## AFCEC Environmental Restoration Innovative Technology Projects

### Ongoing Projects

| FY | ITP ID | Title | Contractor/PI | Synopsis |
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| 2022 | BAA2203 | On-site removal and destruction of PFAS using Surface Active Foam Fractionation and DeFluoro Technologies | Allonia<br><br>Kent Sorenson | Demonstrate a cost-effective, sustainable, on-site separation, concentration, and destruction solution for regulated PFAS compounds in surface water and/or groundwater at Hanscom AFB. The demonstration will represent the first ever coupling of SAFF® and DE-FLUORO™ for a complete on-site treatment process. |
| 2022 | BAA2213 | Tempe cell method for PFAS leaching | Arcadis<br><br>Joseph Quinnan | Develop and validate a leaching method using Tempe cells by extending the retention curve analysis to allow sampling of porewater from intact cores under controlled conditions. Validation of the method will be completed using two primary lines of evidence: comparison with lysimeter porewater sampling through intact cores collected proximal to prior lysimeters and comparison of transient water release and imbibition sampling at various points on the soil moisture retention curve and numerical simulations. The goal is to develop a commercial method of leaching tests that can be reliably conducted by contract laboratories, enabling widespread adoption by practitioners and providing a realistic estimate of leaching potential for vadose zone soils containing PFAS. |
| 2022 | BAA2217 | Field Validation of a Modified HYDRUS Model for Simulating PFAS Leaching in the Vadose Zone | Arclight<br><br>Jeff Silva | Develop a methodology for modeling PFAS fate and transport in vadose zones, particularly for charactering the transport between the source zones and the groundwater table. Specifically, this project will evaluate, demonstrate, and validate the use of the commercially available and widely used HYDRUS unsaturated flow and transport model for use at F.E. Warren AFB, WY. |
| 2022 | BAA2224 | In Situ Treatment of PFAS-Impacted Stormwater Emanating from AFFF Source Areas | CDM Smith<br><br>Charles Schaefer | Demonstrate the use of commercially available, engineered pre-cast concrete vaults to divert, capture, and remove PFAS present in stormwater in situ in an easy-to-implement and cost-effective manner at Dobbins ARB, GA. This project proposes to treat PFAS-impacted stormwater in situ by diverting, capturing, and directly funneling stormwater outfall through pre-cast concrete vaults containing filtration and PFAS adsorption media. |
| 2022 | BAA2237 | Applicability Comparison of Two Commonly Used Modeling Systems for Simulating Fate and Transport | GSI<br><br>Chin "Bill" Mok | Evaluate use of commercially available fate-and-transport (F&T) models for assessing PFAS F&T at industrial sites. Specifically, this project will evaluate, demonstrate, and validate the use of two readily available F&T modeling systems; the Transport of Unsaturated Groundwater and Heat (TOUGH) and MODFLOW with Un-Structed Grids (MODFLOW-USG) families of codes, for assessing PFAS persistence in the environment and migration from sources to receptors through the vadose zone and saturated zones. |

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| 2022 | BAA2247 | Treatment of PFAS in Mixed Media | Savron<br><br>David Major | Demonstration/validation of smoldering treatment that was evaluated under the U.S. Department of Defense Strategic Environmental Research Development Program. The objectives of this project are: 1) Assess if exchange resins (IX) can serve as a fuel that supports smoldering-based combustion; 2) Generate performance data on the ability of smoldering combustion to treat PFAS and other co-contaminants in soils, granular activated carbon or IX to meet regulatory criteria, including the U.S. Environmental Protection Agency Lifetime Health Advisory for perfluorooctanoic acid and perfluorooctane sulfonic acid; and 3) Assess the impact of soil permeability, moisture content, soil type, and PFAS concentrations on treatment robustness and effectiveness. |
| 2022 | BAA2276 | Supercritical Water Oxidation Destruction of PFAS Concentrated Spent Media | Wood<br><br>Dora Chiang | Use of Supercritical water oxidation (SCWO) to destroy PFAS waste streams generated through pump and treat remediation systems. SCWO is proposed to be demonstrated and validated at Air Force installations for on-site destruction of remediation derived PFAS wastes such as spent GAC, spent ion exchange resins, innovative sorbents, or other concentrate rejects. |
| 2021 | BAA2101 | Integrated Analysis of Existing Data to Maximize High- Resolution Site Characterization Knowledge | GSI<br><br>Chin “Bill” Mok | Fractured bedrock aquifers have proven to be difficult settings for remedial efforts. Due to the complex nature of these sites, groundwater plumes in fractured bedrock sites are typically more mature, dispersed over large areas, and penetrate deep into the subsurface; therefore, these sites often accrue high remedial and operational costs. In recent years, particulate carbon amendments (PCAs) have become more common in the environmental remediation industry, offering an alternative in-situ remedy with the benefits of contaminant sorption (typically activated carbon) and destruction (via and oxidizing/reducing agent or serving as a medium for microbial growth in situ). Complex chlorinated volatile organic compound (CVOC) sites could benefit from these PCA technologies to potentially address key obstacles such as back diffusion, dilute plumes, and complex geological settings. When combined with a high-resolution site characterization (HRSC) tools, PCA products have the potential to drastically improve remediation efforts at complex sites. |
| 2021 | BAA2102 | Continuous Flow Field Pilot to Completely Mineralize PFAS in Groundwater | OXbyEL<br><br>Ed Ricci | Design, build, and operate a scalable Electrolyzer pilot remediation system for PFAS impacted groundwater and validate performance through on-site treatability studies at Davis Monthan AFB, AZ. The key objectives are: 1) prove technology scalability for groundwater remediation; 2) assess the technology performance treating a variety of groundwater matrices impacted by complex geological heterogeneity; 3) validate PFAS mineralization effectiveness; 4) demonstrate co-contaminant mineralization effectiveness; 5) confirm continuous, single-pass flow-through operation; and 6) estimate operating and capital costs for a commercial treatment system. |