A.1 Technology Name: Dual Membrane Passive Diffusion Bag sampler (DMPDB™)

A.1.1 Source:

A Dual Membrane Passive Diffusion Bag Sampler for PFAS in Groundwater-White Paper, Bradley Varhol & Alyssa Varhol, MSc, July 2022

A.1.2

Media: Groundwater

Study Type: Summary of multiple studies

Technology: Equilibration Diffusion Sampler

Peer Reviewed: No

Publication Date: July 2022

A.1.3 Site Description:

This document serves to inform the industry of the capability of the DMPDB™ to provide accurate and representative samples of groundwater for a wide range of contaminants and specifically for PFAS, at a lower cost, with reduced contaminated wastewater, and increased ease of use compared to pumping and purge techniques. The design and function of the Dual Membrane Passive Diffusion Bag (DMPDB™) sampler is presented along with examples of its performance for sampling a wider range of analytes, beyond VOCs, to include metals, ions, SVOCs, inorganics, and contaminants of emerging concern, 1,4 Dioxane and PFAS. The paper provides a summary of field and bench-scale test results using a passive technique for PFAS sampling in groundwater monitoring wells, that is an adaptation of a passive diffusion bag sampler (PDB). Data is provided from controlled bench tests and from five independent, side-by-side field tests on the performance of the DMPDB™ for PFAS sampling.

A.1.4 Phase: Site Assessment and Long Term Monitoring

A.1.5 Outcome: Bench-scale and five independent side-by-side field tests comparing PFAS concentrations from the DMPDB passive sampler to results obtained from controls and low-flow samples show that,

- DMPDB™s produce field results for PFAS that are comparable to those from low-flow pumping, even at single-digit ng/L concentrations.
    - Results showed very strong positive correlations for PFOS, PFOA, PFNA, which are often listed as the most significant PFAS of concern.
- DMPDB™s show several PFAS-sampling benefits over low-flow pumping, including:
    - Eliminating purge wastewater, and therefore reducing IDW
    - Increasing the sample interval accuracy
    - Collecting samples with less turbidity, and therefore less analytical bias and noise
- DMPDB™s significantly reduce time, equipment, and costs associated with PFAS sampling

A.1.6 References:

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[6] Consultant & Project names redacted by request.

[7] Client and site names redacted by request.

[8] This agency, whose name and site names were redacted on request, will publish this study in 2023, pending peer review.