



Tonka Talk

Tonka Equipment Company Newsletter

Spring 2006

Chairman's Corner

By Fred Friswold

Less is More

Water conservation is moving from something "nice to do" to a "must do." In the Western states, which are chronically short of water, the value of water (and water rights) is well recognized. However, now there is growing realization throughout the rest of the country of the need to manage water resources soundly. Even in our home state of Minnesota—"Land of 10,000 Lakes"—urban growth and intensifying agricultural use have put pressure on aquifers. State, county, and local restrictions on further growth or industrial expansion inevitably follow.

At Tonka, we have long been aware of the need to be good stewards of our water resources. Our corporate mission includes finding more efficient and cost-effective methods of water treatment. We have installed hundreds of water treatment plants utilizing our Simul-Wash™ method of backwashing, which typically generates less than half the wastewater generated by conventional backwash systems. We have been actively involved in designing backwash reclaim systems and in planning treatment systems for aquifer recharging systems. Tonka has also introduced alternatives to low-efficiency membrane systems. As we look to the future, Tonka plans to continue its leadership in the design of efficient and environmentally sound potable water systems that minimize waste. It's good for our customers—and it's our planet, too!

TONKA CLARIFIERS RESPOND WELL TO HURRICANE RITA IN WINNIE, TX

By Scott Hall, Chief of Operations, LNVA

In late September 2005, approximately one year after beginning operation, the Lower Neches Valley Authority's West Regional Water Treatment Plant experienced Hurricane Rita. The plant in Winnie, Texas, was in the left front quadrant as the hurricane made landfall on the Texas-Louisiana state line in the early morning hours of Saturday, September 24th. The upper Texas coast was under a mandatory evacuation, including the entire LNVA service area from High Island to Port Bolivar in Galveston County. The West Regional WTP personnel initiated an orderly shutdown of the plant on Thursday, September 22, 2005, and evacuated the plant at approximately 9:30 a.m. The Rotaclear rotor drives remained in the run mode until electrical service to the facility was interrupted by hurricane Rita sometime during the evening hours of Friday, September 23, 2005.

Potable Water Restored in Devastated Area

The plant manager and lead operator returned to the plant on Sunday, September 25, 2005, at approximately 9:00 a.m. A preliminary damage assessment was conducted and the determination was made that start-up of the plant could begin. Operating on emergency generator power, both Rotaclear rotor drives were started at maximum RPM for a period of approximately 15 minutes in order to expedite lifting the settled sludge from the bottom of the clarifiers. The rotor drive RPM was then returned to normal and the formation of very



good quality recirculation slurry began almost immediately. Both clarifiers achieved good floc formation within a short period and the plant was able to start raw water treatment by around 1:00 p.m. Both clarifiers responded exceptionally well to the adverse conditions created by having the sludge remain stagnant at the bottom of the units for approximately 40 hours. The quick response of the clarifiers was critical to restoring potable water service to the hurricane-devastated area. The West Regional Water Treatment Plant was one of the first plants back online after the storm. In addition to restoring service to the Bolivar Peninsula, with Texas Commission on Environmental Quality guidance and approval, LNVA set up a water hauling station in the plant to provide bulk water to other agencies in need.



Simul-Wash™ – Revisited

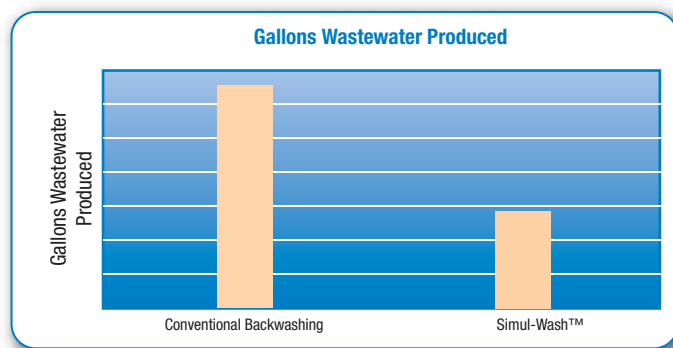
By Sherri Westphal

For over thirty years, Tonka Equipment has provided the potable water industry with its water-conserving Simul-Wash™ backwash system, using air and water simultaneously to backwash a filter. Many have tried to duplicate the features and performance of the Simul-Wash™ backwash system; all have failed. We should be proud, right? Imitation is the highest form of flattery.

Are they wise to try to copy? Of course, why would one not want Simul-Wash™? The advantages are numerous, and include media retention, overall filter cleanliness, longer filter runs, collapse-pulsing action (as studied and documented by Amirtharajah¹) and water conservation. Any one of these advantages is enough to justify the system. However, the focus today is on water conservation.

Water conservation – no longer an option

The question of why water conservation is important is one that does not really need to be asked. Good drinking water sources are becoming limited and highly valued. It is critical to use these resources carefully and with great respect. One way to do that is to limit the amount of water wasted during a backwash cycle. The frequency of backwash is not a controllable function; this will be determined mostly by the hours of operation, water chemistry and chemical feed. We must focus on the volume of wastewater generated per backwash for conservation.



Backwash Duration

Simul-Wash™ incorporates a 15-minute backwash duration and meets Ten States Standards. The key to water conservation is that most of the 15-minute backwash cycle is done at sub-fluidized water rates simultaneously with air scour. The sub-fluidization of the filter media allows for the collapse-pulsing¹ action to take place, ensuring the complete scouring and turnover of the entire filter bed. Tonka's unique filter troughs eliminate media loss in the air/water phase. A high fluidization water rate is used briefly toward the end of the backwash cycle to both re-classify a dual media filter and to satisfy Ten States Standards for filter media fluidization.

The table below compares the volumes of wastewater generated by using Simul-Wash™ and two other popular backwash methods. (Assumptions made are: 100 ft² area and dual media consisting of silica sand and anthracite.)

BW method	Phase 1		Phase 2		Total gallons used
	Water rate	Duration	Water Rate	Duration	
Simul-Wash™	5 gpm / ft ²	12 min.	15 gpm / ft ²	3 min	10,500
Air followed by water	n/a air only		15 gpm / ft ²	15 min	22,500
Water only	n/a		15 gpm / ft ²	15 min	22,500

Savings with Simul-Wash™ can't be ignored

The Simul-Wash™ backwash process saves over 50% wastewater EVERY time a filter is backwashed. Keep in mind, backwash supply for potable water filters is potable water, *water that the plant has already paid to treat*. The additional benefits of reduced O & M costs and the other advantages of the Simul-Wash™ backwash process add further value. Want to learn more? Please contact Tonka at 763-559-2837.

¹ Amirtharajah, Appiah, et al. Optimum Backwash of Dual Media Filters and GAC Filter-Adsorbers With Air Scour, AWWA Research Foundation and American Water Works Association, 1991.

Jackfish Lake – the path to quality drinking water

By Todd Butz

Jackfish Lake, located in Saskatchewan, Canada, is surrounded by recreational communities that boast of sandy swimming beaches, great boating, and breathtaking sunsets. The current residents living near Jackfish Lake realized that these attributes, along with good drinking water, could help draw residents from the nearby city of North Battleford to relocate in the pristine lake area. While the lake is a beautiful place, its water poses challenges to nearby communities who would like to use it for drinking water. Under normal conditions the water is quite turbid due to organic and inorganic particles. Furthermore, Jackfish Lake is a large warm-water lake, which leads to even higher turbidities when the wind picks up.



Tonka's UTS-P at the Jackfish Lake WTP

Water Source and Treatment

After investigating using the high-turbidity lake water as a source-water, the idea was abandoned and the decision was made to dig three new infiltration wells. The new water source contains very high amounts of iron, manganese and TOC, requiring treatment to meet the Saskatchewan Environment Guidelines. Tonka's UTS-P packaged water treatment equipment was chosen to meet these guidelines. The custom-designed UTS-P incorporates 2-stage flocculation, a settling chamber utilizing high-efficiency plates, and gravity filtration through a filter bed of manganese greensand and anthracite media. Not only did Tonka supply the UTS-P water treatment unit, but also the customized controls which automate the operation of the entire water treatment plant.

UTS-P = High Quality Water

Prior to the plant being placed online, Jackfish Lake area residents were on a boil order. From day one of the new plant being online, high-quality water has been produced and the boil order was immediately lifted.

Tonka is proud to have the opportunity to provide high-quality drinking water to the residents and visitors around Jackfish Lake.



Sunset on Jackfish Lake

Filter Media Life

By Jeff Emerson



Let's take a look at your filter media!

Filter media has a typical life expectancy of 10–15 years. Based on your raw water quality and filter maintenance, media life can be shorter or longer.

Tonka can provide media analysis for filters or softeners at any time. Taking an accurate core sample is a critical step in having your filter media analyzed for quality.

When providing Tonka with a core sample, first backwash your filter, then drain the water out. Using a 1¼" or 1½" tube that is 4'–6' long, push the tube into the bed and remove media from the tube. Push the tube into the same hole until the tube bottoms out at the gravel. A minimum 1-quart sample is required by the lab for an accurate analysis, so several core samples may need to be taken in different places throughout the media bed.

Knowing the quality of your filter media will help to understand many performance and operational issues.

If you have questions or require assistance, please call our Customer Service department at 800-530-1887.

