

Proposal for Approval of a Hospital Water Softener System

Date: July 15, 2026

To: MRMC Hospital Board of Directors

Executive Summary

This proposal seeks approval for the installation of a centralized water softener system throughout the hospital facility. Hard water, characterized by elevated concentrations of calcium and magnesium minerals, contributes to scale buildup within plumbing systems, medical equipment, washers, sterilization equipment, and other water-dependent infrastructure. Over time, this buildup can significantly reduce equipment efficiency, increase maintenance costs, shorten equipment lifespan, and negatively impact cleaning effectiveness.

Implementation of a water softener system will help protect critical assets, support infection prevention efforts, improve environmental services outcomes, and promote patient safety. The investment aligns with the hospital's commitment to operational excellence, regulatory compliance, and high-quality patient care.

Background

The hospital relies on numerous water-dependent systems and equipment to provide safe and effective patient care. Current hard water conditions contribute to mineral scale accumulation within:

- Ice machines
- Water heaters
- Plumbing infrastructure
- Environmental services cleaning equipment
- Boilers and HVAC systems
- Patient care areas including sinks and fixtures

As mineral deposits accumulate, equipment performance declines, maintenance requirements increase, and the effectiveness of cleaning and disinfecting agents may be reduced.

Problem Statement

Hard water presents several operational and clinical challenges:

Equipment Damage and Reduced Lifespan

Mineral scale deposits restrict water flow, reduce heat transfer efficiency, and accelerate wear on internal components. This can result in:

- Increased equipment downtime
- Premature replacement of high-cost assets
- Increased repair expenses
- Reduced energy efficiency

Plumbing Infrastructure Deterioration

Scale accumulation within pipes and fixtures can lead to:

- Reduced water flow
- Increased maintenance needs
- Higher risk of plumbing failures

- Increased operating costs

Reduced Cleaning and Disinfection Effectiveness

Hard water minerals can interfere with detergents, enzymatic cleaners, and disinfectants by reducing their ability to perform effectively. This may require:

- Higher chemical usage
- Additional cleaning cycles
- Increased labor resources

Microbial Biofilm and Bioburden Concerns

Scale deposits create rough surfaces and protective niches where microorganisms can adhere and proliferate. Although a water softener is not a disinfection system, reducing mineral scale can help limit conditions that contribute to biofilm formation and microbial harborage within water systems and equipment. This supports broader infection prevention and water management initiatives.

Proposed Solution

Install a hospital-grade water softener system designed to treat incoming water before distribution throughout the facility.

The system will:

- Remove hardness-causing minerals (calcium and magnesium)
- Reduce scale accumulation
- Improve efficiency of cleaning products and detergents
- Support optimal performance of sterilization and washing equipment
- Extend the lifespan of critical infrastructure
- Lower maintenance and energy costs

Routine monitoring and preventive maintenance will be incorporated into the hospital's facilities management program.

Expected Benefits

1. Protection of Capital Equipment

Reducing mineral buildup will extend the useful life of expensive equipment including:

- Boilers
- Ice machines
- Water heaters
- HVAC components

This will decrease replacement frequency and preserve capital investments.

2. Reduced Maintenance Costs

Benefits include:

- Fewer service calls
- Reduced descaling requirements

- Less equipment downtime
- Lower repair costs

3. Improved Cleaning Effectiveness

Softened water improves the performance of:

- Detergents
- Enzymatic cleaners
- Surface cleaning agents

This supports more consistent cleaning outcomes while potentially reducing chemical consumption.

4. Enhanced Infection Prevention Efforts

While water softening alone does not eliminate microorganisms, reducing mineral deposits limits environmental conditions that support biofilm accumulation within equipment and plumbing systems.

This contributes to:

- Improved environmental hygiene
- Better equipment cleanliness
- Support for the facility water management program
- Stronger infection prevention practices

5. Increased Energy Efficiency

Scale buildup acts as insulation within heating equipment, requiring greater energy consumption. Water softening improves operational efficiency of:

- Boilers
- Water heaters
- Heat exchangers

Resulting in lower utility costs.

6. Improved Patient Experience

Reliable equipment operation and enhanced environmental cleanliness contribute to:

- Greater patient confidence
- Improved patient satisfaction
- Reduced risk of service interruptions

CMS and ASHRAE Water Management Program Requirements

CMS Requirements

The Centers for Medicare & Medicaid Services (CMS) requires hospitals, Critical Access Hospitals, and other Medicare-certified healthcare facilities to develop and maintain policies and procedures that reduce the risk of growth and transmission of *Legionella* and other waterborne pathogens within building water systems. Facilities must demonstrate implementation of a Water Management Program (WMP) that includes risk assessment, monitoring, corrective actions, and documentation. CMS expects healthcare organizations to align their

programs with ASHRAE Standard 188 and CDC guidance. Failure to maintain an effective water management program may result in regulatory citations during accreditation or CMS surveys.

ASHRAE Standard 188

ANSI/ASHRAE Standard 188, *Legionellosis: Risk Management for Building Water Systems*, establishes the framework for preventing Legionnaires' disease associated with healthcare facility water systems. The standard requires healthcare facilities to:

- Establish a multidisciplinary Water Management Team.
- Describe and map all building water systems.
- Identify areas where hazardous conditions may occur.
- Establish control measures and control limits.
- Monitor system performance.
- Define corrective actions when control limits are not met.
- Verify and validate program effectiveness.
- Maintain documentation and records of all program activities.

ASHRAE Standard 514

ANSI/ASHRAE Standard 514, *Risk Management for Building Water Systems: Physical, Chemical, and Microbial Hazards*, expands the water management approach beyond Legionella. While ASHRAE 188 focuses specifically on legionellosis prevention, Standard 514 addresses a broader range of water-related hazards, including:

- Microbial hazards (Legionella, Pseudomonas, nontuberculous mycobacteria, and other opportunistic pathogens).
- Chemical hazards (disinfectants, disinfection byproducts, corrosion products, and contaminants).
- Physical hazards (scalding, thermal injury, and other water system-related risks).

Standard 514 provides minimum requirements for a comprehensive risk management program covering system design, construction, operation, maintenance, renovation, monitoring, corrective actions, and program validation. It specifically includes guidance for healthcare facilities, recognizing the increased vulnerability of patients to waterborne pathogens. Compliance with ASHRAE 188 is required as part of implementing Standard 514.

Strategic Alignment

Approval of a water softener system supports the hospital's strategic goals by:

Promoting Patient Safety

Supports clean healthcare environments and reliable clinical operations.

Supporting Infection Control Initiatives

Strengthens environmental and water management practices that contribute to infection prevention efforts.

Preserving Organizational Assets

Protects expensive infrastructure and medical equipment investments.

Demonstrating Fiscal Responsibility

Reduces long-term maintenance, repair, and replacement costs.

Enhancing Organizational Reputation

Demonstrates the hospital's commitment to quality, safety, and proactive facility management.

Financial Considerations

Although initial capital investment is required, expected cost savings include:

- Reduced equipment replacement costs
- Lower maintenance expenditures
- Reduced plumbing repair costs
- Lower energy consumption
- Potential reduction in cleaning chemical usage
- Decreased equipment downtime

Over the long term, these savings are expected to offset installation and maintenance costs while protecting valuable hospital assets.

Recommendation

It is recommended that the Hospital Board approve funding for the purchase and installation of a centralized water softener system.

This initiative represents a proactive investment in patient safety, infection prevention, equipment preservation, and operational efficiency. By reducing hard water-related damage and supporting effective cleaning processes, the hospital will strengthen its commitment to high-quality care while protecting critical infrastructure and maintaining its reputation for excellence.

Requested Board Action

Approve the evaluation, procurement, and installation of a hospital-wide water softener system to support patient safety, infection prevention, equipment longevity, operational efficiency, and long-term financial stewardship.

Respectfully submitted,

April Summerlin, BSN, RN, CIC

Infection Preventionist

Mangum Regional Medical Center