M-TRAP *Legionella* bacteria Capture Efficiency Evaluation

Conducted at the CDC/NIOSH unit in Morgantown, WV and Assured Bio Labs Oak Ridge, TN

Study Objective: Determine the efficiency of M-TRAP® to capture airborne *Legionella* bacteria

Methods: Serial dilutions of *Legionella pneumophila* ATCC 33152 were placed in a Collison nebulizer and aerosolized for 10 minutes. M-TRAP® samples were pulled during this 10 minute time frame at 15 liters per minute for a total air volume of 150 L of air. Each dilution was run in triplicate. Once sampling had finished, these M-TRAP® samples were packaged and shipped to Assured Bio Labs where DNA extraction and QPCR analysis was performed. Each dilution replicate was run six times on the Roche LightCycler® 480 II system utilizing the *Legionella pneumophila* specific assay according to Yang et al.

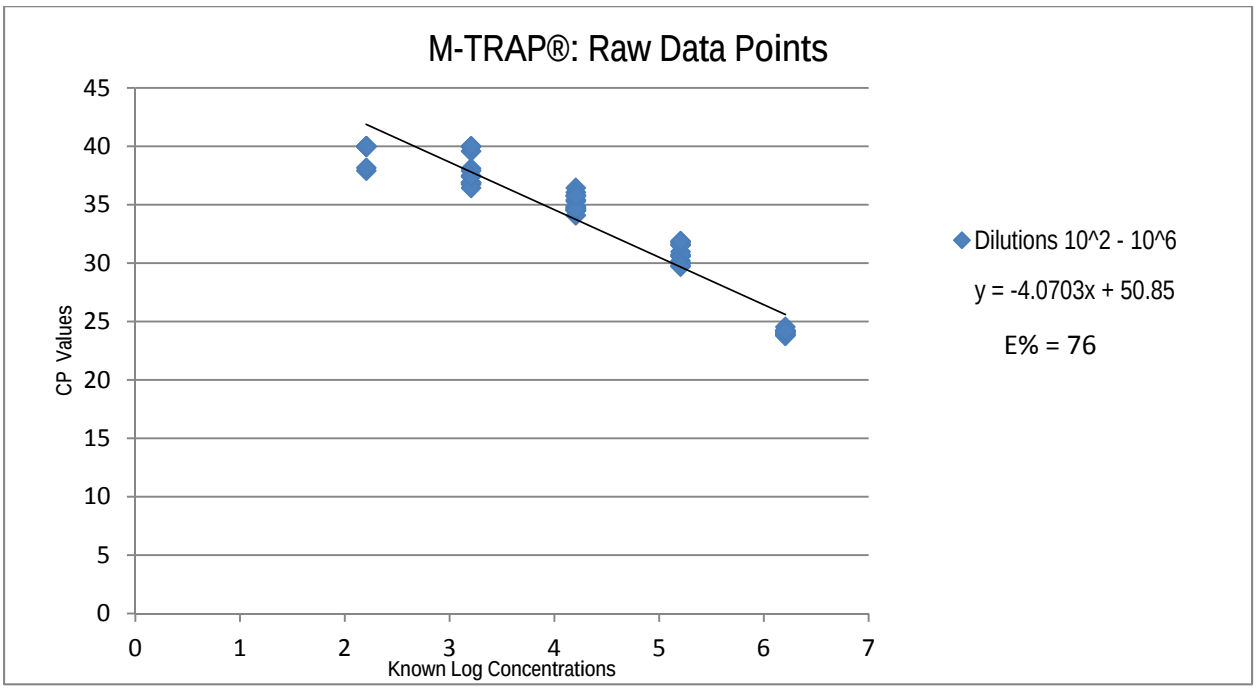

Figure 1: From the graph above, the M-TRAP® data follows the typical log linear trend associated with QPCR technology. The M-TRAP® was shown to detect aerosolized *Legionella* bacteria down to the 10^2 dilution; equivalent to 100 colony forming units this is the threat level of domestic water according to OSHA guidelines. https://www.osha.gov/dts/osta/otm/otm_iii/otm_iii_7.html#app_iii:7_2

Conclusions: The M-TRAP® technology is an inexpensive and easy to use capture matrix to detect airborne *Legionella* bacteria for downstream molecular diagnostics such as QPCR. The M-TRAP® capture efficiency provides end users with a reliable technology to investigate the potential threat of infection in both commercial and health care facilities with results available in as little as 24 hours from time of collection.

Barbaree, J.M, et al. "Protocol for Sampling Environmental Sites for *Legionellae.*" 1987. Applied and Environmental Microbiology. Vol 53, No 7. 1454-1458.

Giglo, S., Monis, P.T., Saint, C.P. "*Legionella* Confirmation Using Real-Time PCR and SYTO9 is an Alternative to Current Methodology." 2005. Applied and Environmental Microbiology. Vol 71, No 12. 8944-8948.

Yang, G., et al. Dual detection of Legionella pneumophila and Legionella species by real-time targeting the 23S-5S rRNA gene spacer region." 2009. Clinical Microbiology and Infection.