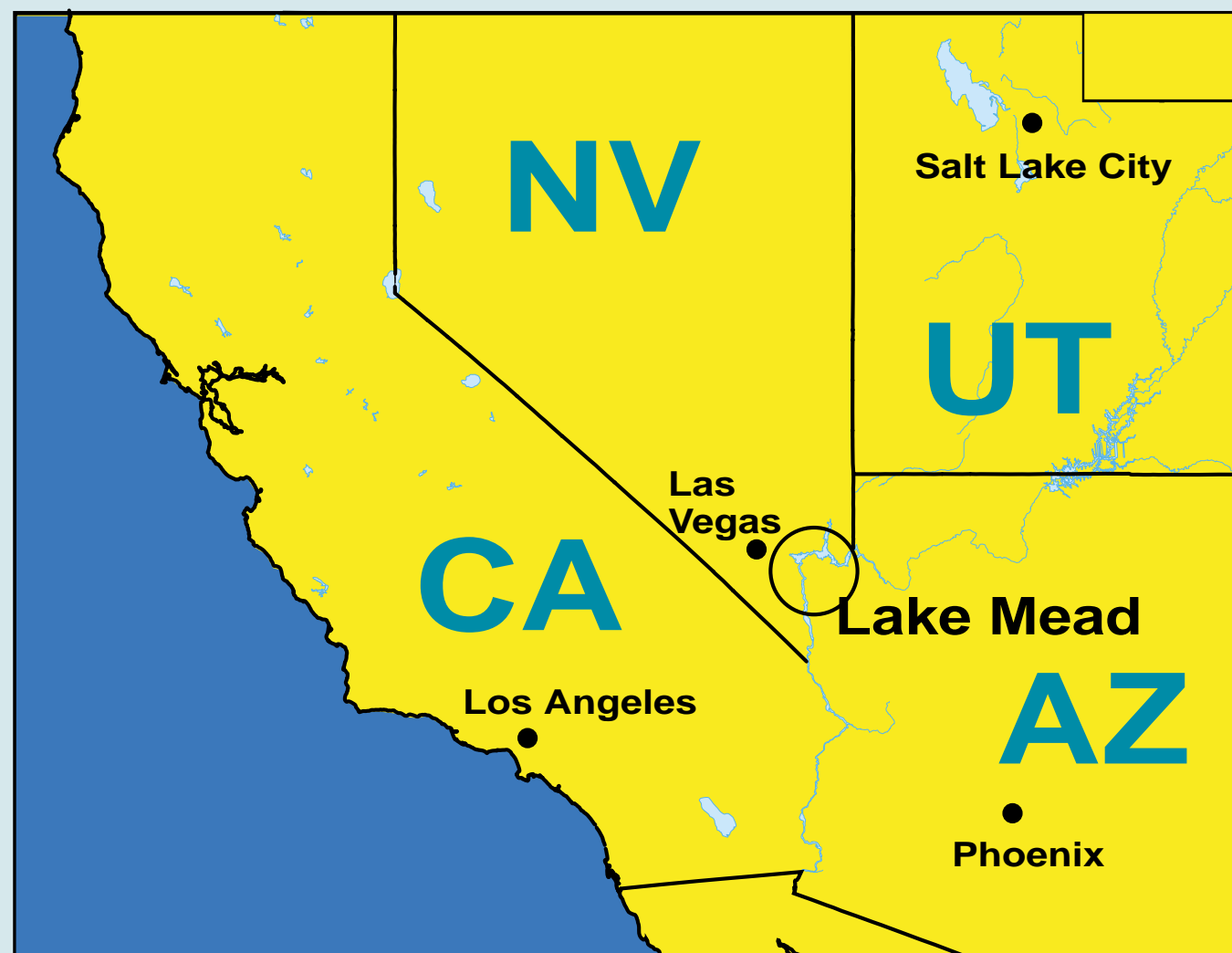




FILMTEC NF270-400 Element Helps National Park Service Improve Water Quality

The Challenge

From the Denver Service Center of the National Park Service

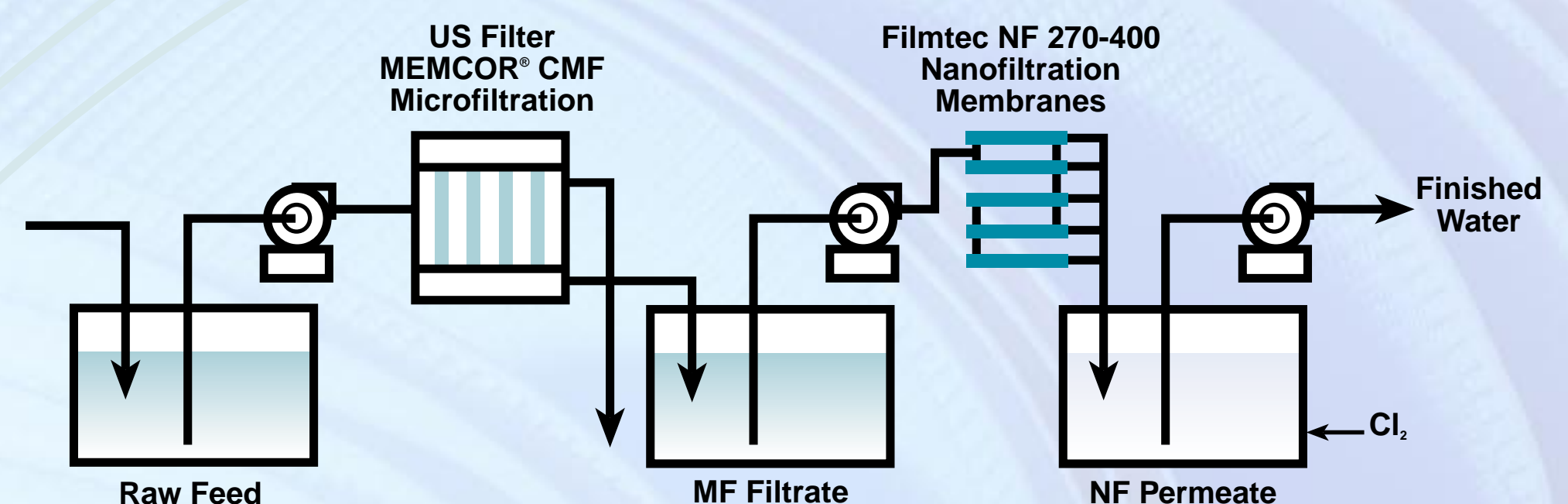


Overton Beach Marina, Overton, Nevada

- 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 (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

The System

- Microfiltration: USFilter's MEMCOR[®] CMF
- Nanofiltration: 2 x 2 x 1 Array of 8-inch, 4-element vessels
- 100,000 gpd (380 m³/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

The conductivity of the combined permeate was 403 $\mu\text{mho/cm}$ after 1 day of operation and 416 $\mu\text{mho/cm}$ after 3 weeks.

Three weeks after startup, the system produced up to 100,000 gpd (380 m³/d) at a feed pressure of just 50 psi (3.4 bar).

Water Quality Results

DISSOLVED COMPONENT	FEED (ppm)	PERMEATE (ppm)	REJECTION (%)
Total dissolved solids	573	250	56
Alkalinity (HCO_3^-)	134	97	28
Ca^{++}	54	14	74
Total organic carbon	3.6	0.2	94

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 Imh)
Recovery	80.0%
Temperature	78°F (25.6°C)

FILMTEC[®] NF270-400 Element selected for future installations at Lake Mead.