

From: da Silva, Allegra K.
Sent: Tue, 10 Mar 2015 18:26:23 +0000
To: Daniel Nix; Crawford, Susan
Cc: Russell Schreiber; Vandegrift, Jillian C.
Subject: RE: FW: Wichita Falls IPR and DPR Case Study

Hello Daniel,

Let's talk on Thursday at 1:30pm Central Time. I'll be calling you from Denver. Would you like me to call your office number, 940-691-1153?

Thank you very much,
Allegra

From: Daniel Nix [mailto:daniel.nix@wichitafallstx.gov]
Sent: Tuesday, March 10, 2015 7:13 AM
To: Crawford, Susan
Cc: Russell Schreiber; Vandegrift, Jillian C.; da Silva, Allegra K.
Subject: Re: FW: Wichita Falls IPR and DPR Case Study

Susan,

That should work. I am available Thursday between 1:30 and 3:00. And ten on Friday from 8:30 to 11:00, and all Friday afternoon.

On Mon, Mar 9, 2015 at 4:22 PM, Crawford, Susan <CrawfordSL@cdmsmith.com> wrote:

Thanks Daniel! These comments are very helpful. One question for you, on the highlighted item below, could we call you this week and get a feel for how you would like the regulatory discussion handled? We could talk on the phone and then write something up for you to review. Would that work?

Regards,

Susan L. Crawford, PE, BCEE | Senior Vice President
CDM Smith | 8140 Walnut Hill Lane, Suite 1000 | Dallas, Texas 75231
Office: 214-346-2800 | Cell: 214-334-1101

From: Daniel Nix [mailto:daniel.nix@wichitafallstx.gov]
Sent: Monday, March 09, 2015 8:57 AM
To: Crawford, Susan
Cc: Russell Schreiber; Vandegrift, Jillian C.; da Silva, Allegra K.
Subject: Re: FW: Wichita Falls IPR and DPR Case Study

Susan,

The case study is accurate and I only have a few minor changes.

Water conservation methods were practiced in a staged format and saved up to 2 BG of water, however were not significant enough to sustain a reliable drinking water supply (Nix, 2013)
We actually saved 2 BG in one of our stages. All Total, through all 5 stages, we have saved 6.1 BG, at the end of December 2014. At our current usage, that is about 1.5 years worth of water.

Since there are no regulatory guidelines for DPR in Texas (or in any other state), TCEQ and the City of Wichita Falls Public Works Department collaboratively discussed the necessary treatment requirements and effluent limitations.

I think this could be elaborated upon, since it took so much time and the project hinged on it.

The system transfers treated effluent from River Road WWTP to Cypress WTP where MF and RO processes occur, followed by holding in an engineered storage buffer for 24 hours and subsequent blending with Lake Arrowhead surface water, constituting 50% of the total blended water volume.
The system transfers treated effluent from River Road WWTP to Cypress WTP where it is treated by MF and RO. The RO permeate is then blended at a 1:1 ratio with raw, untreated lake water and subsequently treated through a conventional water treatment plant, followed by holding in an engineered storage buffer for 24 hours before being discharged to the Distribution System.

This process creates an additional 5 MGD (33% of daily demand) of municipal drinking water. It can be as high as 50% of the daily demand in the winter.

DPR: WWTP→WTP (MF→RO)→Holding Lagoon (Engineered Storage Buffer)→Blending 50-50→Conventional Water Treatment Plant (Chlorine dioxide pre-disinfection, coagulation, lime softening, sedimentation, re-stabilization, gravity media filtration, fluoridation).

DPR: WWTP (with Chloramine disinfectant down the pipeline)→WTP (MF→RO)→Holding Lagoon→Blending 50-50→Conventional Water Treatment Plant (Chlorine dioxide pre-disinfection, Chloramines primary disinfection, coagulation, lime softening, sedimentation, re-stabilization, gravity media filtration, fluoridation, Chloramines terminal disinfection) and Storage (Engineered Storage Buffer).

The DPR process is required to achieve 9-log virus removal, 7-log Giardia removal, and 5.5-log Cryptosporidium removal as specified by TCEQ.

These were based on the log removal charts in the SWTR, and rather than using a 24 month (sample) average the max cysts concentrations were used to determine log removal. We started with 8 -log Virus, but was increased to 9-log because the Chloramines were pre-forming at the wastewater Plant was Ammonia first and then Chlorine. TCEQ felt that we would not get any of the extra benefit of Chlorine (free) first, so they went up a log. The Giardia was originally 6-log, but was increased due to new max cyst level being found on our continued monitoring of the effluent.

TCEQ does not give log-removal credits for the reverse osmosis process during DPR treatment with respect to the microbial log-removal requirements.

Because Daily Integrity testing of the RO elements is not possible.

TCEQ requires both bi-weekly and daily monitoring of Cryptosporidium utilizing two different methods
The PCR method did not work. It was only used during the Verification Testing to try the new method. Therefore, the PCR was removed from the monitoring requirements.

On Mon, Feb 9, 2015 at 10:29 AM, Crawford, Susan <CrawfordSL@cdmsmith.com> wrote:

Daniel,

Here's the draft write-up for the Wichita Falls case study that will go in the EPA DPR document we are preparing as part of our contract with them. You will note that there is no discussion currently about the UV system. We left that out so that you add this as you see fit. This document is really your story to tell others, so you can edit it to add more information if you like and as you see fit to be accurate.

Most of the information provided here is from public documents and your previous presentations. If you want to use track changes to edit, that would be great!

Let me know how I can help or answer any questions you may have. We'd like to get this back from you next week if possible.

Regards,

Susan L. Crawford, PE, BCEE | Senior Vice President
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From: Vandegrift, Jillian C.
Sent: Friday, February 06, 2015 3:47 PM
To: Crawford, Susan
Cc: da Silva, Allegra K.; Bell, Kati
Subject: RE: Wichita Falls IPR and DPR Case Study

Hi Susan,
Here is the final version of the write up with your edits incorporated. Thanks!

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

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Blue Skies. Golden Opportunities.

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