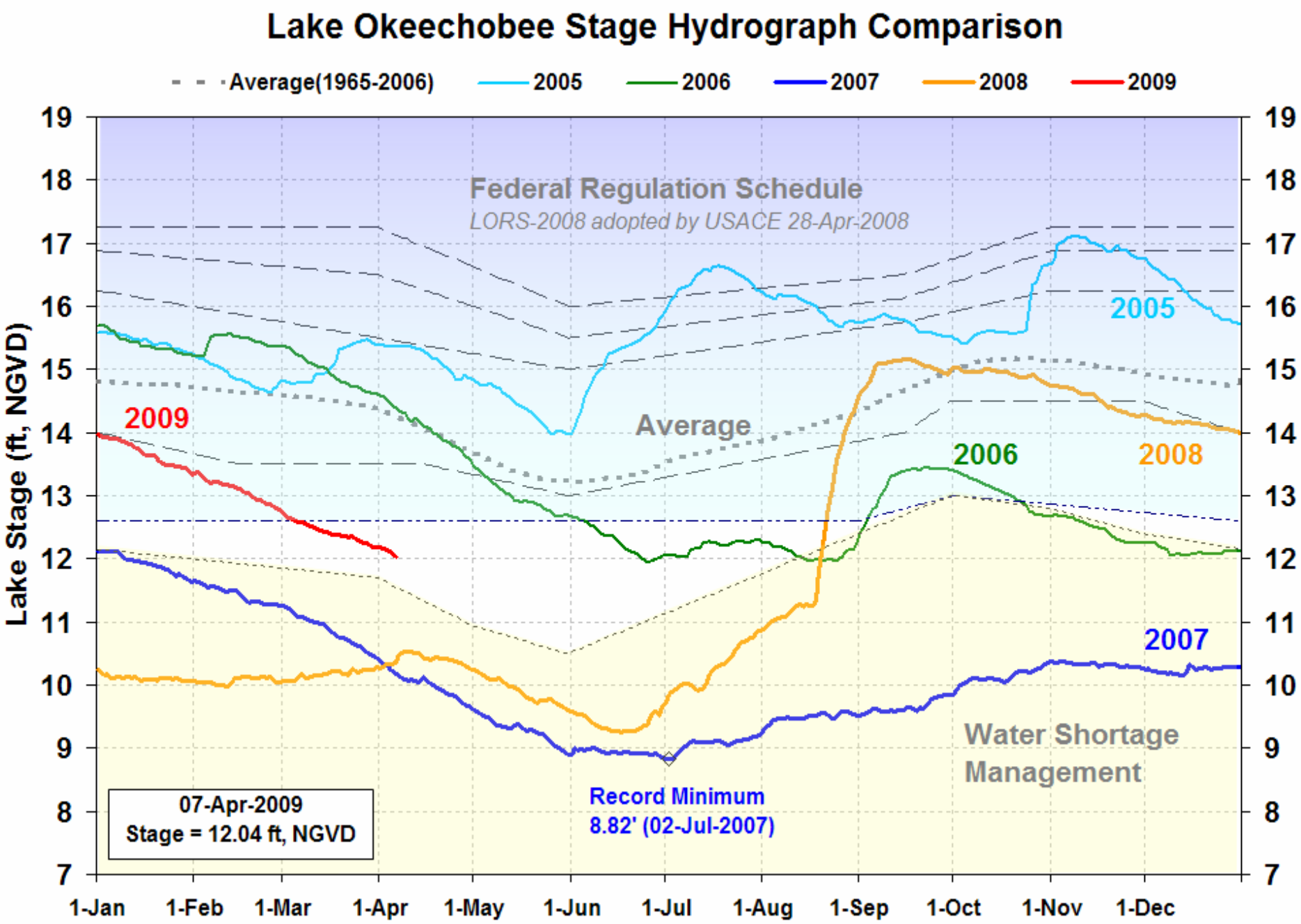

Lake Istokpoga
Published: 4/5/2009
Stage (ft. NGVD)
41.0
40.0
39.0
38.0
37.0
36.0
38.60
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Graph
text
inst
Maximum
Lake Level
Zone C Pump Operation


WPB
MIAMI


Water Conservation Area 1
Published: 04/05/2009
ZONE
ZONE B
ZONE C
15.27
Stage (ft NGVD)
19.0
18.0
17.0
16.0
15.0
14.0
13.0
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Graph text inst
hist
Flood Regulation
Canal Level
Marsh Level
Minimum


Water Conservation Area 2A
Published: 04/05/2009
Stage (ft NGVD)
14.0
13.0
12.0
11.0
10.0
9.0
10.37
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Graph text inst
hist
Regulation
Minimum
Canal Level
Marsh Level

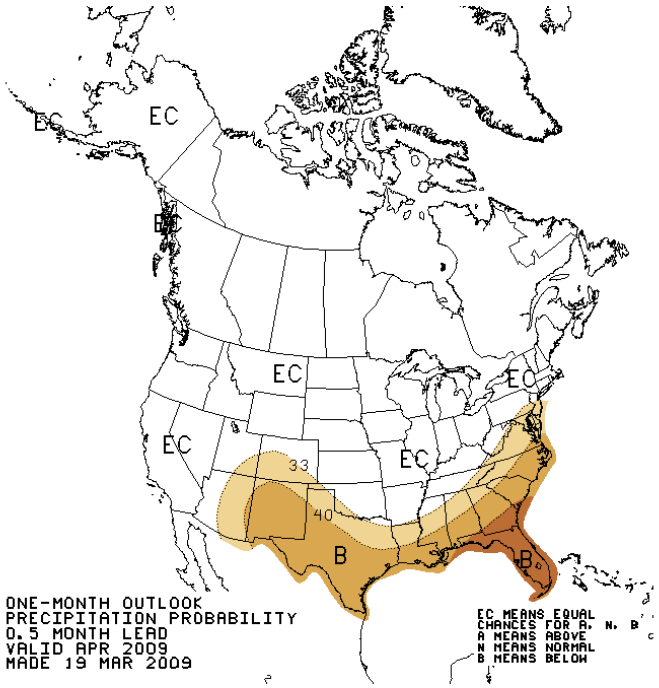

Water Conservation Area 3A
Published: 04/05/2009
Stage (ft NGVD)
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
Zone E
9.12
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Graph text 63 64 65
hist
Flood Regulation
Upper Transition
Lower Transition
Marsh Level
Canal Level
Zone E1
Minimum
depth


Lake Okeechobee Stage Hydrograph Comparison
Average(1965-2006)
2005
2006
2007
2008
2009
Federal Regulation Schedule
LORS-2008 adopted by USACE 28-Apr-2008
Average
Water Shortage Management
Record Minimum
8.82' (02-Jul-2007)
07-Apr-2009
Stage = 12.04 ft, NGVD
Lake Stage (ft, NGVD)
19
18
17
16
15
14
13
12
11
10
9
8
7
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec

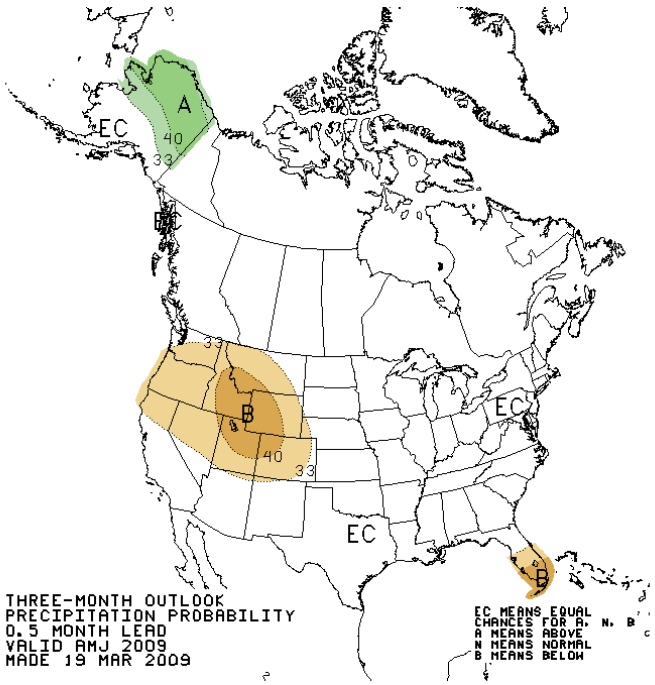
U. S. Seasonal Precipitation Outlook

National Climate Prediction Center (CPC)

April



April-June



- The CPC outlook for April shows increased chances for below-normal rainfall conditions.
- The outlook for April-June also shows increased chances of below-normal rainfall.
- Atmospheric and oceanic conditions reflect LaNina conditions
- La Nina conditions expected to gradually weaken in the northern hemisphere in the next few months

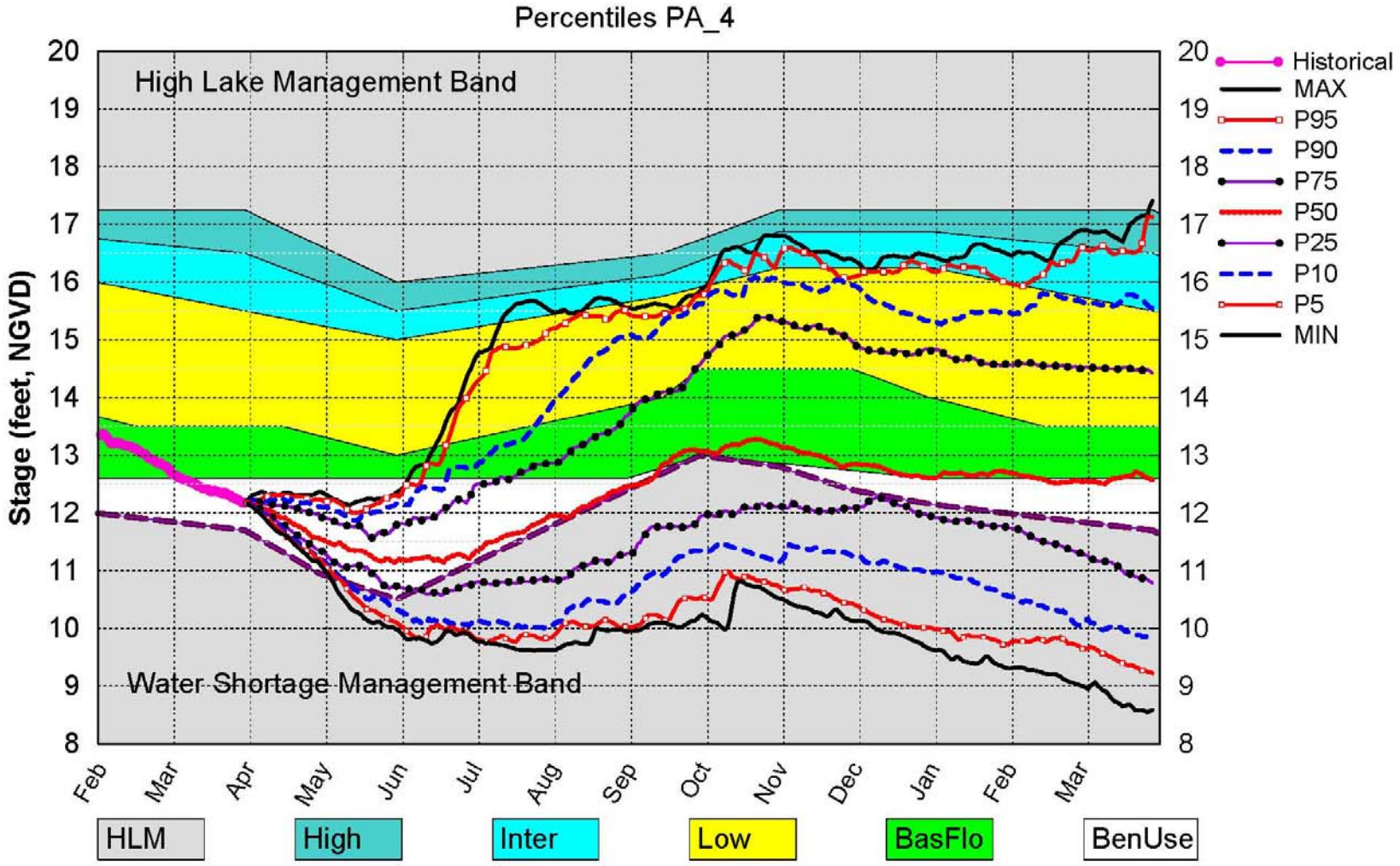
3-month outlook

How will Lake Okeechobee stages behave for the remainder of the dry season?

- **Projections provided monthly by SFWMD Hydrologic and Environmental Systems Modeling (HESM) Department**

- **Position Analysis**
  - **Each year starts with current hydrologic conditions**
  - **41 1-yr simulations of system response to historical rainfall conditions**
  - **Statistical summaries used to display projections**

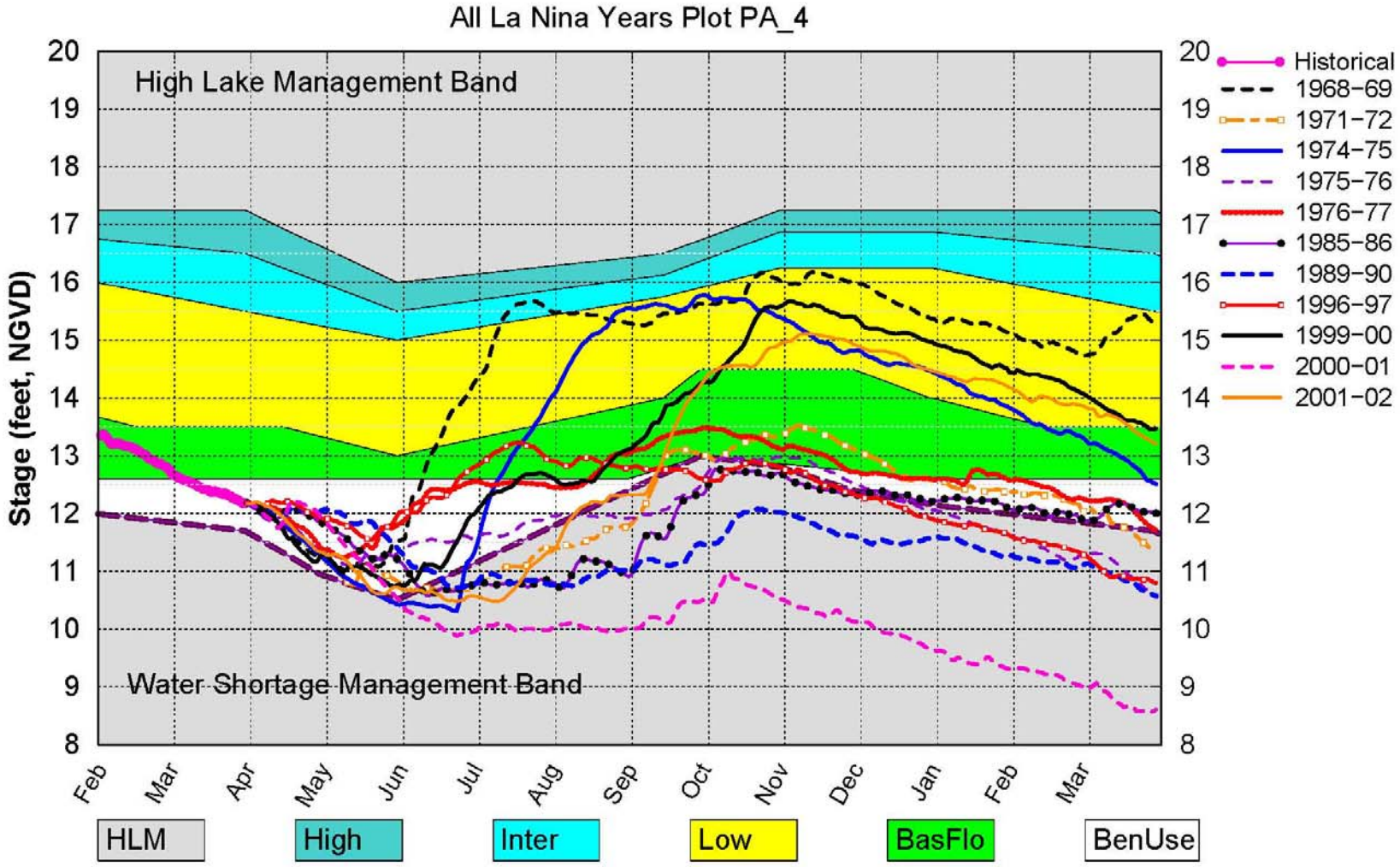
Lake Okeechobee SFWMM April 2009 Position Analysis



(See assumptions on the Position Analysis Results website)

Mon Apr 6 09:37:55 2009

Lake Okeechobee SFWMM April 2009 Position Analysis



(See assumptions on the Position Analysis Results website)

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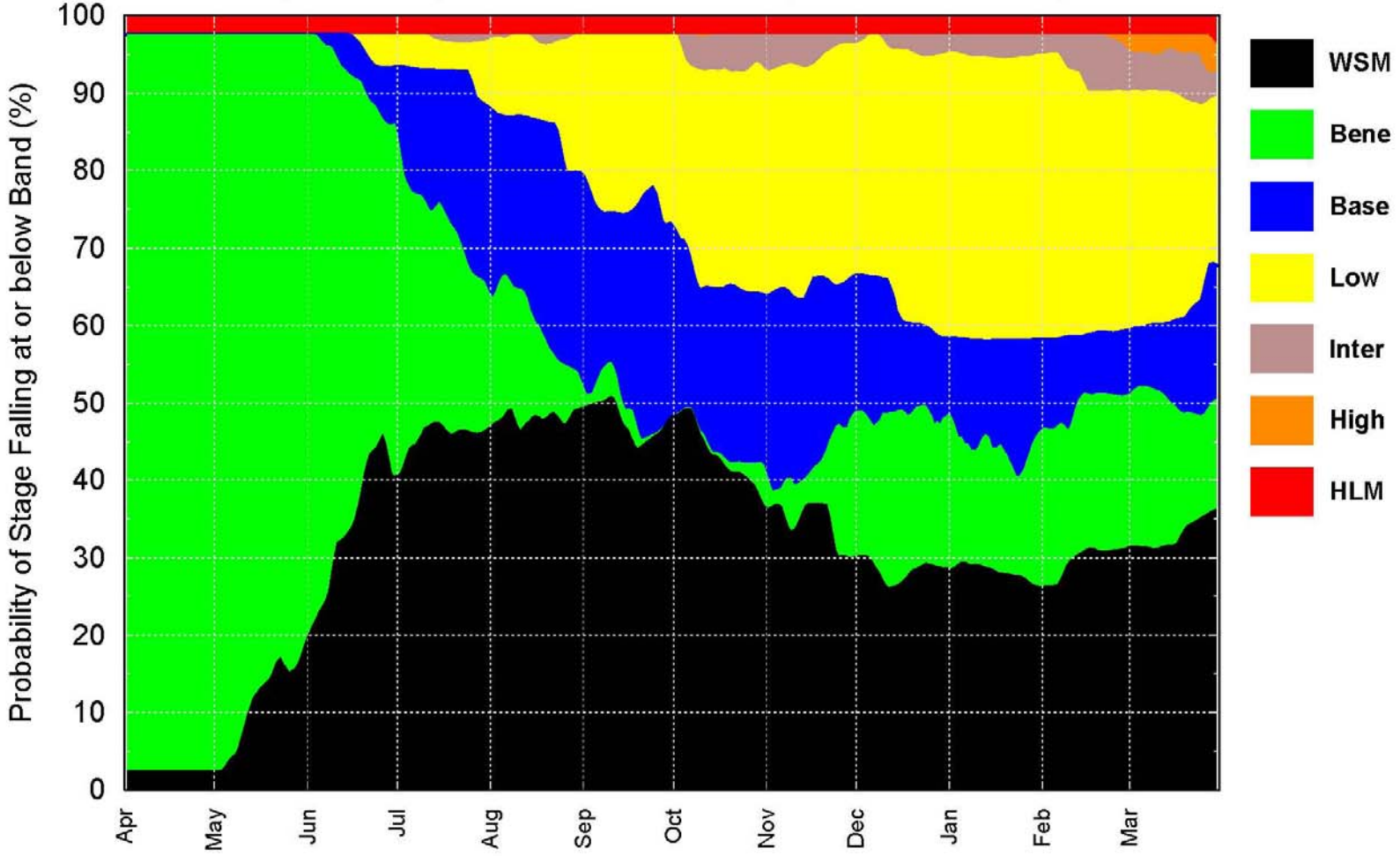
Lake Okeechobee – Probabilities for Operational Bands

(See assumptions on the Position Analysis Results website)



The width for each band gives the probability of stage falling in that band, as defined by the operational schedules.

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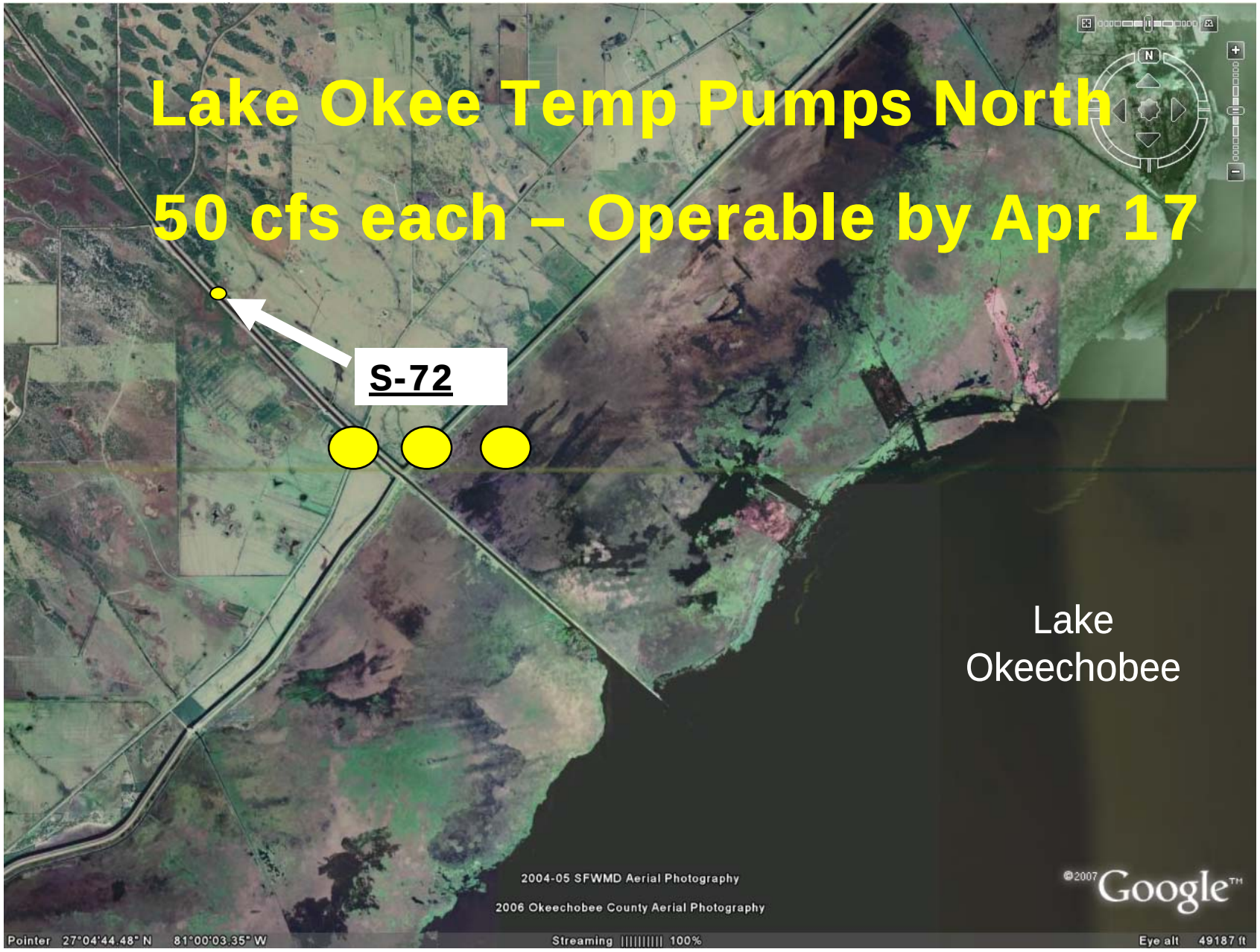
Lake Okee Temp Pumps North

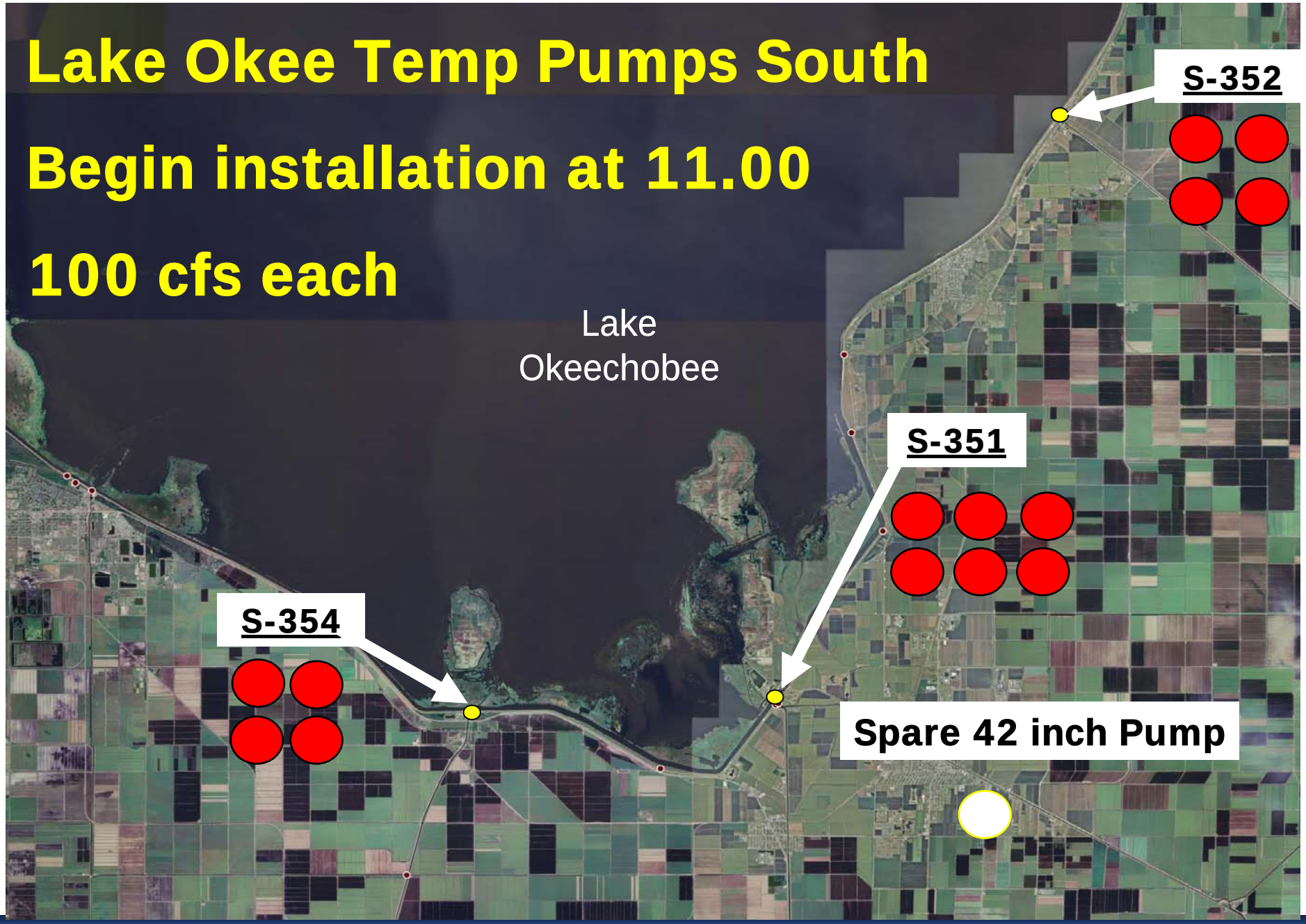
50 cfs each – Operable by Apr 17



Lake Okee Temp Pumps South

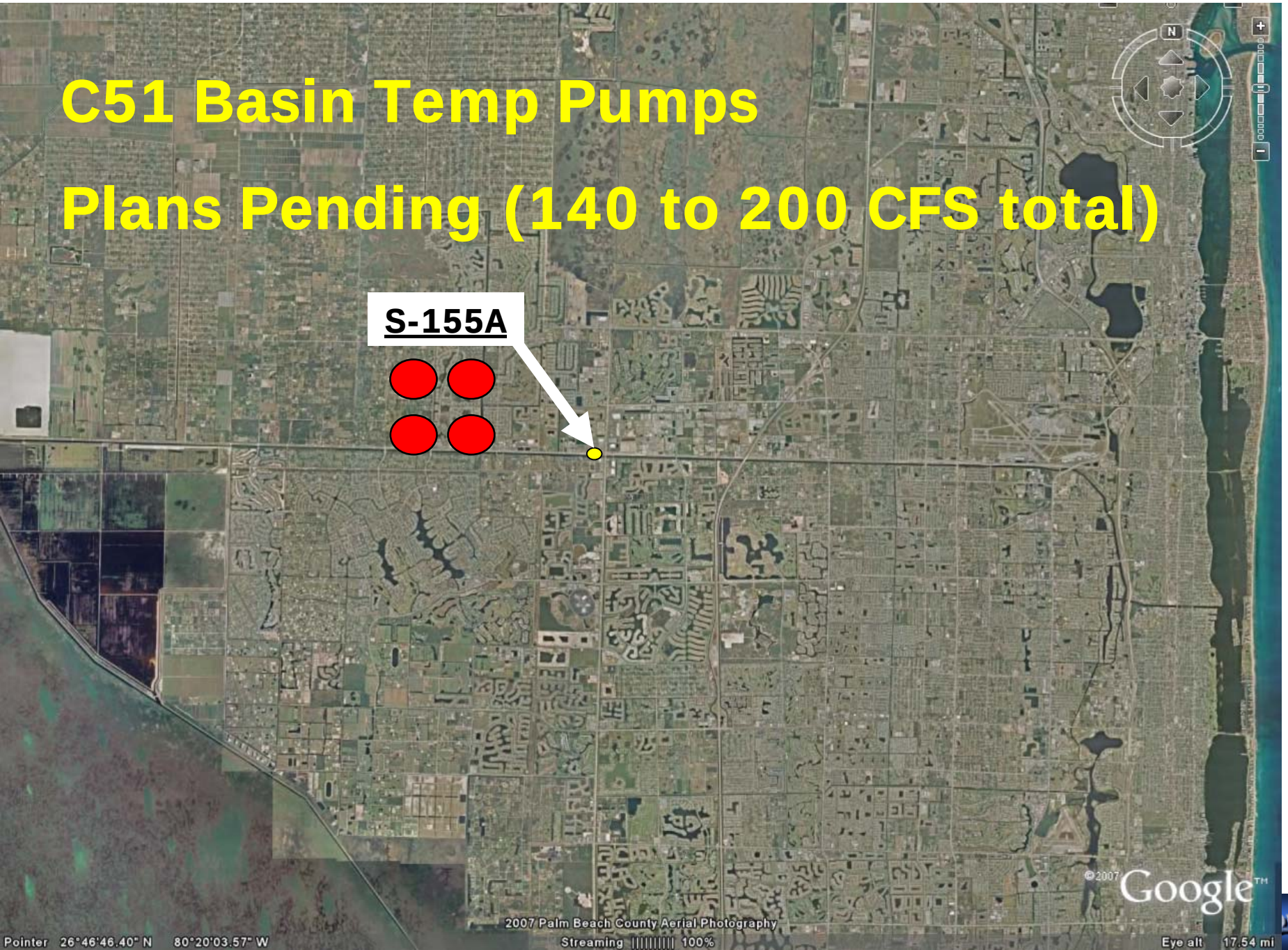
Begin installation at 11.00

100 cfs each

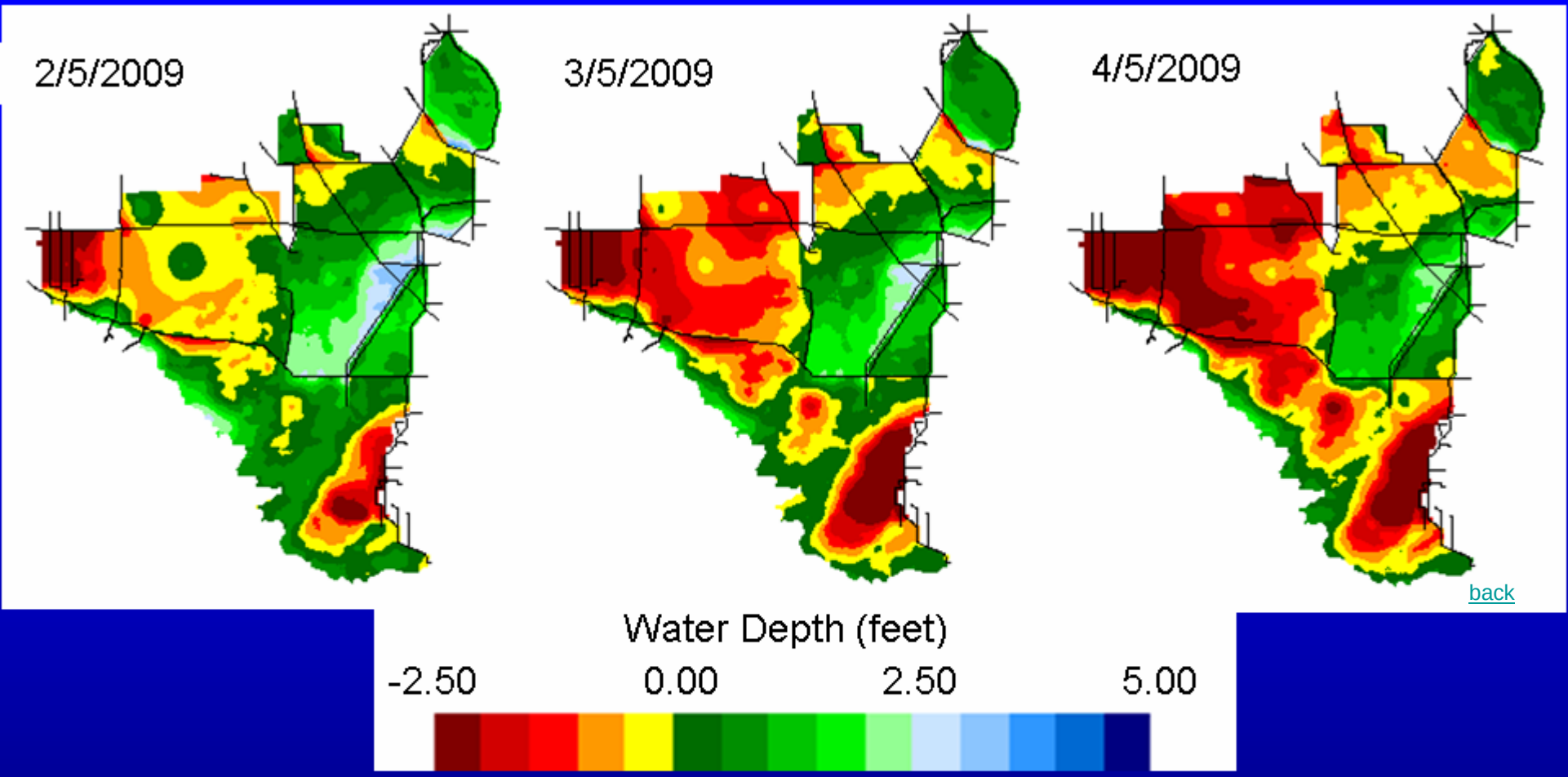


C51 Basin Temp Pumps

Plans Pending (140 to 200 CFS total)



Questions?

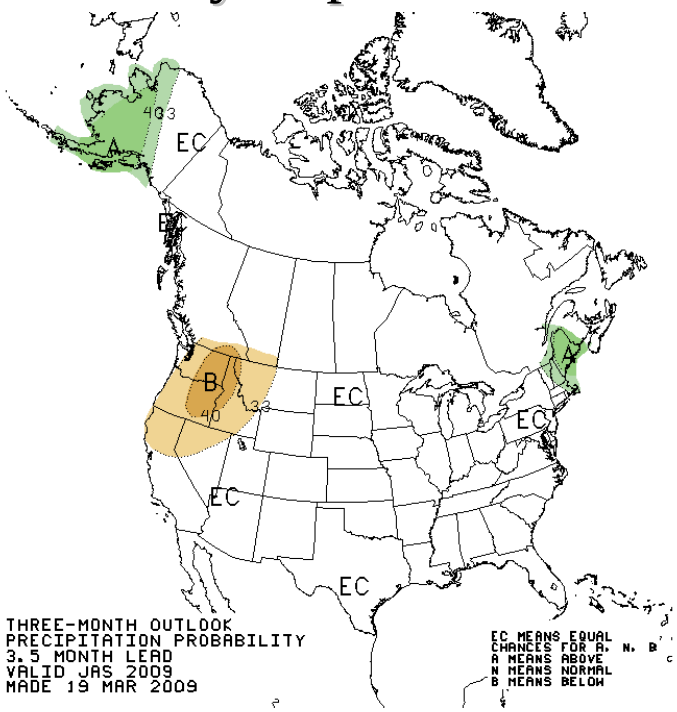


back

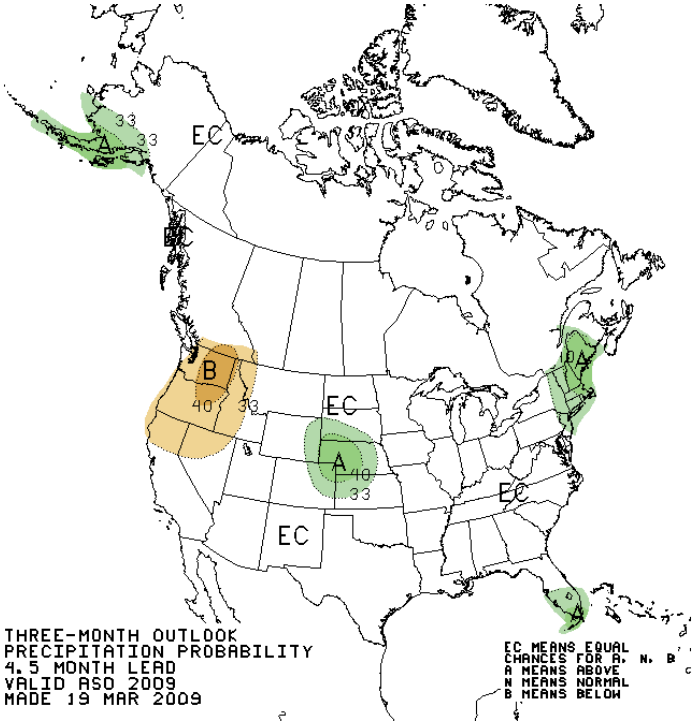
U. S. Seasonal Precipitation Outlook

National Climate Prediction Center (CPC)

July-Sept



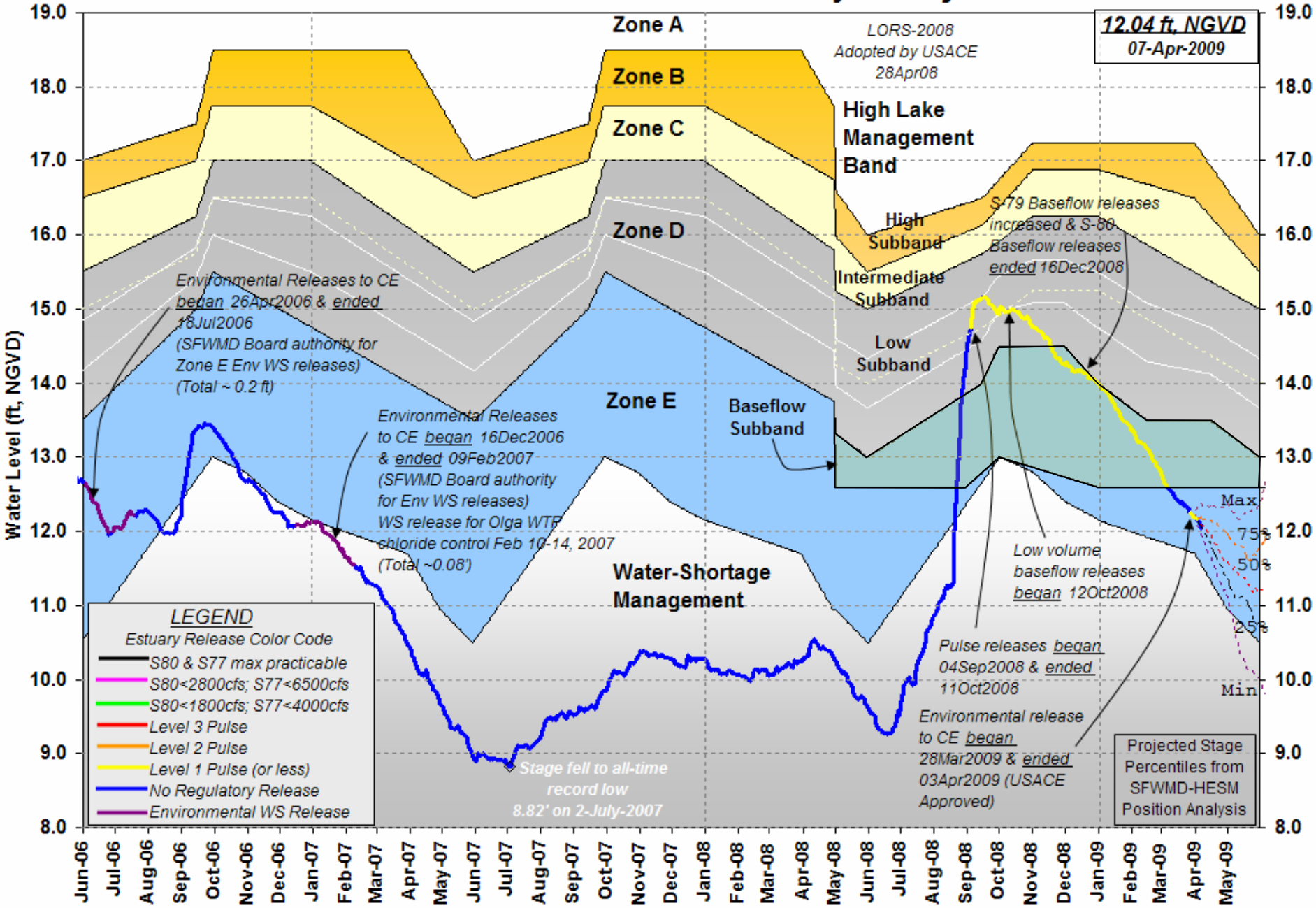
Aug-Oct



- The outlook for July-Sept shows normal rainfall.
- The outlook for Aug-Oct shows increased chances of above-normal rainfall

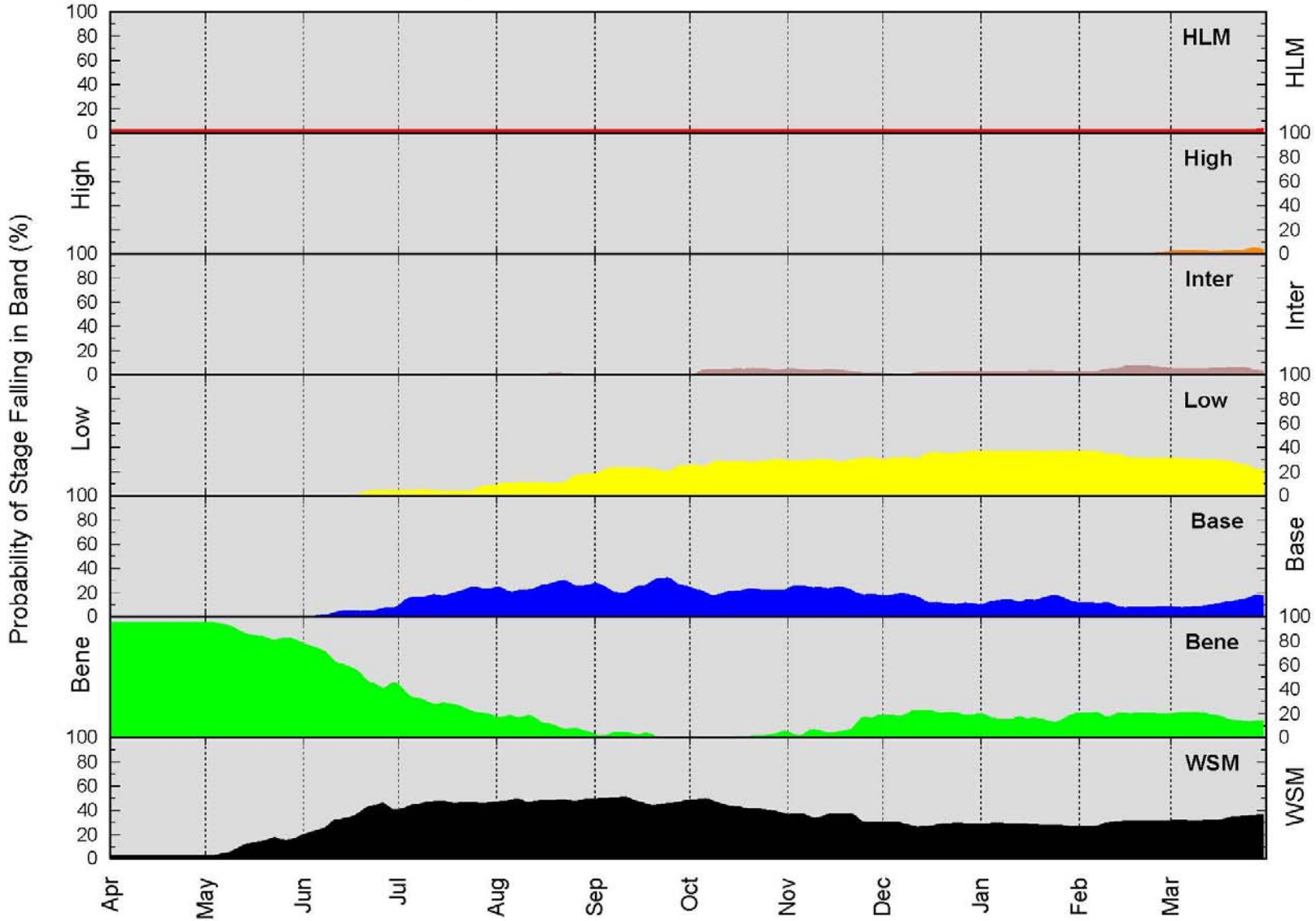
3-month outlook

Lake Okeechobee Water Level History & Projection



Lake Okeechobee – Band Probabilities

(See assumptions on the Position Analysis Results website)



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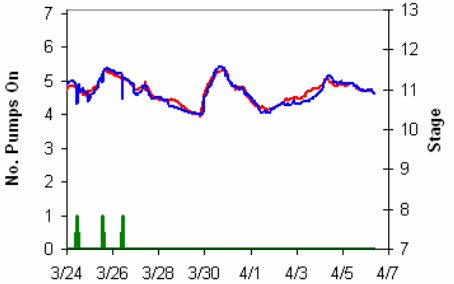
2 Week Canal Stages (NGVD)
April 6, 2009

MacVicar, Federico & Lamb, Inc.

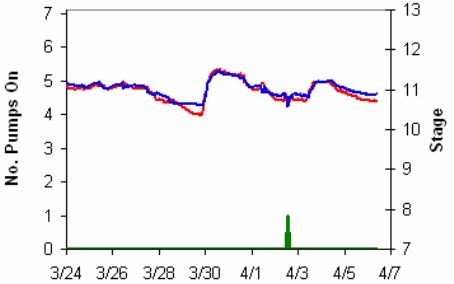
Miami Canal



S3 Pump — G372 Pump — At S3 — At G372

30 Day 90 Day

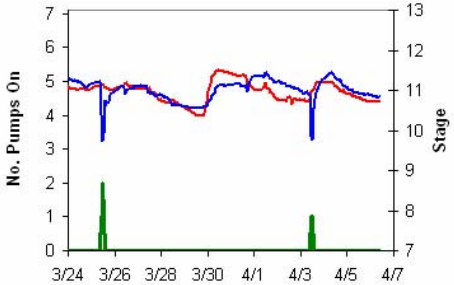
North New River Canal



S2 Pump — G370 Pump — At S2 — At G370

30 Day 90 Day

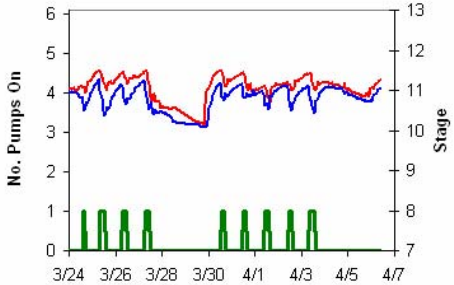
Hillsboro Canal



S2 Pump — S6 Pump — At S2 — At S6

30 Day 90 Day

West Palm Beach Canal



S5A Pump — At S352 — At S5A

30 Day 90 Day

Canal Stages | EAA | Lake Okeechobee | Upper Lakes | WCA | South Dade | Hendry | Coastal | L-8

Internet

sfwmd.gov

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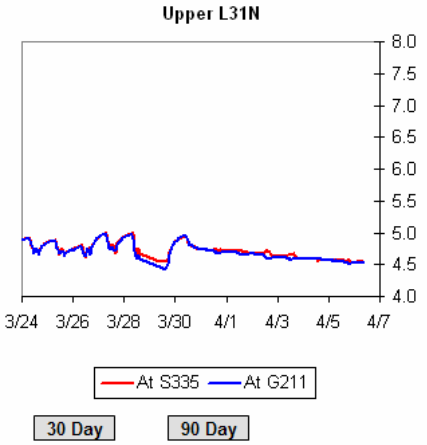
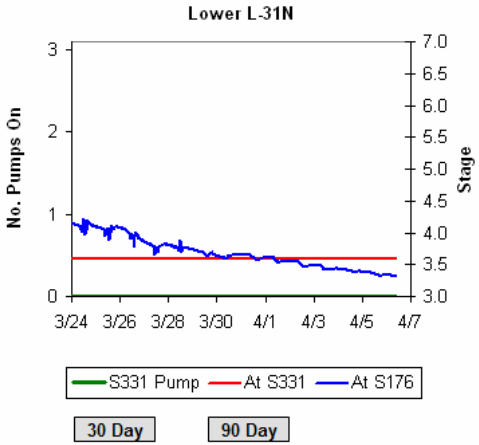
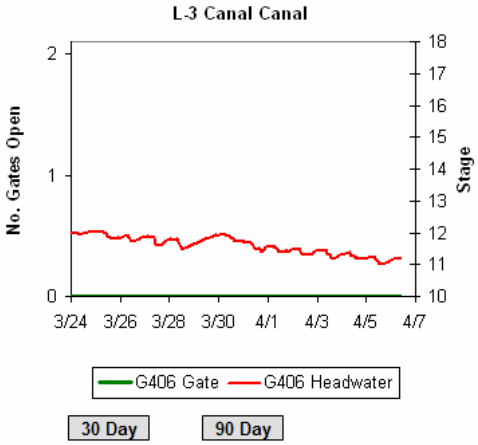
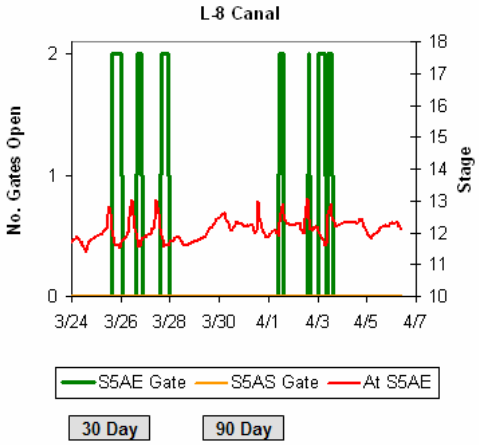




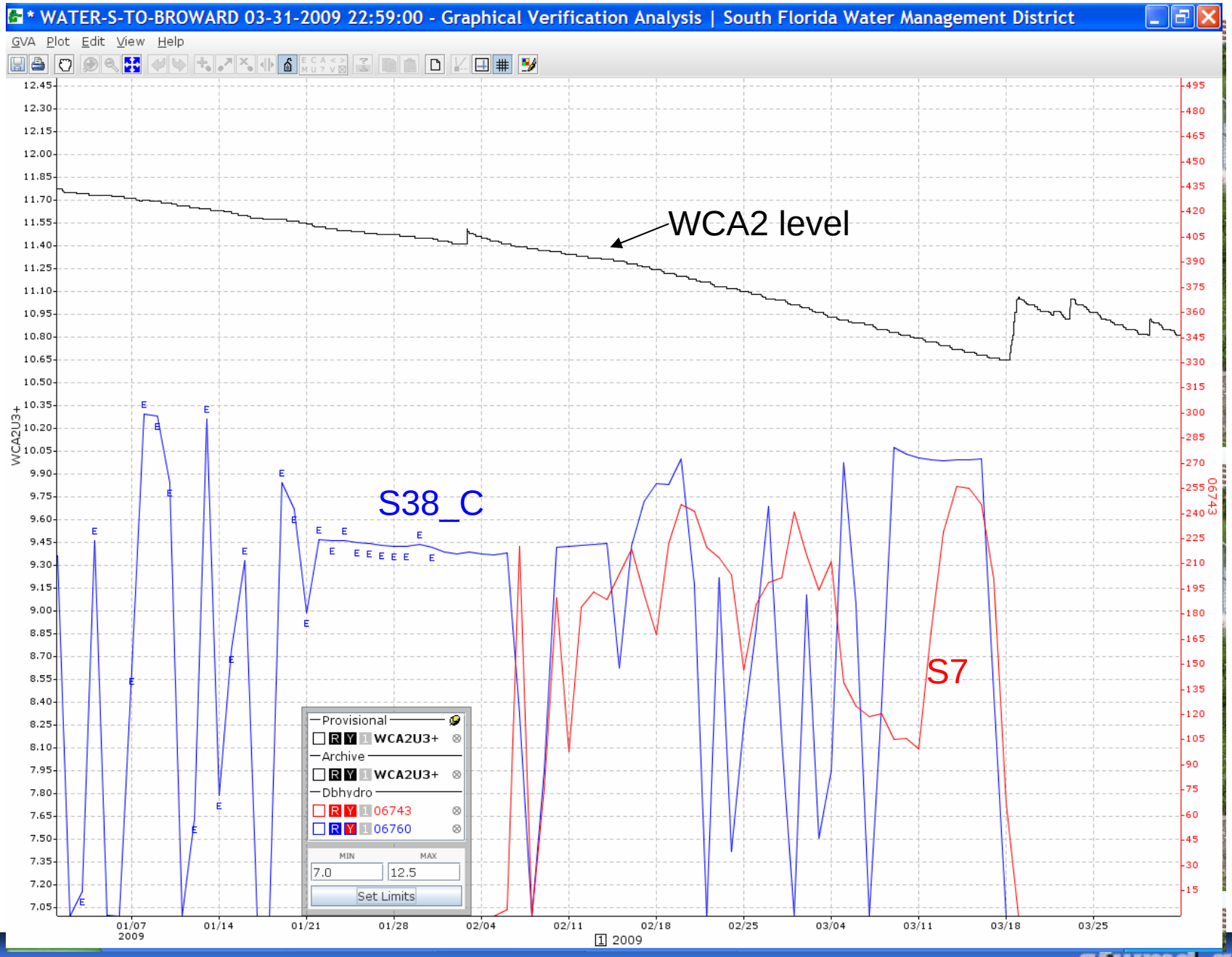




Canal Stages | EAA | Lake Okeechobee | Upper Lakes | WCA | South Dade | Hendry | Coastal | L-8

Internet

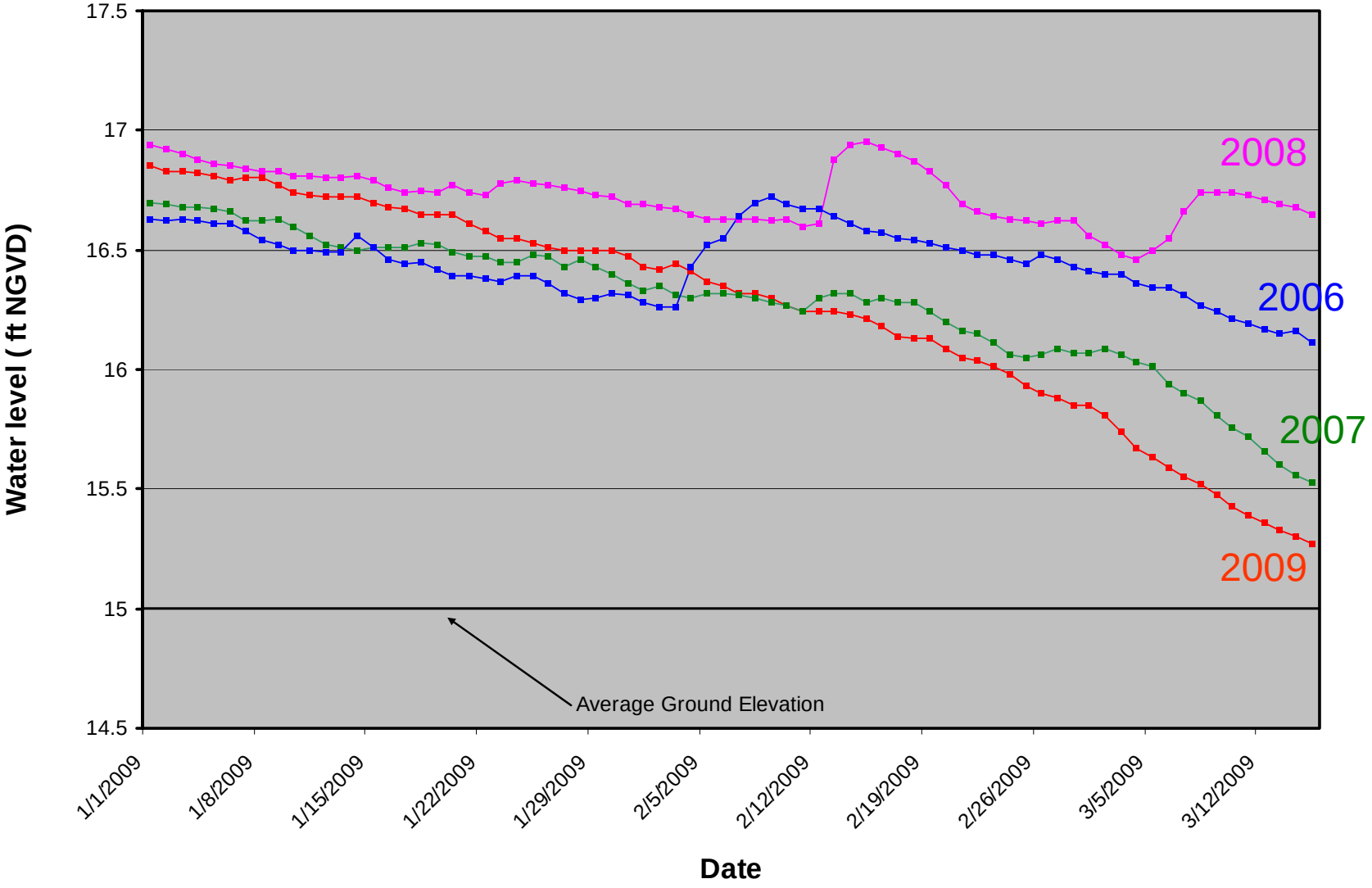
Water Supply to Broward from LOK via WCA2



Level (ft NGVD 29)

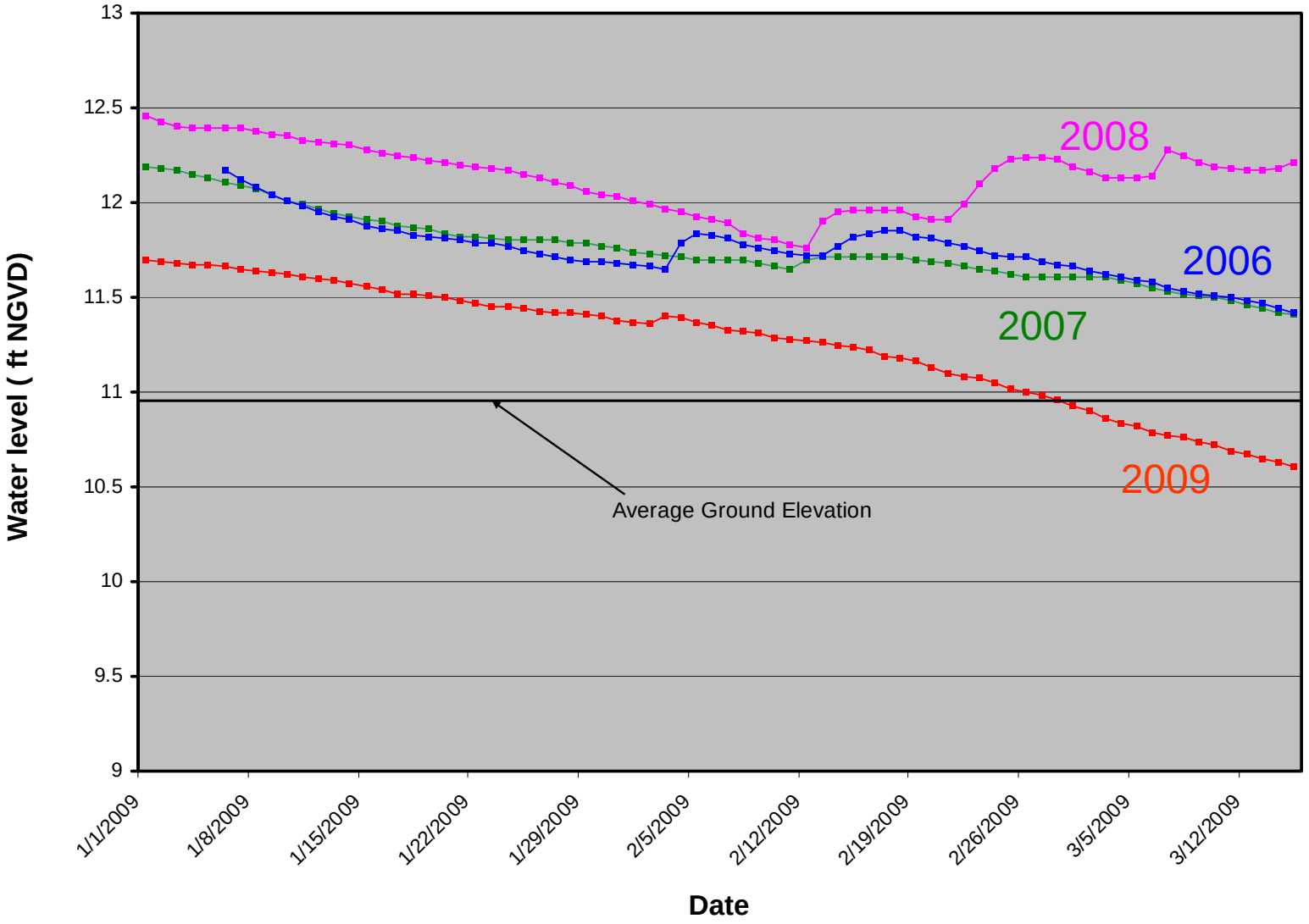
Flow (cfs)

WCA1 – Historical Comparison



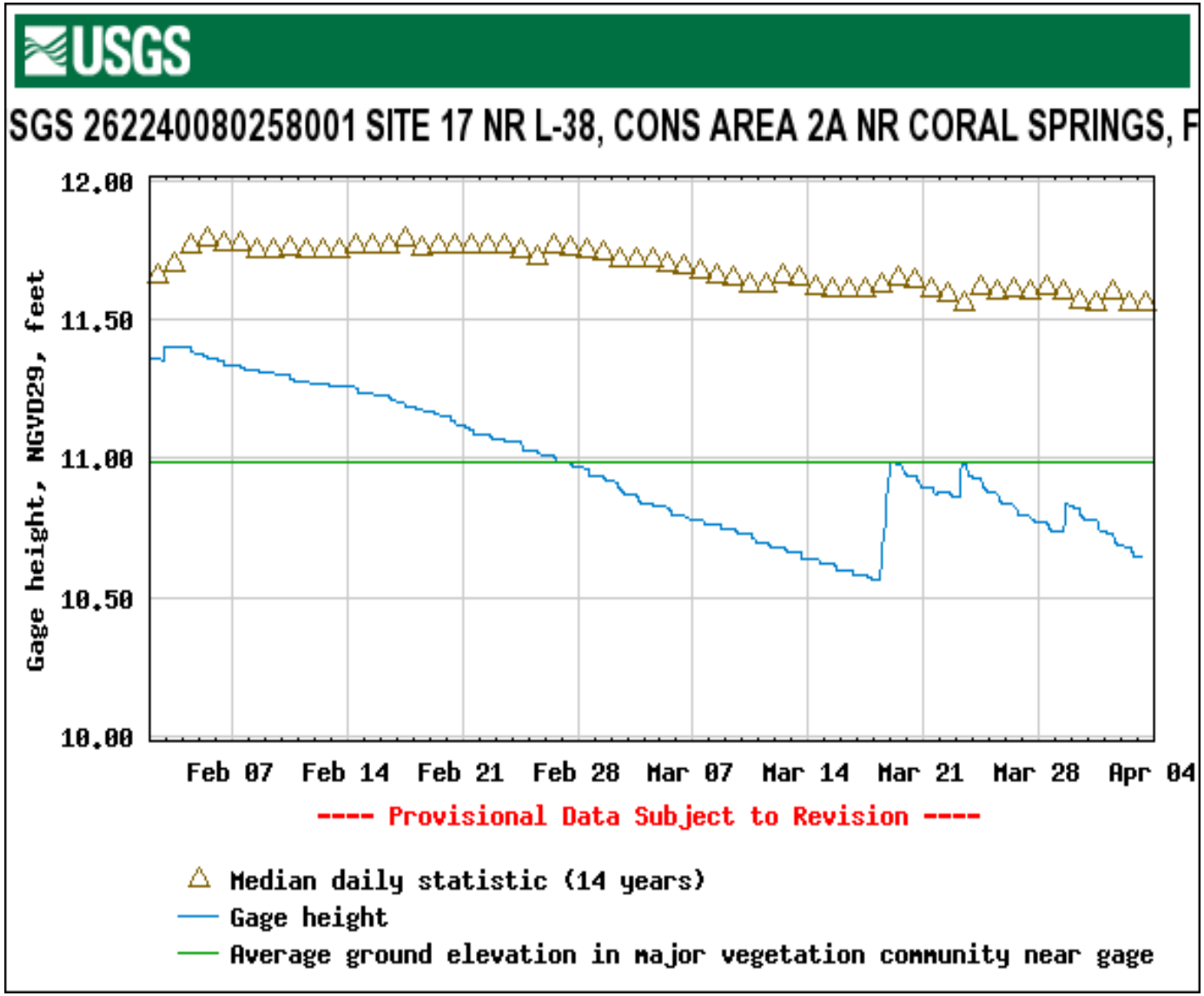
back

WCA2 – Historical Comparison

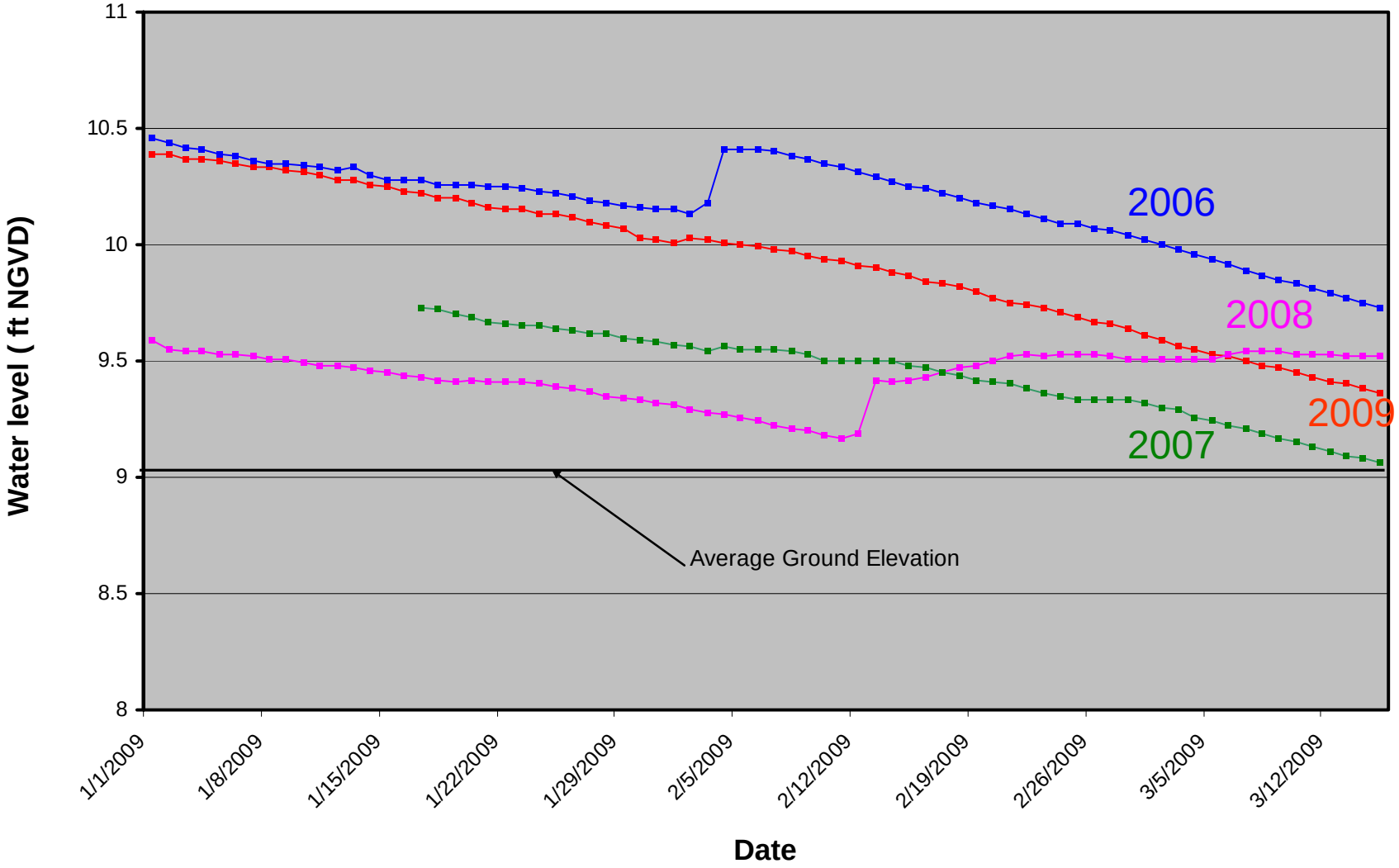


back

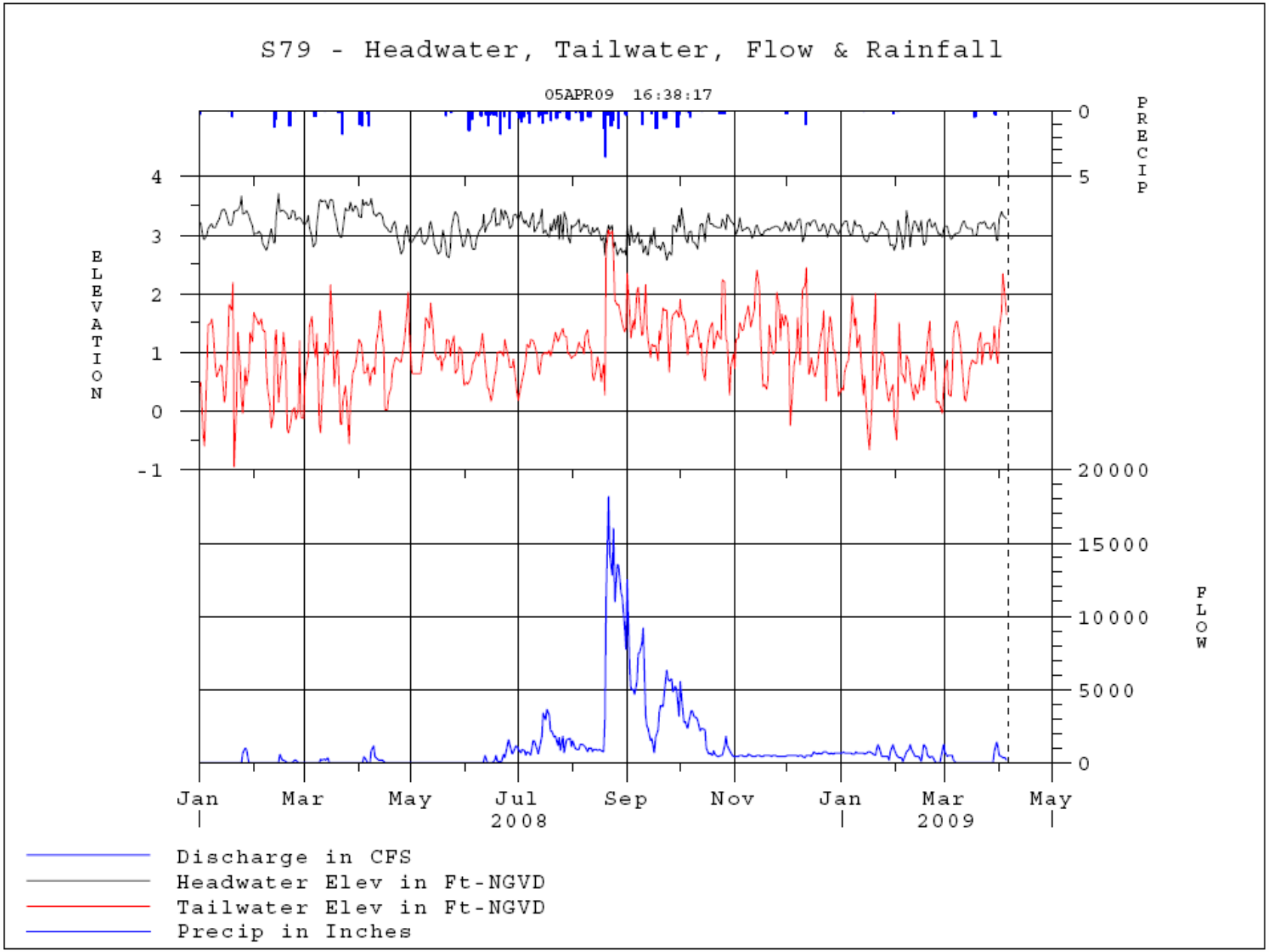
WCA2

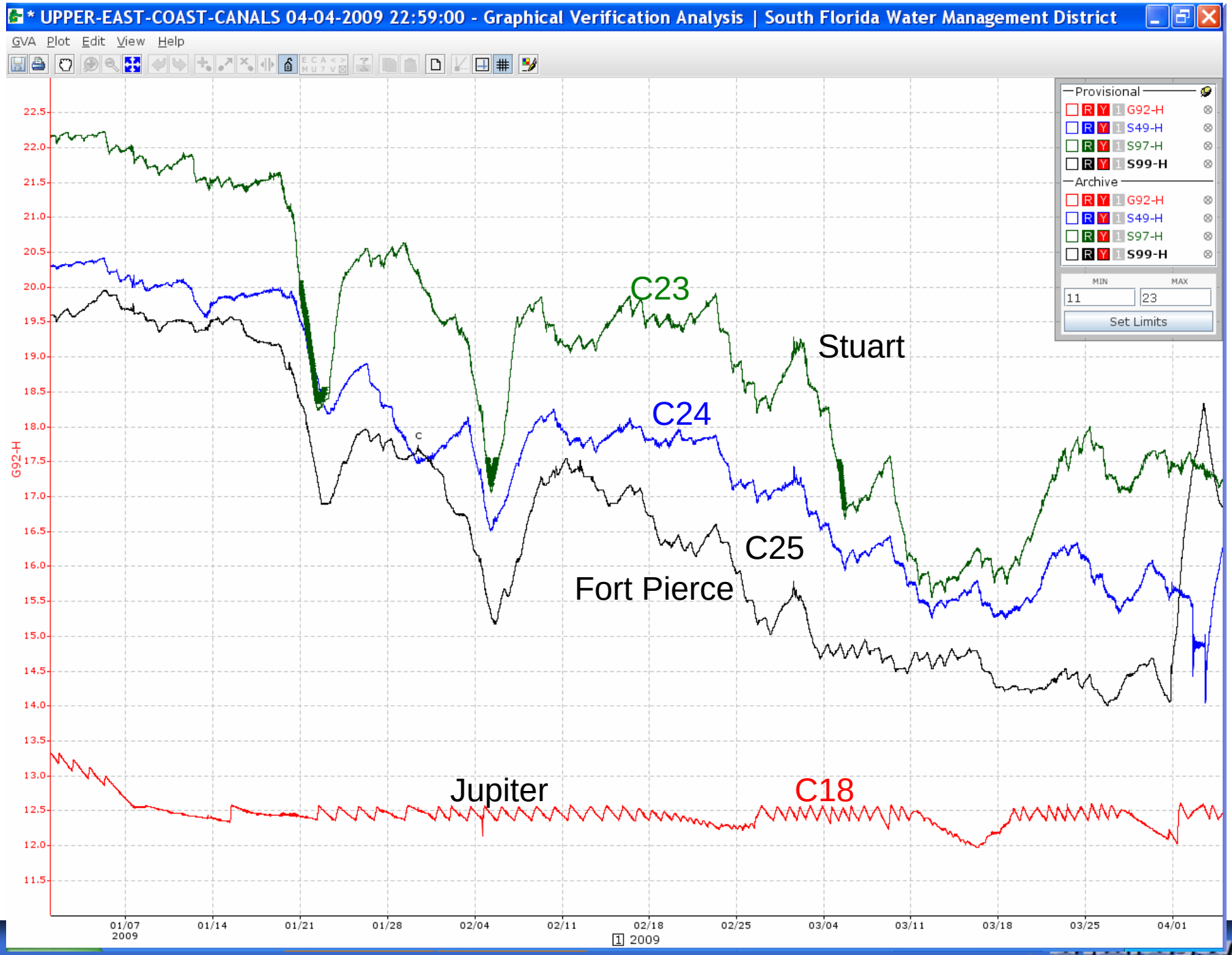

USGS
SGS 262240080258001 SITE 17 NR L-38, CONS AREA 2A NR CORAL SPRINGS, F
Gage height, NGVD29, feet
12.00
11.50
11.00
10.50
10.00
Feb 07
Feb 14
Feb 21
Feb 28
Mar 07
Mar 14
Mar 21
Mar 28
Apr 04
---- Provisional Data Subject to Revision ----
Median daily statistic (14 years)
Gage height
Average ground elevation in major vegetation community near gage

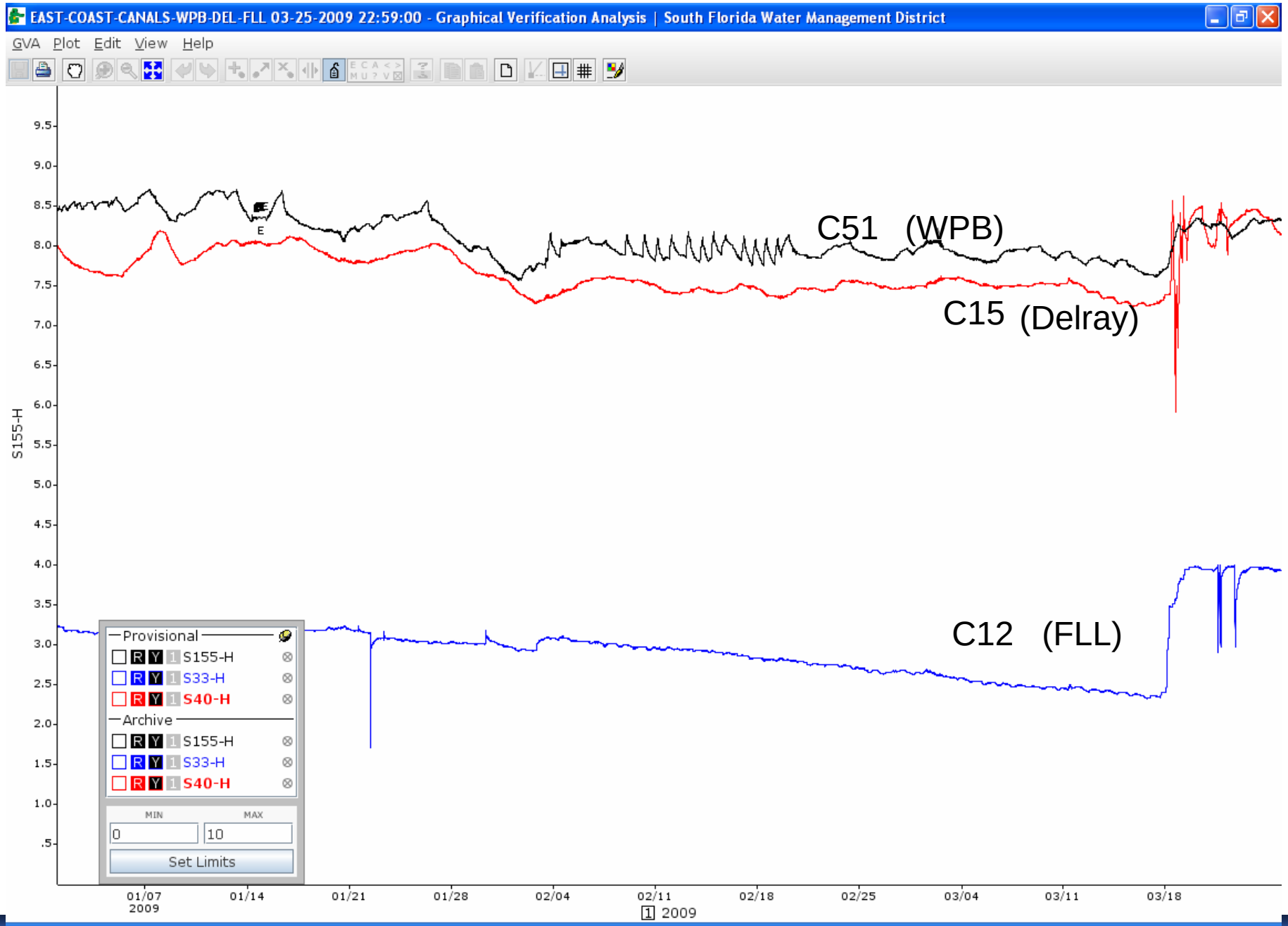
WCA3 – Historical Comparison

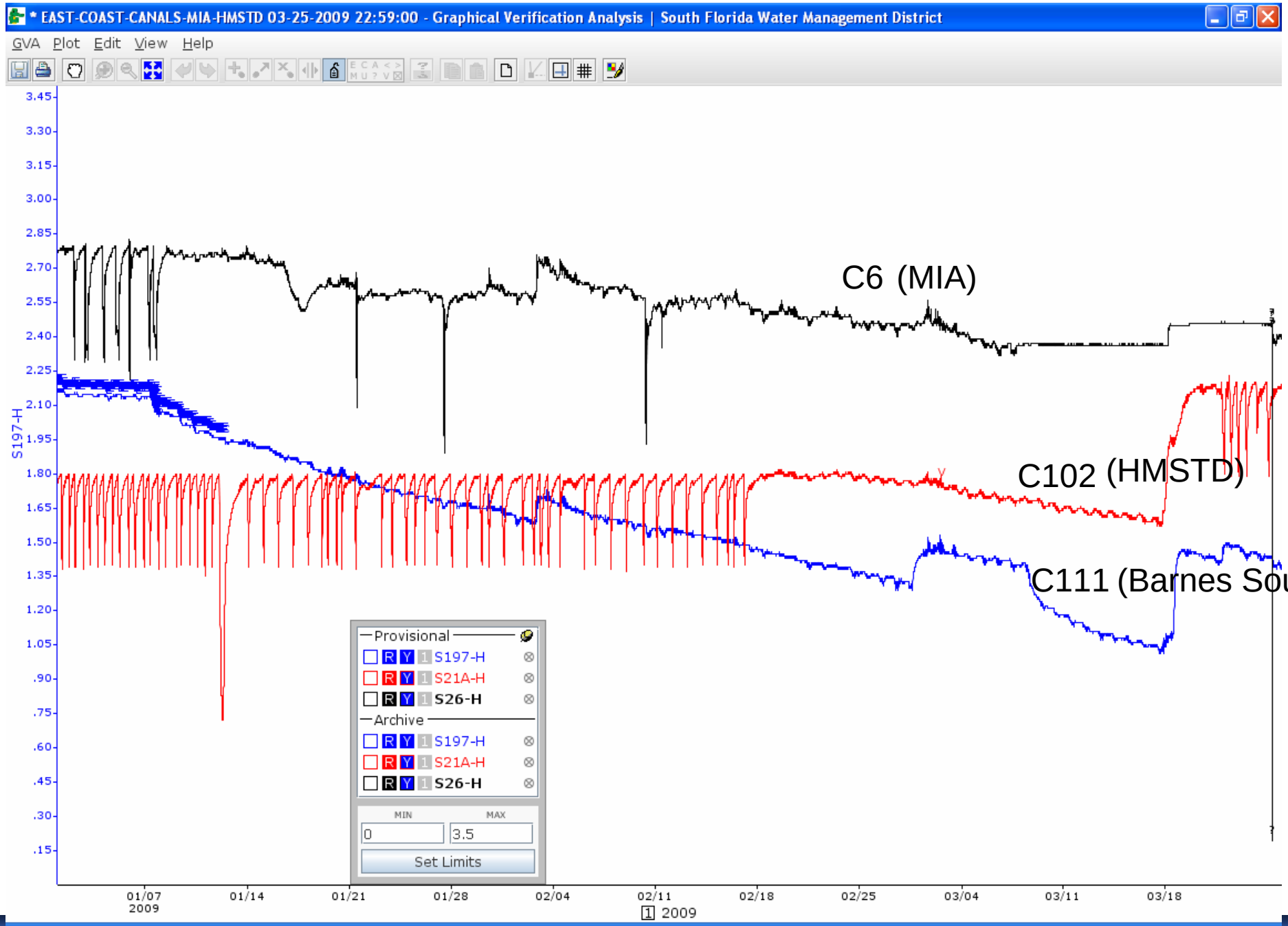


back


S79 - Headwater, Tailwater, Flow & Rainfall
05APR09 16:38:17
ELEVATION
PRECIP
FLOW
4
3
2
1
0
-1
0
5
20000
15000
10000
5000
0
Jan
Mar
May
Jul
2008
Sep
Nov
Jan
Mar
2009
May
Discharge in CFS
Headwater Elev in Ft-NGVD
Tailwater Elev in Ft-NGVD
Precip in Inches


* UPPER-EAST-COAST-CANALS 04-04-2009 22:59:00 - Graphical Verification Analysis | South Florida Water Management District
GVA Plot Edit View Help
Provisional
G92-H
S49-H
S97-H
S99-H
Archive
G92-H
S49-H
S97-H
S99-H
MIN
MAX
11
23
Set Limits
C23
Stuart
C24
C25
Fort Pierce
Jupiter
C18
G92-H
22.5
22.0
21.5
21.0
20.5
20.0
19.5
19.0
18.5
18.0
17.5
17.0
16.5
16.0
15.5
15.0
14.5
14.0
13.5
13.0
12.5
12.0
11.5
01/07
2009
01/14
01/21
01/28
02/04
02/11
02/18
02/25
03/04
03/11
03/18
03/25
04/01
2009


EAST-COAST-CANALS-WPB-DEL-FLL 03-25-2009 22:59:00 - Graphical Verification Analysis | South Florida Water Management District
GVA Plot Edit View Help
S155-H
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
C51 (WPB)
C15 (Delray)
C12 (FLL)
Provisional
S155-H
S33-H
S40-H
Archive
S155-H
S33-H
S40-H
MIN
MAX
0
10
Set Limits
01/07 2009
01/14
01/21
01/28
02/04
02/11
02/18
02/25
03/04
03/11
03/18
1 2009


* EAST-COAST-CANALS-MIA-HMSTD 03-25-2009 22:59:00 - Graphical Verification Analysis | South Florida Water Management District
GVA Plot Edit View Help
S197-H
3.45
3.30
3.15
3.00
2.85
2.70
2.55
2.40
2.25
2.10
1.95
1.80
1.65
1.50
1.35
1.20
1.05
.90
.75
.60
.45
.30
.15
C6 (MIA)
C102 (HMSTD)
C111 (Barnes Sou
Provisional
S197-H
S21A-H
S26-H
Archive
S197-H
S21A-H
S26-H
MIN
MAX
0
3.5
Set Limits
01/07 2009
01/14
01/21
01/28
02/04
02/11
02/18
02/25
03/04
03/11
03/18
1 2009