
TKW Consulting Engineers, Inc.

QUALIFICATIONS AND EXPERIENCE

SFWMD Southern Corkscrew Regional Ecosystem Watershed (C.R.E.W.) Project

Lee County, Florida

Dates: 2011 - On-Going

Project Fees to Date: \$551,913

The purpose of this project is to achieve ecosystem restoration of 4,150 acres in the southern Flint Pen Strand region of Lee County and reestablish the natural historical flow-way to Estero Bay. The east Bonita area in Lee County gained widespread attention during area wide flooding in 1992 and again in 1995. The flooding prompted the South Florida Water Management District and Lee County to explore the hydrology of the region through the South Lee County Watershed Study (SLCWS). One proposed component of the SLCWS was the purchase and restoration of key habitat defined in the SLCWS. In response to the plan, and to provide a comprehensive approach to the Imperial River watershed, the District



implemented the Southern Corkscrew Regional Ecosystem Watershed (CREW) Critical Project as part of its Comprehensive Everglades Restoration Project (CERP) through the Critical Projects Program. The Southern CREW Project (Project) developed a list of proposed actions to relieve flooding along the Imperial River by acquiring up to seven (7) sections of land east of Bonita Grande Road and acquiring additional land in the Imperial River Flowway. The District has acquired approximately 4,150 acres that is now the limits of the Southern CREW Project. TKW Consulting Engineers has been contracted for two phases. The first phase consisted of the preparation of a basis of design report for the project's main objective to restore the hydrology and ecology of the project footprint without impacting adjacent properties. The second phase included the civil engineering and design of the project, implementing the recommendations of the basis of design report.

Methodology and Approach

The purpose of the Southern Corkscrew Regional Ecosystem Watershed Critical (CREW) Project, aka Southern CREW Project (Project), is to restore hydrology and ecology to an environmentally sensitive natural area encompassing 4,150 acres, located along Bonita Beach Road, just east of Bonita Springs. Forming a part of Lee County's Imperial River Watershed, the Project was initiated as a Critical Project in the Comprehensive Everglades Restoration Plan. The area comprising the Project is a former residential development having numerous dirt roads, agricultural ditches, and canals that have over the years, altered the historical sheet flow patterns within the region. The Project's objective is to restore the hydrology and ecology of the area without significant adverse impacts to offsite properties. The U.S. Army Corps of Engineers prepared an Environmental Assessment (EA) in 1999, stating this objective and several recommendations to achieve this objective. The Project has been designed to implement the following objectives: hydrologic restoration, reduction of nutrient and pollutant loads to the Imperial River, land acquisition, protection, and restoration of wetland habitat targeted for housing and commercial development, and protection of listed species and other fish and wildlife resources.

The initial design phase of this Project entailed evaluating various restoration scenarios based on two model simulations. The first model was a short duration simulation (order of days to months) for analyzing large rainfall events and corresponding flooding, and the second model was a long-term simulation (order of years) to analyze hydro-ecological benefits that need to be implemented.



The Project area presently consists of dirt roadbeds, canals, ditches, embankments, and berm areas, which need to be graded, degraded, excavated, and/or filled in order to allow restoration of a more natural, northeast to southwest sheet flow and shallow groundwater flow pattern. Several different restoration improvement options were considered, individually as well as in conjunction with one another. These options included constructing ditch blocks to impede flow, making road cuts and adding conveyances to redirect the flow, constructing weirs with fixed elevation and time-varying-crest to control water-levels, and also constructing or removing berms as a way to control the flow of water. The initial study phase concluded with the preferred restoration improvement option recommended various berm removal locations, fill ditches and road cuts, new culverts and ditch plugs.

To address the recommended improvement option, TKW created 26 project alignments. TKW's design approach considered evaluating each of the project alignments with the goal of developing cost effective earthwork improvements with respect to the following earthwork operation options:

- Cutting/degrading berms;
- Constructing 12-foot minimum wide roadbeds along various alignments where existing roadbeds are located within a cut section (degrade berm section) and the roadbed section is less than 12 feet wide;
- Filling ditches/canals composed of native Unclassified Fill material to create the following features:
 - New Canal Plugs;
 - New Ditch Plugs;
 - New Lengthened Canal Plugs;
 - New Low-Water Crossings along 2 alignments; and
- New Wood Stork Foraging Areas at canal plugs along 3 alignments;
- Constructing a temporary Construction Staging Area to be converted to a permanent District parking area by the District after completion of the Project; and
- Installing New 18-inch RCP at 2 alignments, and New 24-inch RCP at the Construction Staging Area site.

Selection of the optimal earthwork design improvement for each of the alignments required investigating existing terrain conditions and evaluating the various earthwork operations involved with respect to constructability, effectiveness, transporting logistics, and cost. It is noted that earthwork operations must only employ backfilling ditches and canals using "native" excavated material from local cutting, degrading, and excavation operations; no off-site fill or borrow excavation is permitted on this project, except where Select Fill may be required to fill roadbed areas to accommodate pipe cover requirements. Ultimately, upon completion, this Project will reflect an overall improvement that restores site conditions, to the degree possible, back to predevelopment conditions, while improving ecological hydrology through new water conveyance crossings. The Project achieves its objective of restoring the hydrology and ecology of the region without significant adverse impacts to offsite properties.

Quality Assurance/Quality Control Methods

It is a policy of TKW to develop, implement, and maintain a QA/QC Plan per project. After Notice to Proceed and prior to project startup, TKW prepared a project-specific QA/QC plan tailored toward the Client and more specifically, this project, including the following items:

- QA/QC organization chart (including sub-consultants), project staffing, and description of responsibilities;
- Schedule control;
- Budget control;
- Status reports; and
- Submittal reviews

The project-specific quality assurance plan included Progress Review meetings and Monthly Status reports. In addition, all submittals to the Client included a signed *Quality Certificate of Compliance* confirming that TKW performed all internal QA/QC activities in accordance with the QA/QC plan and that the contents of the submittal were completed and met the requirements as stated in the Statement of Work for the Work Order.



Management Process

TKW understands the need for a consultant to develop a timely and responsive technical proposal, prepared at a moment's notice, detailing a project specific approach that meets the explicit needs of the selected assignment. Our "Team" of professionals listens to the Client's requests and needs, identifies site conditions, project constraints, and scope of work tasks, and then tailors a project program and schedule to meet these precise requirements. To this end, we offer a proven track record of technical expertise, planning foresight, innovative thinking, responsiveness, reliability, and dedication, all complimented by exceptional project management, value engineering, constructability analysis, and quality assurance/quality control procedures. The end results are successful projects and client satisfaction.

We know that the Project Manager must ensure a seamless coordination between SFWMD and our "Team" while satisfying the needs of each individual task assignment. Our Project Manager's overriding goal will be to minimize SFWMD's project management and administrative efforts by ensuring a timely, responsive, and high quality project. We know that the Project Manager must make certain that "Team" resources are readily available when, and to the degree, necessary.

