



# **HydroTreat™ Disinfection Cart Case Studies**

## Case Studies

Implementations of the HDC system have been conducted in various residential settings affected by microbial contamination (*Legionella* bacteria) following Legionnaires' disease (LD) case investigations directed by public health authorities having jurisdiction. In each case, the system effectively reduced bacterial contamination levels to safe standards, as verified by independent water testing at CDC-ELITE laboratories.

### Case Study 1

A long-term care facility identified a case of Legionnaires' disease and engaged IWC Innovations to test their water system. Initial tests showed an 86% positivity for *Legionella* bacteria, with concentrations ranging from 20-100 CFU/mL in water samples and 20-5,300 CFU/mL in swab samples. The incoming city water had a concentration of 0.2 CFU/mL, indicating low-level contamination common in distribution systems, but a risk if not properly managed over time.

In response, IWC Innovations recommended an acute chemical sanitization remediation treatment. After treatment, *Legionella* concentrations dropped below 1.0 CFU/mL, although positivity remained high at 85% throughout the facility. An HDC system was then installed to enhance control during this phase. Subsequent testing showed a 78% reduction in positivity about 30 days later, and these improved levels were maintained at the 60-day endpoint testing.

The Department of Health, overseeing the facility, was confident with the system's effectiveness in reducing *Legionella* exposure risk and concluded their case investigation. Consequently, the facility resumed normal operations and routine water monitoring as outlined in their water management plan.

# HydroTreat™ Disinfection Cart Case 1

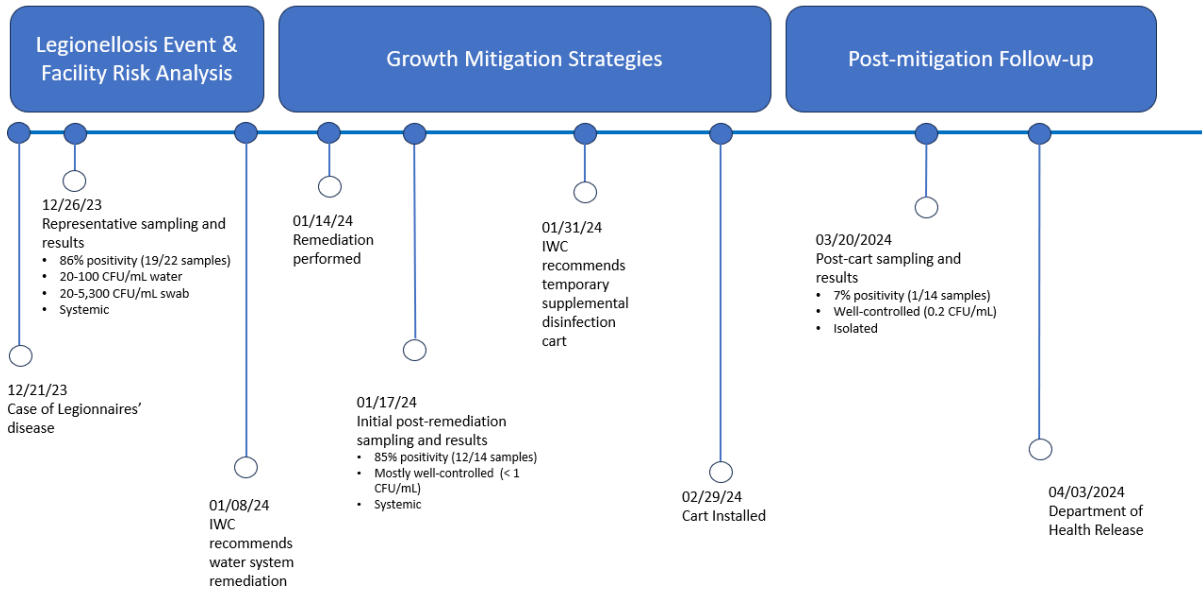


Figure 3 – Case 1 HydroTreat Disinfection Cart Project Timeline

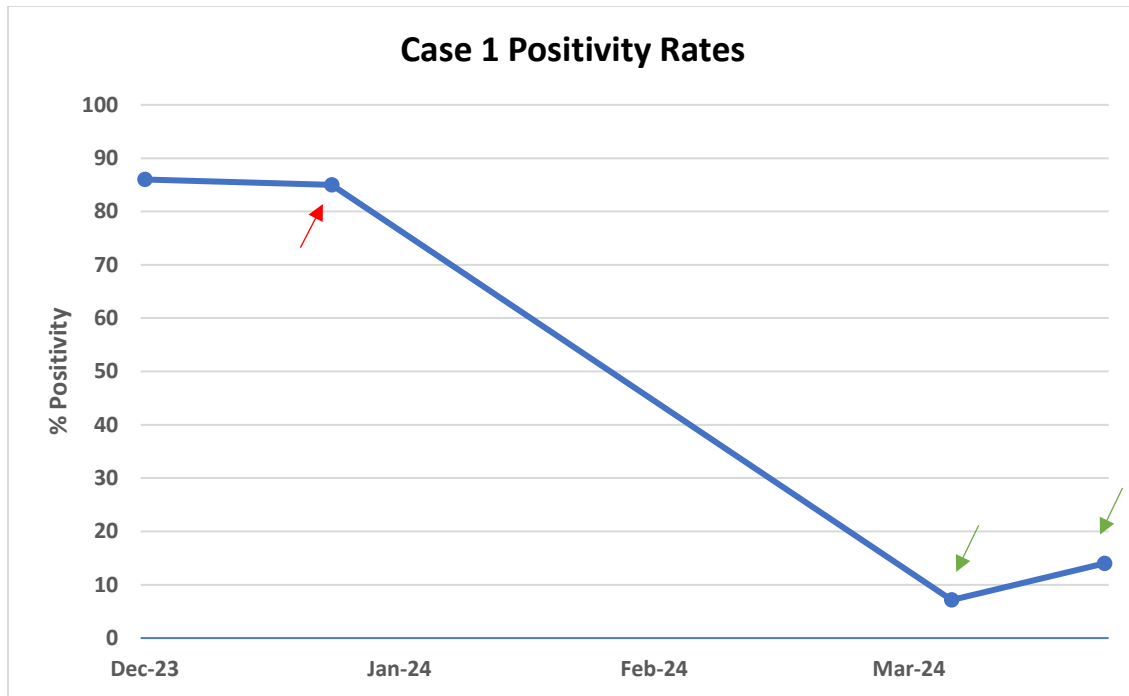


Figure 4 – Case Study 1 Positivity. Red arrow represents the acute chemical sanitization remediation treatment. Green arrows represent the 60-day HydroTreat Short Course Disinfection Midpoint and Endpoint testing events.

Monitoring Period	Average ORP (mV)	Average Free Chlorine (ppm)	Average pH
Midpoint	588	0.57	7.46
Endpoint	583	0.18	7.41
<b>Total</b>	<b>585</b>	<b>0.35</b>	<b>7.43</b>

Table 4 – Case 1 Water Quality

## Case Study 2

A long-term care facility recently encountered a significant public health issue when a case of Legionnaires' disease was identified among its residents. Prompted by this discovery, an extensive water testing was carried out, revealing a disturbing 76% positivity rate for *Legionella* bacteria throughout the facility's water system. In response to this alarming finding, a comprehensive acute chemical sanitization remediation treatment was implemented as a critical mitigation strategy.

The initial remediation efforts proved largely successful, dramatically reducing the positivity rate to just 3%. For several months following this intervention, no further detections of the bacteria were reported, indicating a temporary resolution of the issue. However, nearly two years later, the facility faced a recurrent challenge as sustained elevated positivity rates of *Legionella* were once again observed.

To tackle this resurgence, another robust mitigation strategy using the HDC system was employed. The results of this proactive approach were highly encouraging, with recent tests showing a complete absence of *Legionella* bacteria, reflecting a positivity rate of 0% and maintaining this level of protection across the 60-day period. This outcome underscores the effectiveness of the newly implemented measures and marks a significant step forward in ensuring the health and safety of the facility's residents.

# HydroTreat™ Disinfection Cart Case 2

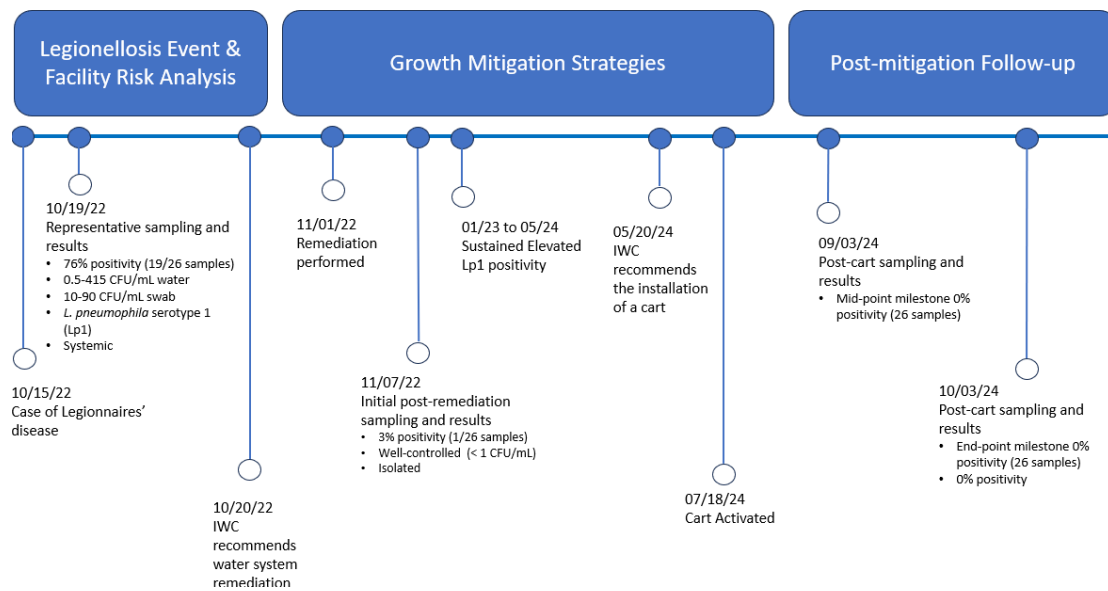


Figure 5 – Case 2 HydroTreat Disinfection Cart Project Timeline

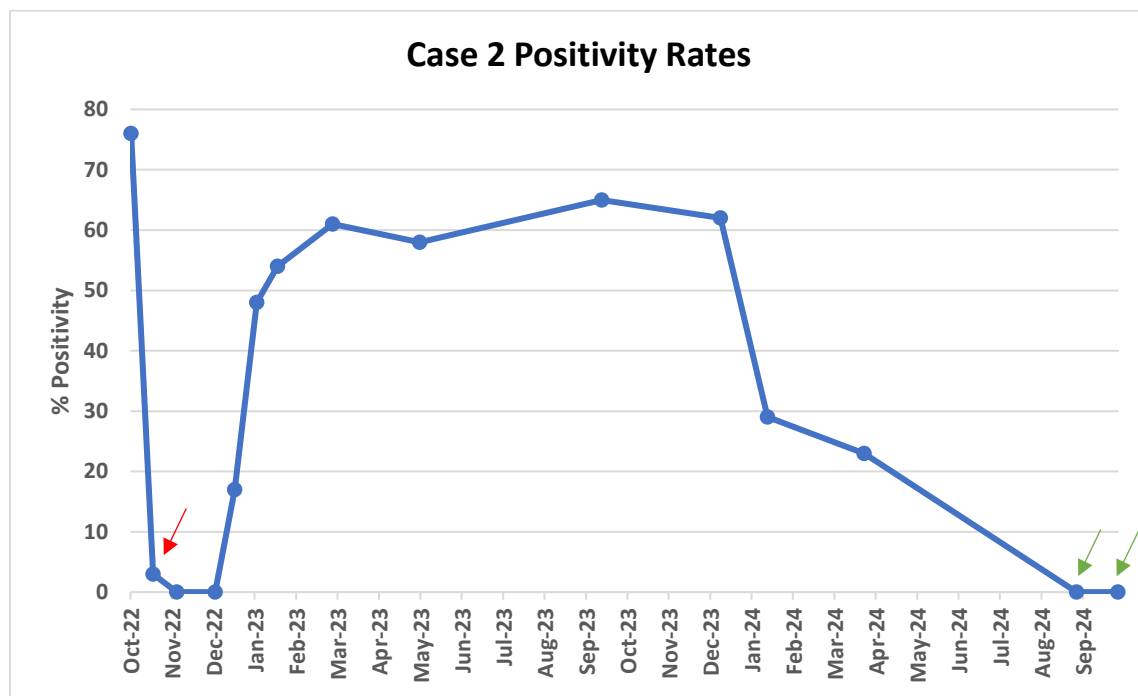


Figure 6 – Case 2 Positivity Rates. Red arrow represents the acute chemical sanitization remediation treatment. Green arrows represent the 60-day HydroTreat Disinfection Cart System Midpoint and Endpoint testing events.

Monitoring Period	Average ORP (mV)	Average Free Chlorine (ppm)	Average pH
Midpoint	687	0.92	8.21
Endpoint	677	0.75	8.37
<b>Total</b>	<b>683</b>	<b>0.85</b>	<b>8.37</b>

Table 5 – Case 2 Water Quality

### Case 3

A long-term care facility enlisted IWC Innovations' help following a death linked to Legionnaires' disease at their site. Initial tests showed a 90% positivity rate for *Legionella*, specifically the hazardous *L. pneumophila* serotype 1, with samples yielding 0.4 to 120 CFU/mL from bulk water samples and 600 to 4,400 CFU/mL from swab samples. In response, IWC initiated an acute chemical sanitization remediation treatment of the water system, which led to an 81% decrease in positivity to just 9%. Despite this initial success, *Legionella* positivity fluctuated in subsequent months, peaking again at 71% with high bacterial concentrations.

To combat the resurgence of *Legionella* growth, a HydroTreat™ Disinfection Cart system was implemented. This resulted in an overall 30% reduction in positivity. This facility experienced both external and internal disruption events such as construction projects, which impacted water system stability. Adjustments in the disinfection strategy, particularly increasing HydroTreat dosages due to ongoing external construction, led to a further 26% decrease in positivity by the end of the intervention. The temporary supplemental disinfection cart provided this facility with an added protective factor during these disruptive events to the water system.

# HydroTreat™ Disinfection Cart Case 3

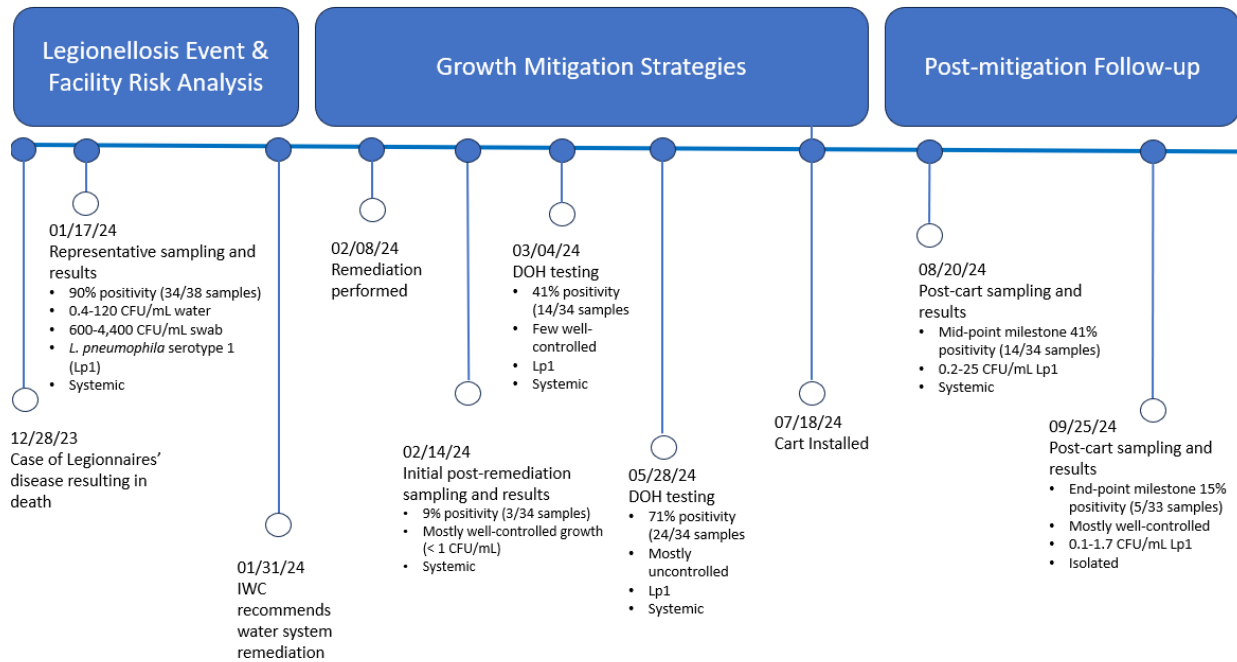


Figure 7 – Case 2 HydroTreat Disinfection Cart Project Timeline

