

RED AND AVERA		What has been done?	Does the corrective Action fix the issue?
12-17-2013 letter item			
Membrane Plant			
1. CFE span should include above 1.0 NTU			NO
2.a. IFE formulas should include all high turbidities at all times.		tested by entering	
2.b. IFE work to fix possible interference from air bubbles in the sample line.		still working on	
2.c. Automatic shut-downs should be instituted for IFE turbidities.		alarm sheet	
2.a. Automate or improve collection of data for maximum confirmed membrane IFE		max + 5 min now look at ~~and~~ confirmed heading	
4.b. Automate or improve collection of data for Membrane CFE ^{flux printed}		spreadsheet set up for DPR to calc. Normalized flux	
4.c. Automate or improve collection of data for Temperature corrected flux;		spreadsheet calc. Temp corrected flux old equation	
4.d. Automate or improve collection of data for Duration of each direct integrity test		date, time & start pressure recorded	
4.f. Automate or improve collection of data for The addition of comments to each SWMOR when a DIT is triggered or fails.		noted has happened	
Cypress 2010 Plant, TP 410071 (conventional plant)			
5. The sample location for CFE turbidity levels needs to be relocated to the transfer pumps for the 2010 clearwell.		yes located on discharge line of transfer pump	
6. All of the 15-minute turbidity readings are considered when the maximum IFE reading for the day		sample provided as 5	
7. The plant staff needs to include the results of chlorine dioxide tests conducted at the end of zone D1, D2 and D3 when determining the inactivation ratio.		O, O @ D1 & D2 Ozone where credit in D3	

Planning on resubmitting CT's when DPR is done

RED AND VERA

12-17-2013 letter item

Membrane Plant

What has been done?

Does the corrective Action fix the issue?

1. CFE span should include above 1.0 NTU *still needs to.*

2.a. IFE formulas should include all high turbidities at all times.
two consecutive

2.b. IFE work to fix possible interference from air bubbles in the sample line.
all

2.c. Automatic shut-downs should be instituted for IFE turbidities.

2.a. Automate or improve collection of data for maximum confirmed membrane IFE *first 4 values, 0.100*

4.b. Automate or improve collection of data for Membrane CFE; *same*

4.c. Automate or improve collection of data for Temperature corrected flux; *20C*

4.d. Automate or improve collection of data for Duration of each direct integrity test.

4.e. Automate or improve collection of data for The addition of comments to each SWMOR when a DIT is triggered or fails.

Cypress 2010 Plant, TP 410071 (conventional plant)

5. The sample location for CFE turbidity levels needs to be relocated to the transfer pumps for the 2010 cleanwell.

6. All of the 15-minute turbidity readings are considered when the maximum IFE reading for the day

7. The plant staff needs to include the results of chlorine dioxide tests conducted at the end of zone D1, D2 and D3 when determining the inactivation ratio.

No

tested by entering Manual Clock to see if 3

still working on moving valve without No

Alarm sheet

if more than 4 download look No

No

spreadsheet using old 'Red' Connection equations

Geopon spreadsheets

all 100 Durations 2.0 minutes / Comments LCL = 0.65psi

people able to transfer data to MMOR

YES

YES

YES ?

relocated to discharge of 2010 transfer pumps

same as for Membranes

0.0, 0.0, 11-37-14 pack Mark and all monitored

will not monitor D3=0.0, go back to DPR WTP 45min to 1hr for analysis.

EXCEPTION CONDITIONS		City Meeting Requirements
1. These temporary exceptions shall be revoked once the City has completed a TCEQ acceptable Full-Scale Verification Test. Approval of additional temporary exceptions will be considered during the TCEQ's review of a TCEQ-acceptable Report.		
1.a. The conditional granting of the temporary exceptions is valid for a period of two years from the date of this letter or until the City completes a TCEQ-acceptable Full-Scale Verification Test, whichever occurs first. If the City fails to complete construction of the TCEQ-approved modifications in accordance with all TCEQ requirements, conduct a TCEQ-approved Full-Scale Verification Test of the DPR WTP, and submit a TCEQ-approvable Report within two years of the date of this letter, all temporary exceptions will be revoked.		
1.b. The conditional granting of the above temporary exceptions is valid only for the approval to construct the TCEQ-approved modifications to the Cypress SWTPs and conduct verification testing of the proposed temporary Cypress DPR WTP treatment process contained in the City's Concept Paper for the Emergency Reuse of Wastewater Effluent as a Source for Direct Potable Reuse in Wichita Falls (received November 13, 2012) and Preliminary Engineering Report For Temporary Direct Potable Reuse Project For City of Wichita Falls, Texas (dated May 2013).		
2. The City must adopt and comply with all TCEQ-required amendments and revisions to the City's proposed Protocol as specified in this letter and enclosures for the verification testing of the temporary Cypress DPR WTP. Failure to comply with one or more of the conditions of this letter and its enclosures may result in the City being required to shut down the Full-Scale Verification Test and possibly restart it in order to accomplish the TCEQ's minimum required test duration while complying with the TCEQ conditions.		

RR WWTP Effluent as PWS Source Water

3. During the required verification testing, the effluent from the proposed temporary Cypress DPR WTP cannot be discharged to the City's potable water distribution system. Instead, this effluent must be discharged through a permitted outfall in accordance with the RR WWTP TPDES wastewater discharge permit or reused in accordance with a TCEQ issued reclaimed water reuse authorization.	piping. see conditions #12	
4. Only effluent from the RR WWTP that meets all the requirements in the City's Chapter 210 reclaimed water reuse authorization and in the RR WWTP's wastewater discharge Permit No. WQ00104419-000 can be sent to the temporary Cypress DPR WTP	No effluent without permit No trigger released yet	

EXCEPTION CONDITIONS	How?	The City meeting requirements?
6. Prior to beginning the verification testing, automatic shut-down controls and alarms for summoning the operators must have been constructed and tested for taking.		
6.a. The RR WWTP effluent transfer pumps (to the Cypress facility) out of service when the effluent exceeds the Chapter 210 reclaimed water reuse authorization discharge requirements.	N/A	
6.b. A MF membrane unit out of service when its filtrate turbidity level is greater than 0.100 nephelometric turbidity units (NTU) for two consecutive five-minute readings	N/A	
6.c. Waste Lagoon No. 3's reuse pumps out of service when the partially treated RR WWTP flow rate is greater than the Secondary Reservoir's raw surface water flow rate to the Cypress Splitter Box	N/A	
6.d. A gravity media filter out of service when the individual filter effluent turbidity level exceeds 0.3 NTU (or 0.15 NTU if additional removal credit is being sought) for two consecutive 15-minute readings	N/A	
6.e. All the 2010 SWTP clearwell's transfer pumps out of service when the volume of filtered water in the 2010 SWTP clearwell is less than 50.0-percent of the reported full operating capacity	N/A	

EXCEPTION CONDITIONS	How?	The City Meeting Requirements
11. All treatment chemicals and media used in the treatment of the RR WWTP effluent and Secondary Reservoir raw surface water must conform to American National Standard Institute/National Sanitation Foundation (ANSI/NSF) Standard 60 for direct additives and ANSI/NSF Standard 61 for indirect additives and must be certified by an organization accredited by ANSI. This includes:		
disinfectants,		
coagulants,		
acids,		
caustics,		
fluosillicic acid,		
all chemicals used in the cleaning of the MIF and RO membranes.	<i>Handwritten: all chemicals used in the cleaning of the MIF and RO membranes.</i>	
Finished Water Quality		
The total culturable virus concentration is no greater than 2.222×10^7 most probable number (MPN)/L;	<i>Handwritten: 10⁶ off</i>	<i>Handwritten: 10⁶ off</i>
The Giardia cyst concentration is no greater than 7.000×10^5 cysts/L;		<i>Handwritten: 10⁶ off</i>
The Cryptosporidium oocyst concentration is no greater than 2.999×10^5 oocysts/L;	<i>Handwritten: all non-potable 2012 occurs before 2012</i>	<i>Handwritten: 10⁶ off</i>
No E. coli is present;		<i>Handwritten: 10⁶ off</i>
The levels for all primary and secondary drinking water standards do not exceed the regulatory levels in 30 TAC Chapter 290, Subchapter F.		<i>Handwritten: 10⁶ off</i>

EXC AVAILABILITY	How?	When?	Where?	By Whom?
12.b.ii. If leaking from either of these two weir gates is noted, immediate corrective actions must be taken to stop the leaking and prevent the exposure of the 1961 and 1987 SWTPs' pretreatment facilities to the partially treated RR WWTP effluent;				no corrective action reported
12.b.iii. As proposed by the City in your July 29, 2013 email, the drain valve in the 1961 SWTP settling basin must be maintained open during the verification testing (and during the proposed six-month temporary discharge to the potable water distribution system);				✓
12.b.iv. The drain valve in the 1987 SWTP Parshall flume must be maintained open during the verification testing (and during the proposed six-month temporary discharge to the potable water distribution system); and				✓
12.b.v. The results of the eight-hour visual inspections and any corrective actions must be recorded and included with the Report.				To be done
12.c. As shown in Detail No. 1 on Sheet 2 of the engineering drawings in the PER's Appendix N, also included with your July 16, 2013 letter, the RO membrane permeate 36-inch pipeline from the RO permeate tanks to the 2010 and 1961 SWTP clearwells must be cut (or an appropriate fitting removed) after the RO permeate flow meter and connected to the proposed temporary above-ground, 24-inch pipeline to waste Lagoon No. 3. The 36-inch pipe to the clearwells must have a blind flange installed or be capped to prevent the entrance of contaminants during the DPR WTP's verification testing.				reported, covered up
12.d. Detail No. 2 on Sheet 2 of the engineering drawings in the PER's Appendix N, also included with your July 16, 2013 letter, must be modified to require a minimum separation distance of nine (9) inches from the bottom of the 24-inch pipe to the top elevation of the waste Lagoon No. 3's berm.				✓

EXCEPTION CONDITIONS		How?	When/How Often?
14. As noted in the TCEQ letters approving exceptions for the use of membranes and construction for the Cypress 2008 SWTP, each individual MF membrane unit's and RO membrane skid's piping must be equipped with cross-connection protection in the form of an air gap, double block-and-bleed valve system, isolation valves with removable pipe spools, or another TCEQ-approved method. The following piping must have cross-connection protection:			
14.a.	Feed water piping;		
14.b.	MF filtrate piping;		
14.c.	RO permeate piping;		
14.d.	Backwash supply piping;		
14.e.	Backwash waste piping;		
14.f.	RO concentrate piping;		
14.g.	Maintenance clean solution feed piping;		
14.h.	Maintenance clean recirculation piping;		
14.i.	Maintenance clean solution waste piping;		
14.j.	Clean-in-place (CIP) solution feed piping;		
14.k.	CIP solution recirculation piping; and		
14.l.	CIP solution waste piping.		
Ask about:			
> Flux rate at 20 C			
Temperature correction equation			
> BW frequency			
> MC frequency			
which one, add used TCF = $C(R-0.0239) \times (10-T)$ EPA			
		30	by 25 approx

Pre-formed Chloramines as a Pre-disinfectant

15. The City must provide an additional 1.0-log viral inactivation when using pre-formed chloramines (ammonia before chlorine) as a pre-disinfectant. Based on consultation with EPA Region 6 staff, the TCEQ has concluded that 1.0-log of additional viral log inactivation will provide an equivalent safety factor to that provided when chlorination precedes ammonia addition. Therefore, using pre-formed chloramines will require at least 9.0-log of total viral removal and inactivation through the temporary Cypress DPR WTP.		operation of 1.0 log viral inactivation required in DPR WTP.
16. The City must monitor for cyanide at the effluent of the 2010 SWTP clearwell during the verification testing as specified in Enclosure J: Full-Scale Verification Test Protocol Minimum Monitoring and Reporting of Water Qualities and Flow Rates.		collected

EXCEPTION CONDITIONS	How?	Requirements
19.j. A CIP procedure once every 30 days.	with see	
20. The City submitted a 2004 MWH Challenge Study prepared for the California Department of Health Services. Based on this study and the previously submitted direct integrity testing, TCEQ can approve a 2.8-log removal for <i>Cryptosporidium</i> and <i>Giardia</i> for the installed membranes. A separate letter will be prepared and mailed to the City with a response to the Challenge Study submittal.	✓	
21. Unless superseded by a more current TCEQ letter, the City must conduct a direct integrity test (DIT) on each MF membrane unit treating water during the verification testing using the test pressure (P_{test}) of 16.5 pounds per square-inch (psi) and upper control limit (UCL) of 1.65 psi/minute specified in the TCEQ's April 30, 2012 letter.		stand down for 1-29-14
21.a. At least once each 24-hour period		for both units
21.b. After each CIP procedure		
21.c. After failing a preceding DIT; and		
21.d. Before a MF membrane unit being tested is returned to service after being removed for repair and/or removed from service for exceeding 0.100 NTU for two consecutive five-minute readings.	✓	
22. The City can use a lower control limit (LCL) that is less than 1.65 psi/minute, such as the 0.65 psi/minute noted in your letter dated July 31, 2013. Whether the City uses the TCEQ-approved UCL or a selected LCL, the pressure sensors/gauges must have a plus-minus error small enough to ensure that the measured P_{test} is high enough and pressure decay rate is less than the approved UCL.	with LCL 0.65	set in SCADA
23. When any one of the MF membrane units used during the verification testing has an individual filtrate turbidity level greater than 0.100 NTU for two consecutive five-minute readings, the MF membrane unit must automatically shut-down, an audible alarm be sounded to summon the operators, the membrane repaired, and the unit must pass a TCEQ-approved DIT before being returned to service.	✓	set in SCADA
24. If the selected MF membrane unit for verification testing cannot be repaired, cannot pass a TCEQ-approved DIT, or exceeds the 0.100 NTU limit for two consecutive five-minute readings in a one-hour period after being returned to service, then the verification testing must be temporarily halted and the City must contact the TCEQ Technical Review & Oversight Team at (512) 239-4691 to discuss the problem.	(hope don't happen)	unknown as time
25. The selected MF membrane unit's influent and effluent water qualities and operating parameters must be monitored, analyzed, and recorded as specified in the Full-Scale Verification Test Protocol section of this letter, Enclosure J: Full-Scale Verification Test Protocol Minimum Monitoring and Reporting of Water Qualities and Flow Rates, and Enclosure B: Full-Scale Verification Test Protocol Monitoring and Reporting of Operating Processes.	samples being collected for analysis	set in SCADA

EXCEPTION CONDITIONS

The City is testing requirements

How?	How?
31. The 2008 SWTP radial flow clarifier basin cannot be operated at a surface overflow rate greater than 0.6 gpm/sf.	based on WWTG
32. The 2010 SWTP Accelerator clarification basin cannot be operated at a surface overflow rates greater than 1.0 gpm/sf.	2010 particle flow
33. If one of the 2010 SWTP gravity media filter's effluent exceeds 0.3 NTU for two consecutive 15-minute readings during the verification testing:	
33.a. The filter must be automatically taken out of service;	GLH DA
33.b. An alarm must sound to summon the operators;	
33.c. The filter must be backwashed; and	
33.d. The effluent discharged to filter-to-waste until the turbidity level is less than 0.3 NTU before returning to service.	
If the City wishes to optimize the gravity media filters' individual performance during the verification testing for additional log removal credits, then a 2010 SWTP gravity media filter's effluent that exceeds 0.15 NTU for two consecutive 15-minute readings during the	
33.e. Must be automatically taken out of service;	
33.f. An alarm must sound to summon the operators;	
33.g. The filter must be backwashed; and	
33.h. The effluent discharged to filter-to-waste until the turbidity level is less than 0.15 NTU before returning to service.	

EXCEPTION CONDITIONS

Do you need requirements?

35. No gravity media filter backwash waste, MF and RO membrane backwash or chemical cleaning waste, or clarifier blow-down waste can be discharged to waste Lagoon No. 3.

36. All liquid and solid waste generated during the verification testing must be disposed of in accordance with the TCEQ permits, rules and regulations.

Condition 35
✓

OK WA permits after?

RED AND VERA	EXCEPTION CONDITIONS	How?	The City meeting requirements?
	1. These temporary exceptions shall be revoked once the City has completed a TCEQ acceptable Full-Scale Verification Test. Approval of additional temporary exceptions will be considered during the TCEQ's review of a TCEQ-acceptable Report.		
	1.a. The conditional granting of the temporary exceptions is valid for a period of two years from the date of this letter or until the City completes a TCEQ-acceptable Full-Scale Verification Test, whichever occurs first. If the City fails to complete construction of the TCEQ-approved modifications in accordance with all TCEQ requirements, conduct a TCEQ-approved Full-Scale Verification Test of the DPR WTP, and submit a TCEQ-approvable Report within two years of the date of this letter, all temporary exceptions will be revoked.		
	1.b. The conditional granting of the above temporary exceptions is valid only for the approval to construct the TCEQ-approved modifications to the Cypress SWTPs and conduct verification testing of the proposed temporary Cypress DPR WTP treatment process contained in the City's Concept Paper for the Emergency Reuse of Wastewater Effluent as a Source for Direct Potable Reuse in Wichita Falls (received November 13, 2012) and Preliminary Engineering Report For Temporary Direct Potable Reuse Project For City of Wichita Falls, Texas (dated May 2013).		
	2. The City must adopt and comply with all TCEQ-required amendments and revisions to the City's proposed Protocol as specified in this letter and enclosures for the verification testing of the temporary Cypress DPR WTP. Failure to comply with one or more of the conditions of this letter and its enclosures may result in the City being required to shut down the Full-Scale Verification Test and possibly restart it in order to accomplish the TCEQ's minimum required test duration while complying with the TCEQ conditions.		

RR WWTP Effluent as PWS Source Water

EXCEPTION CONDITIONS	How?	The City meeting requirements?
3. During the required verification testing, the effluent from the proposed temporary Cypress DPR WTP cannot be discharged to the City's potable water distribution system. Instead, this effluent must be discharged through a permitted outfall in accordance with the RR WWTP TPDES wastewater discharge permit or reused in accordance with a TCEQ issued reclaimed water reuse authorization.		
4. Only effluent from the RR WWTP that meets all the requirements in the City's Chapter 2-10 reclaimed water reuse authorization and in the RR WWTP's wastewater discharge Permit No. WQ00104419-000 can be sent to the temporary Cypress DPR WTP		
5. During the TCEQ-approved verification test period (interrupted only during backwashing of filters and membranes and cleaning procedures for the membranes), the temporary Cypress DPR WTP must continuously demonstrate it can produce a safe quality of water. A minimum total treatment of 9.0-log for viruses, 7.0-log for Giardia and 5.5-log for <i>Cryptosporidium</i> must be provided. The requirements are:		
5.a. Effluent water quality from the 2010 SWTP clearwell that does not exceed:		
5.a.i. Any maximum contaminant level for any regulated primary or secondary drinking water standards contained in 30 TAC Chapter 290, Subchapter F; and		
5.a.ii. 10.0 milligrams per liter (mg/L) for nitrate,	shutdown	

EXCEPTION CONDITIONS	How?	The City meeting requirements?
5.b. A minimum 4.0-log removal of viruses	DIT	
5.c. A minimum 6.0-log removal of <i>Giardia</i> cysts		
5.d. A minimum 5.5-log removal of <i>Cryptosporidium</i> oocysts		
5.e. Sufficient inactivation through disinfection throughout the proposed DPR WTP that under varying source water qualities and with the 10.0-million gallon (MG) GST in service (at a minimum 50.0-percent volume) to demonstrate that the following will be achieved: 5.e.i. A minimum of 5.0-log inactivation of viruses; and 5.e.ii. A minimum of 1.0-log inactivation of <i>Giardia</i> cysts must be provided at all times regardless of the amount of removal achieved.		
6. Prior to beginning the verification testing, automatic shut-down controls and alarms for summoning the operators must have been constructed and tested for taking.		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
6.a. The RR WWTP effluent transfer pumps (to the Cypress facility) out of service when the effluent exceeds the Chapter 210 reclaimed water reuse authorization discharge requirements.		
6.b. A MF membrane unit out of service when its filtrate turbidity level is greater than 0.100 nephelometric turbidity units (NTU) for two consecutive five-minute readings	covered in shutdown procedures	
6.c. Waste Lagoon No. 3's reuse pumps out of service when the partially treated RR WWTP flow rate is greater than the Secondary Reservoir's raw surface water flow rate to the Cypress Splitter Box		
6.d. A gravity media filter out of service when the individual filter effluent turbidity level exceeds 0.3 NTU (or 0.15 NTU if additional removal credit is being sought) for two consecutive 15-minute readings		
6.e. All the 2010 SWTP clearwell's transfer pumps out of service when the volume of filtered water in the 2010 SWTP clearwell is less than 50.0-percent of the reported full operating capacity		
6.f. All the 10.0-MG GST's high service pumps out of service when:		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
6.f.i. The nitrate level in the 10.0 MG GST's effluent is greater than 10.0 mg/L; or 6.f.ii. The 10.0-MG GST's volume of water is less than 50.0-percent of the reported full operating capacity	not FSV	
7. The results of the above testing of the automatic shutdown triggers and controls must be included in the Full-Scale Verification Test Report.		
8. <i>Giardia</i> and <i>Cryptosporidium</i> levels (enumeration) in the RR WWTP effluent, water in different stages of treatment, and the effluent from the 2010 SWTP clearwell must be monitored and reported using a real-time, on-site quantitative polymerase chain reaction (qPCR) analytical method, reported as being currently used by the City, and an off-site EPA Method 1623 at the frequencies specified in Enclosure J: <u>Full-Scale Verification Test Protocol Minimum Monitoring and Reporting of Water Qualities and Flow Rates</u>. When samples are collected for analysis at an off-site laboratory using EPA Method 1623, a portion of the same water (split sample) must also be collected for analysis using the on-site qPCR method.		
9. The flow rate of the partially treated RR WWTP effluent from waste Lagoon No. 3 to the influent of the Cypress Splitter Box must continuously be 50.00-percent, or less, of the total flow rate after blending with the Secondary Reservoir raw surface water.	2010 Parshull Flume - Lagoon pumps	

EXCEPTION CONDITIONS	How?	The City meeting requirements?
10. Continuous flow monitoring, flow control, alarms and automatic shut-down controls must be in place to prevent the blended flow from the Splitter Box from containing greater than 50.00-percent partially treated RR WWTP effluent from waste Lagoon No. 3.		
11. All treatment chemicals and media used in the treatment of the RR WWTP effluent and Secondary Reservoir raw surface water must conform to American National Standard Institute/National Sanitation Foundation (ANSI/NSF) Standard 60 for direct additives and ANSI/NSF Standard 61 for indirect additives and must be certified by an organization accredited by ANSI. This includes:		
disinfectants,		
coagulants,		
acids,		
caustics,		
fluosilicic acid,		
all chemicals used in the cleaning of the MF and RO membranes.		
Finished Water Quality		
The total culturable virus concentration is no greater than 2.222×10^{-7} most probable number (MPN)/L;		
The Giardia cyst concentration is no greater than 7.000×10^{-6} cysts/L;		

EXCEPTION CONDITIONS	How?	Are City meeting requirements?
The Cryptosporidium oocyst concentration is no greater than 2.999×10^{-5} oocysts/L;		
No E. coli is present;		
The levels for all primary and secondary drinking water standards do not exceed the regulatory levels in 30 TAC Chapter 290, Subchapter F.		

Required Isolation of Water in Different Stages of Treatment and Equipment Not Used in the Treatment of RR WWTP Effluent

12. Because of concerns regarding introducing contamination into the Lake Kemp/Headquarters Road Reservoir raw water line, 1961 SWTP and 1987 SWTP treatment equipment and associated clearwells and piping, the 3.0-MG, 5.0-MG and 10.0-MG GSTs, and associated appurtenances, the following conditions must be met:		
12.a. The 2008 SWTP flow control vault's valve located on the Lake Kemp/Headquarters Road Reservoir pipeline must remain closed at all times during the verification testing (and during the proposed six-month temporary discharge of potable water to the distribution system). The City must take the following actions:		
12.a.i. The valve and flow meter after the valve and before the tee must be inspected at least once each eight-hour shift;		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
12.a.ii. If leaking of the RR WWTP effluent back into the Headquarters Road transmission pipeline is noted, immediate corrective actions must be taken to stop the leaking and prevent the exposure of the pipeline to the RR WWTP effluent; and		
12.a.iii. The results of the eight-hour visual inspections and any corrective actions must be recorded and included with the Report.		

12.b. The weir gates in the Cypress Splitter Box to the 1961 and 1987 SWTPs must be maintained closed and:	1961 Leaking	
12.b.i. Visually inspected at least once each eight-hour shift for leakage;		
12.b.ii. If leaking from either of these two weir gates is noted, immediate corrective actions must be taken to stop the leaking and prevent the exposure of the 1961 and 1987 SWTPs' pretreatment facilities to the partially treated RR WWTP effluent;		
12.b.iii. As proposed by the City in your July 29, 2013 email, the drain valve in the 1961 SWTP settling basin must be maintained open during the verification testing (and during the proposed six-month temporary discharge to the potable water distribution system);		
12.b.iv. The drain valve in the 1987 SWTP Parshall flume must be maintained open during the verification testing (and during the proposed six-month temporary discharge to the potable water distribution system); and		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
12.b.v. The results of the eight-hour visual inspections and any corrective actions must be recorded and included with the Report.		
12.c. As shown in Detail No. 1 on Sheet 2 of the engineering drawings in the PER's Appendix N, also included with your July 16, 2013 letter, the RO membrane permeate 36-inch pipeline from the RO permeate tanks to the 2010 and 1961 SWTP clearwells must be cut (or an appropriate fitting removed) after the RO permeate flow meter and connected to the proposed temporary above-ground, 24-inch pipeline to waste Lagoon No. 3. The 36-inch pipe to the clearwells must have a blind flange installed or be capped to prevent the entrance of contaminants during the DPR WTP's verification testing.		
12.d. Detail No. 2 on Sheet 2 of the engineering drawings in the PER's Appendix N, also included with your July 16, 2013 letter, must be modified to require a minimum separation distance of nine (9) inches from the bottom of the 24-inch pipe to the top elevation of the waste Lagoon No. 3's berm.		
12.e. A 42-inch, 90-degree elbow must be removed (as proposed by the City in your email dated July 29, 2013) from the 2010 SWTP transfer pumps' discharge and the discharge piping connected to the temporary 12-inch, above-ground pipe discharging into the manhole that drains to the 2010 SWTP recovery well located on waste Lagoon No. 2. A blind flange or cap must be installed on the 42-inch pipe to the 3.0-MG, 5.0-MG and 10.0-MG GSTs to prevent the entrance of contaminants during the DPR WTP's verification testing and TCEQ-approved temporary operation.		
12.f. Detail No. 4 on Sheet 2 of the engineering drawings in the PER's Appendix N, also included with your July 16, 2013 letter, must be modified to require a minimum separation distance of nine (9) inches from the bottom of the 12-inch pipe to the top elevation of the manhole.		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
12.g. The backwash supply pipe for the 2010 SWTP gravity media filters must be disconnected from the backwash pumps' pipe coming from the Cypress High Service Pump Station during the verification testing. The pipe from the pump station will need to be temporarily plugged or capped at the point of disconnection to prevent the entrance of contaminants. During the verification testing, the City will need to use one of the following methods to supply backwash water for the 2010 SWTP gravity media filters by temporarily connecting the backwash supply pipe at the 2010 SWTP gravity media filters either:		
12.g.i To a pipe from the temporary 2010 SWTP transfer pumps' discharge header (going to waste) with necessary flow and pressure control valves to prevent blowing media out of the filters;	Option Used	
12.g.ii. Directly to the discharge of one of the 2010 SWTP transfer pumps with any necessary flow and pressure control valves solely for the purpose of backwashing the tested 2010 SWTP gravity media filters; or	Option not used	
12.g.iii. To a temporary dedicated pump and any necessary flow and pressure control valves that is taking suction from either: 1. The 2010 SWTP clearwell; or 2. An acceptable temporary storage tank that will be filled with gravity media filtered water or water from the 2010 SWTP clearwell transfer pumps.	• Option not used	
13. All of the above referenced valve and gate closures and piping modifications must be completed prior to the RR WWTP transfer pumps being turned on after connecting the wastewater effluent piping to the temporary Cypress DPR WTP. TCEQ staff will inspect the DPR WTP to confirm isolation as described in Item No. 12 has been completed. The inspection must occur before the Full-Scale Verification Test may begin.	Site Vist conducted 1/9/2014	No. See Jennelle summary/pictures and TCEQ FER response dated ?

EXCEPTION CONDITIONS	How?	The City meeting requirements?
14. As noted in the TCEQ letters approving exceptions for the use of membranes and construction for the Cypress 2008 SWTP, each individual MF membrane unit's and RO membrane skid's piping must be equipped with cross-connection protection in the form of an air gap, double block-and-bleed valve system, isolation valves with removable pipe spools, or another TCEQ-approved method. The following piping must have cross-connection protection:		
14.a. Feed water piping;		
14.b. MF filtrate piping;		
14.c. RO permeate piping;		
14.d. Backwash supply piping;		
14.e. Backwash waste piping;		
14.f. RO concentrate piping;		
14.g. Maintenance clean solution feed piping;		
14.h. Maintenance clean recirculation piping;		
14.i. Maintenance clean solution waste piping;		
14.j. Clean-in-place (CIP) solution feed piping;		
14.k. CIP solution recirculation piping; and		
14.l. CIP solution waste piping.		

Pre-formed Chloramines as a Pre-disinfectant

EXCEPTION CONDITIONS	How?	The City meeting requirements?
15. The City must provide an additional 1.0-log viral inactivation when using pre-formed chloramines (ammonia before chlorine) as a pre-disinfectant. Based on consultation with EPA Region 6 staff, the TCEQ has concluded that 1.0-log of additional viral log inactivation will provide an equivalent safety factor to that provided when chlorination precedes ammonia addition. Therefore, using pre-formed chloramines will require at least 9.0-log of total viral removal and inactivation through the temporary Cypress DPR WTP.		
16. The City must monitor for cyanide at the effluent of the 2010 SWTP clearwell during the verification testing as specified in Enclosure J: Full-Scale Verification Test Protocol Minimum Monitoring and Reporting of Water Qualities and Flow Rates.		
Chloramines for Inactivation of Pathogens at Subsequent Disinfection Zones		
17. The City must monitor and use the monochloramine residual to calculate the inactivation credit for a disinfection zone where chloramines—specifically monochloramine—are the disinfectant during the verification testing.		
18. During the verification testing, the free ammonia, free chlorine, total chlorine and nitrite levels while treating the RR WWTP effluent must be monitored at the locations and frequencies specified in Enclosure J: Full-Scale Verification Test Protocol Minimum Monitoring and Reporting of Water Qualities and Flow Rates. The following analytical		
18.a. Free ammonia: EPA 350.1 or SM* 4500-NH3-G		
18.b. Free chlorine: One of the methods in 30 TAC §290.110(d)(1) except that a color comparator cannot be used;		
18.c. Monochloramine: SM* 4500-Cl D or SM* 4500-Cl F;		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
18.d. Total chlorine: One of the methods in 30 TAC §290.110(d)(1) except that a color comparator cannot be used; and		
18.e. Nitrite: EPA 300.0 or EPA 353.2.		

Microfiltration Membranes		
19. The temporary exception to use MF membranes in the treatment of the RR WWTP effluent is specifically and exclusively for the Siemens Memcor (previously distributed by USFilter) S10V MF membranes for which an exception was previously granted and for which the City received TCEQ approval to construct on August 19, 2004. The following conditions remain in place:		
19.a. A feed-side surface area of 334.9 square-feet (sf);		
19.b. A nominal pore size of 0.2-micron;		
19.c. Maximum transmembrane pressure (TMP) of -12 pounds per square-inch (psi);		
19.d. Water temperature range of 1° to 40° C; and		
19.e. pH tolerance range of 2 to 12.		
19.f. Five tanks containing 504 submerged MF membrane elements;		
19.g. A maximum instantaneous flux rate of 19.6 gallons per square-foot per day (gfd) at 20° C; $J_{20} = J_T \times [1.784 - (0.0575 \times T) + (0.0011 \times T^2) - (10^{-5} \times T^3)]$		
19.h. A three-minute backwash duration once every 25 minutes;	Doing every 30 min	
19.i. A 32-minute maintenance clean once per day; and		
19.j. A CIP procedure once every 30 days.		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
20. The City submitted a 2004 MWH Challenge Study prepared for the California Department of Health Services. Based on this study and the previously submitted direct integrity testing, TCEQ can approve a 2.8-log removal for <i>Cryptosporidium</i> and <i>Giardia</i> for the installed membranes. A separate letter will be prepared and mailed to the City with a response to the Challenge Study submittal.		
21. Unless superseded by a more current TCEQ letter, the City must conduct a direct integrity test (DIT) on each MF membrane unit treating water during the verification testing using the test pressure (P_{test}) of 16.5 pounds per square-inch (psi) and upper control limit (UCL) of 1.65 psi/minute specified in the TCEQ's April 30, 2012 letter.		
21.a. At least once each 24-hour period		
21.b. After each CIP procedure		
21.c. After failing a preceding DIT; and		
21.d. Before a MF membrane unit being tested is returned to service after being removed for repair and/or removed from service for exceeding 0.100 NTU for two consecutive five-minute readings.		
22. The City can use a lower control limit (LCL) that is less than 1.65 psi/minute, such as the 0.65 psi/minute noted in your letter dated July 31, 2013. Whether the City uses the TCEQ-approved UCL or a selected LCL, the pressure sensors/gauges must have a plus-minus error small enough to ensure that the measured P_{test} is high enough and pressure decay rate is less than the approved UCL.		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
23. When any one of the MF membrane units used during the verification testing has an individual filtrate turbidity level greater than 0.100 NTU for two consecutive five-minute readings, the MF membrane unit must automatically shut-down, an audible alarm be sounded to summon the operators, the membrane repaired, and the unit must pass a TCEQ-approved DIT before being returned to service.		
24. If the selected MF membrane unit for verification testing cannot be repaired, cannot pass a TCEQ-approved DIT, or exceeds the 0.100 NTU limit for two consecutive five-minute readings in a one-hour period after being returned to service, then the verification testing must be temporarily halted and the City must contact the TCEQ Technical Review & Oversight Team at (512) 239-4691 to discuss the problem.		
25. The selected MF membrane unit's influent and effluent water qualities and operating parameters must be monitored, analyzed, and recorded as specified in the <u>Full-Scale Verification Test Protocol</u> section of this letter, <u>Enclosure J: Full-Scale Verification Test Protocol Minimum Monitoring and Reporting of Water Qualities and Flow Rates</u> , and <u>Enclosure B: Full-Scale Verification Test Protocol Monitoring and Reporting of Operating Processes</u> .		

Reverse Osmosis Membranes		
26. The temporary exception to use RO membranes for the removal of chemical contaminants from the RR WWTP is only for the eight-inch diameter by 40-inch long Hydranautics RO elements currently installed, that previously received an exception and approval to construct, based on:		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
26.a. Six RO units/skids with two-stages per unit; and		
26.b. Operated at a maximum permeate flux rate of 14.9 gfd (average of the two stages flux rates).		
27. The selected RO membrane skid's influent and effluent water qualities and operating parameters must be monitored, analyzed, and recorded during the verification testing as specified in the TCEQ's:		
27.a. <u>Enclosure J: Full-Scale Verification Test Protocol Minimum Monitoring and Reporting of Water Qualities and Flow Rates; and</u>		
27.b. <u>Enclosure B: Full-Scale Verification Test Protocol Monitoring and Reporting of Operating Processes.</u>		
pH Adjustment		
28. The 2010 SWTP clearwell's effluent.		
28.a. Must have a pH level of 7.0 or greater;		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
28.b. Cannot be corrosive; and		
28.c. The Langelier Saturation Index (LSI) and pH levels must be monitored and reported as specified in Enclosure J: Full-Scale Verification Test Protocol Minimum Monitoring and Reporting of Water Qualities and Flow Rates of this letter.		
Fluoride Addition		
29. The filtered water discharge from the 2010 SWTP clearwell must be monitored, analyzed, and the results recorded as specified in the Enclosure J: Full-Scale Verification Test Protocol Minimum Monitoring and Reporting of Water Qualities and Flow Rates , and Enclosure D: Design, Operating and Monitoring Requirements for Fluoride Adjustment during the verification testing.		
All Temporary Exceptions		
30. Continuous coagulation and flocculation must be maintained for the 2008 SWTP radial flow clarifier and 2010 SWTP Accelerator clarification basins during the verification testing.		
31. The 2008 SWTP radial flow clarifier basin cannot be operated at a surface overflow rate greater than 0.6 gpm/sf.		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
32. The 2010 SWTP Accelerator clarification basin cannot be operated at a surface overflow rates greater than 1.0 gpm/sf.		
33. If one of the 2010 SWTP gravity media filter's effluent exceeds 0.3 NTU for two consecutive 15-minute readings during the verification testing:		
33.a. The filter must be automatically taken out of service;		
33.b. An alarm must sound to summon the operators;		
33.c. The filter must be backwashed; and		
33.d. The effluent discharged to filter-to-waste until the turbidity level is less than 0.3 NTU before returning to service.		
If the City wishes to optimize the gravity media filters' individual performance during the verification testing for additional log removal credits, then a 2010 SWTP gravity media filter's effluent that exceeds 0.15 NTU for two consecutive 15-minute readings during the verification testing:		
33.e. Must be automatically taken out of service;		
33.f. An alarm must sound to summon the operators;		
33.g. The filter must be backwashed; and		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
33.h. The effluent discharged to filter-to-waste until the turbidity level is less than 0.15 NTU before returning to service.		
34. Since the 10.0-MG GST will not be included in the verification testing, the TCEQ has created these templates with the City's proposed Disinfection Zone 5 split into two disinfection zones: Temporary Blended Disinfection Zone 5 for the 2010 SWTP clearwell and Temporary Blended Disinfection Zone 6 for the 10.0-MG GST. The TCEQ understands that the minimum required inactivations for virus and <i>Giardia</i> probably will not be met at the effluent of the 2010 SWTP clearwell during the Full-Scale Verification Test period, even at the reduced flow rate of the verification test. Therefore, for the City to demonstrate the effectiveness of its final Disinfection Zone 5, the City staff will need to take the following actions once each eight-hour period during a day to simulate the inactivation being achieved in the 10.0-MG GST:		
34.a. Collect a sample of water from the 2010 SWTP clearwell's effluent;		
34.b. Record the flow rate at the 2010 SWTP clearwell's effluent when the water sample is collected;		
34.c. Calculate the hydraulic detention time for the 10.0-MG GST using the 50-percent volume and the recorded flow rate;		
34.d Calculate the T_{10} in minutes (theoretical disinfectant contact time based on the design of a basin/unit) for the 10.0-MG GST using the hydraulic detention time calculated in Condition No. 34.c. above and a baffling factor of 0.3;		

EXCEPTION CONDITIONS	How?	The City meeting requirements?
34.e. Maintain the water samples collected in Condition No. 34.a in a manner that simulates storage in the 10.0-MG GST (for example, at ambient water temperature and in the dark) for a duration not less than the calculated T_{10} from Condition No. 34.d.;		
34.f. After the water has resided in the sample container for the calculated T_{10} from Condition 34.d., measure:		
34.f.i. The monochloramine residual;		
34.f.ii. pH level; and		
34.f.iii. Water temperature.		
34.g. For each day (midnight to midnight as specified for reporting on the TCEQ's SWMOR), the City must calculate the simulated virus and Giardia inactivation achieved for each of the three samples;		
34.h. Enter the sample set results (flow rate, monochloramine residual, pH level and water temperature) that achieved the lowest inactivation for virus and Giardia on the SWMORs for both the Secondary Reservoir raw surface water and RR WWTP effluent sources; and		
34.i. Record the results from this simulated inactivation for TCEQ Sample Sets 41J and 42J of Enclosure J: Full-Scale Verification Test Protocol Minimum Monitoring and Reporting of Water Qualities and Flow Rates.		
35. No gravity media filter backwash waste, MF and RO membrane backwash or chemical cleaning waste, or clarifier blow-down waste can be discharged to waste Lagoon No. 3.		
36. All liquid and solid waste generated during the verification testing must be disposed of in accordance with the TCEQ permits, rules and regulations.		

EXCEPTION CONDITIONS		How?	The City meeting requirements?
Review the SWMOR CT			
Using Monochloramine residual?		yes	
Getting 5.0 -log virus with Chemical Disinfection		✓	
Getting 1.0-log Giardia with Chemical Disinfection		✓	
Calculating CT for each data set and using lowest numbers.			