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Application of RANS Simulations for Contact Time Predictions in Turbulent Reactor Tanks for Water Purification Process CASSANDRA NICKLES, MATTHEW GOODMAN, JOSE SAEZ, EMIN ISSAKHANIAN, Loyola Marymount University — California's current drought has renewed public interest in recycled water from Water Reclamation Plants (WRPs). It is critical that the recycled water meets public health standards. This project consists of simulating the transport of an instantaneous conservative tracer through the WRP chlorine contact tanks. Local recycled water regulations stipulate a minimum 90-minute modal contact time during disinfection at peak dry weather design flow. In-situ testing is extremely difficult given flowrate dependence on real world sewage line supply and recycled water demand. Given as-built drawings and operation parameters, the chlorine contact tanks are modeled to simulate extreme situations, which may not meet regulatory standards. The turbulent flow solutions are used as the basis to model the transport of a turbulently diffusing conservative tracer added instantaneously to the inlet of the reactors. This tracer simulates the transport through advection and dispersion of chlorine in the WRPs. Previous work validated the models against experimental data. The current work shows the predictive value of the simulations.

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