

REPORT SUMMARY
Central and South Florida Project
Comprehensive Everglades Restoration Plan
Site 1 Impoundment Project

STUDY INFORMATION

Study Authority: The Site 1 Impoundment Project was authorized by Section 601(b)(2)(C)(iii) of WRDA 2000 subject to the requirements of Section 601(b)(2)(D) of WRDA 2000.

Section 601, Water Resources Development Act of 2000

PUBLIC LAW 106-541—DEC. 11, 2000

(b) COMPREHENSIVE EVERGLADES RESTORATION PLAN.—

(2) SPECIFIC AUTHORIZATIONS.—

(C) INITIAL PROJECTS.—The following projects are authorized for implementation, after review and approval by the Secretary, subject to the conditions stated in subparagraph (D), at a total cost of \$1,100,918,000, with an estimated Federal cost of \$550,459,000 and an estimated non-Federal cost of \$550,459,000:

(iii) Site 1 Impoundment, at a total cost of \$38,535,000, with an estimated Federal cost of \$19,267,500 and an estimated non-Federal cost of \$19,267,500.

(D) CONDITIONS

(i) PROJECT IMPLEMENTATION REPORTS.—Before implementation of a project described in any of clauses (i) through (x) of subparagraph (C), the Secretary shall review and approve for the project a project implementation report prepared in accordance with subsections (f) and (h).

(ii) SUBMISSION OF REPORT.—The Secretary shall submit to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Environment and Public Works of the Senate the project implementation report required by subsections (f) and (h) for each project under this paragraph (including all relevant data and information on all costs).

Study Sponsor: The South Florida Water Management District (SFWMD) is the non-Federal sponsor for the implementation of most of the components of the Comprehensive Everglades Restoration Plan (CERP). The SFWMD and the Corps executed a Design Agreement on 12 May 2000 for \$712 million for planning, engineering, and design studies of CERP. The State of Florida has purchased 207,000 acres in south Florida which is over 51 percent of the total land needed for CERP. In addition to the approximately \$200 million per year already provided by the State of Florida for CERP implementation through existing revenue sources, the State has also recently committed over \$1.5 billion in additional State funds via bonds to accelerate construction activities on certain CERP projects (including the Site 1 Impoundment project) through the State of Florida's "Acceler8" program. To ensure appropriate and timely coordination of federal activities necessary to support the Acceler8 program, the Department of the Army and the Department of Interior have committed to align resources and workloads to produce project implementation reports (including the Site 1 Impoundment PIR) consistent with

the State of Florida's construction schedules. SFWMD has been involved throughout the Site 1 Impoundment PIR development process and has indicated their intent to proceed to construction.

Study Purpose and Scope: In accordance with WRDA 2000 and the programmatic regulations (Section 385.26), a Project Implementation Report (PIR) is required to be completed prior to implementing any component of CERP. The Site 1 Impoundment PIR bridges the gap between the conceptual level of detail contained in the April 1999 *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement* and the detailed design necessary to prepare plans and specifications required to proceed to construction. This PIR documents the planning process and all relevant assumptions and rationale for project decision making. All planning analyses, including economic, environmental, water quality, flood protection, real estate, and plan formulation, conducted during the planning phase are documented and included in this PIR. The purpose of this PIR is to reaffirm the plan identified in the 1999 Restudy Plan to determine that the project objectives and benefits have not changed and that the project can be implemented in a cost-effective manner. The PIR also optimizes the impoundment and formulates for system-wide environmental benefits in the Everglades. The Site 1 Impoundment Project is one of 68 projects identified in the 1999 Restudy Plan. It is one of 12 components that collectively were designed to capture Lake Okeechobee releases and storm water runoff from the lower east coast of Florida and store this water to reduce demands on the natural system. The Site 1 Impoundment PIR is an interim response to Section 601 of WRDA 2000 and a final response to Section 601(b)(2)(C)(iii) of WRDA 2000.

Project Location / Congressional District: The Site 1 Impoundment Project footprint is approximately triangular in shape and includes 1,800-acres of undeveloped land located adjacent to LNWR and the Hillsboro Canal in southern Palm Beach County. The proposed project would affect the following Florida Congressional Districts: 16, 19, 20, 21, 22, 23, and 25. The Project location is shown in **Figure 1**.

Prior Reports and Existing Water Projects: The following prior planning efforts and reports are related to the proposed Site 1 Impoundment project: Water Supply Preserves (Everglades Coalition/National Audubon Society, 1994), East Coast Buffer Feasibility Study (SFWMD, 1996), Water Preserve Areas Land Suitability Analysis (U.S. Army Corps of Engineers (USACE) and SFWMD, 1996), Governor's Commission for A Sustainable South Florida Conceptual Plan (1996), the C&SF Project Comprehensive Review Study (a.k.a. *Restudy*, USACE and SFWMD, 1999) and Water Preserve Areas, Draft Feasibility Study (USACE and SFWMD, 2001). The recommendations of these prior planning efforts and reports all included above-ground storage at the Site 1 Impoundment location. The recommended storage volume for the Comprehensive Review Study was 14,760 acre feet.

Federal Interest: The proposed Site 1 Impoundment is one of the components of the CERP. With the passage of WRDA 2000, the CERP was approved as a "framework for modifications and operational changes to the C&SF project that are needed to restore, preserve, and protect the south Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection". The Site 1 Impoundment was one of the ten initial CERP projects authorized for implementation in accordance with Section 601(b)(2)(C) of WRDA 2000, which called for the review and approval of a PIR by the Secretary. Project lands were acquired

in 1996 with funding provided by the Department of Interior to the non-Federal sponsor specifically for Everglades ecosystem restoration in accordance with Section 390 of the Federal Agriculture Improvement and Reform Act of 1996 (1996 Farm Bill). Work completed for the PIR has confirmed the federal interest in the project by demonstrating project benefits, completeness, cost effectiveness, and acceptability.

The recommended plan for the Site 1 project maximizes net environmental benefits and is the National Ecosystem Restoration plan. Project implementation will result in a net gain of approximately 38,000 habitat units in the ridge-and-slough community of the Everglades ecosystem by reducing the rate of expansion and future spatial extent of undesirable vegetation (cattail) and increasing the spatial extent of desirable tree island and periphyton habitat, two important indicators of ecosystem health and function within the Everglades ecosystem. The project will also provide a net gain of 177 habitat units in the Hillsboro Canal estuarine system by reducing the harmful effects of flood control discharges on the estuarine portion of the Hillsboro Canal. Based on total first cost, the cost per habitat unit provided by the project is approximately \$1,500.

The Everglades has been designated an International Biosphere Reserve (1976) and a World Heritage Site (1979) by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and a Wetland of International Importance (1987) in accordance with the Ramsar Convention. The Everglades ecosystem, including those portions of LNWR, WCA-2A, and the estuarine portions of the Hillsboro Canal and Atlantic Intracoastal Waterway directly benefited by the Site 1 Impoundment project is habitat for thirteen federally-listed endangered or threatened animal species, including the Florida panther, Everglades snail kite, wood stork, manatee, bald eagle, and the American alligator.

STUDY OBJECTIVES

Problems and Opportunities: Nearly half of the original Everglades ecosystem has been converted to agricultural and urban uses. Additionally, the hydrology of the remaining Everglades has become altered by the operation of the Central and South Florida Project. The ecological effects of these human-induced changes have generally resulted in:

- A substantial reduction in habitat quality and availability for fish and wildlife;
- A reduction in the system-wide levels of primary and secondary production and changes in the proportions of community types within the remaining system;
- An increase in the concentrations of pollutants in remaining natural system surface waters and sediment;
- A reduction in average annual flows and negative changes in the timing, duration, and magnitude of surface water stages;
- The lowering of regional ground water tables;
- Reductions in the extent of long hydroperiod refugia; and
- Alterations of salinity levels in estuaries.

The purpose of the Site 1 Impoundment Project as originally conceived during the Restudy and carried through this PIR is to supplement water deliveries to the Hillsboro Canal during dry

periods thereby reducing demands on Lake Okeechobee and the LNWR. This would make more water available in LNWR, Lake Okeechobee and in the water conservation areas (WCAs) to meet natural system needs. As a result of project implementation, there are opportunities to:

- Improve hydroperiods and hydropatterns in the LNWR, Water Conservation Areas (WCAs) 2 and 3, and Everglades National Park (ENP) by reducing the amount of water withdrawn from the regional water management system necessary to supply water for resource protection and to meet the demands of municipal, agricultural and industrial users in the vicinity of the proposed project;
- Retain additional water in the natural system to improve habitat and species abundance and diversity for threatened and endangered species in the Ridge and Slough Everglades ecological community;
- Store water discharged to tide via the Hillsboro Canal during times of excess water to augment regional water supply in the study area, thereby increasing the amount of water available to meet water supply and resource protection needs and reducing demands for water withdrawals from the natural system;
- Reduce the frequency and duration of damaging freshwater flows to the Hillsboro Canal and Atlantic Intracoastal Waterway; and,
- Provide recreational opportunities.

Planning Objectives: In general the CERP planning objectives are to make additional water available for the natural system, thereby restoring more natural water levels in areas that have been impacted by regional water management practices and to reduce the frequency and duration of damaging freshwater flows to the estuaries. This additional water will benefit the ecological functions of the Everglades ecosystem and is consistent with National Ecosystem Restoration as demonstrated by the specific objectives below:

- Maximize the amount of water available to the greater Everglades system;
- Reduce damaging fresh water discharges to the estuarine system;
- Increase the spatial extent and quality of fish and wildlife habitat in the LNWR;
- Increase the spatial extent and quality of fish and wildlife habitat in WCA-2A;
- Improve hydroperiods and hydropatterns in the LNWR;
- Improve hydroperiods and hydropatterns in WCA-2A;
- Increase spatial extent of functional estuarine habitat; and
- Improve recreation at the project site.

Planning Constraints: Provisions in WRDA 2000 and the CERP Programmatic Regulations (November 12, 2003) state: 1) The project must maintain the level of service for flood protection in accordance with the “Savings Clause”; 2) The project should not eliminate or transfer an existing legal source of water unless a new source of comparable quantity and water quality is provided as part of project implementation; 3) The project cannot cause or contribute to violations of water quality standards; and 4) Adjacent land uses (water conservation areas and urban areas).

ALTERNATIVES

Plan Formulation Rationale: Based on the plan formulation requirements of Programmatic Guidance Memorandum 2 (Formulation and Evaluation of Alternative Plans for Project Implementation Reports, draft April 2005), the project delivery team reaffirmed the above-ground impoundment described in the CERP would still achieve the benefits of the project as described in the Plan in a cost-effective manner. As part of this reaffirmation, the team re-analyzed previous efforts to identify management measures that could be used to capture excess water in the basin and a siting analysis to determine the optimum location for an impoundment. After screening, the team considered different alternative plans, including scaling the size of the proposed impoundment. After screening the initial array of alternatives, the final array of alternatives was evaluated using cost effectiveness and incremental cost analysis based on average annual habitat unit values and hydrologic benefit units. The hydrologic benefit units were used to measure the effective storage of the impoundment as well as the quantity of water retained in the natural system. The average annual habitat units were used to develop the system-wide benefits used for plan comparison and selection.

Evaluations of the final array of alternatives were conducted on a system-wide basis in the context of the rest of CERP, and the selected alternative plan was justified on a next-added incremental basis (as if this project was the only project to be constructed in CERP). The project described in this PIR will achieve the benefits of the project as originally described in the CERP in a cost-effective manner.

Management Measures and Alternative Plans: Management measures included both structural and non-structural elements. Management measures and subsequent alternative plans for this project were consistent with those that were produced during prior planning efforts: Reverse Osmosis, Seepage Management, Aquifer Storage and Recovery (ASR), Partitioning of Lake Okeechobee, Well Fields, Above-ground Impoundment, and Additional Storage in Lake Okeechobee. Screening criteria were applied to address each management measure. The screening criteria included evaluations of environmental impact and effectiveness to meet overall system-wide and project-level objectives as well as the ability to capture excess stormwater, which is normally released to tide. This screening evaluation resulted in the identification of an above-ground impoundment located on the Hillsboro Canal adjacent to (east of) the remaining Everglades (LNWR and WCA-2A) as the most effective management measure for achieving project objectives.

In addition to the “No-Action” alternative, a preliminary array of six alternatives (listed below) was carried through preliminary screening. Screening indicated that an above-ground impoundment at the location previously identified best accomplished the goals and objectives of the project. Further, lands were acquired in 1996 with Federal funds provided by the Department of Interior for this purpose. As a result, the initial array of alternatives focused on scales of various impoundment sizes on the lands already acquired.

1) No-Action (Alt A -Future Without Project)

2) CERP-SP (Alt B - Starting Point)

This alternative included a 1,660-acre impoundment at 6-feet depth.

3) D13R (Restudy Selected Plan)

This alternative included a 2,460-acre impoundment at 6-foot depth.

4) WPAFS (Alternative Number 3)

This alternative included a 2,246-acre impoundment at 6-foot depth.

5) SP (Alt C - WPAFS Selected Plan)

This alternative included a 1,660-acre impoundment at 8-foot depth.

6) Smaller Impoundment (SI)

This alternative included an 830-acre impoundment at 6-foot depth.

7) Larger Impoundment (LI)

This alternative included consideration of an impoundment greater than the volume provided by 2,460-acre impoundment at 8-foot depth.

Final Array of Alternatives: After further evaluation to determine the extent to which the alternative plans would be able to meet project objectives (e.g., some were too small to capture enough water to meet objectives) and considering size and storage volume limitations of potential impoundments due to land use changes (e.g., permitted aggregate mining for the next 10-15 years), two final structural alternatives were identified in addition to the No-Action Alternative; see **Table 1**. The final array of alternatives consisted of Alternative A (the no-action alternative), Alternative B (1,660-acre impoundment at 6-foot depth), and Alternative C (1,660-acre impoundment at 8-foot depth). A recreation plan was added to both Alternative B and C.

Comparison of Alternatives: The three final alternatives were formulated on a system approach (considering the effects of alternative plans together with the rest of the CERP). The selected alternative plan was then justified as the next-added increment (NAI). The system formulation is required to determine the beneficial contribution of project alternatives toward the goals and objectives of the CERP. The NAI justification is necessary to determine the benefits of a project that can be achieved without other CERP projects that remain unauthorized or unapproved. System and project-level benefits were evaluated with the same hydrologic models that were used in the Restudy for the development of the CERP.

As shown in **Table 2** the hydrologic benefit unit was used to measure the objective of maximizing the water in the greater Everglades and reducing damaging freshwater to the estuarine environment. The habitat unit was used to determine the ecosystem function of improving the hydroperiods and hydropatterns which will increase the spatial extent and quality of habitat in LNWR and WCA-2A. While the two metrics are not combinable, the evaluation revealed that both metrics resulted in the same conclusion: Alternative C should be the selected alternative plan because it produces the greatest amount of National Ecosystem Restoration benefits.

The No-Action plan would result in construction of single-family residences and mixed use development within the lands required for the project; acquired lands would be surplus in accordance with the provisions of the 1996 Farm Bill. Alternative B meets the objectives, but not to the extent of Alternative C. Alternative C would best achieve the majority of the goals and objectives established for the proposed Site 1 Impoundment project. Additionally, this alternative would create the most beneficial ecological effects for natural system areas within the

Table 1. Screening of Alternatives

Alternatives	Screening Criteria	
	Ability to Meet Project Objectives	Size Limitations due to Land Use
1) No Action (Alt A)	X	N/A
2) CERP-SP (Alt B) (1,660 ac @ 6')	✓	N/A
3) D13R (Restudy Selected Plan) (2,460 ac @ 6')	✓	X - Permitted mining operations in southern compartment
4) WPAFS (Alternative No. 3) (2,246 ac @ 6')	✓	X - Permitted mining operations in southern compartment
5) SP (Alt C) (WPAFS Selected Plan) (1,660 ac @ 8')	✓	N/A
6) Smaller Impoundment (830 ac @ 6')	X - Not as capable of reducing natural system water demands and meeting water supply deliveries	N/A
7) Larger Impoundment (2,460 ac @ 8')	✓	X - Permitted mining operations in southern compartment and developed urban lands costing \$20K to \$2,000K/acre

Table 2. Alternative Comparison

Objective/Measure	Alt A No Action	Alt B 1,660 @ 6'	Alt C 1,660 @ 8'
Average Annual Cost	0	\$4,401,300	\$4,685,800
	Net Average Annual Habitat Units		
Ecosystem Function			
-Cattail expansion rate reduction	0	31,090	34,545
-Tree Islands	0	1,599	1,777
-Periphyton	0	1,471	1,635
Spatial extent of estuarine habitat			
-Estuarine Habitat	0	159	177
	Net Average Annual Benefit Units (1000 acre-feet)		
Maximize water in Greater Everglades			
-Water Storage	0	124.3	165.6
-WS Deliveries from LNWR	0	23.8	31.7
-WS Deliveries from LNWR to WCA-2A	0	27.3	36.9
Reduce damaging fresh water to estuarine environment			
-Discharges to tide	0	38.3	51.1
Benefit Unit – term used to measure the effective storage of the impoundment as well as the water retained in the natural system as measured using South Florida Water Management Model			

Everglades and in the estuarine portions of the Hillsboro Canal and Intracoastal Waterway. Alternative C produces the greatest amount of National Ecosystem Restoration (NER) benefits between the alternatives. Alternative C is cost-effective and is considered the “best buy” after performing an incremental cost analysis. Recreational opportunities would be created by adding boardwalks, viewing platforms, picnic shelters, canoe launches and information kiosks at two sites within the footprint. A trade-off analysis was performed to compare beneficial effects in LNWR to potential adverse affects in WCA-2A. The result was that the benefits to LNWR far outweigh any loss of function to WCA-2A. Furthermore, through adaptive assessment and management, the regional water management system can be operated to minimize any potentially adverse effects in WCA-2A that may occur as a result of project implementation.

Key Assumptions: The basic assumption was that water captured and stored in the impoundment and released for urban water supply and resource protection needs results in a reduction of water withdrawn from the natural system. The project was not specifically formulated for recreation, but a recreation plan would be added to the selected alternative.

System and project benefits were determined with large scale regional hydrologic models which were previously used in the development of the WPAFS and CERP.

Recommended Plan: The recommended plan for Site 1 Impoundment features an 1,800-acre project footprint with a 1,660-acre, approximately eight-foot deep above-ground impoundment with a 1,360 cfs inflow pump station, 150 cfs seepage pump station, gated discharge culvert, emergency overflow spillway, and seepage control canal with associated structures. The impoundment is divided into two compartments (cells) by an internal levee. A gated culvert is included in the internal levee to provide a hydraulic connection between the two cells to efficiently manage water in the impoundment. The recreation plan has boardwalks, viewing platforms, picnic shelters, canoe launches and information kiosks at two sites within the footprint.

The recommended plan would best achieve the majority of the goals and objectives for the proposed Site 1 Impoundment, including creation of the most beneficial ecological effect on both natural system areas within the adjacent Everglades and in the estuarine portions of the Hillsboro Canal and Atlantic Intracoastal Waterway. The recommended plan would produce the greatest amount of National Ecosystem Restoration (NER) benefits and is considered the “best buy” after performing an incremental cost analysis, providing greater benefits for comparable cost than the next best alternative.

The recommended plan is justified by restoring more natural hydrologic conditions and vegetative communities for fish and wildlife, including several endangered species, within the 147,000 acre LNWR and the adjacent 135,000 acre Water Conservation Area (WCA)-2A. The project will also improve approximately 650 acres of habitat in the estuarine portion of the Hillsboro Canal and the adjacent Atlantic Intracoastal Waterway by improving the quality, quantity, and timing of flows in the Hillsboro Canal. Project implementation will also result in a desirable increase in freshwater flow into Everglades National Park. The recommended plan improves functional habitat in the Everglades Ridge and Slough community, which is part of the mosaic of community types forming the only sub-tropical wetland habitat in the United States.

In accordance with the WRDA 2000 Section 601(f)(2), individual CERP projects shall be formulated, evaluated, and justified based on their ability to contribute to the goals and purposes of the Plan. The Site 1 Impoundment project delivers 39 percent of the overall CERP benefits at about 6 percent of the cost of the remaining system of benefits. Thus the Site 1 project is justified on a next added increment basis.

Systems/Watershed Context: The study explicitly considered the needs of and potential impacts to areas within the Everglades ecosystem upstream and downstream of the project area. The proposed Site 1 Impoundment is one of 68 different components that comprise the CERP. The selected plan for the Site 1 Impoundment project is consistent with the Site 1 Impoundment component originally formulated for CERP and it was formulated to optimize system-wide benefits in furtherance of CERP goals and objectives. The evaluation of project effects demonstrated that the Site 1 Impoundment project will benefit the entire Everglades watershed, including Everglades National Park.

The sponsor, the South Florida Water Management District is a cooperating agency under the National Environmental Policy Act. Other agencies, including U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, U.S. Geological Survey, Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, Florida Department of Transportation, Lake Worth Drainage District, Palm Beach County, and Broward County, participated as PDT members and were active participants in the formulation and evaluation of the plan.

Environmental Operating Principles: The proposed Site 1 Impoundment Project is consistent with the seven Environmental Operating Principles adopted by USACE. These principles foster unity of purpose on environmental issues, reflect a new tone and direction for dialogue on environmental matters, and ensure that employees consider conservation, environmental preservation and restoration in all Corps activities.

The proposed project would help to reverse declining conditions in the Everglades and provide for a return to sustainable, diverse conditions in the natural system without adverse effects on the nearby human environment. The proposed Site 1 Impoundment Project and PIR/EA are in direct compliance with all pertinent laws and would be consistent with other restoration activities in south Florida occurring as part of the CERP. As part of a watershed approach for restoring the South Florida ecosystem, the Site 1 Impoundment would be one of many projects that will beneficially affect the remaining, contiguous natural system areas of south Florida. Project development and evaluation was accomplished via an integrated, interagency team, using the combined knowledge and scientific and technical expertise of a team of professionals experienced in South Florida ecosystem restoration and in consideration of public input provided throughout the study process. Finally, project implementation involves adaptive assessment (monitoring) and management (actions taken to address monitoring results) activities to ensure that the Site 1 Impoundment project will achieve project objectives.

USACE Civil Works Strategic Plan: The Civil Works Strategic Plan for fiscal years 2004 - 2009 contains an approach for all new plans to be innovative and collaborative in order to stretch resources and capabilities. The approach advocated in the Civil Works Strategic Plan emphasizes:

- A holistic focus on water problems and opportunities
- Attention to the watershed as a logical geographic area for managing water resources
- A systems approach for analyzing problems and solutions
- Collaboration, partnerships, and teamwork for deriving and implementing solutions
- An emphasis on efficiencies to achieve more within existing resources.

The CERP was designed to address multiple water resources problems, like ecosystem restoration, urban and agricultural water supply, water quality and flood protection. The Site 1 Impoundment project addresses these as well. As one of the 68 different components that comprise the CERP, which was formulated on the entire 18,000 square mile south Florida ecosystem, including all tributaries, estuaries, wetlands, and other areas within the entire watershed, Site 1 Impoundment was formulated to optimize system-wide benefits in furtherance of CERP goals and objectives. As part of the systems approach, Site 1 Impoundment and CERP

look at the entire south Florida ecosystem to include economic, environmental, social, political and other factors for solutions to problems. Programmatic regulations tie project implementation process to the overall program success, through a Master Implementation Sequencing Plan, Interim Goals and Targets, and Periodic Reports to Congress. A special multi-agency, multi-disciplinary team (RECOVER) was organized to analyze project performance from the system wide perspective. All work within CERP and Site 1 Impoundment was performed through interagency project teams, regional project delivery teams, Design Coordination Team, stakeholder involvement, the South Florida Ecosystem Restoration Task Force, Evergladesplan.org web site, and the use of CERPZone for collaboration including P2 for scheduling and funding and Documentum for report development. To emphasize the efficiencies, the Corps and the Sponsor used the best resources to implement the program, utilized program management support contractors to obtain industry expertise and input, utilized CERPZone as the network to share information, the web site to disseminate information to the team members and public, and utilized interagency participation on technical teams.

Independent Technical Review (ITR): A Jacksonville District ITR team reviewed the proposed project and documentation throughout the planning process and prior to the Feasibility Scoping Meeting, Alternative Formulation Briefing, Draft PIR, and the Final PIR. The PDT responded to all of the comments received from the ITR team, all technical issues have been resolved, and certification of completion of independent technical review was provided.

To supplemental the Jacksonville District’s independent technical review and to complete the preparation of the Final PIR, an external ITR team was also established consisting of team members from the Wilmington, Charleston, and Savannah Districts within the South Atlantic Division. The external ITR verified that the previous ITR was sufficient and that all technical review issues have been adequately addressed in the Final PIR. There were no substantive comments.

EXPECTED PROJECT PERFORMANCE

Project Costs

Table 3. Project Costs
(October 2005 Price Levels)

<u>Construction Item</u>	<u>Cost</u>
Lands & Damages	\$8,364,000
Relocations	\$45,000
Channels and Canals	\$8,125,000
Levees and Floodways	\$6,899,000
Pumping Plants	\$21,703,000
Floodway Control and Diversion Structures	\$4,679,000
Recreation	\$305,000
Planning, Engineering and Design	\$3,431,000
<u>Construction Management</u>	<u>\$3,181,000</u>
Total Project Construction Costs	\$56,732,000

Equivalent Annual Costs and Benefits

Table 4. Economic Costs and Benefits of Recommended Plan

Item	Restoration		Recreation		Total Costs	
	Allocated Costs	Benefits	Allocated Costs	Benefits	Allocated Costs	Benefits
Investment Cost (\$)						
First Cost	56,364,000		368,000		56,732,000	
Interest During Construction ³	5,829,000		32,000		5,861,000	
Total	62,193,000		401,000		62,594,000	
Annual Cost (\$)						
Interest and Amortization ¹	3,658,600		23,400		3,682,000	
OMRR&R ²	773,600		5,100		778,700	
Monitoring Cost	340,800				340,800	
Subtotal	4,773,000		28,500		4,801,500	
Annual Benefits						
Non-monetary						
Hydrological Function (Avg. Annual Benefit Unit ⁴)		285.3				285.3
<i>Water Storage Function</i>		165.6				165.6
<i>Water Retained in the Natural System Function</i>		119.7				119.7
Water Supply Deliveries from LNWR		31.7				31.7
Water Supply Deliveries from LNWR to WCA-2A		36.9				36.9
Discharges to Tide		51.1				51.1
Ecological Function ⁵ (Avg. Annual Habitat Unit for LNWR and WCA-2A)		37,957				37,957
<i>Cattail Expansion Reduction Rate</i>		34,545				34,545
<i>Tree Islands</i>		1,777				1,777
<i>Periphyton</i>		1,635				1,635
Monetary (Recreation\$) ⁶				168,600		168,600
Net Annual Recreation Benefits				140,100		140,100
Recreation Benefit-Cost Ratio				5.9 to 1		5.9 to 1
Recreation Benefit-Cost Ratio (at 7%) ⁷				4.83 to 1		4.83 to 1

¹Based on October 2005 price levels, 5.125 percent rate of interest, and a 41-year period of analysis.

² Operation, Maintenance, Repair, Replacement, and Rehabilitation

³ Project Based on 4 year construction schedule

⁴ Hydrological Function - Hydrologic Benefit Unit is a term used to measure the effective storage of the impoundment as well as the water retained in the natural system as measured using regional hydrologic model output (annual acre-feet).

⁵ Ecological Function – term used to measure the net average annual habitat units in LNWR and WCA-2A. The attributes chosen would best show the ecological response within this ridge and slough habitat.

⁶ Recreation Benefits reflect 2006 unit day values from EGM, 06-03

⁷ Per Executive Order 12893

Cost Sharing: The estimated cost for the Site 1 Impoundment recommended plan is \$56,732,000. In accordance with Section 601(e) of WRDA 2000, the non-Federal share of CERP projects is 50 percent. The Federal cost of the recommended plan would be approximately \$28,366,000 and the non-Federal cost would be approximately \$28,366,000. The estimated value of lands easements, rights-of-way, relocation, and disposal areas (LERRD) is \$8,364,000. In accordance with Section 309 of the Federal Agriculture Improvement and Reform Act of 1996 (Farm Bill) and a 1996 Federal Grant Agreement between US Department of Interior (DOI) and SFWMD, the actual acquisition costs and the DOI approved incidental costs of acquisition are split 50/50 between the State and Federal government. Section 601(e)(5)(B) of WRDA 2000 authorizes credit toward the non-Federal share for non-Federal design and construction work completed during the period of design or construction, subject to the execution of the design or project cooperation agreement, and subject to a determination by the Secretary of the Army that the work is integral to the project.

The non-Federal sponsor will provide cash or manage a portion of construction as necessary to meet its 50 % share of the total first cost of the project to be balanced according to Section 601 of WRDA 2000 to maintain a 50/50 cost share as measured cumulatively for the entire CERP Program.

Table 5 contains an apportionment of project costs between the Federal government and the non-Federal sponsor based on the features in the selected alternative plan.

Table 5. Cost Apportionment of Selected Alternative Plan
(Initial Costs – rounded, Oct 2005)

Item	Total	Federal	Non-Federal
Construction	\$44,937,000	\$22,468,500	\$22,468,500
LERRD	\$8,364,000	\$4,182,000	\$4,182,000
PED	\$3,431,000	\$1,715,500	\$1,715,500
Total	\$56,732,000	\$28,366,000	\$28,366,000

Section 601(b)(2) of the WRDA of 2000 specifies that adaptive assessment and monitoring will be cost shared equally by the Federal Government and the non-Federal sponsor (SFWMD). These adaptive management costs have been allocated to Construction and O&M for budgeting purposes. Recreation features are cost shared equally by the Federal government and non-Federal sponsor.

Project Implementation:

The South Florida Water Management District (SFWMD) is the non-Federal sponsor for this project. The SFWMD is interested in expediting this initially authorized project and has advanced completion of the detailed design activities, including plans and specifications, in accordance with the current schedule for their Acceler8 program. Initial detailed design activities are scheduled to be completed in June 2006. The Sponsor may also pursue initiation of construction of certain project features as early as August 2006 and finish by August 2009. In that case, the SFWMD would fund the design and construction of those features in advance of Secretary of the Army approval and Congressional appropriation of funds in anticipation of receiving credit for work performed toward their cost share on a subsequent CERP project.

The PIR recommends that the non-Federal sponsor receive credit for planning, engineering, design and construction performed by it, or under contract by it, towards the implementation of the Site 1 Impoundment Project before execution of the project cooperation agreement if the Secretary of the Army determines that the work performed was for a reasonable cost, necessary and integral to the project, and was implemented to appropriate design and construction standards.

The project will make additional water available that is beneficial for the protection of fish and wildlife in Loxahatchee National Wildlife Refuge and Everglades National Park that will be reserved or allocated for that purpose by the State of Florida in accordance with WRDA 2000.

Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R): The estimated average annual costs for operation, maintenance, repair, replacement and rehabilitation (OMRR&R) of the restoration features of the project is \$774,000, which includes monitoring and adaptive management activities at an estimated average annual cost of \$341,000, to ensure success of the project. In accordance with sections 601(e)(4) and 601(e)(5)(D), OMRR&R will be shared equally between the Federal government and the non-Federal sponsor. OMRR&R activities include day-to-day water control operations and normal OMRR&R activities associated with pump stations, canals, levees, and water control structures. The recreation OMRR&R is estimated at an average annual cost of \$5,000 and is a 100 percent non-Federal cost. All OMRR&R activities will be conducted by the non-Federal sponsor.

Key Social and Economic Factors: The project will impact wetlands within the project footprint, but the benefits generated by this project and the rest of CERP will offset these negative effects. Therefore, mitigation for adverse environmental effects is not required. Nonetheless, certain fish and wildlife habitat features are included in the project design to encourage fish and wildlife utilization of the proposed impoundment. Concerning Environmental Justice, the Site 1 Impoundment Project does not present any environmental impacts that are high, adverse and disproportionate to low income, minority or Tribal populations. There were no unresolved issues. Wetlands impacts on project lands are offset by improvements in wetland function in the Everglades system.

Stakeholder Perspectives and Differences: Although they are not PDT members, stakeholders such as non-governmental groups and the public were given the opportunity to attend and provide their views at PDT meetings and Regional PDT (RPDT) meetings. Stakeholders and interested parties have also been provided the opportunity to voice their comments, concerns, and issues during the Public Comment periods at previous PDT and all RPDT meetings. Since construction and operation of an above-ground impoundment at this location has been a central element of Everglades restoration planning for more than 10 years and project lands were acquired by the non-Federal sponsor via the 1996 Federal Farm Bill for this specific purpose, most stakeholders in the south Florida region are strongly supportive of project implementation. However, the Natural Resources Defense Council (NRDC) did provide comments stating that the project implementation report failed to comply with the National Environmental Policy Act (NEPA) because the NEPA document was an environmental assessment instead of an environmental impact statement, and that it failed to comply with certain provisions of both WRDA 2000 and the CERP Programmatic Regulations (33 CFR 385). The Corps disagrees with NRDC's comments. CERP Programmatic Regulations provide that the District Commander may consider the use of an environmental assessment if early studies and coordination show that a

particular action is not likely to have a significant impact on the quality of the human environment. Their other concerns were on the draft Project Assurances analysis in that the draft PIR did not initially identify water to be reserved by the State of Florida. The Corps, the SFWMD, and the U.S. Fish and Wildlife Service have done further analyses since the draft report. The final PIR now identifies water to be reserved in both LNWR and Everglades National Park, as well as including additional documentation demonstrating compliance with other requirements contained in the CERP Programmatic Regulations. The final PIR (Annex B, “Public/Agency Comments from Draft Report”) contains the Jacksonville District’s responses to NRDC’s comments. The Florida Fish and Wildlife Commission suggested that the Corps should retain operational flexibility of the regional water management system to assure no damages would occur to WCA-2A and that the Corps should consider adding a boat ramp to the recreation plan. The Corps agrees with maintaining operational flexibility in the regional water management system to ensure that project implementation will not adversely affect WCA-2A. Since USFWS is strongly opposed to usage of motor boats in the impoundment due to potential water quality impacts, the Corps did not recommend a boat ramp in the recreation plan. The SFWMD may continue to explore the possibility of a public boat ramp and will coordinate with the appropriate agencies in the future. There are no unresolved issues.

Figure 1. Project Location Map

