Water Solutions

FilmTec™ NF270-400 Element Helps National Park Service Improve Water Quality

The Challenge

From the Denver Service of the National Park Service

- **Raw Water:** 570 ppm TDS and conductivitity of 880 µmho/cm
- **Treatment Goals:**
  - Rejection of TDS, Sulfates and Hardness to meet EPA Secondary standards
  - High rejection of organic carbon to meet EPA standards
  - Moderate removal of Calcium and Low Removal of Alkalinity (HCO_3-) to maintain corrosion protection and taste (at least 400 µmho/cm in the permeate)
- **Other Objectives:**
  - Retain desired hardness without excessive blending of Microfiltration and Nanofiltration permeate
  - Maximize energy efficiency for lowest operating expense

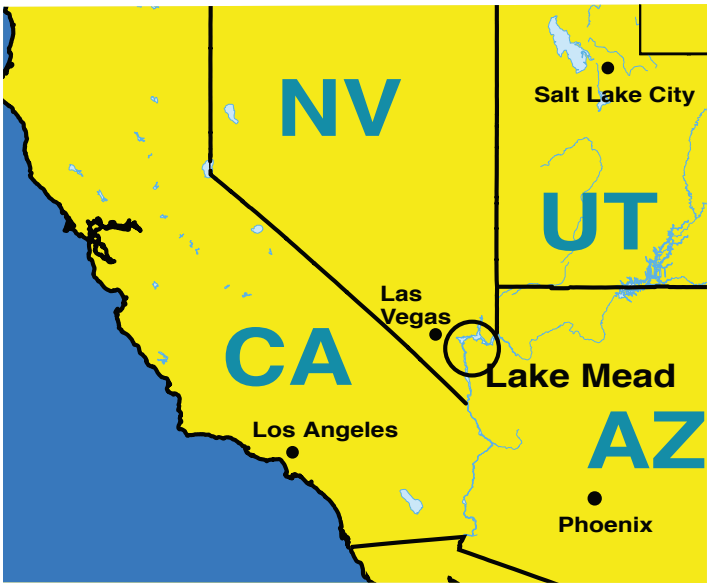
The System

- Microfiltration: USFilter's MEMCOR® CMF
- Nanofiltration: 2 x 2 x 1 Array of 8-inch, 4-element vessels
- 100,000 gpd (380 m^3/d) of potable water
- Design: Denver Service Center, National Park Service

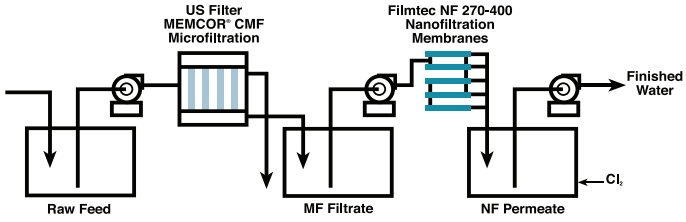
The Results

- Selective rejection
- Increased mineral passage
- Eliminated the need for blending
- Achieved high rejection of TOC
- Improved energy efficiency
- High productivity at low pressure

FilmTec™ NF270-400 Element selected for future installations at Lake Mead.



Overton Beach Marina, Overton, Nevada



Water Quality Results

DISSOLVED COMPONENT	FEED (ppm)	PERMEATE (ppm)	REJECTION (%)
Total Dissolved Solids	573	250	56
Alkalinity (HCO_3-)	134	97	28
Ca++	5.4	14	74
Total Organic Carbon	3.6	0.2	94

The conductivity of the combined permeate was 403 µmho/cm after one day of operation and 416 µmho/cm after 3 weeks

Operational Savings

OPERATING PARAMETER	VALUE
Net Feed Pressure	50 psi (3.4 bar)
Concentrate Pressure	25 psi (1.7 bar)
Average Flux	14.0 gfd (23.8 lmh)
Recovery	80.0%
Temperature	78 °F (25.6 °C)

Three weeks after startup, the system produced up to 100,000 gpd (380 m^3/d) at a feed pressure of just 50 psi (3.4 bar).

Have a question? Contact us at: dupont.com/water/contact-us

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Form No. 45-D01517-en CDP, Rev. 2
February 2020