

NOVEMBER 2007

TEXTILE RENTAL

UNIFORMS ■ LINEN SUPPLY ■ HEALTHCARE ■ DUST CONTROL

Healthcare Pulse Check

The Real Costs of OPLs

Greening of the OR

Nursing Home Opportunities

Rethinking Underpads

Hospital Execs on HLAC

HLS Ottawa Plant

Reprinted with permission of Textile Rental magazine, the official publication of the Textile Rental Services Association of America

Bring in the Green with Green Practices

Enviro-friendly wastewater recycling can boost image and profits

By Jeff Lebedin

It's not easy being green—While Kermit the frog wasn't referring to the environment when this famous phrase was coined, recent fears about pollution and global warming have sparked a reduction in wasteful actions. Growing concerns over huge increases in the cost of water and energy have added to a desire to operate in a more environmentally friendly fashion.

While we all understand the necessity and channels to pursue conservation, marrying environmental benefits along with monetary savings can be difficult to calculate and achieve. The simple and useful tools outlined below can help you formulate the mon-

etary and environmental savings of a recycling system, while also learning how to qualify for environmental certification. It's been in operation for just over nine months. So far, the facility has recycled almost 14 million gallons of wastewater for reuse in the laundry. In addition, this wastewater has been returned to the laundry operation preheated, which represents significant energy savings.

Based on the geographical location of the facility, the average temperature of the incoming city water is 60°F, and the average temperature of the recycled water is 110°F. That represents a 50° delta or savings on energy. Water and sewer costs are \$4.73 per 1,000 gal., and the natural gas rate ranges around the \$10 per deca-therm range. This translates into a total water, sewer and

Eastern US Healthcare Laundry															
Today's Date		Oct-07													
Startup Date		Dec-06													
Months in Operation		10													
Initial Sale Price		\$200,000.00													
Projected Payback in Months		13													
Actual Payback in Months		12													
wastewater cost		\$4.73													
energy cost		\$1.00													
City Water Temp (°F)		60													
Recycle Water Temp (°F)		110													
Water Temp Savings(°F)		50													
Summary of Savings				This Month		Cumulative		ENVIRONMENTAL IMPACT STATEMENT				This Month		Cumulative	
Water / Sewer		\$16,153.11		\$65,926.88		Greenhouse Gas (GHG) Emissions Reductions				93.33		603.86 MT of CO2			
Energy		\$16,027.88		\$100,643.58		Increase of Drinking Water back to the Public				2,167,889		13,838,012 gallons			
Total Savings		\$32,181.19		\$166,570.38		Reduction of Wastewater Discharge to the Environment				1,901,628		12,544,211 gallons			
Annualized Return on Investment				184%		Increase of Natural Gas Resources				15,685		190,844 THERMS			
						Reduction of Toxins discharged to our Sewer Systems				976		6,272 LBS of TOCs			
Date	Time	Recycle Water Meter Reading	Freshwater Meter Reading	Recycled water used this period	Freshwater used this period	Total water used this period	Percentage Recycle in total water	Water Savings this period	Energy Savings this period	Maintenance Agreement Costs this period	Cumulative Savings				
1/1/2007	11:35:29 AM	913,013	580,090	813,613	506,086	1,489,699	60.9%	\$4,321.39	\$7,835.46	\$8.00	\$11,356.85				
1/31/2009	9:08:08 AM	1384425	878383	479,812	292,287	743,199	61.7%	\$2,226.94	\$3,579.94	\$8.00	\$17,163.73				
3/9/2007	11:59:49 AM	2,375,899	1,230,312	891,474	351,929	1,343,403	73.8%	\$4,699.67	\$8,382.34	\$8.00	\$28,155.64				
5/1/2007	11:17:54 AM	4,973,069	2,998,854	2,997,770	1,438,542	4,834,311	64.4%	\$12,267.45	\$19,835.34	\$8.00	\$59,379.44				
6/1/2007	10:22 AM	6,346,102	3,415,746	1,372,433	746,693	2,119,325	64.8%	\$6,491.61	\$9,842.29	\$8.00	\$75,812.33				
7/2/2007	9:23 AM	7,809,362	4,294,999	1,823,290	879,153	2,482,433	63.4%	\$7,205.11	\$11,370.41	\$8.00	\$84,287.86				
8/1/2007	10:06 AM	9,623,667	5,214,744	1,754,296	919,645	2,674,131	65.6%	\$8,297.77	\$12,545.82	\$8.00	\$115,130.64				
8/1/2007	1:29 PM	11,791,476	6,245,416	2,147,809	1,036,674	3,188,483	67.8%	\$10,253.74	\$15,894.88	\$8.00	\$148,389.36				
10/1/2007	12:30 PM	13938811.79	7515451.378	2,146,536	1,278,034	3,416,569	62.8%	\$10,153.11	\$16,827.93	\$8.00	\$166,570.35				

Implementing energy and waste-reduction efficiencies not only helps the environment, but as the chart above shows, it can generate more than 100% ROI annually.

etary and environmental savings of a recycling system, while also learning how to qualify for environmental certification.

Savings measured

The cost benefits of implementing reusable wastewater procedures can best be demonstrated with an eastern U.S.-based healthcare facility that recently purchased a laundry wastewater recycle system. The system was installed in December 2006, and

energy savings, over a nine-month period, of \$165,000, which also provides a one-year payback. The water savings is also easy to calculate by applying this formula: 13,938,012 / 1000 x \$4.73.

Energy efficiencies are more difficult to determine because it's necessary to first convert the gallons recycled to pounds and then apply the 50° delta to the formula. Since a gallon of water weighs 8.34 lbs., the first conversion formula is 13,938,012 x 8.34 x 50, which equals 5,812,151,005 Btu (British thermal units) saved in

heating laundry wastewater using recycling.

Since a therm of natural gas represents 100,000 Btu, and each Btu will heat a pound of water by 1°, the recycle system approximately has generated a savings of over \$100,000 through the first nine months of operation.

Certify “green” wastewater

As for environmental concerns, there are several organizations that have developed standards to follow in qualification for “Green Practices.” The Green Healthcare Construction Guidance Statement, developed by the Green Building Committee of the American Society for Healthcare Engineering (ASHE), is the standard for the healthcare industry. The Leadership in Energy and Environmental Design (LEED) is the standard for the hospitality industry. The key elements in wastewater recycling are the same for either certification. Below are some benefits of wastewater recycling.

- Reduction in GHG (Green House Gases)
- Savings of potable water for public use
- Reduction in wastewater discharge to sewer
- Reduction in energy, such as natural gas, liquid petroleum or diesel fuels
- Reduction in toxins discharged to sewer

While calculating the savings may sometimes be tricky, the resulting figures are undeniable.

As of September, the eastern U.S.-based healthcare facility noted above accrued numerous benefits from the practice of laundry wastewater recycling. GHG has become a highly popular term in environmental circles. These are the savings from reducing natural gas usage by recycling the laundry wastewater. The rule of thumb is .006 metric tons (MT) per therm of natural gas saved. As the facility has saved over 100,000 therms over the last nine months, this equates to a savings of 600 MT of GHG.

Since the recycling system is reusing the laundry’s wastewater, rather than using public drinking water, a substantial 14 million gallons of drinking water is also being saved. Based on current averages, the total projected savings is 240 million gal. over 10 years.

Smaller carbon footprint

The reduction in use of the city’s drinking water directly corre-

lates to the reduction of the contaminated wastewater being discharged to our sewer systems. In many cases, this polluted water is directly sent to rivers and lakes for treatment and reuse as drinking water. Since the recycling system is reusing the majority of the wastewater, this represents a substantial reduction in wastewater being discharged to the sewer system. A factor of 90% is generally used, since there is still water retained on the laundry that evaporates during the drying process. So, at 90%, this facility is reducing wastewater discharge at the rate of 12.5 million gal. over nine months, almost 2 million gal. per month, based on current usage.

As noted, by recognizing that 75% of all the wastewater discharged is preheated in the washers before being discharged, the reuse water that has an average temperature of 110° becomes reusable, rather than cold, city water coming in at 60°. This 50° savings represents over 100,000 therms of natural gas saved over the current operating time of the recycling system and also saves 1,333,000 therms over 10 years.

Another key element of environmental savings produced from recycling water is in the reduction of Total Organic Carbon (TOC), a harsh contaminant contained in laundry wastewater. By using a factor of .5 lb. per 1,000 gal. discharged, recycling laundry wastewater will reduce the volume of TOC by 1,000 lbs. per month at its current levels (6,272 YTD).

Green for growth

Since the laundry is the single largest water source in a hospital or hotel—25% to 40% of total usage—the impact of converting your laundry to a profit center is great. Visualizing the tremendous, additional benefits associated with environmentally friendly practices makes the decision to recycle an important company commitment. This allegiance provides a facility with major savings on energy, water and wastewater processing, as well as a public image boost for helping the environment. At the end of the day, Kermit would be smiling. **TR**

Since the laundry is the single largest water source in a hospital or hotel—25% to 40% of total usage—the impact of converting your laundry to a profit center is great. Visualizing the tremendous, additional benefits associated with environmentally friendly practices makes the decision to recycle an important company commitment. This allegiance provides a facility with major savings on energy, water and wastewater processing, as well as a public image boost for helping the environment. At the end of the day, Kermit would be smiling.



Jeff Lebedin is president of AquaRecycle, Marietta, GA. Contact him at 770/425-3005 or jeff.lebedin@aquarecycle.com.

Turn Water Into Profit

For more information or an estimate, call toll-free
1-866AQCYCLE or **1-866-272-9253**. Visit the
AquaRecycle website: www.aquarecycle.com

AquaRecycle
1061 Triad Court Suite 9
Marietta, GA 30062

