RO MEMBRANE TROUBLESHOOTING MATRIX

Possible Cause	Possible Location	Pressure Drop	Feed Pressure	Salt Passage	Suggested Products
Metal Oxide Fouling (e.g. Fe, Mn, Cu, Ni, Zn)	1st stage lead elements	Rapid increase	Rapid increase	Rapid increase	S-200
Colloidal Fouling (organic and/or inorganic complexes)	1st stage lead elements	Gradual increase	Gradual increase	Slight increase	F-25
Mineral Scaling (e.g. Ca, Mg, Ba, Sr)	Last stage tail elements	Moderate increase	Slight increase	Marked increase	S-200
Polymerized Silica	Last stage tail elements	Normal to increased	Increased	Normal to increased	S-200
Biological Fouling	Any stage, usually lead elements	Marked increase	Marked increase	Normal to increased	F-25
Organic Fouling (dissolved NOM)	All stages	Gradual increase	Increased	Decreased	F-25
Oxidant Damage (e.g. Cl_2, ozone, $KMnO_4$)	1st stage most severe	Normal to decreased	Decreased	Increased	N/A
Hydrolysis Damage (out of range pH)	All stages	Normal to decreased	Decreased	Increased	N/A
Abrasion Damage (carbon fines, etc)	1st stage most severe	Normal to decreased	Decreased	Increased	N/A
O-ring Leaks (at interconnectors or adapters)	Random (typically at feed adapter)	Normal to decreased	Normal to decreased	Increased	N/A

NOTE: Pressure drop is defined as the feed pressure minus the concentrate pressure. For reference only. Actual membrane analysis must be conducted for accurate diagnosis.