Johnny G. Martinez and South Tempe Water Treatment Plant Upgrades

Carollo recently designed two UV disinfection facilities for the City of Tempe. These facilities will accommodate expansion of the South Tempe Water Treatment Plant and the Johnny G. Martinez Water Treatment Plants to 50 and 80 mgd, respectively. The UV system design for both plants involves using large-scale UV reactors located in a dedicated building downstream of filtration. The Johnny G. Martinez design involves four duty and one standby UV reactors each sized to treat 20 mgd of flow using 84 low-pressure high-output UV lamps. The South Tempe design involves three duty and one standby UV reactors each sized to treat 17 mgd of flow using 84 LPHO lamps.

Locating UV disinfection after filtration was relatively uncomplicated. At both plants, finished water from each filter is combined into a 72-inch manifold. The UV reactors connect to the 72-inch manifold via a 48-inch pipe to a tee off of the manifold. UV disinfected water from each reactor is combined into a second 72-inch manifold and sent directly to the finished water reservoir. A weir upstream of the reservoir ensures the UV reactors are always flooded.

Headloss through both UV systems is less than two feet. The buildings for the Johnny G. Martinez and South Tempe plants are 3,300 and 2,700 square feet, respectively. Because the UV reactors and associated building occupy a relatively small footprint, construction will result in minimal site impacts. The buildings allow easy access to the reactors for maintenance, such as lamp and sleeve replacement. To ensure continual operation of the UV system, both systems are equipped with standby power supplies.