Hydrologic Systems Modeling Evaluation

Removal of L-67 Levees and Canals
from Comprehensive Everglades Restoration Plan (D13R)

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Definition of Simulation

This investigation reports on a suite of South Florida Water Management Model simulations (SFWMM v3.5) undertaken to evaluate the impact of removing the L-67 A/C levees and their respective borrow canals. Different assumptions regarding operations of water control structures and further structural modifications were used in the attempt to achieve optimal environmental performance in terms of stage, hydroperiods and directionality of flow in the Everglades Protection Area. The simulations were based on the Restudy selected alternative, D13R, and were compared against this alternative.

Assumptions

Seven (7) L-67 removal scenarios were simulated and the assumptions for each scenario are listed in Table 1. Unless stated specifically in Table 1 below, each successive simulation built on and included the assumptions of the previous scenario, with the first scenario, XL67-1 being built on Restudy Alternative D13R. Scenario 7 was included primarily for illustration purposes and was not analyzed in the same detail as the other scenarios.

Summary

The results for each scenario are summarized in Table 2 which is followed by a more detailed evaluation by area. Simple removal of the L-67 levees and canals in XL67-1 resulted in excessive high water in WCA-3B and less excessive high water in eastern WCA-3B. Net flow of water to Everglades National Park increased by about 10 percent and the duration of uninterrupted flooding in NE Shark Slough returned to NSM4.5 levels. Annual average hydroperiods very similar to Alt. D13R.

Structural modifications and operational refinements were made in scenarios XL67-2 through XL67-6 in an attempt to minimize the detrimental impacts to WCA-3B from the removal of the L-67 levees and canals and to optimize environmental performance. Modifications included

- closing the S11's,
- increasing the capacity of the S144, S145 and S146 structures,
- increasing the capacity to remove water from eastern WCA-3A and WCA-2B and convey it to the ENP via S356s,
- re-introducing the lower section of the Miami canal (removed in Alt D13R) and later replacing this with a levee,
- changing LOK operations to utilize ASR more to help the lake in dry years,
- introducing a trigger in WCA-3B to stop excess inflow into WCA-3A.

As a result of these modifications, the XL67-6 scenario provides the best environmental performance of the Alt D13R scenarios with the L-67 levees and canals removed. In the optimal scenario (XL67-6) there is still excessive high water in WCA-3B (worse than Alt D13R) and the proportion of water entering Everglades National Park through the S356 structures (rather than as overland flow across Tamiami Trail) is increased. Water

levels in eastern WCA-3B are slightly better than the XL67-1 scenario. Flow patterns, measured by comparing directional flow vectors with the direction of NSM4.5 flow vectors are improved in WCA-3B.

Table 1. Assumptions used in suite of L-67removal scenarios.

Simulation	Assumptions and reason where applicable
XL67-1	• L-67 levees completely removed • L-67 canals completely filled • No operational refinements
XL67-2	XL67-1 assumptions plus, • S11 closed to encourage flow direction parallel to WCA-2A/WCA-3A boundary rather than across it • S144, S145, S146 capacity increased to move more WCA-2A water to WCA-2B • Proposed outlet capacities for WCA-2Band canal conveyance south of WCA-3B increased to move more water to ENP via S356A & B • S335 capacity increased to stop L30 from getting too high • S140 flows into WCA-3A were spread northward two grid cells (4 miles) to enhance overland flow patterns • S356 capacity doubled
XL67-3	XL67-2 assumptions plus, • Lower section of Miami canal from Alligator Alley to L30 canal put back into model to encourage removal of high water in east WCA-3A and to try to reduce excessive high water in WCA-3B
XL67-4	XL67-3 assumptions except, • Replace lower section of Miami Canal in XL67-3 with a levee to try to reduce excessive high water in WCA-3B without substantially increasing low water in east WCA-3A
XL67-5	XL67-4 assumptions plus, • East WCA-3A outlet capacity as well as the pulling action by ENP increased to relieve high water in east WCA-3A. • Changed LOK operations so that ASR wells utilized more to help LOK during dry years • S11 opened for emergency relief of high water in WCA-2A
XL67-6	XL67-5 assumptions plus, • Trigger in WCA-3B added to stop <u>excess</u> inflow into WCA-3A when stages in WCA-3B were high enough to potentially endanger tree islands (depth at trigger was > 2.0 ft.).
XL67-7	XL67-6 assumptions except, • Eliminate inflows into ENP via S-356 A & B to determine impact on WCA-3B and ENP of L-67 A/C removal without supplementing flow to ENP through S-356 A & B. Note that in this scenario, flows to S-356 were simulated using the same targets as in XL67-6. However, discharges from S-356 A & B were removed from the model domain rather than being sent to the ENP.

Table 2. Key results of each scenario.

Simulation	Results
XL67-1	• Excessive high water in WCA-3B. High water criteria exceeded 12% of the time in eastern WCA-3B (IR16) compared to 3% of the time in D13R. • High water in western WCA-3B criteria exceeded 17% of the time compared to 5% in D13R. • Fewer high water exceedences in WCA-3A. Low water exceedences in WCA-3A about the same except for slight increases in east (IR19) and northeast (IR21) regions. • Net flow to ENP increased by 10% from 1312 to 1439 ac-ft/year. • Water supply performance in LOSA decreased slightly because more water was pulled from LOK to WCAs.
XL67-2	• WCA-3A performed better than XL67-1 for S and N central as well as east and northeast regions. • WCA-3B high water exceedences similar to XL67-1. • Water supply slightly worse than XL67-1 because more water was extracted from LOK to WCA-3A due to the closing of S11 structures. • Significant increase (nearly 200 kac-ft/year) in flow to ENP via S-356 structures compared to XL67-1. Total net inflow into ENP increased slightly (40 kac-ft/year) compared to XL67-1.
XL67-3	• Similar results to XL67-2. • Slight lowering of stages in east WCA-3A (IR19)
XL67-4	• Excessive high water criteria exceeded 9% of the time in IR15, compared to 12% of time in XL761, XL762 or XL763, and 3% in ALT13R. • Incorporation of a levee with same alignment as Miami Canal reduces occurrences of low water violation in east WCA-3A (IR19). Lower Miami levee <u>improved</u> performance in WCA-3B, but occurrences of high water increased in north central WCA-3A (1% to 3% of the time), northeast WCA-3A (0 to 2% of the time) and east WCA-3A (6 to 36% of the time). • Slight decrease in total net inflow into ENP compared to XL67-2 or XL67-3.
XL67-5	• Improvement in performance in eastern, northeastern, and north central regions of WCA-3A compared to XL67-4. Eastern region similar to D13R in terms of high water exceedences. • WCA-3B high water exceedence still too frequent (similar to XL67-4) • ~100 kac-ft./year increase in flow to ENP <u>via S-356</u> compared to XL67-4.
XL67-6	• Further improvement in high water exceedence in WCA-3A • Limiting excess water into WCA-3A when stages in WCA-3B was sufficiently high had little impact on high water exceedences in WCA-3B. • 78 kac-ft/year increase of flow into ENP <u>via S-356 A & B</u> (10% greater than XL67-5)
XL67-7	• High water exceedences in WCA-3B decreased substantially to acceptable levels (below D13R). • Restoration in ENP sacrificed. Hydroperiod matching with NSM45 decreased from 95% to 68%. • Inflows to ENP decreased substantially. • Shows that meeting NSM45 targets in ENP has substantial backwater effect on WCA-3B.

Detailed Evaluation

The detailed evaluation makes use of and refers to two sets of performance measures. The first set compares XL67-1, XL67-2, XL67-3 and XL67-4 with Alt D13R, while the second set compares XL67-4, XL67-5, XL67-6 and XL67-7 with Alt D13R. Figures with these performance measures are number as A and B with the same figure number. XL67-3 is not discussed in detail because its results were very similar to XL67-2. XL67-7 is discussed only where its results differ significantly from XL67-6.

System-wide Flows

System-wide flows were evaluated qualitatively using flow vector maps and more quantitatively using maps showing angular differences between flow vectors for each scenario and those for NSM4.5.

Map 1 shows the mean annual overland flow patterns for NSM4.5 and D13R that provide a base for comparison of the L-67 removal scenarios. Map 2 shows a comparison of the mean annual flow patterns for D13R and XL67-1 simulations. The comparison clearly shows that removing L-67 A and C substantially increases overland flow into WCA-3B, particularly from the north and northwest. The flow patterns in WCA-3B and NESRS were more NSM-like than D13R.

Closing the S-11s in scenario XL67-2 and diverting more water through WCA-2B into NESRS via S356 A and B decreases flow into eastern WCA-3A and into WCA-3B (Map 3), which was more NSM-like, but the flow patterns remain similar to XL67-1 (Maps 2 and 3). XL67-2 also resulted in substantially more flow through WCA-2B (Map 3) which results in more inflow into NESRS via S-356 A and B. Flow patterns in XL67-3 were very similar to those in XL67-2, so they were not shown. The proposed levee along the Miami Canal in XL67-4, XL67-5 and XL67-6 further reduced overland flow through WCA-3B (Maps 3 and 4). The flow patterns in the vicinity of the Miami Canal were more aligned along the canal which was more NSM-like. In XL67-7 (Map 4) overland flow in the ENP was reduced considerably by removal of S-356 A & B water.

Flow vector angle differences in Map 5, quantify, on a cell by cell basis, differences between alternative D13R vectors and NSM4.5 and XL67-2 and NSM4.5. Vector angle differences for the other XL67 scenarios (Table 3) were very similar to those for XL67-2. Removal of the L67 levees/canals significantly improved flow angles in WCA-3B compared to Alt D13R.

Table 3. Average annual difference (degrees) between flow vectors in each scenario and NSM4.5 for selected areas.

Area	D13R	XL67-1	XL67-2	XL67-4	XL67-5	XL67-6	XL67-7
EPA	24	21	21	22	22	22	24
WCA-3A	23	22	22	23	24	24	28
WCA-3B	89	28	26	33	32	38	36

Lake Okeechobee

Removing the L-67 levees and canals in XL67-1, decreased high stages in Lake Okeechobee by 0.1-0.2 feet and low stages (in the 11.5 - 13.0 ft range) approximately 0.4 feet compared to D13R (Figure 1A). Other changes made in XL67-2 through XL67-7 had very little further effect on Lake stages (Figures 1A and 1B). Lower Lake stages in XL67-1 were due to lower stages in northern WCA-3A, which resulted in an increase (149 kac-ft/year to 176 kac-ft/year) in environmental water supply from LOK to the WCAs (Table 1). There was a 23% increase (65 kac-ft/year) in utilization of EAA storage with a similar decrease (51 kac-ft/year) in injection to ASR storage (Figure 2A). Lake Okeechobee releases in XL67-2 and XL67-4 were very similar to those of XL67-1 (Figure 2A and Table 4).

Table 4. Outflow components from Lake Okeechobee (1,000 acre-ft/year)

	D13R	XL67-1	XL67-2	XL67-4	XL67-5	XL67-6
Environmental water supply directly to WCAs	149	176	192	184	337	329
Combined regulatory releases to EAA reservoir and WCAs	380	418	420	419	272	250
ASR injection	279	228	220	224	272	282

In simulations XL67-5 and XL67-6 routing of excess water from LOK to destinations (ASR and North Storage) from which water could later be retrieved was given higher priority to help the Lake Okeechobee Service Areas during drought. Table 4 shows that for these simulations the EAA reservoir was utilized less and there was more injection to ASR, but it became necessary for the Lake to deliver more water to the WCAs for environmental water supply purposes (see Figure 2B). Since environmental water supply demand to maintain NSM target levels in northern and central WCA-3A was greater, Lake stages were similar in all simulations with L-67 levees removed (Figures 1A and 1B), even with different prioritization of ASR injection in XL67-5 and XL67-6.

Lake Okeechobee Service Area:

Irrigation demands not met for the Lake Service Area were 1 to 3 percent greater (worse) for the XL67-1 through XL67-7 simulations than D13R for both mean annual and drought years (Figures 3A,B; 4A,B). In the simulations with a greater attempt to optimize environmental performance in WCA-3A and WCA-3B, the irrigation demands not met were slightly larger than XL67-1 and D13R (See Figures 3A,B; 4A,B).

Water Conservation Area 2A:

Environmental performance in WCA-2A with the L-67 levees removed and no other changes (XL67-1) was nearly the same as D13R (Figure 5A). In the attempt to optimize environmental performance in WCA-3A and WCA-3B (XL67-2 - XL67-6 simulations) significantly more water was routed from WCA-2A through WCA-2B with S-11 structures closed or open only for emergency purposes. Even with the outlet structures from WCA-2A (S-144, S-145, S-146) increased an order of magnitude and the outlet structures from WCA-2B significantly increased, peak stages in WCA-2A and WCA-2B increase compared to D13R or XL67-1, as seen in Figures 5A, 5B (for WCA-2A), 6A, and 6B (for WCA-2B). However, the percentage of time stages violated the high water criteria increased only 2% in southern WCA-2A, while in northern WCA-2A and in WCA-2B the high water exceedence did not increase (Table 5).

Table 5. High and Low Water Summary for Key Indicator Regions.
(for complete Indicator Region Report see Appendix A).

High Water (depth >2.5 feet)
#Events/Avg. Duration (weeks/event)/Avg. Annual Duration (% of year)

IR	Region	NSM45	D13R	XL67-1	XL67-2	XL67-4	XL67-6
24	South WCA-2A	0/0/0	4/5/1	4/4/1	5/8/3	5/9/3	8/7/3
14	South WCA-3A	0/0/0	2/9/1	2/4/0	1/3/0	1/3/0	0/0/0
17	S Central WCA-3A	0/0/0	2/9/1	2/3/0	0/0/0	0/0/0	0/0/0
18	N Central WCA-3A	0/0/0	3/7/1	3/4/1	1/1/0	5/3/1	2/4/1
19	East WCA-3A	0/0/0	25/12/19	16/10/10	10/10/6	21/28/36	20/15/19
20	NW WCA-3A	0/0/0	1/1/0	0/0/0	0/0/0	1/1/0	0/0/0
21	Northeast WCA-3A	2/2/0	6/7/3	6/4/2	1/1/0	5/6/2	3/5/1
15	West WCA-3B	6/6/2	5/10/3	16/12/12	17/12/12	15/10/9	17/9/9
16	East WCA-3B	7/9/4	12/7/5	20/14/17	23/12/17	17/13/14	20/13/16

Low Water (Depth <1.0 feet)

IR	Region	NSM45	D13R	XL67-1	XL67-2	XL67-4	XL67-6
14	South WCA-3A	8/4/2	4/4/1	4/5/1	4/5/1	4/4/1	4/5/1
17	S Central WCA-3A	8/7/3	5/2/1	4/4/1	4/4/1	4/4/1	5/3/1
18	N Central WCA-3A	9/5/3	1/6/0	1/6/0	2/4/0	1/6/0	1/6/0
19	East WCA-3A	10/6/4	8/3/1	11/5/3	11/5/3	8/4/2	9/3/2
20	NW WCA-3A	6/6/2	9/5/3	9/6/3	8/5/2	7/6/2	6/6/2
21	Northeast WCA-3A	15/7/7	15/4/4	18/6/7	18/5/6	20/4/5	11/5/3

Water Conservation Area 3A

Removing L-67 levees and the borrow canal in XL67-1 improved performance relative to D13R in WCA-3A, as seen in Table 5 above. There were fewer high water exceedences in all WCA-3A indicator regions (IR's 14, 17, 18, 19, 20, 21) while low water exceedences were about the same, except for east WCA-3A (IR19) and northeast WCA-3A (IR21) regions where exceedences of low water increased 2-3% relative to D13R (See also Figures 7A,B; 8A,B; 9A,B for IR's 17, 18 and 19). Note that, although the low water exceedences increased in IR's 19 and 21 in the XL67-1 simulation relative to D13R, the exceedences were still comparable to or less than those in NSM45. Due to the lowering of stages in northern and eastern regions of the WCA-3A as a result of removing L-67 levees in XL67-1 simulation, inflow into WCA-3A increased from 1204 kac-ft/year to 1273 kac-ft/year, a 69 kac-ft/year increase.

Closing S-11 structures and diverting the additional excess water through WCA-2B to ENP via S356 (XL67-2 simulation) decreased the total inflow into WCA-3A by 265 kac-ft/year but flow into the ENP via S356 increased nearly 200 kac-ft/year. Stages in WCA-3A decreased 0.2-0.3 feet during wet times for IR's 18 and 19 (Figures 8A and 9A), decreasing exceedence of high water in WCA-3A. When the levee was placed along the Miami Canal in XL67-4, stages in east WCA-3A (IR 19) exceeded the 2.5 ft. high water criterion 36% of the time, 17% more than in Alt D13R. When the outlet capacity in eastern WCA-3A was increased in scenarios XL67-5 and XL67-6, high water stages in IR 19 were similar to those in Alt D13R (Table 5).

In the XL67-6 simulation, the environmental performance in WCA-3A was improved even further by adding a trigger in WCA-3B to stop excess inflow into WCA-3A. Table 5 shows the high water exceedences in WCA-3A were further reduced for the south WCA-3A (IR14), and northeast WCA-3A (IR21) regions compared to D13R and XL67-1 while in the east region (IR19) the high water exceedences were greater (worse) than XL67-1, but similar to D13R. The low water exceedences were slightly improved or about the same as D13R for all indicator regions presented. Thus the environmental performance in WCA-3A has potential to improve slightly compared to D13R with the removal of L-67 levees and canal and the addition of proposed modifications described earlier, but at a cost to WCA-3B.

Water Conservation Area 3B

Unlike WCA-3A, removing L-67 levees and canal alone (XL67-1) significantly worsened performance in terms of high water depths (>2.5 ft.) in WCA-3B (IR-15 and IR-16 in Table 5). Stages in WCA-3B increased about 0.5 feet during times of high water in the XL67-1 simulation, compared to D13R (Figure 10A). The XL67-2 and XL67-3 scenario performance in WCA-3B was similar to that of XL67-1.

Changes in structural operations and facilities were introduced along with removal of the L-67 levees and canals in XL67-2 through XL67-6 in an attempt to reduce exceedences of high water in WCA-3B to acceptable levels (comparable to D13R). These measures had little effect in reducing high water stages in WCA-3B (Figure 10A). Adding a levee along Miami Canal in XL67-4 lowered stages in WCA-3B during wet times about 0.2 feet (Figure 10A) and decreased the occurrence of high water exceedence by about 3%.

Further attempts to reduce high water stages in WCA-3B in XL67-5 and XL67-6 were not successful, since the NSM4.5 targets in northeast Shark River Slough were so high that water backs up into WCA-3B even though inflow into WCA-3A was reduced. Evidence of this was shown by comparing Figure 8B with Figure 10B. Figure 8B shows that limiting inflow of excess water in XL67-6 when depths in WCA-3B were above 2.0 feet, decreased stages during wet times in northern WCA-3A, but Figure 10B shows that the impact of the WCA-3B trigger on stages in WCA-3B was non-existent. Thus, restoration of ENP to NSM4.5 target levels cannot be achieved with the removal of L-67 levees without raising water levels in WCA-3B and possibly detrimentally impacting tree islands in WCA-3B. Flow patterns in WCA-3B are however improved as discussed earlier.

Everglades National Park

As seen in Table 6, removing L-67 levees (XL67-1) increases the total net inflow into ENP by 127 kac-ft/year, or from 80% to 87% of NSM 4.5 flows.

Table 6. Total Net Inflows to Everglades National Park

(mean annual flows for 31-year simulation in units of 1,000 ac-ft/year)

Simulation	Tamiami Trail-West (R23, C17-21)	Tamiami Trail-East (R23, C22-26)	Tamiami Trail-gw (R23, C17-26)	*Structural Inflow on East	Total Net Inflow (% of NSM)
NSM45	467	739	6	425 (overland)	1637 (100%)
D13R	478	485	7	342	1312 (80%)
XL67-1	350	552	5	532	1439 (87%)
XL67-2	331	432	5	711	1479 (90%)
XL67-3	330	434	5	723	1492 (90%)
XL67-4	324	377	5	719	1425 (86%)
XL67-5	316	321	5	824	1466 (89%)
XL67-6	290	261	1	903	1453 (88%)
XL67-7	227	406	9	75	717 (44%)

* Structural inflow calculated as [S356's +Max (S332s-LvSpg,0)]
This is a conservative estimate of inflows into the ENP along its eastern boundary because it reduces the structural inflow by the total levee seepage as long as levee seepage is less than the sum of structural inflows.

Tamiami Trail - West = Tamiami Trail from 40-Mile Bend to L-67, Transect 1, Figure 11.
Tamiami Trail -East = Tamiami Trail from L-67 to L-31N, Transect 2, Figure 11.
Tamiami Trail-gw = Groundwater inflow from WCA-3 to ENP.

Note that as flow into northern WCA-3A was decreased in trying to lower stages in WCA-3B, there was greater flow into ENP via the S356 structures. In NSM4.5 approximately 74% (1212/1637) of the total net inflow into ENP crossed Tamiami Trail. For D13R this was 74% (970/1312), for XL67-1 this was 63% (907/1439) and for the XL67-6 simulation this was 38% (552/1453). A similar trend is shown by looking at surface water flows into the Shark River Slough headwaters (Table 7).

Table 7. Inflows to Shark River Slough (SRS) Headwaters and Outflows Toward Whitewater and Florida Bays

Simulation	NWSRS Headwater Transect 3, Fig. 11	NESRS Headwater Transect 4, Fig. 11	TOTAL	SRS Outflow (% of NSM) Transect 5, Fig.11
NSM45	504	1030	1534	156 (100%)
D13R	429	702	1131	1110 (71%)
XL67-1	413	839	1252	1202 (77%)
XL67-6	379	882	1273	1217 (78%)
XL67-7	209	386	595	623 (40%)

Removing L-67 levees and canals alone in XL67-1 redistributed inflows into SRS. The west-east distribution changed from 38%/62% in D13R to 33%/67% in XL67-1, while NSM45 the distribution was 36%/64%. In the XL67-6 simulation, the distribution was 31%/69%. Shark River Slough outflows toward Whitewater and Florida Bays (Table 6) were increased from 71% of NSM in D13R to 77% of NSM in the XL67-1 simulation and 78% of NSM in the XL67-6 simulation.

Water depths and hydroperiods in NESRS (IR11) increase when the L-67 levees and canals were removed. As shown in the stage duration curves for IR-11 (Figures 12A, B), water depths in all XL67 simulations (XL67-1 through XL67-6) increased 0.25-0.3 feet during times of high stages (20% exceedence) and 0.1-0.2 feet (due to increased storage in Central Lake Belt reservoir) during the dry season. Hydroperiods with L-67 levees removed improved less than 1% compared to D13R (Figure 13A, B).

The XL67-7 scenario which removed S356 flows rather than putting them into the ENP illustrates the extent to which restoration in ENP as defined by NSM45 targets can be achieved with L-67 levees removed without excessively high stages in WCA-3B. Maintaining NSM-like flow patterns throughout the Everglades system without excessively high stages in WCA-3B can only result in partial restoration in ENP. Hydroperiod matches increase to only 68% in ENP, compared to 54% in current system and 95% in D13R (Figure 13B). As seen in Figure 12B, in XL67-7, water depths and hydroperiods in NESRS (IR11) were not close to the NSM45 targets or to D13R levels.

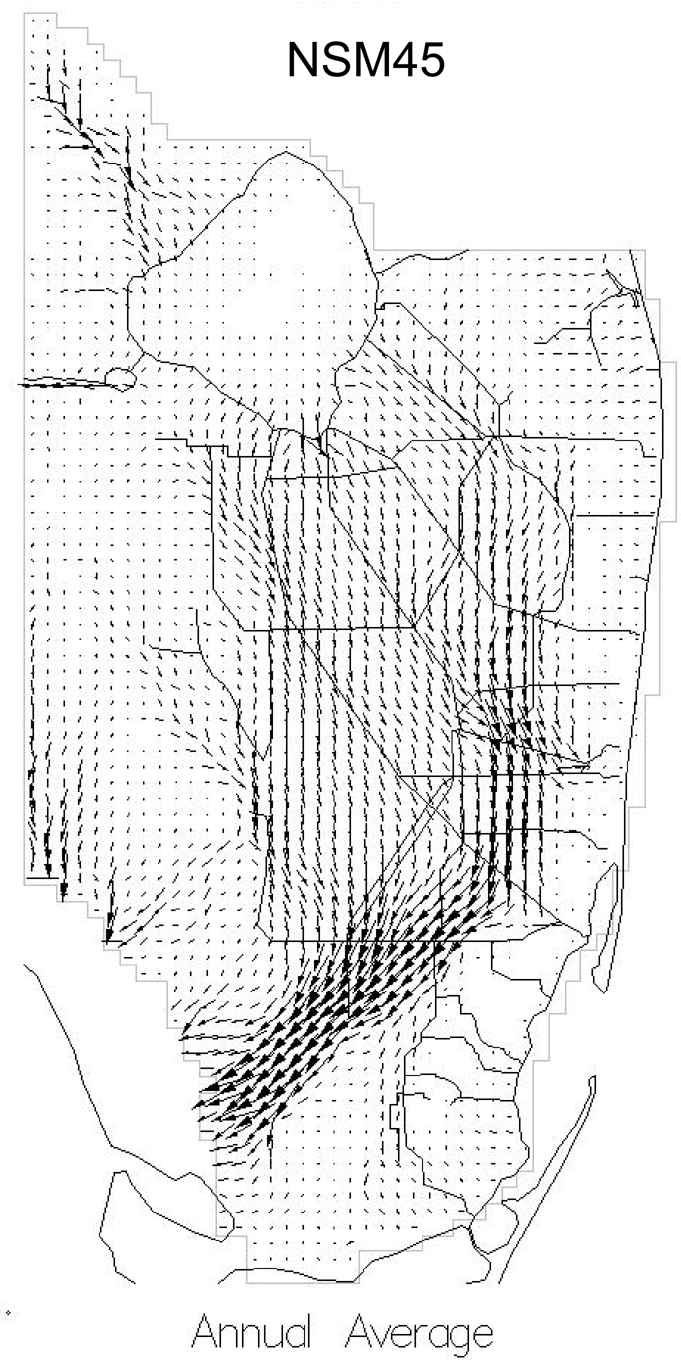
Biscayne Bay

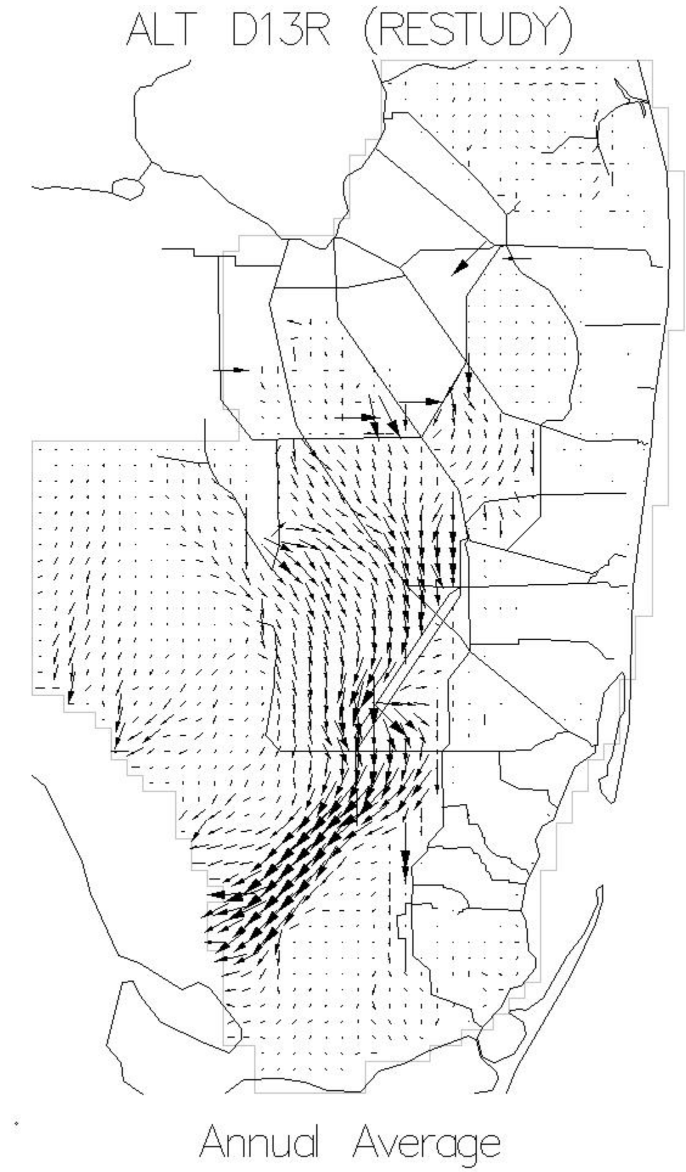
As seen in Figures 14A and 14B, inflow to Biscayne Bay increased minimally (~10kac-ft/year) with L-67 levees and canals removed compared to D13R. Over 50% of the increase occurred at Miami River due to increased seepage from WCA-3B.

Lower East Coast Service Areas

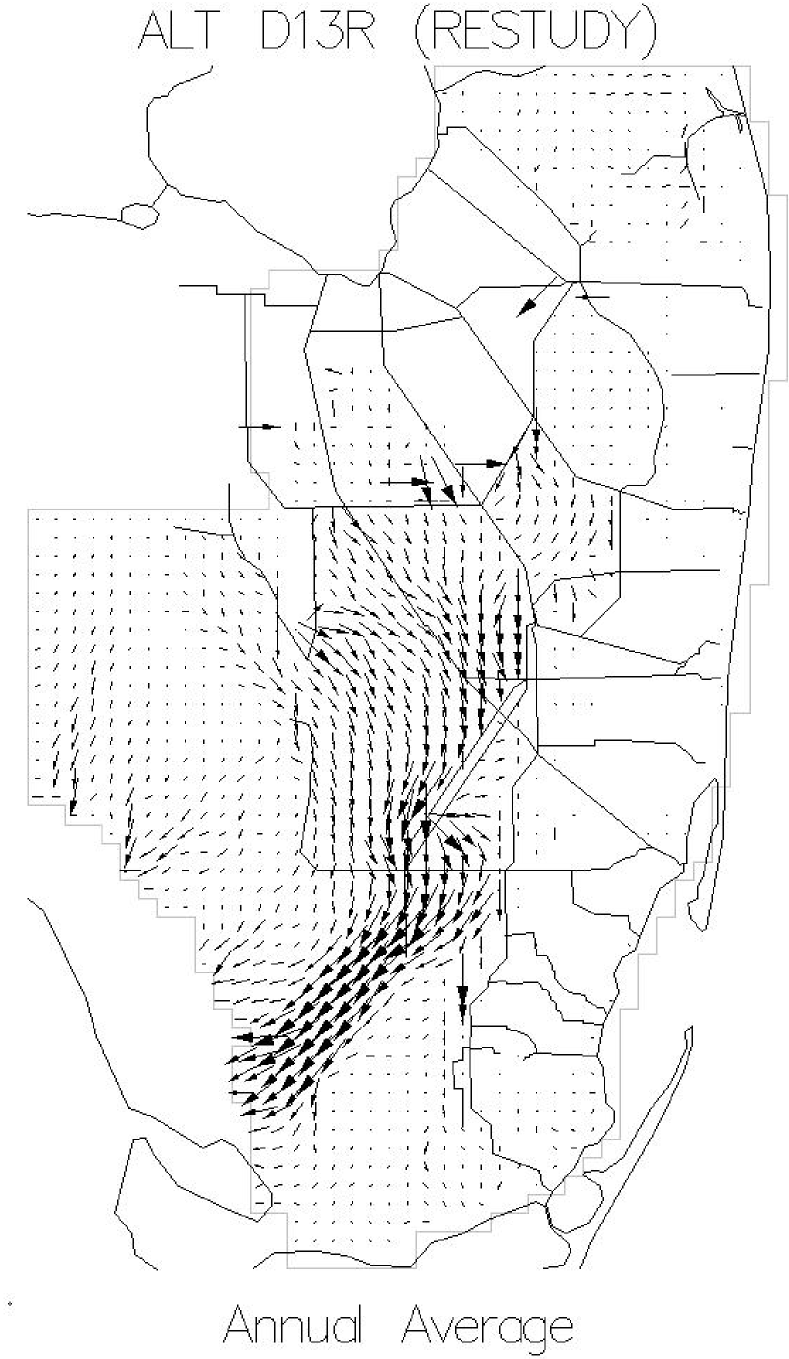
The number of months of locally-triggered Phase I restrictions were the same in all simulations. The number of lake-triggered water restriction months remained the same in the XL67-1 scenario as in from D13R. In scenarios XL67-2 through XL67-6, the attempt to optimize environmental performance, increased LOK induced water restriction months by two, and the number of months of restrictions triggered by dry season criteria by three months relative to D13R (Figures 15A and 15B).

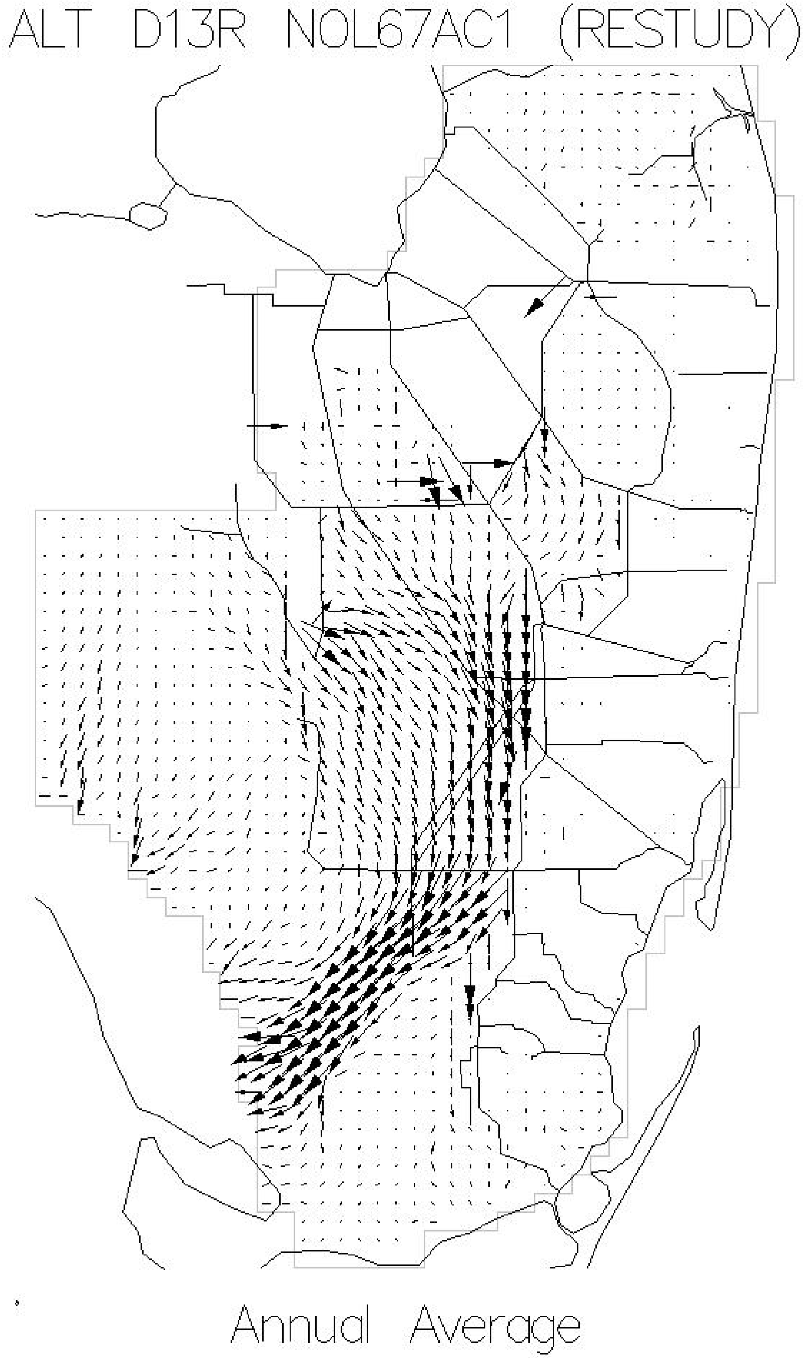
Map 1. Mean annual overland flow patterns for NSMv4.5 and Alt D13R



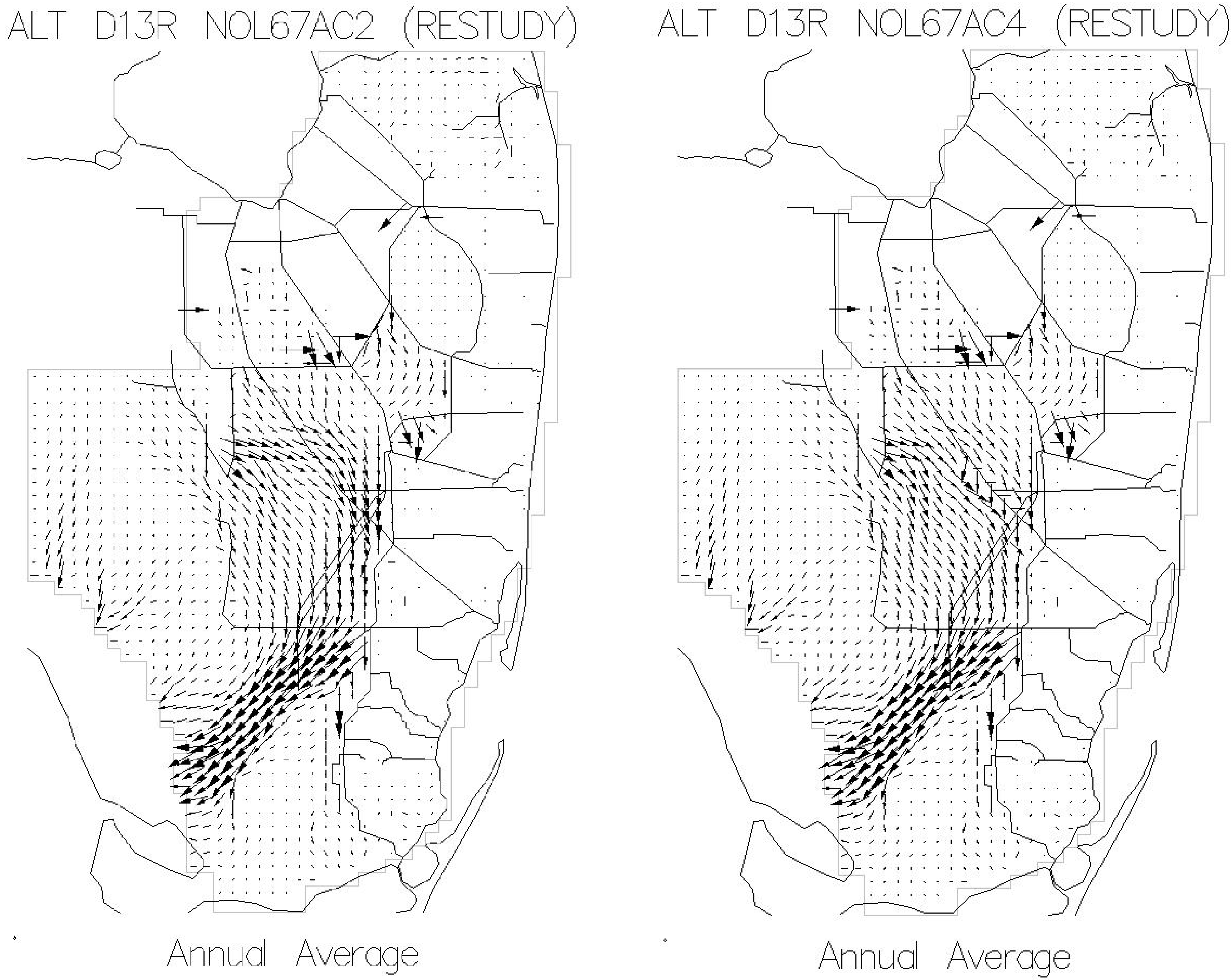


Map 2. Mean annual overland flow patterns for Alt D13R and XL67-1

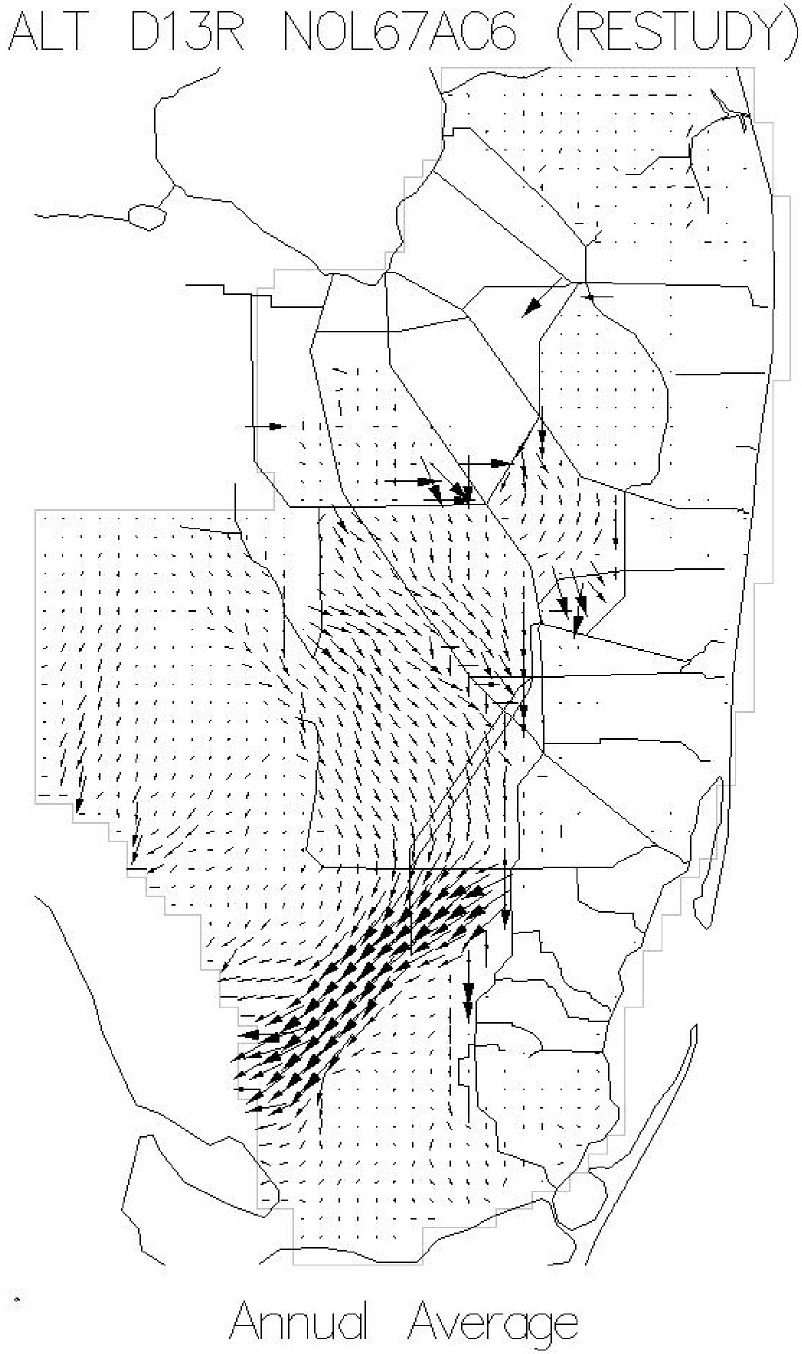


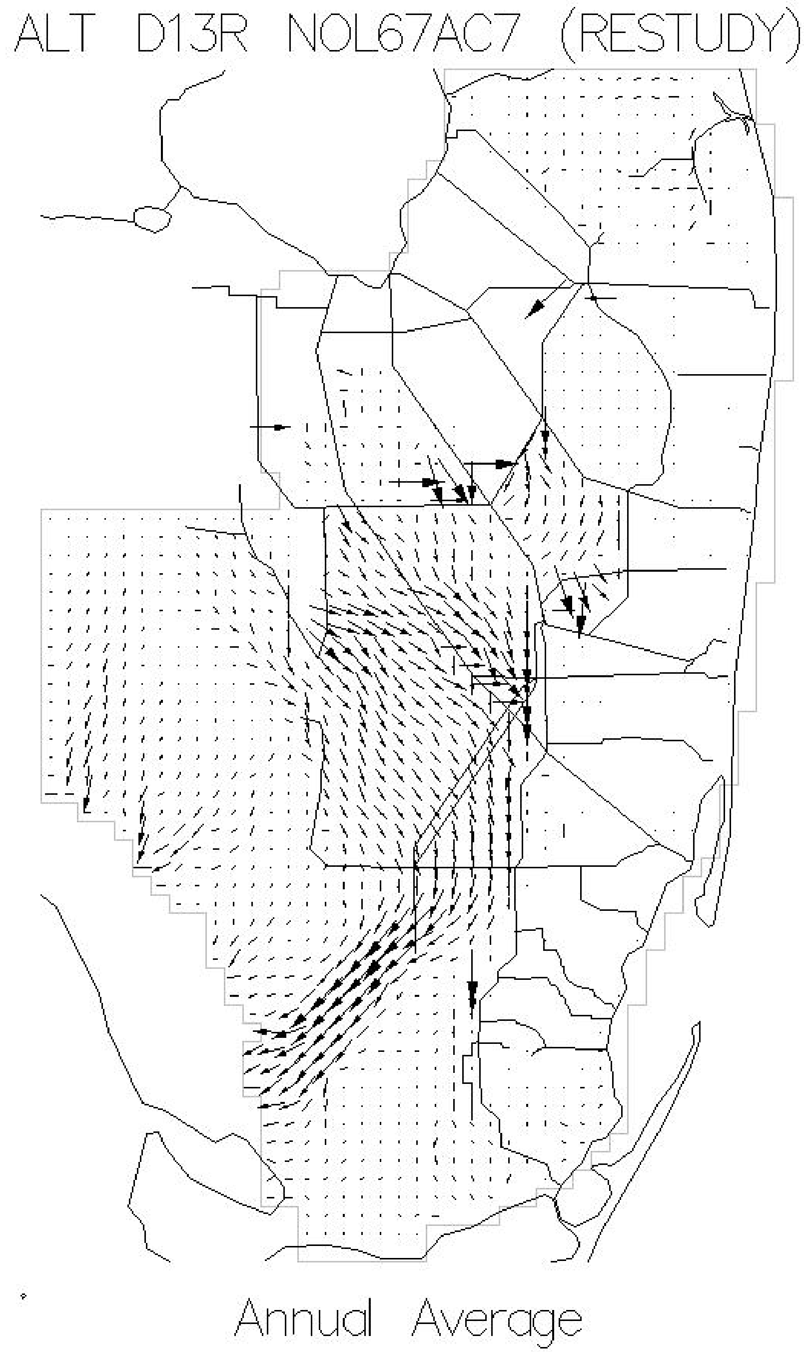


Map 3. Mean annual overland flow patterns for XL67-2 and XL67-4



Map 4. Mean annual overland flow patterns for XL67-6 and XL67-7





Map 5. Flow Vector Angle Differences

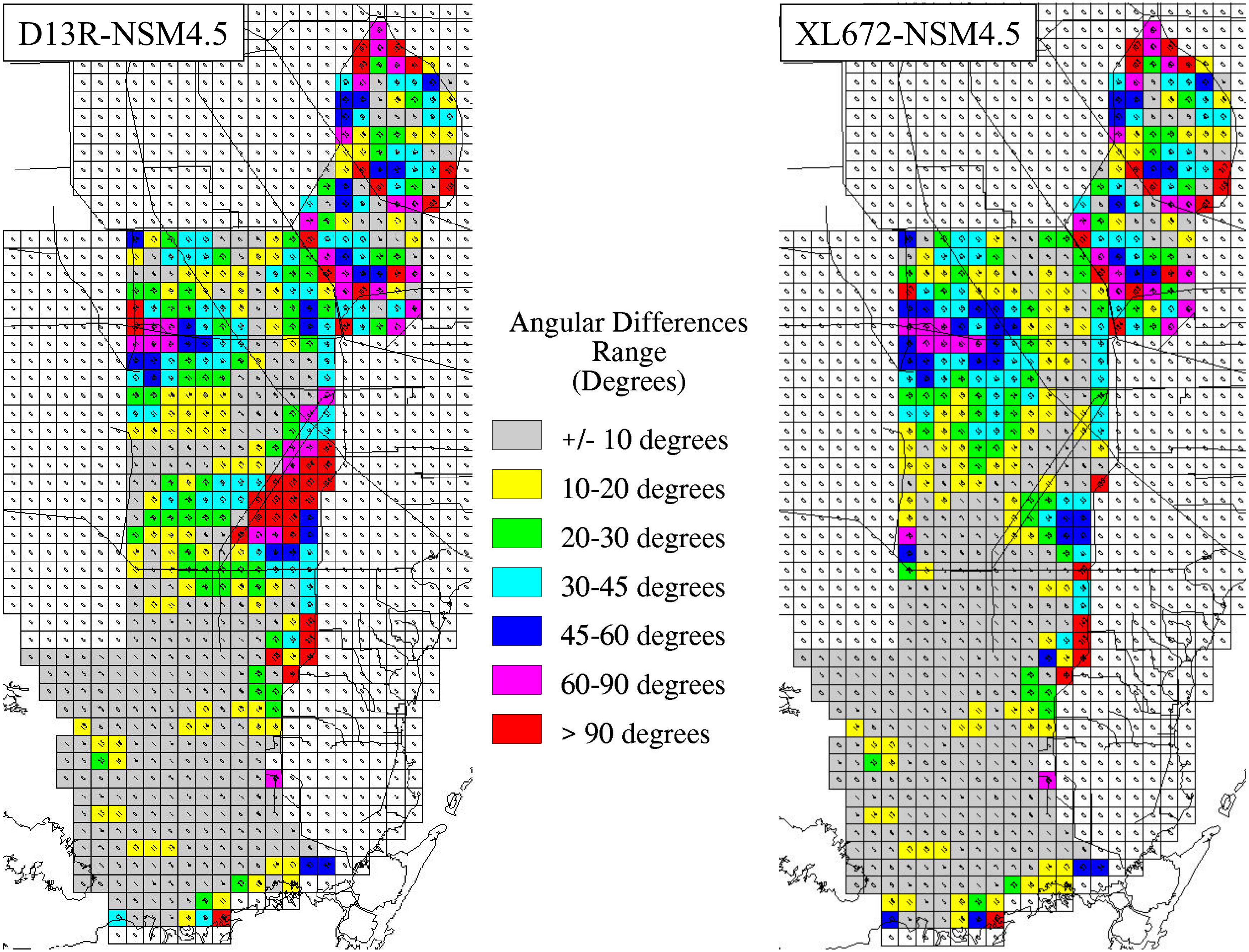
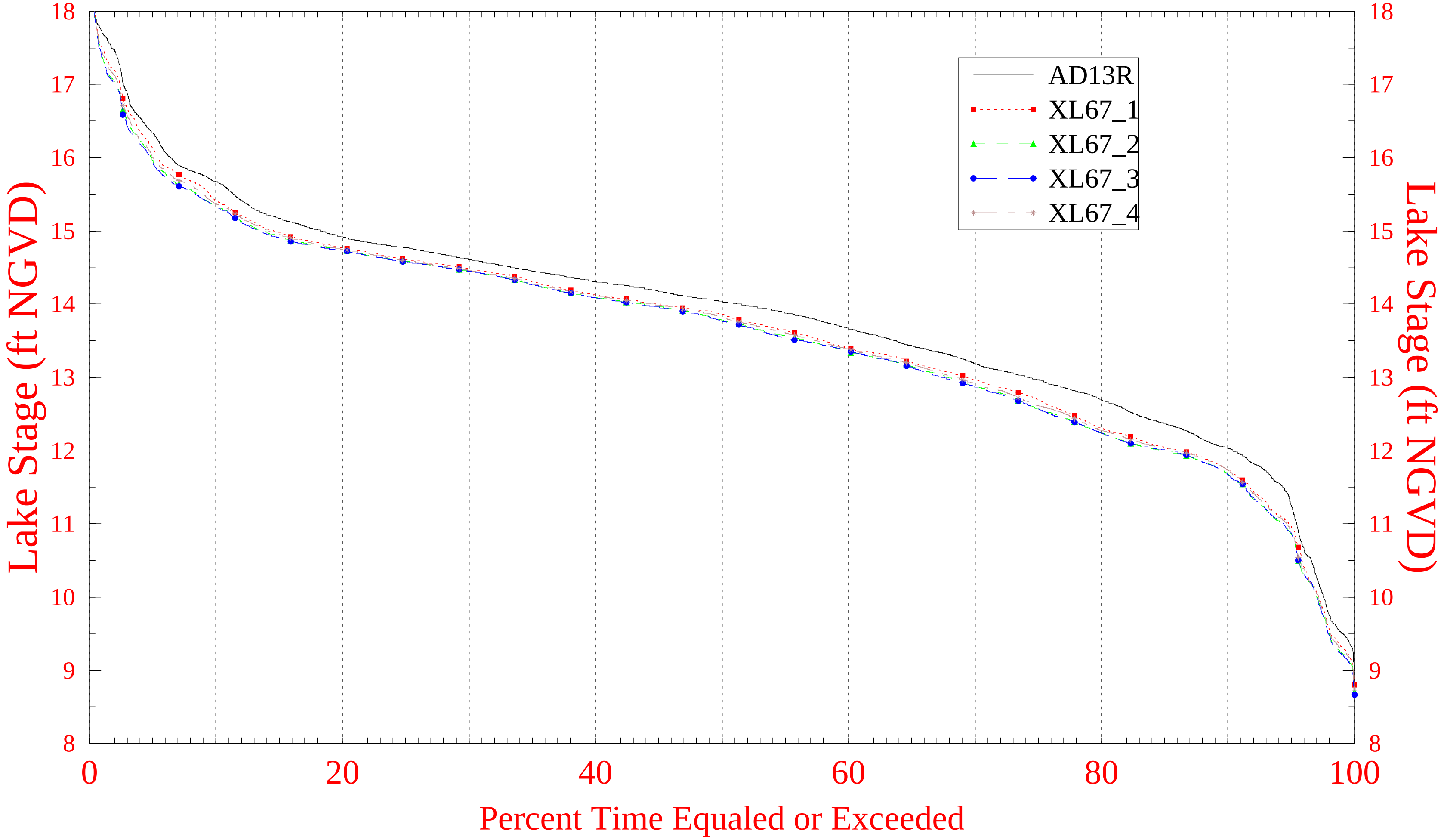


Fig. 1 A   Lake Okeechobee Stage Duration Curves



Run date: 07/03/99 00:45:12
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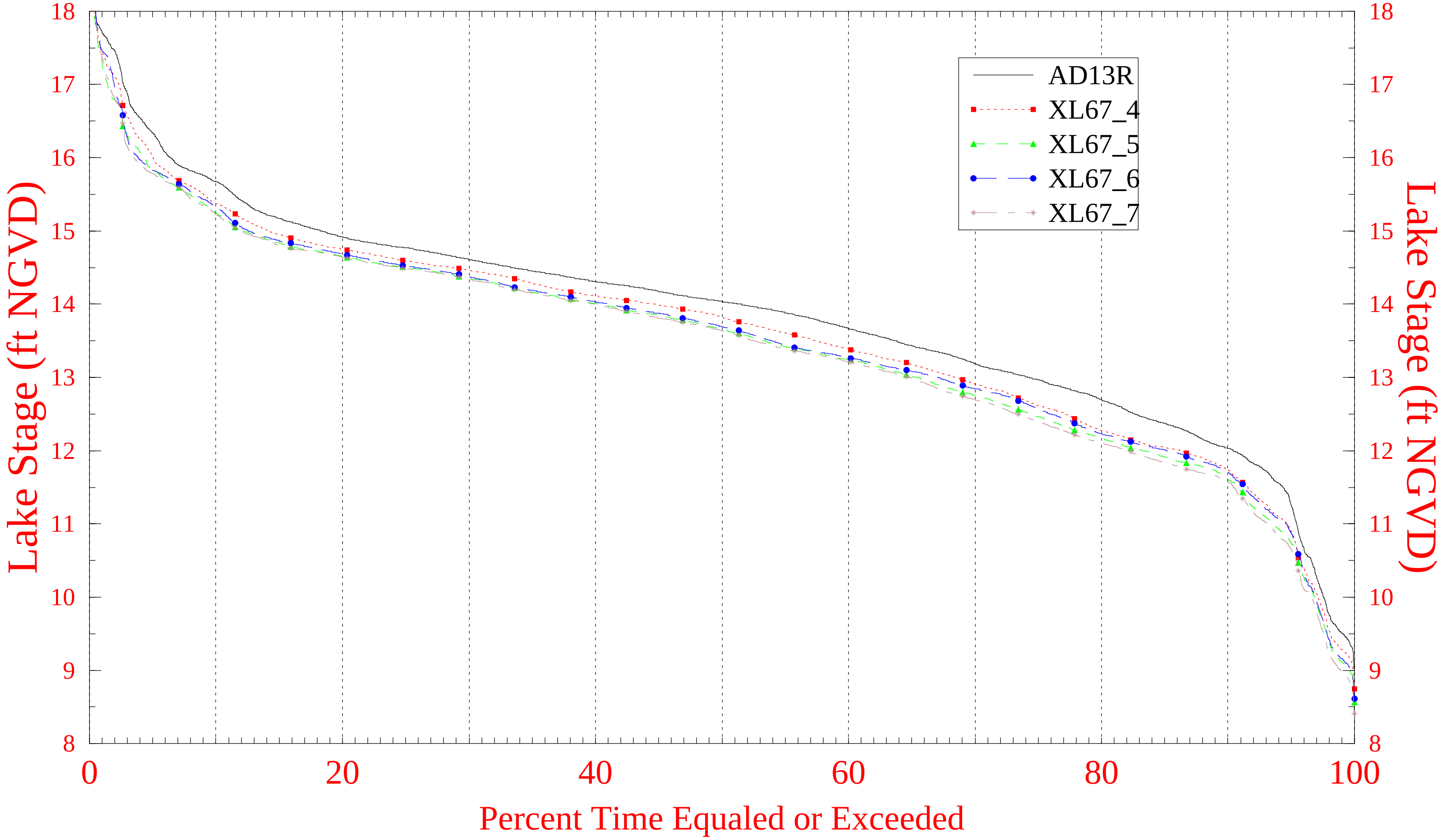
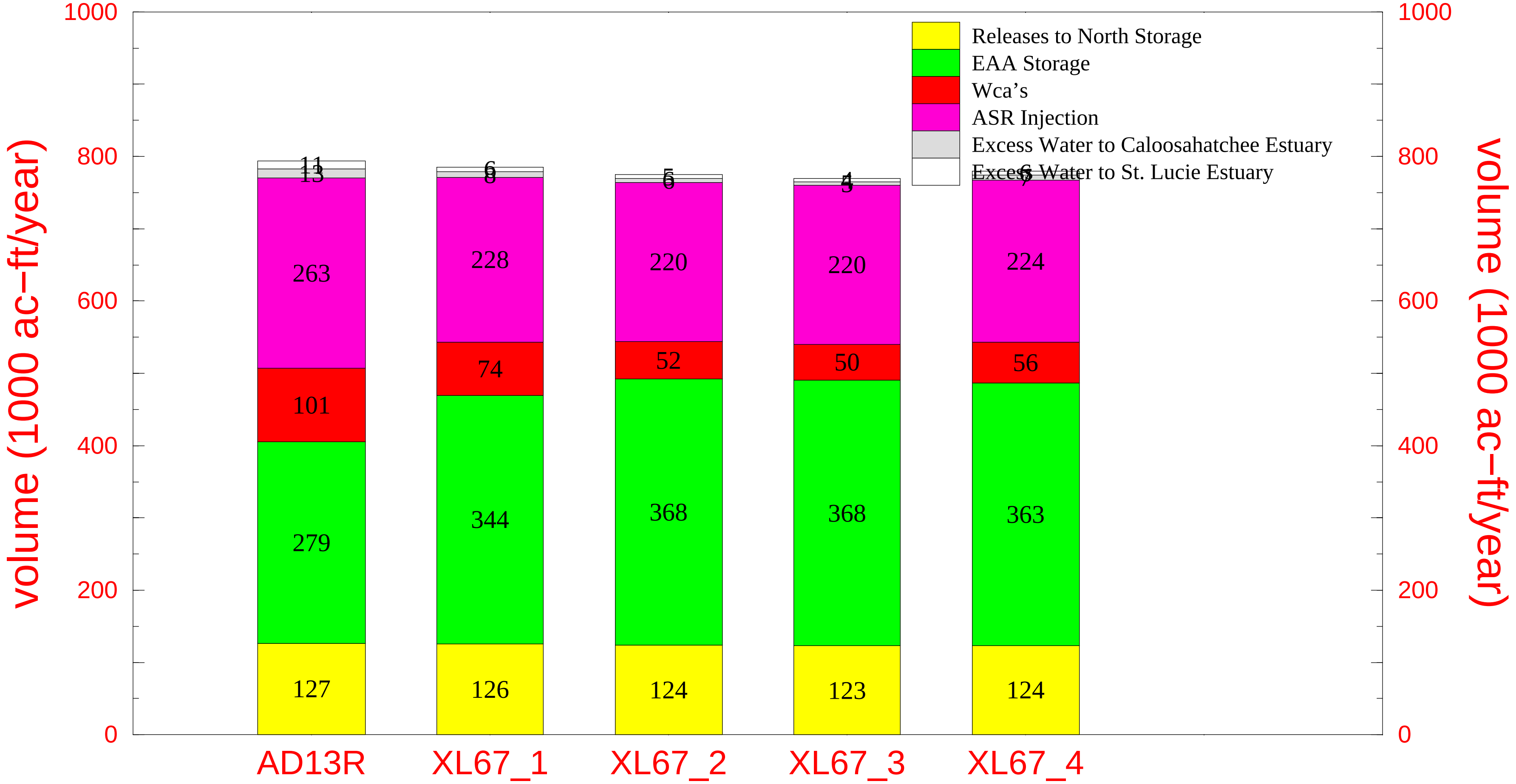
Fig. 1B Lake Okeechobee Stage Duration Curves



Run date: 07/06/99 13:51:13
For Planning Purposes Only
SFWMM V3.5

Fig. 2A Mean Annual Flood Control Releases from Lake Okeechobee for the 31 yr (1965 − 1995) Simulation



Note: Although regulatory (flood control) discharges are summarized here in mean annual values, they do not occur every year. Typically they occur in 2−4 consecutive years and may not occur for up to 7 consecutive years.

Run date: 07/03/99 00:52:05
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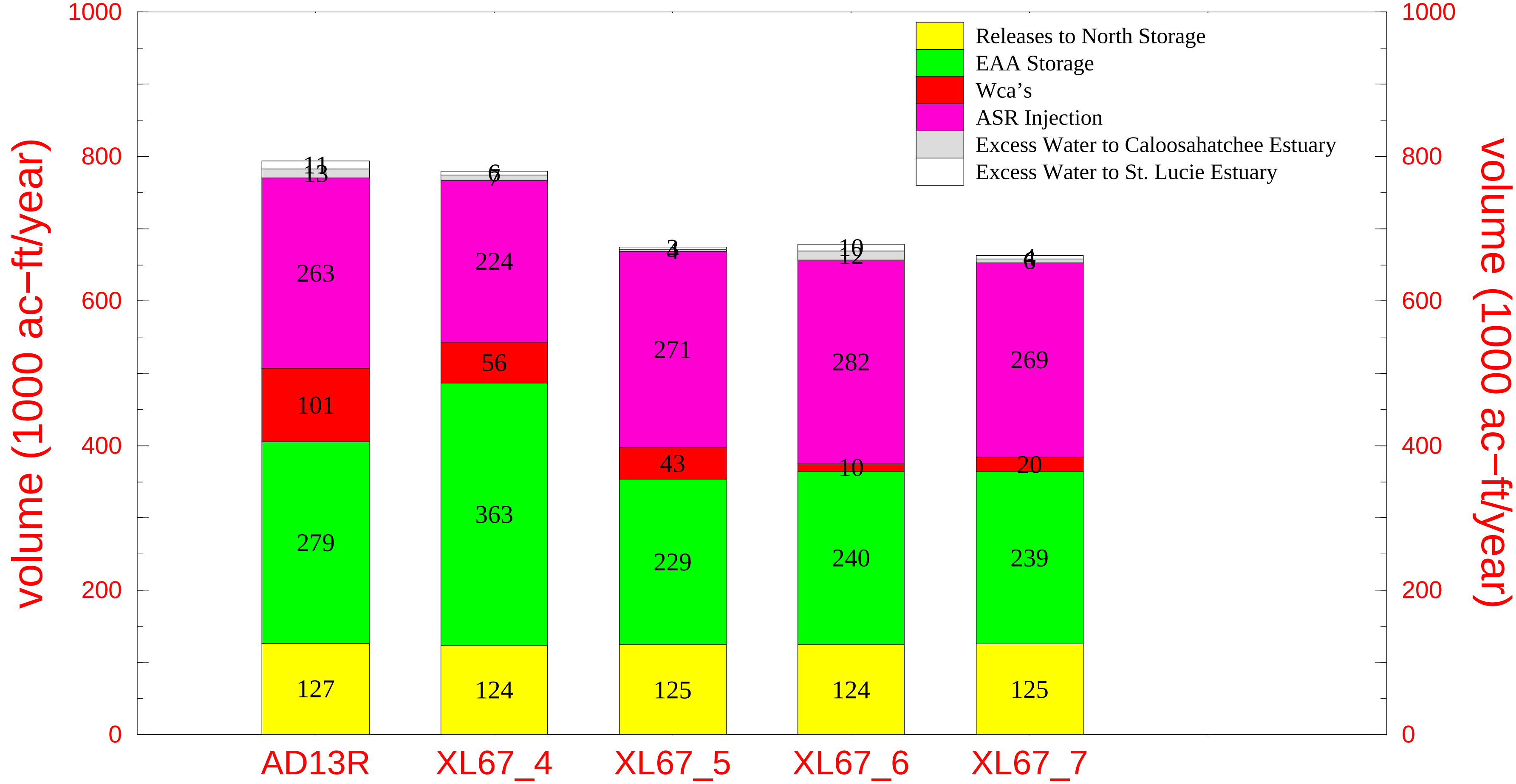
SFWMM V3.5

Fig. 2B Mean Annual Flood Control Releases from Lake Okeechobee for the 31 yr (1965 − 1995) Simulation



Note: Although regulatory (flood control) discharges are summarized here in mean annual values, they do not occur every year. Typically they occur in 2−4 consecutive years and may not occur for up to 7 consecutive years.

Run date: 07/06/99 13:56:20
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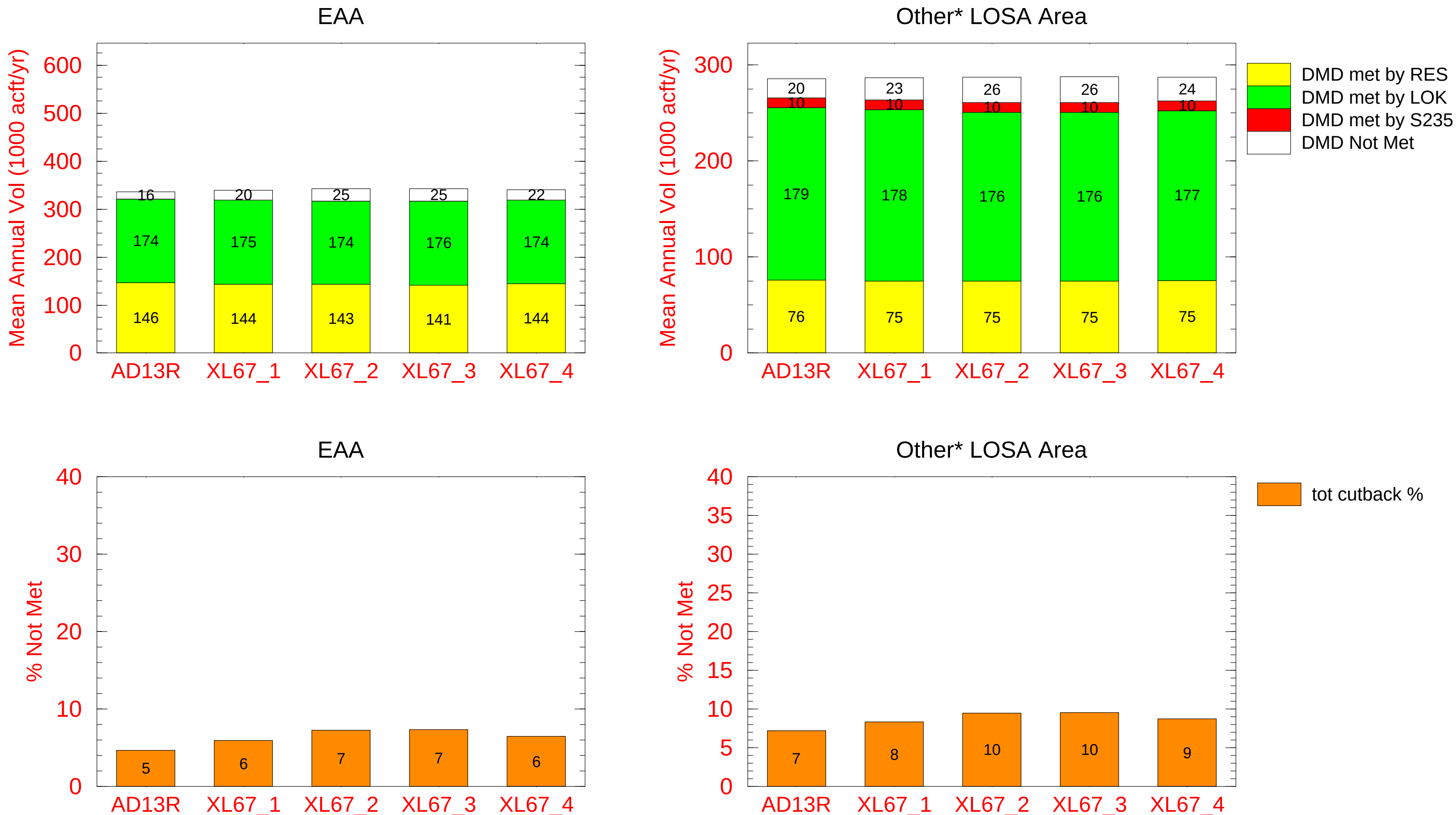
SFWMM V3.5

Fig. 3A Mean Annual EAA/LOSA Supplemental Irrigation: Demands and Demands Not Met

for the 1965 − 1995 Simulation Period

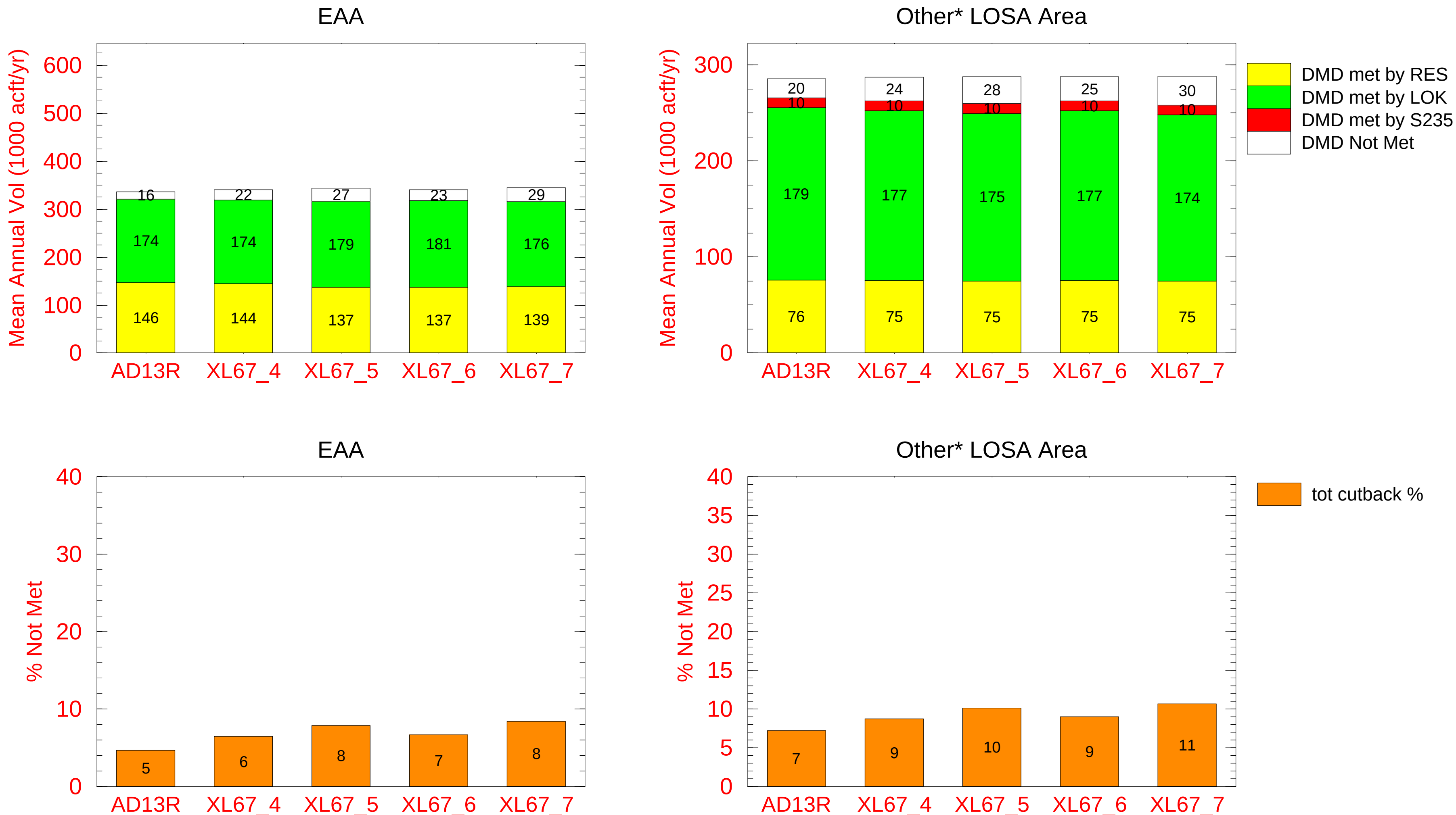


*Other Lake Service SubAreas (S236, S4, L8, C43, C44, and Seminole Indians (Brighton & Big Cypress)).

Run date: 07/03/99 00:58:10
For Planning Purposes Only
SFWMM V3.5

Fig. 3B Mean Annual EAA/LOSA Supplemental Irrigation: Demands and Demands Not Met

for the 1965 − 1995 Simulation Period



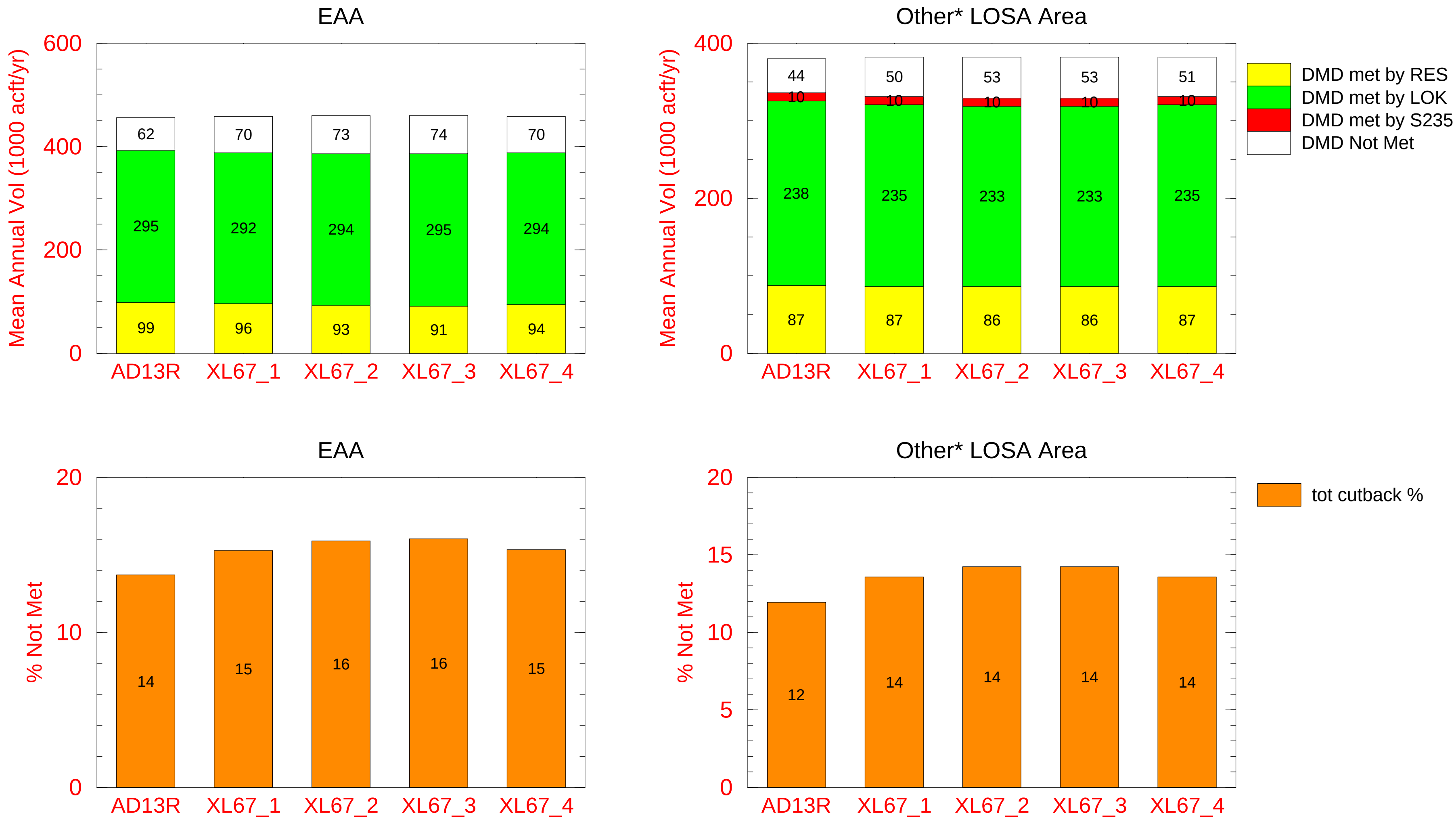
*Other Lake Service SubAreas (S236, S4, L8, C43, C44, and Seminole Indians (Brighton & Big Cypress)).

Run date: 07/06/99 14:01:45
For Planning Purposes Only
SFWMM V3.5

Fig. 4A Mean Annual EAA/LOSA Supplemental Irrigation:

Demands and Demands Not Met for the Drought Years:

1971, 1975, 1981, 1985, 1989 within the 1965 − 1995 Simulation Period



*Other Lake Service SubAreas (S236, S4, L8, C43, C44, and Seminole Indians (Brighton & Big Cypress)).

Run date: 07/03/99 01:03:12
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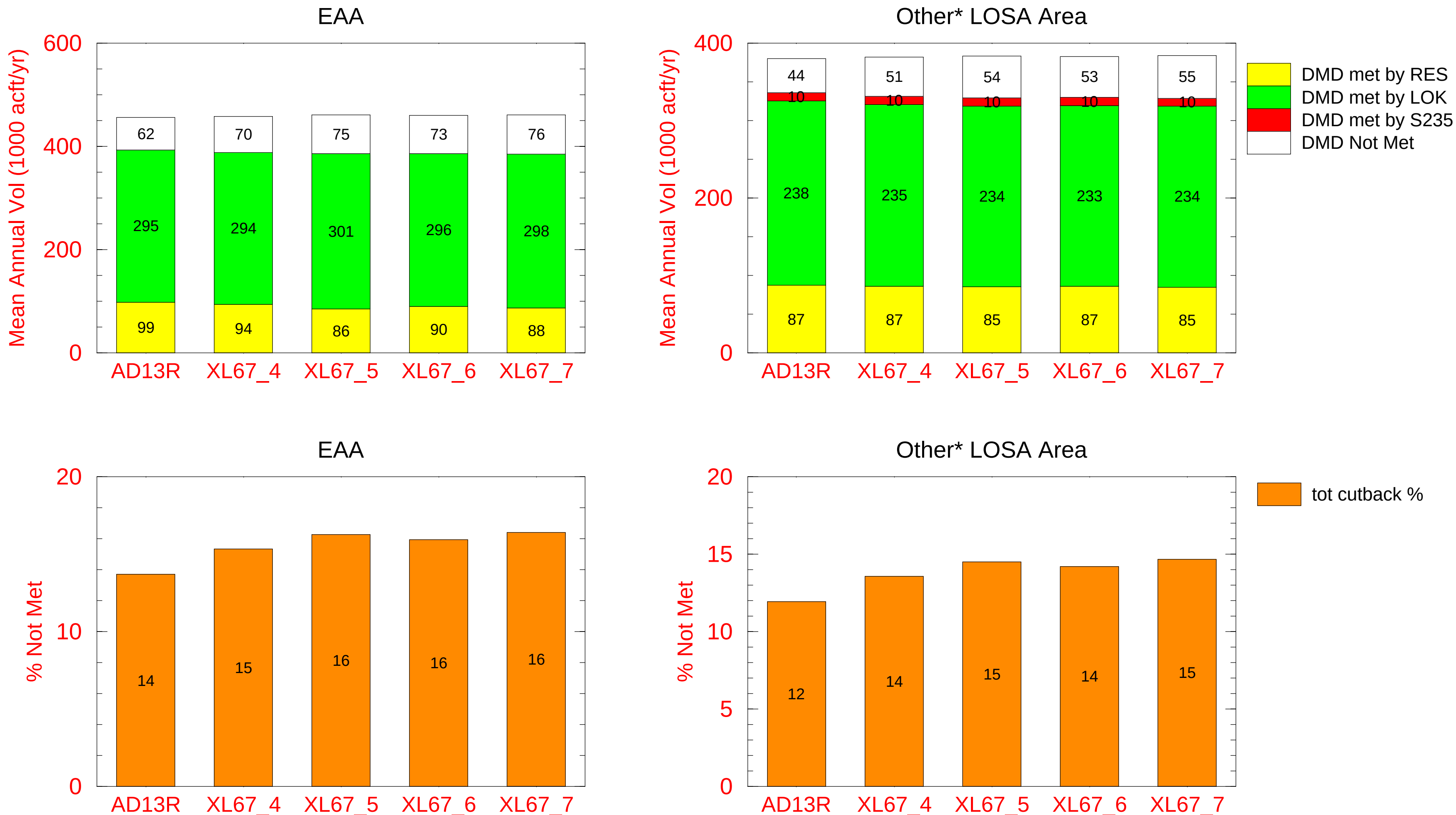
SFWMM V3.5

Fig. 4B Mean Annual EAA/LOSA Supplemental Irrigation:

Demands and Demands Not Met for the Drought Years:

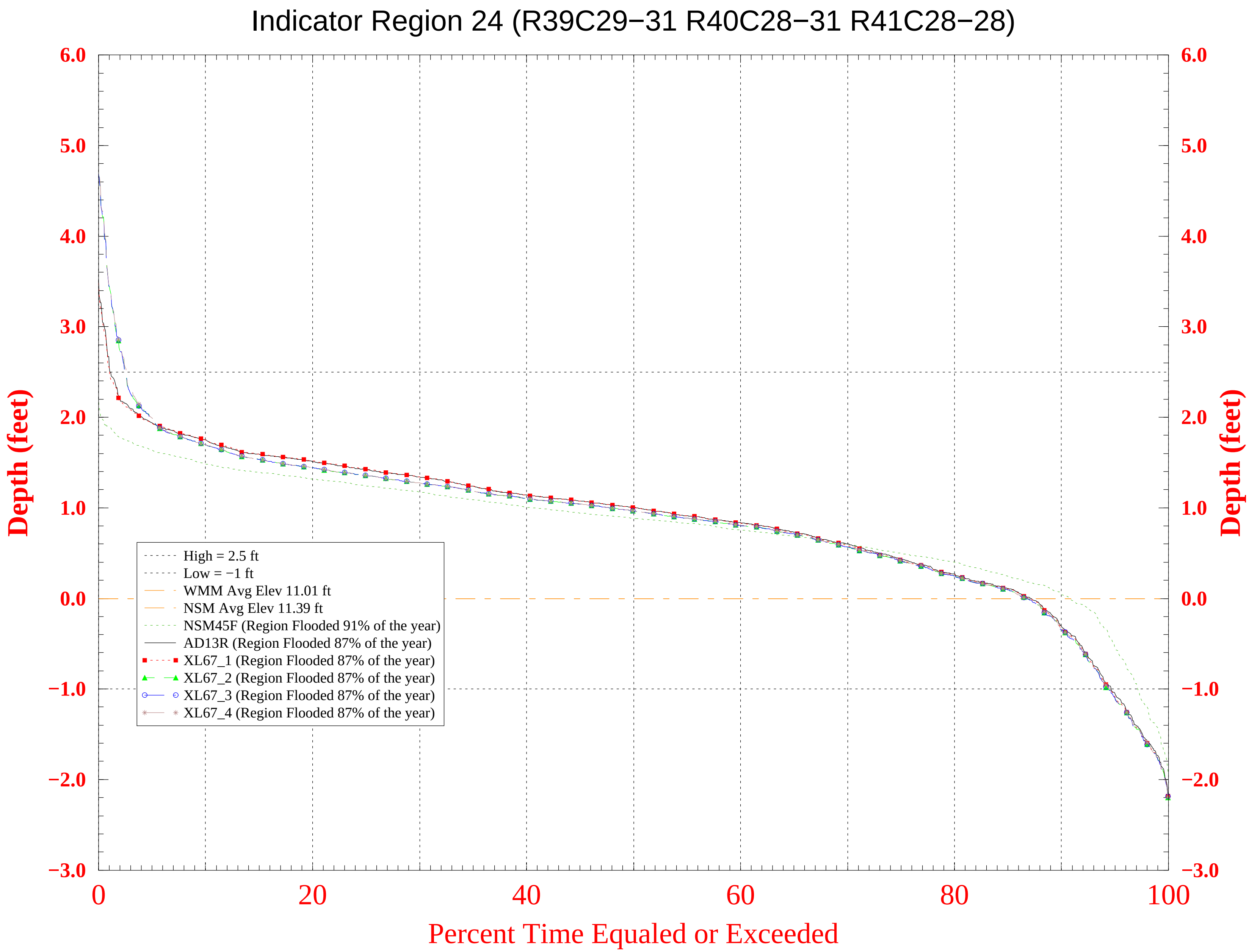
1971, 1975, 1981, 1985, 1989 within the 1965 − 1995 Simulation Period



*Other Lake Service SubAreas (S236, S4, L8, C43, C44, and Seminole Indians (Brighton & Big Cypress)).

Run date: 07/06/99 14:06:44
For Planning Purposes Only
SFWMM V3.5

Fig. 5A Normalized Weekly Stage Duration Curves for South WCA−2A



Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Sat Jul 3 09:58:43 EDT 1999
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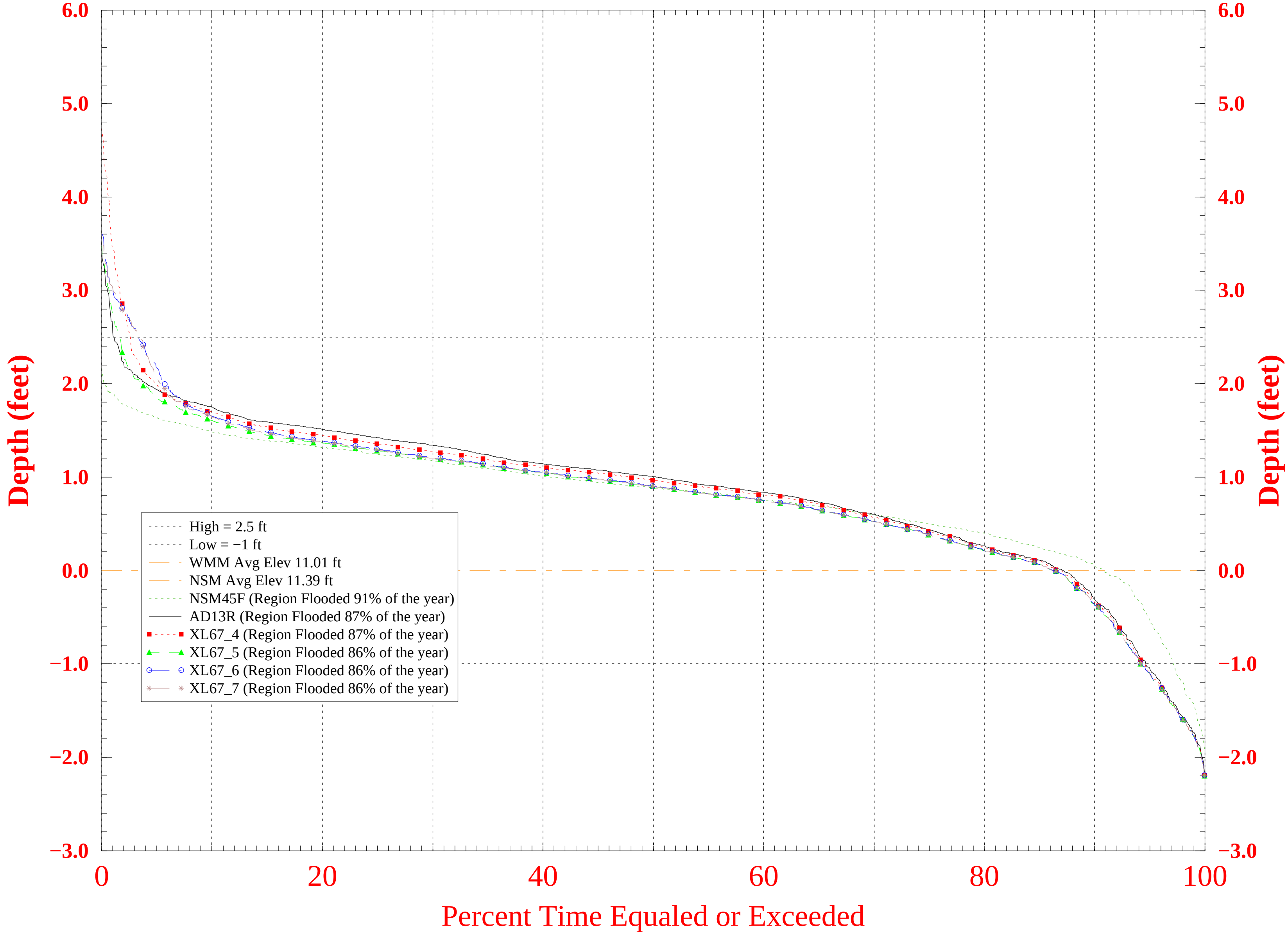
SFWMM V3.4

Fig. 5B Normalized Weekly Stage Duration Curves for South WCA−2A

Indicator Region 24 (R39C29−31 R40C28−31 R41C28−28)

Fig. 4B



Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Tue Jul 6 20:45:42 EDT 1999
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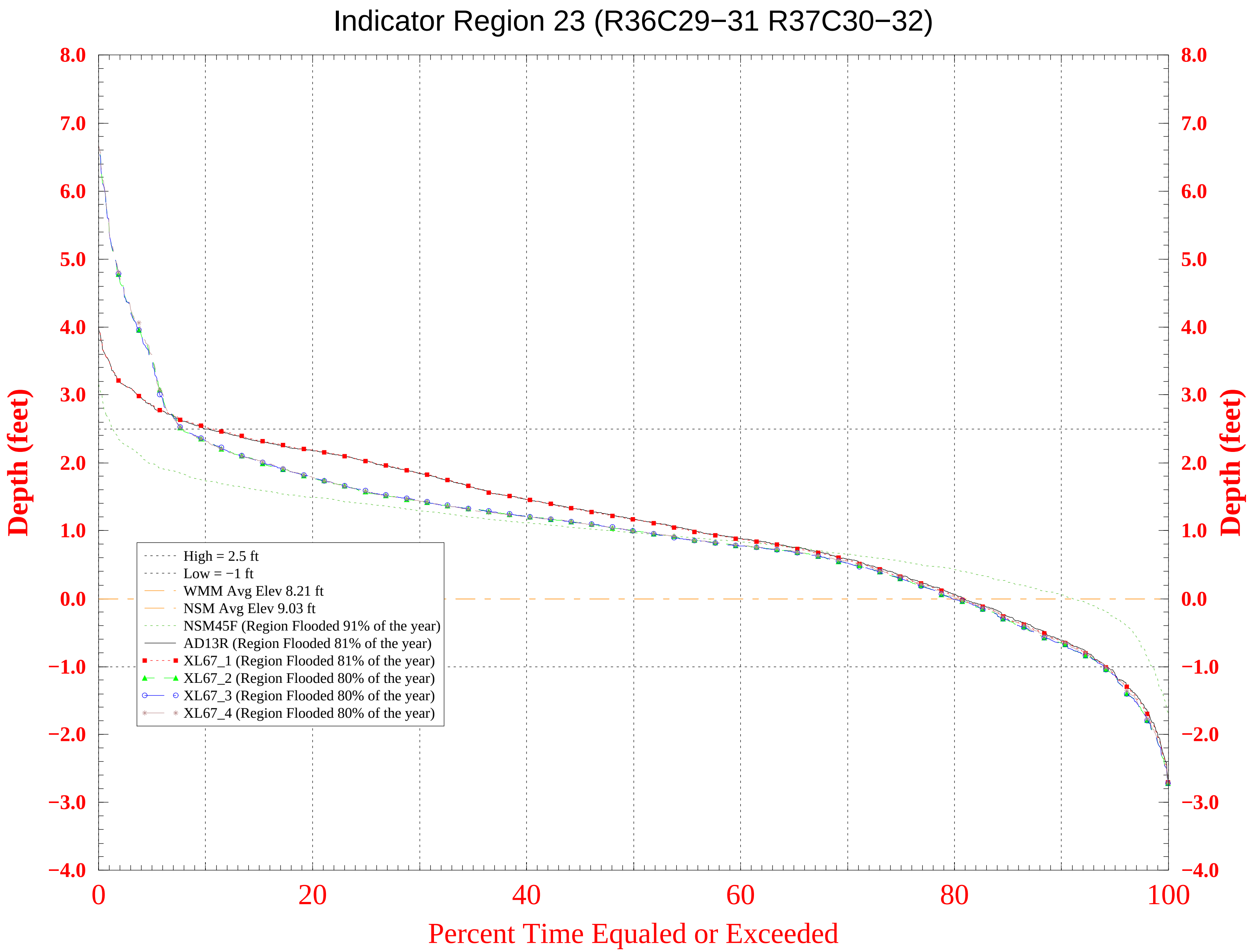
SFWMM V3.4

Fig. 6A Normalized Weekly Stage Duration Curves for WCA−2B

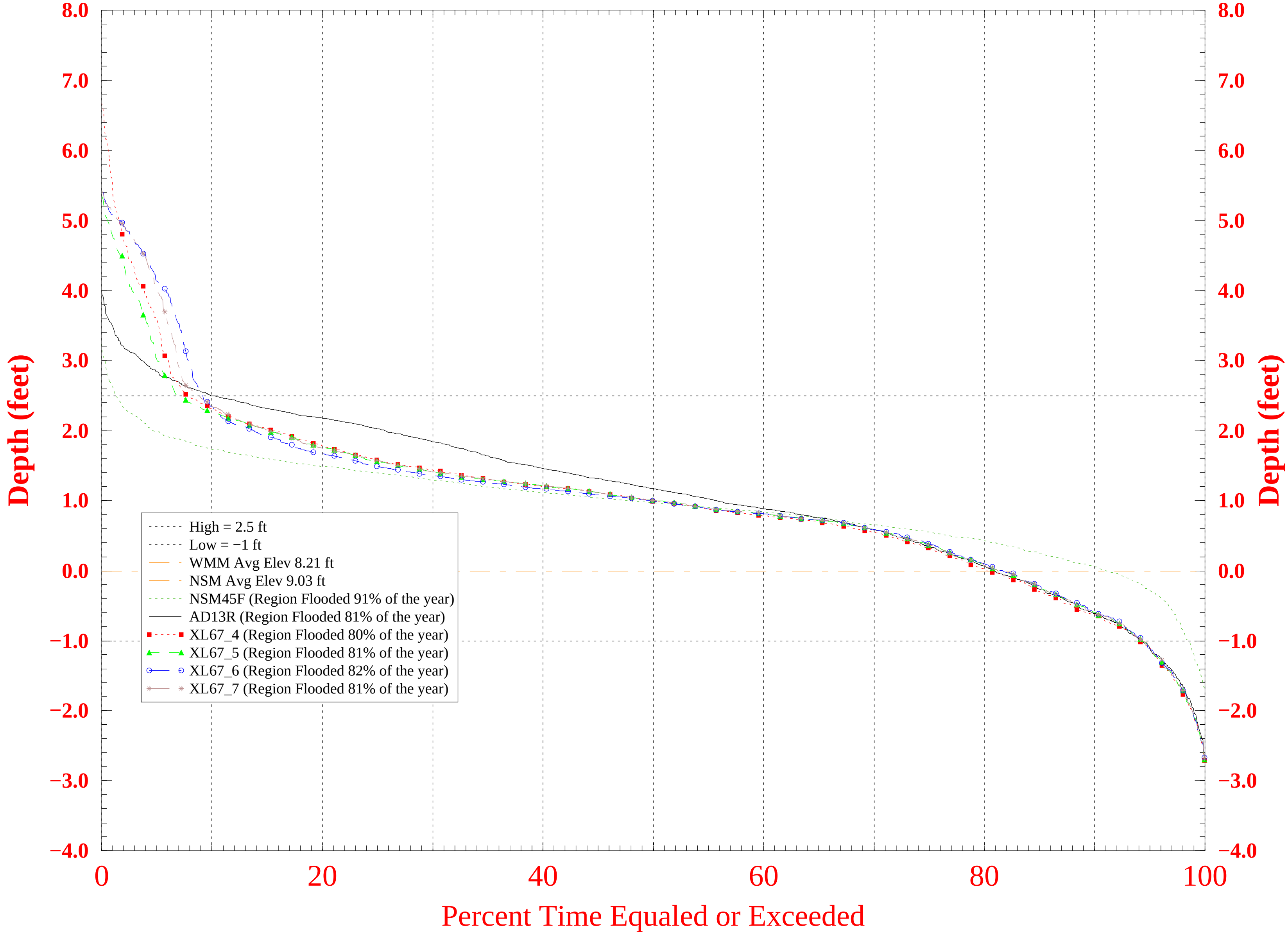


Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Sat Jul 3 09:58:31 EDT 1999
For Planning Purposes Only
SFWMM V3.4

Fig. 6B Normalized Weekly Stage Duration Curves for WCA−2B

Indicator Region 23 (R36C29−31 R37C30−32)

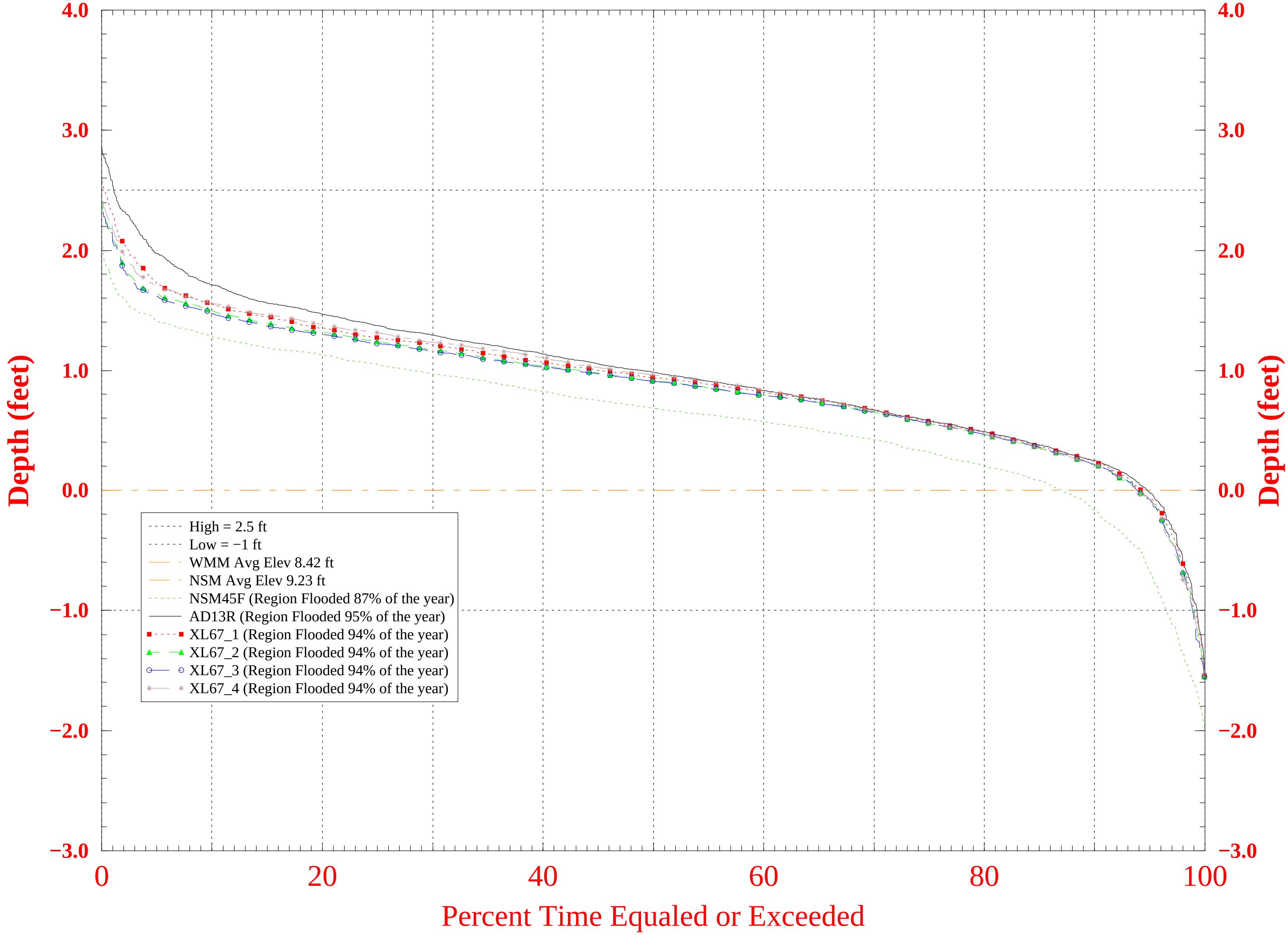


Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Tue Jul 6 20:45:30 EDT 1999
For Planning Purposes Only
SFWMM V3.4

Fig. 7A Normalized Weekly Stage Duration Curves for South Central WCA−3A

Indicator Region 17 (R28C17−21 R29C17−22 R30C18−22 R31C18−22)

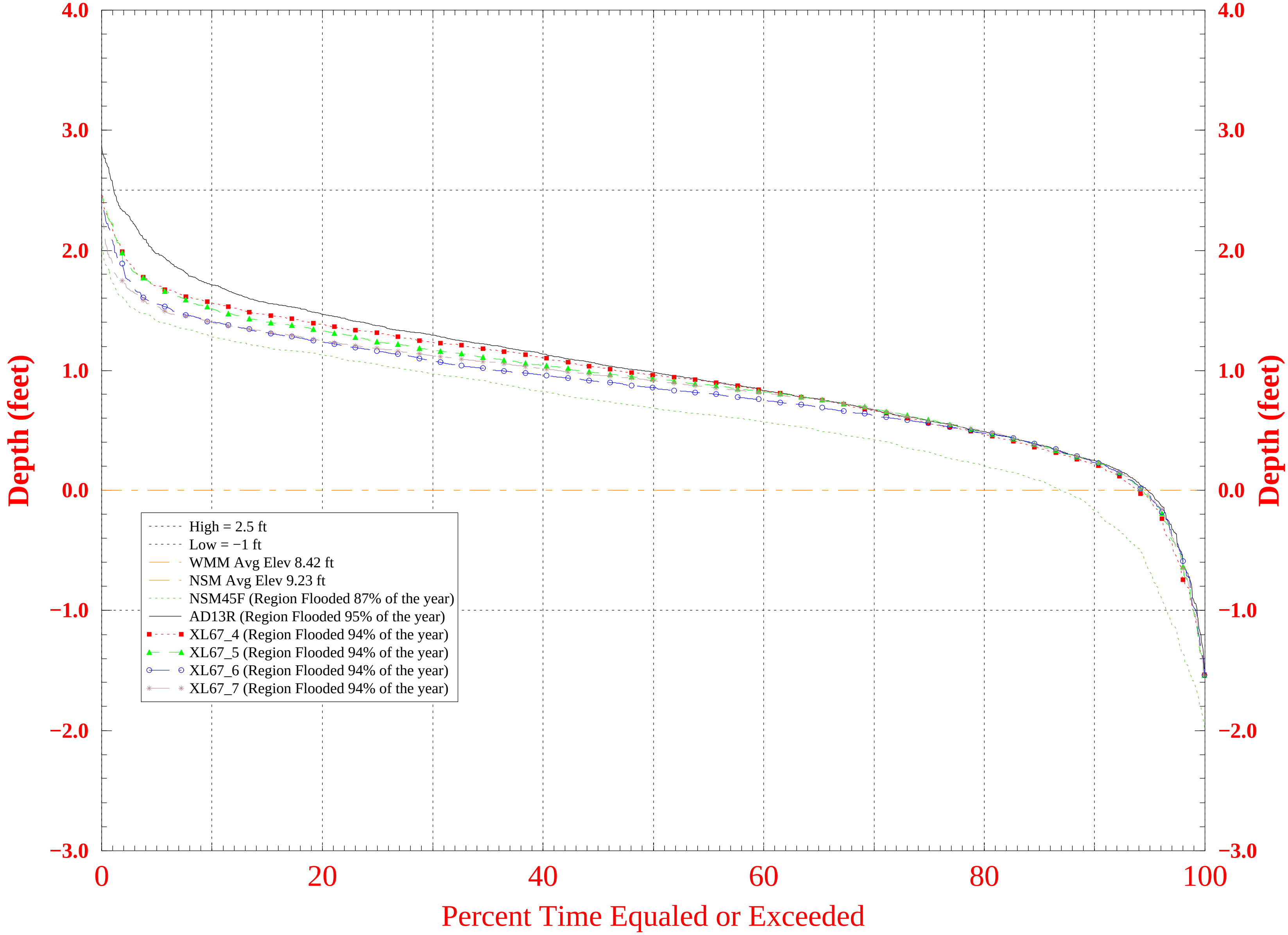


Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Sat Jul 3 09:57:25 EDT 1999
For Planning Purposes Only
SFWMM V3.4

Fig. 7B Normalized Weekly Stage Duration Curves for South Central WCA−3A

Indicator Region 17 (R28C17−21 R29C17−22 R30C18−22 R31C18−22)

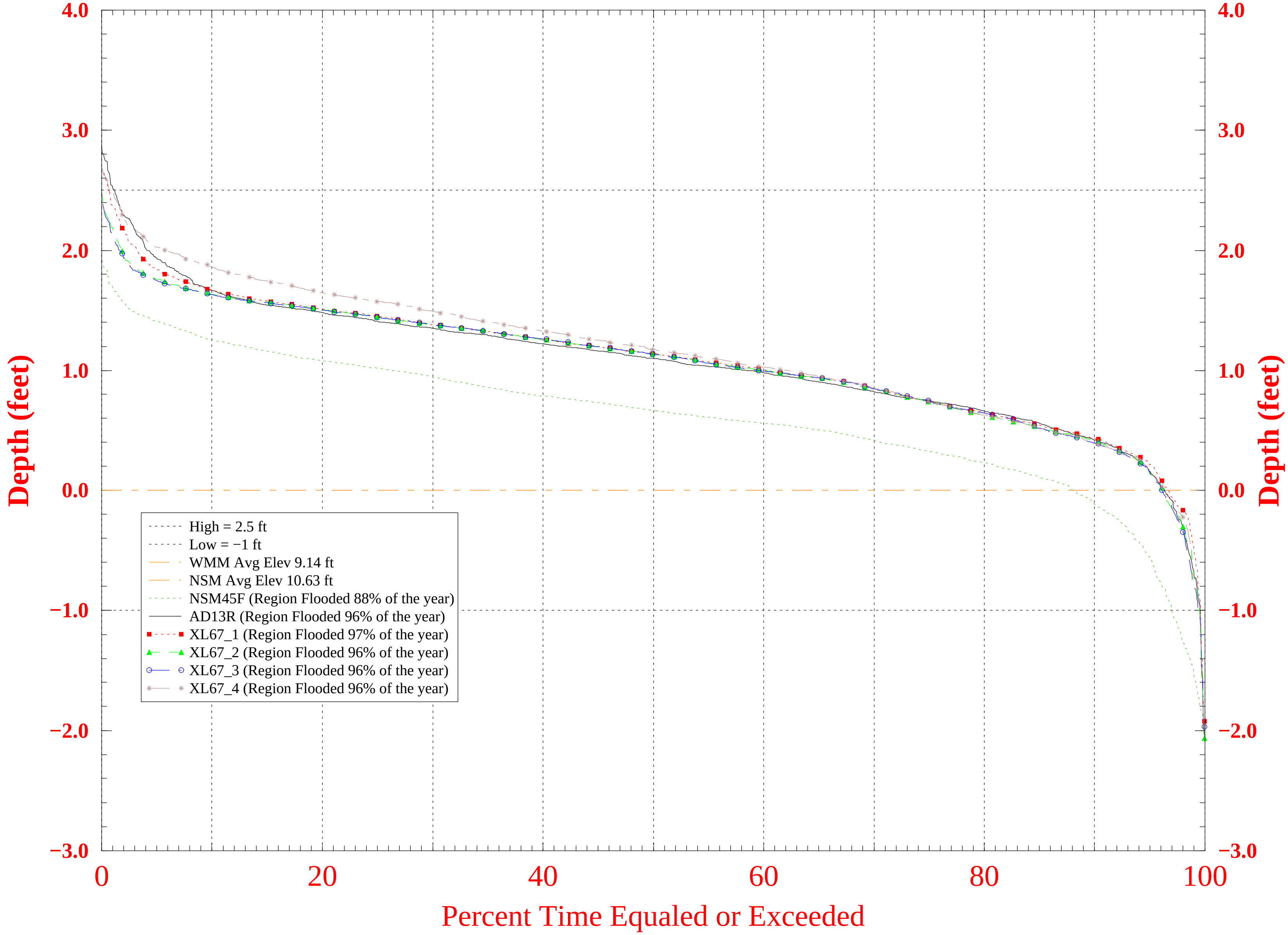


Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Tue Jul 6 20:44:21 EDT 1999
For Planning Purposes Only
SFWMM V3.4

Fig. 8A Normalized Weekly Stage Duration Curves for North Central WCA−3A

Indicator Region 18 (R33C18−21 R34C18−21)



Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

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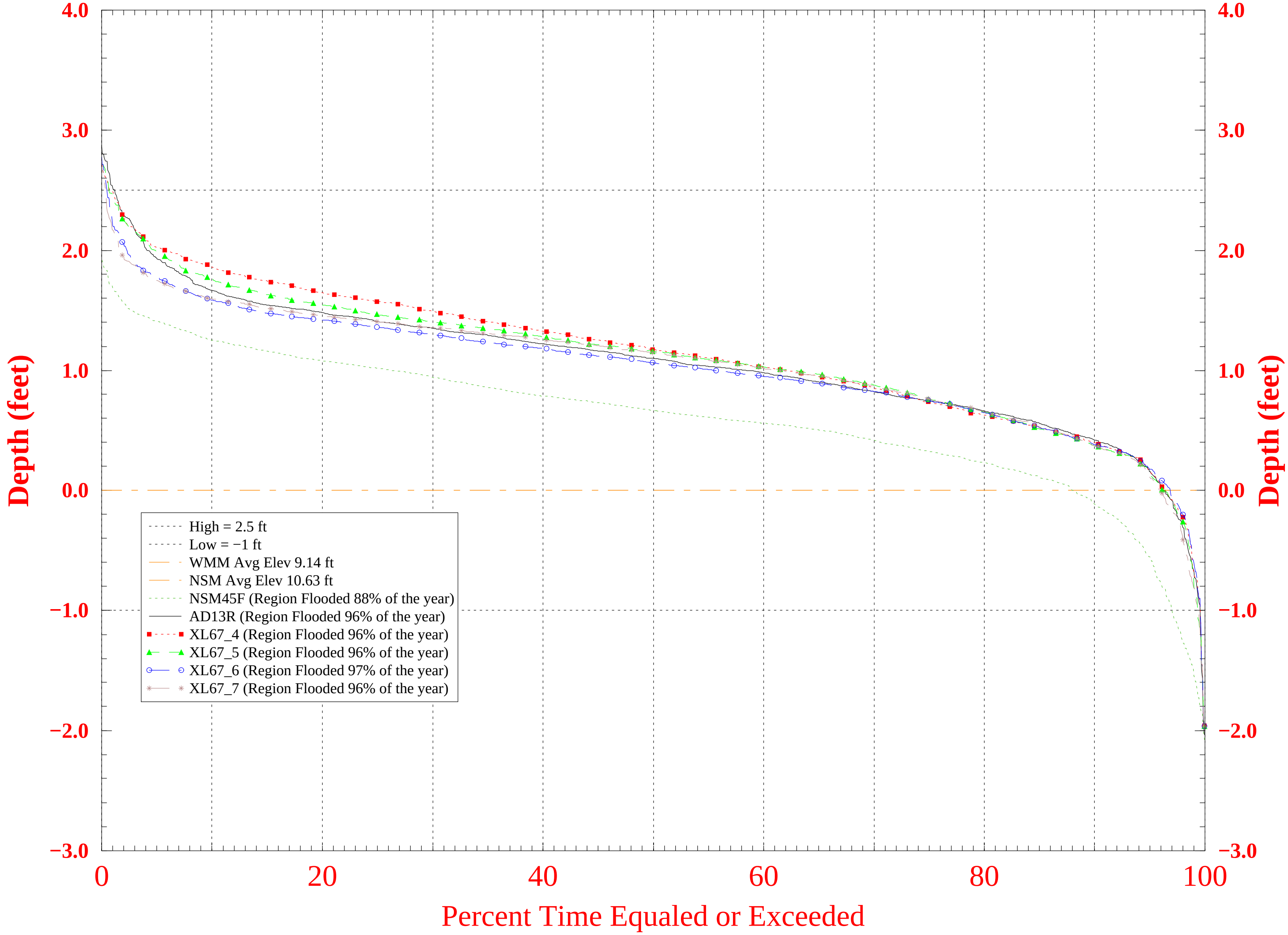
For Planning Purposes Only
SFWMM V3.4

Fig. 8B Normalized Weekly Stage Duration Curves for North Central WCA−3A

Indicator Region 18 (R33C18−21 R34C18−21)



Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Tue Jul 6 20:44:33 EDT 1999
For Planning Purposes Only
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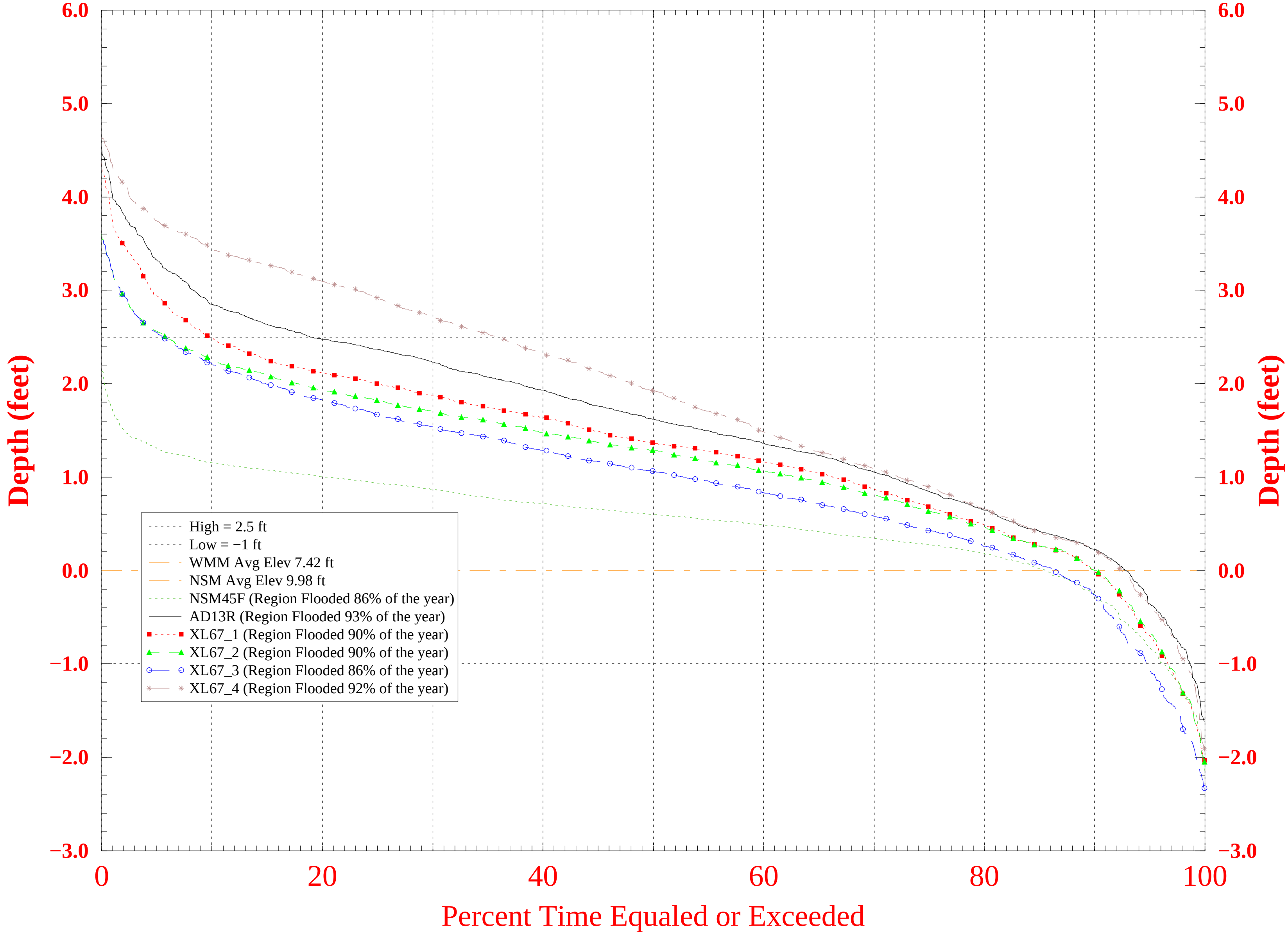
Fig. 9A Normalized Weekly Stage Duration Curves for East WCA−3A

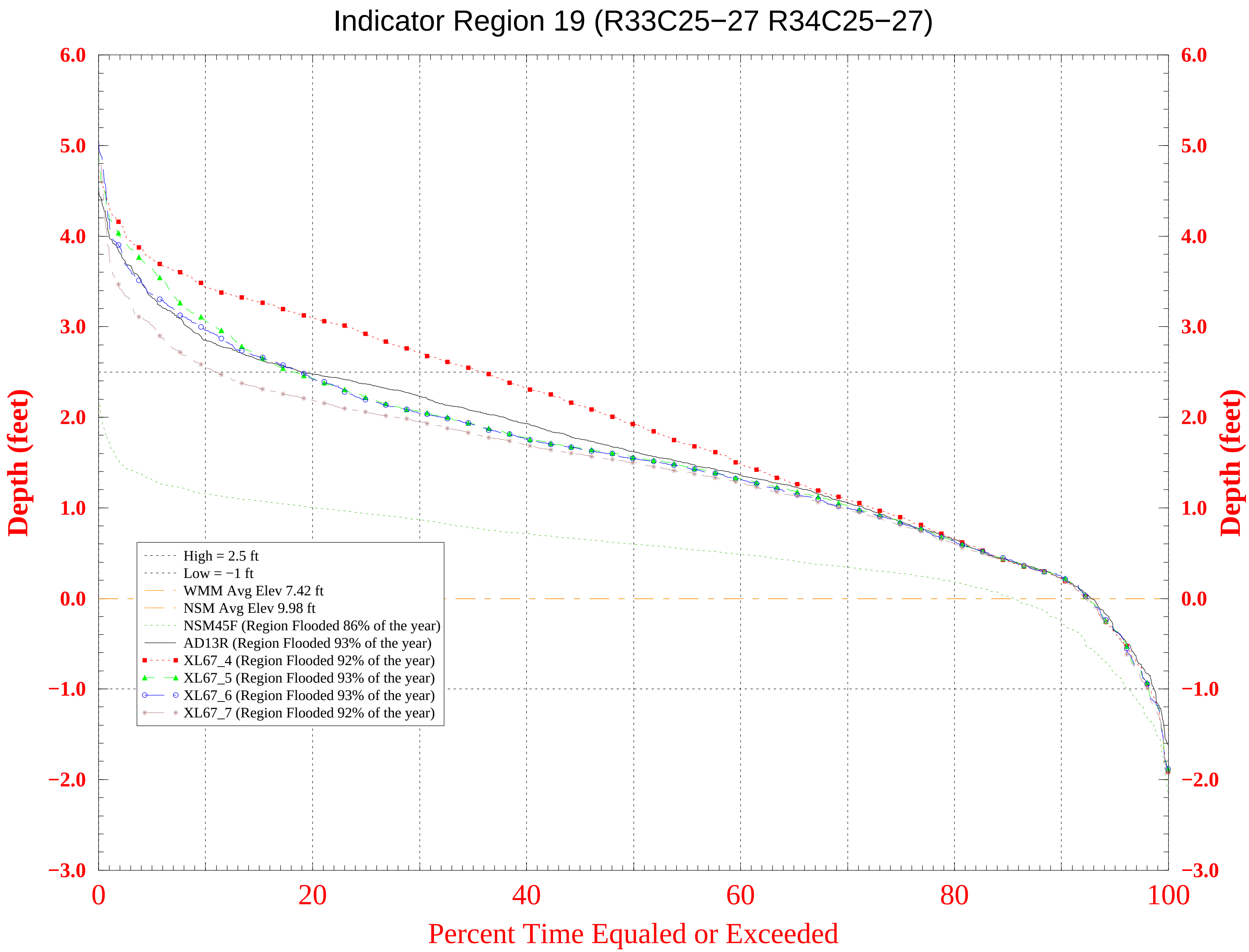
Indicator Region 19 (R33C25−27 R34C25−27)



Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Sat Jul 3 09:57:47 EDT 1999
For Planning Purposes Only
SFWMM V3.4

Fig. 9B Normalized Weekly Stage Duration Curves for East WCA−3A

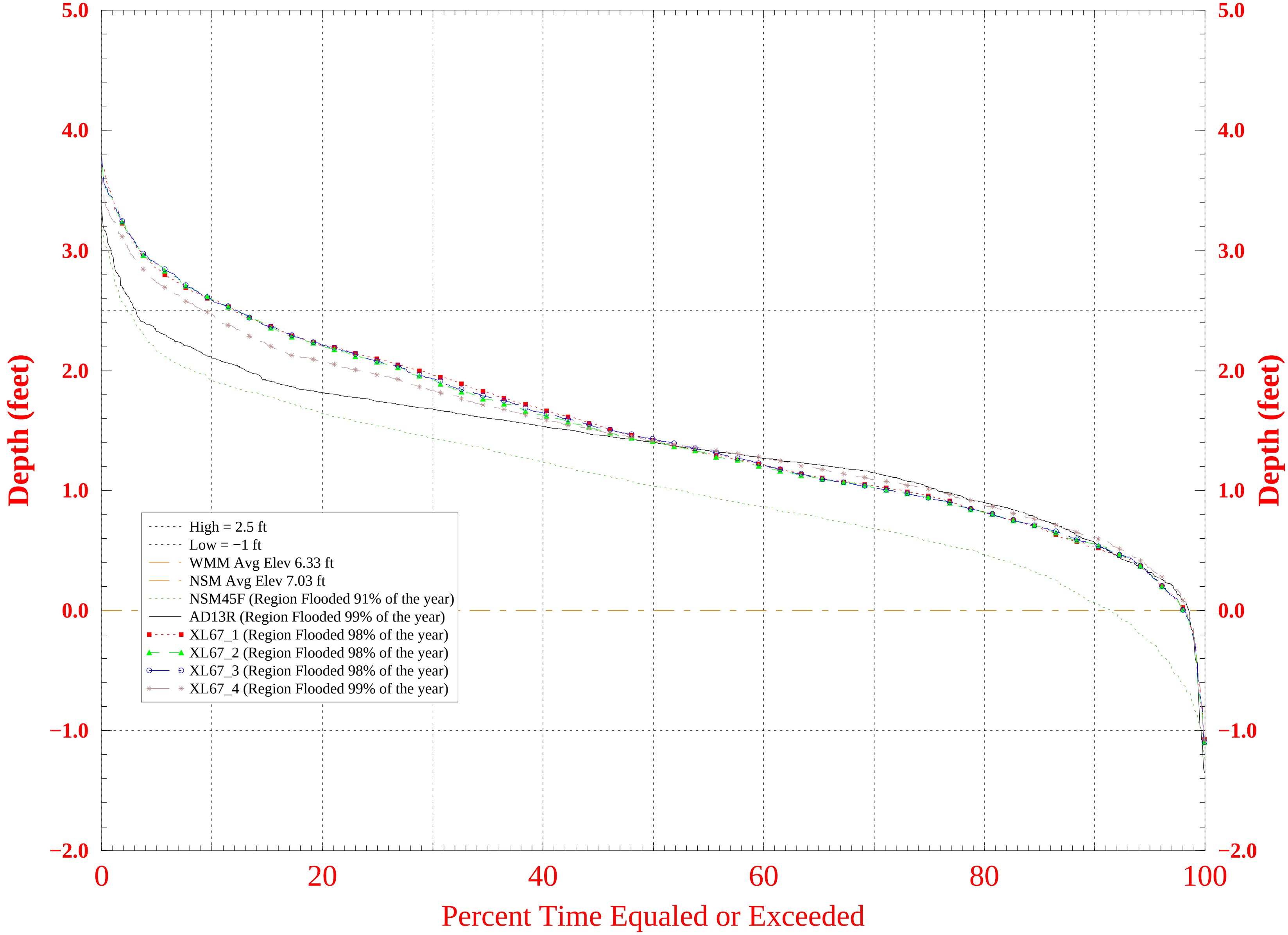


Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Tue Jul 6 20:44:44 EDT 1999
For Planning Purposes Only
SFWMM V3.4

Fig. 10A Normalized Weekly Stage Duration Curves for West WCA−3B

Indicator Region 15 (R23C23−23 R24C23−24 R25C24−25 R26C25−25 R27C25−25)

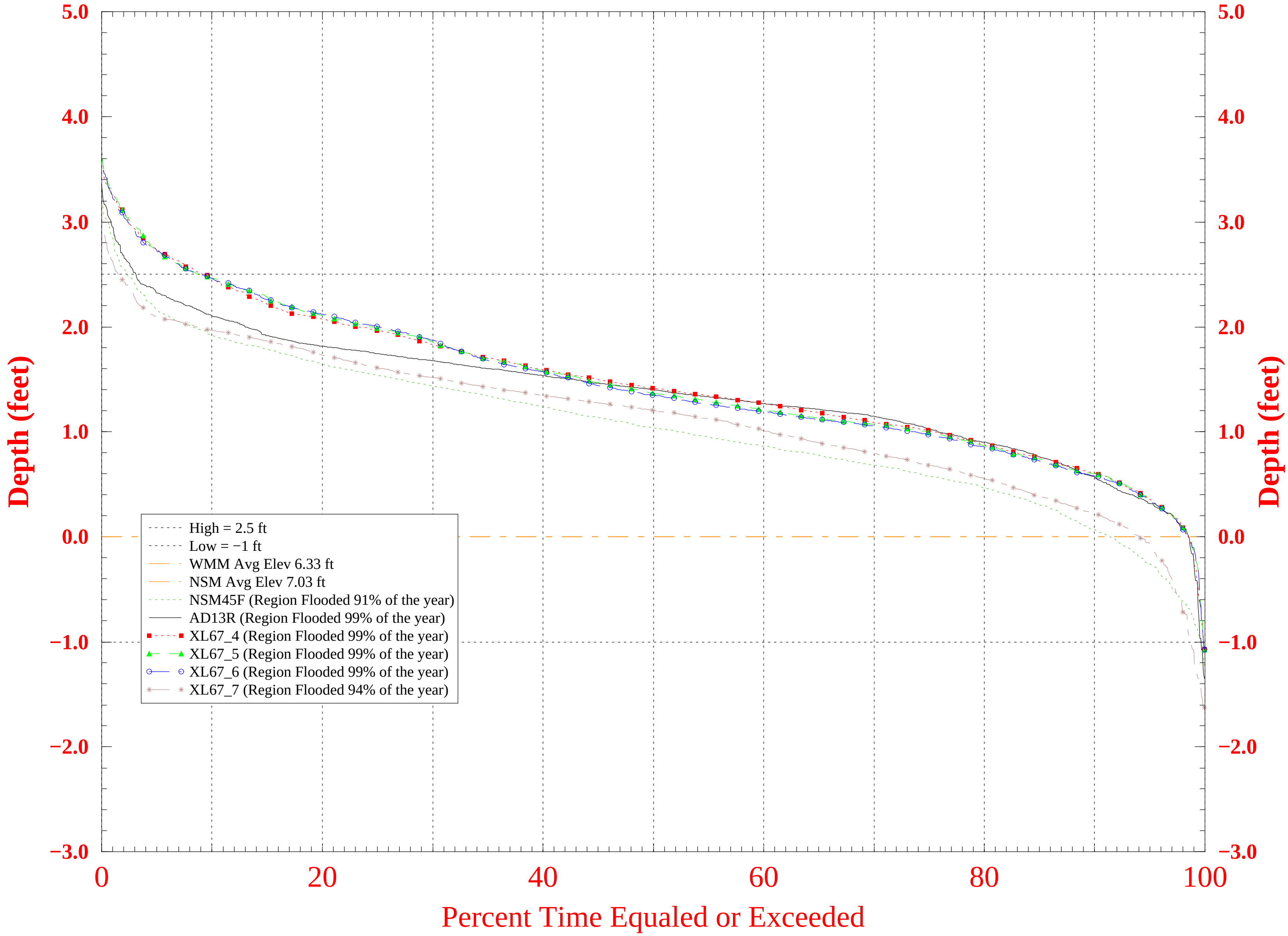


Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Sat Jul 3 09:56:52 EDT 1999
For Planning Purposes Only
SFWMM V3.4

Fig. 10B Normalized Weekly Stage Duration Curves for West WCA−3B

Indicator Region 15 (R23C23−23 R24C23−24 R25C24−25 R26C25−25 R27C25−25)



Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Tue Jul 6 20:43:48 EDT 1999
For Planning Purposes Only
SFWMM V3.4

Fig.11 FLOW TRANSECTS

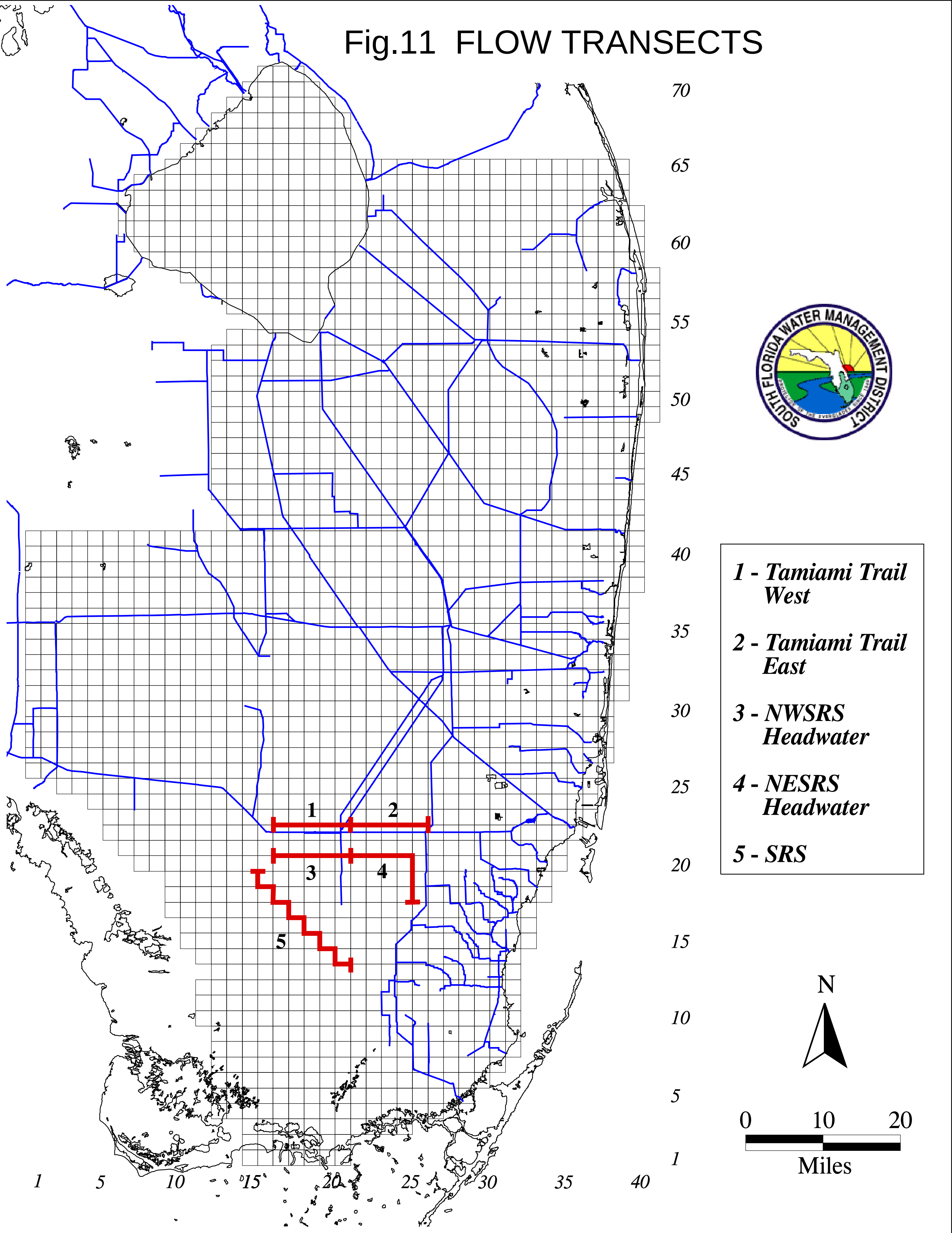
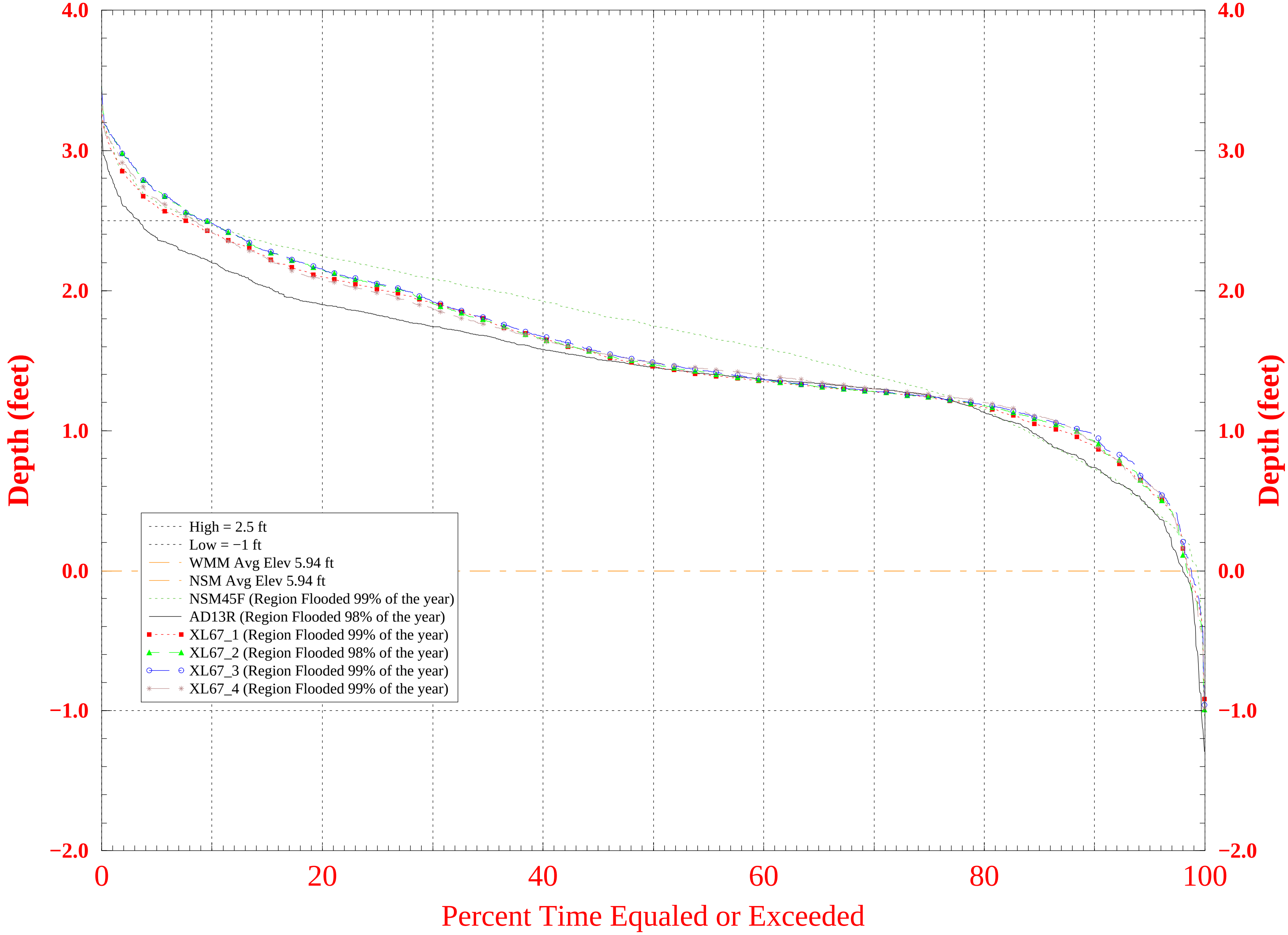


Fig. 12A Normalized Weekly Stage Duration Curves for NE Shark River Slough

Indicator Region 11 (R19C22−23 R20C22−26 R21C22−26)

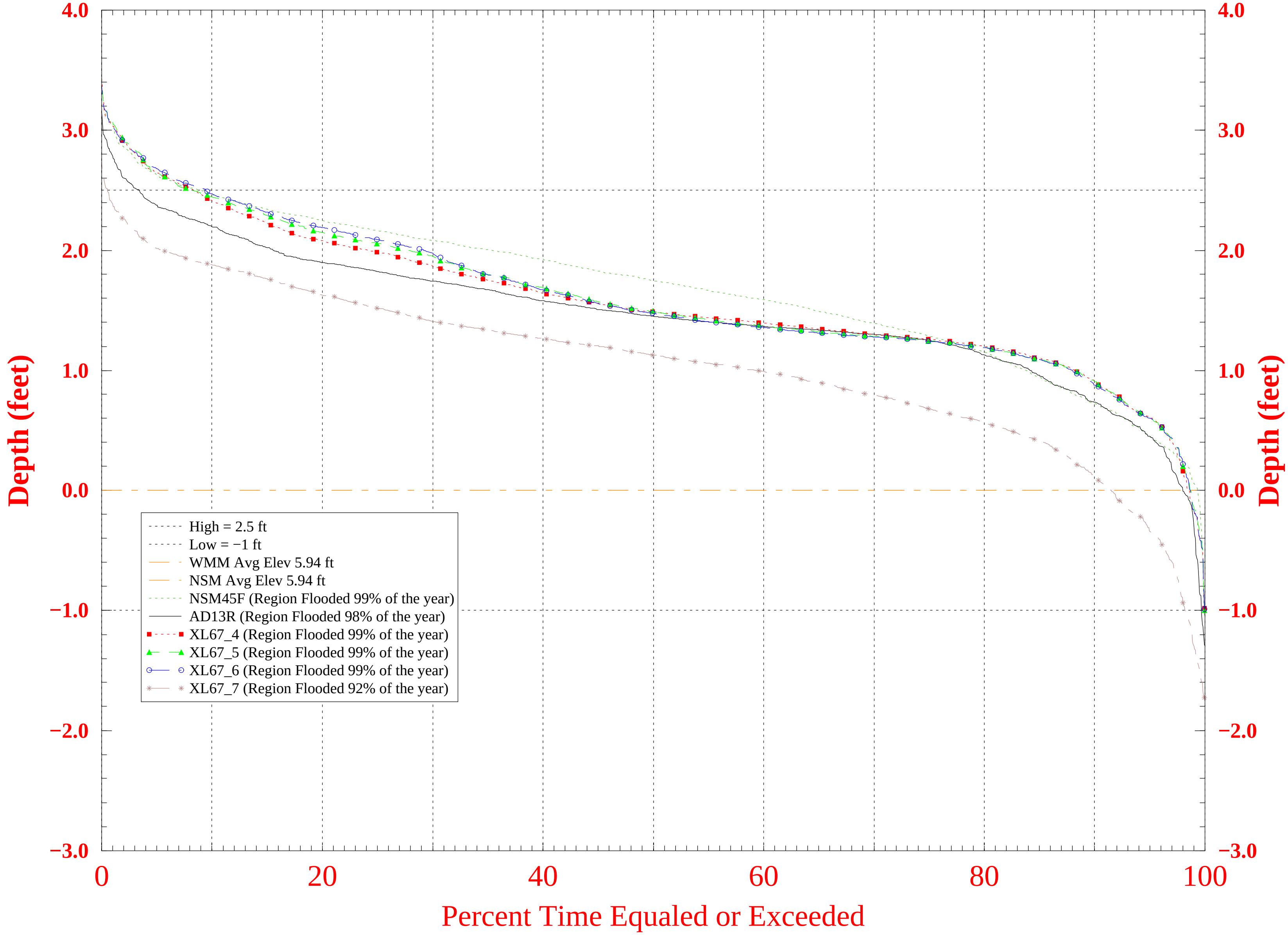


Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Sat Jul 3 09:56:05 EDT 1999
For Planning Purposes Only
SFWMM V3.4

Fig. 12B Normalized Weekly Stage Duration Curves for NE Shark River Slough

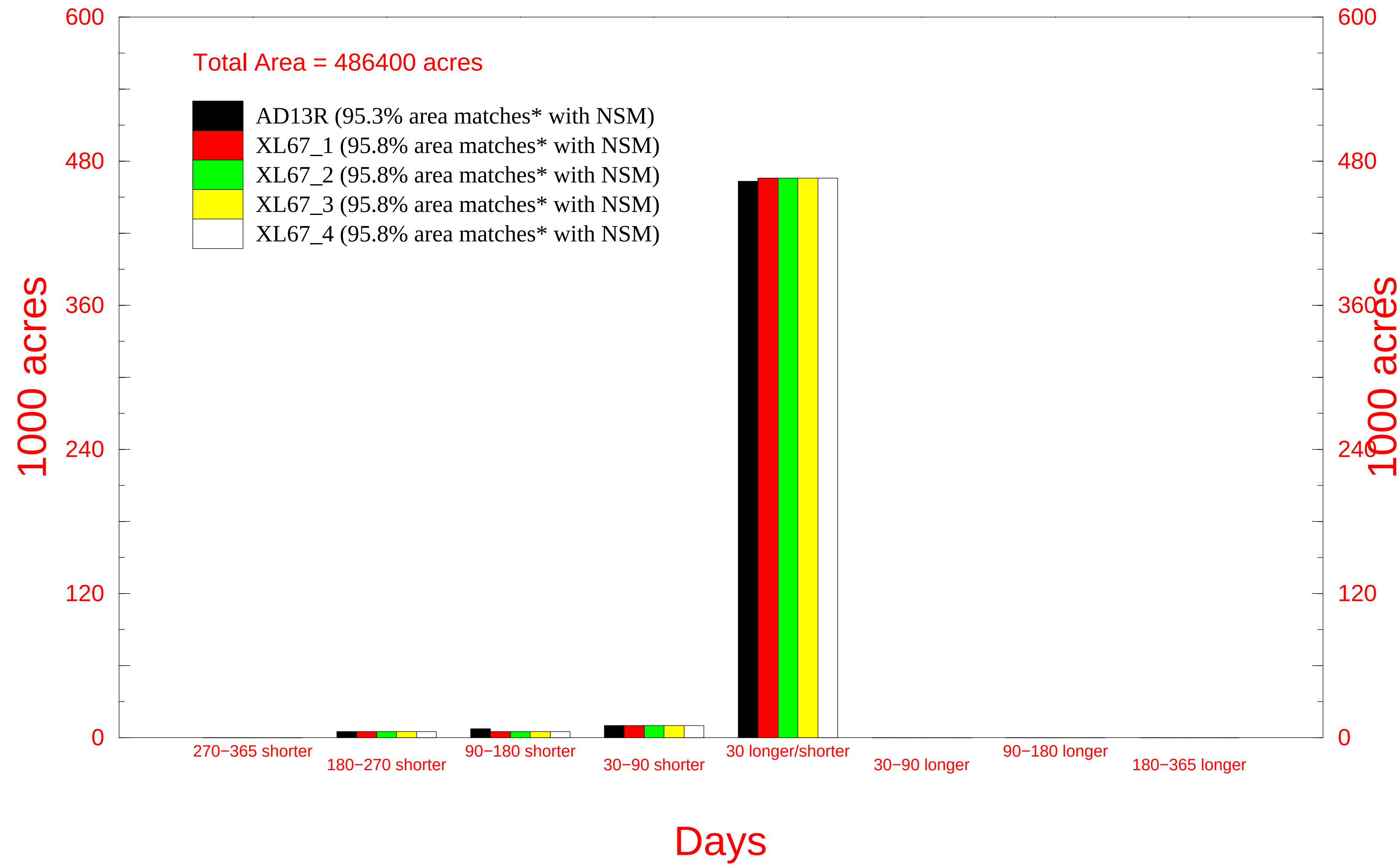
Indicator Region 11 (R19C22−23 R20C22−26 R21C22−26)



Note: Normalized stage is stage referenced to Land Elevation. Thus, values above zero indicate ponding while values below zero indicate depth to the water table.

Run date: Tue Jul 6 20:43:00 EDT 1999
For Planning Purposes Only
SFWMM V3.4

Fig. 13A Mean NSM hydroperiod matches for the Everglades National Park for the 31 yr. simulation



Note: xaxis represents hydroperiod days shorter or longer as compared to NSM
*Match corresponds to 30 hydroperiod days shorter or longer than NSM.

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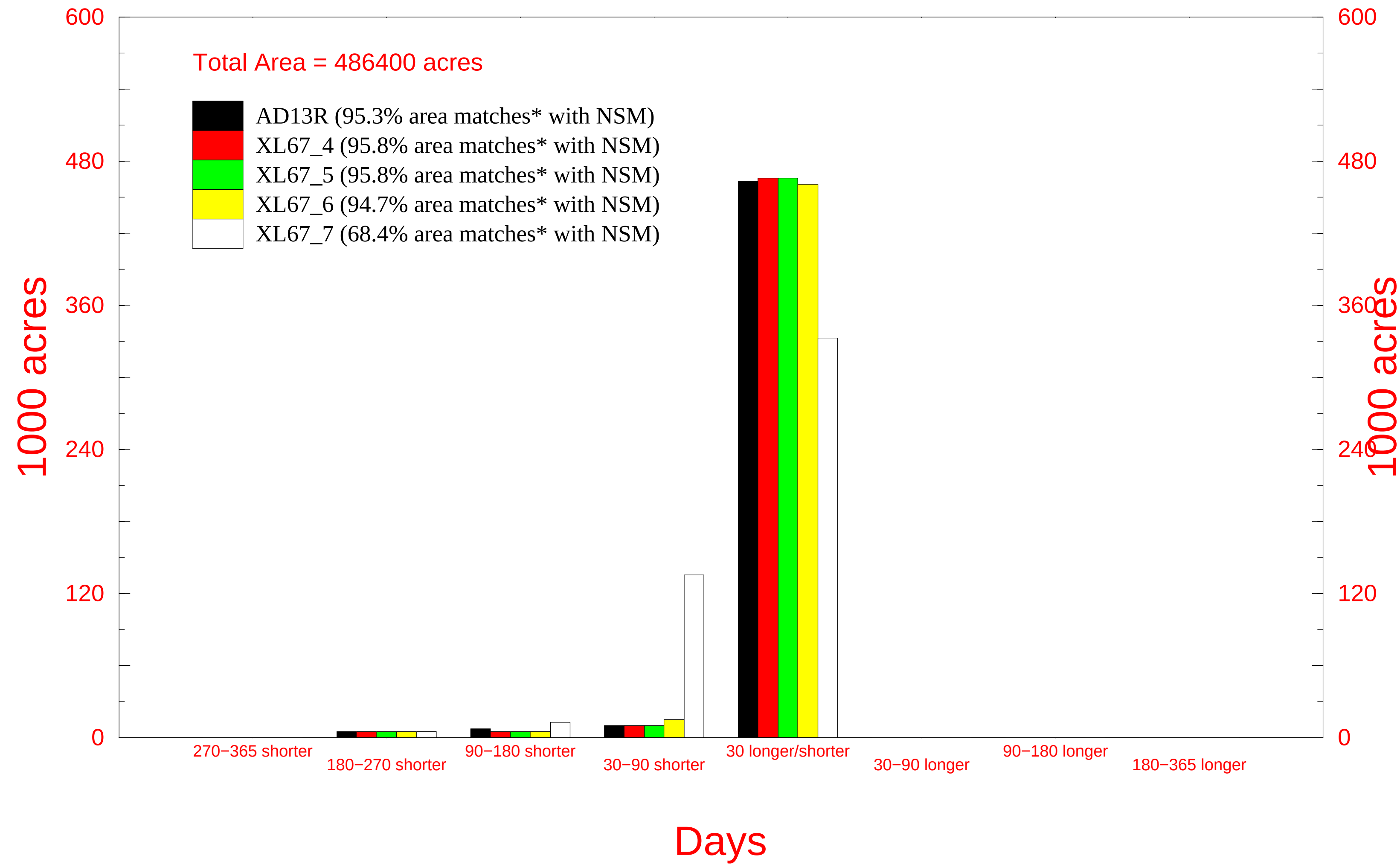
For Planning Purposes Only
SFWMM V3.5

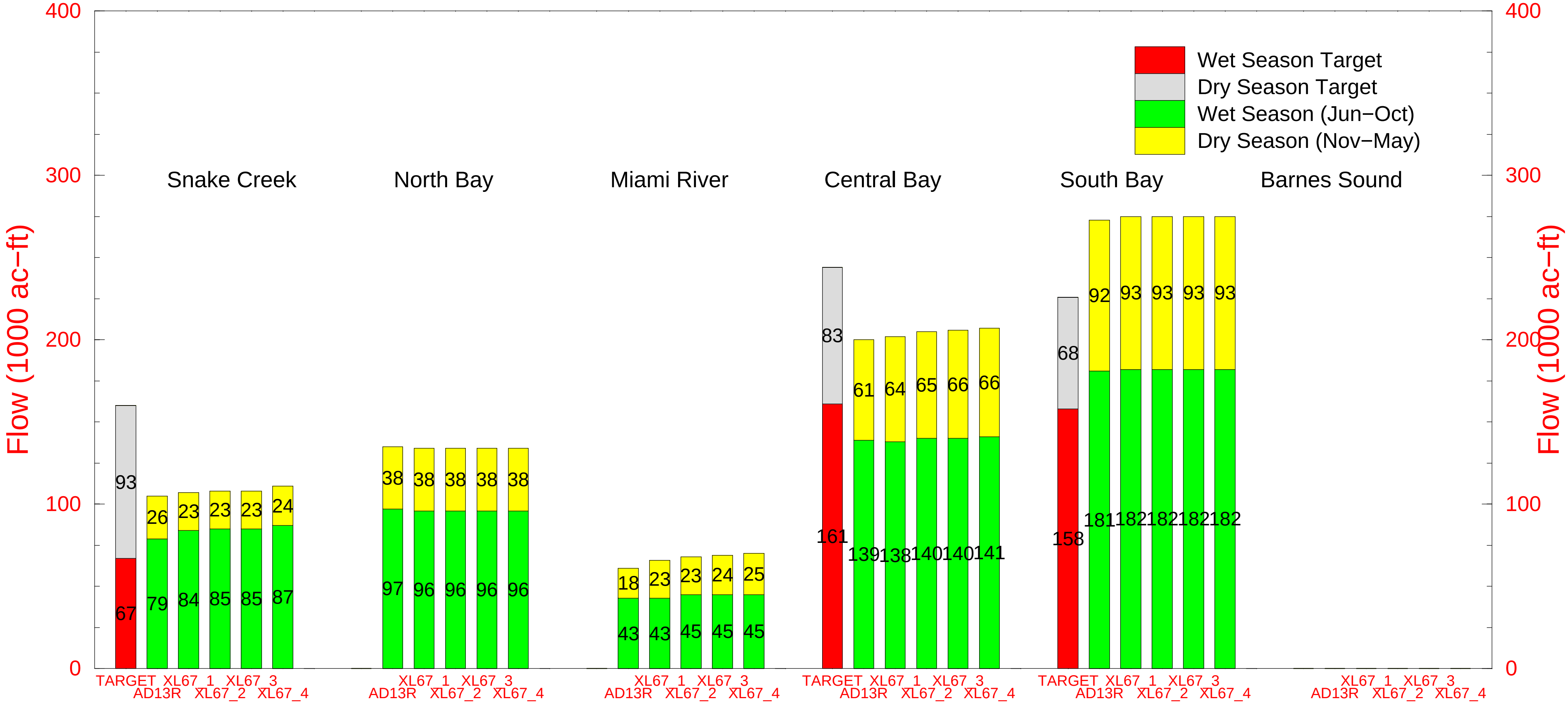
Fig. 13B Mean NSM hydroperiod matches for the Everglades National Park for the 31 yr. simulation



Note: xaxis represents hydroperiod days shorter or longer as compared to NSM
*Match corresponds to 30 hydroperiod days shorter or longer than NSM.

Run date: 07/06/99 15:27:42
For Planning Purposes Only
SFWMM V3.5

Fig. 14A Simulated Mean Annual Surface Flows Discharged into Biscayne Bay for the 1965 − 1995 simulation period

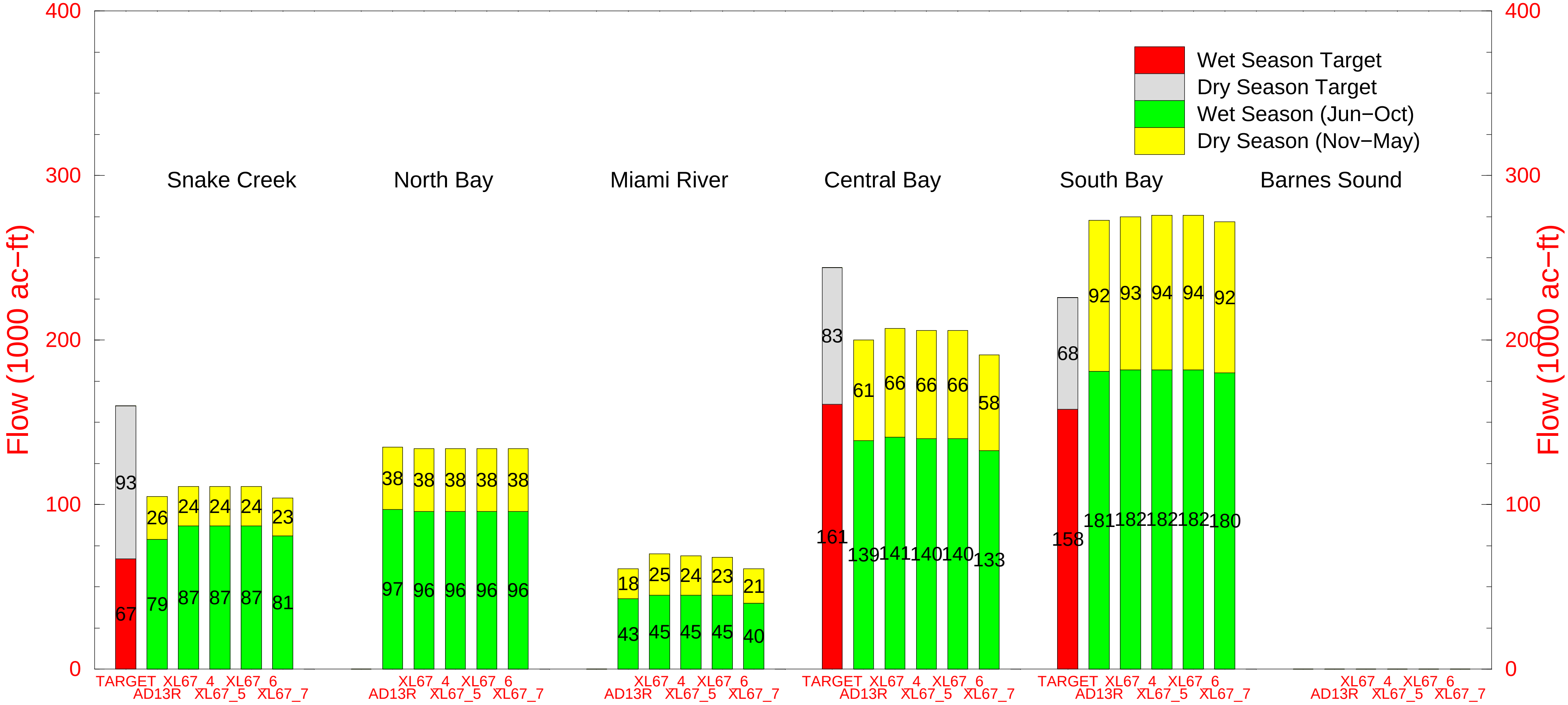


Note: Snake Creek=S29; North Bay=G58+S28+S27; Miami River=S26+S25B+S25; Central=G97+S22+S123; South=S21+S21A+S20F+S20G; Barnes Sound=S197

Targets for Central and South Bay reflect a 30% increase in mean annual dry season flows over the 95 Base
Targets for Snake Creek reflect a minimum monthly flow volume of 13,300 ac−ft (x 5 months for wet season and x 7 months for dry season) to maintain salinity levels below 20 ppt.

Run date: 07/03/99 01:32:16
For Planning Purposes Only
SFWMM V3.5

Fig. 14B Simulated Mean Annual Surface Flows Discharged into Biscayne Bay for the 1965 − 1995 simulation period



Note: Snake Creek=S29; North Bay=G58+S28+S27; Miami River=S26+S25B+S25; Central=G97+S22+S123; South=S21+S21A+S20F+S20G; Barnes Sound=S197

Targets for Central and South Bay reflect a 30% increase in mean annual dry season flows over the 95 Base
Targets for Snake Creek reflect a minimum monthly flow volume of 13,300 ac−ft (x 5 months for wet season and x 7 months for dry season) to maintain salinity levels below 20 ppt.

Run date: 07/06/99 14:32:13
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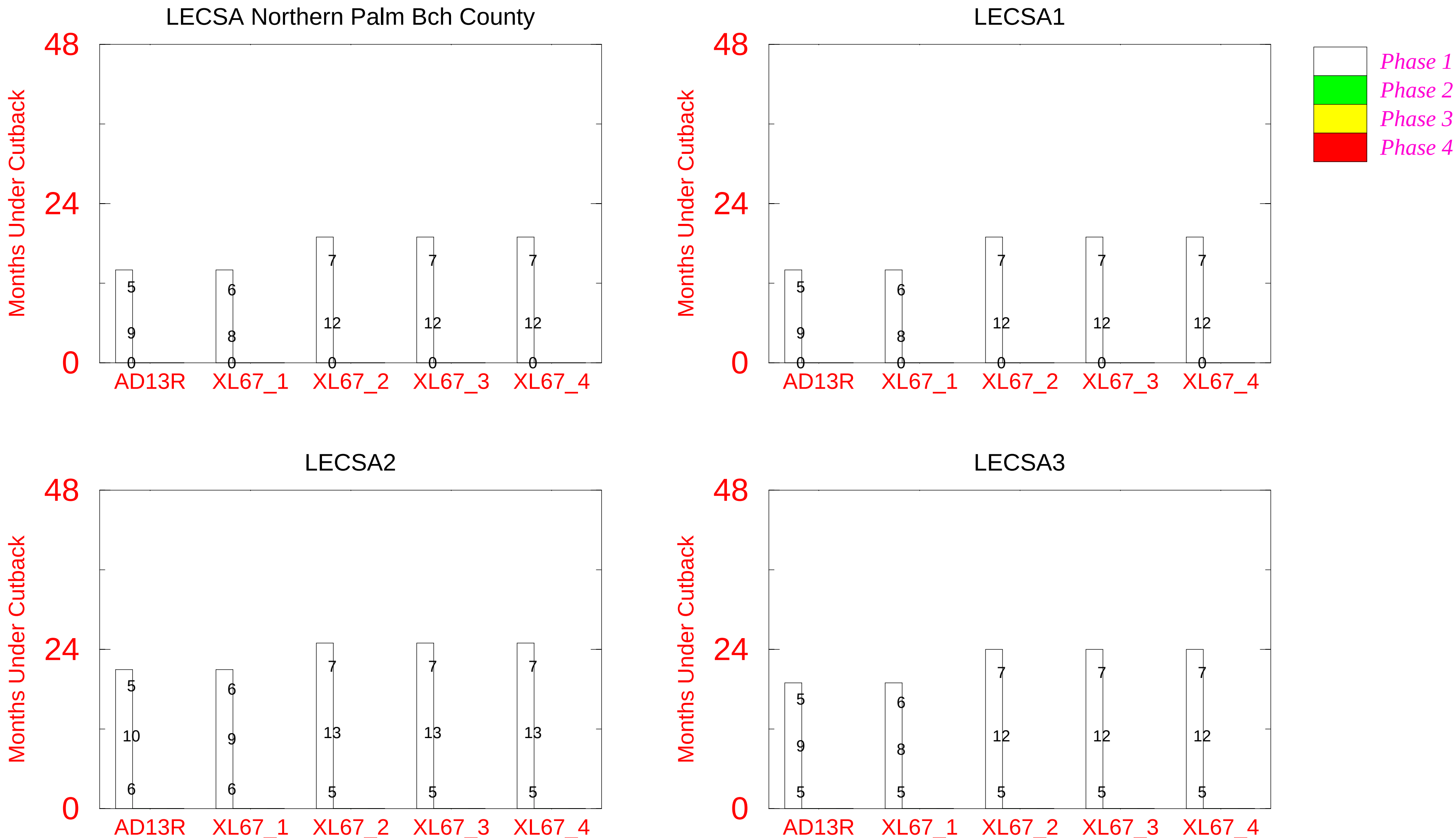
SFWMM V3.5

Fig. 15A

Number of Months of Simulated Water Supply Cutbacks

for the 1965 − 1995 Simulation Period



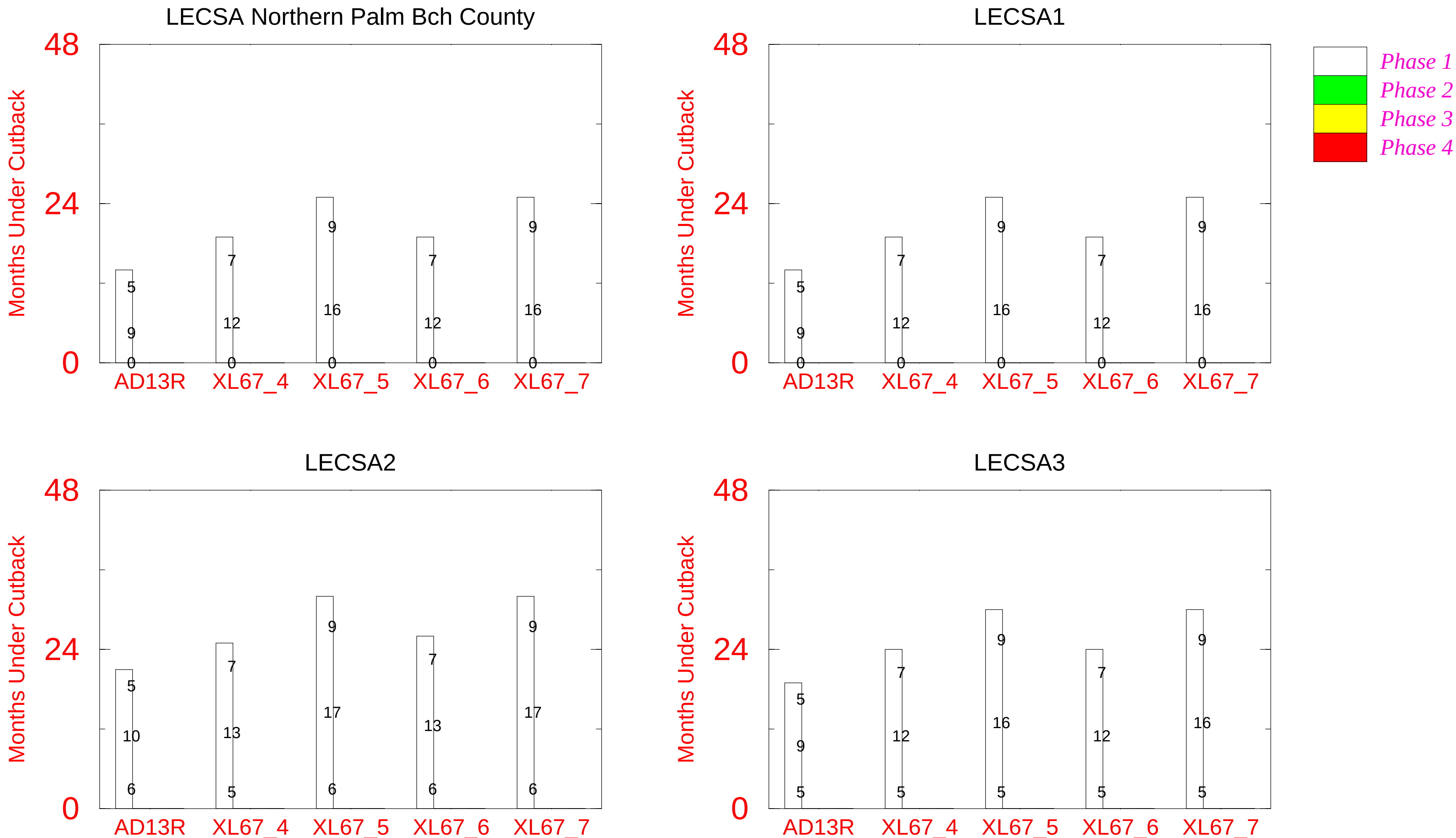
Note: Phase 1 water restrictions could be induced by a) Lake stage in Supply Side Management Zone (indicated by upper data label), b) Local Trigger well stages (lower data label), and c) Dry season criteria (indicated by middle data label).

Run date: 07/03/99 01:17:25
For Planning Purposes Only
SFWMM V3.5

Fig. 15B

Number of Months of Simulated Water Supply Cutbacks

for the 1965 − 1995 Simulation Period



Note: Phase 1 water restrictions could be induced by a) Lake stage in Supply Side Management Zone (indicated by upper data label), b) Local Trigger well stages (lower data label), and c) Dry season criteria (indicated by middle data label).

Run date: 07/06/99 14:19:28
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SFWMM V3.5

Appendices

Appendix A: XL67-1 to XL67-4

A1 Inundation duration Summary for indicator Regions
A2 High Water Summary for Indicator Regions
A3 Low Water Summary for Indicator Regions

Appendix B: XL67-4 to XL67-7

B1 Inundation duration Summary for indicator Regions
B2 High Water Summary for Indicator Regions
B3 Low Water Summary for Indicator Regions

Appendix A1 Inundation Duration Summary for Indicator Regions

Indicator Region Number	Name	NSM45F #Events	NSM45F Avg Flood Dur (Wks/Event)	NSM45F Avg Ann Hydper (Percent of Yr)	AD13R #Events	AD13R Avg Flood Dur (Wks/Event)	AD13R Avg Ann Hydper (Percent of Yr)	XL67_1 #Events	XL67_1 Avg Flood Dur (Wks/Event)	XL67_1 Avg Ann Hydper (Percent of Yr)	XL67_2 #Events	XL67_2 Avg Flood Dur (Wks/Event)	XL67_2 Avg Ann Hydper (Percent of Yr)	XL67_3 #Events	XL67_3 Avg Flood Dur (Wks/Event)	XL67_3 Avg Ann Hydper (Percent of Yr)	XL67_4 #Events	XL67_4 Avg Flood Dur (Wks/Event)	XL67_4 Avg Ann Hydper (Percent of Yr)
1	Taylor Slough	37	33	76	36	32	72	37	31	72	36	32	72	36	32	72	37	31	72
2	West Perrine Marl Marsh	68	9	39	67	9	39	67	10	40	67	10	40	67	10	40	68	9	40
3	Mid-Perrine Marl Marsh	43	23	60	50	17	54	47	19	54	48	18	55	47	19	55	47	19	54
4	C-111 Perrine Marl Marsh	47	21	62	44	28	76	43	29	76	43	29	76	43	29	76	43	29	76
5	Model Lands South	55	19	64	34	40	84	39	35	85	41	34	85	41	34	86	41	34	86
6	Model Lands North	43	27	72	109	7	45	106	7	46	107	7	46	108	7	46	107	7	46
7	Ochopee Marl Marsh	35	32	70	38	28	66	42	24	63	38	26	62	37	27	62	40	25	62
8	Rockland Marl Marsh	37	28	65	37	26	59	35	28	62	34	29	62	34	29	62	36	27	61
9	SW Shark River Slough	9	176	98	10	156	97	12	129	96	12	130	96	11	141	97	9	174	97
10	Mid Shark River Slough	5	321	100	4	398	99	6	265	99	6	265	99	6	266	99	4	399	99
11	NE Shark River Slough	4	402	100	7	226	98	4	398	99	4	398	99	5	320	99	4	399	99
12	New Shark River Slough	32	42	82	28	50	87	35	38	83	36	37	83	36	37	84	35	39	84
13	West Slough	38	28	66	34	32	67	40	25	61	42	23	61	43	23	61	45	22	61
14	South WCA-3A	17	88	92	11	139	95	14	108	94	15	101	94	15	101	94	13	117	94
15	West WCA-3B	20	74	92	4	398	99	8	199	99	9	176	98	9	176	98	6	266	99
16	East WCA-3B	15	102	95	6	263	98	6	263	98	7	226	98	7	226	98	5	317	98
17	South Central WCA-3A	24	59	87	14	110	95	16	95	95	16	95	94	15	101	94	16	95	94
18	North Central WCA-3A	24	59	89	12	130	97	11	142	97	11	142	97	12	130	97	12	130	97
19	East WCA-3A	25	55	86	13	115	93	19	77	90	18	81	90	26	54	87	12	125	93
20	NW WCA-3A	21	70	91	23	62	88	23	61	88	19	75	89	20	72	89	22	65	89
21	NE WCA-3A	28	49	85	30	45	84	32	41	82	33	41	84	34	39	83	30	45	83
22	NW Corner WCA-3A	20	73	91	18	85	95	23	65	93	22	69	94	27	56	94	23	65	93
23	WCA-2B	21	70	92	20	66	81	19	69	81	21	62	80	21	62	80	21	62	81
24	South WCA-2A	20	74	91	18	78	88	18	78	88	19	74	87	19	74	87	19	74	87
25	North WCA-2A	30	46	86	16	93	92	16	93	92	16	93	92	16	93	92	16	93	92
26	South LNWR (WCA-1)	25	57	89	7	228	99	7	228	99	7	228	99	7	228	99	7	228	99
27	North LNWR (WCA-1)	15	99	92	16	96	95	16	96	95	16	96	95	16	96	95	16	96	95
28	Rotenberger WMA	40	31	76	41	31	79	41	31	79	42	30	79	42	30	79	43	30	79
29	Holey Land WMA	28	50	88	28	50	88	29	49	87	30	47	87	29	49	87	31	45	87
30	Corbett WMA	61	13	50	56	3	10	55	3	10	56	3	10	56	3	10	56	3	10
31	Mullet Slough	64	14	56	59	14	50	58	14	50	57	14	50	57	14	50	58	14	50
32	Upland Pine	56	15	51	57	15	52	57	15	52	57	15	52	57	15	52	57	15	52
33	Upper Mullet Slough	64	8	33	65	8	33	65	8	33	65	8	33	65	8	33	65	8	33
34	Cypress Marsh	36	35	78	42	12	31	42	12	31	42	12	31	42	12	31	42	12	31
35	Wet Prairie	31	43	82	42	19	50	42	19	50	42	19	50	42	19	50	42	19	50
36	Wetter Prairie NE	59	18	65	64	15	59	65	15	59	67	14	59	67	14	59	65	15	59
37	Wetter Prairie SW	58	17	63	67	14	58	69	14	58	67	14	57	67	14	57	67	14	58
38	Drier Cypress NW	67	10	40	68	9	39	68	9	39	68	9	39	68	9	39	68	9	39
39	Drier Cypress NE	62	14	55	66	12	50	66	12	49	66	12	49	66	12	49	65	12	50
40	Cypress	48	23	67	48	22	65	49	21	65	49	21	65	49	21	65	50	21	65
41	NW Big Cypress	54	16	53	59	12	46	59	12	46	59	12	46	59	12	46	59	12	46
42	NE Big Cypress	44	22	61	55	16	53	55	16	53	55	16	53	55	16	53	55	16	53
43	NE Corner Big Cypress	39	31	75	45	14	38	45	14	38	44	14	38	44	14	38	44	14	38
44	SW Big Cypress	62	14	54	60	14	54	60	14	54	60	14	54	60	14	54	60	14	54
45	Racoon Point	61	11	42	64	10	40	64	10	40	64	10	40	64	10	40	64	10	40
47	North C-111	48	20	60	55	10	35	53	11	35	56	10	35	55	10	35	53	11	35
48	North Bisc. Bay Groundwater 1	14	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	North Bisc. Bay Groundwater 2	49	15	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	Central Bisc. Bay Groundwater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	South Bisc. Bay Groundwater	34	5	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	Pennsuco Wetlands North	21	70	91	13	119	96	11	141	96	13	119	96	15	102	95	14	111	96
53	Pennsuco Wetlands South	9	176	98	18	82	91	18	82	92	19	78	92	17	87	92	18	83	92
46	Cape Sable Sparrow A	37	30	68	35	30	66	41	24	62	42	24	62	42	24	62	42	24	62
54	Cape Sable Sparrow B	69	9	40	66	10	40	66	10	41	66	10	41	67	10	41	65	10	41

55	Cape Sable Sparrow C	40	22	54	35	21	46	38	21	49	34	23	49	36	22	50	37	21	49
56	Cape Sable Sparrow D	45	22	61	53	16	54	51	17	55	53	17	55	53	17	55	54	16	55
57	Cape Sable Sparrow E	47	17	50	39	19	47	40	20	50	39	21	51	39	21	51	40	20	49
58	Cape Sable Sparrow F	36	30	67	40	23	57	40	24	61	39	25	60	40	24	61	38	25	60
61	WCA−2B1	20	72	89	46	22	62	48	21	62	61	14	52	56	15	52	56	15	52
62	WCA−2B2	24	61	91	50	19	59	49	19	59	76	10	48	78	10	48	76	10	48
63	WCA−2B3	20	74	92	19	75	89	21	68	88	19	74	88	19	74	88	20	71	88
64	WCA−2B4	25	56	87	5	319	99	8	198	98	9	176	98	9	175	98	6	264	98
65	WCA−2B5	14	110	95	14	106	92	14	106	92	17	86	91	17	86	91	17	86	91
66	N WCA−3B	27	49	82	10	156	97	9	173	96	9	173	96	9	173	96	8	196	97
67	NE WCA−3B	22	62	85	20	68	85	19	75	88	21	68	88	19	76	89	19	76	89
68	S of NE WCA−3A	28	50	86	28	50	87	29	48	86	29	48	86	30	46	85	22	64	88

Notes: #events = number of continuous ponding events over the period of record
Avg Flood Duration = [sum(days of ponding)/7]/#events
Avg Annual Hydroperiod = 100 x [sum(weeks of ponding per year)]/[52 x #years]

High Water Summary for Indicator Regions

#Events|Avg Duration (Wks/Event)|Avg Ann Duration(Percent of Yr)

Indicator Region Number	Name	Depth(ft) Criterion	NSM45F			AD13R			XL67_1			XL67_2			XL67_3			XL67_4		
1	Taylor Slough	> 1.5	10	2	1	5	2	1	7	2	1	6	2	1	6	2	1	6	2	1
2	West Perrine Marl Marsh	> 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Mid−Perrine Marl Marsh	> 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	C−111 Perrine Marl Marsh	> 2.0	0	0	0	10	3	2	11	3	2	11	3	2	11	3	2	10	3	2
5	Model Lands South	> 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Model Lands North	> 1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Ochopee Marl Marsh	> 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Rockland Marl Marsh	> 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	SW Shark River Slough	> 2.5	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	1	1	0
10	Mid Shark River Slough	> 2.5	5	11	4	5	6	2	5	10	3	9	7	4	9	7	4	7	7	3
11	NE Shark River Slough	> 2.5	15	10	9	10	6	4	16	8	8	17	9	10	17	9	9	16	9	9
12	New Shark River Slough	Undefined																		
13	West Slough	Undefined																		
14	South WCA−3A	> 2.5	0	0	0	2	9	1	2	4	0	1	3	0	1	2	0	1	3	0
15	West WCA−3B	> 2.5	6	6	2	5	10	3	16	12	12	17	12	12	16	12	12	15	10	9
16	East WCA−3B	> 2.5	7	9	4	13	7	5	20	14	17	23	12	17	23	12	18	17	13	14
17	South Central WCA−3A	> 2.5	0	0	0	2	9	1	2	3	0	0	0	0	0	0	0	0	0	0
18	North Central WCA−3A	> 2.5	0	0	0	3	7	1	3	4	1	1	1	0	0	0	0	5	3	1
19	East WCA−3A	> 2.5	0	0	0	25	12	19	16	10	10	10	10	6	9	10	6	21	28	36
20	NW WCA−3A	> 2.5	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0
21	NE WCA−3A	> 2.0	2	2	0	6	7	3	6	4	2	1	1	0	1	1	0	5	6	2
22	NW Corner WCA−3A	> 2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	WCA−2B	> 2.5	4	5	1	25	7	10	25	7	11	15	9	8	16	8	8	15	8	8
24	South WCA−2A	> 2.5	0	0	0	4	5	1	4	4	1	5	8	3	5	9	3	5	9	3
25	North WCA−2A	> 2.5	0	0	0	3	1	0	2	1	0	3	5	1	3	5	1	3	5	1
26	South LNWR (WCA−1)	> 2.5	0	0	0	29	14	25	29	14	25	29	14	25	29	14	25	29	14	25
27	North LNWR (WCA−1)	> 2.5	0	0	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0
28	Rotenberger WMA	> 1.5	17	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	Holey Land WMA	> 1.5	22	8	12	30	4	7	29	3	6	28	4	6	28	4	6	26	4	6
30	Corbett WMA	Undefined																		
31	Mullet Slough	Undefined																		
32	Upland Pine	Undefined																		
33	Upper Mullet Slough	Undefined																		
34	Cypress Marsh	Undefined																		
35	Wet Prairie	Undefined																		
36	Wetter Prairie NE	Undefined																		
37	Wetter Prairie SW	Undefined																		
38	Drier Cypress NW	Undefined																		
39	Drier Cypress NE	Undefined																		
40	Cypress	Undefined																		
41	NW Big Cypress	Undefined																		
42	NE Big Cypress	Undefined																		
43	NE Corner Big Cypress	Undefined																		
44	SW Big Cypress	Undefined																		
45	Racoon Point	Undefined																		
47	North C−111	> 1.8	0	0	0	5	2	0	6	2	1	6	2	1	6	2	1	7	2	1
48	North Bisc. Bay Groundwater 1	Undefined																		
49	North Bisc. Bay Groundwater 2	Undefined																		
50	Central Bisc. Bay Groundwater	Undefined																		
51	South Bisc. Bay Groundwater	Undefined																		
52	Pennsuco Wetlands North	> 2.0	16	8	8	6	4	1	18	4	5	13	4	3	12	4	3	13	4	3
53	Pennsuco Wetlands South	> 2.0	40	13	33	6	3	1	12	5	4	5	7	2	5	7	2	7	5	2
46	Cape Sable Sparrow A	Undefined																		
54	Cape Sable Sparrow B	Undefined																		

55	Cape Sable Sparrow C	Undefined																		
56	Cape Sable Sparrow D	Undefined																		
57	Cape Sable Sparrow E	Undefined																		
58	Cape Sable Sparrow F	Undefined																		
61	WCA−2B1	> 2.5	0	0	0	0	0	0	0	0	0	6	9	3	6	9	3	6	9	3
62	WCA−2B2	> 2.5	3	4	1	7	6	3	7	6	3	10	9	5	10	9	5	10	9	5
63	WCA−2B3	> 2.5	5	7	2	33	16	33	33	16	33	41	12	31	42	12	31	44	11	31
64	WCA−2B4	> 2.5	0	0	0	49	16	48	49	16	47	58	14	49	58	14	49	58	14	49
65	WCA−2B5	> 2.5	13	6	5	32	32	63	30	34	62	50	19	58	47	20	58	49	19	58
66	N WCA−3B	> 2.5	1	1	0	5	10	3	31	12	23	26	13	20	25	14	22	18	11	13
67	NE WCA−3B	> 2.5	0	0	0	5	11	3	32	15	31	31	14	27	28	16	28	20	43	53
68	S of NE WCA−3A	> 2.5	0	0	0	12	11	8	9	9	5	5	6	2	4	6	1	18	15	16

Notes: #events = number of events with depths continuously greater than the criterion over the period of record
Avg Duration of High Water Events = [sum(days over criterion)/7]/#events
Avg Annual Duration of High Water(Percent) = 100 x [sum(weeks over criterion)]/[52 x #years]

Appendix A3 Low Water Summary for Indicator Regions

#Events|Avg Duration (Wks/Event)|Avg Ann Duration(Percent of Yr)

Indicator Region Number	Name	Depth(ft) Criterion	NSM45F			AD13R			XL67_1			XL67_2			XL67_3			XL67_4		
1	Taylor Slough	< −1.5	20	4	5	28	4	7	26	4	7	26	4	7	26	4	7	26	4	7
2	West Perrine Marl Marsh	< −1.5	36	7	16	34	8	16	36	7	16	35	7	16	35	7	16	36	7	16
3	Mid−Perrine Marl Marsh	< −1.5	28	8	13	35	4	9	32	4	8	32	4	8	32	4	8	32	4	8
4	C−111 Perrine Marl Marsh	< 0.5	54	24	80	53	17	55	50	17	54	49	18	54	50	17	54	49	18	54
5	Model Lands South	< 0.5	56	23	81	80	14	68	78	14	67	77	14	67	77	14	67	77	14	67
6	Model Lands North	< 0.2	54	14	46	51	29	93	51	29	93	51	29	93	51	29	93	51	29	93
7	Ochopee Marl Marsh	< −1.5	17	8	9	22	7	10	22	8	11	22	8	11	21	8	11	21	8	11
8	Rockland Marl Marsh	< −1.5	21	10	13	22	10	14	22	10	13	24	9	13	22	9	13	21	10	13
9	SW Shark River Slough	< −1.0	1	5	0	3	2	0	5	2	1	5	2	1	5	2	1	4	2	1
10	Mid Shark River Slough	< −1.0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0
11	NE Shark River Slough	< −1.0	1	1	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
12	New Shark River Slough	< −1.0	17	7	8	13	5	4	19	5	6	20	5	6	19	5	6	18	5	5
13	West Slough	< −1.5	22	7	10	20	8	10	23	8	11	23	8	11	23	8	11	23	8	11
14	South WCA−3A	< −1.0	8	4	2	4	4	1	4	5	1	4	5	1	4	5	1	4	4	1
15	West WCA−3B	< −1.0	3	2	0	2	3	0	1	1	0	2	1	0	2	1	0	2	1	0
16	East WCA−3B	< −1.0	1	1	0	3	3	1	3	1	0	3	1	0	3	1	0	3	1	0
17	South Central WCA−3A	< −1.0	8	7	3	5	2	1	4	4	1	4	4	1	4	5	1	4	4	1
18	North Central WCA−3A	< −1.0	9	5	3	1	6	0	1	6	0	2	4	0	3	3	1	1	6	0
19	East WCA−3A	< −1.0	10	6	4	8	3	1	11	5	3	11	5	3	16	5	5	8	4	2
20	NW WCA−3A	< −1.0	6	6	2	9	5	3	9	6	3	8	5	2	10	4	3	7	6	2
21	NE WCA−3A	< −1.0	15	7	7	15	4	4	18	6	7	18	5	6	19	5	6	20	4	5
22	NW Corner WCA−3A	< −1.0	7	5	2	6	4	1	6	3	1	5	4	1	6	3	1	4	5	1
23	WCA−2B	< −1.0	5	5	1	14	7	6	15	7	6	13	8	6	12	8	6	13	7	6
24	South WCA−2A	< −1.0	6	8	3	12	7	5	11	8	5	11	8	6	11	8	6	11	8	5
25	North WCA−2A	< −1.0	8	8	4	4	9	2	4	9	2	4	9	2	4	9	2	4	9	2
26	South LNWR (WCA−1)	< −1.0	10	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	North LNWR (WCA−1)	< −1.0	8	4	2	1	3	0	1	3	0	1	3	0	1	3	0	1	3	0
28	Rotenberger WMA	< −1.0	18	8	9	18	3	4	18	3	4	18	4	4	18	3	4	18	3	4
29	Holey Land WMA	< −1.0	14	6	5	11	4	3	12	4	3	12	4	3	12	4	3	11	4	3
30	Corbett WMA	Undefined																		
31	Mullet Slough	Undefined																		
32	Upland Pine	< −7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Upper Mullet Slough	Undefined																		
34	Cypress Marsh	< −6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Wet Prairie	< −6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Wetter Prairie NE	< −6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Wetter Prairie SW	< −6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Drier Cypress NW	< −5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Drier Cypress NE	< −5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	Cypress	< −4.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	NW Big Cypress	< −3.0	13	5	4	13	5	4	13	5	4	13	5	4	13	5	4	13	5	4
42	NE Big Cypress	< −3.0	6	5	2	9	5	3	9	5	3	9	5	3	9	5	3	9	5	3
43	NE Corner Big Cypress	< −3.0	0	0	0	22	6	9	23	6	9	23	6	8	23	6	8	23	6	8
44	SW Big Cypress	< −3.0	9	6	3	10	7	4	10	7	4	10	7	4	10	7	4	10	7	4
45	Racoon Point	Undefined																		
47	North C−111	< 0.0	47	14	41	55	19	67	52	20	66	54	20	66	53	20	66	53	20	66
48	North Bisc. Bay Groundwater 1	< −5.1	18	4	5	1	1612	100	1	1612	100	1	1612	100	1	1612	100	1	1612	100
49	North Bisc. Bay Groundwater 2	< −5.0	0	0	0	11	146	100	11	146	100	11	146	100	11	146	100	11	146	100
50	Central Bisc. Bay Groundwater	< −7.5	3	3	1	130	7	59	128	7	59	129	7	59	129	7	59	129	7	59
51	South Bisc. Bay Groundwater	< −3.0	30	9	17	92	11	65	92	11	64	92	11	64	91	11	64	92	11	64
52	Pennsuco Wetlands North	< −1.0	3	2	0	4	4	1	3	2	0	4	2	0	3	2	0	3	2	0
53	Pennsuco Wetlands South	< −1.0	1	1	0	4	7	2	4	4	1	4	4	1	4	4	1	4	4	1
46	Cape Sable Sparrow A	Undefined																		
54	Cape Sable Sparrow B	Undefined																		

55	Cape Sable Sparrow C	Undefined																		
56	Cape Sable Sparrow D	Undefined																		
57	Cape Sable Sparrow E	Undefined																		
58	Cape Sable Sparrow F	Undefined																		
61	WCA−2B1	< −1.0	10	5	3	26	10	17	25	11	17	32	10	19	33	9	19	32	10	19
62	WCA−2B2	< −1.0	6	4	2	26	8	13	24	9	13	25	9	14	25	9	14	24	9	13
63	WCA−2B3	< −1.0	4	6	1	7	7	3	7	7	3	7	8	3	7	8	3	8	6	3
64	WCA−2B4	< −1.0	16	4	4	2	3	0	2	5	1	4	4	1	4	4	1	3	4	1
65	WCA−2B5	< −1.0	4	6	2	13	5	4	14	5	4	19	5	6	18	5	5	20	4	5
66	N WCA−3B	< −1.0	21	5	6	3	5	1	4	2	1	4	3	1	4	3	1	3	2	0
67	NE WCA−3B	< −1.0	15	5	5	16	5	5	13	5	4	13	5	4	11	5	4	12	4	3
68	S of NE WCA−3A	< −1.0	13	5	4	13	4	3	14	6	5	12	6	4	13	5	4	11	5	4

Notes: #events = number of events with depths continuously less than the criterion over the period of record
Avg Duration of Low Water Events = [sum(days below criterion)/7]/#events
Avg Annual Duration of Low Water(Percent) = 100 x [sum(weeks below criterion)]/[52 x #years]

Inundation Duration Summary for Indicator Regions

#Events|Avg Flood Dur(Wks/Event)|Avg Ann Hydper(Percent of Yr)

Indicator Region Number	Name	NSM45F			AD13R			XL67_4			XL67_5			XL67_6			XL67_7		
		#Events	Avg Flood Dur	Avg Ann Hydper	#Events	Avg Flood Dur	Avg Ann Hydper	#Events	Avg Flood Dur	Avg Ann Hydper	#Events	Avg Flood Dur	Avg Ann Hydper	#Events	Avg Flood Dur	Avg Ann Hydper	#Events	Avg Flood Dur	Avg Ann Hydper
1	Taylor Slough	37	33	76	36	32	72	37	31	72	36	32	72	36	32	73	37	31	71
2	West Perrine Marl Marsh	68	9	39	67	9	39	68	9	40	68	9	40	66	10	40	70	9	38
3	Mid-Perrine Marl Marsh	43	23	60	50	17	54	47	19	54	47	19	55	49	18	55	53	16	51
4	C-111 Perrine Marl Marsh	47	21	62	44	28	76	43	29	76	44	28	76	43	29	76	44	28	75
5	Model Lands South	55	19	64	34	40	84	41	34	86	40	35	86	41	34	86	41	34	86
6	Model Lands North	43	27	72	109	7	45	107	7	46	108	7	46	107	7	46	109	7	46
7	Ochopee Marl Marsh	35	32	70	38	28	66	40	25	62	41	24	62	43	23	61	51	17	54
8	Rockland Marl Marsh	37	28	65	37	26	59	36	27	61	36	28	62	36	28	62	40	20	50
9	SW Shark River Slough	9	176	98	10	156	97	9	174	97	11	142	97	11	142	97	16	92	91
10	Mid Shark River Slough	5	321	100	4	398	99	4	399	99	6	266	99	6	265	99	15	101	94
11	NE Shark River Slough	4	402	100	7	226	98	4	399	99	3	532	99	3	532	99	18	82	92
12	New Shark River Slough	32	42	82	28	50	87	35	39	84	36	37	83	37	36	83	35	37	81
13	West Slough	38	28	66	34	32	67	45	22	61	42	23	61	45	21	60	43	22	59
14	South WCA-3A	17	88	92	11	139	95	13	117	94	15	101	94	16	94	94	15	101	94
15	West WCA-3B	20	74	92	4	398	99	6	266	99	6	266	99	8	199	99	15	102	95
16	East WCA-3B	15	102	95	6	263	98	5	317	98	5	318	99	5	317	98	15	101	94
17	South Central WCA-3A	24	59	87	14	110	95	16	95	94	15	102	95	16	96	95	15	102	95
18	North Central WCA-3A	24	59	89	12	130	97	12	130	97	12	130	97	11	143	97	12	129	96
19	East WCA-3A	25	55	86	13	115	93	12	125	93	12	125	93	12	125	93	12	125	93
20	NW WCA-3A	21	70	91	23	62	88	22	65	89	21	69	89	20	72	90	20	72	89
21	NE WCA-3A	28	49	85	30	45	84	30	45	83	26	54	87	25	56	87	27	51	86
22	NW Corner WCA-3A	20	73	91	18	85	95	23	65	93	20	76	94	23	66	94	23	65	93
23	WCA-2B	21	70	92	20	66	81	21	62	81	21	63	82	20	66	82	21	63	82
24	South WCA-2A	20	74	91	18	78	88	19	74	87	21	67	87	21	67	87	20	70	87
25	North WCA-2A	30	46	86	16	93	92	16	93	92	15	100	93	15	100	93	15	100	93
26	South LNWR (WCA-1)	25	57	89	7	228	99	7	228	99	7	228	99	7	228	99	7	228	99
27	North LNWR (WCA-1)	15	99	92	16	96	95	16	96	95	16	96	95	16	96	95	15	102	95
28	Rotenberger WMA	40	31	76	41	31	79	43	30	79	43	30	79	43	30	79	42	30	79
29	Holey Land WMA	28	50	88	28	50	88	31	45	87	31	45	87	30	47	87	29	49	88
30	Corbett WMA	61	13	50	56	3	10	56	3	10	56	3	10	55	3	10	56	3	10
31	Mullet Slough	64	14	56	59	14	50	58	14	50	59	14	50	60	13	50	58	14	50
32	Upland Pine	56	15	51	57	15	52	57	15	52	57	15	52	57	15	52	57	15	52
33	Upper Mullet Slough	64	8	33	65	8	33	65	8	33	65	8	33	65	8	33	65	8	33
34	Cypress Marsh	36	35	78	42	12	31	42	12	31	42	12	31	42	12	31	42	12	31
35	Wet Prairie	31	43	82	42	19	50	42	19	50	42	19	50	42	19	50	42	19	50
36	Wetter Prairie NE	59	18	65	64	15	59	65	15	59	66	14	59	64	14	58	66	14	58
37	Wetter Prairie SW	58	17	63	67	14	58	67	14	58	70	13	57	67	14	56	66	14	56
38	Drier Cypress NW	67	10	40	68	9	39	68	9	39	68	9	39	67	9	39	68	9	38
39	Drier Cypress NE	62	14	55	66	12	50	65	12	50	66	12	49	67	12	50	66	12	49
40	Cypress	48	23	67	48	22	65	50	21	65	49	21	65	50	21	64	49	21	64
41	NW Big Cypress	54	16	53	59	12	46	59	12	46	59	12	46	59	12	46	59	12	46
42	NE Big Cypress	44	22	61	55	16	53	55	16	53	55	16	53	55	16	53	55	16	53
43	NE Corner Big Cypress	39	31	75	45	14	38	44	14	38	44	14	38	44	14	38	44	14	38
44	SW Big Cypress	62	14	54	60	14	54	60	14	54	60	14	54	60	14	54	60	14	54
45	Racoon Point	61	11	42	64	10	40	64	10	40	64	10	40	64	10	40	65	10	40
47	North C-111	48	20	60	55	10	35	53	11	35	54	11	35	53	11	35	54	10	34
48	North Bisc. Bay Groundwater 1	14	7	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	North Bisc. Bay Groundwater 2	49	15	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	Central Bisc. Bay Groundwater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51	South Bisc. Bay Groundwater	34	5	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
52	Pennsuco Wetlands North	21	70	91	13	119	96	14	111	96	15	103	96	16	97	96	24	61	91
53	Pennsuco Wetlands South	9	176	98	18	82	91	18	83	92	18	82	92	20	74	92	26	53	86
46	Cape Sable Sparrow A	37	30	68	35	30	66	42	24	62	42	24	62	46	21	61	49	19	56
54	Cape Sable Sparrow B	69	9	40	66	10	40	65	10	41	66	10	41	67	10	41	68	9	39

55	Cape Sable Sparrow C	40	22	54	35	21	46	37	21	49	35	23	50	35	23	50	38	17	41
56	Cape Sable Sparrow D	45	22	61	53	16	54	54	16	55	52	17	55	52	17	55	54	15	52
57	Cape Sable Sparrow E	47	17	50	39	19	47	40	20	49	39	21	51	39	21	51	46	14	41
58	Cape Sable Sparrow F	36	30	67	40	23	57	38	25	60	40	25	61	39	25	61	39	21	50
61	WCA−2B1	20	72	89	46	22	62	56	15	52	60	14	53	56	16	56	60	14	53
62	WCA−2B2	24	61	91	50	19	59	76	10	48	77	10	48	85	9	46	75	10	47
63	WCA−2B3	20	74	92	19	75	89	20	71	88	17	84	89	17	84	89	17	84	89
64	WCA−2B4	25	56	87	5	319	99	6	264	98	7	226	98	7	226	98	7	226	98
65	WCA−2B5	14	110	95	14	106	92	17	86	91	17	87	91	19	78	91	18	82	91
66	N WCA−3B	27	49	82	10	156	97	8	196	97	10	157	98	9	175	98	12	128	95
67	NE WCA−3B	22	62	85	20	68	85	19	76	89	20	71	89	22	65	88	21	67	87
68	S of NE WCA−3A	28	50	86	28	50	87	22	64	88	26	55	88	23	62	88	26	55	88

Notes: #events = number of continuous ponding events over the period of record
Avg Flood Duration = [sum(days of ponding)/7]/#events
Avg Annual Hydroperiod = 100 x [sum(weeks of ponding per year)]/[52 x #years]

High Water Summary for Indicator Regions

Indicator Region Number	Name	Depth(ft) Criterion	NSM45F #Events	NSM45F Avg Duration (Wks/Event)	NSM45F Avg Ann Duration (Percent of Yr)	AD13R #Events	AD13R Avg Duration (Wks/Event)	AD13R Avg Ann Duration (Percent of Yr)	XL67_4 #Events	XL67_4 Avg Duration (Wks/Event)	XL67_4 Avg Ann Duration (Percent of Yr)	XL67_5 #Events	XL67_5 Avg Duration (Wks/Event)	XL67_5 Avg Ann Duration (Percent of Yr)	XL67_6 #Events	XL67_6 Avg Duration (Wks/Event)	XL67_6 Avg Ann Duration (Percent of Yr)	XL67_7 #Events	XL67_7 Avg Duration (Wks/Event)	XL67_7 Avg Ann Duration (Percent of Yr)
1	Taylor Slough	> 1.5	10	2	1	5	2	1	6	2	1	7	2	1	6	2	1	5	2	1
2	West Perrine Marl Marsh	> 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Mid-Perrine Marl Marsh	> 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	C-111 Perrine Marl Marsh	> 2.0	0	0	0	10	3	2	10	3	2	11	3	2	11	3	2	10	3	2
5	Model Lands South	> 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	Model Lands North	> 1.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Ochopee Marl Marsh	> 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Rockland Marl Marsh	> 2.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	SW Shark River Slough	> 2.5	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
10	Mid Shark River Slough	> 2.5	5	11	4	5	6	2	7	7	3	8	7	3	7	7	3	1	2	0
11	NE Shark River Slough	> 2.5	15	10	9	10	6	4	16	9	9	17	8	8	15	10	10	3	3	1
12	New Shark River Slough	Undefined																		
13	West Slough	Undefined																		
14	South WCA-3A	> 2.5	0	0	0	2	9	1	1	3	0	1	2	0	0	0	0	0	0	0
15	West WCA-3B	> 2.5	6	6	2	5	10	3	15	10	9	14	10	9	17	9	9	5	5	2
16	East WCA-3B	> 2.5	7	9	4	13	7	5	17	13	14	20	13	16	20	13	16	6	8	3
17	South Central WCA-3A	> 2.5	0	0	0	2	9	1	0	0	0	0	0	0	0	0	0	0	0	0
18	North Central WCA-3A	> 2.5	0	0	0	3	7	1	5	3	1	2	6	1	2	4	1	1	7	0
19	East WCA-3A	> 2.5	0	0	0	25	12	19	21	28	36	21	14	18	20	15	19	17	11	11
20	NW WCA-3A	> 2.5	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0
21	NE WCA-3A	> 2.0	2	2	0	6	7	3	5	6	2	5	5	1	3	5	1	3	5	1
22	NW Corner WCA-3A	> 2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	WCA-2B	> 2.5	4	5	1	25	7	10	15	8	8	16	7	7	18	8	9	17	8	9
24	South WCA-2A	> 2.5	0	0	0	4	5	1	5	9	3	5	6	2	8	7	3	8	7	4
25	North WCA-2A	> 2.5	0	0	0	3	1	0	3	5	1	3	1	0	4	1	0	4	1	0
26	South LNWR (WCA-1)	> 2.5	0	0	0	29	14	25	29	14	25	29	14	25	29	14	25	29	14	25
27	North LNWR (WCA-1)	> 2.5	0	0	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0
28	Rotenberger WMA	> 1.5	17	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	Holey Land WMA	> 1.5	22	8	12	30	4	7	26	4	6	28	3	6	30	3	6	29	3	6
30	Corbett WMA	Undefined																		
31	Mullet Slough	Undefined																		
32	Upland Pine	Undefined																		
33	Upper Mullet Slough	Undefined																		
34	Cypress Marsh	Undefined																		
35	Wet Prairie	Undefined																		
36	Wetter Prairie NE	Undefined																		
37	Wetter Prairie SW	Undefined																		
38	Drier Cypress NW	Undefined																		
39	Drier Cypress NE	Undefined																		
40	Cypress	Undefined																		
41	NW Big Cypress	Undefined																		
42	NE Big Cypress	Undefined																		
43	NE Corner Big Cypress	Undefined																		
44	SW Big Cypress	Undefined																		
45	Racoon Point	Undefined																		
47	North C-111	> 1.8	0	0	0	5	2	0	7	2	1	6	2	1	7	2	1	4	2	0
48	North Bisc. Bay Groundwater 1	Undefined																		
49	North Bisc. Bay Groundwater 2	Undefined																		
50	Central Bisc. Bay Groundwater	Undefined																		
51	South Bisc. Bay Groundwater	Undefined																		
52	Pennsuco Wetlands North	> 2.0	16	8	8	6	4	1	13	4	3	6	6	2	8	6	3	9	12	7
53	Pennsuco Wetlands South	> 2.0	40	13	33	6	3	1	7	5	2	6	6	2	7	6	3	8	14	7
46	Cape Sable Sparrow A	Undefined																		
54	Cape Sable Sparrow B	Undefined																		

55	Cape Sable Sparrow C	Undefined																			
56	Cape Sable Sparrow D	Undefined																			
57	Cape Sable Sparrow E	Undefined																			
58	Cape Sable Sparrow F	Undefined																			
61	WCA−2B1	>	2.5	0	0	0	0	0	0	6	9	3	7	6	3	7	12	5	6	13	5
62	WCA−2B2	>	2.5	3	4	1	7	6	3	10	9	5	10	7	5	10	12	7	10	10	6
63	WCA−2B3	>	2.5	5	7	2	33	16	33	44	11	31	40	13	31	40	13	31	45	11	31
64	WCA−2B4	>	2.5	0	0	0	49	16	48	58	14	49	53	15	50	57	14	50	54	15	50
65	WCA−2B5	>	2.5	13	6	5	32	32	63	49	19	58	57	17	61	79	12	59	60	16	60
66	N WCA−3B	>	2.5	1	1	0	5	10	3	18	11	13	23	9	13	19	11	13	6	9	3
67	NE WCA−3B	>	2.5	0	0	0	5	11	3	20	43	53	32	22	44	28	25	43	29	16	28
68	S of NE WCA−3A	>	2.5	0	0	0	12	11	8	18	15	16	10	14	9	10	11	7	9	6	4

Notes: #events = number of events with depths continuously greater than the criterion over the period of record
Avg Duration of High Water Events = [sum(days over criterion)/7]/#events
Avg Annual Duration of High Water(Percent) = 100 x [sum(weeks over criterion)]/[52 x #years]

Low Water Summary for Indicator Regions

#Events|Avg Duration (Wks/Event)|Avg Ann Duration(Percent of Yr)

Indicator Region Number	Name	Depth(ft) Criterion	NSM45F			AD13R			XL67_4			XL67_5			XL67_6			XL67_7		
			#Events	Avg Duration	Avg Ann Duration	#Events	Avg Duration	Avg Ann Duration	#Events	Avg Duration	Avg Ann Duration	#Events	Avg Duration	Avg Ann Duration	#Events	Avg Duration	Avg Ann Duration	#Events	Avg Duration	Avg Ann Duration
1	Taylor Slough	< −1.5	20	4	5	28	4	7	26	4	7	26	4	7	26	4	7	29	4	7
2	West Perrine Marl Marsh	< −1.5	36	7	16	34	8	16	36	7	16	36	7	16	36	7	16	36	8	18
3	Mid−Perrine Marl Marsh	< −1.5	28	8	13	35	4	9	32	4	8	32	4	8	32	4	8	34	4	9
4	C−111 Perrine Marl Marsh	< 0.5	54	24	80	53	17	55	49	18	54	48	18	54	50	17	54	49	19	57
5	Model Lands South	< 0.5	56	23	81	80	14	68	77	14	67	77	14	67	77	14	67	81	14	68
6	Model Lands North	< 0.2	54	14	46	51	29	93	51	29	93	51	29	93	51	29	93	50	30	93
7	Ochopee Marl Marsh	< −1.5	17	8	9	22	7	10	21	8	11	21	8	11	23	8	11	26	8	13
8	Rockland Marl Marsh	< −1.5	21	10	13	22	10	14	21	10	13	21	10	13	23	9	13	36	10	21
9	SW Shark River Slough	< −1.0	1	5	0	3	2	0	4	2	1	5	2	1	4	3	1	12	4	3
10	Mid Shark River Slough	< −1.0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0	7	4	2
11	NE Shark River Slough	< −1.0	1	1	0	3	2	0	0	0	0	0	0	0	0	0	0	6	5	2
12	New Shark River Slough	< −1.0	17	7	8	13	5	4	18	5	5	19	5	5	21	5	6	21	6	8
13	West Slough	< −1.5	22	7	10	20	8	10	23	8	11	23	8	11	24	8	12	23	8	12
14	South WCA−3A	< −1.0	8	4	2	4	4	1	4	4	1	4	4	1	4	5	1	4	5	1
15	West WCA−3B	< −1.0	3	2	0	2	3	0	2	1	0	2	1	0	2	1	0	5	4	1
16	East WCA−3B	< −1.0	1	1	0	3	3	1	3	1	0	3	1	0	3	1	0	6	5	2
17	South Central WCA−3A	< −1.0	8	7	3	5	2	1	4	4	1	4	4	1	5	3	1	6	3	1
18	North Central WCA−3A	< −1.0	9	5	3	1	6	0	1	6	0	4	3	1	1	6	0	2	5	1
19	East WCA−3A	< −1.0	10	6	4	8	3	1	8	4	2	9	3	2	9	3	2	10	3	2
20	NW WCA−3A	< −1.0	6	6	2	9	5	3	7	6	2	8	5	2	6	6	2	7	6	3
21	NE WCA−3A	< −1.0	15	7	7	15	4	4	20	4	5	14	5	4	11	5	3	15	4	4
22	NW Corner WCA−3A	< −1.0	7	5	2	6	4	1	4	5	1	6	4	2	6	4	1	5	4	1
23	WCA−2B	< −1.0	5	5	1	14	7	6	13	7	6	11	8	6	10	9	6	11	8	6
24	South WCA−2A	< −1.0	6	8	3	12	7	5	11	8	5	12	8	6	12	8	6	12	8	6
25	North WCA−2A	< −1.0	8	8	4	4	9	2	4	9	2	5	6	2	3	10	2	3	10	2
26	South LNWR (WCA−1)	< −1.0	10	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	North LNWR (WCA−1)	< −1.0	8	4	2	1	3	0	1	3	0	1	3	0	1	3	0	1	3	0
28	Rotenberger WMA	< −1.0	18	8	9	18	3	4	18	3	4	18	3	4	18	3	4	19	3	4
29	Holey Land WMA	< −1.0	14	6	5	11	4	3	11	4	3	11	4	3	10	5	3	11	4	3
30	Corbett WMA	Undefined																		
31	Mullet Slough	Undefined																		
32	Upland Pine	< −7.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Upper Mullet Slough	Undefined																		
34	Cypress Marsh	< −6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Wet Prairie	< −6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Wetter Prairie NE	< −6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Wetter Prairie SW	< −6.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Drier Cypress NW	< −5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Drier Cypress NE	< −5.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	Cypress	< −4.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	NW Big Cypress	< −3.0	13	5	4	13	5	4	13	5	4	13	5	4	13	5	4	13	5	4
42	NE Big Cypress	< −3.0	6	5	2	9	5	3	9	5	3	9	5	3	9	5	3	9	5	3
43	NE Corner Big Cypress	< −3.0	0	0	0	22	6	9	23	6	8	23	6	8	23	6	8	23	6	8
44	SW Big Cypress	< −3.0	9	6	3	10	7	4	10	7	4	10	7	4	10	7	4	10	7	4
45	Racoon Point	Undefined																		
47	North C−111	< 0.0	47	14	41	55	19	67	53	20	66	53	20	66	53	20	66	53	21	68
48	North Bisc. Bay Groundwater 1	< −5.1	18	4	5	1	1612	100	1	1612	100	1	1612	100	1	1612	100	1	1612	100
49	North Bisc. Bay Groundwater 2	< −5.0	0	0	0	11	146	100	11	146	100	11	146	100	11	146	100	11	146	100
50	Central Bisc. Bay Groundwater	< −7.5	3	3	1	130	7	59	129	7	59	130	7	59	131	7	59	127	8	60
51	South Bisc. Bay Groundwater	< −3.0	30	9	17	92	11	65	92	11	64	91	11	64	91	11	64	93	11	65
52	Pennsuco Wetlands North	< −1.0	3	2	0	4	4	1	3	2	0	3	2	0	3	2	0	8	4	2
53	Pennsuco Wetlands South	< −1.0	1	1	0	4	7	2	4	4	1	3	4	1	3	5	1	13	5	4
46	Cape Sable Sparrow A	Undefined																		
54	Cape Sable Sparrow B	Undefined																		

55	Cape Sable Sparrow C	Undefined																		
56	Cape Sable Sparrow D	Undefined																		
57	Cape Sable Sparrow E	Undefined																		
58	Cape Sable Sparrow F	Undefined																		
61	WCA−2B1	< −1.0	10	5	3	26	10	17	32	10	19	33	10	20	31	10	19	33	10	20
62	WCA−2B2	< −1.0	6	4	2	26	8	13	24	9	13	23	9	13	23	9	13	24	9	13
63	WCA−2B3	< −1.0	4	6	1	7	7	3	8	6	3	8	6	3	8	6	3	8	6	3
64	WCA−2B4	< −1.0	16	4	4	2	3	0	3	4	1	2	6	1	3	4	1	4	3	1
65	WCA−2B5	< −1.0	4	6	2	13	5	4	20	4	5	19	4	5	20	4	5	20	4	5
66	N WCA−3B	< −1.0	21	5	6	3	5	1	3	2	0	3	2	0	2	3	0	7	4	2
67	NE WCA−3B	< −1.0	15	5	5	16	5	5	12	4	3	11	4	3	12	4	3	14	5	4
68	S of NE WCA−3A	< −1.0	13	5	4	13	4	3	11	5	4	11	5	3	10	5	3	10	6	3

Notes: #events = number of events with depths continuously less than the criterion over the period of record
Avg Duration of Low Water Events = [sum(days below criterion)/7]/#events
Avg Annual Duration of Low Water(Percent) = 100 x [sum(weeks below criterion)]/[52 x #years]