Chapter 7: Everglades Restoration Update

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SUMMARY

Everglades restoration is a broad-reaching effort to identify, plan, implement, and adapt solutions designed to restore, preserve, and protect the Greater Everglades ecosystem, which spans the area from the Kissimmee Chain of Lakes and Kissimmee River, through Lake Okeechobee and the Caloosahatchee and St. Lucie rivers and estuaries, to the remnant Everglades system, and Florida Bay, Biscayne Bay, and the Florida Keys. In the *2011 South Florida Environmental Report* (SFER) – *Volume I*, Chapter 7 provides an annual update on the suite of projects and initiatives designed to improve the water quality, timing, and distribution of water deliveries, many of which are under way in collaboration with state, local, federal, and tribal partners. Updates on annual work plans and activities for the Comprehensive Everglades Restoration Plan (CERP), the Northern Everglades and Estuaries Protection Program (NEEPP), and Restoration Coordination and Verification (RECOVER) along with highlights of activities that occurred during Water Year 2010 (WY2010) (May 1, 2009–April 30, 2010) and Fiscal Year 2010 (FY2010) (October 1, 2009–September 30, 2010) for planning, design, construction, and land acquisition are described in this Everglades restoration annual update. The primary focus of this chapter is to provide enhanced oversight and accountability for the fiscal commitments being made to implement restoration projects. The chapter's content seeks to identify the pool of restoration projects that the South Florida Water Management District (SFWMD or District) has identified and prioritized for implementation.

Supplemental information associated with this chapter is contained in the following appendices of this volume:

- Appendix 7-1: Comprehensive Everglades Restoration Plan Annual Report – 470 Report
- Appendix 7-2: Northern Everglades Annual Work Plan for Fiscal Year 2010
- Appendix 7-3: RECOVER Activities Update

Additionally, supplemental information regarding other restoration initiatives and programs in the Greater Everglades is contained in other chapters of this volume, particularly in:

- Chapter 4: Nutrient source control programs in the Northern and Southern Everglades watersheds.
- Chapter 8: Implementation of the Long-Term Plan for Achieving Water Quality Goals in the Everglades Protection Area (Everglades Forever Act activities and projects).
- Chapter 11: Kissimmee Basin (Kissimmee River Restoration Project).
- Chapter 12: Coastal Ecosystems (NEEPP including the River Watershed Protection Program comprising the Caloosahatchee River Watershed Protection Plan and St. Lucie River Watershed Protection Plan).

To further streamline reporting, project-specific details, such as descriptions, project schedules, fiscal year milestones and accomplishments, and project cost estimates are available from the SFER Consolidated Project Report Database at www.sfwmd.gov/SFER.

In the 2011 SFER, detailed permit-related information pertaining to Greater Everglades restoration projects can be found in Volume III, Annual Permit Reports, which expands on Volume I to comply with various permit-related reporting requirements. The permit reports are prepared and submitted annually to the Florida Department of Environmental Protection, in support of the Comprehensive Everglades Restoration Plan Regulation Act, Everglades Forever Act, Northern Everglades and Estuaries Protection Program, and Environmental Resource Permitting projects.

Beyond the SFER content outlined above, complementary reports are available documenting the progress of Everglades restoration in achieving environmental benefits. Specifically, the multiagency, multidisciplinary RECOVER team is required to produce the biannual System Status Report (SSR), which documents the progress on Everglades restoration and provides an integrative systemwide analysis of environmental benefits (see Volume I, Appendix 7-3 for highlights; the complete 2009 SSR update is available at www.evergladesplan.org/pm/ssr_2009/ssr_main.aspx).

Another complementary report, entitled Plan for Coordinating Science: A Framework for Strategic Coordination (South Florida Ecosystem Restoration Task Force, 2008a), includes the stoplight indicators for evaluating restoration and provides a management-level summary of the progress and status of Everglades restoration. This publication is available for review at www.sfrestore.org/scg/documents/2008_Final_PCS_approved_at_the_Sept_08_TF_meeting.pdf.

Additionally, an independent review of Everglades restoration progress is required by and submitted to the U.S. Congress every two years. This review is documented in Progress Toward Restoring the Everglades: The Third Biennial Review, 2010 (Committee on Independent Scientific Review of Everglades Restoration Progress, National Research Council of the National Academies, 2010), which is available at www.nap.edu/catalog/12988.html.

The report titled Coordinating Success 2008: Strategy for Restoration of the South Florida Ecosystem and Tracking Success: Biennial Report of the South Florida Ecosystem Restoration Task Force for July 2006–June 2008, Volume 1 of 2 (South Florida Ecosystem Restoration Task Force, 2008b) provides a management-level summary of the progress of Everglades restoration, through a synthesis of environmental measures, goals, objectives and outcomes, and includes information regarding the development and refinement of success indicators for evaluating ecosystem health and other water-related benefits. The report is available at www.sfrestore.org/documents/2006_2008_strategic_plan_volume_I.pdf.

INTRODUCTION

The Greater Everglades ecosystem is composed of the Northern Everglades and Southern Everglades regions. The Northern Everglades includes the Kissimmee area lakes and river, Lake Okeechobee, and the Caloosahatchee and St. Lucie rivers and estuaries. The Southern Everglades includes the Water Conservation Areas, Big Cypress National Preserve, Biscayne Bay, Everglades National Park/Florida Bay, and coastal bays and estuaries south of Lake Okeechobee. Changes in the region's habitats over the past century have caused the degradation of a vital subtropical wetland system. The consequence of development and drainage in South Florida is that, in dry times, sufficient water of the right quality is not always available for both the environment and the human population. Conversely, in wet times, the lack of natural storage capacity often causes damaging inundation to the coastal estuaries.

This chapter describes the progress of environmental restoration projects and initiatives that occurred during Water Year (WY2010) (May 1, 2009–April 30, 2010) and Fiscal Year 2010 (FY2010) (October 1, 2009–September 30, 2010) across the Northern and Southern Everglades regions. **Figures 7-1** and **7-2** present the general location of selected projects and components in these respective regions.

The projects and initiatives are designed to work together to benefit the Greater Everglades ecosystem, striving toward increased spatial extent of natural areas; enhanced habitat and functional quality; and improved native plant and animal species abundance and diversity. Most of the projects serve multiple purposes with objectives such as increased water storage, reduced seepage from natural areas, and improved water quality. While no single project will significantly improve the Everglades ecosystem by itself, cumulative regional environmental benefits will be derived from the implementation of the full array of projects designed to improve the quantity, quality, timing, and distribution of water.

The following sections provide a snapshot of key activities and advancements associated with Greater Everglades restoration initiatives — particularly the Comprehensive Everglades Restoration Plan (CERP), Restoration Coordination and Verification (RECOVER), and Northern Everglades and Estuaries Protection Program (NEEPP). This restructured chapter is intended to be a high-level overview, whereas more detailed, interrelated restoration work and associated data and results are covered in other Volume I chapters (e.g., Chapters 10, 11, and 12) and supporting appendices.

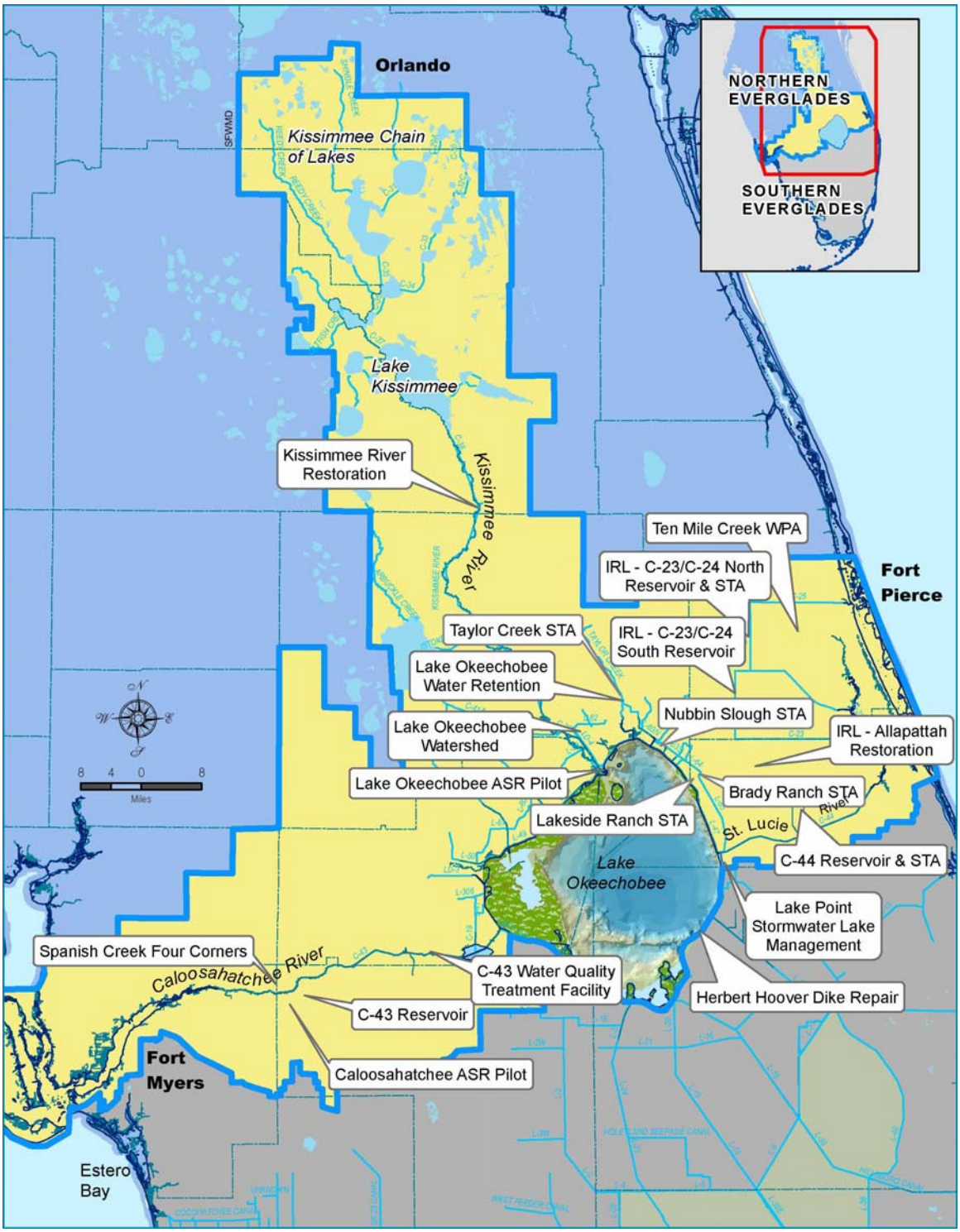

Figure 7-1. Northern Everglades Region with selected projects and components. [Note: Further details about these projects are available in the *South Florida Environmental Report* (SFER) Consolidated Project Report Database at www.sfwmd.gov/SFER.]

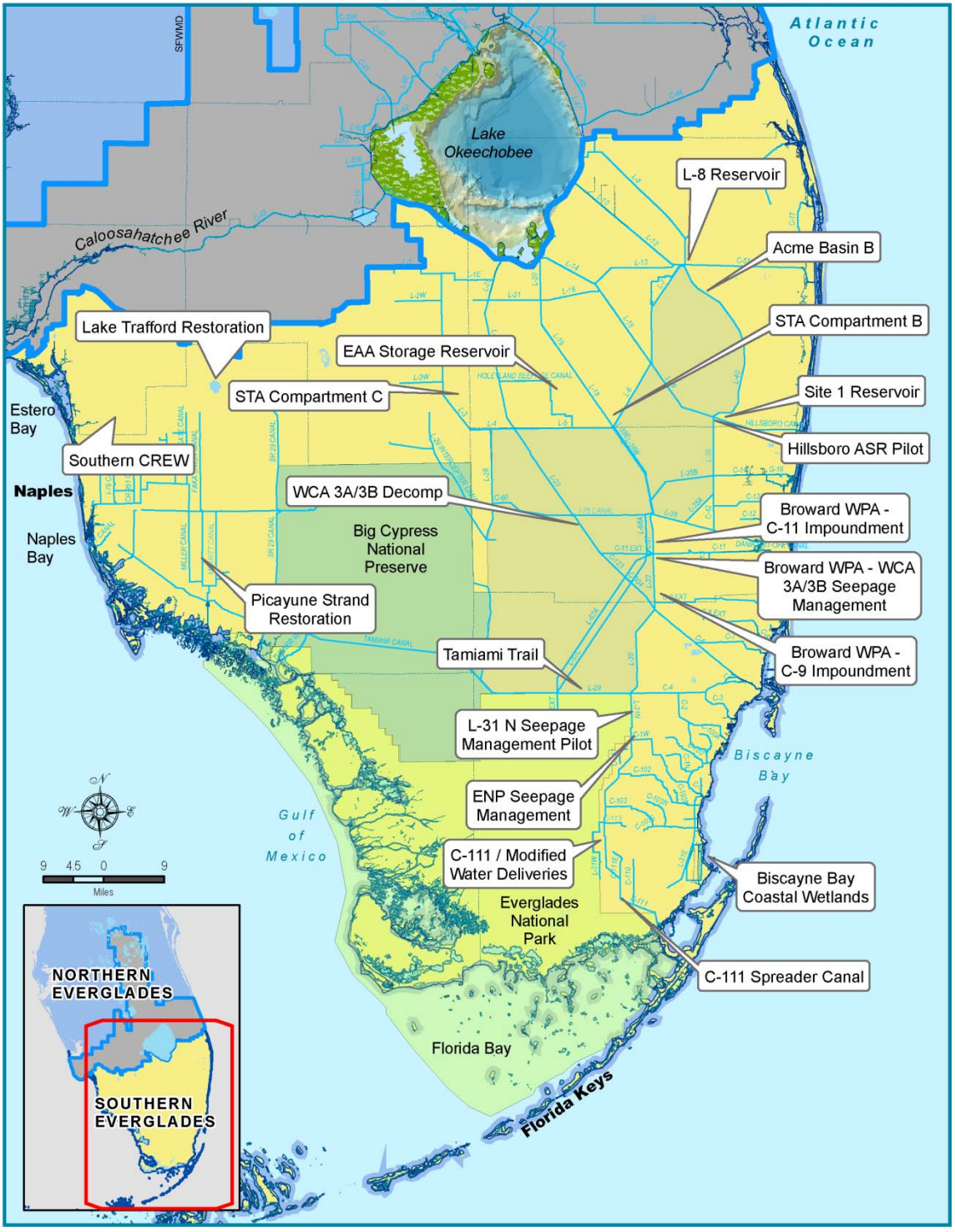

Figure 7-2. Southern Everglades Region with selected projects and components. [Note: Further details about these projects are available in the SFER Consolidated Project Report Database at www.sfwmd.gov/SFER.]

COMPREHENSIVE EVERGLADES RESTORATION PLAN

Authorized by the U.S. Congress in 2000, the CERP is a conceptual plan, the implementation of which is a significant restoration program that builds upon and complements other state and federal initiatives to revitalize South Florida's ecosystem. In 2000, the federal government and the State of Florida entered into an equal partnership agreement to restore, protect, and preserve water resources in Central and South Florida, including the Everglades.

To implement CERP, the South Florida Water Management District (SFWMD or District) employs a CERP Implementation Process consisting of the following phases: (1) project identification, (2) project planning, (3) project design, and (4) project construction. These phases are supported by modeling, land acquisition, and project controls and technical services performed throughout the process (see Appendix 7-1 of this volume).

The CERP Annual Report (see Appendix 7-3 of this volume) provides a financial update for Fiscal Year 2010 (FY2010) (October 1, 2009–September 30, 2010) and the status of the CERP implementation. During the reporting period, 93 projects and components were identified for implementation of CERP, of which 27 CERP projects and components were actively being worked, including one project coordinated by another local sponsor.

Highlights of key Everglades restoration milestones and activities occurring during the reporting period include:

- A total of 232,505 acres, or 60 percent, of estimated lands needed for CERP has been acquired as of September 2010. This includes 130 shoreline acres acquired in FY2010 to help restore freshwater flows to Biscayne Bay and Biscayne National Park.
- Hydrology has been partially restored in the eastern areas of Picayune Strand and western areas of Fakahatchee Strand since the filling of the Prairie Canal and removal of eastern roads. Some die-off of young cabbage palms, which is a desired result of restoration, was observed near the filled Prairie Canal where water levels have risen. Merritt Pump Station construction and Phase II road and logging tram removal for the Picayune Strand Restoration Project began in January 2010.
- Construction of the Frog Pond Detention Area, modifications to the Aerojet Road Canal, and plugging the C-110 and L-31E canals for the C-111 Spreader Canal Western Project also began in January 2010.
- The chief's report on the C-43 West (Caloosahatchee River) Reservoir Project, outlining the recommended plan for implementation, was signed by the Lieutenant General, U.S. Army, Chief of Engineers in March 2010.
- Construction of the L-31E culverts and Deering Estate features for the Biscayne Bay Coastal Wetlands – Phase I Project began in May 2010.
- In summer 2010, Project Partnership Agreements were executed between the District and U.S. Army Corps of Engineers to move forward with the CERP Site 1 Impoundment (Fran Reich Preserve), L-31N (L-30) Seepage Management Pilot, and Melaleuca Eradication and Other Exotic Plants projects.
- In September 2010, the District's Governing Board and the U.S. Army Corps of Engineers approved a Project Partnership Agreement to move forward on the Indian River Lagoon – South Project, enabling the construction of the C-44 Reservoir and STA, two priority water storage and quality improvement components.
- The Acme Basin B Discharge Project was named by the American Society of Civil Engineers Palm Beach Branch as the "Outstanding Project of the Year for 2009."

NORTHERN EVERGLADES AND ESTUARIES PROTECTION PROGRAM

To better protect both the southern and northern reaches of the ecosystem, the state legislature amended the Lake Okeechobee Protection Act in 2007 to include the protection of the Caloosahatchee and St. Lucie River watersheds through NEEPP, which promotes a comprehensive, interconnected watershed approach to protecting these water bodies. The District, in collaboration with the Florida Department of Environmental Protection (FDEP) and the Florida Department of Agriculture and Consumer Services (FDACS) as coordinating agencies, and in cooperation with local governments, developed the Lake Okeechobee Watershed Construction Project Phase II Technical Plan (P2TP), St. Lucie River Watershed Protection Plan (SLRWPP), and Caloosahatchee River Watershed Protection Plan (CRWPP). The P2TP, submitted to the legislature in February 2008, is being implemented. In addition, the SLRWPP and CRWPP were submitted to the legislature in January 2009. The status of projects being implemented under the P2TP is presented in Chapter 10 of this volume; the status of projects being implemented under the SLRWPP and CRWPP can be found in Chapter 12 of this volume.

The NEEPP, which is codified in Section 373.4595, Florida Statutes, is focused on achieving and maintaining compliance with state water quality standards in Lake Okeechobee and its tributary waters through a phased, watershed-based comprehensive protection program. This program also aims to capture water to meet the storage needs of the Northern Everglades. By design, the goals and objectives of NEEPP and CERP overlap, and related efforts complement and support one another. Chapters 10, 11, and 12 of this volume focus on the science necessary to support NEEPP. Chapter 4 of this volume provides details on source control programs in the Northern Everglades.

The Annual Work Plan for the Northern Everglades contains the next steps for restoration of the Northern Everglades Region (see Appendix 7-2 of this volume). The work plan includes restoration efforts for the Lake Okeechobee Watershed as well as Caloosahatchee and St. Lucie River watersheds.

Highlights of key NEEPP restoration milestones and activities occurring during the reporting period include the following:

- Initiated Lake Okeechobee Watershed Protection Plan Update, which is expected to be completed by early 2011.
- Completed water quality and storage target development for Fisheating Creek Feasibility Study.
- Conducted pilot demonstration projects to help identify new, innovative technologies designed to improve water quality.
- Started construction of three water quality improvement projects under the SLRWPP, which are local cost-share projects with Martin County.
- Continued construction of Lakeside Ranch Stormwater Treatment Area – Phase I, which is expected to be completed in 2012.
- Initiated data evaluation to support future source control program development in the St. Lucie and Caloosahatchee River watersheds.
- Continued to address area-specific stakeholder issues, monitoring network evaluations, and performance measure development for Lake Okeechobee Best Management Practices (BMPs) rule development.
- Continued partnerships with agriculture and urban communities to implement BMPs.

- Achieved a total of 127,123 acre-feet of storage in the Lake Okeechobee Watershed as a result of partnership programs that have implemented water management alternatives since 2005.

The Lake Okeechobee Watershed Protection Program (LOWPP) is being implemented as part of NEEPP, which promotes a comprehensive, interconnected watershed approach to protecting the lake and its downstream waters, specifically the Caloosahatchee and St. Lucie River estuaries. This program addresses the reduction of pollutant loadings, restoration of natural hydrology, and compliance with applicable state water quality standards. The LOWPP is a cooperative effort between the SFWMD, FDEP, and FDACS.

Highlights of key LOWPP restoration milestones and activities occurring during the reporting period include:

- Over 12,000 acres of marsh were treated for exotic control in 2009, primarily for torpedograss (*Panicum repens*) and water hyacinth (*Eichhornia crassipes*).
- Thousands of birds foraged in shallow, open water areas previously overgrown with torpedograss.
- FDACS-sponsored BMP demonstration and evaluation projects are ongoing at representative sites for all agricultural land uses in the watershed, including dairy, beef, citrus, and vegetable production. The total phosphorus (TP) load reduction to Lake Okeechobee from these cost-share BMP projects is estimated to be 19 metric tons (mt).
- The monitoring and evaluation of District-sponsored projects to capture water quality improvements continued through WY2010. The TP load reduction from these projects is estimated to be 27 mt.
- Research and assessment activities conducted during WY2010 included (1) completion of the Taylor Creek Algal Turf Scrubber® facility, (2) MIKE SHE/MIKE 11 model application in the S-191 basin, (3) nutrient budget analysis, (4) continued operation and evaluation of four Hybrid Wetland Treatment Technology projects, (5) Watershed Assessment Model documentation and validation, and (6) continuation of the Chemical Treatment Study to evaluate existing technologies for phosphorus removal that may be suited for use in the watershed and Hybrid Wetland Treatment Technology studies.

RECOVER

RECOVER provides essential support to CERP in meeting its goals and purposes by applying a systemwide perspective to program planning and implementation (see Appendix 7-3 of this volume). This multiagency team is charged with organizing and applying scientific and technical information to most effectively support CERP objectives and to conduct scientific and technical evaluations and assessments to improve CERP's ability to restore, preserve, and protect the South Florida ecosystem.

Highlights of key Everglades restoration milestones and activities occurring during the reporting period include the following:

- Completed the System Status Report (RECOVER, 2010a) as an interactive web page that allows managers, stakeholders, and scientists with many different interests and different degrees of technical expertise to easily find the information they need.

- Completed a report summarizing systemwide updates of the CERPA modeling conditions, which reflects the Master Implementation Sequencing Plan Band 1 projects and the updated Integrated Delivery Schedule.
- Completed the Adaptive Management Integration Guide and related CERP guidance memorandum for adaptive management (RECOVER, 2010b). The guidance manual translates the concepts of CERP adaptive management into a practical series of steps that can guide and direct implementation and use of adaptive management at both the systemwide and project level.

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