

Water Resources Advisory Commission
Issues Workshop
River of Grass Project Planning Phase 1
April 1, 2009

Florida Crystals
Project Configuration

Underlying Assumption

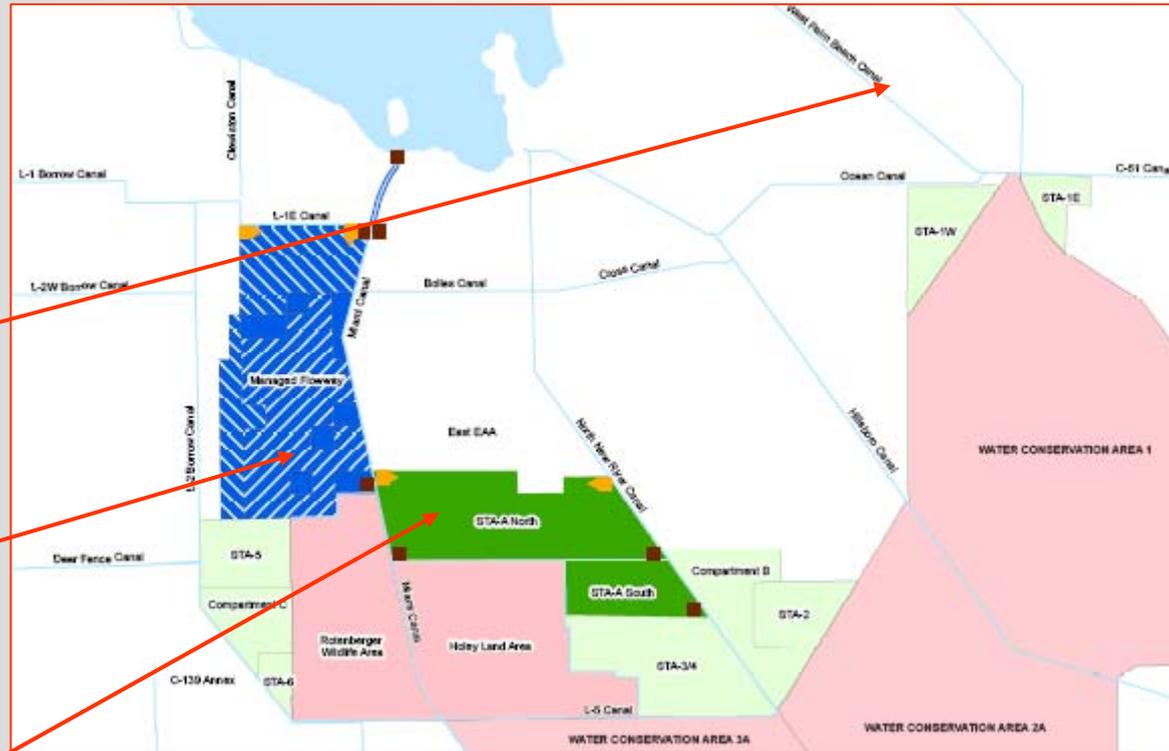
This exercise (and the Florida Crystals configuration) is developed upon the principal underlying assumption that sufficient lands are acquired through the River of Grass acquisition project, and that needed lands other than those directly acquired would or could be made available by exchange with current property owners.

NOT an offer to sell!

Conceptual Plan in EAA

- **Three Basic Elements**

- Additional STA in S-5A Basin
 - 14,000 eff. acres
- Managed Flow Way
 - 45,000 eff. acres
- Convert Talisman Compartment A to new STA
 - 35,200 eff. acres



As presented
at February 19,
2009 WRAC
Meeting

- Additional 14,000-acre STA in S-5A Basin
 - Approx. 15,000 acres gross area
- 59,800-acre effective treatment area in central flow path
 - STA-3/4
 - Talisman Lands Compartment B (as presently designed)
 - Talisman Lands Compartment A
- 45,000-acre (wetted) managed flow-way
 - Approx. 47,000 acres gross area
 - Adjust or reduce areas (if necessary) for topographic constraints in northwest corner
 - 4 ft. depth (180,000 acre-feet)
 - Considered as “South Reservoir” in RESOPS modeling

- Conveyance Improvements on North New River and Cross Canal
 - Included in ECART
- C-43 and C-44 Reservoirs
- Complete STA expansion on Talisman Lands Compartment C
- Divert S-4 Basin Runoff from Lake to Managed Flow-way

- WSE (LOSR 2000) Regulation Schedule
 - Assumes completion of at least Reaches 1-3 of Herbert Hoover Dike repair (presently scheduled for 2020)
 - Everglades Delivery Target
 - Used NSM Version 4.6.2 at T5+T6 times a multiplier of 1.32 (e.g., Central Flow Path)
 - Flow target time series at T5+T6 necessitated by use of RESOPS r3.0 (doesn't directly address Eastern and Western flow paths)
 - Should be updated in subsequent analyses to incorporate monthly time series in Eastern and Western flow paths
- Continue delivery of Lake regulatory releases directly to expanded treatment area in Central flow path

- Northern estuaries demand supplied by local basin runoff
 - Potential for Lake release to meet Caloosahatchee demand can be evaluated further in combination with other initiatives north of the Lake
- Discontinue Lake regulatory releases to L-8 Canal at Sand Cut (not in RESOPS modeling tool anyway)

- Flows to Arthur R. Marshall Loxahatchee NWR, then to WCA-2A. Includes:
 - C-51 West Basin runoff
 - L-8 & C-51 West Basin runoff
 - Including current “back pumping” to Lake at C-10A
 - S-5A Basin runoff
 - Flows to C-51 East not captured under current design
 - “Flow-through” releases to West Palm Beach Canal
- Hillsboro Basin runoff and Hillsboro Canal releases from Lake to Hillsboro Canal delivered to WCA-2A via STA-2

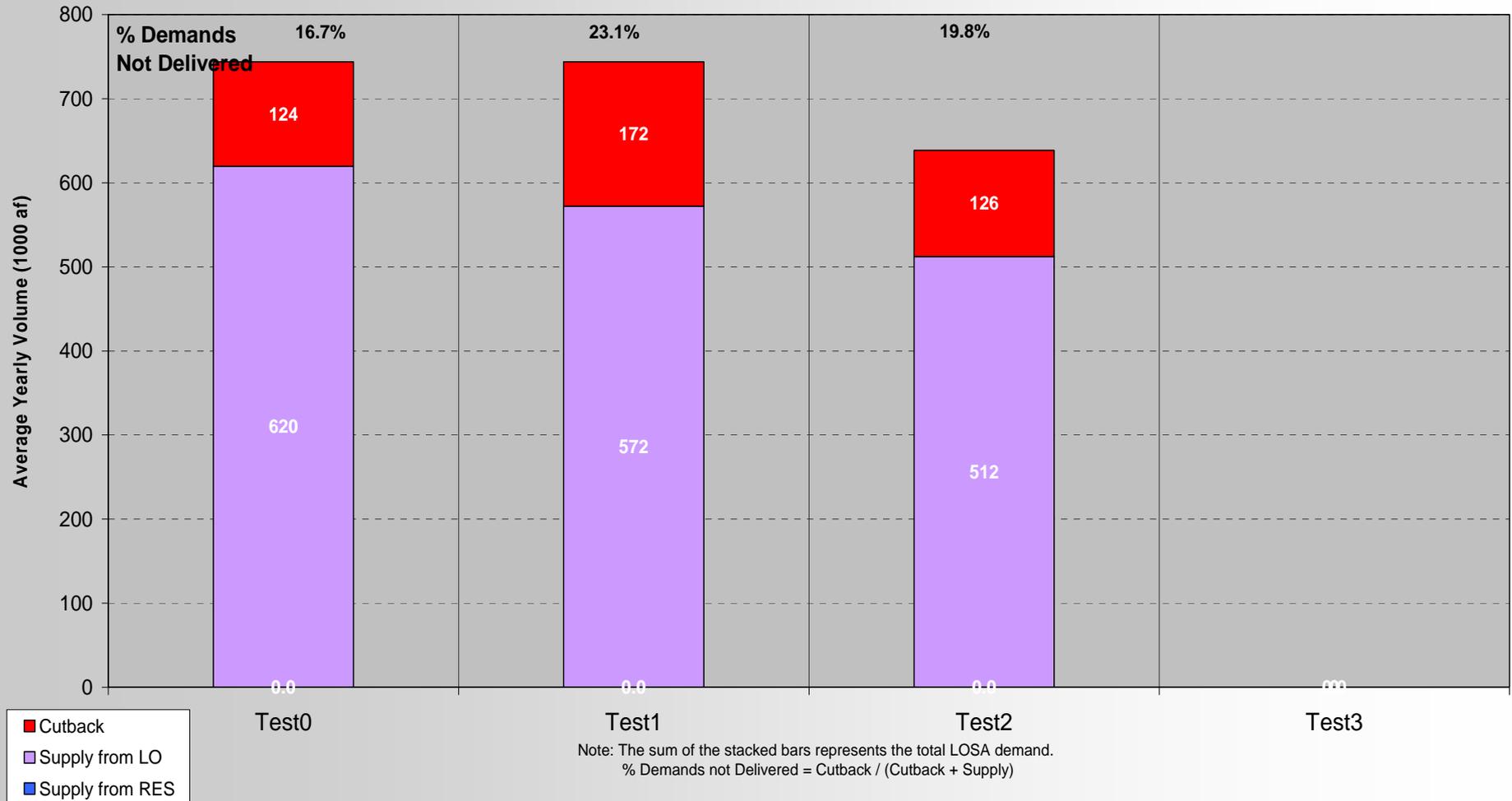
- Used r3.0 as posted on SFWMD web site
 - Does not directly evaluate Eastern Flow Path
 - Does not directly evaluate Western Flow Path
- Providing input data file to SFWMD for use in evaluation
- Request opportunity to review results of updated RESOPS model for possible further adjustments to Eastern and Western flow paths

- “Test 0”=current conditions if operated under WSE (LOSR 2000) Lake schedule
- “Test 1”= current (“Base”) conditions, using LOSR 2008 Lake schedule
- “Test 2”=Florida Crystals conceptual project configuration

RESOPS Results

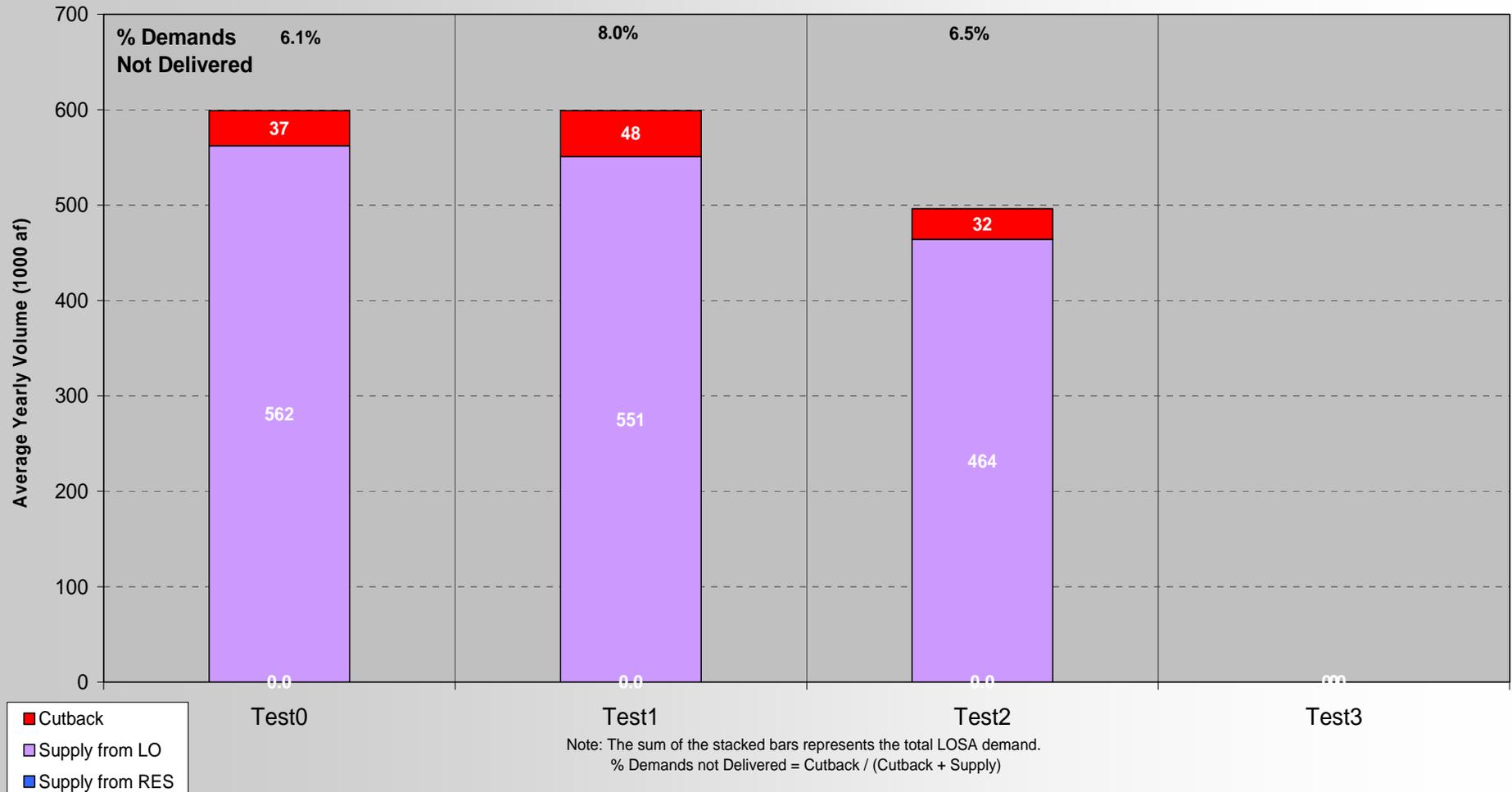
LOSA Supply & Demands Not Delivered

Average of 7-largest drought years ending in Sep (1973, '74, '81, '82, '90, '91, '01)



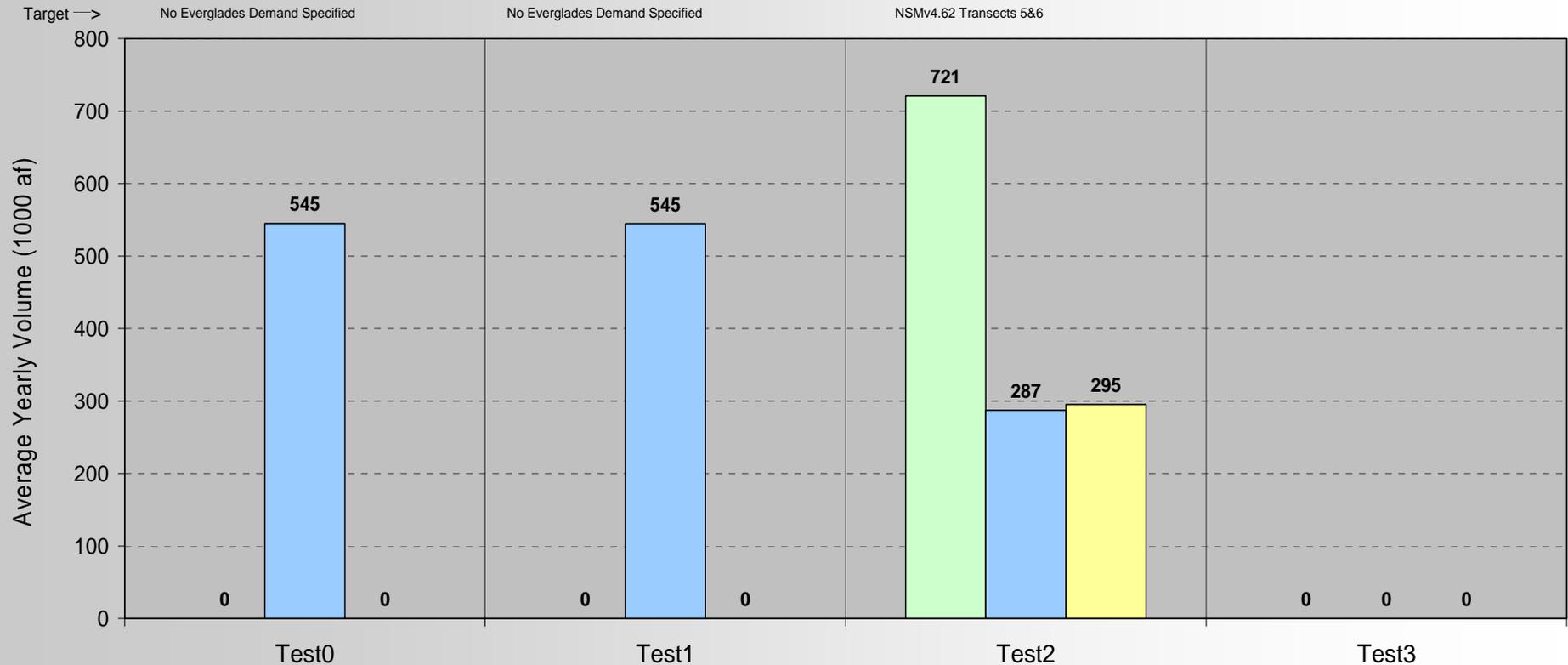
RESOPS Results

LOSA Supply & Demands Not Delivered
41-yr Average



RESOPS Results

Average Annual Flows to Everglades

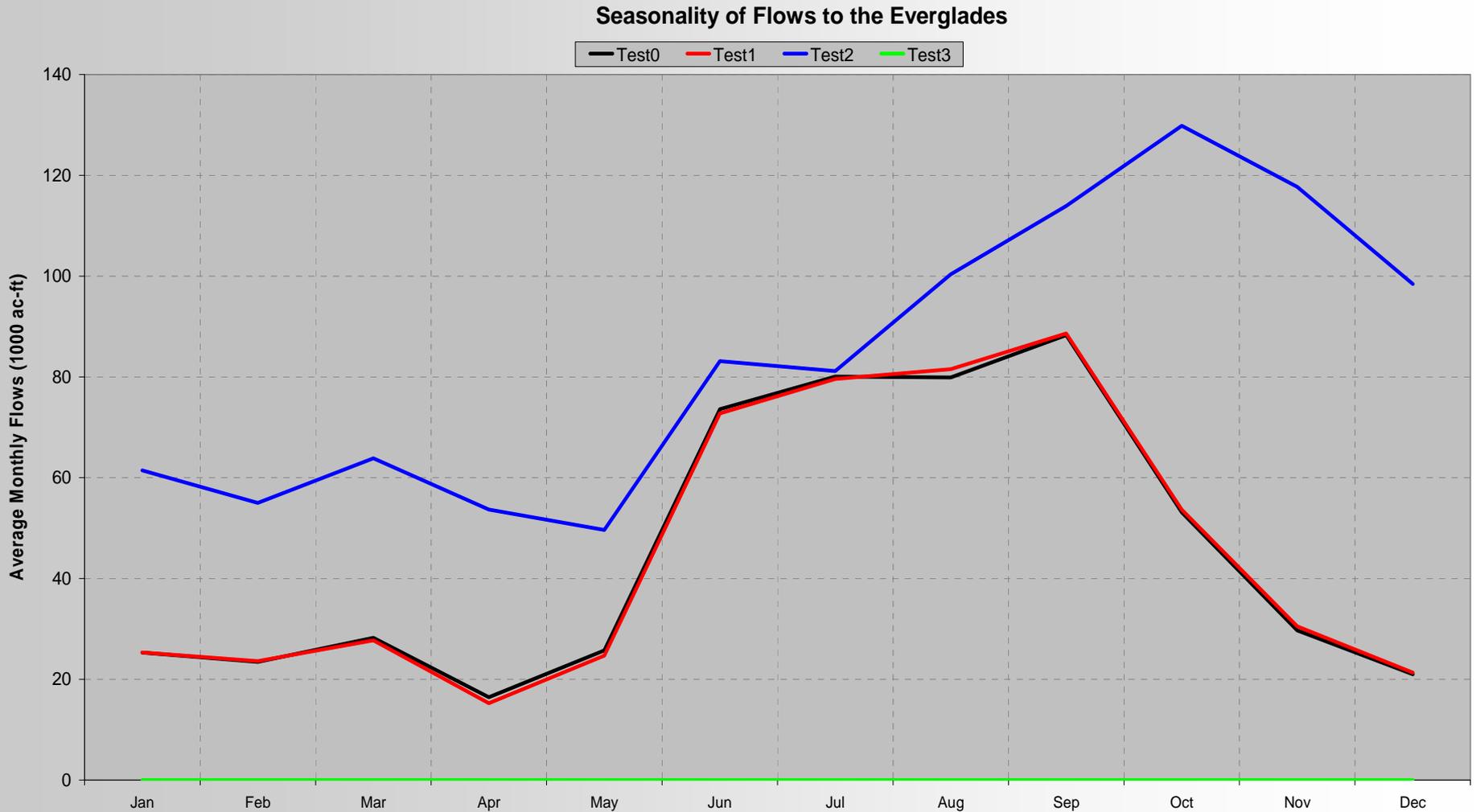


- Delivery Toward Everglades Target
- Delivery in Excess of Everglades Target
- Target not met by Delivery

Notes:

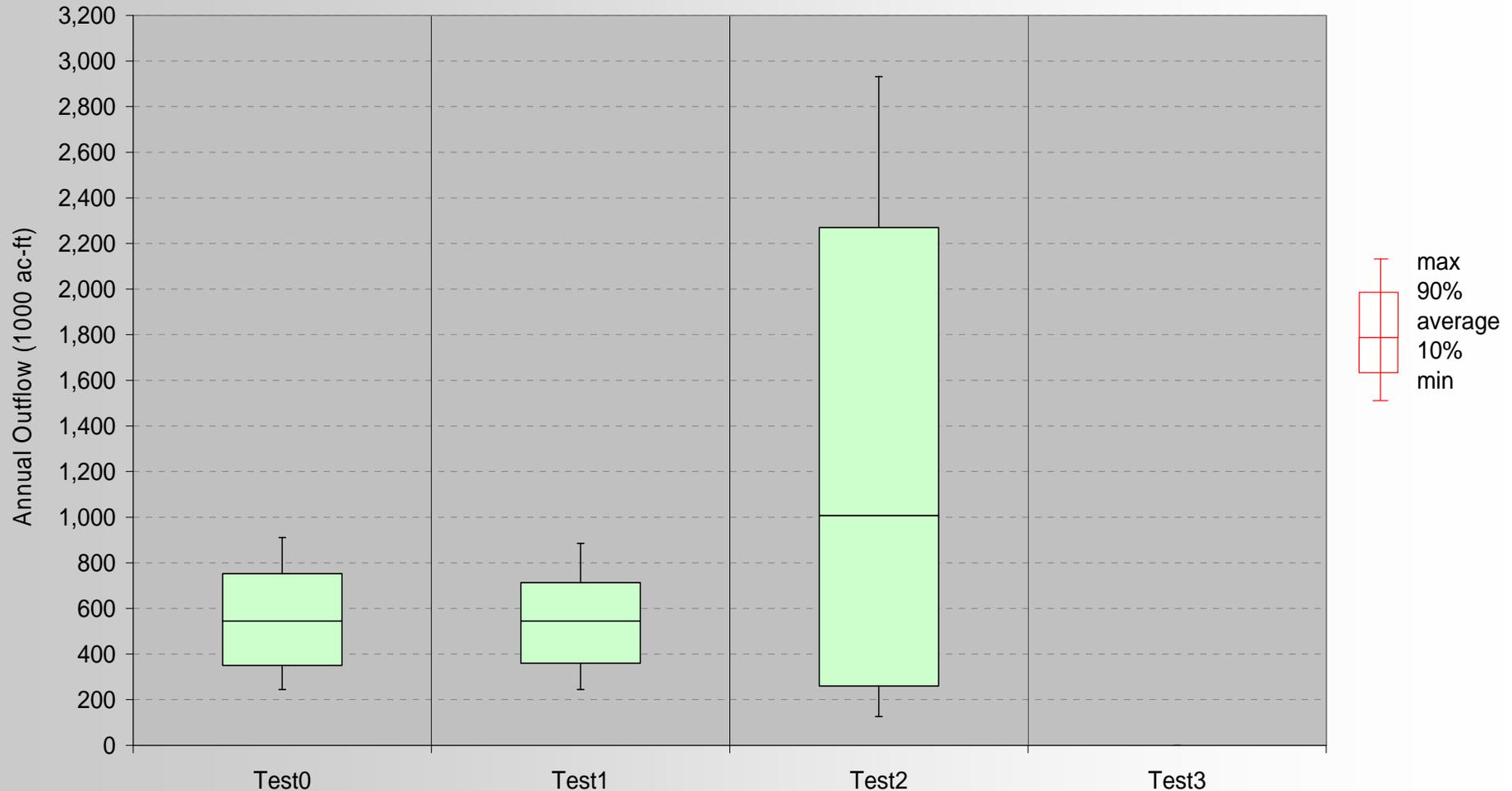
1. The sum of the green and blue bars represents the total Everglades delivery (via TA).
2. Everglades Target/Need is specified per scenario/test at top of bar charts.
3. There is a timing element associated with desirable deliveries to the Glades,

RESOPS Results



RESOPS Results

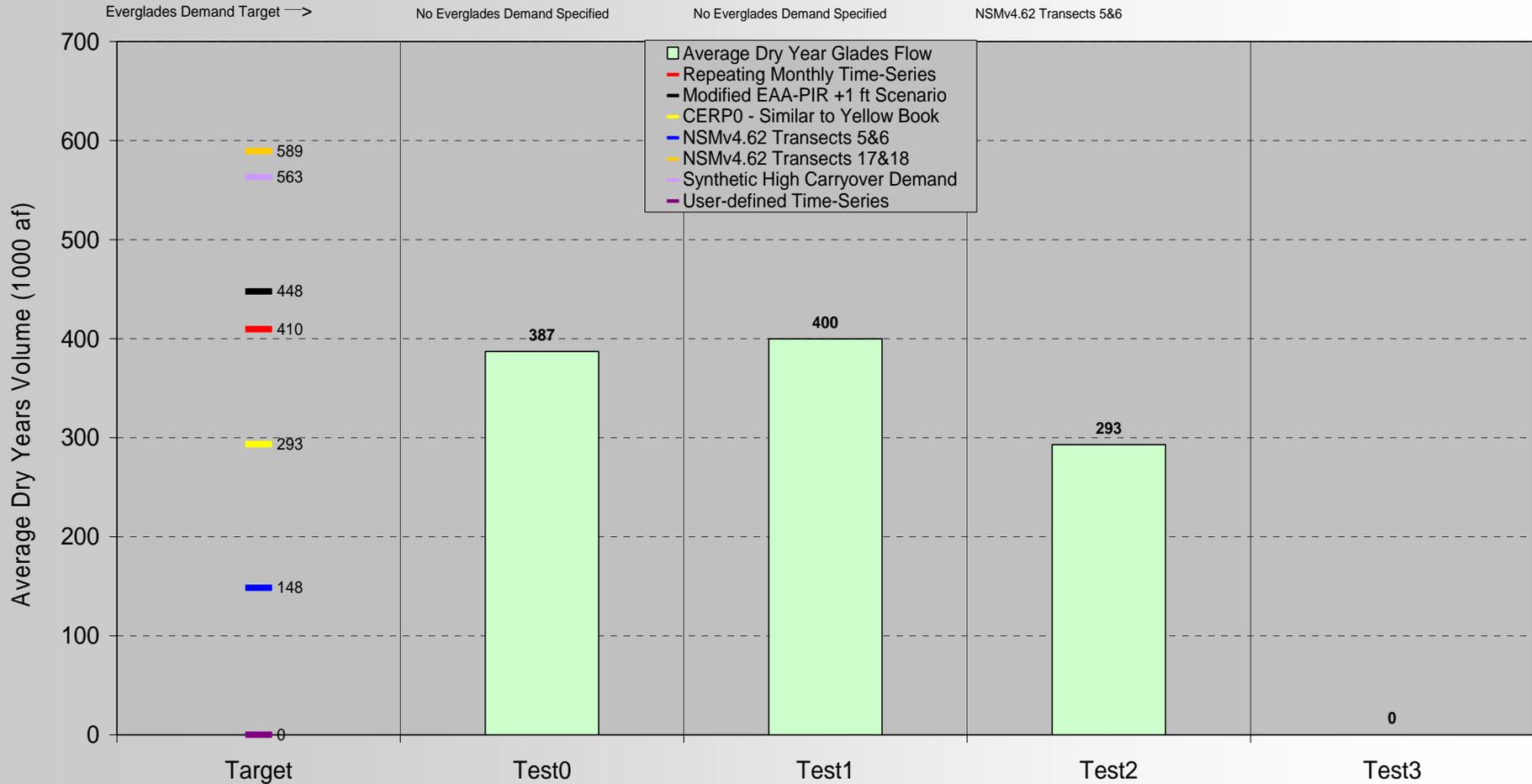
Variability of Annual Flows to the Everglades
41 year simulation period



RESOPS Results

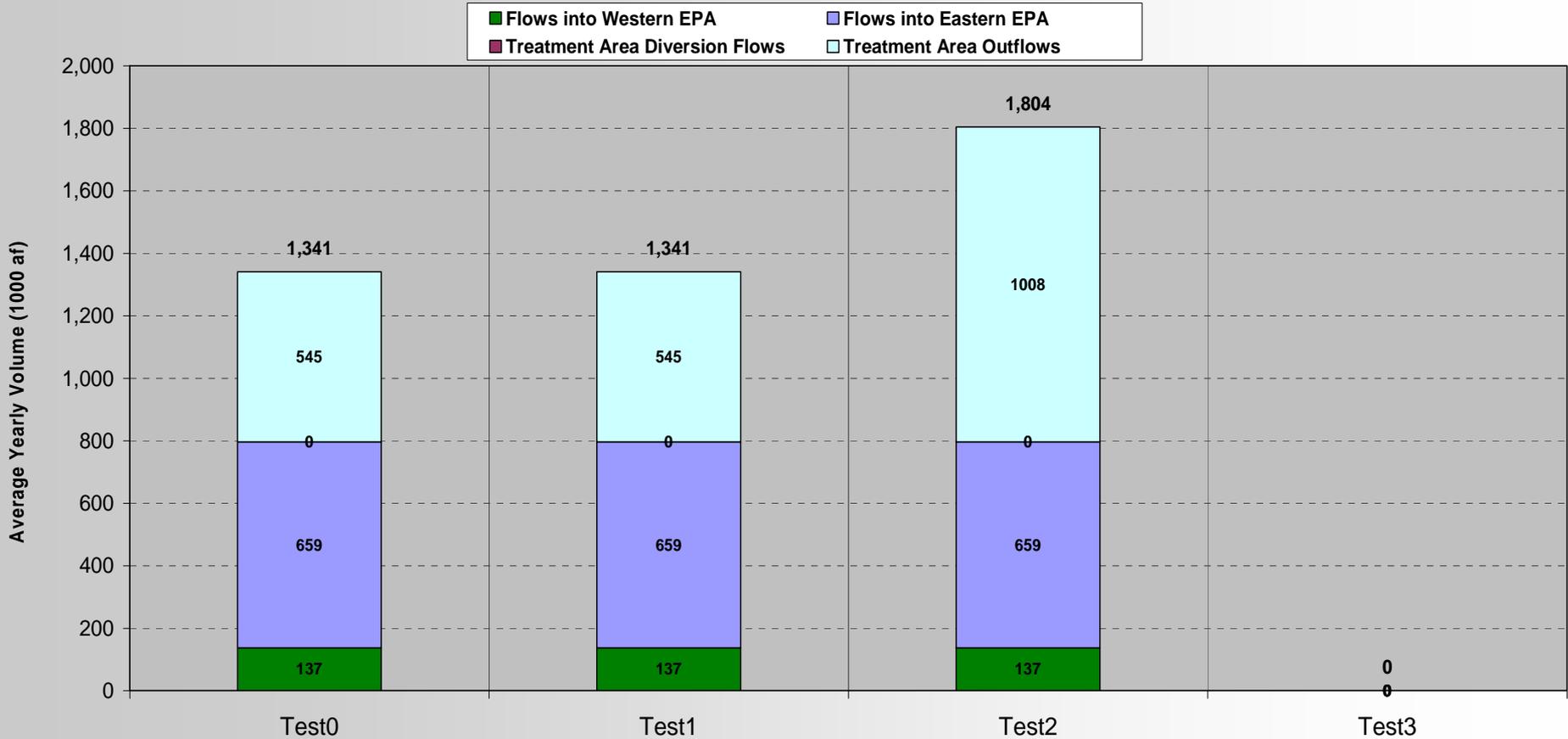
Average Flows to the Everglades during Dry Years

10 Years used for Avg: 65 71 73 76 77 81 89 90 01 02



RESOPS Results

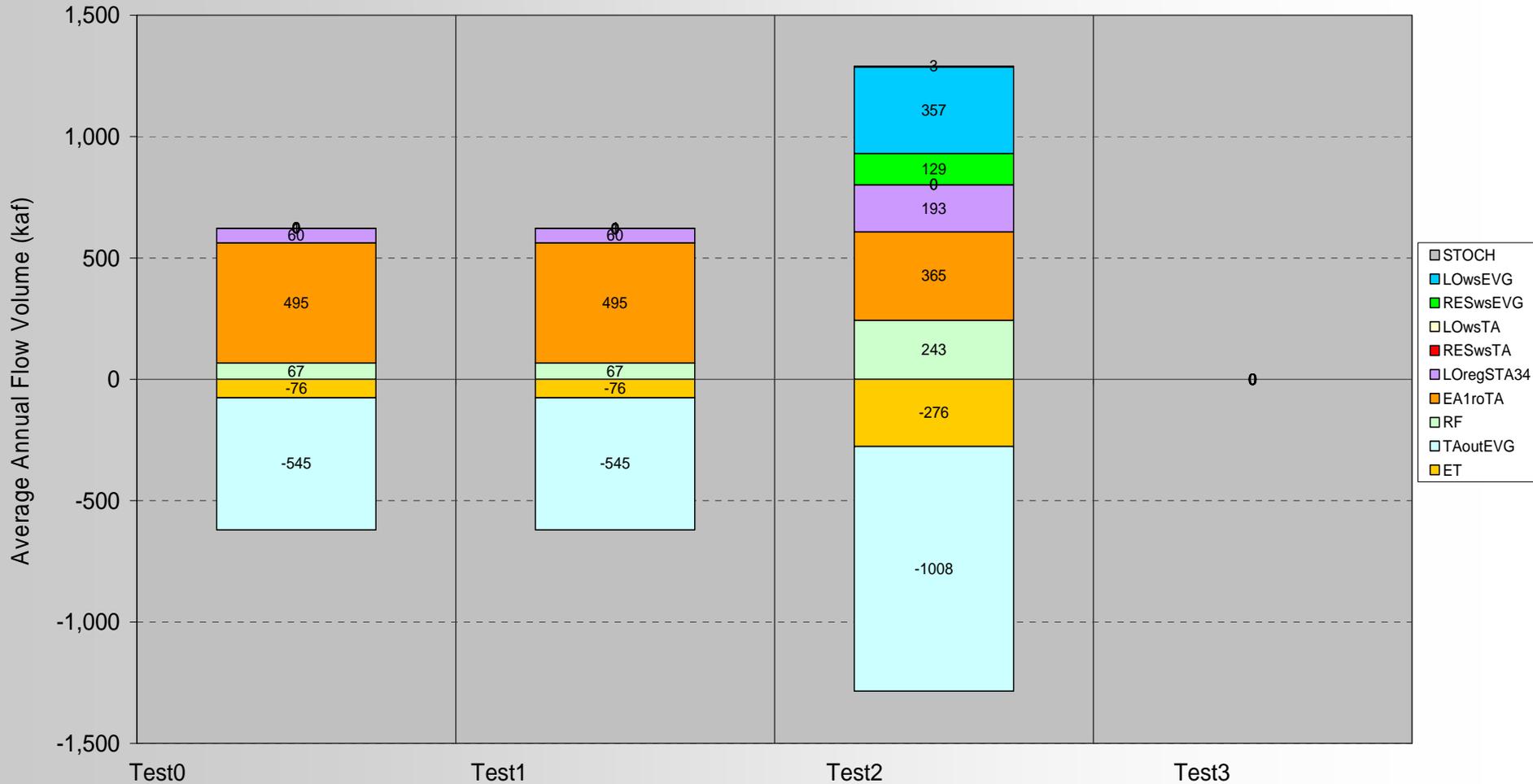
Total Flows to Northern Everglades Protection Area
41-yr Average



Note: Western flows include S8 west to S140 and do not include any inflows simulated by the Treatment Area.
Eastern flows include S150 east to S5A (including STA-1E) and do not include any inflows simulated by the Treatment Area.

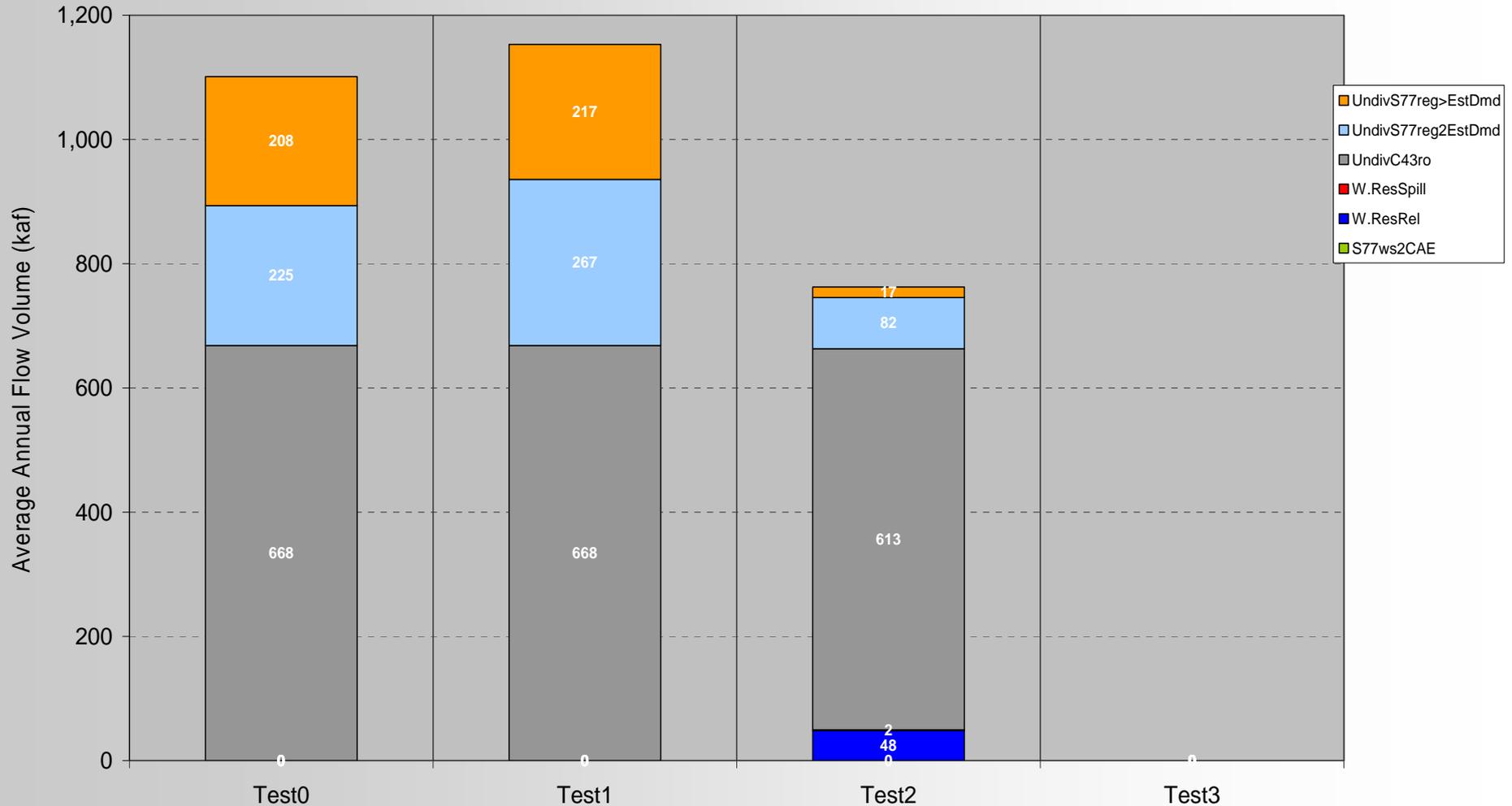
RESOPS Results

Treatment Area Water Budget



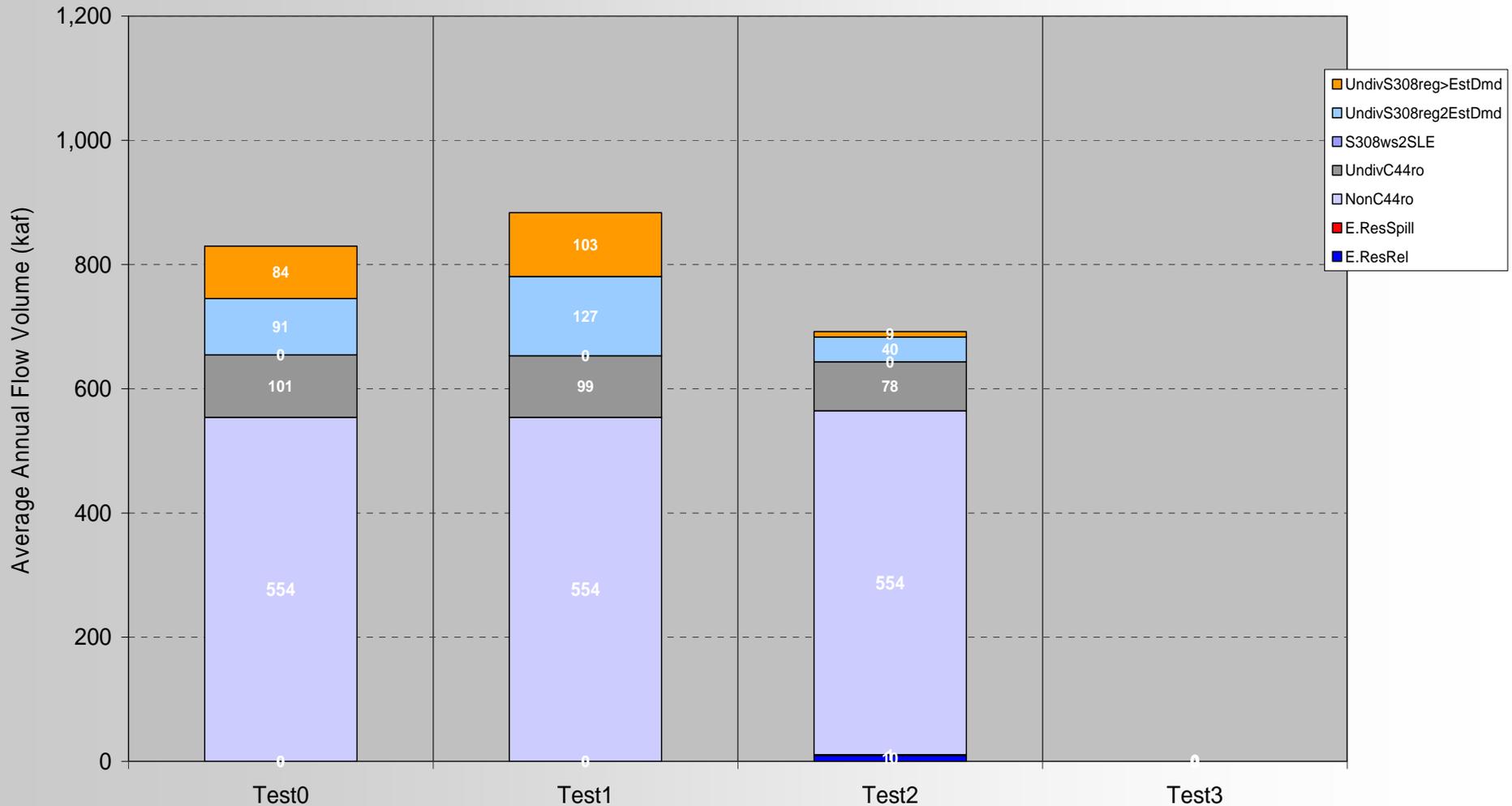
RESOPS Results

S-79 Average Flow Composition



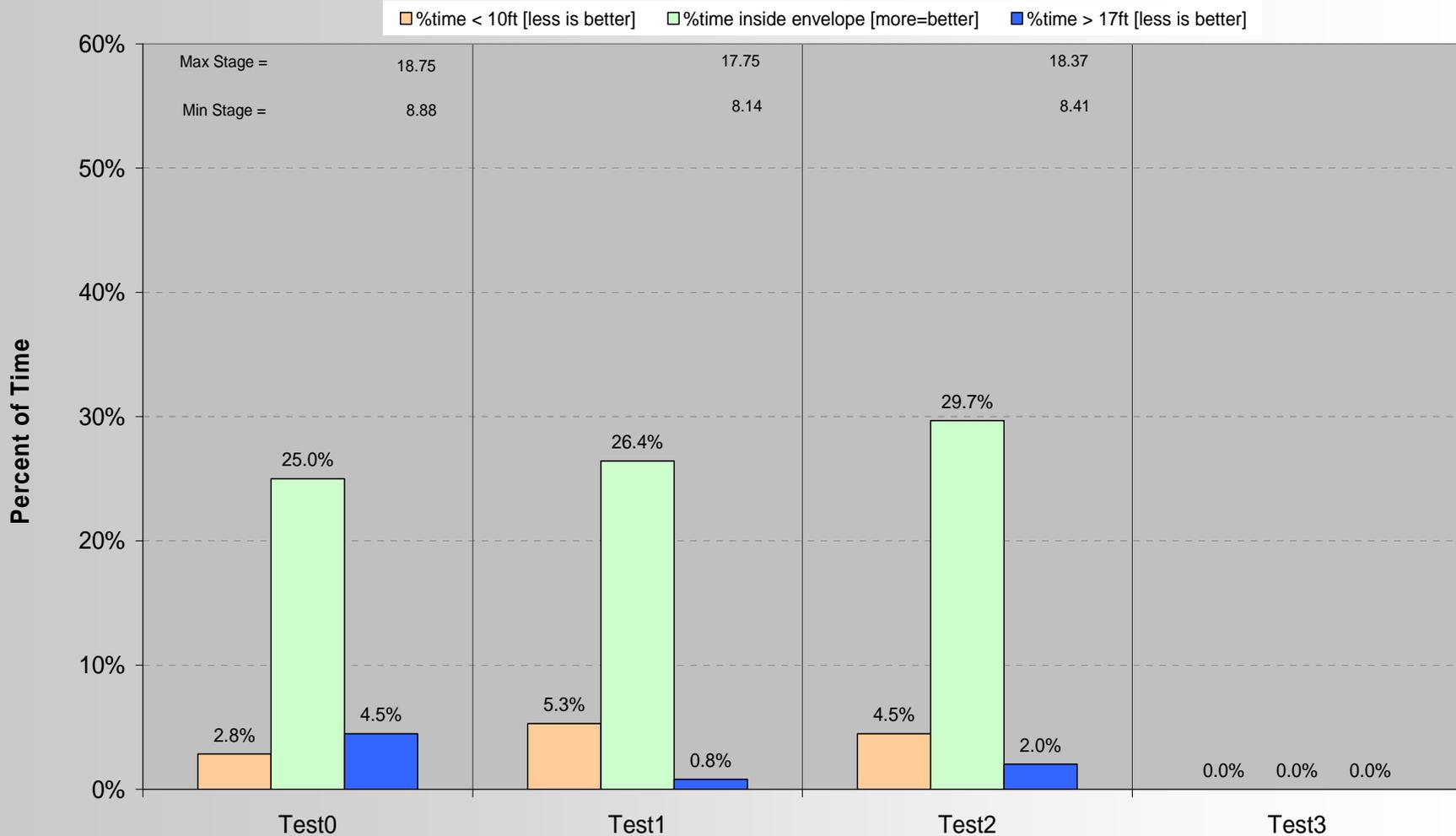
RESOPS Results

SLE Average Flow Composition



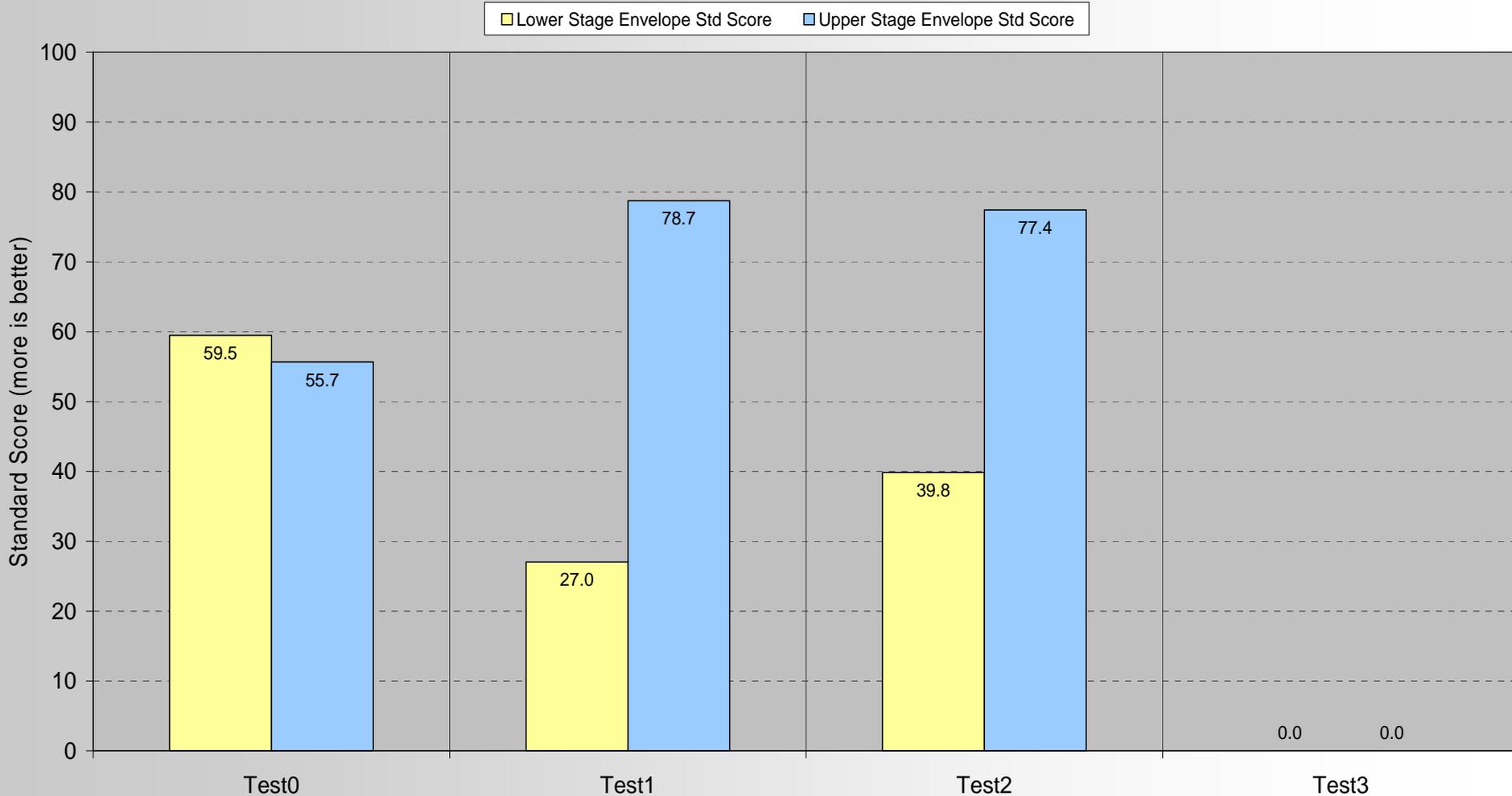
RESOPS Results

Lake Okeechobee Stage Statistics



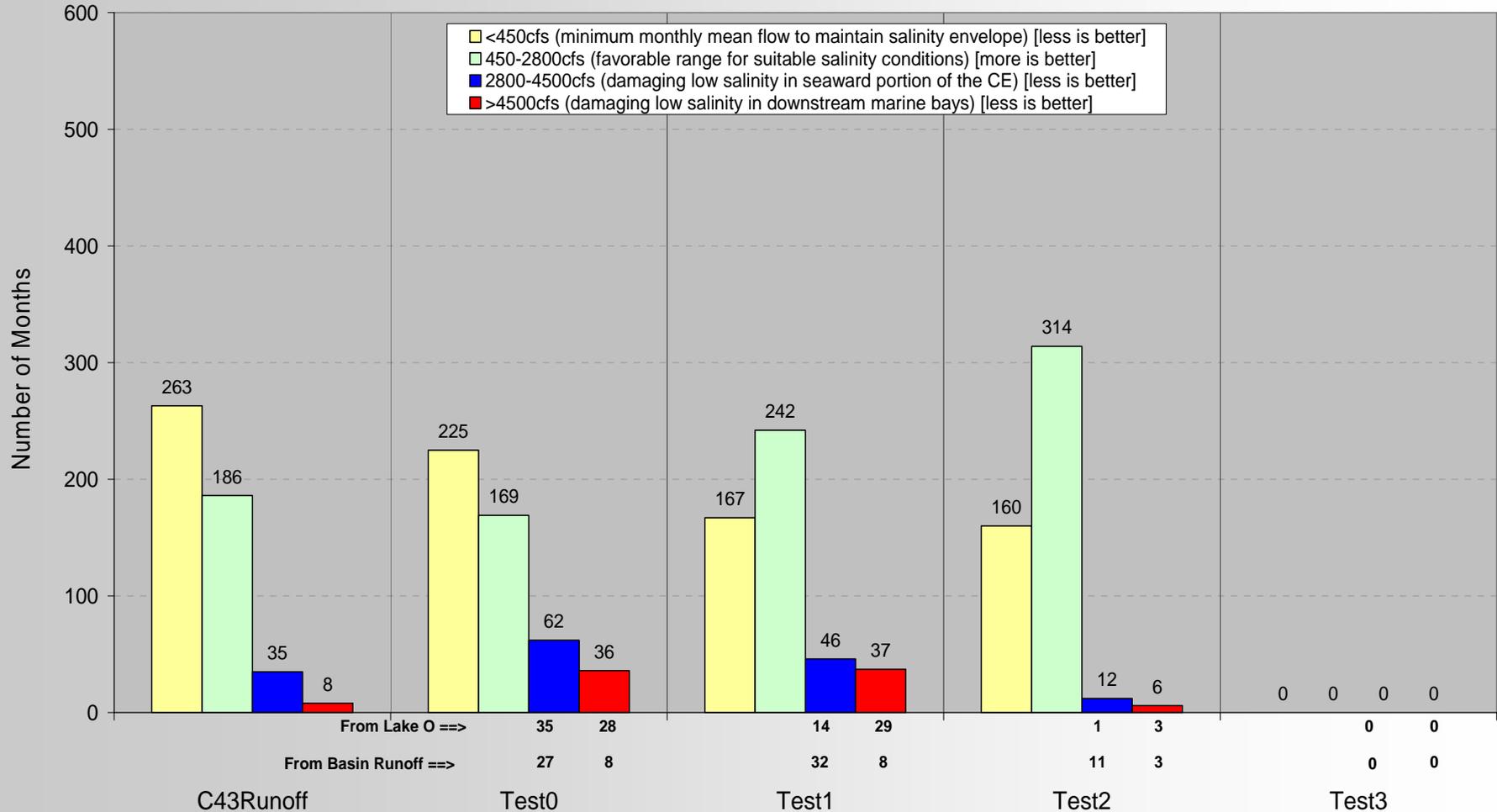
RESOPS Results

Lake Okeechobee Stage Envelope



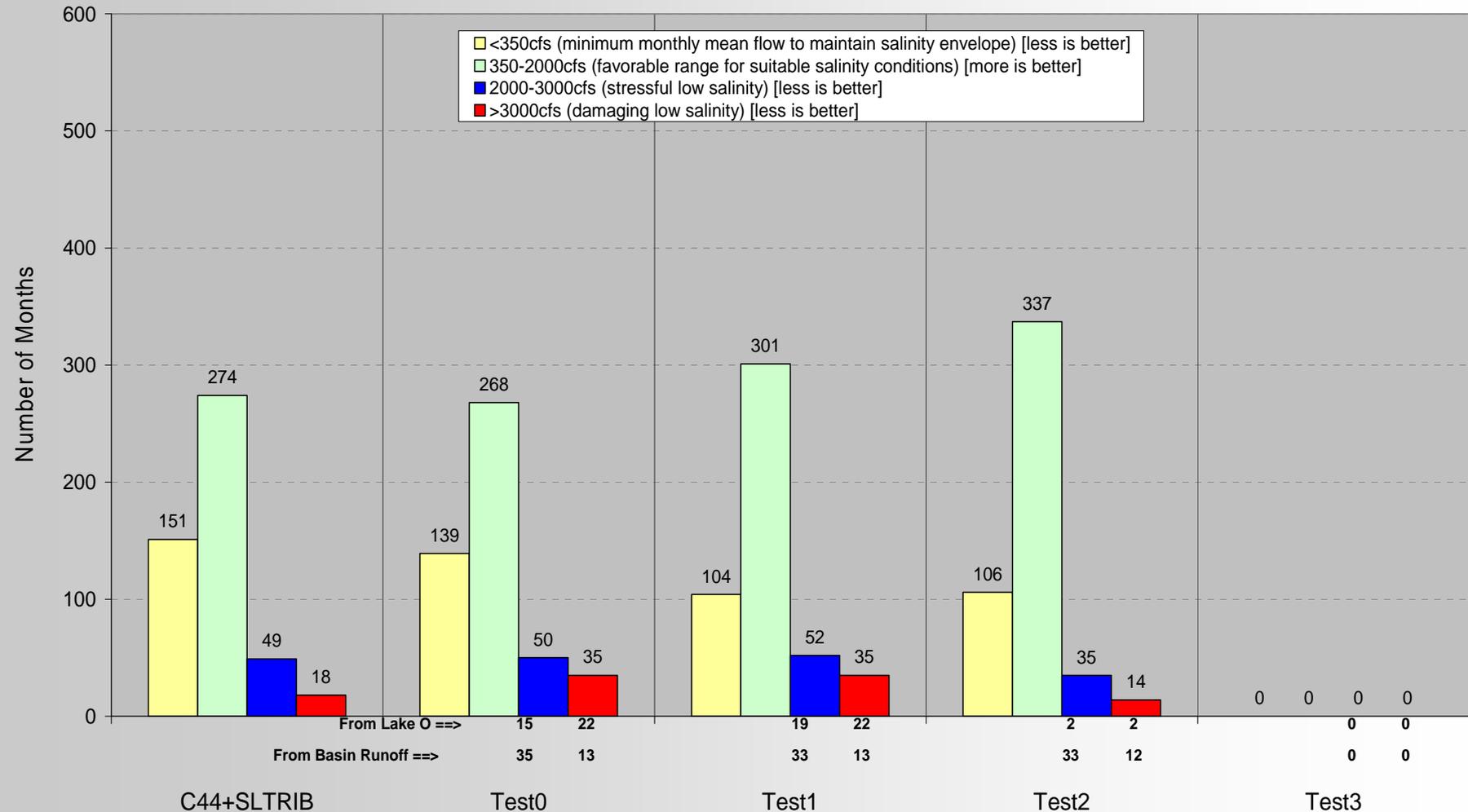
RESOPS Results

Distribution of Monthly Mean Flows to the CE at S-79



RESOPS Results

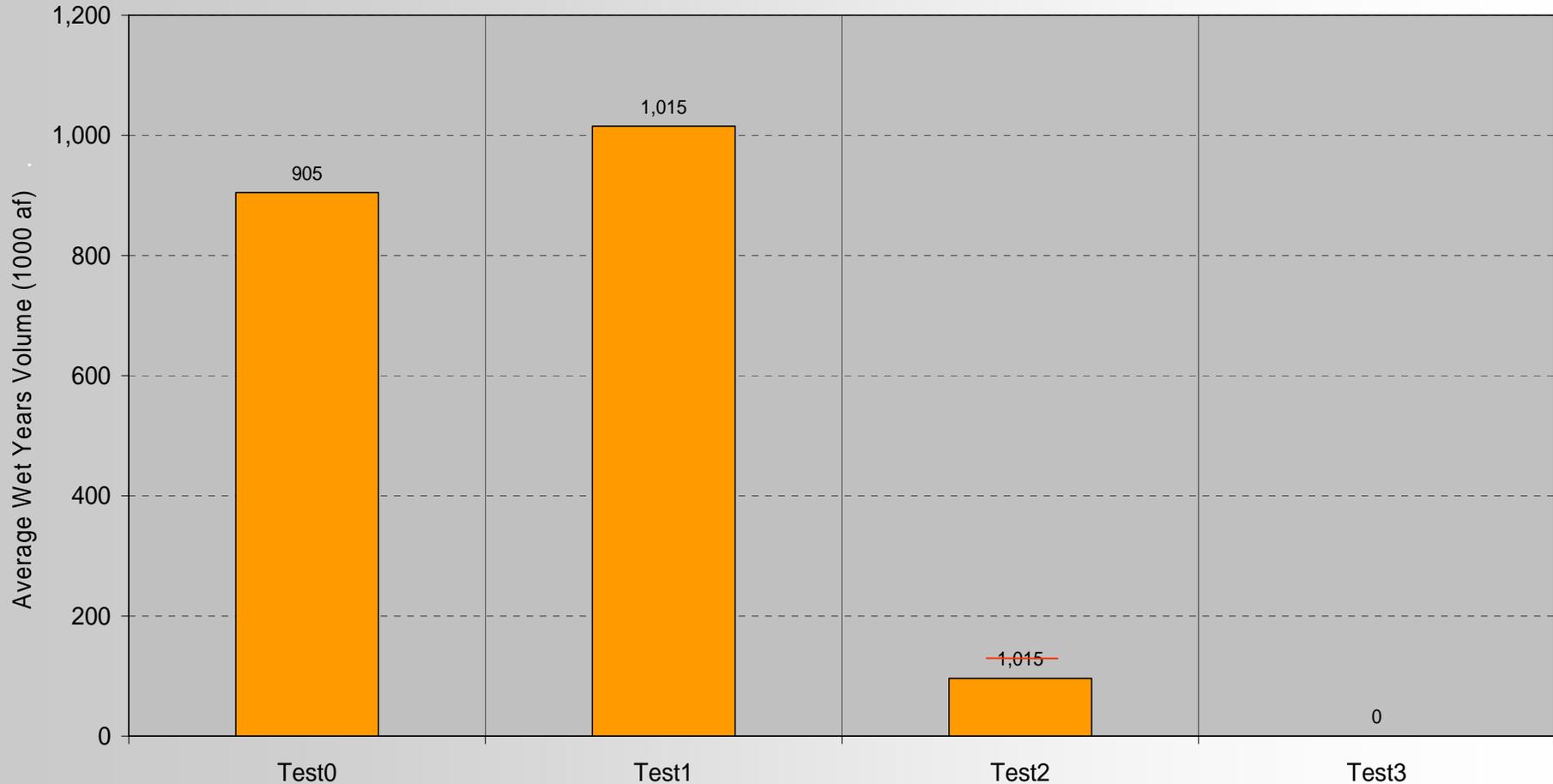
Distribution of Monthly Mean Flows to the SLE (S80+SLTRIB)



RESOPS Results

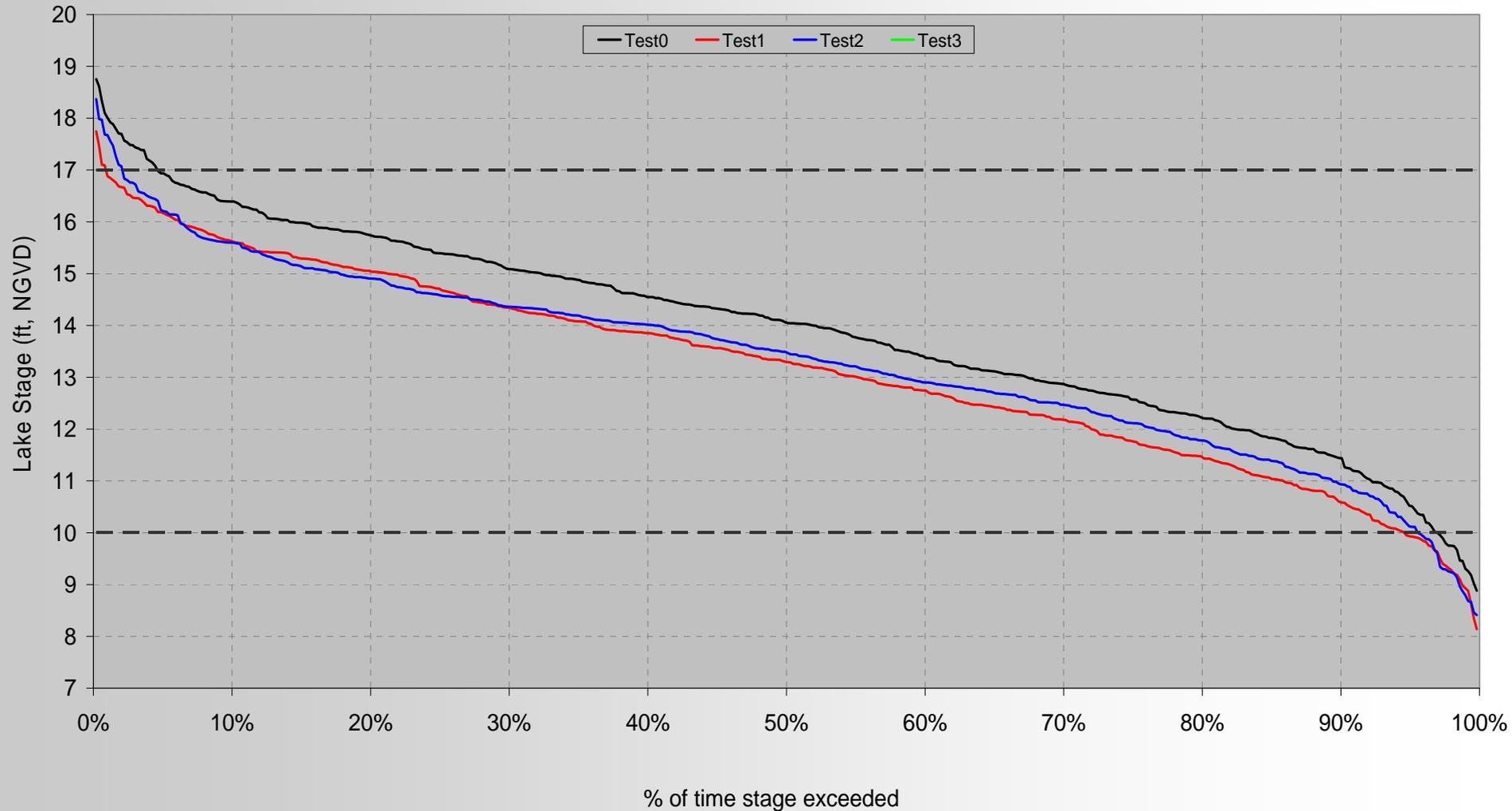
Average Wet Year Lake Regulation Discharge in excess of Estuary Demand
(sum of excess for Caloosahatchee & St. Lucie Estuaries)

11 Years used for Avg: 65 66 69 70 83 95 96 98 03 04 05

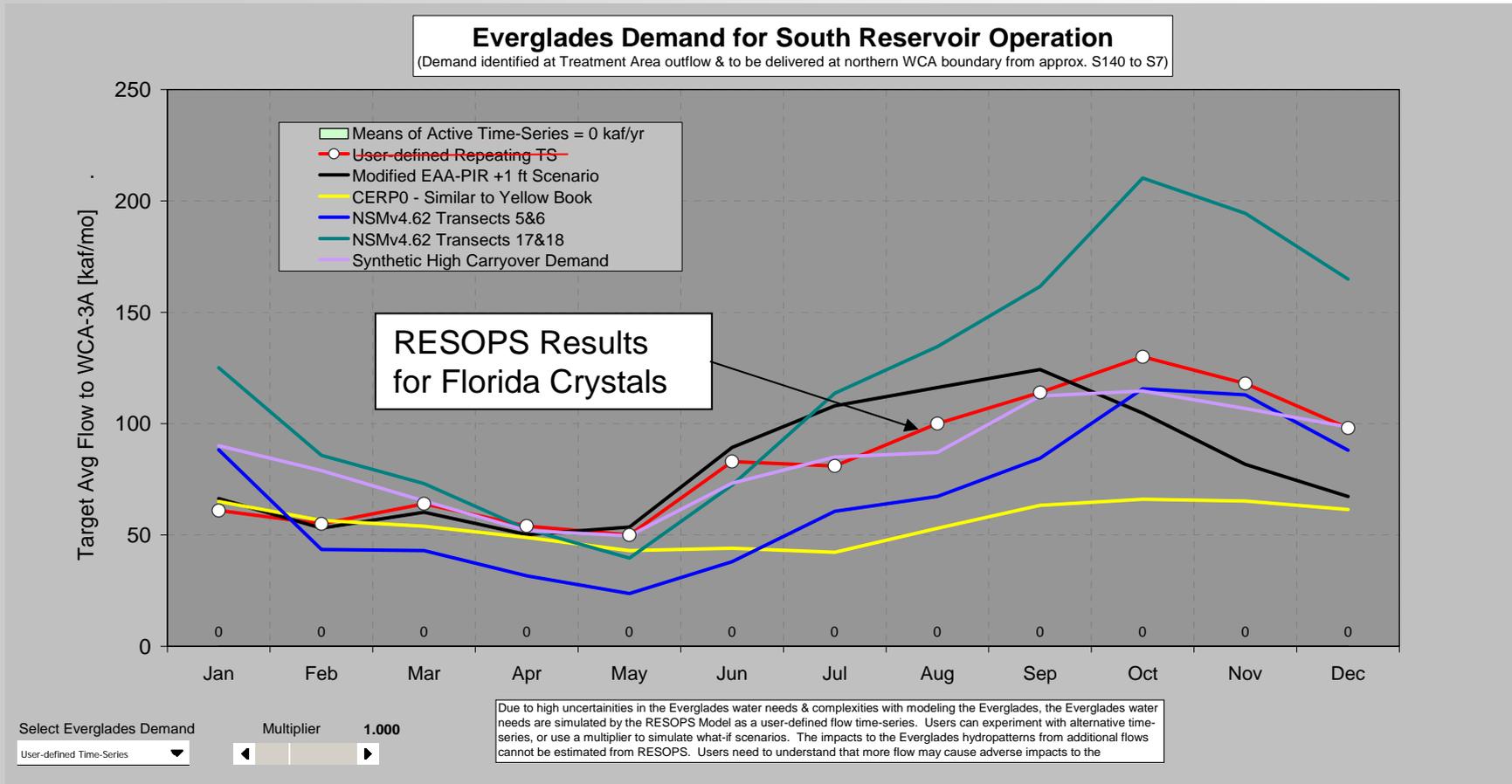


RESOPS Results

Lake Okeechobee Stage Duration

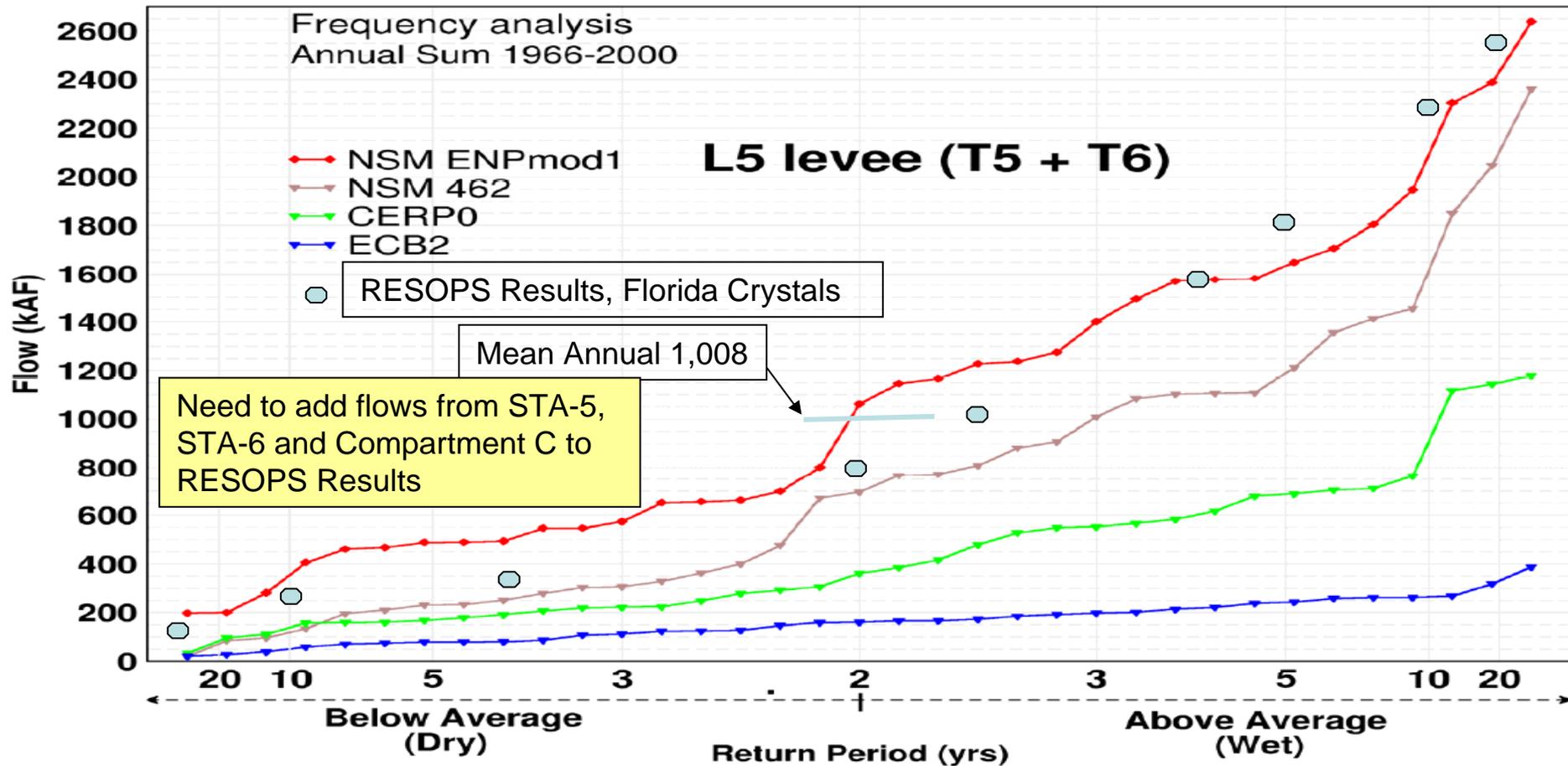


RESOPS Results



RESOPS Results (41-Year Simulation)

Flows through the Central Everglades



Suggestions for Further Improvement

- Lake Regulation Schedule
 - Increase usable storage
 - Dry year flows to Everglades & LOSA Water Supply
 - Caloosahatchee Estuary Demands
- Lake Inflows
 - FRESP Storage/Treatment
 - Focus on load reduction, secondary benefit as flow modifier
 - Kissimmee Headwaters Revitalization
 - Kissimmee River Restoration
- Further optimization or addition of storage and/or treatment in C-43 and C-44 basins to address local basin runoff
- Potential for additional flows to and/or storage on Rotenberger Tract and Holey Land WMA

- Timing for completion of structural and operational components must be synchronized with other system changes
 - Repair of Herbert Hoover dike
 - Decompartmentalization and Mod Waters
 - Seepage control along east perimeter of EPA
- Need to synchronize funding for all system changes as well
- Each incremental change should move toward eventual plan completion and not worsen results for key performance measures in the interim

- Compartments B and C STA expansions
- C-43 and C-44 Reservoirs, ECART
- New STA in S-5A Basin
- Expanded treatment area in Central Flow Path
- Managed Flow-Way, S-4 Basin Diversion

- Restores flows to Everglades
- Provides adequate treatment (additional analysis both appropriate and necessary)
- Re-establishes historic hydrologic connection
- Addresses phosphorus overloads to Refuge
- Addresses needs of northern estuaries
- Reduces costs (as compared to any alternative with significant deep storage of Everglades flows)
- Can be improved upon further analysis of system operations (without additional construction)
- Can be sequenced with other necessary changes to the system
- ***Hits the “Sweet Spot”***