

EXPANDING WATER TREATMENT ONE RESTAURANT AT A TIME

While consumers and business owners may now be more cautious and conscientious with their dollars than at any time in recent memory, there are still significant opportunities in both residential and commercial water treatment. Let's begin with three important facts:

1. Our water quality is not improving, in fact, in many areas of the world it is getting worse by the day.
2. In many markets, a higher percentage of R&D dollars are being spent in an attempt to make products less expensive than developing new technologies.
3. People will still pay more for perceived quality and value. The recently introduced iPhone has exceeded 37 million units sold.

If we were to take a step back from the day to day survival mode many of us find ourselves in today, and ask ourselves the simple question: *"What do customers today want?"* I believe we would find that answer has not changed. They want a quality product at a fair price that offers exceptional value. Such was the case at Ricardo's in Las Vegas. Ricardo's Mexican Restaurant opened in October of 1987 by Bob Ansara. With incoming water quality of 700 mg/L of TDS and 25 grains of hardness, water had been an issue since the inception. Originally Bob had opted to go with a 2 cubic foot water softener to treat the water feeding the water heaters. He then selected four individual filter banks for his two ice machines, coffee & tea brewers and fountain beverages. On an average business day the restaurant used 4,000 gallons of water.

The average monthly costs related to maintaining the water treatment at Ricardo's was \$334.17. Details of those costs are below:

EXPENSE	QTY	COST/ UNIT	MONTHLY LIFE	MONTHLY \$'s
Salt for water softener				\$ 130.00
Water softener depreciation				\$ 100.00
Sediment Filters	3	\$ 45.00	3.00	\$ 45.00
Carbon Filters	3	\$ 65.00	6.00	\$ 32.50
Polyphosphate Filters	2	\$ 80.00	6.00	\$ 26.67
TOTAL WATER TREATMENT EQUIPMENT MAINTENANCE COST				\$ 334.17

In May, 2010, Bob agreed to remove all of his existing water treatment equipment and have it replaced by one central point of entry commercial RO system. Due to challenges with 23 year old plumbing, the initial was originally connected to all the water in the restaurant except for the water cooled line on their Hoshizaki ice machine – which could use up to two gallons per minute for up to ten hours per day. With very limited available space, the system was crammed into a utility closet next to the water heaters. The system consisted of a 3500 GPD RO unit that was designed to reject on average 95% of the hardness and 90% of the monovalent ions – resulting

in a final TDS between 50 and 75 mg/L. In order to accommodate the peak demands at the restaurant two 300 gallon storage tanks with individual ozone generators were included, along with a 20 GPM delivery pump.

The results of this new system were dramatic. The restaurant immediately noticed that their ice cubes were crystal clear without the cloudy white look they had experienced for the past 23 years. They also immediately noticed that the dishes and glassware were now spotless and did not need to be wiped down. Also, the tea was no longer cloudy, the soda tasted sharper and the coffee less bitter. Coupled with the immediate improved results, improved results, they had their soda and ware washing vendors come out to adjust the dispenser settings which allowed additional savings. Below is a summary of the savings they experienced:

EXPENSE	QTY	COST/ UNIT	MONTHLY SAVINGS
RO System (Leased)	1	\$ 225.00	\$ (225.00)
Salt for water softener			\$ 130.00
Water softener depreciation			\$ 100.00
Sediment Filters	3		\$ 45.00
Carbon Filters	3		\$ 32.50
Polyphosphate Filters	2		\$ 26.67
Detergent Savings		\$ -	\$ 100.00
Soda Savings (3% less syrup)			\$ 90.00
TOTAL MONTHLY SAVINGS			\$ 299.17

So along with the improved operational and aesthetic results, the restaurant benefited from a \$299.17 per month cost savings, and the above numbers do not include the savings from no longer wiping down dishes and glassware or significantly reduced maintenance on all water using appliances. Factoring in all factors, it was determined that this new system was saving the restaurant over \$500 per month.

However, as often is the case when dealing with restaurant applications, water usage patterns are never as expected, and several miscalculations in the system size quickly appeared.

The first error with the system design involved the evaporative coolers. This location had three large rooftop evaporative coolers that during the summer months used up to 1.5 GPM for up to 12 hours per day. Since the system was installed in early May, the water usage from the evaporative coolers had been minimal. Within 30 days of the installation, with the evaporative coolers in full use, the storage tanks were running empty at least two to three times per day. To resolve this issue, an additional system was installed on the roof to feed only to these coolers.

The second error involved the primary kitchen area with cold water usage at the pot and pan sink, next to the dishwasher. We concluded that converting that particular sink to raw water saved a high percentage of water usage from the RO system with no adverse operational impact. This substantially reduced occasions where the facility went into automatic bypass.

The third error involved the cleaning crew. It was determined that each morning the tanks were not full. After a detailed investigation, including several late nights at the facility, it was determined that the cleaning crew was coming in early each morning and washing down all the floors with hot water. To alleviate this problem, the crew developed the habit of boiling raw cold water and using this hot water for the daily wash down procedure, saving between 100 to 150 gallons of hot water per day.

After all of the above situations were addressed, there were still times throughout the busy days of the week where the tanks were completely drained and the system ran in bypass for several hours. And since they had become accustomed to the new water quality, not receiving the RO water was no longer acceptable.

With all of the above issues combined together, it was determined that the current system would not be capable of keeping up with Ricardo's water requirements. In October of 2011, the entire system was removed and replaced by a new system design that could produce up to 7,000 GPD. By increasing the overall production of the RO system, one of the 300 gallon storage tanks was able to be removed – creating more space. Also, a blending system was incorporated into the design to allow the customer to set the water quality to meet his expectations. The key lesson learned from this application is that when dealing with restaurants: get as much information you can upfront, including daily and peak water usage. Then double the size of the system to account for those unknown variables that always seem to arise.

The owner initially was budget focused, but after enjoying the benefits of RO and seeing the difference in the equipment, small wares, ice cubes, and overall flavors, they are thrilled to crow about providing RO water to their guests. They even eliminated offering non-carbonated bottled water!

Per Bob Ansara, "It's a miracle, especially considering the age of the building. The results are tremendous. RO is the only way to go. I would not build another restaurant without having an RO system like this one. The operational savings are incredible and everything just tastes better."