

WWOA – Southern District Meeting

5/16/17

Hosted by: The City of Jefferson Wastewater Treatment Plant

There were 50 people in attendance with 10 of them being vendors.

The meeting opened with a few words from the City Administrator Tim Freitag who expressed his appreciation for the job us as wastewater employees all do. He gave a brief history lesson on the VFW hall that the meeting took place in. It was established sometime in the 40s and is one of the oldest in existence.

Ben Heidemann from Town & Country Engineering spoke about the Jefferson Wastewater Treatment plant and their evaluation of biogas operations. They looked into four options: flare, heat generation through a boiler, a biogas engine/turbine, or using it as a fuel substitute for vehicles. The presentation was more focused on the fuel substitute option. They looked at plant loadings and capacities, industrial contributors, and even accepting additional hauled ~~in~~ waste to help produce more gas. The City was losing one of their industries that contribute a large portion of their BOD. The T&C group looked at cost of the fuel systems which are needed to clean, pressurize, and store the gas before use. When looking at cost they also performed payback analysis for each system. Various municipal departments were consulted to see what would be involved to convert fleet vehicles to run on biogas. Some cost estimates were anywhere from \$5-10k to perform a single vehicle conversion. Loss of trunk space for the police cruiser vehicles was one concern mentioned. The conversion system resides in the trunk and would eliminate trunk space needed for tactical gear. Ben discussed the logistics involved to obtain the certification and licensing associated with establishing a biogas fuel station. The City of Jefferson determined it was not cost effective at this time.

The next topic for discussion was obtaining ultra-low phosphorus levels using the CLEARAS system. Terry Robinson described how the CLEARAS process utilizes algae to further reduce nutrients concentration such as: Total Phosphorus, Nitrogen, Total Suspended Solids, BOD, and Carbon Dioxide from wastewater effluent. It is a simple process utilizing three phases: Mix, Recover, Separate. Terry explained how similarities between operating the CLEARAS process compared to managing an Activated Sludge processes. A carbon source is added to the bioreactor in the form of Carbon Dioxide. A steady environment to promote algae growth and keeping everything fresh is important to successful operation and therefore some algae is recycled back into the process and some is wasted. A convenient aspect to this system is that it is modular and scalable to your specific treatment plant. It isn't a one size fits most. Flow and phosphorus concentration determine sizing of the system. On top of the ultra-low phosphorus removal that takes place the wasted algae can be used for a variety of things from digester feed

to actually providing a product to sell (used in cosmetics, pharmaceuticals, and fertilizers) and recover cost of investment.

David Arnott from Reukert & Mielke presented on Bio-P removal using oxidation ditches. For those who don't know Oxidation Ditches are complete mix tanks in a series in the shape of a racetrack. The shapes of the racetrack vary from plant to plant, but the one David spoke of is known as an Orbal oxidation ditch. Ditches usually run with an SRT of 20-30 days. They have a variety of mixing/aerating options: Brush, Disc, or Surface Aerating. The downfall to ditches for Bio-P is there are no true anaerobic zones. That's where a bit of trial and error comes in to play. David and his group experimented with turning off the aerators at certain areas of the ditch to attempt to create an anaerobic zone and promote bio-p all while making sure there was enough mixing occurring in other areas to prevent solids from settling out. With making changes to the aeration they were able to drop the ORP values and get some biological phosphorus removal to occur.

The next presentation was from Suzanne Wade from the Rock River Coalition. Her presentation was titled: Testing the Water: A Paddle to Probe Adventure. She discussed engaging the communities within the Rock River watershed basin by promoting water quality using recreational opportunities. The Rock River Coalition decided to get people together May, 2016 to kayak the Rock River from the headwaters all the way down to the Wisconsin/Illinois stateline area. Kayaks were fitted with a mounting apparatus holding various analytical probes measuring dissolved oxygen, pH, conductivity and temperature. They also collected samples at different points on the river to analyze for nutrients such as phosphorus. Suzanne provided some great data on the Rock River that will help their organization identify watershed improvement opportunities to enhance water quality. She hopes future paddle and probe events will include testing for additional constituents such as Turbidity and Nitrates and also include fixed locations for continuous sample monitoring. She also mentioned doing this again at different times of the year to collect more data. Another wish list item is a cellular modem for battery power because electronics were often an issue during all the hours on the river. The Rock River Coalition also trains volunteers to perform river and stream monitoring within the Rock River Basin. To help better engage and retain their volunteer base, RRC staff developed a report card utilizing the collected monitoring data to describe the stream and river conditions at those monitoring locations by assigning a grade to the water quality observed.

DNR Update: DNR Basin Engineer Amy Garbe

Amy reminded everyone of the due date for the CMAR – June 30th. She mentioned the Collection and Financial sections and how those look different. If there are any questions go to the website as it has been updated to reflect the changes and should provide solutions for you.

The DNR is still working on producing electronic SSO forms to be used in the future should you need them. Amy also touched on staffing changes and that they are still working through them.

The Southern District Business meeting was called to order. The meeting minutes and treasury report were discussed. The plaque for hosting the Southern District meeting was presented to Jefferson's WWTP Superintendent Todd Clark. The Southern District is looking for a new Secretary for 2018, an Operator of the Year for 2017, and a competition team for the Annual WWOA conference in the fall. Southern is also looking for host communities for 2018. Establishing the Tuition Aid Fund for the Southern District was discussed. It was voted on and approved. The Southern District will have it set up by the next meeting in August for people to apply. We will upload it to the website when it is completed. The next meeting will be in August in Richland Center, but we are still working on a date.

State Update

Rick Mealy talked about a change in the competition this fall. For the lab portion the competitors will not be doing analysis. Instead, they will be auditing the analysis of the judges putting a unique twist on the competition.

The final speaker was David Bolha from the DNR who talked about Water Quality Improvements in the Fond du Lac Watershed. The priority watershed project that took place in 1997 was a nonpoint source control plan. Best management practices (BMPs) were implemented in hopes of improving water quality. The DNR had some great baseline data (Nitrates, TSS, and TP) previous to this project. In 2015 David performed nutrient analyses, aquatic insect assessment, and fish surveys to determine current water quality and impairment. Overall, his findings did not show much improvement from the initial watershed assessment. Contributing factors discussed were limited buffers, eroding streambanks, cropland erosion, urban development, and extensive tile damage. More cooperation and implementation of BMPs from additional agricultural and land use stakeholders are needed to achieve success. Some monitoring sites showed more improvement than others. A large amount of sediment in the river contributes to many of the issues. Developing a 9 key element plan to come up with other ideas to improve water quality is key to starting any water quality project and requesting sources of funding. The projects that were taken into account for this presentation provide great baseline data and possible scenarios for those looking into something like this. This discussion was a good example of the realities involved with watershed management showing that not all efforts are completely successful.

The meeting adjourned after a brief discussion of the Jefferson WWTP. A tour of the facility followed the meeting.

