

LOS ALTOS HILLS

On-Site Sodium Hypochlorite Generation
Maintains Consistent Chloramine
Disinfectant Residual at a Remote Tank

OVERVIEW

Purissima Hills Water District (PHWD), a county water district, provides chloraminated water service to two-thirds of the town of Los Altos Hills, adjacent to the city of Palo Alto in Northern California. With remote tank locations, low population density (6,800 people) and low water demand (1.61MGD), PHWD is constantly challenged to maintain consistent disinfectant residual levels while simultaneously balancing the safe delivery of chemicals to its tank site at an affordable cost. Despite the challenges, PHWD operators take pride in providing consistently high-quality drinking water to the region – recently named the wealthiest town in the United States¹ – through continually investing in innovative water quality technologies and outstanding operating practices.

Working together with PSI Water Technologies, Inc. a Cleanwater1 company since 2013, PHWD has successfully implemented numerous projects to address water quality concerns in its distribution system, including adding tank mixers to overcome stratification, aeration and ventilation equipment to remove trihalomethanes (THMs), and sensors and chemical dosing skids for residual control. Most recently, PHWD was introduced to PSI's Microclor® On-Site Sodium Hypochlorite Generation (OSHG) system, which uses salt and electricity to produce chlorine in the form of sodium hypochlorite, versus using chlorine from gas or liquid bulk hypochlorite.

Like hundreds of other utilities that have installed the Microclor® OSHG system, concern about safely transporting supplies through a residential area was a major factor in PHWD's interest in OSHG. In OSHG systems, the input (salt) doesn't degrade over time or lose potency and may be safely transported through neighborhoods and densely populated areas. Bulk hypochlorite at 12.5% concentration, on the other hand, is classified as a hazardous material and requires compliance with numerous state and local regulations for handling and transporting. Bulk hypochlorite also degrades quickly and loses potency over time, which can be a challenge to maintaining consistent residual levels. Moreover, purchasing bulk salt is considerably faster and easier for utilities compared to the two-to-three week lead times required for ordering bulk liquid hypochlorite. While bulk hypochlorite systems may have lower initial capital costs than OSHG systems, bulk systems have higher long-term operational costs, making the Microclor® OSHG system a better long-term value. PHWD was also



Figure 1 Neary Tank's remote hillside location

impressed with the Microclor® OSHG system's unique design which features passive hydrogen evacuation as a key component of overall system safety. The unique electrolytic cell design means there are no internal baffles to trap hydrogen or gaskets to wear and fail. Finally, the skid-mounted design and easily accessible union connections allow quick access for routine cell maintenance and replacement.

PSI's new, compact Microclor® Mini MC-10 (10 pounds per day of chlorine equivalent generation) was the perfect choice for PHWD's 3MG ground storage Neary Tank given its low water demand and space restrictions at the tank site. The skid-mounted unit has a small footprint and requires less storage space for the sodium hypochlorite it produces. In August 2018, PHWD purchased and installed a Microclor® Mini MC-10 at the Neary Tank and combined it with the previously-installed Monoclor® RCS system. The Microclor® Mini MC-10 began generating safe 0.06% (+/- .05%) sodium hypochlorite on-site on an as needed basis.

Given the hot summers in California, PHWD was often challenged to maintain residual levels in the 3MG Neary Tank, especially during times of low water demand. Installation of the Microclor® Mini MC-10 enhanced PHWD's ability to maintain constant residual levels while improving public safety, at an affordable price. After installation and calibration of the Microclor® Mini MC-10, PHWD operators chose a desired residual setpoint for the Neary Tank. The Monoclor® RCS system monitored the residual levels in the tank and dosed the chlorine and ammonia needed to maintain the desired level. After several weeks, operators increased the setpoint and the system responded by dosing at a higher level.

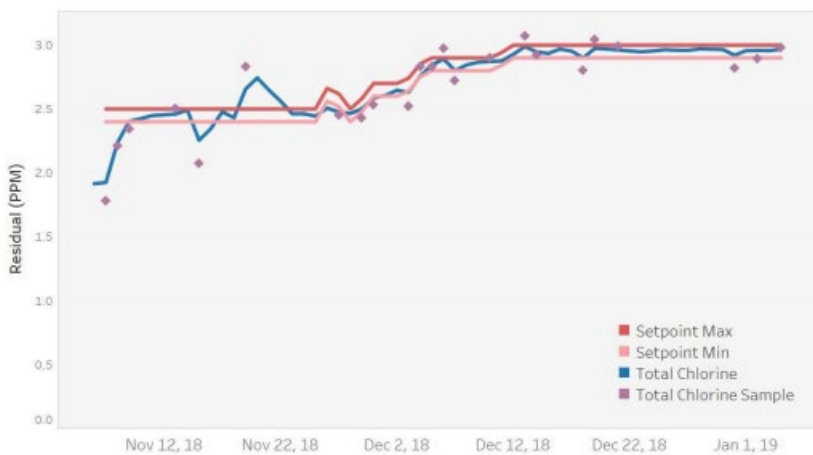


Figure 3 Neary Tank residual setpoint compared to samples



Figure 2 Neary Tank - Limited space for equipment and chemical storage

"We are extremely happy with the results of the MC-10. We've had no subsequent issues with residual. Furthermore, we are pleased that we no longer have to deal with the long lead time of getting 12.5% from a nearby chemical distributor and the potential safety issues of bringing highly hazardous materials once a week up to the hill through a residential neighborhood. The equipment is affordable and works great in helping us maintain chlorine residual at our 3MG Neary Tank, especially when combined with the Monoclor® RCS system."

Patrick Walter, General Manager of Purissima Hills Water District

The name of Patrick Walter does not imply that Patrick Walter endorses this product or service in his official capacity and does not imply an endorsement by any governmental entity.

1 <https://www.bizjournals.com/sanjose/news/2018/05/31/los-altos-hills-wealthiest-town-us-calif-homes.html>

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