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Newsletter

Federal Water Quality Association

An Affiliate of the Water Environment Federation; www.fwqa-dc.org

2016-17 Theme - Water Infrastructure: Now and Future

Blue Plains Advanced Wastewater Treatment Plant (AWTP): Overview and Discussion of New Processes & Innovations *by K. Jack Kooyoomjian, Ph.D*



Columbus Day, October 12, 2016 found members of the Federal Water Quality Association (FWQA) at the Elephant & Castle Restaurant in Washington, DC navigating through their first 2016-17 luncheon presentation given by Ms. Christine deBarbadillo. Christine is the Director of Clean Water Quality and Technology for the District of Columbia’s Water and Sewer Authority (DC Water) in Washington, DC.

Ms. deBarbadillo (pictured below) was introduced by FWQA President, Greg Mallon, who explained that following the September 15, 2016 tour by FWQA members at the Blue Plains biosolids processes (see picture on left and others on pages 3 and 4), Christine would first give an overview of what was on the tour, followed by details and highlights of the recent developments pertaining to advanced wastewater treatment at the facility.

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Members listen attentively about the processing of biosolids at DC Water’s Blue Plains facility...See more pictures in this issue and read the Blue Plains article on this page.

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President's Corner

At the outset of each year the FWQA Board holds our annual planning meeting and a critical part of this effort is to establish an overall theme. The annual theme is used to guide the selection of speakers and other association activities. This year the theme of "Water Infrastructure: Now and Future" has been established and we look forward to your participation in FWQA activities that offer insight from outstanding speakers offering their insight into this critical topic. I look forward to seeing you at one of our events and hopefully you can contribute to the continuing success of both FWQA and the Water Environment Association.

As I write this message the election has come to a close and with it significant change is likely to occur to many of the programs that are focused on infrastructure and clean water. Our December luncheon will feature a speaker that will provide insight to the many changes within congress that will be driven by the election results. Additional information concerning the luncheon will be distributed shortly and I look forward to seeing each of you at the Elephant and Castle. I hope the presentation and discussion helps to provide insight as to how to continue the challenge of improving water infrastructure in a changing political environment.

Election Results

The FWQA is pleased to announce the official results of the 2016 Executive Board elections. The FWQA received 24 legal ballots. All candidates were unanimously elected. In addition, four Members-at-Large are appointed by the president to serve one year teams. The new Executive Board was effective July 1, 2016 through June 30, 2017.

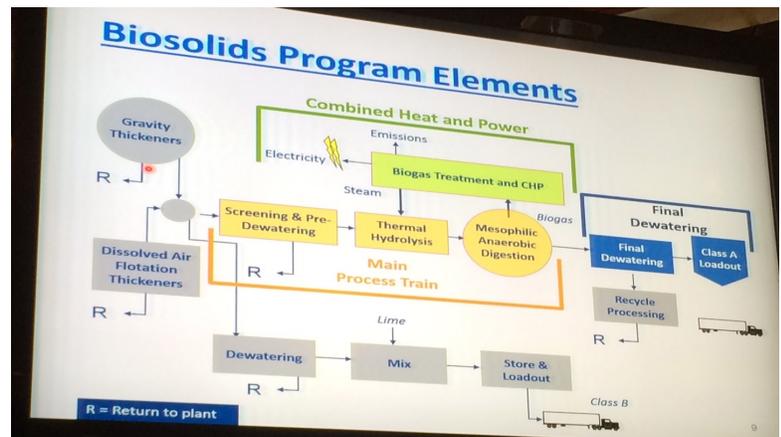
President Greg Mallon
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 Jack Kooyoomjian;
 Tim Connor; and
 Joe Ford

Blue Plains deBarbadillo Presentation (continued from Page 1)

Christine explained that the average daily capacity of the plant is 391 million gallons per day (mgd). Blue Plains is housed on approximately 160 acres and serves more than 2 million people in Washington, DC plus areas of Maryland and Virginia, providing advanced secondary treatment, including filtration along with nitrogen and phosphorus removal. DC Water is a partner in the Chesapeake Bay Agreement of 1987. Its overall mission is to serve customers and sustain the environment. In 1996, DC Water assumed management of the Blue Plains plant. The plant has dramatically upgraded and improved its liquid processing systems. The east and west sections of the plant house secondary clarifiers, the nitrification and sedimentation basins, and a long bank of filters. Primary sludge goes through thermal hydrolysis, then is thickened and processed. The secondary treatment processes are currently undergoing upgrades. Nitrate removal occurs from the filtrate via the belt presses.

The plant uses land application for the Class B biosolids. They produce 1,200 wet tons per day of lime-stabilized biosolids, which is applied in 39 counties in Maryland and Virginia for agricultural uses. Silviculture is permitted on 40,000 acres in eight Virginia counties. Some of the Class B biosolids is used in a gravel mix. For the thermal hydrolysis process (THP) including anaerobic digestion, the biosolids planning goals are to produce Class A Biosolids, reduce its quantity (volume reduction) and enhance long-term reliability. Ms. deBarbidillo explained the Biosolids Program Elements (pictured on right), which include screening and dewatering followed by thermal hydrolysis, mesophilic anaerobic digestion, and final dewatering. In the overall treatment of biosolids, the sludge is thickened from 5% solids to 17% solids. DC Water reached Class A quality of its Biosolids in February of 2015.

Ms. deBarbadillo showed slides of camera shots inside the sludge digesters to provide a good view of what was going on inside the digesters. Additionally, Christine showed the final dewatering facility, as well as the belt press performance for solids dewatering. She then showed an illustration of the difference between the Class B versus the Class A product. DC Water is marketing the Blue Plains Class A biosolids as "Bloom Product," and



their target is Spring 2017 for their product launch.

Attendees also got an overview of DC Water's Combined Heat and Power Project at the Blue Plains facility. The Blue Plains facility for some time has been using the digester gas as fuel for turbines to generate electricity. They also use the hot exhaust from the turbines to generate steam for the thermal hydrolysis process (known as Cambi). Overall, about 30% of the plant's power demand is produced in-house. The current overall power demand of the Blue Plains facility is 26 Megawatts.

The filtrate treatment facility at Blue Plains reduces the ammonia load from the belt press filtrate. Ms. deBarbadillo explained the nitrogen removal pathways, noting that the Blue Plains facility uses methanol as a carbon source. The facility uses overall less energy as a result. However, she estimated that this process will take roughly six months to get fully operational.

Christine also touched on the Blue Plains and the Anacostia River Tunnel projects, which are major expenditures of funds to manage combined stormwater and sewage flows. The system includes a tunnel dewatering pump station and an enhanced clarification facility with grit removal, as a part of this overall system that is anticipated to eliminate 99% of the stormwater/sewer overflows. As a part of this new flow management retention system, it is anticipated that there will be minimum fluctuations (that is, lower and more predictable, steady flows) processed through the Blue Plains facility. The system includes enhanced clarification and a vortex grit chamber. There is a continued focus on intensification and resource recovery, where the engineering staff is looking for every opportunity to get increased treatment and capacity within the existing footprint of the Blue Plains facility. The presentation was followed by a short Q & A session.



On September 15, FWQA members had a guided tour of the DC Water's Blue Plains biosolids operations. Pictures show the group following initial dewatering through thermal hydrolysis, filtration, and further dewatering to storage for transport to other locations and use in the Blue Plains garden.

*A Tribute to Pete Eagen and Bill Telliard -
Our FWQA Colleagues and Friends*

Robert F. "Pete" Eagen (1938-2016)

We regret to inform you that our FWQA colleague, Robert F. "Pete" Eagen passed away on October 15, 2016 in Cornwall Manor, Lebanon, PA. Pete was born on May 13, 1938 in Prince George's County, MD. He was a long-term member of the FWQA, having served as President, secretary, treasurer and in other capacities of the FWQA. He was honored to become a member of the FWQA's 5S Society (the Select Society of Sanitary Sludge Shovelers) in 1992, and was a great supporter of the FWQA's activities and mission. There were many times after his retirement in 2003 that he and his lovely wife Pat drove from Lebanon, PA to attend FWQA professional society luncheon events at the Channel Inn along the Anacostia Riverfront area, even with his mobility challenges. Pete was an engineer with the U.S. EPA in Washington, DC and served in the Office of the Inspector General in Engineering & Scientific Assistance. Pete served his country in the U.S. Army, and was an active member Good Shepherd Church in Lebanon, PA. Contributions may be made in Pete's memory to the Lebanon County Christian Ministries, 250 S. 7th Street, Lebanon, PA 17042, or the Cornwall Manor Benevolent Fund, P.O. Box 125, Cornwall, PA 17016.



William A. Telliard (1940-2016)

We regret to inform you that our FWQA colleague William A. "Bill" Telliard passed away on October 22, 2016. Bill was born on February 2, 1940 in Cleveland, Ohio. He was a graduate of Kent State University (1963), worked for the City of Cleveland Water Authority, and then founded Aqua Laboratories. In 1972, the newly created U.S. Environmental Protection Agency (EPA) offered him a position, and he would serve with the EPA for 34 years. Bill worked in the Effluent Guidelines Division (now the Engineering & Analysis Division) in the Office of Water, and made major contributions in the development of standards, methods and protocols to detect and control environmental pollutants. He is known for his technical acumen in developing the priority pollutant protocols for detection in wastewater and in industrial processes, and is the recipient of the EPA's Gold Medal for the development of analytical methods to detect *Cryptosporidium* and *Giardia* in drinking water. Bill retired from EPA in 2006. He attended many of our professional luncheon meetings at Pier 7 and the Elephant & Castle restaurants, traveling from the Richmond, VA area to keep in touch with his colleagues. He is survived by his wife of 53 years, Joanne (Waszak), four children, and four grandchildren. Contributions can be made in Bill's memory to the Chesapeake Bay Foundation (www.cbf.org, or mail to Chesapeake Bay Foundation, 6 Herndon Avenue, Annapolis, MD 21403, Tel 410-268-8816 in memory of Bill Telliard).



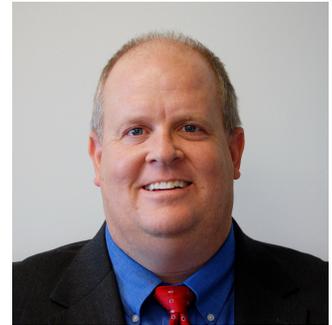


A Legitimate Reason to Have a Beer: Microbrews give communities a taste of high-purity potable reuse

By Rick Warner and Barry Liner



Rick Warner (pictured left) is a senior engineer at Washoe County, Nev., and President of the Water Environment Federation (Alexandria, Va.). Barry Liner (pictured right) is director of the Water Science & Engineering Center at WEF.



Background: Beer is a product that everybody likes to talk about. The explosion of microbreweries around the United States gave Clean Water Services (Portland, Ore.) an idea for a program to start conversations about the reusable nature of all water. The utility began partnering with Oregon home brewers in 2014 to brew beer from reclaimed water to demonstrate that water should be judged by its quality, not its history.

Sustainable Beer Smackdown

The utility produced a batch of high-purity water that far exceeds safe drinking water standards and provided it to local home brewers. The beers, using the Pure Water Brew brand, were featured at WEFTEC 2014 and WEFTEC 2015 as part of the Sustainable Beer Smackdown. Each successive year, the Smackdown has gained new contenders. In September 2016, at the WEFTEC 2016 Innovation Pavilion, Hillsborough County in Florida introduced its New Water Brew, joining Clean Water Services and the Activated Sludge beers from the Milwaukee Metropolitan Sewerage District and The Water Council (Milwaukee, Wis.). In addition, CDM Smith (Boston), in partnership with the Water Replenishment District of Southern California, served up an Indian pale ale called the FAT Californian, named after the full advanced treatment (FAT) model of treatment for potable reuse applications.

This year, the Reuse Beer Smackdown dovetailed nicely with the release of the WEF Water Reuse Roadmap, a collaborative effort by WateReuse (Alexandria, Va.), Water Environment & Reuse Foundation (WE&RF; Alexandria, Va.), and the National Water Research Institute (NWRI; Fountain Valley, Calif.). Such efforts serve to engage industry professionals, public leaders, and imbibers everywhere in this conversation about clean water, not only for its role in health, but also in supporting big and small businesses.

The importance of legitimacy in reuse

While the beer events are fun and engaging, the most important aspect of these efforts is the focus on

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A Legitimate Reason to Have a Beer (continued from page 6)

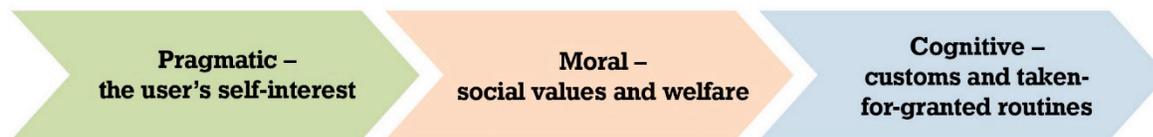
creating an authentic conversation with the larger community about water quality. These conversations are the cornerstones of a sociological concept known as “legitimacy.”

Legitimacy is more important as communities consider reuse projects, particularly potable water reuse. Reuse projects have often been met with public opposition, despite having proven that the technology and water quality meet or exceed drinking water standards. Oftentimes, technical professionals such as engineers and scientists believe the public will accept new technologies when it is provided with information through marketing and public education. Such outreach efforts need be authentic to achieve public support.

Three levels of legitimacy need to be addressed to have a successful project.

- The Pragmatic level focuses on the user’s self-interest, seeking to answer questions such as “How do I benefit personally?” and “How am I involved in the decision-making process?”
- The Moral level deals with social values and welfare, addressing questions like “How is quality and process safety guaranteed?” and “Is the organization trustworthy?”
- The final level, Cognitive, deals with customs and routines that are taken for granted. “Does the technology fit with my daily life?” and “Is the technology essential, with no feasible alternatives?” are examples of the inquiries that community members need answered.

Three Levels of Legitimacy



Orange County and Nevada strive for legitimacy

One example of how legitimacy can produce successful results is the Orange County Groundwater Replenishment System in California. Through its dedication to the outreach efforts, utility managers were recognized as trustworthy and competent experts in the community. (Learn more in the publications listed in “Further Reading”). Taking the lessons that Orange County learned to heart, a northern Nevada utility values legitimacy as part of a feasibility study that may someday lead to Nevada’s first potable reuse project.

Essentially, the feasibility study must show that every aspect of the treatment train is robust and redundant. The utility takes full ownership from the home lateral to the final compliance testing, ensuring the public it should have the full confidence in the water utility. This also includes looking carefully at pretreatment ordinances, collection systems, resource recovery treatment processes, and the most advanced water purification processes.

One cornerstone of the feasibility study is a demonstration-scale project. Not only will this project show that treatment technologies are able to perform and meet stringent regulations, but community leaders and the general public also will be able to visit and see water purification processes in action. The public will be able to meet with the utility’s operations and laboratory staff, and these events will showcase the agencies’ technical skills and dedication to quality and also give the utility an opportunity to interact and share ideas with customers.

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A Legitimate Reason to Have a Beer (continued from page 7)

Building trust and confidence with each community is vital. The Northern Nevada Regional Effluent Management Team driving this feasibility effort includes representatives from the City of Reno, Truckee Meadows Water Reclamation Facility, Truckee Meadows Water Authority, the City of Sparks, Washoe County, and the Northern Nevada Water Planning Commission. It is an exciting time to be in the water business, and the Northern Nevada Effluent Management Team demonstrates that utility leaders take the trust the public has afforded them very seriously.



Local beers created by utilities and microbreweries were showcased at WEFTEC 2016.
Photo credit: Water Environment Federation

Further Reading

Binz, C., S. Harris-Lovett, M. Kiparsky, D. L. Sedlak, and B. Truffer (2016). "The thorny road to technology legitimation—Institutional work for potable water reuse in California." *Technological Forecasting and Social Change* 103: 249–263.

Harris-Lovett, S.R., C. Binz, D.L. Sedlak, M. Kiparsky, and B. Truffer (2015). "Beyond user acceptance: A legitimacy framework for potable water reuse in California." *Environmental Science & Technology* 49(13): 7552–7561.

Jordi, Andres (2015). "Legitimacy—The key to successful implementation." *Eawag Aquatic Research News*, October 2015. https://www.eawag.ch/fileadmin/Domain1/News/User_Acceptance_englisch.pdf.

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