

CASE STUDY: Garland, Texas Wastewater Treatment Plant



Application:	Return Activated Sludge Channel
Design Flow (ADF):	24 MGD
Mixing Efficiency:	80% savings over conventional diffused air mixing
Compressors:	Two (2) 15 HP Rotary Screw
Nozzles:	31 Single Drop Style
Design Engineer:	Carollo Engineers, Inc.
Contractor:	Archer Western

BioMix™ System Engineered for a Wet Installation for Rowlett Creek WWTP Upgrade

The Rowlett Creek Wastewater Treatment Plant is a trickling filter/activated sludge (TF/AS) plant permitted to treat 24 million gallons per day. The plant undertook an extensive upgrade in 2018.

As part of the upgrade, an existing aeration basin needed to be modified, requiring the retrofit of a return activated sludge (RAS) channel mixing system. The existing diffused air mixing system with positive displacement blowers had reached the end of its service life, necessitating replacement.

One of the challenges with replacing the existing mixing system was that **the RAS channel needed to remain in service during construction.** This required a unique solution. The plant selected EnviroMix's BioMix Compressed Gas Mixing System, which provides uniform mixing of tank contents by firing programmed, short-duration bursts of compressed air through nozzles located near the tank floor.

BioMix is easily adaptable to any channel configuration and depth. Particularly beneficial for Rowlett Creek, **BioMix can be installed in a single drop nozzle configuration suitable for wet installations with the channel in operation.**



Single drop style nozzle headers uniformly mix the RAS channel



ENERGY EFFICIENCY

80% energy savings compared to conventional diffused air mixing



STRAIGHTFORWARD OPERATION

No in-tank maintenance
Maintainable equipment in centralized location



PROCESS OPTIMIZATION

Operator-adjustable firing parameters of duration and frequency enable optimal mixed conditions



UNPARALLELED FLEXIBILITY

Drop-in nozzle header configuration for wet installation with a live channel



Drop-in nozzle headers uniquely designed for wet installation in an active channel



Compressor, receiver tank, and valve control panel deliver high pressure mixing air to the system with flexibility to optimize mixing

BioMix's non-clog nozzle design is ideal for channel applications, requiring zero in-tank maintenance and providing unparalleled flexibility.

The BioMix solution for Rowlett Creek consists of 31 dedicated drop pipes, each with its own nozzle and concrete ballast block for drop-in installation. Since 2018, the BioMix system has kept solids in suspension where the old, antiquated diffused air system had allowed for significant accumulation of solids in the channel.

The Texas Commission on Environmental Quality (TCEQ) limits discharge of treated wastewater for cBOD, TSS, and ammonia. Treated effluent is discharged into Duck Creek, which flows to the east fork of the Trinity River, and ultimately to the Houston Ship Channel. During dry months, the Trinity River may be composed of up to 95 percent wastewater. Therefore, the performance of the Rowlett Creek WWTP is critical to the river's health and usefulness as a drinking water source for those downstream.

Rowlett Creek has received several gold and silver awards from the National Association of Clean Water Agencies (NACWA) in recognition of the plant's complete and consistent pollutant discharge elimination compliance.

BioMix was selected for this project because it offers:

- **Wet installation, enabling the plant to maintain live channel operation**
- **Energy savings of 80% over diffused air mixing**
- **Minimal maintenance of accessible equipment in a centralized location**

EnviroMix is proud to partner with this facility in continuing to meet effluent standards and protect the waterways in the Dallas–Fort Worth area.



Contact sales@enviro-mix.com today to discuss the ways EnviroMix can optimize your mixing solutions. Also, learn more about Channel mixing [in this video](#).