



Unique PFAS Challenges

We apply our experience with multi-media sampling and analysis to the specific challenges of characterizing PFAS releases in the environment. For defensible, cost-effective PFAS characterization, we apply the following procedures:

- Conduct detailed review of historical operations information to prioritize possible release sites at installations
- Develop dynamic Site Conceptual Models to guide site work and illustrate new findings
- Involve of key stakeholders in development of Data Quality Objectives (DQOs) to maximize value data for decision support
- Establish PFAS DQOs aligned with federal and state regulatory health advisories that require low parts per trillion (or ng/L) reporting limits in water
- Use industry-leading analytical laboratories for high-quality analytical services (modified EPA Method 537 using LC/MS/MS) and electronic data deliverables
- Use stringent “clean” sampling techniques and SOPs to eliminate field contamination by PFASs from common external sources (e.g., Teflon tubing, GorTex clothing, cosmetics, fabric treatments, food wrappers, etc.)
- Maintain centralized analytical database to support data visualization for analysis and decision support

PFASs are a suite of chemicals of emerging public health concern found primarily in drinking water systems.

PFASs are a large family of long-chain fluorinated chemicals used in many manufacturing and industrial applications, including fire suppression and oil, stain, grease, and water repellency. Among the many PFASs, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) are the most commonly produced.

A major use of PFASs was in fire extinguishing aqueous film forming foam (AFFF). During fire training, equipment maintenance, and use, PFASs were released to the environment. Additionally, PFOS was used in mist suppressants in decorative and hard chrome plating processes.

Under multiple NAVFAC and USACE contracts, our Oneida ESC Group company OTIE is currently performing Preliminary Assessments/Site Investigations on over 170 PFAS sites in USEPA Regions 6 and 9 involving over 2,700 soil and 1,300 groundwater samples. We use stringent clean field sampling protocols to prevent PFAS contamination and to meet data quality objectives (DQOs) for decision support, all in accordance with our approved UFP-QAPPs.

CHARACTERISTICS OF PFASs



PROPERTIES

- Fully fluorinated organic compounds
- C-F strongest bond
- Amphiphilic
- Low vapor pressure
- Heat stable
- Stable in acids, bases, and (most) oxidants
- No hydrolysis, photolysis, or biodegradation
- High water and atmospheric half-lives

BEHAVIOR

- Highly resistant to degradation
- Ubiquitous in the environment
 - Found in water, soil, sediments, groundwater, and sewage sludge
 - Transported long distances by air or water
- Tend to bioaccumulate and biomagnify
 - Found in human blood and wildlife tissue

PFAS Experience and Success

Under several NAVFAC SW and USACE contracts, our Oneida ESC Group company OTIE performed groundwater sampling for PFASs at two sites at Red River Army Depot and six sites at MCLB Barstow, OTIE is also performing Preliminary Assessments/Site Inspections with soil, sediment, groundwater, and surface water sampling at over 160 sites for 16 active USAF installations in five states in EPA Regions 6 and 9.

OTIE has developed and implemented specialized, rigorous sampling techniques required for PFAS investigations to avoid sample contamination by PFASs from non-site-related sources, while meeting all DQOs.

We have established relationships with DoD ELAP-accredited laboratories that specialize in PFAS analysis. We analyze soil, sediment, groundwater, and surface water samples using EPA Method 537 (LC/MS/MS technology) to deliver reporting limits in the low parts per trillion levels for PFOA and PFOS, as well as several other PFASs.

■ **USACE Time-Critical Response Action.** OTIE is performing PFAS sampling and drinking water mitigation for a CONUS Army installation. OTIE is tasked with monthly sampling of drinking water for PFAS analysis; conducting a Desktop Aquifer Study; limited groundwater investigation for PFAS, Metals, VOCs, and SVOCs; geotechnical investigation; design and install of new water supply well capable of 2,500 gpm; and installation of 9,400 LF of conveyance water main to Post's existing water treatment plant.

The Desktop Aquifer Study included development of a Conceptual Site Model, update of a USGS groundwater flow model, PFAS particle tracking under various pumping scenarios, evaluation of the drinking water aquifer and potential water supply well locations, and recommended locations for optimal water supply well placement.

■ **Site Inspections for PFAS Releases from AFFF Use at Multiple US Air Force Installations in EPA Regions 6 and 9.** The Air Force and the USACE have identified 26 USAF installations in five states in EPA Regions 6 and 9 that require CERCLA site inspections to investigate the presence of per- and PFASs related to past AFFF use. OTIE (under a task order from the USACE Tulsa District) is performing site inspections at 160 sites at 16 active USAF installations. The overall objective is to characterize soil and groundwater contamination by PFASs using low part per trillion (ppt) reporting limits.

The types of sites investigated for suspected PFAS release include fire training areas; aircraft maintenance hangars, including oil/water separators; AFFF lagoons and ponds; fire stations; storm water outfalls; aircraft crash sites where AFFF was used for fire suppression; and firefighting equipment testing and maintenance facilities. Facilities include Environmental Restoration Program (ERP) and non-ERP sites. Sample media include surface and subsurface soil, groundwater, surface water, and sediment.

■ **PFAS Investigation, Red River Army Depot, Txarkana, TX.** OTIE planned and executed groundwater sampling from monitor wells at two suspected PFAS sites on Red River Army Depot (TACOM-AMC). The sites are suspected of contamination due to the historical use of misting applications during electroplating processes and a past history of industrial fluids. The work was performed under a Professional Services Agreement with Tetrahedron, Inc., Baltimore MD as Prime with Army Material Command (AMC) funding. The data will be analyzed to determine if further investigation in the area is warranted

■ **Site Investigation of PFASs in Groundwater, Marine Corps Logistics Base, Barstow (MCLB), CA.** To evaluate PFASs in groundwater, OTIE prepared a technical approach and work plan which was approved by the Navy, USEPA, California RWQCB – Lahontan Region, and the CalEPA DTSC.

As part of work plan preparation, we researched potential materials and processes that are known sources of PFASs and regulatory action levels and identified sites with potential sources of PFASs through interviews and review of administrative records, including sources from AFFF, chromium plating, and wastewater treatment discharges. We sampled groundwater from 18 wells with depths to 208 feet using rigorous SOPs to minimize risk of sample contamination by PFASs from non-site sources.

Personnel were briefed on all prohibited items and SOP protocols in pre-mobilization meetings. We conducted a field audit of sampling activities. Analytical results (EPA Method 537) from equipment and field reagent blanks revealed no detectable PFASs, verifying successful cross-contamination control.

About the Oneida ESC Group

Oneida Engineering, Science, and Construction Group, LLC (Oneida ESC Group) is a tribally-owned family of growing companies that deliver customer-focused technical services with a fundamental commitment to employee-driven safety and quality. Within the Oneida ESC Group and sharing a common management platform, we offer three subsidiary companies: Oneida Total Integrated Enterprises (OTIE), Sustainment Restoration Services (SRS), and Mission Support Services (MS2).

Under the provisions afforded to us by the SBA under 13 CFR 121.103(b)(2) as a tribally-owned, Native American company, our subsidiary companies will draw upon the experience of sister companies as a recognized means of support for our growth, expanding and diversifying our services to our federal customers—ultimately benefiting our Native American, Oneida Nation of Wisconsin owners.

Within the Oneida ESC Group, we offer 27 years of DoD contract experience on more than 50 DoD ID/IQ contracts, ranging from \$3M to \$350M in value. We understand DoD management processes and how to get work done at active installations. We have a mature, in-place business infrastructure to manage, control, and report costs using our DCAA-audited accounting system. Our FAR-compliant procurement systems are governed by written SOPs. We have in-place, OSHA and USACE EM-385-1-1 compliant safety plans and templates as well as UFP-QAPPs, field SOPs, and data management systems.

The Oneida ESC Group integrates engineers, scientists, and construction managers for cooperative and businesslike delivery of services to enhance our customers' missions. Through our Oneida ESC Group common management platform and shared resources for safety, QC, cost accounting, procurement, IT, and human resources, all of our subsidiary companies are fully equipped to meet our customers' needs.

We maximize responsiveness to our customers' requirements by harnessing our diverse network of resources to meet customers' challenges for creative, cost-effective project delivery.



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