

### OPERATION & MAINTENANCE MANUAL

#### Rated Operating Specifications

The following limits set forth by the membrane manufacturer must be observed at all times in order to maintain the warranty for the membrane module. WesTech may request operating logs from the Owner in the event of a membrane module warranty claim to demonstrate that the modules have been operated in accordance with WesTech's operating instructions.

#### Raw Water Quality:

Mean Turbidity .....	< 25 NTU
Peak Turbidity .....	< 100 NTU
Chlorine Residual .....	< 0.1 ppm continuously below pH 9.5
Operating Temperature .....	2-35 °C
Particulate .....	< 130 micron

Restricted contaminants: Oils or greases, anti-caking agents, polymers used as coagulation aids, chlorine dioxide, peroxide, and ozone. Any chemicals not typically used in water treatment.

#### Normal Operating Conditions:

Filtration TMP .....	< 22 psid
Backwash TMP .....	< 29 psid
Repair Fiber Breaks (recommended) .....	at 1/2 Plant Allowable PDT Value
Backwash intervals .....	20 - 120 minutes

#### Operation Limits:

Maximum Temperature .....	35°C
Minimum Temperature .....	2°C
Maximum Continuous pH .....	10
Maximum Cleaning pH .....	13
Minimum pH .....	2
Module Pressure (maximum) .....	43.5 psi
Filtration TMP (maximum) .....	22 psid
Backwash TMP (maximum) .....	29 psid
Backwash Flow/module (w/o air scour) .....	66 gpm
Backwash Flow/module (w/ air scour) .....	44 gpm
Air Scour Pressure (maximum) .....	15 psi
Air Scour Flow per Module (maximum) .....	1.5 scfm
Normalized Flux at 20°C (maximum) .....	57 gfd
Normalized Permeability 20°C (minimum) .....	30 l/hm <sup>2</sup> b
Chlorine Tolerance below 9.5 pH .....	7,500 ppmh

#### Approved Chemicals:

Citric Acid, Hydrochloric Acid, Potassium Permanganate, Sodium Permanganate, Sodium Hypochlorite, Sodium Hydroxide, Sodium Carbonate (Soda Ash), Sodium Bicarbonate, Aluminum Sulfate (low iron)