

From: [Daniel Nix](#)
To: [Jack Schulze](#)
Cc: [James Weddell](#); [Joel Klumpp](#); [Russell Schreiber](#); [Kerry D. Maroney](#); [Marlo Berg](#)
Subject: Re: CT Calculations for Reuse
Date: Thursday, July 18, 2013 9:07:34 AM

Jack,

Thanks for the speedy reply. I have run the numbers and the project is still do'able using your logic for Giardia and Viruses. It's complicated, but do'able. I will include the analysis in the set of replies to either the third or fourth set of TCEQ questions.

However, the answer for the CT inactivation of Giardia and Virus does not answer the question surrounding the Cryptosporidium issue. Since Crypto is not inactivated by Disinfection, I am simply left with Physical removal for the Secondary Reservoir water in the 2010 SWTP. If the TCEQ requires 5.5 log removal for Cryptosporidium for the Secondary Reservoir source, then there is absolutely no way to meet this requirement as the plant is currently configured **and this could be what kills this project**. To resolve this issue, the TCEQ would need to endorse 5.5 log removal for Cryptosporidium in the WW Effluent Source and 2.0 log for the Secondary Reservoir source. What does TCEQ intend to require for Cryptosporidium inactivation on the Secondary Reservoir source?

On Wed, Jul 17, 2013 at 12:23 PM, Jack Schulze <jack.schulze@tceq.texas.gov> wrote:

Daniel,

Because you own and operate both the DPR and conventional plants, you have the option on how you want to set up the disinfection process.

- a) You can provide all the log removal inactivation required for the "DPR" source before you blend it with the "conventional" source, or
- b) You can sum the cumulative credits received as the DPR water passes through the combination of both plants.

If you do the latter, the disinfection zones within the conventional plant will need to meet the greater of two credits.

- 1) The 0.5-log giardia and 2-log viral removal credits that would apply if there were no DPR water . . . and giardia will drop to 0.0-log if you provide additional removal credits by meeting the enhanced CFE or IFE turbidity criteria (i.e., at least 95% of the readings ≤ 0.1 NTU).

OR

- 2) Whatever log inactivation is needed to complete the cumulative removal/inactivation targets

for the DPR source.

Basically, DPR removal/inactivation does not restart at 0.0 credits just because you blend partially treated DPR water with another conventional source.

If you do the former, the disinfection zones at the conventional plant will need to meet the 0.5-log giardia and 2-log viral removal credits that would apply if there were no DPR water . . . and, again, giardia will drop to 0.0-log if you want to provide additional removal credits by meeting the enhanced CFE or IFE turbidity criteria

I think that answered your question but here's the real world implications regardless of which option you choose . . .

I'm almost positive you guys will have to complete 2 SWMORs when the DPR plant goes on-line, one for the DPR treatment processes and another for the conventional treatment processes. While the new SWMOR-Alt has a way to enter up to 5 different treatment sequences (i.e., 5 dissimilar trains), it does not have a way to isolate individual disinfection zones and assign different zones to different trains. Since the "conventional" source will only see a subset of the disinfection zones seen by the "DPR" source, a separate SWMOR will be needed for each.

Please note that, depending on how the disinfection zones are defined at each plant, the shared zones may not share the same designation on the two SWMORs. For example, if there are 3 common zones, they might appear as D5, D6, and D7 on the DPR plant's CT Study/SWMOR but as D8, D9, and D10 on the conventional plant's CT study/SWMOR. Regardless of their designations, the flow rates, volumes, baffling factors, and T10 times for any shared zone will be identical in both CT Studies/SWMORs.

Hope this helps.

jack

From: Daniel Nix [mailto:daniel.nix@wichitafallstx.gov]
Sent: Wednesday, July 17, 2013 9:44 AM
To: Jack Schulze

Cc: James Weddell; Joel Klumpp; Russell Schreiber; Kerry D. Maroney; Marlo Berg
Subject: CT Calculations for Reuse

Jack,

I have 2 quick questions regarding the CT Calculations.

Does the TCEQ intend for the City to apply the 1.0 log Giardia and 5.0 log Virus to the CT calculations for the Secondary Reservoir, or should the normal log removals that we qualified for under the LT2ESWTR apply?

The reason I am asking is, that at low temperatures the CT calculations for the Secondary Reservoir are not meeting the 1.0 log and 5.0 log requirements for Giardia and Virus, respectively, the TCEQ has set for the Effluent source water. To get them to meet the log removal requirements, the water temperature has to be 16.5 oC, not the worst case 7.0 oC that we are planning around.

The Secondary Reservoir source has proven to be a Bin 1 classified source and therefore, has never required additional/advanced treatment to meet higher log removal credits.

We are also having the same issue with the Cryptosporidium removal credits. Currently, the Secondary Reservoir is only supposed to meet 2.0 log removal, which we easily do throughout the year. However, applying 5.5 log removal to this source makes it hard to accomplish since it does not have any of the advanced treatment ahead of it, as the wastewater effluent does.

The Wastewater Effluent CT's are looking good for the Removal Credits, as you indicated on our last Conference Call, but the Secondary Reservoir will present a problem if the log removal credits for the wastewater effluent is applied to it, as well. Therefore, we would like clarification on whether we can apply the regular removal credits to the Bin 1 Classified water from the Secondary Reservoir.

I am available to discuss, if you feel the need. Please advise.

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Those who have the privilege to know have the duty to act. ~Albert Einstein

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