

From: **Davis, Bill** <bdavis@mrbgroup.com>
Date: Tue, May 12, 2015 at 2:09 PM
Subject: RE: Message from KM_C224e
To: Elizabeth Thomas <supervisor@ulysses.ny.us>

Liz,

Thanks for forwarding this on. This is an important piece of information from the TCDH and reiterates some of the issues we have also noted in our review to date. I am glad we are not the only one with concerns. I have hesitated to provide you written documentation in regards to our evaluation of Hunts report or on this issue as we have continuously been reviewing since we started and I did not want to get the "cart before the horse" so to speak. We are catching up on a lot of history here and, although I have no problem simply discussing the issues we have found from time to time, documenting them early on seemed a little premature. In addition, I was also a little hesitant about contradicting Hunts report in any way before doing our due diligence.

Even though it is still a little early in my mind, I understand everyone's concerns about the options we are evaluating and also the concern that we are being open minded and truly evaluating all options. I can assure you we are and there is no bias towards the connection to Trumansburg. The cost may simply be too much compared to other options, we shall see. However, as your consultant, I also need to advise you when we have a concern about the direction you are heading. With a single aerator in the Van Doren Road Water Tank – we share the same concerns with the TCDH. I wouldn't say we have "ruled it out" all the way which is why we will keep this as an option in our Engineering Report. However, the following are just a few concerns/questions I would consider:

- 1) The USCI/PAX proposal mentions a target removal of 50% of the THM's at 60,000 gpd (this is the rate of treatment through their system). This has been construed as a guarantee and that USCI/PAX will provide more units if the single unit does not meet this target. This is a great guarantee but I would be cautious about any stipulations that come with this. THM's are sometimes "speciated" prior to these guarantees being offered to assure that the THM's are of the correct nature prior to this. Some constituents of THM's are more volatile than others and this might be something to consider determining first if it has not already been done.
- 2) The target TTHM levels are based on a turn over rate of 60,000 gpd in a 200,000 gallon tank. I would also caution that this should be discussed further since we will have MANY hours of service that water is simply by-passing the tank. The model is showing 80% flow through the tank of which 20% is by-passing the tank and ALSO a portion of the 80% flowing into/out of the tank may not actually make it through the aeration system. For a considerable amount of water, it may flow into the tank but only be there for a short time and may not pass through the aeration system. This has to be taken into account. Also – will this affect their guarantee (I would suspect it might).
- 3) The hydraulic model that was completed by Hunt seems to have been completed very well. However, with ANY model done by any firm (even MRB), we always need to be cautious that this is a model representing the average day conditions with many assumptions. This is representative of a snap shot in circumstances which provides us with the output that 80% of the water will now pass through the tank and that there will always be 50% removal of THM's in this 80% of water volume. This is a big risk as there are going to be many times that less than 80% of the water passes through the tank (high demand times, low demand times during filling, etc.). This means water WILL pass BY the tank and not make it through the THM removal system. Keep in mind that this means that this 80% figure will only be reduced by the factor of error. It is not like we will ever really be able to pass more than 80% of the water through the tank, it will only be less than this. How this will impact our sample results and the actual THM values at the end of the line is difficult to predict. I will need to explain the actual hydraulics of this in more detail.
- 4) Most importantly, when the THM removal system is evaluated, its THM reduction is that expected at the tank. We have a range of THM's at the Tank of approximately 47-97 ppm TTHM's based on latest data. With a

50% reduction this would result in an “outgoing” TTHM level of approximately 24-49 ppm (in theory). From the point at the tank to the end of the watermain (i.e. end of Cold Springs Road), TTHM reformation WILL occur and are difficult to predict. This means our levels of 23-49 will start rising again. Will these values stay below 80ppm is the question. If we simply look at the 11/5/14 data, TTHM’s rose from 88ppm to 128ppm from the VanDoren Tank to the end of Cold Springs Road. This is an increase of 40ppm. If we consider this is to be expected (the tank level outgoing would be 44), it would result in a TTHM value in the range of $44+40=84$ ppm, and this is only if the model and the actual results are 100% correct and all the water passing through the tank was reduced by 50%.

With all of the variables noted above, that will only lead us to believe the actual TTHM values at the end of the line will only be higher than has been modeled (or predicted) at this time, we are very skeptical about this option. Like I said, I would not completely rule this out just yet as we have some more questions to answer first, but it is not looking favorable in our mind at this time.

With that said, we will continue to evaluate this. More TTHM data over the next few months may also help so we can see consistent data throughout the system for more than 6 months. With the time allotted to get the study done and submit for EFC financing – it also allows us the ability to collect more samples and maybe feel more confident about whatever solution is chosen. In addition, if we supplement the Van Doran Tank aeration system with another in the Town of Ithaca – it may also show better results and provide us more confidence that these results will be consistent and keep us in compliance. There are some details here we need to see.

These are some of the issues to consider. I will continue to try to discuss and explain these as we move forward with the committee and the board and hopefully get everyone to a point where we can make a collective decision in the near future.

Let me know if you have any questions or concerns.

thanks

Bill Davis
Team Leader

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