



South Carolina
Office of Regulatory Staff

THE WATER WELLSPRING

A Flowing Source of Information for Water and Wastewater Utilities

Fall 2016

Workshop 2017 Date Set

Mark your calendars! The water/wastewater workshop is scheduled for April 14, 2017, from 8:45 a.m. – 3:00 p.m., in the PSC's Hearing Room. More details to follow in the winter edition of the newsletter.

Updated Annual Report Forms

The annual report forms have been revised and no longer require the utility's Federal Employee Identification Number (FEIN) to be recorded on the report. Please make sure that your utility is using the most current version of the annual report. All reports can be found on the ORS website at:

<http://www.regulatorystaff.sc.gov/waterwaste/formsandresources/Pages/default.aspx>

Center for Disease Control Releases Legionella Toolkit

The Center for Disease Control (CDC) has developed a toolkit to help people understand which buildings and devices need a *Legionella* water management program to reduce the risk for Legionnaires' disease, what makes a good program, and how to develop it. The CDC is encouraging utilities to share the toolkit with pertinent customers.

<http://www.cdc.gov/legionella/downloads/toolkit.pdf>

Around the Country...

Recycling the 'Waste' in Wastewater

The increasing landfill costs, rising electricity costs, increasing number of government regulations, and concerns about future environmental impact are causing wastewater utilities to seek solutions to managing wastewater residuals. New technologies are taking the wastewater biosolids and converting them into heat, energy, and soil, thus benefitting the industry nationwide.

A city in Oregon saved approximately \$500,000 in electricity costs by replacing their aeration basin with bubble diffusers and added more energy-efficient turbo blowers that minimized power consumption and maximized output simultaneously. In addition, the city operates a receiving station for fats, oils, and grease (FOG) from local restaurants and other food service locations to double its biogas production used to generate heat and electricity. First, wastewater enters the treatment plant's bar screen to remove any large particles. The smaller particles then settle in the sedimentation tank. The sludge is then removed and fed into anaerobic digesters that treat the solids and convert them into biogas. Generators then convert the biogas into heat and electricity providing enough heat and electricity, with extra electricity generated, to run the plant. This process has saved the utility from putting the waste into a landfill.

A small community in Ohio is the pilot site for the Q2Power energy generation system. This system turns biogas waste into energy through an internal combustion process which creates a biogas steam that condenses and flows back into the system. Q2Power is also working to turn biosolids into compost and engineered soils used to improve and control storm water runoff, conserve water during low-flow periods, and reduce runoff associated with construction sites. The soil, with its increased water-holding capacity, can replace commercially used soils in areas prone to drought.

A Biosolids Management System (BMS) is utilizing a process introduced by a Wastewater Treatment Plant in Fayetteville, Arkansas to convert the wastewater treatment residuals by combining solar houses with a thermal heating unit to dry and create Class A biosolids that are sold to farmers and residents for farm and residential land application. In addition, the effluent is used to irrigate a site where hay is harvested and sold to local farmers and residents who can incorporate the biosolids into their soil. The profits from the sale of the fertilizer and hay assists the utility goal of providing the maximum amount of service at the lowest price possible.

Cite:

Maya, A. (2016, September). Wastewater Without the 'WASTE'. *WaterWorld*, 32(9), 16-21.
Retrieved from
http://digital.waterworld.com/waterworld/201609?sub_id=Bia5IOPNkQ7Vp&pg=19#pg19

Artificial Intelligence -- Can it Make Our Water Infrastructure More Sustainable?

By Gil Hurwitz, Water Planet, Inc.

Semi-autonomous computers are everywhere: autopilot is making air travel safer and faster; our phones are like pocket-sized personal assistants; and self-driving cars are promising to reduce stress and increase safety in our daily commutes. Yet operation of our vital public infrastructure – water and wastewater treatment plants – is still reliant on Victorian-era technologies; plant operators may be seen standing in front of a water treatment system, just waiting for something to go wrong. In our technologically-advanced age, it is concerning that water treatment operators and engineers are still required as the first line of defense to combat complex, natural, and dynamic system disruptions. Even well-trained, experienced plant personnel require days to process data, analyze trends, and prescribe operational changes needed at any given time. Such delays in response time can lead to compromised effluent water quality, damaged equipment, and decreased throughput.

Artificial intelligence (AI), or machine learning, is the future of the water industry. AI can play a pivotal role in making our society's current water infrastructure more cost-effective, energy-efficient and, ultimately, better equipped to keep us all safe. The advanced mathematics used to optimally maintain a complex water treatment system cannot possibly be processed by humans in real-time; however, computers excel at rapid computing –around the clock and with perfect memory. It is through the use of advanced computing and control philosophies that operators, engineers, and their companies will be able to make more informed decisions in a timely manner.

Some companies are already pursuing AI solutions. JEA management has introduced their Optimized System Controls of Aquifer Resources system, or OSCAR, which is experimenting with automated supervisory control. OSCAR regulates the pumping of water from an aquifer by evaluating a combination of weather-related and system data to optimize maintenance of the local water supply year-round. Pairing these automated controls with long-term data will lead to greater efficiency and lower operating costs. Similarly, Water Planet's *IntelliFlux*[™] self-adaptive flux enhancement and recovery control technology appears to be the first application of AI in water treatment. Implemented via a SCADA platform, *IntelliFlux*[™] monitors key operating parameters, performs real-time data analytics, and makes predictions about when and what future maintenance actions will be required. *IntelliFlux*[™] can directly control a water filtration system or act like a remote monitoring call-center, alerting operators via a text message or email when the system needs attention or operating conditions need to be adjusted to optimize performance.

Creativity is not the strength of artificial intelligence, computers are only as smart as we make them, and human ingenuity will always be needed to shepherd industrial and municipal processes to meet the ever-growing and complex needs of future generations. Integrating AI into the water industry will be the first step in doing so by maximizing the potential of current technology while freeing up valuable time for experts to focus on these higher-level advancements.

*Gil Hurwitz is a Lead Research Scientist with Water Planet, Inc. (www.waterplanet.com), an award-winning global supplier of high-performance membrane-based water treatment solutions. He can be reached at gil@waterplanet.com. This article is based on a previous paper written by Alex Severt of Water Planet that appeared in the July/August 2016 issue of *Industrial WaterWorld*.*

Continuing Property Records (CPRs)

What are CPRs and why do we need them?

- A system of preserving original cost of plant in such a manner as to, at all times, be able to identify, locate, obtain cost, and disclose the age of utility plant in service.
- To prove the existence, location, age, cost, and resulting net book value of a utility's plant in service. Maintenance of such records is imperative in accounting for fixed assets of a regulated public utility
- Provides perpetual history of utility's assets

Why is it important to track fixed assets of a regulated public utility?

- A utility may have an unusually large investment in fixed property and plant
- Assets are scattered over a wide geographic area
- Return on investment as authorized and approved by the Commission is based upon the dollars invested in these assets

CPR System Requirements

- Name of asset(s), description, code, or serial number
- Location of property
- Date placed in service
- Original cost of the asset(s)
- An estimate of service life (depreciation rate) and salvage value
- Current depreciation expense and accumulated depreciation
- All additions, modifications, and retirements
- Taxing district in which property is located
- Asset-control accounts and numbers to which property is charged

Important Uses of CPRs

- Provides detailed information for general ledger plant accounts
- Basis for depreciation expense calculation
- Facilitates identity and location of utility's assets

For any accounting questions, please contact Jay Jashinsky at 803-737-1984 or Daniel Sullivan at 803-737-0476.

THE WATER WELLSPRING

Published by the South Carolina Office of Regulatory Staff
1401 Main Street, Suite 900
Columbia, South Carolina 29201
Phone: (803) 737-0800
Fax: (803) 737-0801

Hannah Majewski, Editor
Willie J. Morgan, P.E., Co-Editor

Submit all articles or suggestions to: hmajews@regstaff.sc.gov

C. Dukes Scott, Executive Director
Nanette S. Edwards, Deputy Executive Director
Dawn M. Hipp, Director of Utility Rates & Services, Safety & Transportation
www.regulatorystaff.sc.gov