



LEE COUNTY
SOUTHWEST FLORIDA
BOARD OF COUNTY COMMISSIONERS

**THREE OAKS WATER RECLAMATION FACILITY
EXPANSION TO 8 MGD**

Design-Build Criteria Package

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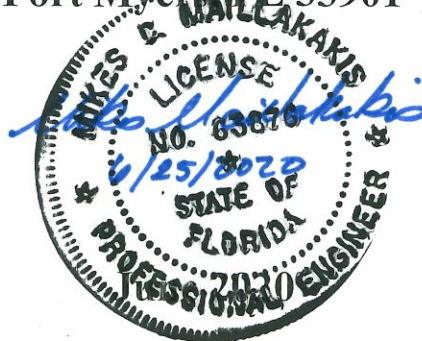


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October 2005**

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Improvements, October 2014**

1. Project Objective

Lee County Utilities (LCU) has selected the progressive design-build delivery method for this project. The purpose of the proposed project is to provide design, permitting, and construction for the expansion of the Three Oaks Water Reclamation Facility (WRF) to a treatment capacity of 8 MGD with a possible rerating to 9 MGD.

2. Location and Background

Lee County Utility (LCU) owns and operates the Three Oaks Water Reclamation Facility (WRF) located at 18521 Three Oaks Pkwy, Fort Myers, Florida, 33967. The Three Oaks WRF is an extended aeration wastewater treatment plant. The facility first began operation in 1989 with a permitted capacity of 0.25 MGD. In 1991, an expansion of the plant facilities increased the permitted capacity to 0.50 MGD. In 1995, an expansion of the plant facilities increased the permitted capacity to 0.75 MGD. In 2004, an expansion of the plant facilities increased the permitted capacity to 3 MGD. In 2007, an expansion of the plant facilities increased the permitted capacity to 6 MGD. In 2018, an improvements project was completed to allow for the plant to treat the permitted capacity of 6 MGD.

The Three Oaks WRF is the primary provider for wastewater and reuse to the southern Lee County collection service area. A map of the Three Oaks service area is located in Appendix A. Based on population projections, an expansion was deemed necessary in order to meet future demands.

3.0 Project Site

An approximate 17.28-acre site is contained within the property of the Three Oaks Water Reclamation Facility, located on Three Oaks Parkway.

3.1 Strap Number

15-46-25-00-00005.1030

3.2 Site Address

18521 Three Oaks Pkwy, Fort Myers, Florida, 33967

3.3 Legal Description

The East Half (E ½) of Section 15, Township 46 South, Range 25 East, Lee County, Florida, between I-75 and Three Oaks Parkway. As described in OR1931 PG2434.

3.4 Survey

This is an expansion project on an existing property. As such the site or property boundaries will not change. The Record Drawings have been provided in Section 10 and Appendix B. The Record Drawings show the survey location of the different items within the facility of relevance to this project.

3.5 Provisions for Utilities

The Record Drawings provided in Section 10 and Appendix B show the existing utilities to be reused for this project.

3.6 Internal Space Requirements

The purpose of this project is to increase the treatment capacity of the water reclamation facility WRF. No changes in staffing levels are anticipated, and therefore no corresponding changes in the interior space requirements for the administration building is anticipated. The existing space within the interior of the property line, on the exterior of buildings shall be used for the treatment capacity expansion.

4.0 Project Components Analysis

The existing facility shall be modeled and evaluated by the Design-Builder (DB) resulting in creation of the Basis of Design Report (BODR). The BODR and models shall be used to propose new processes/equipment and/or modifications to existing process equipment to allow the existing facility to reach a treatment capacity of 8 MGD. During this analysis the County would like for the DB team to evaluate whether a rerating of the plant to 9 MGD would be possible. In the components analysis, all evaluations should maximize functionality, operability and maintainability of the existing equipment. Minimization of equipment and facility life cycle cost should be considered. It is LCU's preference and where applicable, to match the manufacturer of installed equipment for plant compatibility and cohesiveness. In circumstances where existing equipment cannot be utilized or a complete replacement is necessary, an alternatives comparison analysis should be conducted to justify the selection. Constructability and maintenance of plant operations should be taken into consideration as part of the evaluation and recommendation process. The BODR and hydraulic model shall be considered as a starting point for the 30% design of the plant expansion.

Approval of the GMP is necessary to start the second phase of the Progressive Design-Build. If at any point an equitable GMP cannot be negotiated, the contract shall be cancelled. All design, design reports, and associated documents shall become property of LCU, who shall retain all rights to utilize them to re-solicit for the remaining design and construction services.

Procurement and construction of components shall be executed as soon as design permits. Following construction, components shall be completed through testing, startup, and full functionality and operational performance testing as soon as possible.

Project components analysis shall include but not be limited to the following:

4.1 Headworks

- Evaluate and provide recommendations concerning the existing screening system to determine if the units need to be upsized, upgraded or replaced.
- Evaluate the existing headworks coatings to determine if recoating is needed.
- After approval of the GMP, construct approved recommendations.

4.2 Oxidation Ditch

- Evaluate and provide recommendations concerning the Oxidation Ditch capacity and what is needed to expand capacity.
- An evaluation of the influent line to Oxidation Ditch 3 might also need to be completed including recommendations of where it could be relocated.
- Replace non-code stairs and landing pads to Oxidation Ditches 1, 2 and 3.
- After approval of the GMP, construct approved recommendations.

4.3 Clarifier

- Evaluate and provide recommendations concerning the Clarifier capacity and what needs to be done, if anything, to expand capacity.
- As part of the evaluation, verify the splitter boxes are sized correctly for needed clarifiers.
- After approval of the GMP, construct approved recommendations.

4.4 Sand Bed Filter

- Evaluate and provide recommendations concerning the Sand Bed Filter capacity and what needs to be done to expand capacity.
- Based on investigations, propose modifications to the system to improve functionality, operability, and maintainability.
- Evaluate options to build a structure to cover the filters.
- After approval of the GMP, construct approved recommendations.

4.5 Chlorine Contact Chamber

- Evaluate and provide recommendations concerning the Chlorine Contact Chamber capacity and what needs to be done to expand capacity.
- After approval of the GMP, construct approved recommendations.

4.6 Effluent Pump Station

- Evaluate and provide recommendations concerning the Effluent Pump Station.
- Evaluate and provide recommendations for increasing reuse production from 6 MGD to 8 MGD.
- All pumps shall be the same make and model as existing.
- After approval of the GMP, construct approved recommendations.

4.7 Filter Feed Pump and Transfer Pump

- Evaluate and provide recommendations concerning the Filter Feed Pumps and Transfer Pumps.
- Additional Filter Feed Pumps, Transfer Pumps, motors, VFD's, and bypasses shall match what is currently installed.
- After approval of the GMP, construct approved recommendations.

4.8 Chemical Storage and Feed System

- Evaluate and provide recommendations concerning the Chemical Storage and Feed System.
- As part of the evaluation, verify the tank capacity, the existing pump sizing and ensure the existing number of pumps are capable of delivering the required dosage of chemicals while maintaining one spare swing pump.
- After approval of the GMP, construct approved recommendations.

4.9 Digesters

- Evaluate and provide recommendations concerning the Digester capacity and what needs to be done to expand capacity.
- Replace non-code stairs and landing pads to the Digesters.
- After approval of the GMP, construct approved recommendations.

4.10 Ground Storage Tanks/DIW

- Evaluate and provide recommendations concerning the Ground Storage Tanks (Reject and Reuse) and DIW capacity.

4.11 Electrical System/ Backup Power Upgrades

- Evaluate and provide recommendations concerning the Electrical System, VFD's and Backup Power.
- All evaluations, should consider the existing built-out conditions in the plant's MCC room and alternate location sites for new electrical components.
- As part of the evaluation, verify the backup power requirements to fully operate the plant after added power consumption of recommended equipment is available.

- Consider the impacts of an additional 1000kw generator for redundant backup power supply.
- Evaluate the diesel fuel storage capacity to ensure adequate fuel storage with the added load. The existing capacity is 3,500 gallons with only 85% usable.
- Upgrade the existing generator controls.
- As part of the evaluation, investigate conduit and wire sizes for equipment whose horsepower may change.
- Evaluate the possibility of constructing a block building around the electrical structure between oxidation ditches and digesters.
- Update remaining site lighting to match new lighting.
- All new equipment and structures will need to include lightning protection.
- LOTO update.
- All new electrical structures will need to be flood hardened facilities.
- After approval of the GMP, construct approved recommendations.

4.12 Instrumentation, Controls, and SCADA Systems Upgrades:

Design-Builder must have at least one staff personnel assigned to this project that is a Silver Citect Certified SCADA Engineer (CCSE) through the Schneider Electric Certified Expert Program.

- Evaluate and provide recommendations concerning the Instrumentation, Controls, and SCADA Systems.
- As part of the evaluation, verify the capabilities of the existing control panels, related to equipment that has been recommended for any modification and recommend any new instrumentation required. For uniformity, the PLC system should be upgraded to Rockwell Allen Bradley.
- As part of the evaluation, recommend new instrumentation for expansion equipment.
- After approval of the GMP, construct approved recommendations.

4.13 Overall Site Layout

- Evaluate and provide recommendations concerning the existing Overall Site Layout.
- Include an enclosure for odor control at the Headworks dumpster.
- As part of the evaluation, demonstrate locations for additional recommended process equipment, chemical storage, etc.
- As part of the evaluation, maintain accessibility to all chemical delivery sites and other crucial plant operating sites.
- As part of the evaluation, maintain required on-site retention and detention areas, per permitting agencies.
- As part of the evaluation, assess the stormwater system on the North property line to see if improvements need to be made to this system.

5.0 Design Services

Professional services will be provided by the DB, including but not limited to the following: prepare process modeling and analyses as necessary, BODR, prepare design plans and technical specifications with document and constructability reviews at 30%, 60%, 90%, and 100% completion; evaluate design alternatives; prepare permit applications and obtain permits required by all regulatory agencies, including but not limited to FDEP, SFWMD, and Lee County. Provide geotechnical and survey services as necessary; conduct value engineering review meetings that focus on minimizing life cycle cost of the facility; coordinate various design and review meetings; and provide design schedule details.

Engineering inspection during construction shall be performed by all disciplines at least once a week. Red lines shall be incorporated for all design reviews. Record drawings and an assets management list shall be required for project completion.

6.0 Construction Services

Construction services will be provided by the DB, including but not limited to the following: self-perform work; prepare sub-contractor/vendor bid packages and secure sub-contracts (who are not already part of the DB's team); obtain all construction permits required by Lee County and other agencies as required; manage the overall project construction; manage the on-site dewatering efforts; manage progress scheduling; manage procurement, delivery, and storage of all materials, including direct purchased materials by LCU; provide engineering support service during construction; provide engineering inspection; manage project costs within the GMP; coordinate regular progress meetings; coordinate all work with WRF operations and accomplish work without disruption to existing operations and process treatment; red line and maintain a set of master red line drawings.

Construction personnel from each trade shall be present during the 30%, 60%, 90%, and 100% constructability reviews. Construction activities must be planned to minimize disruption to plant operations and service to customers. LCU staff must approve any work requiring disruption to plant operations. A disruption to plant operations that will require a continuous shutdown of more than 3 hours shall require advanced notification and approval of activity at minimum 7 calendar days. A plant shutdown, which meets or exceeds a continuous 24 hours, shall require advance notification and approval of activity at minimum 14 calendar days.

The DB shall be solely responsible for ensuring the safety of its crews, employees, and subcontractors, when performing the work required under the contract. The DB shall operate under their own safety program that is in compliance with all Occupational Safety and Health Administration (OSHA) guidelines and requirements throughout the project duration. The DB team must ensure safety of LCU staff at all times.

7.0 Plant Performance Guarantee

Compliance of the project to the performance guarantee shall be done through performance testing. The exact content of the performance testing specification shall be created in conjunction with the Design-Builder and specific to the final selected and approved design components. The purpose of the performance testing is to provide a guarantee that the expanded Three Oaks WRF, can meet the following:

1. Meet the treatment capacity of the FDEP permit.
2. Project design conditions
3. Primary and backup electrical systems are capable of running the plant under loads associated with the design conditions
4. All programming and SCADA system is properly functioning and capable of running and monitoring process equipment

Successful completion of performance testing will be a criteria in meeting the requirements for substantial completion, final completion and the one and a half year close of warranty period.

8.0 Project Schedule

Substantial completion is planned for October 2024.

Final completion is planned for December 2024.

Warranty period will end eighteen (18) months after Final Completion.

9.0 Project Cost Estimate

The current project budget is estimated at approximately \$25.4 million. Lee County Utilities, through the Capital Improvement Program, will fund the project.

10.0 Record Drawings

Copies of all relevant Record Drawings that the County has in their possession are in Appendix B.

11.0 Permits

A copy of the current FDEP permit is in Appendix C. The FDEP operating permit shall be modified to match the new expansion treatment capacity.

11.1 Stormwater Retention & Disposal

The existing stormwater system permit may be modified as part of Environmental Resource Permitting (ERP) services rendered under this project if necessary.

11.2 Parking Requirements

The purpose of this project is to increase the treatment capacity of the water reclamation facility WRF. No changes in staffing levels are anticipated, therefore no corresponding changes in administration building square footage or in parking requirements is anticipated. The parking requirements shall be evaluated as part of the Limited Development Order (LDO) or Development Order (DO) permitting services rendered under this project.

12.0 Historical Preliminary Design Report

The Preliminary Design Report for the Three Oaks WWTP Expansion issued by Boyle Engineering Corporation in October 2005 is in Appendix D. The Basis of Design Report for the Three Oaks WWTP Oxidation Ditch Improvements, issued by CDM Smith, Inc. in October 2014 is in Appendix D.