

CASE STUDY

Rural District Upgrades To MBR Treatment

Project Type: Municipalities

Location: Dumont, Colorado

HIGHLIGHTS

Reduced the project cost from \$5.375M to \$3.5M through comprehensive value engineering.

Kept the existing WWTP online throughout construction until the new system switchover.

Replaced an obsolete system with a MBR facility, significantly improving effluent water quality in Clear Creek.

HIGH-ALTITUDE EFFICIENCY: MODERNIZING A WWTP IN THE ROCKIES.

The Central Clear Creek Sanitation District, located in Dumont, Colorado (40 miles west of Denver in the Rocky Mountains), faced the challenge of replacing its aging, over 40-year-old wastewater treatment system. The goal was to meet modern water quality standards, especially for the downstream Clear Creek community. Integrated Water Services, Inc. (IWS) was contracted for the comprehensive upgrade, which centered on implementing a sophisticated Membrane Bioreactor (MBR) system.

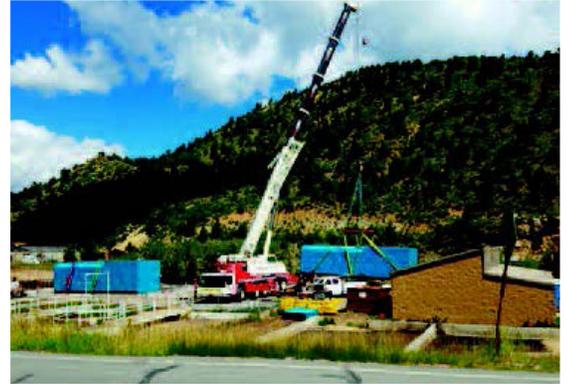
CHALLENGES FACED

- **Exceeding the Project Budget:** The initial low bid from IWS was \$5.375 million, significantly exceeding the Sanitation District's target budget. This required a major reevaluation of the design and scope to make the project financially viable for the community.
- **Maintaining Essential Service During Construction:** The existing 40-year-old plant was the sole wastewater treatment source for the district. A crucial requirement was that the facility remain fully operational throughout the demolition, construction, and system integration phases until the final switchover to the new MBR system.
- **Complex Scope and Equipment Integration:** The project involved a comprehensive scope, including installing two parallel MBR trains, new headworks (screens and grit removal), converting an existing clarifier to an aerobic digester, and integrating complex electrical, control (PLCs), and yard piping systems, all within a constrained timeline and challenging high-altitude environment.



SOLUTIONS IMPLEMENTED

- **Strategic Value Engineering:** IWS partnered with Dewberry Engineers and the District to execute an extensive Value Engineering process. This involved a complete redesign of the MBR treatment system, the treatment building, and the electrical and controls systems, successfully slashing the project cost.
- **Meticulous Construction Sequencing:** Implemented a phased plan to build the new facility in parallel with the old one, ensuring uninterrupted service until the final system integration.
- **Comprehensive Infrastructure Overhaul:** The new system incorporated two parallel MBRs, a new influent screening and grit removal system, conversion of an old clarifier into a new aerobic digester, and a complete electrical overhaul.



OUTCOME AND IMPACT

- **Financial Viability:** The value engineering process saved the District \$1.875M, allowing the project to proceed without compromising on quality or scope.
- **Superior Water Quality:** The successful installation and start-up of the MBR system, producing high-quality effluent, ensuring the District meets standards. This directly led to improved water quality in Clear Creek, benefiting residents and businesses in Dumont and downstream communities.
- **Proactive Partnership:** The project solidified a team partner relationship, with the District recommending IWS for their ability to deliver expertise from design through start-up.

The Clear Creek MBR upgrade demonstrates how collaborative value engineering can deliver complex infrastructure within tight budget constraints. By maintaining continuous operations and reducing costs by over \$1.8M, IWS transformed an obsolete system into a modern treatment facility. This project ensures a cleaner Clear Creek for decades to come.

"Our community is thankful for the work performed. IWS did a great job from the value engineering phase of the project through construction and start-up. We view IWS as a team partner and not just simply a contractor. We would highly recommend IWS for future projects and value their expertise."

Carmen Barker, District Manager of Central Clear Creek Sanitation District



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