



REStoration COOrdination and VERification (RECOVER)  
Evaluation Team, Regional Evaluation Report

**TRANSMITTAL LETTER**

August 9, 2005

Project Managers and Planning Technical Leads  
Everglades Agricultural Area Storage Reservoir Project  
Comprehensive Everglades Restoration Plan

Dear Project Team Managers and Planning Technical Leads,

RECOVER has completed its regional evaluation of the EAA Storage Reservoir Project (EAASR) alternative plans and our final report is attached.

RECOVER's evaluation of project alternatives fulfills the following requirements as prescribed by the Programmatic Regulations:

1. Support project teams to achieve consistency with the CERP's goals and objectives;
2. Document the performance of the project alternative plans using RECOVER approved system-wide performance measures, project performance measures (when appropriate), and best professional judgment. RECOVER determines the ability of each alternative plan to meet the targets established for each performance measure and describes the resulting effects upon the natural system. When appropriate, RECOVER evaluations include a qualitative analysis on how the project fulfills CERP goals and objectives;
3. Suggest improvements to the project, which if pursued could improve project performance or enhance benefits to the natural system;
4. Provide insight, if possible, and alert the project teams of any inconsistent modeling assumptions for the project as originally modeled in the CERP.

Recommendations discussed within the RECOVER regional evaluation report generally fall into one of three categories:

1. Recommendations that can easily be incorporated into the plan formulation process;
2. Recommendations that are more conceptual in nature, which the Project Team may select to incorporate into preliminary designs to improve project performance; and
3. Recommendations that are crucial to the project, but cannot be addressed prior to the AFB meeting.

Concerning the latter category, RECOVER significantly expedited its regional evaluation to satisfy the need for timely reporting, while bringing forward as much science as possible. As a result, this report may not constitute the entirety of RECOVER's review as specified in the Programmatic Regulations. Therefore, RECOVER may provide additional information supporting and refining the original regional evaluation, with the expectation that those additional evaluation comments be considered by the project team.

Best regards,

Evaluation Team Chairs  
(Orlando Ramos-Ginés, Brenda Mills, Kim Jacobs, Steve Gilbert)

# **Everglades Agricultural Area Storage Reservoir Project (EAASR Project) Regional Evaluation Report 08/08/05 Prepared by RECOVER**

## **1.0 Introduction and Purpose of the Evaluation**

The Everglades Agricultural Area Storage Reservoir (EAASR) Project Team has completed the plan formulation phase and requested that Restoration Coordination and Verification (RECOVER) conduct an evaluation of the alternative plans being considered. Additionally, RECOVER was asked to provide a scientific review of the quantification of ecological benefits methodology used by the project. The role of RECOVER is to organize and apply scientific and technical information in ways that are most effective in supporting the objectives of the Comprehensive Everglades Restoration Plan (CERP or Comprehensive Plan). One of the primary missions of RECOVER is to work with the project team to evaluate and maximize the contribution made by each project to the system-wide performance of the CERP. The RECOVER Evaluation Team (ET) is charged with the responsibility of conducting the system-wide evaluation.

The ET is an interagency and interdisciplinary scientific and technical team charged with developing and using performance measures for evaluating alternative plans developed for Project Implementation Reports (PIRs). The purpose of the ET evaluation is to ensure that alternative plans are consistent with the goals and purposes of the CERP. For its evaluations, the ET has developed a suite of approximately 40 ecological performance measures and 8 water supply and flood protection performance measures. Output from the South Florida Water Management Model (SFWMM version 5.4), which is the primary hydrologic simulation model for the CERP, is used to produce PM output. The SFWMM is a regional scale model that provides simulations of hydrologic conditions at a 2-mile by 2-mile spatial resolution. Because of the large-scale resolution of the model and the relatively small hydrologic influence of some CERP projects, ET performance measures may not always reveal differences in system-wide performance of project alternative plans. In these cases, RECOVER uses other scientific information to evaluate the potential performance of project alternatives on the system.

The purposes of regional evaluations are to: (1) inform the project team of the compatibility of proposed project alternative plans with regional CERP restoration goals and performance expectations; (2) determine the performance of each alternative plan toward meeting system-wide goals and objectives through the use of system-wide performance measures, project performance measures, and best professional judgment; (3) identify improvements for project performance that would improve its regional performance, and (4) provide decision-makers required information regarding regional performance expectations of specific projects.

The type of RECOVER evaluations may vary depending on the applied tools, new information that may have become available, the project's relationship to the Central and South Florida (C&SF) Project, or the project implementation schedule. In the case of hydrologically isolated

projects, RECOVER may not be able to rely on regional modeling results for their evaluations. For these projects, the scope of RECOVER's evaluations may be limited to reviewing project-level model results and applying best professional judgment.

## **2.0 Project Background and General Description of Alternative Plans**

### **2.1 Project Goals and Objectives**

The EAASR Project is part of the CERP as authorized by the Water Resources Development Act (WRDA) 2000 (U.S. Congress, 2000). The objectives of this project, as identified in the draft EAASR Project Alternatives Formulation Briefing (AFB) Report (USACE and SFWMD, 2005) are as follows:

- Reduction of the Lake Okeechobee regulatory releases to the estuaries and backpumping from the study area into Lake Okeechobee by sending the water to the reservoir
- Improved environmental releases through the storage of water and release to the Everglades during the dry season
- Flow equalization and optimization of treatment performance of stormwater treatment areas (STAs) by capturing peak storm event discharges within the reservoir for slow release to the STAs
- Improved regional water supply for the agricultural community currently served by the Everglades Agricultural Area (EAA) canals and other areas served by Lake Okeechobee

### **2.2 Project Background**

The Central and Southern Florida Project Comprehensive Review Study (USACE and SFWMD, 1999) conceptual design for the EAASR called for the construction of a 360,000 acre-ft of storage and conveyance capacity increases within the EAA. The initial design assumed 60,000 acres, divided between three separate storage compartments of equal size (USACE and SFWMD, 1999). Compartment 1 discharges were to meet EAA agricultural demands. Compartment 2 discharges were to meet environmental demands as a priority and then to supply agricultural demands. Compartment 3 discharges were to meet environmental demands only.

During the planning and design process for this project refinements to the conceptual project design were developed. As such, model results evaluated by the RECOVER review team were based on updated assumptions from the spring 2005 SFWMM output. The updates assumptions include the following:

1. Both the future with project (FWP) and the future without project (FWO) include rain-driven operations (RDO)
2. Two cells rather than three (90,000 and 270,000 acre-ft)
3. Separate cells for agriculture and Everglades Protection Areas.

Since the spring 2005 modeling, further updates to design and operations are continuing by the EAASR Project team. New model output will be available to RECOVER in the near future that reflects these changes, and will be reviewed by RECOVER once it is made available. The updated modeling will include the following:

1. No rain-driven operations for the FWO,
2. Two reservoirs of approximately equal capacity (190,000 and 170,000 acre-ft)
3. Water distributed between both cells.

### **2.3 General Description of Alternative Plans**

The EAASR Project used screening criteria to identify their final array of four project alternative plans. Each alternative plan being considered includes a storage reservoir of 360,000 acre-ft. In addition to some operational differences, the alternative plans differ in the depth of the reservoir and the size of the reservoir footprint as follows:

- Alternative Plan 1: 360,000 acre-ft of storage at a depth of 6 ft, footprint size 62,000 acres
- Alternative Plan 2: 360,000 acre-ft of storage at a depth of 10 ft, footprint size 37,000 acres
- Alternative Plan 3: 360,000 acre-ft of storage at a depth of 12 ft, footprint size 31,000 acres
- Alternative Plan 4: 360,000 acre-ft of storage at a depth of 14 ft, footprint size 26,500 acres

### **3.0 Evaluation Methodology and Information Considered**

This section outlines the methodology used by RECOVER to conduct its regional evaluation of alternative plans. It also describes the modeling and technical information considered by RECOVER to evaluate the potential system-wide effects of the EAASR Project. RECOVER's analyses of the information presented and implications to the system are presented in later sections of this report.

#### **3.1 Methodology**

The EAASR Project team provided RECOVER with SFWMM version 5.4 modeling results for the four alternatives plans being considered by the project team as part of two planning conditions:

- Last Added Increment (LAI) Modeling Scenario: 2050 future condition including the EAASR Project alternative plans in addition to all other CERP projects included in the Central and South Florida Project Comprehensive Review Study (Yellow Book) (USACE and SFWMD, 1999) designs (referred to as Alt D13R),
- Next Added Increment (NAI) Modeling Scenario: 2050 future condition including the EAASR project alternative and no other CERP projects

To conduct its evaluation, RECOVER first considered the LAI modeling runs for each alternative plan to ensure that each alternative plan was still consistent with system formulation. . The results of this screening confirmed that no alternative plan performed significantly better or worse when considering all other CERP projects in the simulation. The next step in RECOVER's evaluation was to consider the NAI to determine if there were differences among alternative plan

performance. The results of both RECOVER's LAI and NAI regional evaluations are presented in later sections of this report. The NAI alternatives were compared to the 2050B2 FWO (The 2050BS as named by the project is the same as 2050B2 referred to in RECOVER documents. The 2050B2 is the without project condition including RDO.

### **3.2 Hydrologic Modeling**

RECOVER conducted its evaluation based on the following four model scenarios run using the SFWMM version 5.4 according to the methodology discussed previously:

- Future without project (FWO) model simulation: 2050B2 (named by the project as 2050BS)
- Future with project D13R: CERP1
- LAI model simulations:
  - Future with project alternative 1 LAI: last1
  - Future with project alternative 2 LAI: last2
  - Future with project alternative 3 LAI: last3
  - Future with project alternative 4 LAI: last4
- NAI model simulations:
  - Future with project alternative 1 NAI: next1
  - Future with project alternative 2 NAI: next2
  - Future with project alternative 3 NAI: next3
  - Future with project alternative 4 NAI: next4

Results from this modeling are presented in Appendix A. Additional regional modeling information can be found at <http://hpm.saj.usace.army.mil/eaaweb/sfwmm/>.

### **3.3 Water Quality**

Because no model simulations address water-quality parameters directly, RECOVER considered hydrologic information for the SFWMM that could be translated to water quality (WQ) effects. Such information included structural flows, frequency of STA drydowns, and regulatory releases to the Greater Everglades (GE) wetlands. Additionally, RECOVER considered recent STA flow and loading estimates as presented by Burns and McDonnell (2005) in the Everglades Protection Area (EPA) Tributary Basins Supplemental Analysis. This analysis details flows and loads entering STAs located within the CERP and SFWMM boundaries, including STA 3/4 where the EAASR Project would help to store and equalize flows entering the STA for treatment and environmental supply.

RECOVER also used two draft water quality reports requested by and prepared for the EAASR Project team (Alternative Plan Formulation and Evaluation: Water Quality Assessment Report-Preliminary Draft, Wetland Solutions Inc. 2004) and Draft Water Quality Assessment-Water and Air Research, July 28, 2005). The final report is scheduled for team delivery by August 2005. The report includes an analysis of proposed water quality improvements in the reservoir alone and when routed through STA 3/4, impacts of maximum and minimum depths on water quality treatment in the reservoir, operational guidelines for maximizing water quality benefits, and

impacts of complete dry-out of the reservoir. RECOVER commends the EAASR Project Team for requesting such evaluation within the project’s footprint as it helps evaluate regional ecological effects expected by the project implementation. RECOVER will review the final report and make additional comments when it is delivered.

**3.4 Additional Pending Modeling Results**

Additional model results to consider the sensitivity of different operational scenarios are still pending for the EAASR Project. It will take several more weeks before these results are available from the Interagency Modeling Center (IMC). When available, RECOVER will review these additional model results and provide modified and/or additional comments to the EAASR Project team where appropriate.

**4.0 Consistency of Project Goals and Objectives and System-wide Performance of Alternatives Plans**

**4.1 Project Goals and Objectives - Consistency with the Comprehensive Plan**

The planning objectives developed for the EAASR Project are generally consistent with the objectives of the Comprehensive Plan (USACE and SFWMD, 1999). The planning goal of this project is to create an above-ground reservoir as well as conveyance improvements within the EAA. The additional storage would enhance other regional CERP projects as well as the SFWMD Long-Term Plan, the SFWMD Everglades Regulatory Program, and SFWMD Adaptive Implementation Strategy. It will primarily contribute to CERP environmental benefits to Lake Okeechobee, the St. Lucie and Caloosahatchee Estuaries, and the Everglades Protection Area (EPA) by improving the quantity, quality, and timing of downstream releases to the estuaries and the EPA. The planning objectives for this project were developed using both the broad CERP goals and objectives and the more defined regional and site-specific restoration objectives. The four objectives developed for the EAASR project presented below directly correspond to specific CERP objective(s) contained in the Central and Southern Florida Project Comprehensive Review Study Final Integrated Feasibility Report and Programmatic Environmental Impact Statement. (USACE and SFWMD, 1999).

<b>Project Objective</b>	<b>Corresponding CERP Objective(s)</b>
Reduction of the Lake Okeechobee regulatory releases to the estuaries and backpumping from the study area into Lake Okeechobee by sending the water to the reservoir	<ul style="list-style-type: none"> <li>▪ Improve habitat and functional quality</li> <li>▪ Improve native plant and animal species abundance and diversity</li> </ul>
Improved environmental releases through the storage of water and release to the Everglades during the dry season	<ul style="list-style-type: none"> <li>▪ Improve habitat and functional quality</li> <li>▪ Improve native plant and animal species abundance and diversity</li> </ul>
Flow equalization and optimization of treatment performance of STAs by capturing peak storm event discharges within the reservoir for slow release to the STAs	<ul style="list-style-type: none"> <li>▪ Improve habitat and functional quality</li> <li>▪ Increase availability of fresh water</li> </ul>
Improved regional water supply for the agricultural community currently served by the EAA canals and other areas served by Lake Okeechobee	<ul style="list-style-type: none"> <li>▪ Increase availability of fresh water</li> </ul>

## **4.2 System-wide Performance of Alternative Plans**

RECOVER system-wide performance measures were used to evaluate plan performance and, where possible, best professional judgment was applied to discuss environmental effects of hydrologic, water quality, and biology not captured by RECOVER performance measures. Complete documentation of RECOVER performance measure output can be found in Appendix A of this document. System-wide performance of project alternative plans was evaluated for five regions. The following sections summarize performance of the project alternatives using the NAI, LAI, CERP1, and the FWO modeling scenarios for those areas within the boundaries of the SFWMM version 5.4.

## **4.3 Lake Okeechobee (LO)**

RECOVER's review of alternative plans focused on the Lake Okeechobee mean annual flood control releases to the estuaries and the Lake Okeechobee stage above the optimal envelope. Based on these two analyses, the project will provide significant benefits to the area.

Since the RECOVER stage envelope performance measure LO-E10 requires a change of 0.1 or more to show improvement over the base conditions, only one factor is significantly improved for the 36-year period, stage above the desired lake stage envelope (LO-E10SA), the others are minimally improved or at least not further degraded. Published research on LO (Lake Okeechobee Conceptual Model document and Havens, in prep.) indicates adverse ecological impacts associated with extreme high lake stage. The project exerts some effect upon the littoral zone of LO as it reduces the number of high stages (greater than 15 ft for 365 days or more) and permits the lake to operate at lower stages under the NAI condition. This will have a positive effect upon the LO littoral zone wetlands, potentially increasing their area and seasonal longevity. Areas below 6 feet generally permit Submerged Aquatic Vegetation (SAV) reproduction and photosynthesis. These wetlands are essential for maintaining the nutrient budget of LO as attested to by recent high stage events and corresponding high water column nutrients. An example of assimilative capacity of wetlands is STA 1E, which is designed to remove 30 metric tones of total phosphorus (TP) in its 5350 acres. The unit assimilative capacity in several mesocosm studies ranged from 100-300 mg P/m<sup>2</sup>/yr (Dierberg et al, 2002). The 50,000 acres of shelf area between the western littoral zone and the pelagic zone has the potential to exert a significant effect on TP concentrations in the LO water column (Havens, in prep).

EAA backpumping to Lake Okeechobee declines significantly for all the NAI alternatives as compared to the 2050B2 condition (18-25,000 vs. 42,000 acre-ft/yr), with the best performance by NAI alternative plan 1 (18,000 acre-ft/yr). Similar results are seen when looking at only drought years. Additionally, STA bypasses declined significantly under all the NAI alternatives compared to the 2050B2 conditions (ST2BYP 900-1,200 vs. 2,225 acre-ft/yr), with the best performance by NAI alternative plan 1 (928 acre-ft/yr).

## **4.4 Northern Estuaries (NE)**

### Caloosahatchee Estuary and St Lucie Estuary

For the Caloosahatchee Estuary, the NAI alternative plans perform slightly better than the FWO

(Note: no model output was available for LAI alternatives), but no substantial differences were observed between the NAI alternative plans for high water discharges into the estuary. Lake Okeechobee regulatory releases higher than 2,800 cfs into the Caloosahatchee Estuary are predicted to decline thereby improving mean flows to the estuary from 289,000 acre-ft/yr under the FWO to 183,000-187,000 acre-ft/yr, with the best performance from NAI alternative plan 1 (183,000 acre-ft/yr).

During the dry season, the NAI alternative plans show increased number of months with flows less than 300 cfs with no substantial differences between the alternative plans. This increase would negatively affect the salinity conditions within the estuary during the time of year when additional freshwater flows are needed to maintain the target salinity envelope.

#### St. Lucie Estuary

For the St. Lucie Estuary, the NAI alternative plans perform slightly better than FWO and there are no substantial differences among the alternative plans for the high discharge criteria. The 14-day moving-average of flows greater than 2,000 cfs, including LO releases, are better for the NAI alternative plans than FWO conditions and there are no substantial differences among the alternative plans. No significant differences are shown between FWO and NAI alternative plans for number of months average flow is less than 350 cfs.

#### Lake Worth Lagoon

No significant differences between FWO and NAI alternative plans. There is a small reduction in the overall structural discharges (S44, S155, and S41) and loading to Lake Worth Lagoon (3,000 acre-ft) for the NAI alternative plans.

### **4.5 Greater Everglades (GE)**

The regional evaluation of the Greater Everglades region includes an evaluation of model outputs and other information, as needed, for the following areas:

- Arthur R. Marshall Loxahatchee National Wildlife Refuge
- Rotenberger Water Management Area
- J.W. Corbett Water Management Area
- Holey Land Water Management Area
- Big Cypress National Preserve
- Water Conservation Area 2
- Water Conservation Area 3
- Shark River Slough
- Taylor Slough
- Lostman's Slough
- Marl Marshes
- Pennsuco Wetlands
- Southern Everglades
- Model Lands
- C-111/Perrine Marl Marsh

This section includes a discussion on those areas where substantial or significant differences were observed in either next or last added increments.

#### *Last Added Increment:*

Looking at the full 36-year period of record for GE-E1, GE-E2 and GE-E3 and the four LAI alternative plans, RECOVER found no significant differences between the four LAI alternative

plans or between the LAI alternative plans and CERP1.

*Next Added Increment Alternative Plans:*

Looking at the full 36-year period of record for performance measures GE-E2 and GE-E3, there are no significant differences between the four NAI alternative plans, or between the NAI alternative plans and the FWO. However, there are some very minor differences and it is possible that greater differences might be apparent if outputs for only the wettest and driest years were examined.

For the four NAI alternative plans, RECOVER understands that output for the wettest and driest years was only generated for one of the NAI alternative plans. It may be worthwhile for the project team to request this output for all four NAI alternative plans when the updated modeling is generated. This output could then be examined for potential significant differences between the four NAI alternative plans.

RECOVER also noticed some fairly consistent small differences between the four NAI alternative plans and the FWO in the marl marsh indicator regions. This suggests that there may be significant differences in the marl areas when the wettest and driest years are examined. RECOVER suggests the project team look at the wettest and driest year output for the marl marshes to determine if there are additional project benefits or adverse impacts in these areas that should be taken into account.

Similarly, RECOVER also examined the full 36-year period of record for PM GE-E1 and noticed a small difference between the four NAI alternative plans and the FWO suggesting that the project may provide some benefit in terms of fewer dryouts in Shark River Slough. This difference may become significant if only the driest years are examined and could provide an additional source of project benefits.

Structure flows from S12A-S12D did not differ between the four NAI alternative plans but were approximately 10% greater than the FWO. Similarly the flows (under the NAI alternative plans) through S332 show slight increase (~5%) over FWO potentially providing additional water to Taylor Slough and Florida Bay.

Southward flows in Northern Everglades National Park (south of Tamiami Trail, west and east of L-67 extension) indicate that the EAASR Project would slightly improve the average annual overland flow across transects 17 and 18 under both next and last added increments. Flow volumes across transects are not approved RECOVER performance measures due to their associated levels of uncertainty and are more appropriately used to indicate direction of change rather than quantifiable flows.

*STAs and Potential Effects on Greater Everglades Water Quality*

The EAASR provides water quality treatment benefits within the reservoir which benefits downstream STAs. All of the NAI alternative plans are expected to provide these benefits compared to the FWO. The EAASR provides additional retention time for waters that would otherwise be sent via canal directly to the STAs. This additional residence time increases the settling rate of particulate matter, potentially lowering the total load transmitted downstream to

the STAs. Hydraulic residence time in the reservoir is predicted to average 91 days, ranging from a low of 7 days to a high of 289 days. The average value results in a 65% reduction of total nitrogen, an 81% reduction of TP, and a 95% reduction in total suspended solids (Water and Air Research, Inc., July 28, 2005). This is consistent with the Eutromod Model that indicates with a 28-day residence time there will be an approximately 27.5% decline in TP (Wetland Solutions, Inc 2004). During periods of shorter residence time, benefits to water quality will not be as high. STA operations will benefit greatly from lower nutrient loadings. This will assist in lowering water column TP along the flow path of the STA and maintaining TP loads further away from the GE region.

Potential effects of water depth and wind warrant further investigation. Reservoir depths of 6 feet (alternative 1) or less will promote the growth of SAV. SAV stabilizes sediments and SAV and associated epiphytes lower surface water nutrient concentrations. Wind is a factor that also warrants further consideration. The LO water quality model indicates that wind potentially leads to sediment resuspension. The Water Quality Assessment Report (Wetland Solutions, Inc. 2004) references several studies relating wind and water column nutrients, but it is unclear whether the water quality models used for the Reservoir include wind as a factor. Wind should be considered in the water quality model. Both wind and reservoir water depth will affect the water quality of reservoir outflow entering the STAs.

Further benefits of the EAASR to the STAs relate to seasonal dry down of the STAs. Due to additional storage capacity in the reservoir, there is potential to deliver water to the STAs during the dry season. Keeping STAs saturated will lower the level of nutrient flux from sediments to surface water. This becomes especially important during droughts where water levels can drop a foot or more below land surface. This permits the oxidation of several millimeters of accreted peat soils as well as the oxidation of the standing crop of SAV. Oxidation of sediments during dry down leads to increased nutrient fluxing upon rewetting. Reducing dry down and rewetting of STAs will also reduce the potential for mercury methylation. Although the EAASR will provide water to the STAs much of the year, there are long periods in which the EAASR may be below grade (less than 0 feet). The Draft Water Quality Assessment Report (Water and Air Research, Inc. 2005) indicates that 20% of the time the EAASR will be below grade and an additional 28% of the time the reservoir will be from 0-1 foot. During periods of rewetting there is potential for increased mercury methylation and nutrient flux from the sediments and decomposing vegetation.

Compartmentalization of the reservoir will help water quality by limiting the amount of phosphorus and sulfate loads entering the STAs and ultimately reaching the Everglades Protection Areas. By recirculating water between the EAA and one compartment of the reservoir, nutrients will remain in a relatively closed loop system, and will not enter downstream habitats. Sulfate is of particular concern because STAs do not treat for sulfate and sulfate concentrations in the EAA range from 1.7-197 mg/l and average 38 mg/l. Sulfate concentrations have been linked to mercury methylation. Water Conservation Area (WCA)-3A is highly impacted by sulfate as northern areas of WCA are above 30 mg/l. Sulfate concentrations in unimpacted areas of WCA-3A average less than 0.5 mg/l.

Additional benefits of reservoir storage come from lowering the volume of EAA waters

distributed to the STAs. This provides further STA capacity during times of peak demands (wet season and storm events). Lowering the volume delivered to the STAs from the EAA lowers the probability that STAs will be loaded beyond their design capacity.

#### **4.6 Southern Estuaries (SE)**

Model output for EAASR Project alternative plans was compared to the FWO for the Southern Estuaries. RECOVER's evaluations showed the following for Biscayne Bay and Florida Bay.

##### Biscayne Bay

No difference is shown between the FWO and LAI alternative plans, except that LAI alternative plans appear to deliver slightly less water than the FWO.

In general, there are no differences between the FWO and NAI alternative plans as they relate to flows to Biscayne Bay. Both FWO and all the NAI alternative plans fall short of meeting the targets. This is expected because targets are set for full CERP implementation rather than for single project implementation. North River salinities were above Natural System Model (NSM) levels from August-May.

##### Florida Bay

Average monthly salinity did not differ between NAI alternative plans in Garfield Bight, Joe Bay, Little Madeira, and Terrapin Bay. The salinity for these areas did not vary from NSM. Under the NAI alternative plans there is a very slight improvement in water flows toward Whitewater Bay and Florida Bay as represented by overland flow transects 21, 22, and 23. Flow volumes across transects are not approved RECOVER performance measures due to their associated levels of uncertainty and are more appropriately used to indicate direction of change rather than quantifiable flows.

#### **4.7 Water Supply and Flood Damage Reduction**

##### Lake Okeechobee Service Area (LOSA)

Larger regulatory releases to the south provide a benefit to the system by reducing adverse impacts to estuaries and help to lower seasonally high stages in LO. There is significant increase in LO regulatory releases to the EAASR between the 2050B2 condition and the NAI alternative plans (0 vs. ~ 420,000 acre-ft), with the best performance by NAI alternative plan 4 (425,000 acre-ft). It is interesting to note that LO regulatory releases to the EAA under the LAI alternative plans decline to ~265,000 acre-ft compared to the NAI.

Fewer water supply releases from Lake Okeechobee for EAA irrigation are considered a benefit, leaving more water in the lake for the natural system. Water supply to the EAA from LO under the NAI alternative plans is less than half that of the 2050B2 condition (295,000 vs. 132,000 acre-ft), with the best performance by NAI alternative plan 1 (116,000 acre-ft). The lake deliveries are higher in the LAI alternative plans than those in the NAI analysis.

An evaluation of evapotranspiration lost from the EAASR reveals potentially significant differences among the NAI alternative plans. Significant increases in evapotranspiration result in a reduction in water available in the regional system for users and the natural system.

Conversely, it increases the ability of the reservoir to receive more excess water during wet periods. Depending on the modeling assumptions, this could result in problems with meeting the water supply protection of existing legal users, a requirement related to the savings clause. Evapotranspiration losses under the NAI alternative plans are up to 45,000 acre-ft greater than the 2050B2 losses. Progressively increasing the footprint of the reservoirs, under the four next alternative plans, results in corresponding increase in evapotranspiration losses.

While evapotranspiration under the NAI alternative plans may indicate less water for the natural system and water supply users, the volume of water delivered to the GE remains significantly higher than the FWO condition. Overall there is an increase in the total volume of water supplied to the GE under the NAI due to the EAASR. The compartmentalization of the reservoirs (within the project) permits isolation of the area that contains water and potentially mitigates evapotranspiration losses by lowering the surface area to volume ratio thereby affecting water supply. The planned operation of the reservoir will also minimize water losses by returning water in the first compartment to the EAA for irrigation resupply. Additionally, rainfall into the reservoir is expected to offset ET losses (within 1%) (Water and Air Research, Inc., July 28, 2005)

The total number of years in the LOSA with water restrictions declines slightly from the FWO (12 years) to the NAI alternative plans (10-11 years). The duration and severity of some of the drought years are also reduced from the FWO. Performance of the LAI alternative plans is problematic. The CERP1, using the original Yellow Book design of the EAASR, provides a performance of a total of 4 years with water restrictions (5 months). The LAI alternative plans performance increases the total number of years with water shortages to 6-7 years (8-10 months). It is important to note that the criteria used for determining the total years with water restrictions for LOSA is incorrectly described on the performance measure graphics. The Lower East Coast Service Area (LECSA) criteria are displayed instead of the LOSA criteria. LECSA counts 3 consecutive months as an event while LOSA counts every event. This results in a lower number of cutbacks for the LAI and NAI alternative plans for LOSA than would appear using the appropriate LOSA criteria.

#### Lower East Coast Service Area (LECSA)

There was no difference in the LECSA number of cutbacks between the NAI alternative plans and the FWO for the North Palm Beach County (NPBC) and LECSA1 (LECSA1 = central Palm Beach County and part of Broward County). The number of cutbacks for LECSA3 (LECSA3 = central Miami-Dade and south) declined slightly between the NAI alternative plans and the FWO. The LAI alternative plans show a significant decline in the number of cutbacks compared to both the NAI and FWO conditions for NPBC, LECSA1, LECSA2 (LECSA2 = central Broward to northern Miami-Dade), and LECSA3.

There was no difference in the flows to tide between the NAI alternative plans and the FWO condition for NPBC, LECSA1, LECSA2, or LECSA3. Similarly there was very little difference in structural flows either spatially or seasonally within the LECSA.

There were no major differences between FWO and FWP conditions for saltwater intrusion prevention in South Miami-Dade County, under both NAI and LAI analyses.

## 5.0 Opportunities for Alternative Plan Improvements and Other Considerations

RECOVER provides insight, if possible, and alerts the project team to any inconsistent modeling assumptions for the project. As part of the responsibilities given to RECOVER, this section presents suggested improvements to the alternative plans, which, where possible, are intended to improve the project's performance or enhance benefits to the natural system. These suggested improvements to the alternative plans should be considered by the project during the design of the final plan or reevaluation of alternative plans when appropriate. The project manager or designee is required to notify RECOVER, in writing, which of these suggested improvements to the alternative plans were incorporated in the final design. Additionally, RECOVER provides suggestions on how the project may analyze data or modeling output that may provide the project with greater system-wide benefits than recognized under the current analysis.

**Additional Project Benefits.** For GE-E1 it may be worthwhile to look at only the driest years for Shark River Slough. This may indicate more significant differences between the alternative plans and may provide the project with additional benefits. RECOVER also suggests the project team look at the wettest and driest year output for the marl marshes to determine if there are additional project benefits or adverse impacts in these areas.

It may also be worthwhile for the project team to request output for all four NAI alternative plans based on wettest and driest years when the updated modeling is generated. This output could then be examined for potential significant differences between the four NAI options. Currently this was done for only a single alternative.

**Water Supply Cutbacks for LOSA.** Criteria used for calculating the number of cutbacks for LOSA graphics incorrectly use the LECSA criteria resulting in a lower number of cutbacks for the LAI and NAI alternative plans. The project should request that the IMC correct the criteria used for calculating the number of cutbacks.

**Water Quality.** RECOVER recommends that the project operate the reservoir to increase residence time of incoming waters. Additionally, compartmentalization of the reservoir will help with water quality and potentially evapotranspiration issues. Compartmentalization will limit the amount of phosphorus and sulfate entering the STAs and ultimately the EPA. By recirculating water between the EAA and one compartment of the reservoir, nutrients will remain in a relatively closed loop system, and will not enter downstream habitats. Sulfate is of particular concern because STAs do not treat for sulfate and sulfate concentrations in the EAA range from 1.7-197 mg/l and average 38 mg/l. WCA 3A is highly impacted by sulfate as northern areas of WCA are above 30 mg/l. Sulfate concentrations in unimpacted areas of WCA-3A average less than 0.5 mg/l. It is particularly important to hold water in the reservoir upon rewetting to allow time for re-absorption. Incremental rewetting of compartments with the reservoir should be investigated to optimize nutrient uptake. RECOVER also recommends further investigation of the effects of wind on sediment resuspension in the reservoir. The LO water quality model could potentially be applied to the EAASR to determine impacts of wind on water quality.

## 6.0 Conclusions

To conduct its evaluation, RECOVER first considered the LAI modeling runs for each alternative plan to ensure that each alternative plan was still consistent with system formulation.

The results of this screening confirmed that no alternative plan performed significantly better or worse when considering all other CERP projects in the simulation. The next step in RECOVER's evaluation was to consider the NAI to determine if differences occurred among alternative plan performance. Review of RECOVER's system-wide performance measures as well as additional relevant information mentioned in the report indicates that the project meets its goals of (1) improving habitat in Lake Okeechobee and the estuaries by reducing EAA irrigation demands on Lake Okeechobee and providing storage of regulatory releases from Lake Okeechobee, (2) improving habitat in the Everglades Protection Area by providing adequate timing of environmental water deliveries and providing storage of regulatory releases from Lake Okeechobee, and (3) increasing flood protection within the EAA.

The project has a positive effect upon the LO littoral zone's wetlands reducing the number of high stages (greater than 15 ft for 365 days or more). Operating at lower stages will help maintain the nutrient budget of LO. EAA backpumping to the lake as well as STA bypasses both decline under the future with project (next added increment).

For the Caloosahatchee Estuary, the NAI alternative plans are slightly better than the FWO. During the dry season, the NAI alternative plans show increased number of months with flows less than 300 cfs with no substantial differences between the alternatives. This increase would negatively affect the salinity conditions within the estuary. For the St. Lucie Estuary, the NAI alternative plans are slightly better than FWO. The 14-day moving-average of flows greater than 2000 cfs, including LO releases, is better for the NAI alternative plans than FWO. For Lake Worth Lagoon there were no significant differences between FWO and the NAI alternative plans.

Larger LO regulatory releases to the south benefit the system by reducing adverse impacts to estuaries and lowering seasonally high stages in LO. Fewer water supply releases from Lake Okeechobee for EAA irrigation are considered a benefit, leaving more water in the lake for the natural system. Water supply to the EAA from LO under the NAI is less than half that of the FWO condition. Significant increases in evapotranspiration result in a reduction in total water available in the regional system. However, total losses from ET under the next added increment are much lower than the total losses to tide under the FWO condition and direct rainfall into the reservoir also offsets evapotranspiration losses.

In the Greater Everglades, there are no significant differences between the four NAI alternative plans, or between the NAI alternative plans and the FWO when the full 36-year POR is averaged; however RECOVER did note some small differences, suggesting that significant differences might be observed if only the wettest and driest years were examined. There were consistent small differences between the four NAI alternative plans and the FWO in the marl marsh indicator regions. Similarly, there was a small difference between the four NAI alternative plans and the FWO for GE-E1, suggesting that the project may provide some benefit in terms of fewer dryouts in Shark River Slough.

The EAA storage reservoir provides water quality treatment benefits both within reservoir as well as down stream in STAs. The reservoir itself provides additional retention time increases the settling rate of particulate matter lowering water column TP along the flow path of the STA

and maintaining TP loads further away from the GE. Additional storage capacity in the reservoir will aid in keeping STAs saturated during the dry season, potentially lowering the level of nutrient flux from sediments. Lowering the volume delivered to the STAs lowers the probability that STAs will be loaded beyond their design capacity. RECOVER also recently received two DRAFT WQ reports from the project and will provide further comments as needed. This information was only recently provided to the project and to RECOVER (7-26-05 and 7-28-05). RECOVER reviewed the Draft Water Quality Reports (Wetland Systems Inc. 2004 and Water and Air Research, Inc. 2005) and most RECOVER comments were consistent with the reports. The key factors recognized by the reports and RECOVER is the importance to maintain water in the reservoir when possible, optimize hydraulic residence time, provide steady flows to the STAs, and maintain hydrated soils in the STAs.

The RECOVER evaluation team recognizes that the project has requested additional modeling runs that have not yet been run by the IMC. RECOVER expects to review this additional output and will provide the project with additional comments where necessary. In addition to the system wide evaluation of the EAASR Project, RECOVER also evaluated the quantification of ecological benefits methodology used by the project. This review will be submitted as a separate report. Appendix A contains the complete modeling results used by the RECOVER ET review team.

RECOVER's recent adoption of the "values triangle" is a recognition of the need to balance science, timely reporting and inclusiveness. For this RECOVER evaluation, significant efforts were undertaken to satisfy the need for timely reporting while bringing forward as much science as possible. However, in completing this exercise, we recognize that most of our final recommendations are on improvements to the materials being developed for the project and not necessarily on the design of the project alternatives itself. Therefore, this report may not constitute the entirety of RECOVER's review of projects as specified in the Programmatic Regulations. RECOVER may provide the project additional information supporting and refining the original evaluation.

## **7.0 REFERENCES**

Burns and McDonnell, Inc., 1994. Everglades Protection Project, Palm Beach County, Florida: Conceptual Design. Final Report to the South Florida Water Management District. Contract # C-3021, West Palm Beach, Florida.

Burns and McDonnell, Inc., 2002. Basin-Specific Feasibility Studies Everglades Protection Area Tributary Basins Evaluation of Alternatives for the ECP Basins. Final Report to the South Florida Water Management District. Contract No. C-E023. Project No. 29042, West Palm Beach, Florida.

Burns and McDonnell, Inc., 2005. Everglades Protection Area Tributary Basins Supplemental Analysis. Final Report for Everglades Agricultural Area Environmental Protection District. Project No. 37831SFWMD 2003. Everglades Protection Area Tributary Basin Long-Term Plan for Achieving Water Quality Goals, South Florida Water Management District, West Palm Beach, Florida.

Dierberg, F.E., T. A. DeBusk, S.D. Jackson, M.J. Chimney, and K. Pietro, 2002, Submerged aquatic vegetation-based treatment wetlands for removing phosphorus from agricultural runoff: response to hydraulic and nutrient loading. *Water Research*. 36:1409-1422.

Havens. In prep., Lake Okeechobee Conceptual Ecological Model. Wetlands.

Everglades Forever Act, 1994. Florida Statute, Section 373.4592.

RECOVER, 2003, RECOVER Acme Basin B Project Performance Measure Consistency Review. Restoration Coordination and Verification, c/o United States Army Corps of Engineers, Jacksonville District, Jacksonville, Florida, and South Florida Water Management District, West Palm Beach, Florida.

SFWMD, 2005, South Florida Environmental Report, West Palm Beach, Florida.

USACE and SFWMD, 1999, Central and Southern Florida Project Comprehensive Review Study Final Integrated Feasibility Report and Programmatic Environmental Impact Statement, U.S. Army Corps of Engineers Jacksonville District, Jacksonville, Florida and South Florida Water Management District West Palm Beach, Florida.

USACE and SFWMD, 2005, EAASR Project Alternative Formulation Briefing, U.S. Army Corps of Engineers Jacksonville District, Jacksonville, Florida and South Florida Water Management District West Palm Beach, Florida.

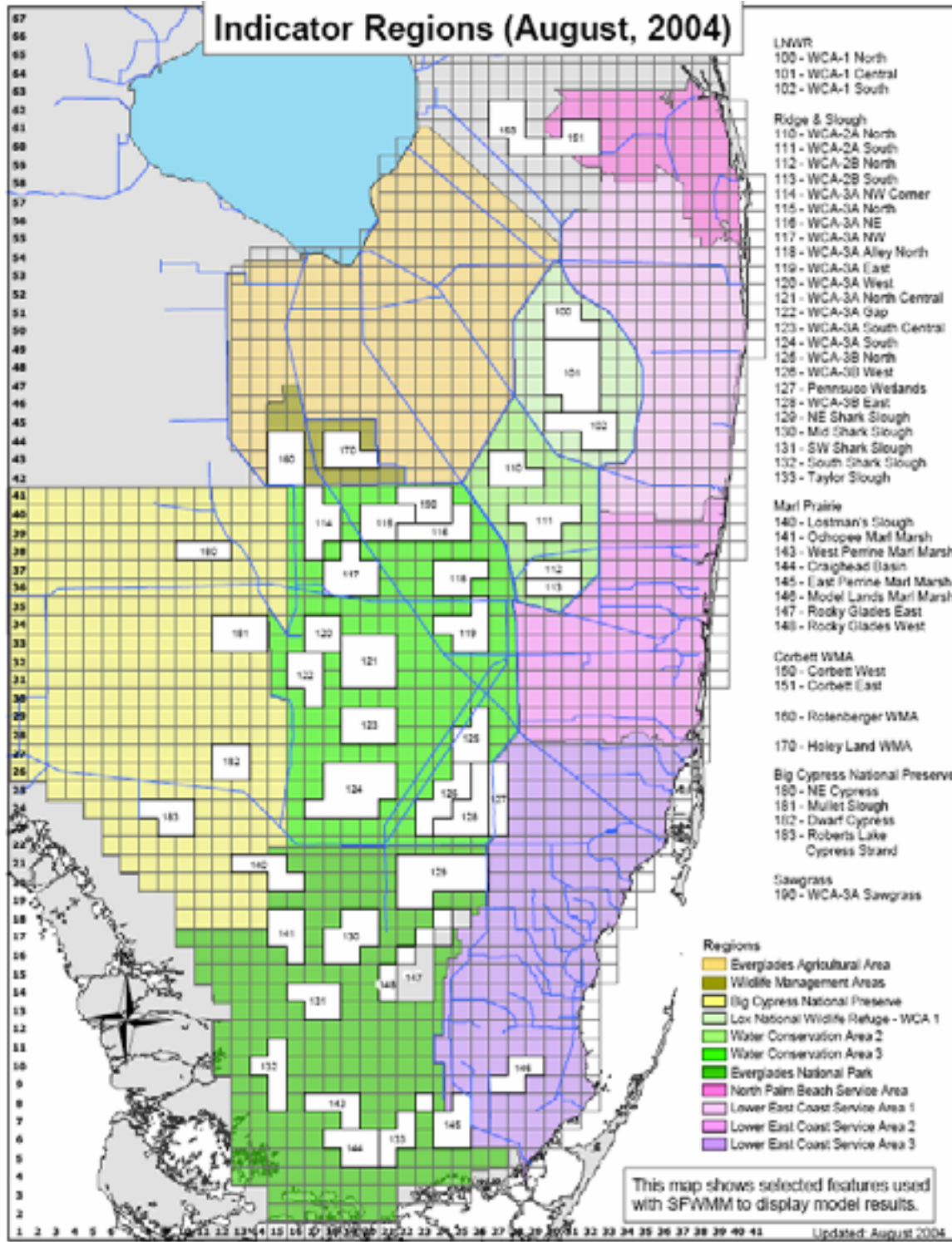
U.S. Congress 2000. Water Resources Development Act 2000, Public Law 106-541, 106<sup>th</sup> U.S. Congress, Washington D.C.

Water and Air Research, 2005, Draft Water Quality Assessment.

Wetland Solutions Inc., 2004, Alternative Plan Formulation and Evaluation: Water quality assessment report (Preliminary Draft, July 28, 2005), pp. 124.

Appendix A: Model Output for RECOVER performance measures

Figure 1- Indicator Region Map



**Table A1-Greater Everglades PM GE-E1 Results (Number of Drydown events in Shark River Slough)**

		NSM46	2050BS	Next1	Next2	Next3	Next4	Last1	Last2	Last3	Last4	CERP1
129	NE Shark Slough											
	Number of Dry Events	2	15	16	16	16	16	3	3	3	3	3
	Average Duration of Dry Events (wks/event)	10	16	15	15	15	15	12	11	12	12	12
130	Mid Shark Slough											
	Number of Dry Events	4	13	11	11	11	11	5	5	5	5	5
	Average Duration of Dry Events (wks/event)	23	15	17	17	17	17	12	12	12	13	14
131	SW Shark Slough											
	Number of Dry Events	7	15	13	13	13	13	9	9	9	9	9
	Average Duration of Dry Events (wks/event)	18	14	17	16	16	16	14	14	14	14	14
132	South Shark Slough											
	Number of Dry Events	9	16	17	17	17	17	11	11	11	11	12
	Average Duration of Dry Events (wks/event)	14	13	14	13	13	13	13	14	14	14	14

**Table A2-Greater Everglades PM GE-E2 Results (Inundation Duration)**

		NSM46	2050BS	Next1	Next2	Next3	Next4	Last1	Last2	Last3	Last4	CERP1
100												
	Number of Inundation Events	15	29	29	29	29	29	30	30	30	30	30
	Average Inundation Duration (wks/event)	118	54	55	55	55	55	51	51	51	51	51
	Inundation (% POR)	94	84	85	85	85	85	82	82	82	82	82
101												
	Number of Inundation Events	17	9	9	9	9	9	7	7	7	7	7
	Average Inundation Duration (wks/event)	100	199	199	199	199	199	260	260	260	260	260
	Inundation (% POR)	91	96	96	96	96	96	97	97	97	97	97
102												
	Number of Inundation Events	18	5	5	5	5	5	3	3	3	3	3
	Average Inundation Duration (wks/event)	91	371	371	371	371	371	620	620	620	620	620
	Inundation (% POR)	88	99	99	99	99	99	99	99	99	99	99
110												
	Number of Inundation Events	24	18	19	19	19	19	19	18	18	18	19
	Average Inundation Duration (wks/event)	66	93	89	89	89	89	89	94	94	94	89
	Inundation (% POR)	84	89	90	90	90	90	90	91	91	91	90
111												
	Number of Inundation Events	13	14	14	14	14	14	16	16	15	15	16
	Average Inundation Duration (wks/event)	131	121	121	121	121	121	103	103	110	110	103
	Inundation (% POR)	91	91	91	91	91	91	88	88	88	88	88
112												
	Number of Inundation Events	16	13	13	13	13	13	20	21	22	21	21
	Average Inundation Duration (wks/event)	107	127	127	128	128	128	79	76	72	76	75
	Inundation (% POR)	91	89	88	89	89	89	85	85	85	85	85
113												
	Number of Inundation Events	16	11	11	11	11	11	16	17	17	17	17

	NSM46	2050BS	Next1	Next2	Next3	Next4	Last1	Last2	Last3	Last4	CERP1
Average Inundation Duration (wks/event)	107	151	149	150	150	151	101	96	96	96	95
Inundation (% POR)	92	89	88	88	88	88	86	87	87	87	86
114											
Number of Inundation Events	12	17	16	16	17	16	13	16	15	14	13
Average Inundation Duration (wks/event)	146	101	108	109	101	107	139	113	120	129	139
Inundation (% POR)	94	92	92	93	92	92	97	97	97	97	97
115											
Number of Inundation Events	14	17	17	17	17	17	21	21	21	21	21
Average Inundation Duration (wks/event)	122	99	99	99	99	99	76	76	76	76	76
Inundation (% POR)	92	90	90	90	90	90	85	86	86	86	85
116											
Number of Inundation Events	19	9	11	9	9	10	16	17	17	16	17
Average Inundation Duration (wks/event)	86	199	160	196	196	176	106	100	100	106	100
Inundation (% POR)	87	96	94	94	94	94	91	91	91	91	90
117											
Number of Inundation Events	10	11	11	10	10	11	10	8	9	9	9
Average Inundation Duration (wks/event)	179	159	159	175	175	159	181	226	201	201	201
Inundation (% POR)	96	93	93	93	93	93	96	97	96	97	96
118											
Number of Inundation Events	14	16	15	15	14	15	20	20	20	20	20
Average Inundation Duration (wks/event)	122	104	110	110	118	110	79	80	80	80	79
Inundation (% POR)	91	89	88	88	89	88	85	85	85	85	85
119											
Number of Inundation Events	14	11	12	12	12	12	13	12	12	12	13
Average Inundation Duration (wks/event)	122	158	144	144	144	144	132	144	144	144	132
Inundation (% POR)	91	93	92	92	93	92	92	92	92	92	92
120											
Number of Inundation Events	10	14	14	14	14	14	6	6	6	6	6
Average Inundation Duration (wks/event)	174	123	124	124	124	124	306	306	306	306	306
Inundation (% POR)	93	92	92	93	93	92	98	98	98	98	98
121											
Number of Inundation Events	14	12	12	12	12	12	9	8	8	8	8
Average Inundation Duration (wks/event)	124	145	145	146	145	145	202	227	227	227	226
Inundation (% POR)	92	93	93	93	93	93	97	97	97	97	97
122											
Number of Inundation Events	12	17	17	17	17	17	7	7	7	7	8
Average Inundation Duration (wks/event)	145	101	101	101	101	101	260	259	259	260	227
Inundation (% POR)	93	92	92	92	92	92	97	97	97	97	97
123											
Number of Inundation Events	16	17	19	18	18	19	12	13	13	13	13
Average Inundation Duration (wks/event)	106	97	87	92	92	87	146	134	134	134	134
Inundation (% POR)	90	88	88	88	89	88	93	93	93	93	93
124											
Number of Inundation Events	14	14	16	16	16	16	13	13	14	13	12
Average Inundation Duration (wks/event)	124	123	108	108	108	108	135	135	125	135	147
Inundation (% POR)	93	92	92	92	92	92	94	94	94	94	94

	NSM46	2050BS	Next1	Next2	Next3	Next4	Last1	Last2	Last3	Last4	CERP1
125											
	Number of Inundation Events	18	18	16	14	14	14	8	8	8	8
	Average Inundation Duration (wks/event)	91	94	104	119	120	119	220	220	220	220
	Inundation (% POR)	87	90	89	89	89	89	94	94	94	94
126											
	Number of Inundation Events	10	16	14	14	14	14	4	4	4	4
	Average Inundation Duration (wks/event)	180	106	120	120	120	120	456	456	456	456
	Inundation (% POR)	96	90	89	90	90	90	97	97	97	97
127											
	Number of Inundation Events	7	21	17	18	18	18	9	9	9	8
	Average Inundation Duration (wks/event)	260	70	87	82	82	82	195	195	195	217
	Inundation (% POR)	97	79	79	79	79	79	94	94	94	93
128											
	Number of Inundation Events	8	19	18	18	18	18	5	5	6	6
	Average Inundation Duration (wks/event)	226	81	85	85	85	85	359	361	300	300
	Inundation (% POR)	96	82	81	81	81	81	96	96	96	96
129											
	Number of Inundation Events	3	16	17	17	17	17	4	4	4	4
	Average Inundation Duration (wks/event)	617	102	96	96	96	96	459	460	459	459
	Inundation (% POR)	99	87	87	87	87	87	98	98	98	98
130											
	Number of Inundation Events	5	14	12	12	12	12	6	6	6	6
	Average Inundation Duration (wks/event)	356	120	140	140	141	140	302	302	302	301
	Inundation (% POR)	95	90	90	90	90	90	97	97	97	97
131											
	Number of Inundation Events	8	16	14	14	14	14	10	10	10	10
	Average Inundation Duration (wks/event)	218	104	118	119	119	119	175	175	175	175
	Inundation (% POR)	93	89	88	89	89	89	93	93	93	93
132											
	Number of Inundation Events	10	17	18	18	18	18	13	12	12	12
	Average Inundation Duration (wks/event)	174	98	91	92	92	91	132	143	143	143
	Inundation (% POR)	93	89	88	88	88	88	91	92	92	92
133											
	Number of Inundation Events	25	30	30	30	30	30	34	34	34	34
	Average Inundation Duration (wks/event)	54	44	44	44	44	44	39	39	39	39
	Inundation (% POR)	72	70	71	71	71	71	71	71	71	71
140											
	Number of Inundation Events	29	36	36	36	35	36	32	32	32	32
	Average Inundation Duration (wks/event)	48	31	32	32	33	32	44	44	44	44
	Inundation (% POR)	74	60	61	62	62	62	75	75	75	75
141											
	Number of Inundation Events	18	25	23	22	22	22	20	20	19	19
	Average Inundation Duration (wks/event)	87	56	60	63	63	63	76	76	80	80
	Inundation (% POR)	84	75	73	74	74	74	81	81	81	81
142											
	Number of Inundation Events	20	33	33	32	32	33	31	30	30	30

	NSM46	2050BS	Next1	Next2	Next3	Next4	Last1	Last2	Last3	Last4	CERP1
Average Inundation Duration (wks/event)	75	34	34	36	36	34	43	44	44	44	42
Inundation (% POR)	80	60	60	61	61	61	71	71	71	71	70
143											
Number of Inundation Events	29	29	29	29	29	29	30	30	30	30	30
Average Inundation Duration (wks/event)	13	12	13	13	13	13	13	13	13	13	13
Inundation (% POR)	21	19	19	20	20	20	20	20	20	20	20
144											
Number of Inundation Events	31	33	33	33	33	33	33	33	33	33	33
Average Inundation Duration (wks/event)	28	24	25	25	25	25	25	25	25	25	25
Inundation (% POR)	47	43	44	44	44	44	44	44	44	44	44
145											
Number of Inundation Events	36	35	34	34	34	34	38	38	38	38	38
Average Inundation Duration (wks/event)	27	18	19	19	19	19	16	16	16	16	16
Inundation (% POR)	51	34	34	34	35	35	33	33	33	33	32
146											
Number of Inundation Events	41	41	43	43	43	43	39	39	39	39	39
Average Inundation Duration (wks/event)	25	12	11	11	11	11	27	27	27	27	27
Inundation (% POR)	56	26	26	26	26	26	56	56	56	56	56
147											
Number of Inundation Events	21	32	36	35	34	35	32	33	33	33	32
Average Inundation Duration (wks/event)	70	33	30	31	32	31	39	39	39	38	39
Inundation (% POR)	79	57	57	58	58	58	67	68	68	68	67
148											
Number of Inundation Events	19	30	27	27	27	27	25	25	25	25	26
Average Inundation Duration (wks/event)	82	41	45	46	46	46	59	59	59	59	57
Inundation (% POR)	83	65	66	66	66	66	79	79	79	79	79
150											
Number of Inundation Events	37	33	32	31	33	33	59	59	59	59	59
Average Inundation Duration (wks/event)	30	4	4	4	4	4	9	9	9	9	9
Inundation (% POR)	59	7	7	7	7	7	28	28	28	28	28
151											
Number of Inundation Events	58	12	12	12	12	12	10	10	10	10	9
Average Inundation Duration (wks/event)	15	3	3	3	3	3	3	3	3	3	3
Inundation (% POR)	46	2	2	2	2	2	2	2	2	2	2
160											
Number of Inundation Events	29	13	13	13	13	13	26	26	26	26	26
Average Inundation Duration (wks/event)	52	137	137	137	137	137	60	60	60	60	61
Inundation (% POR)	80	95	95	95	95	95	84	84	84	84	84
170											
Number of Inundation Events	17	9	7	7	7	7	15	16	16	16	16
Average Inundation Duration (wks/event)	97	201	260	260	260	260	117	110	110	110	110
Inundation (% POR)	88	97	97	97	97	97	94	94	94	94	94
180											
Number of Inundation Events	36	17	17	17	17	17	42	42	42	42	42
Average Inundation Duration (wks/event)	25	5	5	5	5	5	25	25	25	25	25
Inundation (% POR)	47	5	5	5	5	5	57	57	57	57	57

	NSM46	2050BS	Next1	Next2	Next3	Next4	Last1	Last2	Last3	Last4	CERP1
181											
	Number of Inundation Events	26	36	36	36	36	34	34	34	34	34
	Average Inundation Duration (wks/event)	53	33	33	33	33	39	39	39	39	39
	Inundation (% POR)	74	63	63	63	63	71	71	71	71	71
182											
	Number of Inundation Events	36	43	43	43	43	43	43	43	43	43
	Average Inundation Duration (wks/event)	33	21	21	22	22	22	22	22	22	22
	Inundation (% POR)	63	49	49	49	49	51	51	51	51	51
183											
	Number of Inundation Events	34	41	41	41	41	38	36	36	37	38
	Average Inundation Duration (wks/event)	38	27	27	27	27	33	35	35	34	32
	Inundation (% POR)	69	60	60	60	60	66	66	66	66	66
190											
	Number of Inundation Events	17	10	12	10	11	12	20	17	18	20
	Average Inundation Duration (wks/event)	97	182	150	180	164	150	90	106	100	90
	Inundation (% POR)	88	97	96	96	96	96	96	96	96	96

**Table A3-Greater Everglades PM GE-E3 Results (Extreme High and Low Water Conditions)**

	NSM46	2050BS	Next1	Next2	Next3	Next4	Last1	Last2	Last3	Last4	CERP1
<b>100 WCA-1 North (2.50/-1.00)</b>											
	Number of High Water Events	0	0	0	0	0	0	0	0	0	0
	Average Inundation Duration (wks/event)	0	0	0	0	0	0	0	0	0	0
	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0
	Number of Low Water Events	1	2	2	2	2	2	2	2	2	2
	Average Inundation Duration (wks/event)	3	5	5	5	5	5	5	5	5	5
	Total Duration (% POR)	0	1	1	1	1	1	1	1	1	1
<b>101 WCA-1 Central (2.50/-1.00)</b>											
	Number of High Water Events	0	11	11	11	11	13	12	12	13	12
	Average Inundation Duration (wks/event)	0	2	2	2	2	2	2	2	2	2
	Total Duration (% POR)	0	1	1	1	1	1	1	1	1	1
	Number of Low Water Events	1	0	0	0	0	0	0	0	0	0
	Average Inundation Duration (wks/event)	4	0	0	0	0	0	0	0	0	0
	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0
<b>102 WCA-1 South (2.50/-1.00)</b>											
	Number of High Water Events	0	32	31	31	30	30	32	33	32	33
	Average Inundation Duration (wks/event)	0	14	15	15	15	15	15	15	15	15
	Total Duration (% POR)	0	24	24	24	24	24	26	26	26	26
	Number of Low Water Events	1	0	0	0	0	0	0	0	0	0
	Average Inundation Duration (wks/event)	4	0	0	0	0	0	0	0	0	0
	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0
<b>110 WCA-2A North (2.50/-1.00)</b>											
	Number of High Water Events	0	1	1	1	1	2	2	2	3	2
	Average Inundation Duration (wks/event)	0	1	1	1	1	5	5	5	4	5
	Total Duration (% POR)	0	0	0	0	0	1	1	1	1	1
	Number of Low Water Events	6	7	5	6	6	6	6	7	6	6

	Average Inundation Duration (wks/event)	3	4	7	5	5	5	6	6	5	6	6
	Total Duration (% POR)	1	2	2	2	2	2	2	2	2	2	2
111 WCA-2A South (2.50/-1.00)												
	Number of High Water Events	0	8	7	8	8	8	9	9	9	9	9
	Average Inundation Duration (wks/event)	0	3	3	3	3	3	4	4	4	4	4
	Total Duration (% POR)	0	1	1	1	1	1	2	2	2	2	2
	Number of Low Water Events	3	7	7	7	7	7	10	10	10	10	10
	Average Inundation Duration (wks/event)	3	4	4	4	4	4	4	4	4	4	4
	Total Duration (% POR)	1	1	1	1	1	1	2	2	2	2	2
112 WCA-2B North (2.50/-1.00)												
	Number of High Water Events	2	22	23	23	23	23	5	5	5	5	5
	Average Inundation Duration (wks/event)	4	3	3	3	3	3	8	8	8	8	8
	Total Duration (% POR)	0	4	4	4	4	4	2	2	2	2	2
	Number of Low Water Events	2	5	5	5	5	5	6	5	7	7	6
	Average Inundation Duration (wks/event)	2	4	4	4	4	4	4	5	4	4	4
	Total Duration (% POR)	0	1	1	1	1	1	1	1	1	1	1
113 WCA-2B South (2.50/-1.00)												
	Number of High Water Events	5	24	23	23	23	23	44	44	43	43	43
	Average Inundation Duration (wks/event)	7	51	53	53	53	53	11	11	11	11	11
	Total Duration (% POR)	2	65	65	65	65	65	26	26	26	26	26
	Number of Low Water Events	2	15	17	16	16	15	15	15	15	15	14
	Average Inundation Duration (wks/event)	2	8	7	8	8	8	8	8	7	7	8
	Total Duration (% POR)	0	6	7	6	6	6	6	6	6	6	6
114 WCA-3A NW Corner (2.50/-1.00)												
	Number of High Water Events	0	1	1	1	1	1	0	0	0	0	0
	Average Inundation Duration (wks/event)	0	6	6	6	6	6	0	0	0	0	0
	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0
	Number of Low Water Events	2	5	3	5	3	4	1	0	1	1	1
	Average Inundation Duration (wks/event)	6	6	6	3	6	5	3	0	1	2	3
	Total Duration (% POR)	1	2	1	1	1	1	0	0	0	0	0
115 WCA-3A North (2.00/-1.00)												
	Number of High Water Events	0	8	10	10	10	11	5	6	6	6	5
	Average Inundation Duration (wks/event)	0	6	5	5	5	5	5	4	5	5	5
	Total Duration (% POR)	0	2	3	3	3	3	1	1	1	1	1
	Number of Low Water Events	4	8	8	8	7	7	11	10	8	8	8
	Average Inundation Duration (wks/event)	4	4	5	5	6	6	5	5	6	6	6
	Total Duration (% POR)	1	2	2	2	2	2	3	3	2	2	2
116 WCA-3A NE (2.00/-1.00)												
	Number of High Water Events	0	18	21	21	23	21	15	15	15	14	14
	Average Inundation Duration (wks/event)	0	7	8	8	7	8	7	7	7	7	7
	Total Duration (% POR)	0	7	9	9	9	9	5	6	6	5	5
	Number of Low Water Events	6	1	6	7	4	4	11	10	10	10	11
	Average Inundation Duration (wks/event)	4	4	3	3	5	5	4	4	4	4	4
	Total Duration (% POR)	1	0	1	1	1	1	2	2	2	2	2
117 WCA-3A NW (2.50/-1.00)												
	Number of High Water Events	0	5	4	5	5	4	4	3	3	3	3

Average Inundation Duration (wks/event)	0	6	8	7	7	8	2	4	4	4	4
Total Duration (% POR)	0	2	2	2	2	2	1	1	1	1	1
Number of Low Water Events	3	6	6	5	5	5	2	1	1	1	2
Average Inundation Duration (wks/event)	3	4	4	4	4	4	3	4	4	4	3
Total Duration (% POR)	1	1	1	1	1	1	0	0	0	0	0
<b>118 WCA-3A Alley North (2.50/-1.00)</b>											
Number of High Water Events	0	16	16	18	18	18	11	12	13	10	11
Average Inundation Duration (wks/event)	0	8	9	9	9	8	7	6	6	8	7
Total Duration (% POR)	0	7	8	8	8	8	4	4	4	4	4
Number of Low Water Events	4	8	9	9	9	10	12	13	13	13	12
Average Inundation Duration (wks/event)	5	7	6	6	6	5	6	5	5	5	6
Total Duration (% POR)	1	3	3	3	3	3	4	4	4	4	4
<b>119 WCA-3A East (2.50/-1.00)</b>											
Number of High Water Events	0	41	34	34	34	33	35	35	36	36	32
Average Inundation Duration (wks/event)	10	15	19	19	19	19	10	10	10		10
Total Duration (% POR)	0	33	34	35	35	34	18	19	19	19	17
Number of Low Water Events	3	7	5	4	4	4	5	3	4	5	5
Average Inundation Duration (wks/event)	3	3	4	4	5	5	4	4	3		3
Total Duration (% POR)	1	1	1	1	1	1	1	1	1	1	1
<b>120 WCA-3A West (2.50/-1.00)</b>											
Number of High Water Events	0	3	3	3	3	3	0	0	0	0	0
Average Inundation Duration (wks/event)	0	6	6	6	6	7	0	0	0	0	0
Total Duration (% POR)	0	1	1	1	1	1	0	0	0	0	0
Number of Low Water Events	5	7	7	7	7	7	0	1	0	0	1
Average Inundation Duration (wks/event)	5	4	4	4	4	4	0	1	0	0	1
Total Duration (% POR)	1	2	2	2	2	2	0	0	0	0	0
<b>121 WCA-3A North Central (2.50/-1.00)</b>											
Number of High Water Events	0	6	7	7	7	7	3	3	3	3	3
Average Inundation Duration (wks/event)	0	9	8	9	8	9	5	5	5	5	5
Total Duration (% POR)	0	3	3	3	3	3	1	1	1	1	1
Number of Low Water Events	6	5	6	4	4	4	1	1	1	1	1
Average Inundation Duration (wks/event)	4	3	2	3	3	3	2	2	2	2	2
Total Duration (% POR)	1	1	1	1	1	1	0	0	0	0	0
<b>122 WCA-3A Gap (2.50/-1.00)</b>											
Number of High Water Events	0	3	3	4	4	3	0	0	0	0	0
Average Inundation Duration (wks/event)	0	8	8	6	6	8	0	0	0	0	0
Total Duration (% POR)	0	1	1	1	1	1	0	0	0	0	0
Number of Low Water Events	8	7	8	8	8	8	2	2	2	2	2
Average Inundation Duration (wks/event)	5	6	5	5	5	5	4	4	4	4	4
Total Duration (% POR)	2	2	2	2	2	2	0	0	0	0	0
<b>123 WCA-3A South Central (2.50/-1.00)</b>											
Number of High Water Events	0	6	7	9	9	8	3	3	3	3	3
Average Inundation Duration (wks/event)	0	10	10	8	8	9	5	5	5	5	5
Total Duration (% POR)	0	3	4	4	4	4	1	1	1	1	1
Number of Low Water Events	7	9	9	9	9	9	4	4	4	4	4
Average Inundation Duration (wks/event)	5	4	4	4	4	4	4	4	4	4	4

	Total Duration (% POR)	2	2	2	2	2	2	1	1	1	1	1
124 WCA-3A South (2.50/-1.00)												
	Number of High Water Events	2	7	9	9	9	9	3	4	4	4	3
	Average Inundation Duration (wks/event)	1	10	10	11	11	11	3	2	3	2	3
	Total Duration (% POR)	0	4	5	5	5	5	0	1	1	1	0
	Number of Low Water Events	6	7	6	5	5	5	2	2	2	2	2
	Average Inundation Duration (wks/event)	3	3	3	4	4	4	5	5	5	5	5
	Total Duration (% POR)	1	1	1	1	1	1	1	1	0	1	1
125 WCA-3B North (2.50/-1.00)												
	Number of High Water Events	1	26	23	28	28	27	8	8	8	8	8
	Average Inundation Duration (wks/event)	1	13	15	13	13	13	9	9	9	9	9
	Total Duration (% POR)	0	18	18	19	19	19	4	4	4	4	4
	Number of Low Water Events	7	8	7	6	6	6	3	3	3	3	3
	Average Inundation Duration (wks/event)	7	6	6	7	7	7	6	4	4	6	7
	Total Duration (% POR)	3	2	2	2	2	2	1	1	1	1	1
126 WCA-3B West (2.50/-1.00)												
	Number of High Water Events	10	28	22	22	21	22	18	18	17	17	14
	Average Inundation Duration (wks/event)	9	11	15	15	16	15	9	9	10	10	11
	Total Duration (% POR)	5	16	17	17	18	17	9	9	9	9	8
	Number of Low Water Events	0	7	5	5	5	5	2	3	3	2	2
	Average Inundation Duration (wks/event)	0	5	7	7	7	7	8	4	4	8	9
	Total Duration (% POR)	0	2	2	2	2	2	1	1	1	1	1
127 Pennsuco Wetlands (2.00/-1.00)												
	Number of High Water Events	33	20	20	21	21	20	13	11	12	12	12
	Average Inundation Duration (wks/event)	13	11	12	11	12	12	4	5	4	4	4
	Total Duration (% POR)	23	11	13	13	13	13	3	3	3	3	3
	Number of Low Water Events	0	33	33	33	31	30	3	2	2	2	3
	Average Inundation Duration (wks/event)	0	5	5	5	5	6	10	13	13	14	10
	Total Duration (% POR)	0	8	9	9	9	9	2	1	1	2	2
128 WCA-3B East (2.50/-1.00)												
	Number of High Water Events	13	33	36	35	35	36	21	21	21	22	23
	Average Inundation Duration (wks/event)	8	15	14	15	15	14	12	12	12	12	11
	Total Duration (% POR)	6	27	27	28	28	28	13	14	14	14	13
	Number of Low Water Events	0	18	22	23	22	21	2	2	2	2	2
	Average Inundation Duration (wks/event)	0	6	5	5	5	5	13	11	11	13	14
	Total Duration (% POR)	0	5	6	6	6	6	1	1	1	1	1
129 NE Shark Slough (2.50/-1.00)												
	Number of High Water Events	32	9	11	12	11	11	18	19	19	20	18
	Average Inundation Duration (wks/event)	10	6	5	5	5	5	9	9	9	8	9
	Total Duration (% POR)	17	3	3	3	3	3	9	9	9	9	9
	Number of Low Water Events	1	12	14	14	14	14	1	1	1	1	3
	Average Inundation Duration (wks/event)	1	6	5	5	5	5	8	6	6	8	4
	Total Duration (% POR)	0	4	4	3	3	3	0	0	0	0	1
130 Mid Shark Slough (2.50/-1.00)												
	Number of High Water Events	3	1	1	1	1	1	2	2	2	2	2
	Average Inundation Duration (wks/event)	3	1	1	1	1	1	2	3	3	3	2

	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0
	Number of Low Water Events	2	10	10	10	10	10	2	2	2	2	3
	Average Inundation Duration (wks/event)	10	5	6	6	6	6	7	7	7	7	5
	Total Duration (% POR)	1	3	3	3	3	3	1	1	1	1	1
131 SW Shark Slough (2.50/-1.00)												
	Number of High Water Events	1	0	0	0	0	0	1	1	1	1	1
	Average Inundation Duration (wks/event)	1	0	0	0	0	0	1	1	1	1	1
	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0
	Number of Low Water Events	3	10	11	11	11	11	5	4	5	4	4
	Average Inundation Duration (wks/event)	9	6	6	6	5	5	6	7	6	7	8
	Total Duration (% POR)	1	3	3	3	3	3	2	2	2	2	2
132 South Shark Slough (2.50/-1.00)												
	Number of High Water Events	1	0	0	0	0	0	0	0	0	0	0
	Average Inundation Duration (wks/event)	1	0	0	0	0	0	0	0	0	0	0
	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0
	Number of Low Water Events	4	6	6	6	6	6	6	6	6	6	5
	Average Inundation Duration (wks/event)	6	6	6	6	6	6	4	4	4	4	6
	Total Duration (% POR)	1	2	2	2	2	2	1	1	1	1	1
133 Taylor Slough (2.50/-1.00)												
	Number of High Water Events	0	0	0	0	0	0	0	0	0	0	0
	Average Inundation Duration (wks/event)	0	0	0	0	0	0	0	0	0	0	0
	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0
	Number of Low Water Events	24	27	27	26	26	27	26	26	26	26	25
	Average Inundation Duration (wks/event)	6	5	5	5	5	5	5	5	5	5	5
	Total Duration (% POR)	7	7	7	7	7	7	7	7	7	7	7
140 Lostman's Slough (2.00/-1.00)												
	Number of High Water Events	0	0	0	0	0	0	0	0	0	0	0
	Average Inundation Duration (wks/event)	0	0	0	0	0	0	0	0	0	0	0
	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0
	Number of Low Water Events	22	34	32	31	31	32	25	25	25	25	26
	Average Inundation Duration (wks/event)	11	10	11	11	11	11	9	9	9	9	8
	Total Duration (% POR)	13	19	19	18	18	18	12	12	12	11	12
141 Ochopee Marl Marsh (2.00/-1.00)												
	Number of High Water Events	2	0	0	0	0	0	1	1	1	1	1
	Average Inundation Duration (wks/event)	1	0	0	0	0	0	1	1	1	1	1
	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0
	Number of Low Water Events	12	18	21	18	18	18	13	13	13	13	13
	Average Inundation Duration (wks/event)	11	11	10	11	11	11	11	11	11	11	11
	Total Duration (% POR)	7	11	11	11	11	11	8	8	8	8	8
142 Rocky Glades (2.00/-1.00)												
	Number of High Water Events	0	0	0	0	0	0	0	0	0	0	0
	Average Inundation Duration (wks/event)	0	0	0	0	0	0	0	0	0	0	0
	Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0
	Number of Low Water Events	18	34	34	33	33	35	23	23	24	22	21
	Average Inundation Duration (wks/event)	11	11	11	11	11	11	10	10	10	11	11
	Total Duration (% POR)	10	20	20	20	20	20	13	13	13	13	13

143 West Perrine Marl Marsh (1.50/-1.00)												
Number of High Water Events	0	0	0	0	0	0	0	0	0	0	0	0
Average Inundation Duration (wks/event)	0	0	0	0	0	0	0	0	0	0	0	0
Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0	0
Number of Low Water Events	49	48	47	48	48	48	49	48	48	49	49	49
Average Inundation Duration (wks/event)	14	16	16	16	16	16	15	15	15	15	15	15
Total Duration (% POR)	38	41	41	40	40	40	39	39	39	39	39	39
144 Craighead Basin (1.50/-1.00)												
Number of High Water Events	1	1	1	1	1	1	1	1	1	1	1	1
Average Inundation Duration (wks/event)	1	1	1	1	1	1	1	1	1	1	1	1
Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0	0
Number of Low Water Events	28	37	35	35	35	35	36	36	36	36	36	36
Average Inundation Duration (wks/event)	9	8	9	9	9	9	8	8	8	8	8	8
Total Duration (% POR)	13	16	16	16	16	16	16	16	16	16	16	16
145 East Perrine Marl Marsh (1.50/-1.00)												
Number of High Water Events	0	0	0	0	0	0	0	0	0	0	0	0
Average Inundation Duration (wks/event)	0	0	0	0	0	0	0	0	0	0	0	0
Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0	0
Number of Low Water Events	36	45	44	44	44	45	43	41	41	42	43	43
Average Inundation Duration (wks/event)	10	7	8	8	8	7	8	8	8	8	8	8
Total Duration (% POR)	20	18	18	18	18	18	18	18	18	18	18	18
146 Model Lands Marl Marsh (2.00/-1.00)												
Number of High Water Events	0	0	0	0	0	0	0	0	0	0	0	0
Average Inundation Duration (wks/event)	0	0	0	0	0	0	0	0	0	0	0	0
Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0	0
Number of Low Water Events	32	52	53	53	53	52	37	36	37	37	37	37
Average Inundation Duration (wks/event)	8	8	8	8	8	8	4	4	4	4	4	4
Total Duration (% POR)	13	22	21	21	21	21	8	8	8	8	8	8
147 Rocky Glades East (1.50/-1.00)												
Number of High Water Events	11	2	2	2	2	2	4	4	4	4	4	4
Average Inundation Duration (wks/event)	5	1	1	1	1	1	4	4	4	4	4	4
Total Duration (% POR)	3	0	0	0	0	0	1	1	1	1	1	1
Number of Low Water Events	26	43	45	41	45	44	28	28	28	28	28	27
Average Inundation Duration (wks/event)	9	10	10	11	10	10	10	10	10	10	10	11
Total Duration (% POR)	12	23	24	23	23	24	16	15	15	15	15	16
148 Rocky Glades West (2.00/-1.00)												
Number of High Water Events	0	0	0	0	0	0	0	0	0	0	0	0
Average Inundation Duration (wks/event)	0	0	0	0	0	0	0	0	0	0	0	0
Total Duration (% POR)	0	0	0	0	0	0	0	0	0	0	0	0
Number of Low Water Events	15	27	27	25	24	24	19	20	19	19	19	18
Average Inundation Duration (wks/event)	10	11	12	12	13	13	10	9	9	9	9	10
Total Duration (% POR)	8	16	17	16	16	16	10	10	10	10	10	10
160 Rotenberger WMA (1.75/-1.00)												
Number of High Water Events	2	9	9	9	9	9	8	8	8	8	8	8
Average Inundation Duration (wks/event)	3	2	2	2	2	2	1	1	1	1	1	1
Total Duration (% POR)	0	1	1	1	1	1	1	1	1	1	1	1

	Number of Low Water Events	12	3	4	4	3	3	17	17	17	17	17
	Average Inundation Duration (wks/event)	4	5	4	4	4	4	6	6	6	6	6
	Total Duration (% POR)	3	1	1	1	1	1	5	5	6	6	5
170 Holey Land WMA (1.75/-1.00)												
	Number of High Water Events	10	39	43	41	39	39	34	33	33	33	35
	Average Inundation Duration (wks/event)	7	23	21	22	24	24	2	2	2	2	2
	Total Duration (% POR)	4	48	49	49	50	50	4	4	4	4	4
	Number of Low Water Events	8	3	3	3	3	3	6	6	6	6	6
	Average Inundation Duration (wks/event)	7	3	2	2	3	3	4	4	4	4	4
	Total Duration (% POR)	3	0	0	0	0	0	1	1	1	1	1
180 NE Cypress (0.25/-1.00)												
	Number of High Water Events	48	19	19	19	19	19	67	67	67	67	67
	Average Inundation Duration (wks/event)	8	2	2	2	2	2	10	10	10	10	10
	Total Duration (% POR)	20	2	2	2	2	2	37	37	37	37	37
	Number of Low Water Events	43	64	65	65	65	65	36	36	36	36	36
	Average Inundation Duration (wks/event)	9	15	15	15	15	15	9	9	9	9	9
	Total Duration (% POR)	21	53	52	52	52	52	18	18	18	18	18
181 Mullet Slough (0.25/-1.00)												
	Number of High Water Events	45	56	56	56	56	56	42	42	42	42	42
	Average Inundation Duration (wks/event)	25	15	15	15	15	15	25	25	25	25	25
	Total Duration (% POR)	60	45	45	45	45	45	56	56	56	56	56
	Number of Low Water Events	27	36	36	36	36	36	33	33	33	33	33
	Average Inundation Duration (wks/event)	8	9	9	9	9	9	7	7	7	7	7
	Total Duration (% POR)	11	17	17	17	17	17	13	13	13	13	13
182 Dwarf Cypress (0.25/-1.00)												
	Number of High Water Events	73	77	78	79	79	79	71	71	71	71	71
	Average Inundation Duration (wks/event)	11	6	6	6	6	6	8	8	8	8	7
	Total Duration (% POR)	42	25	25	25	25	25	28	29	29	29	28
	Number of Low Water Events	29	36	35	36	36	36	37	37	37	37	37
	Average Inundation Duration (wks/event)	10	11	11	11	11	11	10	10	10	10	10
	Total Duration (% POR)	15	21	20	20	20	20	19	19	19	19	19
183 Roberts Lake Cypress Strand (0.25/-1.00)												
	Number of High Water Events	60	61	63	61	61	61	59	59	60	59	58
	Average Inundation Duration (wks/event)	16	13	12	13	13	13	15	15	14	15	15
	Total Duration (% POR)	52	41	41	41	41	41	46	46	46	46	46
	Number of Low Water Events	24	36	35	35	35	35	31	31	31	31	31
	Average Inundation Duration (wks/event)	10	9	9	9	9	9	9	9	9	9	9
	Total Duration (% POR)	13	17	17	17	17	17	15	15	15	15	15
190 WCA-3A Sawgrass (2.00/-1.00)												
	Number of High Water Events	3	9	13	15	13	14	13	14	14	14	13
	Average Inundation Duration (wks/event)	2	9	8	7	9	8	5	5	5	5	5
	Total Duration (% POR)	0	4	6	6	6	6	3	4	4	3	3
	Number of Low Water Events	10	1	2	1	2	2	0	0	0	0	0
	Average Inundation Duration (wks/event)	7	1	1	2	2	2	0	0	0	0	0
	Total Duration (% POR)	4	0	0	0	0	0	0	0	0	0	0

**Table A4-LOESA/LECSA Water Supply Results**

	2050BS	Next1	Next2	Next3	Next4	Last1	Last2	Last3	last4	CERP1
<b>LOSA</b>										
Regulatory Releases to EAA Reservoir (more is better)	0	413	421	420	425	250	262	266	271	235
WS to EAA lost from LO (less is better)	294.89	127	135	132	116	145	154	152	133	136.48
EAA water lost to ET	1485.3	1568.6	1540.1	1530.6	1531.6	1563.1	1537	1527.7	1528.9	1566.9
LOSA Number of drought years	12	11	11	11	10	6	6	7	6	4
LOSA Number of drought months	45	29	28	27	23	8	9	10	8	5
Caloosahatchee volume of cutbacks	19.97	13.48	13.53	13.04	11.76					
SLE volume of cutbacks	3.59	2.54	2.57	2.45	2.23					
Semnole volume of cutbacks	2.92	2.02	2.02	1.96	1.96					
Brighton volume of cutbacks	2.96	2.13	2.14	2.04	1.97					
<b>LECSA</b>										
Number of Years with Cutbacks										
NPBC	8	8	8	8	8	3	3	3	3	3
SA3	7	6	6	6	6	2	2	2	2	2
SA2	23	22	23	23	23	2	2	2	2	2
SA1	7	7	7	7	7	2	2	2	2	2