



HANNIBAL BOARD OF PUBLIC WORKS

ELECTRIC, WATER AND WASTEWATER

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DATE: February 14, 2018
TO: Hannibal Board of Public Works
FROM: Robert W. Stevenson, P.E.
Re: Status of Chloramine removal at the Water Treatment Plant

At the December 2017 Board meeting, Black & Veatch delivered their final draft report to the Board detailing their findings on the efficacy of GAC treatment for the removal of DBP precursors in the Hannibal finished drinking water supply. That study addressed the size and capacity of a plant needed to serve the City, its capital cost and predicted O&M costs over a 20 year operating life. The study also compared the 20 year present worth cost of this GAC plant to an equivalent Reverse Osmosis plant and reported the present worth costs of the two systems were comparable. The GAC plant was estimated to be lower in capital cost and higher in operating costs than the equivalent RO plant. But the present worth cost estimates were so close (within 5%) to each other as to be within the margin of error of the study. Both systems should be considered to be financially equivalent.

Also at the December meeting the staff was asked to express opinions as to which system would be preferable and it was revealed that the staff actually had an unresolved difference of opinion at that time as to which system to recommend. Since that time there have been meetings and a tour of two nearby RO facilities. George Hausdorf has provided a written opinion (attached) favoring RO which is compelling but disagreement remains. Note that the disagreement is mild as no one is passionately for or against either system. We all agree the systems are essentially similar and all could live with either choice technically.

Note that the GAC system that Black & Veatch recommends is more costly than either the system recommended by Robert Bowcock or the system recommended by Jacobs Engineering in an earlier study. The Black & Veatch study is the only one to use actual pilot scale data which should be more reliable as a predictor of GAC costs. I suggest our planning going forward be based on Black & Veatch cost estimates. But, the higher costs may change how we see the solution to the ammonia removal problem.

Last month the Board authorized a contract with WM Financial Services to develop the financing alternatives that could apply to either system selected. I also authorized a supplemental agreement with Gilmore and Bell, our traditional Bond Counsel. Gilmore and Bell will work jointly with WM Financial services. Their work is underway.

TREATMENT PROCESS

The decision on the basic treatment process is at hand. The Black & Veatch study and report has accomplished two things that are significant. We now know for sure that a GAC treatment plant will be more costly than anybody previously predicted. The capital cost will be higher than Jacobs predicted. And the operating costs will be a lot higher than Jacobs predicted. We have a good idea of what plant design elements will be required by MoDNR to meet their approval. We have what we asked from Black & Veatch and the Board could decide to proceed with detailed design at this point. We have asked Black and Veatch to provide a design contract for Board approval based on the use of GAC as a post filter treatment media.

However, the report also indicated that the cost of a GAC treatment system is equivalent in cost to a Reverse Osmosis treatment system, a conclusion we were not prepared for. Therefore the Board may want to take a little time to consider the merits of RO. As I said earlier, staff has made two trips to observe RO and MF treatment systems in St. Charles and Keokuk. We do have staff plant operators with some experience in RO operation.

The Board and staff met with Black & Veatch on Feb. 2 to dive deeper into RO technology and to learn about the relative advantages or challenges of that type of system.

I have told this Board that I would never present you with a decision without also giving you my recommendation. This particular decision borders more on a matter of policy due to the political nature of the decision. But, based purely on the technical merits, and the City Ordinance the Board is working to obey, I would recommend the Board consider the RO system as being more robust and less susceptible to future regulatory changes as well as providing a more attractive rate basis under Option 3 of rate design choices presented last month. However, I must qualify my recommendation because of my announced retirement plans and the reduced personal stake I have in the outcomes of your decision. This recommendation is a change from my preliminary recommendation made during the December Board meeting. The other staff is still divided on this issue. I know that the decision you are about to make is going to have a profound and long term effect on the City as a whole, reflecting on our ability to compete for new industry, to keep the industry we have, and to keep our water affordable for those on fixed incomes.

DESIGN CONTRACT

A fee proposal from Black & Veatch for detailed design and construction documents will be presented later in the meeting. They will be at the meeting to present their proposal to the Board. Since we asked them to prepare their proposal based on a GAC plant, it may be inappropriate if the Board chooses to pursue an RO solutions. A decision on the hiring of Black & Veatch or a request to revise their proposal can follow after a decision on the technology is made.

RATES AND COST OF SERVICE

A new water Cost of Service Study is underway since it was authorized last month. Results should take two or three months to develop. We should know what the new rates will be so that we can begin making smaller adjustments as soon as possible to avoid the rate shock that is bound to come.

We should be able to estimate what rate adjustments will be required before the study is complete if the Board is agreeable with some principals from our rate design training. For instance, we know from

experience that water unit sales are elastic, meaning as usage prices go up customers tend to conserve more. Historically, when the Board approves a 4% usage rate increase, consumption drops by 2%. The customer charge is not subject to usage amounts and represents that part of our bill that provides very stable revenue to the utility. A new GAC treatment plant is high in capital cost and high in operating costs. Good rate design requires that the capital cost which is fixed once the money is spent and must be paid back regardless of water usage. So, it would be financially prudent (and may be required by our lenders) to repay the capital principal and interest through the monthly customer charge and to pay for the increased O&M costs through the usage charge.

The GAC treatment system is somewhat lower in capital costs and higher in operating costs compared to the RO system. This difference would reflect slightly different rate adjustments between the customer charge and the usage charge but the total monthly bill per household would be very similar for either choice.

Everyone needs to be aware that the above discussion on rates only addresses rate changes that will be required to finance and operate a new treatment plant process. There will have to be other rate adjustments as well for other reasons. The biggest known future adjustment involves the discontinuation of PWSD #1 as a customer sometime in 2019. Lost revenue from that event will have to be made up by the other Hannibal water customers. We predict another 12% increase on top of the treatment plant impact. Also, we know from experience that the costs of treatment chemicals, labor, pipe and electricity keep going up, so we can expect to see annual inflationary adjustments for these items as well.

“The mission of the Hannibal Board of Public Works is to provide safe, reliable utility products with excellent customer service at reasonable prices.”