Entries for July 1-15, 2026

Market/Commercialization Information

ENVIRONMENTAL REMEDIATION SERVICES EEK, AK (COMBINE)
U.S. Department of the Interior, Bureau of Indian Affairs, Pacific Region, Sacramento, CA
Opportunities on SAM.gov140A0526Q0003, 2026

This is an Indian Small Business Economic Enterprise (specific to the Department of the Interior) under NAICS code 562910. The Bureau of Indian Affairs (BIA) seeks a contractor to remediate contaminated soil at a former BIA elementary school in the Native Village of Eek, Alaska. The former school site contains documented historical releases of petroleum and related contaminants from aboveground storage tanks (ASTs), day tanks, fuel pipelines, and former tank farms. Investigations between 2010 and 2025 have identified soil and groundwater impacts, including DRO, RRO, ethylbenzene, 1-methylnapthalene, acenaphthene, naphthalene, fluorene, and phenanthrene, and related compounds of potential concern (COPCs). The site is in a remote Alaska Native community with limited infrastructure, requiring careful planning for logistics and community coordination. Work will include development of a comprehensive, technically accurate work plan, safe and compliant fieldwork conducted in accordance with approved plans, quality sampling consistent with Alaska Department of Environmental Conservation objectives, community coordination, and preparation of a final report. The award will be a firm-fixed-price contract with a period of performance from September 1, 2026, through August 31, 2027. Offers are due BY 9:00 AM PDT on August 24, 2026. https://sam.gov/workspace/contract/opp/a1b05a20f9aa4ae9b5a6f32926b2abec/view

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Cleanup News

PFAS INVESTIGATIONS AND IMMEDIATE RESPONSE ACTIONS FORMER MUNICIPAL FIRE TRAINING FACILITY BARNSTABLE COUNTY, MASSACHUSETTS
Ruszala, P., J. McKechnie, P.G., D. Scanlon, and R. Moore. 2026 Northeast Conference on the Science of PFAS: Public Health and the Environment, 14-16 April, Worchester, MA, 42 slides, 2026

A regional fire training facility in Barnstable County, Massachusetts, used AFFF to provide essential live-fire training to municipal, state, and federal emergency responders. PFAS detection in nearby public water supply wells transformed what initially appeared to be a localized source-area cleanup into a complex regional groundwater remediation challenge, requiring a fundamental rethinking of the site's conceptual model and long-term management strategy. Initial response actions focused on source removal, engineered caps, groundwater extraction and treatment, and treatment of impacted drinking water supplies that mitigated near-term exposures. Continued investigation revealed a far more intricate hydrogeologic system characterized by multiple historical PFAS sources, overlapping contaminant plumes, and hydraulic influences from high-capacity municipal supply wells. High-resolution groundwater profiling, PFAS forensic analyses, regional hydrogeologic investigations, ecological evaluations, aquifer testing, and 3D groundwater flow and transport modeling were integrated to develop a refined conceptual site model. This enabled the design of an innovative in situ permeable reactive barrier utilizing colloidal activated carbon to intercept the migrating PFAS plume before it reached sensitive downgradient receptors. Pilot testing demonstrated >99.9% reductions in PFAS concentrations, lowering groundwater concentrations from ~35,000 ng/L to non-detect levels while validating the long-term viability of the treatment approach. Following the pilot study, a full-scale PRB was installed, featuring a 617-ft PRB with 406,400 lbs of Plumestop through 247 injection points. The lessons learned provide a transferable framework for practitioners confronting the growing number of legacy AFFF release sites where regional hydrogeology, multiple source areas, and evolving regulatory expectations demand innovative, science-based remediation strategies. Https://www.newmoa.org/wp-content/uploads/2026/04/3B_3_RuszalaMcKechnie.pdf

REWRITING THE PLAYBOOK: TRANSFORMING GROUNDWATER REMEDIATION WITH FLUX-FOCUSED MODELS AND ADAPTIVE STRATEGIES
Heinze, K. | DCHWS West 2025 Winter Symposium, 26-28 January, Denver, CO, 15 slides, 2026

At the former Reese Air Force Base near Lubbock, TX, a three-mile-long TCE plume once threatened local drinking water supplies. Early remedial efforts built on oversimplified conceptual site models produced limited progress and highlighted the limits of relying on average conditions. A flux-centric framework was adopted to refine the site model and delineate high-mobility and static zones along the plume's length, tailor remedial systems to these features, and recalibrate operations based on real-time data. Wells were repositioned to target preferential flow paths, and a dynamic combination of extraction, recirculation, and enhanced reductive dechlorination was adaptively managed as site conditions changed. Focused flux control achieved complete restoration of the TCE plume in less than a decade, far ahead of previous 50-year projections. Moreover, remedy optimization led to a 60% reduction in system flow rates, a 25% increase in contaminant removal efficiency, and estimated taxpayer savings of at least $22 million. The site experience highlights core elements of effective management: continuously challenging and improving site models; deploying remedies that can be reconfigured as new data emerge; and allowing quantitative, site-specific flux metrics to guide every major decision. The framework delivers real results and cost savings and also fosters clear and transparent stakeholder communication. As groundwater cleanup projects become more complex and expectations for outcomes continue to rise, teams that capitalize on robust conceptual models, advanced data, and adaptive, flux-focused decision processes are best positioned to drive efficient, repeatable, and defensible project success. Https://mediacdn.guidebook.com/upload/213718/PDmfOD3UVTDT8EdQDiGKVo4Z10ODCQTmEY5q.pdf

STUDY OF REEDBED SYSTEM PLANTED WITH *PHRAGMITES AUSTRALIS* FOR THE TREATMENT OF GROUNDWATER CONTAMINATED WITH 1,2-DICHLOROETHANE (1,2-DCA) AND ITS MICROBIAL ANALYSIS AT A FORMER INDUSTRIAL PLANT
Rahim, F., S.R.S. Abdullah, S.B. Kurniawan, and M.F. Imron. | Environments 13(3):162(2026)

A 2-acre reedbed system, cultivated with *Phragmites australis*, was utilized to remediate chlorinated hydrocarbon-contaminated groundwater at a former industrial site. The reedbed comprised a combination of horizontal and vertical systems over four parallel installations, with a treatment capacity of 305 m3/day. The mean inlet concentration for the four-line treatment was 112.4 mg/L, which was below the specified inlet concentration of 250 mg/L. From 2019 to 2024, the reedbed system effectively eliminated 1,2-DCA, with average removal rates of 97.7%, 98.8%, 98.5%, and 98.6% for Lines 1 to 4, respectively. The average outlet concentrations of 1,2-DCA were 0.70 mg/L, 0.40 mg/L, 0.42 mg/L, and 0.52 mg/L for Lines 1-4, respectively, resulting in an overall average of 0.51 mg/L. An assessment of natural attenuation by first-order decay kinetics for five groundwater monitoring wells showed values between 0.0012/year and 0.0036/year (shallow wells), 0.0003/year and 0.0021/year (middle wells), and 0.0003/year and 0.0009/year (deep wells). Shallow groundwater showed the highest kinetic rates compared to middle and deep groundwater wells. Results indicated that the reedbed system removed the bulk of contaminants through active biological processes involving plants and microbes, and that natural attenuation further degraded 1,2-DCA in the groundwater profiles. Based on data monitoring, the reduction and degradation results showed good removal efficiency for the reedbed systems, combined with natural attenuation in the groundwater. *This article is* ***Open Access*** *at* https://www.mdpi.com/2076-3298/13/3/162

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Demonstrations / Feasibility Studies

INTERMITTENT SOIL VAPOR EXTRACTION (SVE) FOR VOC REMOVAL: A FULL-SCALE CASE STUDY
Bellin, I., R. Raga, and M. Rodighiero. | Remediation V36(3):e70070(2026)

A study investigated the field-scale application of a soil vapor extraction (SVE) system operated under intermittent conditions to remediate an industrial site contaminated with ethylbenzene and xylenes. The contamination originated from a UST release and affected the entire thickness of the unsaturated zone down to ~24 m bgs. Following groundwater containment through a P&T system, an SVE system consisting of four extraction wells was installed, with operational configurations varying over time. The system was monitored over 3 years, and the collected data were used to evaluate vapor phase concentration trends, mass removal rates, and cumulative extracted mass. Results show a progressive decrease in VOCs, with a total extracted mass of ~12,700 kg. By the end of the study period, concentrations had decreased to ~0.1% of their initial values, indicating the likely presence of residual contamination that could be further addressed by transitioning to alternative technologies, such as bioventing. Https://onlinelibrary.wiley.com/doi/epdf/10.1002/rem.70070

WATERJET INJECTION TECHNOLOGY TO ENHANCE BIOREMEDIATION OF CHLORINATED SOLVENTS CONTAMINATION
Chien, S.-W.C., J.-w. Liu, P.-T Wu, Y.-H. Lee, and T.-P. Wang. Water Environment Research 98(6):e70444(2026)

A 2-year pilot-scale study aimed to remediate cVOCs in a low-permeability aquifer, with TCE and 1,2-DCA as the target contaminants. A high-pressure waterjet injection technique was applied to create fine circular slots within the aquifer, enabling the directional delivery of electron donor substrates and improving their distribution in low-permeability zones. The efficiency of substrate transport and reaction was evaluated using time-lapse cross-hole electrical resistivity tomography and groundwater monitoring data, including total organic carbon, chloride, and metabolic by-products such as ethene and methane. Before injection, the aquifer was under aerobic conditions with low organic carbon content, indicating insufficient electron donor availability and unfavorable conditions for reductive dechlorination. After waterjet injection, geochemical results indicated that reducing conditions were rapidly established, accompanied by the gradual depletion of dissolved electron acceptors. As anaerobic conditions developed, concentrations of TCE and 1,2-DCA decreased to below Taiwan's Groundwater Pollution Control Standards (0.05 mg/L) within 1 month, with no rebound observed during the subsequent monitoring period. The formation and subsequent transformation of intermediate dechlorination products, along with the detection of ethene and methane, further confirmed the ongoing reductive dechlorination process. Results demonstrate that waterjet injection is a robust and practical approach for delivering amendments in heterogeneous, low-permeability formations.

GROUNDWATER MICROBIAL RESPONSES TO 1,1,2-TRICHLOROETHANE GRADIENTS DURING BIOSTIMULATION-ENHANCED NATURAL ATTENUATION: A FIELD STUDY
Fang, H., K. Zhao, L. Yang, Y. Huang, Y. Zhang, J. Wan, Y. Huang, and W. Liu.
Journal of Environmental Chemical Engineering 14(3):123121(2026)

Groundwater microbial responses to 1,1,2-TCA gradients were investigated in a field study across low-, high-, and source-pollution zones during biostimulation-enhanced natural attenuation (BENA). Under low contamination, 1,1,2-TCA was completely dechlorinated to ethene, while high contamination levels exhibited partial transformation and spatially heterogeneous ethene production. Within the source zone, 1,1,2-TCA was slowly reduced to VC, whose accumulation imposed persistent toxicity on indigenous microbes. Quantitative PCR revealed that total bacterial 16S rRNA gene abundance increased by four orders of magnitude, from 10^8 to 10^{13} copies/L, following biostimulation. *Dehalococcoides* 16S rRNA genes increased by 10-100 fold, reaching > 10^7 copies/L, while Geobacter stabilized around 10^{10} copies/L, confirming the effective activation of both obligate and facultative organohalide-respiring bacteria. Network analysis indicated that under high contamination, *Dehalococcoides* functioned as the sole module hub, supported by fermentative connectors, which mediated hydrogen and short-chain VFA transfer. As contaminant load increased, deterministic assembly processes strengthened (>60%), modularity rose, and positive correlations dominated, reflecting enhanced cooperation but reduced network complexity. Extreme pollution simplified microbial networks and favored metabolically versatile generalists (e.g., *Geobacter*), diminishing functional coupling. Findings demonstrate that pollutant load regulates both the completeness of dechlorination and the ecological stability of syntrophic networks, providing mechanistic insight for optimizing BENA in CAH-contaminated aquifers.
Https://www.sciencedirect.com/science/article/pii/S2213343726020968/pdfft?md5=e9b3768304f269d06002f57030de2cb&pid=1-s2.0-S2213343726020968-main.pdf

ELECTRICITY-INDUCED SIMULTANEOUS IN SITU REMEDIATION OF ARSENIC AND POLYCYCLIC AROMATIC HYDROCARBONS IN GROUNDWATER AT A FORMER WOOD TREATMENT SITE - A FIELD PILOT STUDY
Kumpiene, J., I. Carabante, E. Lindberg, S. Long, N. Pratt, P. Lam, and A.B. Cundy.
ACS ES&T Water 6(6):3922-3937(2026)

A pilot study evaluated a low-voltage electricity-induced soil remediation method at a highly contaminated site designed to immobilize As and simultaneously degrade PAHs in situ using iron (Fe) electrodes supplying pulsed direct current to promote PAH oxidation and Fe release from electrodes for As immobilization. Groundwater in five wells was monitored for concentrations of contaminants, their degradation byproducts, and microbial and fungal community structures. Over two years, dissolved PAH16 concentrations decreased by 62–94% across wells, with no accumulation of oxygenated or nitrogen-containing PAH. Dissolved As concentrations declined by up to 88% at low PAH levels, but reductions were weaker (55-57%) and more variable at very high PAH concentrations (hundreds to thousands µg/L). Microbial communities, both prokaryotic and fungal, were characterized by taxa often found in contaminated aquifers and soils, with enrichment of PAH-degrading and As-tolerant *Pseudomonas*, *Rugosibacter*, and *Duganella*, but showed no adverse effect of the treatment.
Https://pmc.ncbi.nlm.nih.gov/articles/PMC13274490/pdf/ew6c00318.pdf

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Research

A PASSIVE CONVERGENCE-PERMEABLE REACTIVE BARRIER COUPLING ADSORPTION AND PEROXYDISULFATE-DRIVEN DEGRADATION FOR SUSTAINABLE GROUNDWATER REMEDIATION OF PFAS

GROUNDWATER REMEDIATION OF PFOA

He, Y., S. Chen, J. Fang, T. Zhang, B. Chai, B. Yan, and L. Zheng.
ACS ES&T Water [published online 16 July 2026 before print]

A study applied a passive convergence-permeable reactive barrier (PC-PRB) for long-term PFOA treatment by integrating adsorption enrichment, peroxydisulfate (PDS)-driven degradation, and in situ regeneration of the reactive medium. Commercial granular Fe-modified biochar (GFBC) was used as the reactive medium and exhibited a maximum adsorption capacity of 2.0 mg/g. Batch experiments achieved 91.6% PFOA removal with 69.4% defluorination. In 1D column tests, the highest retardation factor (R = 87.0) occurred during initial adsorption at pH 7, whereas cyclic operation under alkaline conditions maintained R = 37.5 and 46.4% defluorination after two cycles. Three-dimensional (3D) box experiments confirmed adaptive PDS redistribution under convergent flow, with a notably increased PRB remediation capacity (>4.5-fold by day 64) without permeability loss, and a >84% removal maintained for 70 days at 100 μg/L PFOA. A reduced reactive-transport model implemented in FEFLOW reproduced PFOA adsorption-degradation dynamics in 1D columns (R2 = 0.555-0.896; NRMSE = 0.106-0.218) and enabled conservative prediction in 3D systems. Https://pubs.acs.org/doi/pdf/10.1021/acsestwater.6c00571

PATHWAYS FOR THE MINERALIZATION OF PERFLUOROOCTANESULFONIC ACID UNDER A SMOLDERING REDUCTIVE ATMOSPHERE

Zhan, M., Z. Zhang, Y. Shan, J. Fu, P. Cai, and W. Jiao.
Environmental Science & Technology 60(4):3668-3680(2026)

PFOS smoldering degradation pathways and relative bond cleavage mechanisms were deduced from lab-scale byproduct profiles and supported by reactive force field simulations and quantum-chemical calculations. Smoldering was self-sustained at a calorific value of 0.79 MJ/kg and an air Darcy velocity of 1.5-2.5 cm/s. The PFOS removal rate reached 98.1%, with only ~50% energy consumption compared with that of conventional incineration under equivalent degradation conditions. Investigations revealed distinct degradation pathways in smoldering compared with traditional approaches: in a CO atmosphere, early C-C bond scission and CO-coupled sulfur transformation were predicted (potentially evolving toward COS). This pathway played a dominant role in PFOS degradation, providing more efficient sulfur-group transformation, less toxic byproducts, and better compatibility with oxygen-limited conditions. Pilot-scale experiments further validated the feasibility for field applications, achieving 98.6% PFOS removal. Findings provide mechanistic insights into improved smoldering-based PFAS remediation under reductive conditions and optimization of treatment strategies toward higher efficiency and environmental safety.

DUAL-ELEMENT COMPOUND-SPECIFIC ISOTOPE ANALYSIS OF DIETHYL PHTHALATE DEGRADATION ACROSS THE VADOSE ZONE AND SATURATED ZONE: DIVERGENT ISOTOPE BEHAVIOR AND MECHANISMS

Cao, R., Y. Li, Y. Liu, L. Feng, T. Zhang, Z. Du, and L. Zhang.
Environmental Science & Technology 60(26):18813-18824(2026)

A study presented a model system to analyze diethyl phthalate (DEP) degradation processes across the interface of the vadose zone and saturated zone under different simulated contamination scenarios. Across all scenarios, the isotopic fractionation of DEP markedly shifted as it migrated from the vadose zone into the saturated zone. εC ranged from -5.6 to -4.2‰ and εH ranged from -26 to -21‰ in the vadose zone, while εC ranged from -2.8 to -2.4‰ and εH ranged from -15 to -11‰ in the saturated zone. The abundance of carboxylesterases suggests that hydrolysis dominated in both zones, whereas biological oxidation likely varied spatially. Cytochrome P450 predominated in the vadose zone, while peroxidase contributed more in the saturated zone. Differences in oxidative enzymes and the contributions to DEP degradation resulted in distinct carbon and hydrogen isotope fractionation between the two zones. Such substantial differences in isotope fractionation across the vadose and saturated zones help identify interfacial processes of pollutant fate.

REMEDIATION OF A LABORATORY BENZOTHIAZOLES–CONTAMINATED AQUIFER USING PERSULFATE ACTIVATED BY IRON-BEARING MINERALS IN POROUS MEDIUM

Xu, T., W. Li, Z. Dong, M. Yang, and Q. Bao. | Remediation 36(3):e70068(2026)

Batch experiments and 2D tank experiments were performed to investigate in situ oxidation of a benzothiazole (BT)-contaminated aquifer using a persulfate/iron-bearing minerals system. The study evaluated the impact of three different minerals (pyrite, hematite, and magnetite) and the mass loading on the degradation of 2-mercaptobenzothiazole (MBT), benzothiazole (BTH), and 2-hydroxybenzothiazole (OBT). The temporal–spatial distribution of contaminants, injected persulfate, Fe^{2+}, and geochemical parameters in an aquifer during the remediation experiment are discussed in detail. Results indicate that MBT, BTH, and OBT can be effectively degraded in the presence of both persulfate and pyrite, reaching removals of >85% in 8 h. BT removal benefited from increasing pyrite mass loading. $\cdot SO_4^-$ and ·OH are the dominant reactive species involved in BTs degradation. Injecting persulfate in situ into the lab-scale aquifer led to 99%, 42%, and 20% reductions of total MBT, BTH, and OBT, respectively, during the tank experiment. BT migration was intercepted, and its distribution area decreased significantly over time, confirming the long-term effectiveness of the persulfate/pyrite in situ reactive zone for BT treatment. The increase of ORP indicates the formation of an oxidizing condition in the subsurface. No significant disturbance to dissolved oxygen in groundwater occurred during remediation. The outcomes of this study provide a basis for practical engineering remediation for BT-contaminated groundwater.

ENHANCED PHYTOREMEDIATION OF PETROLEUM SLUDGE-CONTAMINATED SOIL BY SALTMARSH PLANTS (*SALICORNIA SINUS-PERSICA*); ASSESSMENT OF THE AMENDMENT EFFECTS OF BIOCHAR AND VERMICOMPOST

Kamranifar, M., H. Pourzamani, R. Khosravi, G. Ranjbar, and K. Ebrahimpour.
Remediation 36(3):e70072(2026)

A study investigated enhanced phytoremediation of petroleum sludge-contaminated soil using the halophyte *Salicornia sinus-persica* and assessed the synergistic effects of biochar and vermicompost as soil amendments. A 6-month greenhouse experiment was conducted using soil contaminated with petroleum sludge concentrations ranging from 0% to 8% (w/w). Treatments included unamended soil, biochar amendment, vermicompost amendment, and a combined biochar-vermicompost amendment, with setups for planted, unplanted, and sterile unplanted conditions. Petroleum sludge concentrations > 4% significantly inhibited seed germination, but amendments mitigated these effects. The presence of *S. sinus-persica* combined with amendments significantly enhanced total petroleum hydrocarbon (TPH) removal in soil. The highest TPH removal efficiency (54.1%) was achieved in the 0.2% sludge treatment with combined amendments and plants. However, at higher contamination levels (4%-8% sludge), removal efficiencies were considerably lower (ranging from 19% to 37%), and plant growth was severely inhibited at 8% sludge. Results indicate that *S. sinus-persica* with biochar and vermicompost amendments is effective for low to moderate petroleum sludge contamination but has limited applicability at high contamination levels without additional pretreatment or dilution.

BIOELECTROCHEMICAL SINGLE REACTOR FOR REDUCTIVE AND OXIDATIVE REMOVAL OF TRICHLOROETHYLENE FROM CONTAMINATED GROUNDWATER

Presutti, M., G. Sassetto, A. Marchetti, G. Simonetti, M.P. Papini, and M. Zeppilli.
Journal of Chemical Technology and Biotechnology [published online 6 February 2026 before print]

This study presents an innovative bioelectrochemical system for the integrated reductive/oxidative removal of TCE from contaminated water in a single tubular reactor. Rather than relying on sequential reactor configurations, the system optimized a three-electrode setup, enabling anaerobic and aerobic dechlorination processes to occur simultaneously within the same unit. The system features a mixed metal oxide anode that facilitates oxygen evolution and supports oxidative degradation, and a graphite cathode for TCE reduction under anaerobic conditions. The reactor's configuration promotes the coexistence of both anaerobic and aerobic microbial communities, enabling complete dechlorination of TCE and minimization of toxic by-products. After characterizing the system from a fluid-dynamic point of view, continuous-flow galvanostatic runs at +15, +30, and +20 mA achieved removal efficiencies > 97%. By-product profiles confirmed the progression toward full mineralization. The most effective performance was obtained at +30 mA, with a removal rate of 38.6 μmol/L/d. Coulombic efficiency and energy consumption were also evaluated, highlighting the feasibility of low-energy operation. The single-reactor strategy represents a significant advancement in the design of compact and efficient systems for in situ groundwater remediation, reducing operational complexity while enhancing treatment performance. Https://scijournals.onlinelibrary.wiley.com/doi/epdf/10.1002/jctb.70147

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General News

PFAS SITE PROFILES

CL:AIRE website, 2026

CL:AIRE's PFAS webpage is a compilation of information relevant to the understanding and management of PFAS. PFAS resources and publications are sorted by publisher, and PFAS news is sorted by the date the article was published on CL:AIRE's website. The material has been sourced from across the world. Https://claire.co.uk/information-centre/pfas.html

STATE OF THE PRACTICE – SUB-AQUEOUS IN-SITU SOLIDIFICATION FOR CONTAMINATED SEDIMENT REMEDIATION

Sabulis, M.W., R.S. Sheaffer, R. Kilkenny, B. Gezon, P.C. Jansen, T. Moran, J. Farr, J. Carr, and G. Wallace. | Remediation 36(4):e70075(2026)

ISS is evaluated in the context of conventional sediment remediation approaches, highlighting its advantages, design and implementation considerations, and effectiveness through case studies. Sub-aqueous ISS offers potential cost savings over traditional methods by mitigating transportation and disposal costs and addressing challenges associated with emerging contaminants. However, altered sediment conditions post-ISS may not support benthic communities, necessitating the use of restoration caps for ecological recovery. ISS is particularly beneficial for sediments > 5 ft below the surface, near sensitive infrastructure, or in large volumes exceeding 10,000 yd^3. Compared to dredging, ISS can reduce environmental disturbance, improve seismic stability, limit vapor and odor emissions, and require a smaller operational footprint, making it suitable for urban environments. The design and execution of ISS demand comprehensive site characterization, regulatory coordination, and careful planning of site preparation, water quality management, and mixing methods. Quality control measures such as GPS monitoring and appropriate grout dosing are critical for success, and long-term monitoring is essential to ensure remedy stability and effectiveness. Https://onlinelibrary.wiley.com/doi/epdf/10.1002/rem.70075

REVERSIBLE PARTS-PER-TRILLION-LEVEL DETECTION OF PERFLUOROOCTANE SULFONIC ACID IN TAP WATER USING FIELD-EFFECT TRANSISTOR SENSORS

Wang, Y., H.-J. Jang, M. Topel, S. Dasetty, Y. Liu, M. Ateia, A. Tam, V. Rozyyev, E. Ouyang, W. Zhuang, H. Pu, S.S. Lee, X. Sui, J.W. Elam, A.L. Ferguson, S.B. Darling, and J. Chen.
Nature Water volume 3:1187-1197(2025)

An ultrasensitive sensing platform is presented for PFOS detection in tap water with a reporting limit (~ 250 ppq) lower than EPA's regulatory standard (4 ppt), using a remote gate field-effect transistor featuring β-cyclodextrin (β-CD)-modified reduced graphene oxide as the sensing membrane. The sensor exhibits excellent selectivity against common inorganic ions, natural organic matter, and select organic pollutants in tap water. The reversible and rapid response (See accepted manuscript: https://www.osti.gov/servlets/purl/3028521

STRATEGIC DELINEATION AT PER- AND POLYFLUOROALKYL SUBSTANCE (PFAS) –CONTAMINATED SITES: A FRAMEWORK COMBINING SOURCE IDENTIFICATION, BACKGROUND ASSESSMENT, AND PLUME MIGRATION INSIGHTS FOR REMEDIAL INVESTIGATIONS

Modiri, M., F. Torres, L. Flores, and R.H. Anderson. | Remediation 36(1):e70040(2025)

Many U.S. entities, including the DoD, have initiated hundreds of remedial investigations (Ris) at sites with PFAS contamination. Although this work generally follows traditional guidance, considerable autonomy is given to the consultant conducting the RI, leading to variable methodologies and associated outcomes, all else equal. Thus, there is a need for a conceptual and systematic framework for conducting an RI for PFAS, especially considering growing knowledge related to the novelty of their fate and transport and ubiquity in the environment. This article summarizes various methods and recommends a standard of practice that balances trade-offs between technical rigor and cost as a systematic guide for practitioners consistent with the state of the science.

PFAS IN THE ENVIRONMENT: TRANSPORT PROCESSES AND IDENTIFYING PFAS RESEARCH NEEDS

Fortner, T., M. Spurlin, and R. Iery. RemPlex webinar, 90 minutes, 2026

Recent research progress in monitoring and remediating the "forever chemical" PFAS inspired this seminar and panel discussion. Researchers from SERDP/ESTCP share recent results, new approaches, and how PFAS statements of need are determined for future research. Https://www.pnnl.gov/projects/remplex/seminars/pfas-environment

SIDE-BY-SIDE EVALUATION OF FIELD-SCALE TREATMENT OF PFAS-IMPACTED SEDIMENTS

Higgins, C., E. Hawley, C. Pritchard, and H. McIntyre. SERDP & ESTCP Webinar, 90 minutes, 2026

This presentation spotlights a comprehensive evaluation of multiple treatment technologies through side-by-side field demonstrations designed to remove and destroy PFAS in impacted sediments and ponded stormwater. Sediment treatment technologies included smoldering combustion, thermal desorption, and sediment washing using high-shear mixing with an ethanol co-solvent. Liquid generated during sediment washing was combined with ponded stormwater and treated using surface-active foam fractionation. Concentrated PFAS foam fractionate was subsequently treated using hydrothermal alkaline treatment, supercritical water oxidation, and ultraviolet-activated photocatalytic silica-based granular media. The presentation discusses treatment performance, PFAS removal and destruction, residual PFAS leachability, potential air emissions, field implementation considerations, and costs. Results provide DoW decision-makers with data needed to evaluate treatment options and support more informed, scalable, and cost-effective remediation of PFAS-impacted sediments at military installations.
Https://serdp-estcp.mil/webinars

The Technology Innovation News Survey welcomes your comments and suggestions, as well as information about errors for correction. Please contact Michael Adam of the U.S. EPA Office of Superfund and Emergency Management at adam.michael@epa.gov or (703) 399-4268 with any comments, suggestions, or corrections.

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