

Final Report for the November 10 – 12, 2014 Onsite Project Training at the City of Wichita Falls Cypress Water Treatment Plant

Executive Summary

On November 10 – 12, 2014, a team of TCEQ representatives conducted a site visit at the City of Wichita Falls' (City) temporary Direct Potable Reuse Water Treatment Plant (temporary DPR WTP) and Cypress Surface Water Treatment Plant (SWTP). The TCEQ team consisted of Jennelle Crane, TCEQ Water Supply Division (WSD); Merissa Green, TCEQ Region 4; Cliff Moore, Jacob Wright, and Aaron Rodrigues, TCEQ Region 3; and Jack C. Schulze, P.E., a TCEQ subcontractor. The purpose of this site visit was to assess the City's compliance with the provisions of the exceptions that TCEQ granted that allowed the City to distribute treated DPR water to the City's customers. During this site visit, the TCEQ staff:

- reviewed plant data produced during the first 120 days of full-scale operation (FSO);
- evaluated the current design, operation, and maintenance of the facilities at the Cypress SWTP site;
- visited the River Road Wastewater Treatment Plant (RRWTP) and inspected portions of the transmission line from the RRWTP to the temporary DPR facility at the Cypress SWTP site;
- conducted some limited chlorine, monochloramine, and free ammonia testing in the distribution system; and
- interviewed several of the operations, maintenance, and management staff at each of the facilities.

The results of the activities conducted during this On-site Project Training (OPT) event are summarized below.

Technical Summary

1) Reviewing plant data

Some of the TCEQ representatives reviewed the procedures and data sources used to complete the monthly operating reports (SWMORs and supplemental reports) that the City routinely submits. The team identified one period when plant staff seems to have place a membrane filter back into service after it had failed a Direct Integrity Test.

There were also a few data discrepancies that appear to be related to transcription errors, i.e., data from daily log sheets were entered inaccurately. However, these errors did not interfere with the ability of the operators to determine compliance with minimum treatment technique requirements.

Other members of TCEQ team reviewed the calibration logs stored in the on-line turbidimeters and the maintenance logs for the on-line instruments. The team also reviewed the sample collection and analysis procedures used by the plant operators and confirmed that the City was complying with the sampling requirements contained in the exception to operate

the temporary DPR WTP. For example, the team confirmed that the City was monitoring the pH at the effluent of the 2010 WTP clarifier prior to pH adjustment in the recarbonation basin.

The team also reviewed the City's distribution flushing records. During this review, the team learned that that City had decided not to accept the temporary exception for monthly distribution system flushing because it had determined that the TCEQ's Nitrification Action Plan (NAP) procedures required to obtain a more permanent exception were too onerous to pursue the exception. The City had developed an alternative NAP approach and is using it to reduce the volume of water being flushed each time.

2) Evaluating the plant design

The team confirmed that the DPR and 2010 WTPs continue to be valved off from the rest of the Cypress SWTP as required by the temporary exceptions. They also confirmed that City had attempted to address the cross-connections in the chlorine and ammonia feed facilities that were noted during previous site visits but had missed some of the ones on backup/standby feeders. During the tour, the operators marked each of the remaining cross-connections so that they could be addressed following the site visit.

The City had not yet installed spill-containment skids for several of the chemical day-tank totes at the DPR WTP and this deficiency was again brought to the City's attention.

The team also noted that some of the block-and-bleed (B&B) valves used to isolate the microfilter (MF) membrane units were manually-operated devices. Each of the SOPs that involve isolating the MF filter cell (i.e., the Microfilter Clean-In-Place (CIP) SOPs) must be updated or a new SOP created for isolating the cell when appropriate must be created.

There is no block-and-bleed valve configuration on the MF filter backflush pumping system. The City believes that the TCEQ has approved the existing design although the approval letter does not explicitly state that the B&B is not required because the MF filtrate tank (from which the backflush pump draws, is located well above the overflow elevation of the MF units. The City may be correct because the TCEQ approval letter did explicitly require the City to install the additional manual B&B capabilities on the MF influent lines. Although there is little possibility that the cleaning chemicals could be introduced into the filtrate tank via the backflush system, the lack of documentation on the backflush system B&B could lead to continued confusion between the City and TCEQ.

3) Visiting wastewater plant and inspecting transmission line

Jack, Merissa, and Aaron visited the RRWTP to familiarize the regional investigators with the wastewater treatment processes and the monitoring regimen for the water entering the DPR transmission line to the Cypress WTP facilities. The team checked the calibration history, alarm settings, and monitoring points for the on-line turbidimeters, chlorine, monochloramine, and free ammonia residual analyzers and reviewed the items that needed to be evaluated during subsequent inspections.

The team visually spot checked a few thousand feet of the DPR transmission line, including the indirect potable reuse tap at the City's golf course. The team also reviewed the inspection process that the wastewater operators use when they check the integrity of the line. The

RRWTP operators are responsible for inspecting the front half of the transmission line and the Cypress SWTP staff checks the back half of the line. No visual signs of pipeline deterioration or vandalism were observed at any of the points that were spot checked.

4) Distribution system testing

Some of the team members accompanied City operators to three dead end lines in the distribution system. At the time of the site visit, the Jasper Street WTP was off-line and the entire City was being supplied by the Cypress SWTP facilities. Consequently, the team had the operator select distribution sites located in the northeastern part of the City because those are relatively remote from the Cypress SWTP pump station. Two of the sites were located in residential areas and one was located in a portion of the system that serves commercial and small industrial buildings.

The team observed the operators conduct limited flushing at each site and collected and analyzed samples for total chlorine, monochloramine, and free ammonia. Samples for nitrite and nitrate analyses were also collected in case they were needed but these analyses were not required because the disinfectant residuals were all greater than 2.0 mg/L and ammonia levels were consistently low.

5) Interviewing staff

During the site visit, the TCEQ representatives had numerous conversations with plant staff. Most of these conversations and interviews occurred as the TCEQ evaluated the plant design and reviewed the operational and maintenance logs, data, and procedures. For example, when the team found discrepancies in the internal calibration records for some of the turbidimeters at the DPR WTP, they met with the maintenance staff, who produced the records showing that these particular instruments had been repaired and replaced at some point during the previous 9 months. The maintenance supervisor also reviewed the procedures and maintenance logs for the weekly performance verification tests conducted on the on-line instruments and the team was able to resolve all of its outstanding questions about the units and procedures.

The whole team also conducted an exit interview with plant and City representatives. During this meeting, the TCEQ representatives reviewed the findings of the site visit, discussed the corrective actions that the City would need to take, and confirmed that the City did not want to accept the conditional exception that allowed reduced distribution system flushing.

Recommendations

The TCEQ should document its decision about whether or not the lack of a block and bleed on the backflush lines is acceptable (See item 2 above). The City should be required to address all of the deficiencies, violations, and weaknesses noted during the site visit. These items will be listed in the TCEQ's final Comprehensive Compliance Investigation report and will include the need for revised SOPs and most, if not all, of the other concerns noted in this OPT site visit summary.