Fixed-Price Design-Build

Water Pollution Control Plant

City of Valdosta, Georgia

PARSONS

Challenge

Due to several flooding events at the old water pollution control plant (WPCP) resulting in permit violations and spills into the Withlacoochee River, and in response to a Georgia Environmental Protection Division consent order, the City of Valdosta sought a design-builder to fast-track a new greenfield plant to meet stringent effluent limits (4 mg/L biochemical oxygen demand, 5 mg/L total suspended solids, 0.5 mg/L ammonia, and 1 mg/L phosphorus) and produce Class B biosolids.

The headworks for the new 12-mgd Withlacoochee water pollution control plant.

Approach

Using a one-step, performance-based fixed-price design-build procurement, the City of Valdosta selected Parsons to design and build the new 12 million gallons per day (12 mgd) Withlacoochee River Water Pollution Control Plant (WRWPCP). The procurement documents specified a qualifications-based proposal together with a technical and cost proposal, as well as phone interviews for any technical clarifications. The rigorous scoring system defined in the RFP placed significant value on the technical approach to be used to meet the regulatory-driven completion date, as well as ensuring that the City received the best value for its money for the $24 million project.

To comply with stringent permit limits and Class B biosolids requirements, Parsons chose Aqua-Aerobics Systems' sequencing batch reactor (SBR) biological nutrient-removal technology with rotating cloth filters and aerobic digestion. The gravity-flow design of the system provided significantly fewer structural requirements, as all process piping is underground, thus expediting the schedule and eliminating any change orders that would generate potential design conflicts.

Results

Parsons substantially completed the project—including start-up, testing, and commissioning—within 20 months from receiving the notice to proceed. To ensure that an early completion date could be achieved, Parsons worked collaboratively with Aqua-Aerobics to have all the process equipment delivered to the site within a four month period. Using CROM® prestressed tanks for the SBR and aerobic digester also expedited the construction process by three to four months.

More than $1 million in costs savings was achieved by reusing the following existing equipment, where possible.

- Influent fine screens and controls
- Positive-displacement blowers for the aerobic digester
- Two-meter BPF press
- Discharge line for chlorine contact,
- Dewatered cake screw conveyors
- Existing standby generator not being used at the Mud Creek WPCP (saving $1 million)
- Discharge piping for chlorine contact, for a new basin (saving more than $500,000)
- Three-belt gravity belt thickener/BFP as a unique solution for Class 1 biosolids reliability (saving $250,000)

As a result, the plant now provides a low-cost alternative of $1.93 per gallon for the project scope.

"Parsons has exceeded our expectations so far on the new Withlacoochee River WPCP Design Build Project. They are ahead of schedule and always looking for a way to save the City of Valdosta additional money on this project. They provide a unique perspective in their design, focusing on ease of operations and maintenance for the end user. As a Utility Director, it is extremely refreshing to see this approach used in the design and construction of a new facility as well as other capital improvements they have performed at our facilities."

—Henry Hicks, Director of Utilities, City of Valdosta