MEMBRANE USE CHECKLIST (STEP 2)

Texas Commission on Environmental Quality
Water Supply Division
Plan Review Team MC-159
P.O. Box 13087, Austin, Texas 78711-3087

Public Water System I.D. No._____
TCEQ Log No. P-_____

Any membrane treatment systems proposed for a public water supply must have plans approved by TCEQ prior to construction– see the "Membrane Construction Checklist (Step 1)". Plans are reviewed for compliance with "Rules and Regulations for Public Water Systems" Title 30 TAC Chapter 290. After the membrane treatment system is constructed, the completion data listed below must be submitted to TCEQ for evaluation. Based on this submitted data, approval may be given for use of the membrane treatment system. Please include the TCEQ construction approval Log Number and public water system name and identification number when submitting membrane treatment system completion information. This list is not a substitute for the rules and this checklist cannot be accepted in lieu of the required engineering submittals. Failure to submit the following items may delay project approval. Copies of the rules may be obtained from **Texas Register, 1019 Brazos St, Austin, TX, 78701-2413, Phone: (512) 463-5561** or downloaded from the website: http://www.tceq.texas.gov/rules/indxpdf.html

Before reverse osmosis or nanofiltration membrane systems can be used to produce drinking water, but after the reverse osmosis or nanofiltration membrane system has been constructed at the water system, the licensed professional engineer must submit an addendum to the engineering report required by paragraph (6) of this subsection to the executive director for review and approval. The addendum shall include the following verification data of the full-scale treatment process: [§290.39(e)(7)]

1. ☐ Provide the initial baseline performance of the plant. The baseline net driving pressure, normalized permeate flow, salt rejection (or salt passage) must be documented when the reverse osmosis or nanofiltration membrane systems are placed online; [§290.39(e)(7)(A)]
2. ☐ Provide the frequency of cleaning or membrane replacement. The frequency must be based on a set time interval or at a set point relative to baseline performance of the unit(s); [§290.39(e)(7)(B)]
3. ☐ If modeling is used as the basis for the design, provide verification of the model's accuracy. If the baseline performance evaluation shows that the modeling projection in the engineering report were inaccurate, the licensed professional engineer shall determine if the deviation from the modeled projections resulted from incorrect water quality assumptions or from other incorrect data in the model. The model shall be considered inaccurate if the overall salt passage or the required feed pressure is 10% greater than the model projection. For any inaccurate model, provide a corrected model with the addendum to the engineering report; [§290.39(e)(7)(C)]
4. ☐ Provide verification of plant capacity. The capacity of the reverse osmosis and nanofiltration membrane facility shall be based on the as-built configuration of the system and the design parameters in the engineering report with adjustments as indicated by the baseline performance; [§290.39(e)(7)(D)]
5. ☐ The calculations for sizing feed pump(s) and chemical storage tank(s) must be submitted to demonstrate that a project meets chemical feed and storage capacity requirements; [§290.39(e)(8)]

6. ☐ Submit final blending report showing compliance to all maximum contaminant levels (MCL) and secondary contaminant levels (SCL);
7. ☐ Provide a physical and chemical analysis of the water. The analyses for the raw water (before any treatment), the water produced from the membrane systems, and the water after any post-treatment (including blending) must be submitted to an accredited laboratory for chemical analyses. (See below)[§290.39(e)(7)(E)]
8. ☐ Public water systems shall ensure that their operators are trained regarding the use of all chemicals used in the water treatment plant. Submit the applicable training records of operators pertinent to this requirement. [§290.46(e)(2)(B)]
9. ☐ Effective September 1, 2016, reverse osmosis or nanofiltration membrane systems must have operators that have successfully completed at least one executive director-approved training course or event specific to the operations and maintenance of reverse osmosis or nanofiltration membrane treatment. Submit the applicable training records of operators pertinent to this requirement. [§290.46(e)(2)(D)]

For Item #7- All systems shall submit a physical and chemical analysis of the water for the raw water (before any treatment), the water produced from the membrane systems, and the water after any post-treatment (including blending) for the contaminants listed below. Reports must come from a TCEQ accredited laboratory and include all QA/QC data. MCL and SCL units are in mg/l (except arsenic).

MCL	PRIMARY	SCL	SECONDARY	SCL	SECONDARY	SCL	SECONDARY
10 (as N)	Nitrate	0.2	Aluminum	5.0	Zinc	300	Sulfate
1 (as N)	Nitrite	1.0	Copper	1,000	Total Dissolved Solids	300	Chloride
10 µg/l	Arsenic	0.3	Iron	2.0	Fluoride	$\geq$ 7.0	pH
4.0	Fluoride	0.05	Manganese	N/A	Lead		

Corrosive Water Parameters	
Parameter	**Units**
Alkalinity as $CaCO_3$	mg/l
Calcium as $CaCO_3$	mg/l
Sodium	mg/l

All systems located in a high-risk county (see page 3) shall submit radiological analysis reports for water samples showing the water to be of acceptable quality for the most contaminants listed below. Reports must come from a TCEQ accredited laboratory for temporary use of the membrane unit.

MCL	CONTAMINANT
15 pCi/L	Gross alpha
5 pCi/L	Radium-226/228
50 pCi/L	Beta particle
30 µg/L	Uranium

WHERE: pCi/L = pico curies per liter, µg/L = micrograms per liter

Please be aware when you review your radiological data that if the report has gross alpha over 15 pCi/L and individual uranium isotopes are not reported, you will have to resample or reanalyze and resubmit radionuclide results. If you see gross alpha plus radium-228 over 5 pCi/L, and don't have radium-226, you will have to resample or reanalyze and resubmit complete results. For more information please see the website at the following URL:

https://www.tceq.texas.gov/drinkingwater/chemicals/radionuclides/pdw_rad.html

List of Counties where Radionuclide Testing is Required

Please be aware that we have added the requirement for analysis for **radionuclides** for high-risk counties. For elevated levels of any contaminants found in a test well, treatment or blending may be required.

COUNTY	STATE CODE#
Atascosa	007
Bandera	010
Bexar	015
Bosque	018
Brazoria	020
Brewster	022
Burnet	027
Concho	048
Culberson	055
Dallam	056
Dawson	058
Erath	072
Fort Bend	079
Frio	082
Garza	085
Gillespie	086
Gray	090
Grayson	091
Harris	101
Hudspeth	115
Irion	118
Jeff Davis	122
Jim Wells	125
Kendall	130
Kent	132
Kerr	133
Kleberg	137
Liberty	146
Llano	150
Lubbock	152

Continued	
McCulloch	154
Mason	160
Matagorda	161
Medina	163
Midland	165
Montgomery	170
Moore	171
Parker	184
Pecos	186
Polk	187
Presidio	189
Refugio	196
San Jacinto	204
San Saba	206
Tarrant	220
Travis	227
Tyler	229
Upton	231
Val Verde	233
Victoria	235
Walker	236
Washington	239
Wichita	243
Williamson	246
Zavala	254