

Tank Shark® Active Tank Mixing Proven to Be Superior to Dedicated Tank Inlet/Outlet Design



San Jose Water Company (SJWC) provides drinking water for over a million people in the greater San Jose Metropolitan region and is a recognized leader in drinking water treatment and distribution system water quality management. UGSI Solutions has partnered with SJWC on numerous projects over the last several years ranging from on-site sodium hypochlorite generation to tank and reservoir water quality management. With over 90 water storage facilities in service, planned maintenance and rehabilitation of capital assets is a key component of SJWC's CIP program. The aging Belgatos Reservoirs are located on top of a seismic fault and are slated for replacement by two 2.3 million gallon water reservoirs. The existing and proposed reservoirs are situated approximately half a mile from the distribution system and share a common inlet/outlet line that splits to service each tank.



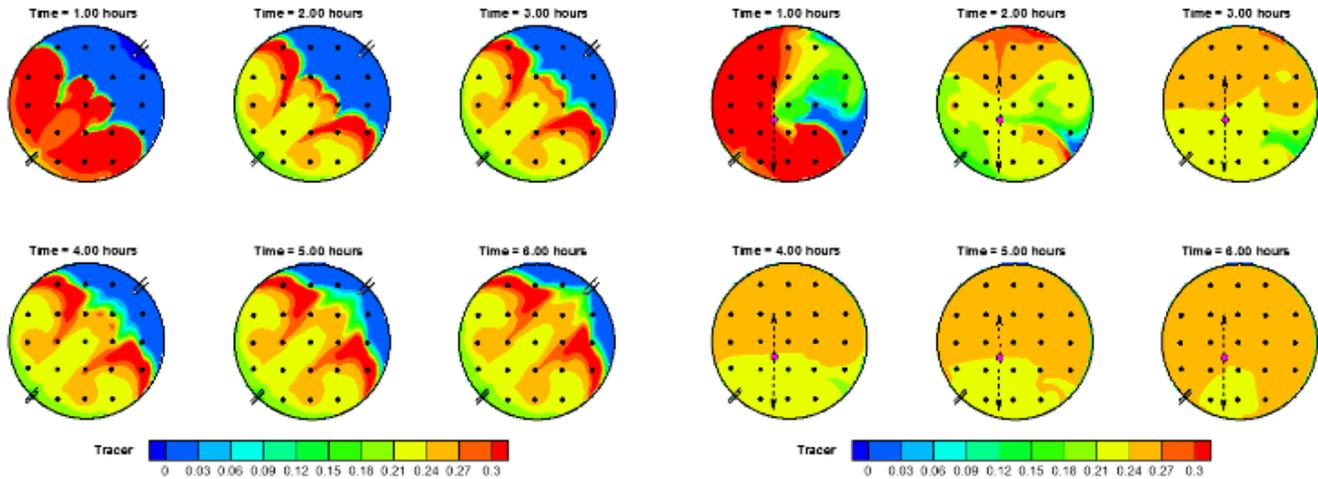
The design of the new reservoirs posed a unique challenge as the Department of Drinking Water (DDW) in California requires dedicated inlet and outlet lines for any new reservoir in an effort to maintain water quality by avoiding “short-circuiting” within a tank. However, the seismic considerations combined with the proposed location of the new Belgatos Reservoirs would have made the addition of dedicated inlet/outlet lines for each tank costly from an engineering and construction perspective.

A variance to the inlet/outlet rule can be granted if certain “duck-bill” or passive mixers are installed in the reservoir. SJWC approached UGSI with the idea that the UGSI active mixing system (Tank Shark®) would provide a greater impact on water quality than a passive mixer and at a significantly lower capital cost than separate inlet/outlet piping. SJWC and UGSI worked together to demonstrate to the CA DDW that an active mixing system would eliminate the need for a dedicated inlet/outlet and request a variance for the design of the new Belgatos reservoirs.

UGSI commissioned a computational fluid dynamics (CFD) analysis from an independent third party comparing the base line model of a dedicated inlet/outlet line assuming a best case daily tank turn-over of 25% against the Tank Shark® active mixing system. The analysis demonstrated that active mixing with the Tank Shark® mixer provided a homogeneous tank in less than three hours and that after six hours the dedicated inlet/outlet model still remained unevenly distributed.

Base Case

Tank Shark®



The compelling results from the CFD analysis confirmed that the Tank Shark® active mixing system not only outperformed the design of a dedicated inlet/outlet, but provided a far superior mixing solution. An active tank mixing system is a far superior water quality solution as active mixing is constant and not dependent on tank turn-over, cycling or seasonal flow variations. UGSI will also be providing their ChemLocker™ reservoir dosing station which when paired with the Tank Shark® mixing system provides real time residual analysis via SCADA and the ability to cost effectively boost disinfectant residual by dosing chlorine based disinfectant only as needed.

The CA DDW has approved the exemption for the Belgatos Reservoirs and UGSI is now pursuing a state-wide approval of the Tank Shark® active mixing and monitoring system as an exemption to the dedicated inlet/outlet rule.



UGSI ChemLocker™ and Tank Shark® tank mixing and boosting system