Tidal Wave Mixer Eliminates Deep Cycling & Maintains Free Chlorine Residual in a 5 Million Gallon Water Storage tank in Southern California

OVERVIEW

Big Wave Water Technologies conducted a case study in October 2020, with a Southern CA municipality that imports potable water via water treatment plants and the Northern California State Water Project. Additionally, this city operates 30 local wells within its boundaries. From those water sources, the city provides approximately 24-million gallons per day to over 30,000 service connections through their 421-mile distribution system. The city adds additional free chlorine to maintain required chlorine residuals.

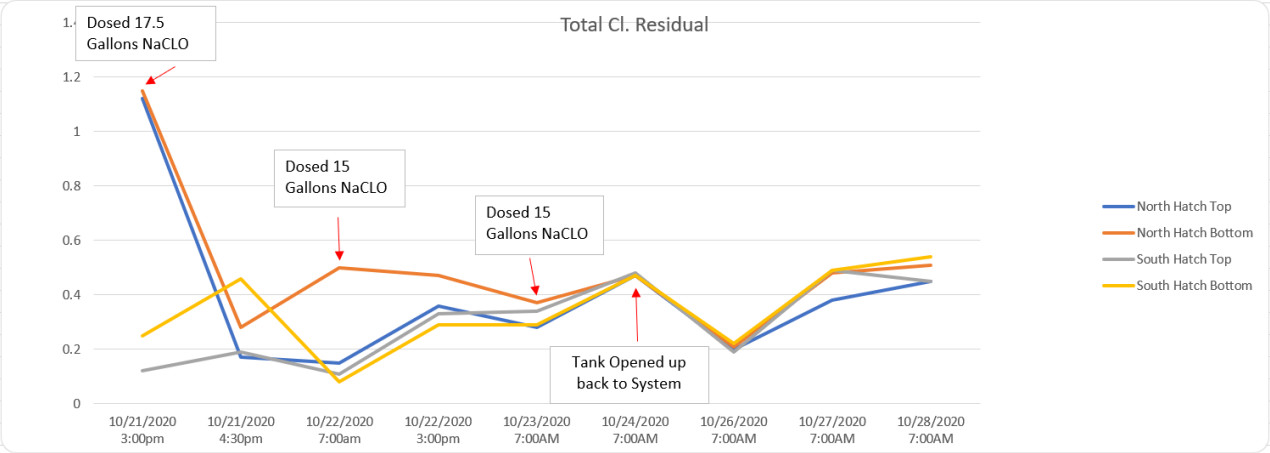
This Southern CA municipality treats their reservoirs with the addition of 12.5% Sodium Hypochlorite. However, this agency had difficulty maintain the residual level due to rising water age and common inlets and outlets within the reservoirs. To mitigate this problem, the city would deep cycle their reservoirs continuously and manually dose 12.5% Sodium Hypochlorite to provide higher residual water to their customers. This agency would fill the water storage tanks up and drop them down to ten to twelve feet and then fill them up again to do a volume exchange. This method can be inefficient and costly, so the city searched for an alternative method to achieve their desired free chlorine residual levels.

This city endeavored to eliminate the need to deep cycle their reservoirs and raise their free chlorine residual levels. This led them to explore different reservoir mixing systems. The mixing systems that the city had initially purchased were costly and the city was not satisfied with their performance. They told us these mixers were often expensive and cumbersome and when this municipality reached out to neighboring agencies about the performance of these mixers, they stated that they were not impressed.

APPROACH

The municipality continued their search for an economically priced reservoir mixer and discovered Big Wave Water Technologies' **Tidal Wave Mixer**. The city opted to conduct a trial utilizing the **Tidal Wave Mixer** after a recommendation from a neighboring agency. The goal for this agency was to isolate a reservoir with little to no residual and add 12.5% Sodium Hypochlorite until there was a constant 0.50ppm+ free chlorine residual throughout the entire reservoir. The municipality installed their first **Tidal Wave Mixer** in Fall of 2020. The mixer was installed below the hatch on the north side of the reservoir, which was a 5 million concrete water storage tank.

The reservoir was valved off and isolated from the system to acquire an accurate reading of the impact the mixing had on their free chlorine residual levels. Prior to installing the mixer, the residual levels being sampled indicated a free chlorine measurement of >0.10ppm on the top and 0.20ppm on the bottom of the reservoir. The reservoir was dosed on three separate occasions, over three consecutive days (See graph on page 2).



Manual grab samples were taken from the top and bottom of the reservoir at the north and south hatches. Multiple daily samples were taken within the first three days of installing the mixer. Within 90 minutes of the mixer being powered on, the reservoir had uniform chlorine residual levels of 0.30ppm. From that point forward, single samples were taken daily which indicated a uniform free chlorine residual of 0.50ppm (+/- 0.05ppm) and climbed over the subsequent ten days (Reference graph above).

RESULTS

Since installing the **Tidal Wave Mixer** in Fall of 2020, this municipality in Southern CA, has maintained a free chlorine residual ranging from 0.50ppm to 0.75ppm. This agency has consistently measured a uniform free chlorine residual throughout the reservoir despite adding less Sodium Hypochlorite. The higher free chlorine residual levels in the reservoir have eliminated the need for deep cycling, as well as reduced the need to pull manual grab samples. This has resulted in significant energy savings from reduced pumping requirements.

CONCLUSION

Big Wave Water Technologies' **Tidal Wave Mixer** has assisted this agency with providing improved water quality water to their residents and has lowered the costs associated with maintaining the required residual levels. The free chlorine residual level within this reservoir has climbed from a range of 0.05ppm – 0.30ppm to a desired range of 0.50ppm – 0.75ppm since the **Tidal Wave Mixer** was installed. Due to the low cost and high performance of the **Tidal Wave Mixer**, the city has opted to install mixers in all their reservoirs.