

# 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 conductivity of 880  $\mu\text{mho/cm}$
- **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 ( $\text{HCO}_3^-$ ) to maintain corrosion protection and taste (at least 400  $\mu\text{mho/cm}$  in the permeate)
- **Other Objectives:**
  - Retain desired hardness without excessive blending of Microfiltration and Nanofiltration permeate
  - Maximize energy efficiency for lowest operating expense



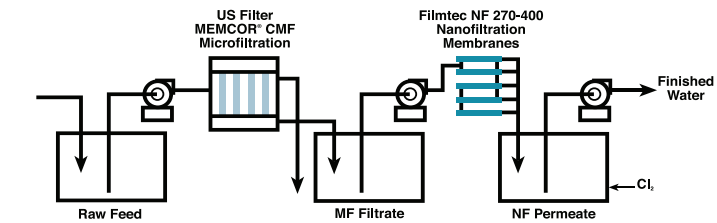
Overton Beach Marina, Overton, Nevada

## The System

- Microfiltration: USFilter’s MEMCOR® CMF
- Nanofiltration: 2 x 2 x 1 Array of 8-inch, 4-element vessels
- 100,000 gpd (380  $\text{m}^3/\text{d}$ ) 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



### Water Quality Results

DISSOLVED COMPONENT	FEED (ppm)	PERMEATE (ppm)	REJECTION (%)
Total Dissolved Solids	573	250	56
Alkalinity ( $\text{HCO}_3^-$ )	134	97	28
Ca <sup>++</sup>	5.4	14	74
Total Organic Carbon	3.6	0.2	94

The conductivity of the combined permeate was 403  $\mu\text{mho/cm}$  after one day of operation and 416  $\mu\text{mho/cm}$  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 $\text{lmh}$ )
Recovery	80.0%
Temperature	78 °F (25.6 °C)

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

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

**Have a question?** Contact us at: [dupont.com/water/contact-us](https://dupont.com/water/contact-us)

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