

BIGGS & MATHEWS, INC.

Consulting Engineers

June 27, 2013

Joel Klumpp, Team Leader
Technical Review & Oversight Team MC-159
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

RE: City of Wichita Falls
PWS ID No. 2430001
Temporary Direct Potable Reuse Project
Response to 1st set of TCEQ Questions (6/18/13)

Dear Mr. Klumpp:

On June 18, 2013 the Texas Commission on Environmental Quality (TCEQ) provided us by E-Mail (Attached) a set of thirteen (13) questions for the City to answer and provide additional information to TCEQ in response to their continuing review of the Temporary Direct Potable Reuse Project (DPRP) for the City of Wichita Falls.

As requested, please find attached our response to each of the 13 questions along with all requested additional information.

1. In section K "Full Scale Verification Sample Points" is the City's proposed Sample Site No. 21 located prior to the tee connection for the RO permeate line from the backwash lagoon?

Response:

Yes it is, so that we can sample only the surface water from Site No. 21, and sample only the RO permeate from Site No. 18. (These were accurately shown in the submitted PER)

2. Staff did not find a description of the proposed minimum operating level for the Cypress 2010 SWTP clearwell and the 10MG GST for calculating inactivation credit. Please provide a description of the:

- a. Proposed DPR WTP on & off control for Cypress 2010 Clearwell water levels.*
- b. On & off controls for the 2010 clearwell transfer pumps and each pump flow capacity.*
- c. On & off controls for 10 MG GST*
- d. Each high service pump flow capacity and low level cut-off*

Response:

a. Cypress 2010 clearwell operating water levels are the same as were designated in the TCEQ approved CT Study for the 2010 plant which was included in Section J of the PER. Max. Volume is 216,290 gallons and Worst Case Volume is 109,102 gallons. Level Controls are by level transducers.

b. The Cypress 2010 transfer pumps operate between a low level 5.7 feet in the clearwell and a high level of 11.3 feet as shown in approved CT Study for the 2010 plant and is included in Section J of the PER. There are two (2) Constant Speed Pumps each rated at approx. 5.75 MGD and there are two (2) VFD Pumps each rated at approx. 10 MGD. Controls are by level transducers.

c. Cypress 10 MG operating water levels are the same as were designated in the TCEQ approved CT Study for the 2010 plant which was included in Section J of the PER. Max Volume is 9,974,083 gallons and the Worst Case Volume is 4,987,042 gallons. Controlled from Operations Control Room via SCADA System.

d. The Cypress High Service Pumps include three (3) Constant Speed Pumps and 2 VFD Pumps and each of the five (5) pumps are rated at 12 MGD. Low suction level shutoff for pumps is approx. 7 feet above the floor of the 10 MG tank.

3. Provide description of how the City measures the parameters to calculate transmembrane pressure.

Response:

The PCS (Process Control System, an industrial computer located within the Main Control Panel that controls all CMF-S system operations) calculates the Trans-membrane Pressure in kPa by collecting readings for inlet pressure and filtrate pressure every second. The thirty most recent values are then added together and the sum divided by thirty for a moving average of the reading, updated once per second. The TMP is calculated by the PCS as $((P_{inlet} + P_{outlet}) / 2)$. This reading is provided as a real time value on the SCADA system. It is also stored at 15 minute intervals in an Excel spreadsheet.

4. Is the coagulant injection point for the MF/RO radial flow clarifier in front of the two parallel static mixers.

Response:

Yes, the coagulant injection point for the MF/RO radial flow clarifier is prior to the two (2) parallel static mixers in the Flow Control Vault.

5. How or where is the flocculation achieved for the MF/RO radial flow clarifier.

Response:

There is a mixer/flocculator in the center column of the MF/RO clarifier.

6. Is there a rapid mix basin for the Cypress 2010 Conventional SWTP solid contact clarifier?

Response:

Yes there is a rapid mixer at the head of the existing 2010 Parshall Flume Basin prior to the 2010 clarifier. There is also a mixer/flocculator in the center column of the 2010 clarifier.

7. Will the City continue providing lime softening at the 2010 Conventional SWTP?

Response:

Yes, the City will continue providing lime softening at the 2010 Conventional SWTP.

8. Section J, Item 4, 2010 Conventional Plant, credit for the three CLO2 disinfection zones is claimed. However, in a note found in Section K for the proposed Sample Site No. 20, it is stated that the City will take credit for the entire transmission pipeline from the Secondary Reservoir to the Splitter Box as one disinfection zone, not three. Please clarify.

Response:

As shown in the TCEQ approved CT Study for the 2010 Plant, there are three (3) disinfection zones along the existing 42" raw water line from the Secondary Reservoir to the Cypress WTP. The CT Study was included in Section J of the PER. If required, sampling can be performed at all three (3) location and the applicable credit taken based a CLO2 residual. However, at this time it is contemplated that credit for the entire transmission line will be determined through one disinfection zone sampled prior to the Splitter Box and prior to the RO Permeate introduction.

9. Please provide the following sealed, signed and dated engineering drawing:

a. The connection of the RRWWTP transmission pipeline to the Cypress MF/RO2008 SWTP's flow vault.

Response:

Attached Sheet 23 of 25 signed, sealed and dated shows the existing flow control vault and the connection of the RRWWTP to the vault piping prior to the static mixers.

b. Disconnection of the raw surface water pipeline for the City's Headquarters Road Reservoir.

Response:

Attached Sheet 23 of 25 signed, sealed and dated shows the existing 24" V130 Gate Valve at the south end of the flow control vault that will be closed to isolate the Headquarters Rd. Reservoir from the RRWWTP effluent source water.

c. Isolation of the RO Permeate lagoon water from the Secondary Reservoir.

Response:

Attached signed, sealed and dated Sheets 1of 2 and 2 of 2 "Temporary Site Piping Modifications", shows in Detail -1, the 36" line going east to be cut and capped which will isolate the RO Permeate lagoon water.

d. Details of cross-connection protection currently provided and proposed to be provided when the RRWWTP effluent is being treated at the Cypress WTP.

Response:

Attached signed, sealed and dated Sheets 1 of 2 and 2 of 2 "Temporary Site Piping Modifications", shows the various cross-connection protection during treatment of the RRWWTP effluent. Detail-1 isolates the permeate from the surface water, Detail-2 is the isolated discharge of effluent into the lagoon, Detail-3 is the connection that will be used during the verification testing with isolation valves closed to the 10 MG, 8 MG, and 3 MG storage tanks. Detail-4 is the connection to an existing gravity manhole to take the treated effluent to the Recovery Well and then following de-chlorination, pumped from the Recovery Well and discharged to the Wichita River. Detail-5 is the cap on the 24" line to isolate it from the effluent lagoon. Valve inside vault (See Attached Sludge Lagoon Vault Detail Sheet YP-DT-33) at Detail-5 will be closed to isolate discharge into the existing adjacent lagoon. Detail-6 is the connection to the existing 20" line that discharges to the Wichita River.

e. Isolation of the 3.0 MG and 5.0 MG GST's influent and effluent lines during the proposed full-scale operation of the DPR WTP.

Response:

Attached signed, sealed and dated Sheets YP-D-4 & YP-E-5 that show the existing closed valves to isolate the 10 MG tank from the 8 MG & 3 MG storage tanks during DPR operations.

10. Please provide a blending report with equipment specifications and drawings. Neither sheet of the submitted drawings show what equipment is currently installed or will be installed to ensure that a 50-50 ratio of RO permeate source water to Secondary Reservoir water will be maintained.

Response:

Attached signed, sealed and dated Sheets 1 of 2 and 2 of 2 "Temporary Site Piping Modifications" show the "Reuse Flow Meter" at location "10" and shows the 2010 "Parshall Flume" at location "12". Utilizing the existing inline "Magnetic Flow Meter" a maximum flow rate of 5 MGD will be set for the reuse effluent from the lagoon and the existing Parshall Flume will be utilized to maintain a maximum of 10 MGD of combined effluent/surface water. Subtracting the difference in the two measuring instruments will be used to determine the surface water flow rate and hence maintain the 50-50 ratio of R/O permeate source water to Secondary Reservoir water.

11. The TCEQ letter dated February 8, 2013 read: "All analytical data results for raw sewage and the RRWWTP's effluent for turbidity, total coliform, E. Coli, culturable viruses, Giardia cysts, Cryptosporidium oocysts, and any other pathogens the City has been monitoring for the preceding five years. Include all analytical methods used and the laboratory's quality assurance and control methods and results.

a. Please provide a schematic identifying the following RRWWTP locations referenced on the analyses submitted in the PER:

- i. Waste Water, untreated, Head Works*
- ii. Waste Water, untreated*
- iii. 1005 River Rd. CCB*
- iv. Waste Water CCB*
- v. 1005 River Rd. Pre Outfall*
- vi. 1005 River Road*
- vii. Raw Wastewater River Road WWTP*
- viii. River Rd. Aeration Outfall*

Please include a description of all treatment before each of the sample collection locations.

Response:

Attached is a schematic that clarifies and addresses the requested information.

b. It was TCEQ understanding that the City would provide a minimum of 12 monthly results for Giardia cysts and Cryptosporidium oocysts. The PER contains 11 months of analytical results. Please provide the results of January, 2013. If the pathogen monitoring continued after January, 2013, please include the results for February, March, April, and May of 2013. Please organize the data in summary tables.

Response:

Attached is a spreadsheet with the Giardia, Cryptosporidium, Total Culturable Viruses, Enteroviruses and Noroviruses in a tabular form as requested by TCEQ.

12. The TCEQ letter dated February 8, 2013 read: "Please provide the proposed location and type of all continuous online monitoring and automatic shutdown triggers at the RRWWTP."

- a. Please provide a schematic that shows the location of all online monitors. Include the sample tap locations for any proposed grab sample monitoring.*

Response:

Attached is a schematic showing the RRWWTP online monitoring as requested by TCEQ.

13. The TCEQ letter dated February 8, 2013 read: "Please provide the proposed location and type of all continuous online monitoring, grab sample monitoring taps, and automatic shutdown equipment at the temporary Cypress DPR WTP."

- a. Please provide a schematic that shows the location of all online monitors. Identify each online monitor that will generate an automatic shutdown of the DPR WTP and the trigger level for each one. Please see attached schematics.*

Response:

Attached is a schematic that shows the location of all online monitors for the DPR WTP as requested by TCEQ.

b. Identify where the online nitrate monitors with automatic shutdown will be provided.

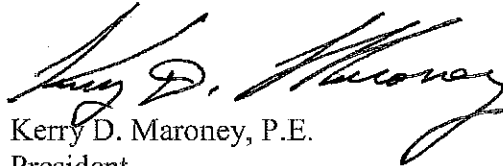
Response:

Also shown on the above referenced schematic is the location of the nitrate monitors.

As you have additional questions please provide those in a timely manner for our response.

Sincerely,

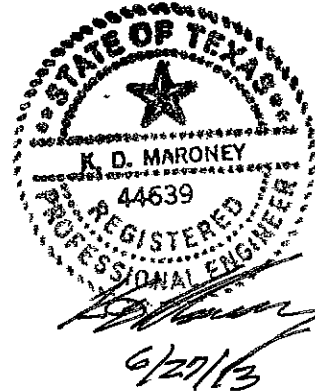
BIGGS & MATHEWS, INC.



Kerry D. Maroney, P.E.
President

Cc: Russell Schreiber, P.E.
Public Works Director
City of Wichita Falls, Texas

Daniel Nix
Public Utilities Operations Manager
City of Wichita Falls, Texas



Kerry D. Maroney

From: Joel Klumpp [joel.klumpp@tceq.texas.gov]
Sent: Tuesday, June 18, 2013 10:37 AM
To: Kerry D. Maroney; Russell Schreiber
Cc: Linda Brookins; Ada Lichaa; Vera Poe; Jaya Zyman-Ponebshek
Subject: Wichita Falls Emergency DPR Project - TCEQ Questions regarding the PER and FSV Test Protocol - June 18, 2013

Kerry and Russell,

TCEQ staff have been working on our review of the Preliminary Engineering Report (PER), temporary exception requests, and Full-Scale Verification Test Protocol for the City's Emergency DPR Proposal. At this time, we'd like to request that the City review the following questions and comments from our review of the PER, and provide a response. We have additional questions and comments that we will share with you in the future when discussions regarding the issues have been concluded. Thank you for your attention to these questions and for your offer to begin work on responses to our questions as they are generated.

1. In Section K, in the figure titled "Full Scale Verification Sampling Points," is the City's proposed Sample Site No. 21 located prior to the tee connection for the RO permeate line from the backwash lagoon?
2. Staff did not find a description of the proposed minimum operating level for the Cypress 2010 SWTP clearwell and 10.0-MG GST for calculating inactivation credit. Please provide a description of the:
 - a. Proposed Direct Potable Reuse (DPR) Water Treatment Plant's (WTP) on-and-off control as related to the Cypress 2010 clearwell's water levels;
 - b. On-and-off controls for the Cypress 2010 clearwell's transfer pumps and each transfer pumps' installed flow capacities;
 - c. On-and-off controls for the 10-MG GST; and
 - d. Each high service pump's installed flow capacity and low suction level cut-off.
3. Please provide a description of how the City measures the parameters to calculate transmembrane pressure.
4. Is the coagulant injection point for the MF/RO radial flow clarifier in front of the two parallel static mixers?
5. How/where is flocculation achieved for the MF/RO radial flow clarifier?
6. Is there a rapid mix basin for the Cypress 2010 Conventional SWTP's solids-contact clarifier?
7. Will the City continue providing lime softening at 2010 Conventional SWTP?
8. In Section J, Item 4., 2010 Conventional Plant, credit for three chlorine dioxide disinfection zones is claimed. However, in a note found in Section K for the proposed Sample Site No. 20, it is stated that the City will take credit for the entire transmission pipeline from the Secondary Reservoir to the Splitter box as one disinfection zone, not three. Please clarify.
9. Please provide the following sealed, signed and dated engineering drawings:
 - a. The connection of the RR WWTP transmission pipeline to the Cypress MF/RO 2008 SWTP's flow vault;
 - b. Disconnection of the raw surface water pipeline for the City's Headquarters Road Reservoir;
 - c. Isolation of the RO Permeate lagoon water from the Secondary Reservoir;
 - d. Details of cross-connection protection currently provided and proposed to be provided when RR WWTP effluent is being treated at the Cypress facility; and

- e. Isolation of the 3.0-MG and 5.0-MG GSTs' influent and effluent lines during the proposed full-scale operation of the DPR WTP.
10. Please provide a blending report with equipment specifications and drawings. Neither sheet of the submitted drawings shows what equipment is currently installed or will be installed to ensure that a 50-50 ratio of RO permeate source water to Secondary Reservoir water will be maintained.
11. The TCEQ letter dated February 8, 2013 read: [Please provide] "*all analytical data results for raw sewage and the RR WWTP's effluent for turbidity, total coliform, E. coli, culturable viruses, Giardia cysts, Cryptosporidium oocysts, and any other pathogens the City has been monitoring for the preceding five years. Include all analytical methods used and the laboratory's quality assurance and control methods and results.*"
 - a. Please provide a schematic identifying the following RR WWTP locations referenced on the analyses submitted in the PER:
 - i. Waste Water, untreated, Head Works;
 - ii. Waste Water, untreated;
 - iii. 1005 River Rd. CCB;
 - iv. Waste Water CCB;
 - v. 1005 River Rd Pre Outfall;
 - vi. 1005 River Road;
 - vii. Raw Wastewater River Road WWTP; and
 - viii. River Rd Aeration Outfall.

Please include a description of all treatment before each of the sample collection locations.

- b. It was the TCEQ's understanding that the City would provide a minimum of 12 monthly results for *Giardia cysts* and *Cryptosporidium oocysts*. The PER contains 11 months of analytical results. Please provide the results for January 2013. If pathogen monitoring continued after January 2013, please include results for February, March, April, and May of 2013. Please organize the data in summary tables.
12. The TCEQ letter dated February 8, 2013 read: [Please provide] "*the proposed location and type of all continuous online monitoring and automatic shutdown triggers at the RR WWTP.*"
 - a. Please provide a schematic that shows the location of all online monitors. Include the sample tap locations for any proposed grab sample monitoring.
13. The TCEQ letter dated February 8, 2013 read: [Please provide] "*the proposed location and type of all continuous online monitoring, grab sample monitoring taps, and automatic shutdown equipment at the temporary Cypress DPR WTP.*"
 - a. Please provide a schematic that shows the location of all online monitors. Identify each online monitor that will generate an automatic shutdown of the DPR WTP and the trigger level for each one. Please see attached schematics.
 - b. Identify where online nitrate monitors with automatic shutdown will be provided.

Please let me know if you have any questions. My direct line is 512-239-4453.

Sincerely,

Joel

Joel Klumpp | Team Leader | Technical Review and Oversight Team | TCEQ

