



**DEPARTMENT OF THE ARMY**  
**OFFICE OF THE CHIEF OF ENGINEERS**  
**WASHINGTON, D.C. 20314-1000**

REPLY TO  
ATTENTION OF:

CECW-SAD (1105-2-10a)

DEC 19 2006

**SUBJECT: Comprehensive Everglades Restoration Plan, Central and Southern Florida, Site 1 Impoundment Project, Palm Beach County, Florida**

**THE SECRETARY OF THE ARMY**

1. I submit for transmission to Congress my report on ecosystem restoration improvements for the Site 1 Impoundment Project, located in Palm Beach County, Florida. It is accompanied by the report of the district and division engineers. These reports are in response to Section 601 (b)(2)(C)(iii) of the Water Resources Development Act (WRDA) of 2000, which authorized the Site 1 Impoundment Project, subject to review and approval of a Project Implementation Report (PIR) by the Secretary. Preconstruction engineering and design activities for this Project will be continued under the cited authority.
2. The Site 1 Impoundment Project is a component of the Comprehensive Everglades Restoration Plan (CERP). The CERP was approved by WRDA 2000 as a framework for the purpose of restoring, preserving, and protecting the south Florida ecosystem while providing for other water-related resource needs of the region, including water supply and flood protection. WRDA 2000 identified specific requirements for implementing components of the CERP, including development of a decision document known as a PIR. The requirements of a PIR are addressed in this report.
3. The PIR recommends a project that significantly contributes to two of the goals and objectives of the CERP: improving habitat and functional quality and improving native plant and animal species abundance and diversity in remaining natural areas. Scientists have established that a mosaic of uplands, freshwater marsh, deep water sloughs, and estuarine habitats supporting a diverse community of fish and wildlife was one of the defining characteristics of the pre-drainage Everglades ecosystem. Currently in south Florida, habitat function and quality has significantly declined in remaining natural system areas due to water management projects and practices, resulting in a loss of suitable nesting, foraging, and fisheries habitat and a decline in native species diversity and abundance. The PIR reconfirms information in the CERP and provides project-level evaluation of costs and benefits associated with construction and operations of an impoundment. Constructing and operating the impoundment would reduce water withdrawals currently taken from the adjacent Loxahatchee National Wildlife Refuge (LNWR) during the dry season to meet water demands, allowing more natural, desirable, and consistent water levels within the LNWR. It also would reduce groundwater seepage from LNWR. In addition, benefits to the downstream estuarine area are expected,

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resulting from reduction in fresh water flows and flood control releases from Lake Okeechobee. Due to the advanced land acquisition activities conducted jointly by the Federal Government and the State of Florida, the Project can be implemented relatively quickly, significantly advancing the realization of project benefits in an area that has been degraded by past water management activities.

4. The reporting officers recommend implementing the Site 1 Impoundment Project to improve the ecological function of the Everglades by capturing and storing the excess surface water runoff from the Hillsboro Canal watershed and releases from the LNWR and Lake Okeechobee. The project site is located on 1,800 acres of undeveloped land adjacent to the Hillsboro Canal in southern Palm Beach County. Project lands were acquired with a 50 percent Federal cost-share using funds appropriated via the 1996 Federal Farm Bill specifically designated for the acquisition of lands to restore the south Florida ecosystem. The impoundment features a 1,660-acre, approximately eight-foot deep above-ground impoundment (at maximum pool depth the impoundment stores 13,280 acre feet of water), with an inflow pump station, discharge gated culvert; one combined service/auxiliary non-gated spillway and one auxiliary non-gated spillway, and a seepage canal with associated structures. An additional gated culvert structure is designed to control stages in L-36 Borrow Canal and North Springs Improvement District discharges into the Hillsboro Canal. Recreational opportunities are also provided at two sites within the project footprint.

5. Section 601(b)(2)(C)(iii) of the WRDA 2000 initially authorized the Site 1 Impoundment Project component at a total cost of \$38,535,000 (1999 price levels). Based on October 2006 price levels, the total first cost of the recommended plan is estimated to be \$80,840,000. The current estimated cost of \$80,840,000 is above the Section 902 of WRDA 1986 cost criteria and Congressional authorization is needed. The project costs have increased primarily due to design refinements made to incorporate current design methodology which have increased the requirements for dam safety. The design refinements also include armoring of interior embankment slopes.

6. In accordance with the cost-sharing requirements of Section 601(e) of the WRDA 2000, the Federal cost of the recommended plan would be \$40,420,000 and the non-Federal cost would be \$40,420,000. The estimated lands, easements, right-of-way, and relocation costs for the recommended plan are \$8,451,000. Based on October 2006 price levels, a 41-year period of economic evaluation and a 4.875 percent discount rate, the equivalent annual cost of the proposed project is estimated at \$6,135,000, which includes operation, maintenance, repair, rehabilitation and replacement (OMRR&R), monitoring, interest and amortization. The estimated annual costs for restoration OMRR&R are \$785,000. The OMRR&R costs for recreation are estimated at \$5,000. The annual cost for project level monitoring is estimated at \$350,000. As a component of the CERP program, the interagency/interdisciplinary scientific and technical team, formed to ensure that system-wide goals are met, will participate in the annual monitoring to assess system-wide changes. In accordance with Sections 601(e)(4) and 601(e)(5)(D) of WRDA 2000, restoration OMRR&R costs and adaptive assessment and

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monitoring costs will be shared equally between the Federal Government and the non-Federal sponsor. OMRR&R costs related to recreation features will be funded 100 percent by the non-Federal sponsor.

7. To ensure that an effective environmental restoration plan was recommended, cost effectiveness and incremental cost analysis techniques were used to evaluate alternative restoration plans. The recommended plan maximizes net benefits and is the National Ecosystem Restoration plan. The recommended plan is justified by restoring more natural hydrologic conditions and vegetative communities for fish and wildlife, including several endangered species, within the adjacent 147,000 acre LNWR. 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. Hydrologic outputs used to compare plans are based on several parameters that measure the degree to which pre-development hydrologic conditions are restored. Biological outputs used to compare plans are based on several parameters that measure the degree to which natural vegetative conditions are restored. The parameters for both hydrologic outputs and biological outputs are based on established peer-reviewed conceptual ecological models developed to guide the restoration of the south Florida ecosystem.

8. The recommended plan improves functional fish and wildlife habitat in the Everglades Ridge and Slough community, which is part of the mosaic of community types forming the Everglades, the only sub-tropical wetland habitat in the United States. 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 portion of the Everglades ecosystem directly affected by the Site 1 Impoundment Project, including those portions of LNWR, WCA-2A, and the estuarine portions of the Hillsboro Canal and Atlantic Intracoastal Waterway, provides 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. In accordance with the WRDA 2000 Section 601(f)(2), individual CERP projects shall be justified by the environmental benefits derived by the South Florida ecosystem. Similarly, Section 385.9(a) of the CERP Programmatic Regulations (33 CFR Part 385) requires that individual projects shall be formulated, evaluated, and justified based on their ability to contribute to the goals and purposes of the Plan and on their ability to provide benefits that justify costs on a next-added increment basis. The Site 1 Impoundment Project operating in conjunction with other projects in the comprehensive plan produces an average annual increase of 38,000 habitat units in LNWR and estuarine areas of the Hillsboro Canal and Atlantic Intracoastal Waterway. On a next-added increment (NAI) basis (meaning adding the Site 1 Impoundment as the next project to be added to a system of projects) the Site 1 Impoundment Project delivers about 14,840 average annual habitat units, or 39 percent of the estimated average annual CERP system benefits in the study area at about 9 percent of the cost of the remaining projects creating system benefits in the study areas. Based on restoration first cost and the benefited area in LNWR and the estuarine portions of the Hillsboro Canal and

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Atlantic Intracoastal Waterway, the cost per acre benefited is about \$545 per acre. On a next-added increment basis, the average annual cost per average annual habitat unit is approximately \$412. Based on these parameters, the Site 1 Impoundment Project is justified by the environmental benefits derived by the South Florida ecosystem and on a next-added increment basis.

9. Section 601(e)(5)(B) of the WRDA 2000 authorizes the Secretary of the Army to provide credit to the non-Federal sponsor for work completed by it during the period of construction pursuant to a project cooperation agreement and a determination by the Secretary that the work is integral to the CERP. As part of its initiative for early implementation of certain CERP projects known as the "Acceler8 Program", the non-Federal sponsor has stated that it may construct portions of the Site 1 Impoundment Project consistent with this report, in advance of Congressional authorization and the signing of a project cooperation agreement. The non-Federal sponsor is exploring alternative project delivery methods to expedite implementation of the Site 1 Impoundment Project through the Acceler8 Program. Such delivery methods may include public-private partnerships in which the non-Federal sponsor contracts with a private or not-for-profit entity for services that may include designing, building, operating or financing these components. I believe that it would be in the public interest for this Project to be implemented expeditiously due to the early benefits to the surrounding habitat, as well as hydrologic benefits to Federal lands and estuaries in other portions of the South Florida ecosystem. Therefore, I recommend that should the non-Federal sponsor construct portions of the Site 1 Impoundment Project prior to the execution of a project cooperation agreement for this Project, the non-Federal sponsor be credited for such construction costs at the time the project cooperation agreement for the Site 1 Impoundment Project is executed. Such credit would be applied toward the non-Federal sponsor's share of the costs associated with the implementation of the CERP as authorized by Section 601(e)(5)(C) of WRDA 2000, shall not include cash reimbursements, and shall be subject to: a) the authorization of the Site 1 Impoundment Project by law; b) a determination by the Secretary of the Army that the activities are integral to the CERP restoration project; c) a certification by the District Engineer that the costs are reasonable, allowable, necessary, auditable, and allocable; and d) a certification by the District Engineer that the activities have been implemented in accordance with U.S. Army Corps of Engineers design and construction standards and applicable Federal and State laws.

10. Credits for non-Federal design and construction will be evaluated based on the provision of documentation by the non-Federal sponsor. All documentation provided by the non-Federal sponsor will be thoroughly reviewed by the USACE to determine reasonable, allowable, necessary, auditable, and allocable costs. Upon completion of this review, a financial audit will be conducted prior to granting final credit. Coordination between the USACE and the Sponsor will occur throughout design and construction via the USACE Regulatory process. The credit afforded to the non-Federal sponsor will be limited to the lesser of the following: (1) actual costs that are reasonable, allowable, necessary, auditable, and allocable to the Project; or (2) the USACE's estimate of the cost of the work allocable to the Project had the USACE performed the

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work. The non-Federal sponsor intends to implement this work using its own funds and would not use funds originating from other Federal sources unless the Federal granting agency verifies in writing that the expenditure of such funds is expressly authorized by statute and in accordance with Section 601 (e)(3) of WRDA 2000.

11. The Project complies with the following requirements of WRDA 2000:

a. Project Implementation Report (PIR). The requirements of a PIR as defined by Section 601(h)(4)(A.).

b. Water Reservations. Sections 601(h)(4)(A)(iii)(IV) and (V) require identification of the appropriate quantity, timing, and distribution of water dedicated and managed for the natural system and the amount of water to be reserved or allocated for the natural system. Additional water delivered to and retained in natural areas was identified and will be reserved or allocated by the State of Florida.

c. Elimination or Transfer of Existing Legal Sources of Water. Section 601(h)(5)(A) states that existing legal sources of water shall not be eliminated or transferred until a new source of water supply of comparable quantity and quality is available to replace the water to be lost as a result of the Plan. Implementation of the Site 1 Impoundment Project will result in a transfer of a portion of the existing legal source of water for other water related needs in the Hillsboro Canal basin from canal deliveries via the C&SF Project to water stored in and delivered out of the Site 1 Impoundment. The water delivered from the impoundment will be of comparable (or better) water quality than that delivered via the Hillsboro Canal from Lake Okeechobee for water supply purposes. Project implementation will also increase the quantity of water retained in the natural system, including transferring a portion of the water budget for LNWR from canal deliveries via the C & SF Project to local rainfall retained in LNWR; however, this transfer is consistent with the purpose of the project to increase the amount of water in the natural system. The new source will be of comparable quantity and better water quality.

d. Maintenance of Flood Protection. Section 601 (h)(5)(B) states that the Plan shall not reduce levels of service for flood protection that are in existence on the date of enactment of this Act and in accordance with applicable law. Potential effects of the storage reservoir on water levels on adjacent lands were evaluated. In response to these evaluations, the Project includes a seepage management system, consisting of a seepage canal and pump to ensure that adjacent lands are not adversely affected.

12. Washington level review indicates that the plan recommended by the reporting officers is environmentally justified, technically sound, cost effective and socially acceptable. The plan conforms to essential elements of the U.S. Water Resources Council's Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies and complies with other administration and legislative policies and guidelines. Also, the views of interested parties, including Federal, State and local agencies, have been considered.

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13. I generally concur in the findings, conclusions, and recommendations of the reporting officers. Accordingly, I recommend that the plan described herein for ecosystem restoration be authorized for implementation as a Federal Project, with such modifications as in the discretion of the Chief of Engineers may be advisable, and subject to cost-sharing, financing, and other applicable requirements of Section 601 of WRDA 2000. In addition, I recommend that the non-Federal sponsor be authorized to receive credit for work accomplished prior to the execution of a project cooperation agreement for this Project, in accordance with the terms described in paragraph 9 of this report. Also, this recommendation is subject to the non-Federal sponsor agreeing to comply with all applicable Federal laws, including the following requirements:

a. Provide 50 percent of total project costs consistent with the provisions of Section 601(e) of the Water Resources Development Act of 2000, including authority to perform design and construction of project features consistent with Federal law and regulation;

b. Provide all lands, easements, and rights-of-way, and perform or assure the performance of all relocations determined necessary for the construction, operation, maintenance, repair, replacement and rehabilitation of the Project with valuation being consistent with the following:

(1) If the lands, easements and right-of-way were acquired prior to execution of the Project Cooperation Agreement, the creditable value shall be their purchase price, subject to a determination of reasonableness where appropriate, together with their reasonable and necessary incidental costs of acquisition;

(2) The value of lands, easements, or rights-of-way acquired by the non-Federal Sponsor after the effective date of the Project Cooperation Agreement executed for this Project shall be the fair market value of such real property interests at the time the interests are acquired, together with the reasonable and necessary incidental costs of acquisition;

c. Provide or pay to the Government the cost of providing all retaining dikes, waste weirs, bulkheads, and embankments, including all monitoring features and stilling basins, that may be required at any dredged or excavated material disposal areas required for the construction, operation, and maintenance of the Project;

d. Give the Government a right to enter, at reasonable times and in a reasonable manner, upon land that the local sponsor owns or controls for access to the Project for the purpose of inspection, and, if necessary, for the purpose of completing, operating, maintaining, repairing, replacing, or rehabilitating the Project;

e. Assume responsibility for operating, maintaining, replacing, repairing, and rehabilitating (OMRR&R) the restoration features of the Project or completed functional portions of the restoration features of the Project, including mitigation features, in a manner compatible with the

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Project's authorized purposes and in accordance with applicable Federal and State laws and specific directions prescribed in the OMRR&R manuals and any subsequent amendments thereto. Cost sharing for OMRR&R will be in accordance with Section 601 of WRDA 2000:

“(e). COST SHARING. –

(4) OPERATION AND MAINTENANCE. – Notwithstanding section 528(e)(3) of the Water Resources Development Act of 1996 (110 Stat. 3770), the Non-Federal Sponsor shall be responsible for 50 percent of the cost of the operation, maintenance, repair, replacements and rehabilitation activities authorized under this section...”

f. The non-Federal Sponsor shall operate, maintain, repair, replace and rehabilitate the recreational features of the Project with responsibility for 100 percent of the cost;

g. Unless otherwise provided for in the statutory authorization for this Project, comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended, and Section 103 of the WRDA of 1986, Public Law 99-662, as amended, which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the Project or separable element;

h. Hold and save the Government free from all damages arising from construction, operation, maintenance, repair, replacement and rehabilitation of the Project and any project-related betterments, except for damages due to the fault or negligence of the Government or the Government's contractors;

i. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the Project to the extent and in such detail as will properly reflect total project costs;

j. Perform, or cause to be performed, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 USC 9601-9675, that may exist in, on, or under lands, easements or rights-of-way necessary for the construction, operation, and maintenance of the Project; except that the non-Federal sponsor shall not perform such investigations on lands, easements, or rights-of-way that the Government determines to be subject to the navigation servitude without prior specific written direction by the Government;

k. Assume complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or right-of-ways that the Government determines necessary for construction, operation, or maintenance;

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l. As between the Government and the non-Federal Sponsor, the non-Federal Sponsor shall be considered the operator of the Project for purposes of CERCLA liability. To the maximum extent practicable, the non-Federal Sponsor shall operate, maintain, repair, replace, and rehabilitate the Project in a manner that will not cause liability to arise under CERCLA;

m. Prevent obstructions of and encroachments on the Project (including prescribing and enforcing regulations to prevent such obstruction or encroachments) which might reduce ecosystem restoration benefits, hinder operation and maintenance, or interfere with the Project's proper function, such that as any new developments on project lands or the addition of facilities which would degrade the benefits of the Project;

n. Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public law 91-646, as amended by title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 100-17), and the Uniform Regulations contained in 49 CFR part 24, in acquiring lands, easements, and rights-of-way, and performing relocations for construction, operation, and maintenance of the Project, and inform all affected persons of applicable benefits, policies, and procedures in connection with said act;

o. Comply with all applicable Federal and State laws and regulations, including, but not limited to: Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d) and Department of Defense Directive 5500.11 issued pursuant thereto; Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army;" and all applicable Federal labor standards requirements including, but not limited to, 40 U.S.C. 3141-3148 and 40 U.S.C. 3701-3708 [revising, codifying and enacting without substantive change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a et seq.), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 et seq.) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c)];

p. Comply with Section 106 of the National Historic Preservation Act in completion of all consultation with the Florida State Historic Preservation Officer, and as necessary, the Advisory Council on Historic Preservation, prior to construction as part of the preconstruction engineering and design phase of the project;

q. Provide 50 percent of that portion of total cultural resource preservation mitigation and data recovery costs attributable to the Project that are in excess of one percent of the total amount authorized to be appropriated for the Project; and

r. Do not use Federal funds to meet the non-Federal sponsor's share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is expressly authorized and in accordance with Section 601 (e)(3) of the WRDA of 2000.



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14. The recommendation contained herein reflects the information available at this time and current Departmental policies governing formulation of individual projects. It does not reflect program and budgeting priorities in the formulation of a national Civil Works construction program or the perspective of higher review levels within the executive branch. Consequently, the recommendation may be modified before it is transmitted to the Congress as a proposal for authorization and implementation funding.

A handwritten signature in black ink, appearing to read 'Carl A. Strock', with a long horizontal flourish extending to the right.

CARL A. STROCK  
Lieutenant General, U.S. Army  
Chief of Engineers