

# **WHITE PAPER: BUILDING A HEALTHCARE WATER QUALITY MONITORING PROGRAM**

A practical framework for healthcare facilities developing a structured water quality monitoring strategy



# EXECUTIVE SUMMARY

Healthcare facilities rely on complex water systems to support patient care, clinical operations, dental treatment, cleaning, food service, and daily building use.

Because these systems can be affected by temperature, stagnation, disinfectant levels, maintenance activity, construction, and occupancy changes, water quality monitoring should be approached as a structured program rather than a one-time testing activity.

This white paper outlines a practical framework for building a healthcare water quality monitoring program. It covers monitoring objectives, risk-based system assessment, representative sampling, testing frequency, trend analysis, documentation, corrective action, and ongoing program review.



## HEALTHCARE WATER MONITORING FRAMEWORK

**1. Define Objectives**



**3. Select Locations**



**5. Analyze Trends**



**7. Take Action**



**2. Assess Risk**



**4. Set Frequency**



**6. Document Actions**



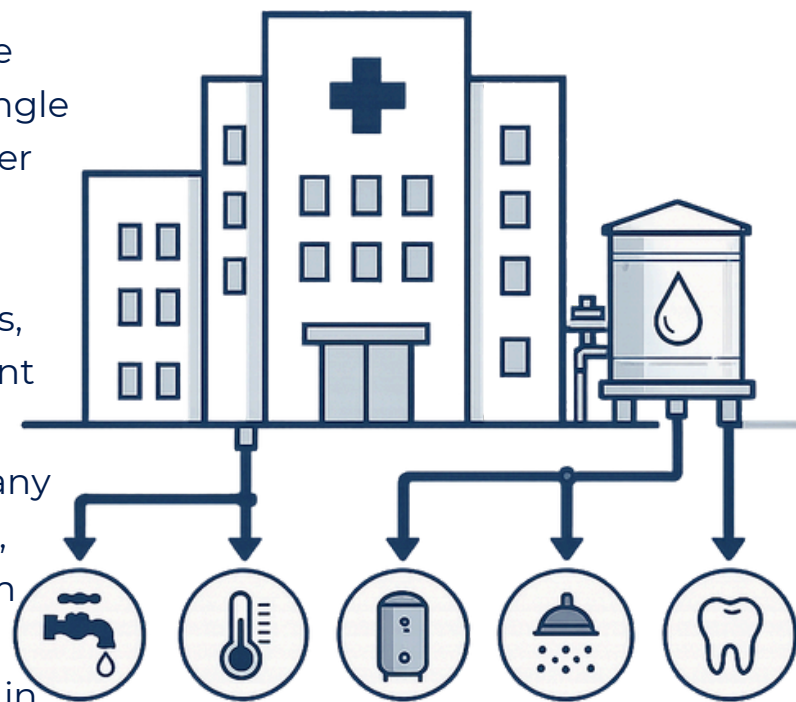
**8. Review Program**



# WHY HEALTHCARE WATER MONITORING REQUIRES A STRUCTURE

Healthcare buildings often have large and complicated water systems. A single facility may include hot and cold water distribution systems, storage tanks, mixing valves, distal outlets, low-use areas, ice machines, dental waterlines, cooling towers, and specialized patient care spaces.

These systems can be affected by many factors, including water temperature, disinfectant levels, stagnation, system age, renovations, construction, maintenance activities, and changes in occupancy. In healthcare environments, these factors matter because water quality can affect daily operations, patient care areas, and facility risk management. A structured monitoring program helps facilities answer important questions before issues arise. Teams need to know which areas should be monitored, which indicators are most relevant, how often testing should occur, what results require follow-up, and how corrective actions should be documented.



## KEY POINT:

Healthcare water monitoring is most effective when facilities connect system assessment, testing data, documentation, trend review, and corrective action into one organized program.

# 1-2 | BUILDING THE FOUNDATION

An effective monitoring program begins with two core foundations: clear objectives and a risk-based understanding of the facility's water system.

## 1. DEFINE OBJECTIVES

Define what the facility needs to learn from its monitoring data. Clear objectives help determine which systems to monitor, what testing is appropriate, how often samples should be collected, and what results require follow-up.

Objectives may include evaluating water quality, supporting a water management program, monitoring higher-risk areas, verifying control measures, or tracking changes after maintenance or corrective action. The goal is to collect meaningful data that helps the facility understand and manage water system performance over time.

## 2. ASSESS RISK

A monitoring program should reflect how the facility's water system is designed and operated. This includes understanding how water enters, moves through, and is stored within the building, as well as where stagnation or exposure may occur.

The assessment should consider hot and cold water systems, storage tanks, distal outlets, low-use fixtures, dental waterlines, cooling towers, and areas affected by construction or maintenance.

A risk-based assessment helps facilities focus testing on locations most relevant to system performance and occupant safety.

# 3–4 | PLANNING THE SAMPLING STRATEGY

A strong sampling strategy depends on choosing representative locations and setting a testing frequency that reflects both routine operations and system changes.

## 3. SELECT LOCATIONS

Sampling locations should represent how water moves through the facility. A practical plan may include entry points, storage tanks, hot water return lines, distal outlets, low-use areas, patient care units, dental treatment rooms, ice machines, or areas affected by plumbing work.

Consistent sampling helps facilities compare results over time, identify patterns, and understand whether conditions are improving, worsening, or staying stable.

## 4. SET FREQUENCY

Testing frequency should reflect the facility's size, system complexity, patient population, monitoring goals, past results, and operational changes. A strong program includes routine testing and event-based testing after construction, plumbing repairs, water interruptions, low occupancy, unexpected results, or corrective action.

This approach helps facilities monitor normal conditions while responding to changes that may affect water quality.



### PLANNING POINT

Routine testing tracks normal conditions. Event-based testing helps facilities respond when system changes may affect water quality.

# 5–6 | TURNING RESULTS INTO INSIGHT

Monitoring data becomes more useful when results are reviewed over time and documented clearly. Trend analysis and documentation help facilities understand what changed, what actions were taken, and whether follow-up is needed.

## 5. ANALYZE TRENDS

A single test result can be useful, but long-term trends often tell a clearer story. Reviewing results over time helps facilities understand whether water quality conditions are stable, improving, or changing.

Trend review can help identify repeated concerns, changes after maintenance or corrective action, isolated issues, system-wide patterns, or seasonal and occupancy-related changes.

This turns testing data into operational insight and helps teams understand what results mean for the facility.

## 6. DOCUMENT ACTIONS

Documentation turns testing into a managed monitoring program. Clear records show what was tested, where samples were collected, what results were received, and what actions were taken.

Records may include sampling plans, lab reports, field observations, corrective actions, follow-up testing, and program review notes.

Good documentation helps teams identify patterns, maintain continuity, and support consistent water quality management.



### INSIGHT POINT

Testing data is most valuable when it is reviewed, documented, and used to guide decisions over time.

# 7-8 | ACTING AND IMPROVING OVER TIME

Monitoring is most effective when results lead to timely action and the program is reviewed as facility conditions change.

## 7. TAKE ACTION

Monitoring results should be reviewed, interpreted, and connected to action when follow-up is needed.

Corrective action may include reviewing control measures, flushing affected areas, checking water temperatures, evaluating disinfectant levels, inspecting equipment, collecting follow-up samples, or escalating the issue to the water management or infection prevention team.

A clear response process helps avoid delays, confusion, or inconsistent action.

## 8. REVIEW PROGRAM

A healthcare water quality monitoring program should not remain static. Facilities change, water systems change, and risk conditions can shift over time.

Program review may be needed after renovations, plumbing changes, new equipment, repeated unexpected results, water disruptions, or changes in patient care areas.

Regular review helps keep the monitoring strategy aligned with current building conditions and operational priorities.



## IMPROVEMENT POINT

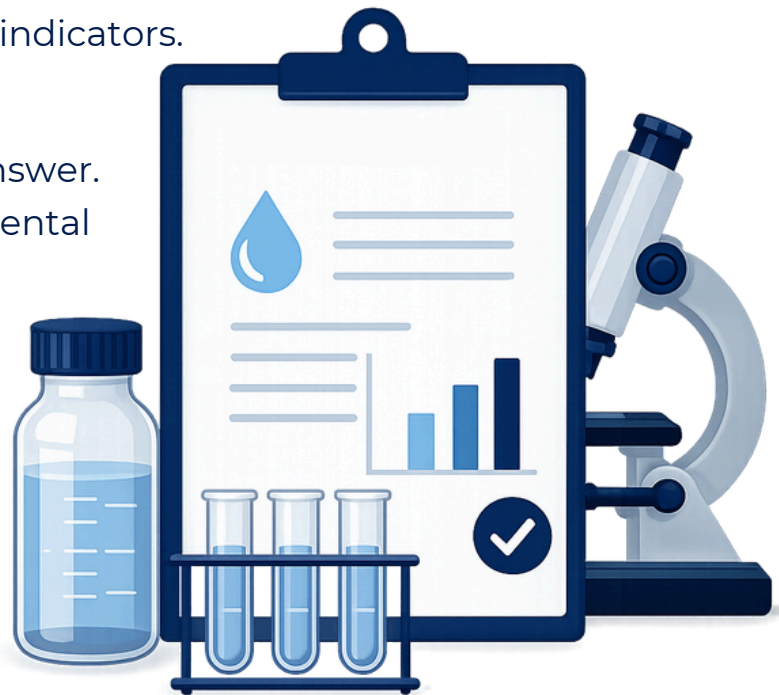
Monitoring programs are strongest when facilities use results to guide action, review performance, and improve the strategy over time.

# LABORATORY TESTING AND PROGRAM SUPPORT

Laboratory testing provides objective data that supports the monitoring program. Depending on the facility's goals, testing may include microbial testing, Legionella testing, dental waterline testing, heterotrophic plate count analysis, or other water quality indicators.

The testing method should match the question the facility is trying to answer. Routine building water monitoring, dental waterline testing, and Legionella risk management may each require different sampling approaches and laboratory methods.

A qualified laboratory partner can help facilities turn sampling plans into usable data through proper sample handling, reliable analysis, clear reporting, and consistent result documentation.



## KEY ELEMENTS OF AN EFFECTIVE PROGRAM

An effective healthcare water quality monitoring program should bring several elements together into one organized framework: clear monitoring objectives, risk-based system assessment, representative sampling locations, routine and event-based testing frequency, trend analysis, documentation, corrective action, follow-up testing, program review, and laboratory support.

When monitoring is planned, documented, reviewed, and connected to action, it becomes a practical tool for understanding system performance and supporting long-term facility operations.

# CONCLUSION: FROM TESTING TO PROGRAM MANAGEMENT

Healthcare water quality monitoring is most effective when it is treated as a structured program, not a series of disconnected tests. By defining objectives, assessing system risks, selecting representative sampling locations, setting routine and event-based testing frequency, reviewing trends, documenting results, and connecting findings to corrective action, facilities can better understand and manage their water systems over time. For healthcare facilities, water monitoring supports more than compliance or maintenance. It supports daily operations, patient care environments, and the people who depend on the facility every day. A strong monitoring program gives healthcare teams the information they need to make better decisions before small concerns become larger problems.

**A strong monitoring program helps healthcare teams turn water quality data into informed, timely decisions.**



## FINAL TAKEAWAY

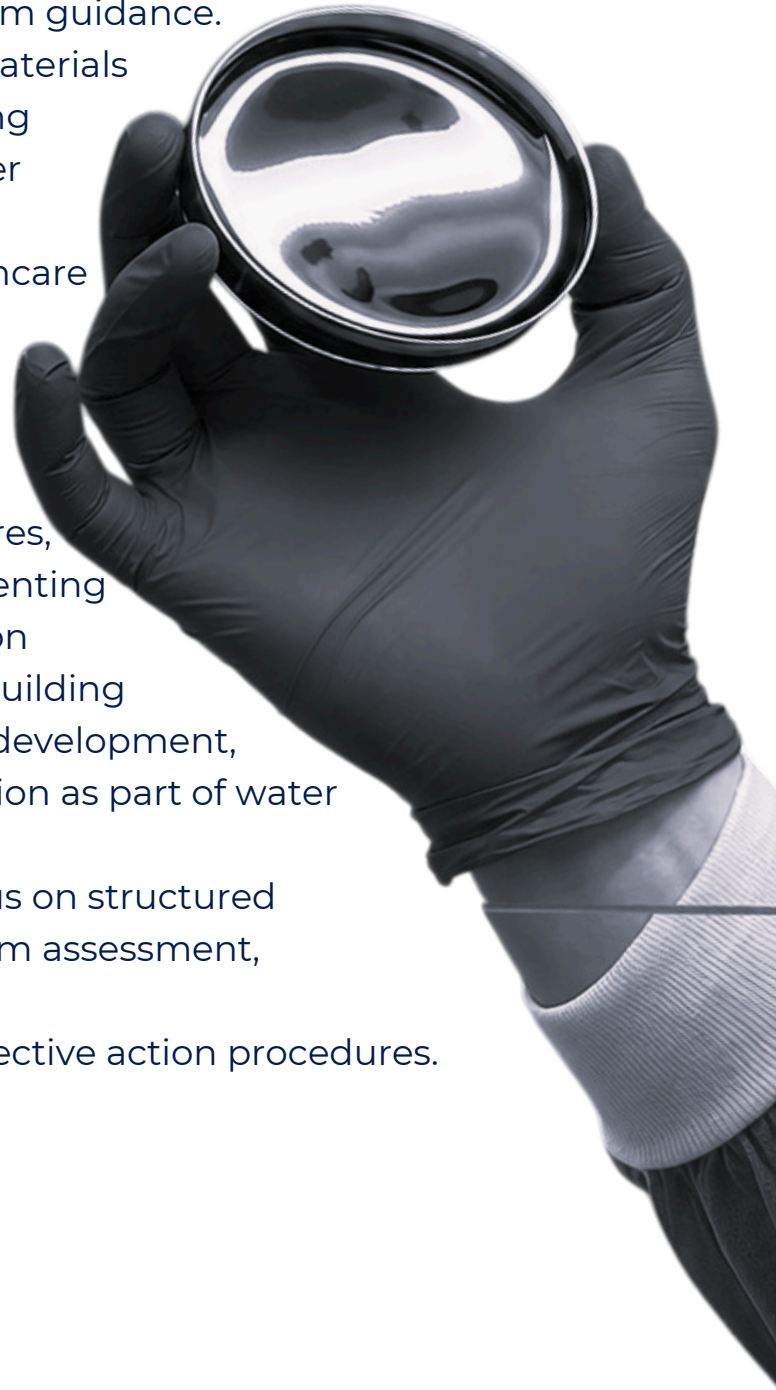
A strong monitoring program helps healthcare teams turn water quality data into informed, timely decisions.

# SOURCE SUPPORT FOR REVIEW

This draft was shaped using publicly available healthcare water management and building water system guidance.

CDC healthcare water management materials emphasize the importance of identifying hazardous conditions, conducting water infection control risk assessments, and establishing corrective actions in healthcare facilities. CDC guidance on Legionella water management programs also outlines core program steps such as identifying areas where Legionella could grow, monitoring control measures, establishing interventions, and documenting program activities. ASHRAE guidance on Standard 188 also supports the use of building surveys, water management program development, preventive measures, and documentation as part of water system risk management.

These sources support the article's focus on structured monitoring objectives, risk-based system assessment, representative sampling, trend review, documentation, and corrective action procedures.



# REFERENCES

## SOURCE LIST

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