



Reedley Wastewater Treatment Plant



## Aeration System Prevents Septic Conditions Mazzei Venturi Aeration Systems in Rural Wastewater Treatment Plants

*Delano Wastewater Treatment Plant & Reedley Wastewater Treatment Plant  
San Joaquin Valley, California*

**The Problem:** Circa 2010, Carollo Engineering designed and implemented expansions at wastewater treatment plants in Delano, California and Reedley, California to handle increased flows of up to 8.8 MGD and 5.0 MGD respectively. The proposals for both facilities specified a need for storage and processing of secondary sludge produced by the processes' secondary clarifiers. In the expansion design for each facility, the sludge is sent to a set of three uncovered sludge holding tanks (110,000 gallons each) where it is thickened prior to being dewatered by centrifuges. The design needed to incorporate a way to prevent the sludge holding tanks from developing septic conditions in an effort to keep odors at bay, as well as to avert operational issues from occurring in the downstream equipment.

**The Solution:** Each sludge holding tank was equipped with an aeration system consisting of a stainless steel Mazzei venturi injector and a chopper pump—both installed outside the tank. Each one was designed to have the ability to operate as a single pass configuration—drawing directly from

the secondary clarifiers—or as a recirculation configuration drawing from the sludge holding tanks, and each can run continuously or can be shut off for extended periods of time.

Mazzei injectors were selected to provide an efficient, zero maintenance method of freshening and mixing the sludge. Due to the injectors' lack of small orifices or sharp edges, they are ideal to handle high concentrations of solids without concerns of plugging. Each plant has three stainless steel venturi injectors (not one has required maintenance or replacement since installation).

The venturi aeration system provides plenty of flexibility for operators to optimize the process. The Delano plant prefers to only aerate the sludge as it is entering the tank. The aeration system is then turned off so a decanting process can occur and the sludge can be thickened to reach a solids concentration as high as 6%. The Reedley plant, on the other hand, prefers to constantly aerate/mix the contents of the tank to prevent the settling of solids since they have found that their centrifuges operate



*Delano Wastewater Treatment Facility*

more effectively under these conditions. In both cases, due to the high quality of their sludge, the treated solids are either sent directly to farm land or to a composting facility.

Since installation and start-up, the Mazzei venturi injectors at both facilities have required zero maintenance. In fact, the only maintenance necessary on the aeration systems has been oil changes on the pumps, replacement of bearings on one of the pumps and a mechanical seal on another. Staffs at both wastewater treatment facilities are very pleased with the efficiency and ease of use of the venturi aeration systems.



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To see how our  
[venturi injectors](#) work,  
take a look at our  
animation

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