



PFAS

STATEMENT OF QUALIFICATIONS



EXECUTIVE SUMMARY

Per- and polyfluoroalkyl substances (PFAS) contamination presents complex challenges that demand safe, efficient, and compliant solutions. Your projects require a partner who can adapt to evolving regulations, minimize risk, and deliver results you can rely on.

Cascade provides you with proven, full-service solutions tailored to your site-specific goals for the drilling, investigation, and remediation of PFAS contamination. Our nationwide team combines advanced treatment technologies, industry-leading expertise, and a robust fleet of specialized equipment to execute complex projects with precision and consistency.

Whether you need rapid response or long-term cleanup, we work alongside you to design and implement the right approach. Our commitment to technical excellence, safety, and environmental stewardship ensures not only regulatory compliance, but also the overall success and health of your project.

WHY PARTNER WITH CASCADE?

Safety

Protect your reputation with Cascade's world-class safety program. We prioritize the safety of people, the environment, and your bottom line while keeping projects on schedule and within budget.

Experience

Benefit from Cascade's extensive expertise across multiple technologies and amendments. Our proactive communication and proven methods help you avoid surprises, reduce risks, and achieve project success.

Capacity

Experience simplified contracting and expedited timelines through Cascade's single-source, self-performing approach to ensure your large-scale environmental projects run smoothly.



PFAS RISKS AND REGULATORY PRESSURE

PFAS represent one of the most pressing environmental challenges of our time. These synthetic chemicals, used for decades in manufacturing, firefighting foams, textiles, coatings, and countless other applications, are highly resistant to breakdown in the environment. This persistence, coupled with their mobility in soil and water, has led to widespread detection in drinking water supplies, surface waters, soils, sediments, and even the atmosphere.

Exposure to certain PFAS compounds is associated with adverse health effects, including developmental impacts, immune system suppression, and increased risk of certain cancers. As public awareness grows, regulators at both the federal and state levels are tightening standards for PFAS in environmental media. The U.S. Environmental Protection Agency (EPA) has proposed enforceable Maximum Contaminant Levels (MCLs) for several key PFAS compounds, while many states have adopted even lower advisory thresholds for drinking water and groundwater. These evolving requirements create significant pressure on site owners and operators to identify, manage, and remediate PFAS impacts, often under accelerated timelines.

KEY CHALLENGES OF PFAS REMEDIATION

PFAS presents unique and complex remediation challenges:

Extreme Mobility – Many PFAS compounds readily migrate with groundwater, creating large, diffuse plumes that can cross property and jurisdictional boundaries.

Low Treatment Thresholds – Cleanup standards are measured in parts per trillion, requiring highly sensitive detection methods and treatment systems capable of meeting ultra-low discharge limits.

Strong Chemical Stability – PFAS are resistant to natural degradation and many conventional treatment technologies, making physical removal, sequestration, or destruction the most viable options.

Co-Contamination – PFAS sites often contain other contaminants of concern, necessitating integrated remedies that can address multiple chemistries simultaneously.

Overcoming these challenges requires a partner with deep technical knowledge of PFAS chemistry and a comprehensive understanding of available and emerging treatment technologies to achieve reliable, cost-effective results.

CASCADE'S ROLE AS A PARTNER

Managing PFAS contamination requires a partner who can deliver practical, proven solutions while adapting to regulatory demands. Cascade combines site-specific investigation, proven and innovative treatment methods, and turnkey project delivery to help you achieve compliance and protect human and environmental health.

Our team offers in-house expertise across every stage of the remediation process. We support you from initial site characterization and delineation, through treatability studies and pilot tests, to full-scale remediation system design, implementation, and long-term operation. By integrating our broad range of services, including high resolution site characterization, injectable sequestration chemistries, in situ and ex situ treatment, we deliver cost-effective, performance-based solutions tailored to each site's conditions and regulatory requirements.

With a nationwide presence, extensive equipment fleet, and commitment to our CORE™ Health & Safety program, Cascade ensures that your projects are executed efficiently, safely, and to the highest quality standards. We work collaboratively with you to navigate the evolving PFAS regulatory environment and achieve lasting, data-driven results.



CASCADE'S PFAS REMEDIATION STRENGTHS AT A GLANCE

Nationwide Reach – 30 offices and a mobile fleet, you gain rapid access to the right people and equipment anywhere in the U.S.

Concept to Completion – A single partner for investigation, full-scale remediation, and long-term operations and maintenance saves you time, reduces risk, and simplifies contracting.

Proven Technologies – Access in situ, ex situ, and above-ground treatment systems tailored to PFAS-impacted soil, groundwater, and surface water, giving you solutions that fit your site's unique conditions.

Sustainable Practices – Waste minimization, energy-efficient operations, and safe handling of PFAS residuals help you meet sustainability goals while maintaining compliance.

Safety Leadership – Our world-class CORE Health & Safety program and consistently low Experience Modification Rate (EMR) protect your workforce, safeguard your reputation, and keep projects on track.

THE CASCADE APPROACH TO PFAS REMEDIATION

No two PFAS sites are the same. Successful remediation depends on a clear understanding of site conditions, contaminant chemistry, regulatory requirements, and project objectives. Cascade's approach focuses on delivering turnkey, data-driven, performance-based solutions that simplify project management, reduce risk, and deliver measurable results.

As a single-source provider, we manage every stage of the remediation process, eliminating the need for multiple contractors. This integrated model ensures seamless coordination from initial site investigation through long-term monitoring. Our engineers, scientists, field crews, and equipment operators work together as one team to streamline schedules, control costs, and maintain quality throughout the project lifecycle.

We begin with comprehensive site characterization, using advanced sampling and high resolution site investigation tools to define PFAS source areas, transport pathways, and exposure risks. These data points guide the selection of targeted remedies and inform our design-build approach. When necessary, we perform in-house bench scale treatability studies and pilot-scale field testing to confirm the treatment method before full-scale implementation.

FOCUSED ON COMPLIANCE, SAFETY, AND SUSTAINABILITY

Every PFAS project is executed under our CORE Health & Safety program, with site-specific Health and Safety Plans (HASPs) to protect workers, the public, and the environment. We anticipate and adapt to evolving regulations, aligning each remedy with current federal and state PFAS standards to ensure compliance today and resilience for future requirements. Our sustainable remediation practices emphasize waste minimization, energy-efficient operations, and safe management of PFAS residuals to prevent recontamination and cross contamination.

By combining technical expertise, a broad suite of remedial technologies, and a proven turnkey delivery model, Cascade empowers clients to address PFAS challenges with confidence. Our approach supports regulatory compliance, protecting the communities you serve, and restores environmental quality.

TECHNOLOGIES AND CAPABILITIES

Cascade offers a large portfolio of PFAS investigation and remediation technologies. Our turnkey capabilities allow us to match the right solution, or combination of solutions, to your site's unique geology, contaminant profile, and regulatory requirements.

Service	PFAS Application	Key Benefits
PFAS Site Investigation Services	Installation of monitoring and extraction wells, high resolution site characterization, soil and groundwater sampling, and precise amendment delivery.	Ensures defensible, high-quality data with strict PFAS decontamination protocols
Waterloo^{APSTM}	Depth-discrete high resolution groundwater and soil sampling; delineation of PFAS plumes and transport pathways	Real-time, high-density data; reduces data gaps; accelerates remedy design and deployment
ColloidalChemTM	In situ sequestration of PFAS in groundwater	Immediate concentration reduction; long-term migration control; minimal surface disruption
ColloidalChem + AnchorTM	Plume interception barriers, source zone treatment, combined remedies	Tailored to site conditions; integrates with other remedial technologies; supported by treatability testing
High Temperature Thermal Treatment	Thermal destruction of PFAS in soils, sediments, and waste streams	Complete compound breakdown; no secondary waste; ideal for concentrated or mixed-waste scenarios
In Situ Stabilization (ISS)	Containment of PFAS with co-contaminants; reduction of leachability and migration potential	Proven track record; adaptable mixing methods; customized reagent blends to meet performance criteria

Remediate complex PFAS sites with confidence. Cascade delivers fully integrated investigation and remediation solutions that help you reduce risk, stay compliant, and keep projects moving. Whether you need PFAS containment, treatment, or destruction, Cascade serves as a single-source partner equipped to meet today's requirements and tomorrow's standards.

SAFETY

At Cascade, safety is not just a policy; it's a core value embedded in every aspect of our operations. We prioritize the health and safety of our employees, subcontractors, and the community we serve, ensuring it is never compromised for expediency or cost. Our comprehensive Health and Safety Program not only complies with governmental regulations but also meets or exceeds client-specific requirements.

Core – Cultivating a Culture of Safety

Our innovative CORE Program is the backbone of our safety culture. This behavior-based approach empowers employees to engage proactively in safe practices, creating a self-sustaining safety environment. CORE includes seven key elements:

- Rigorous Training
- Compliance and Risk Management
- Inspections and Audits
- Effective Communication
- Recognition and Accountability
- Active Management Involvement
- Thorough Incident Investigation and Case Management

Every new Cascade employee completes comprehensive CORE training to ensure a strong understanding of safety processes and practices from day one.

PFAS-Specific Safety Measures

PFAS remediation demands specialized safety considerations due to the chemicals' persistence, mobility, and potential health impacts. Cascade implements PFAS-focused safety measures, including:

Dedicated PFAS Decontamination Protocols – Preventing cross-contamination between sampling points, equipment, and personnel.

Personal Protective Equipment (PPE) – Tailored to PFAS exposure risks, including respiratory protection, chemical-resistant gloves, and impermeable clothing when required.

Containment and Waste Handling Procedures – Secure collection, labeling, and transport of PFAS-impacted media to prevent releases during handling.

Air Monitoring and Exposure Control – Where appropriate, real-time air monitoring to confirm airborne PFAS particulate levels remain below exposure limits.

Water Management Controls – Containment of dewatering effluent, treatment system discharges, and any rinse waters to prevent uncontrolled PFAS migration.



Daily Safety Engagement

We conduct daily field safety meetings for all field projects, adapting additional meetings as needed for changes in scope or conditions. Supervisors, subcontractors, and all team members participate fully, reinforcing a shared commitment to a safety-first mindset.

A Record of Safety Excellence

Cascade's dedication to safety is reflected in our total recordable incident rate of 0.95, consistently below the industry average.

Our Promise

Safety is not just a priority for Cascade, it's a promise. Whether working in a remote location, an active industrial facility, or a sensitive community environment, our CORE™ Health & Safety Program ensures that every project is executed to the highest standards of protection for our employees, clients, and the public.

Year	TRIR Rate
2025	0.95
2024	1.26
2023	0.91



PROJECT EXPERIENCE

Successful PFAS remediation requires more than technical expertise. It demands a partner who can adapt to changing site conditions, anticipate challenges, and deliver solutions that hold up under real-world pressures. Cascade's track record reflects exactly that.

Our PFAS and contaminant remediation portfolio includes projects where innovative solutions, strong safety leadership, and practical field experience came together to protect communities, restore environmental quality, and help clients achieve regulatory compliance with confidence.

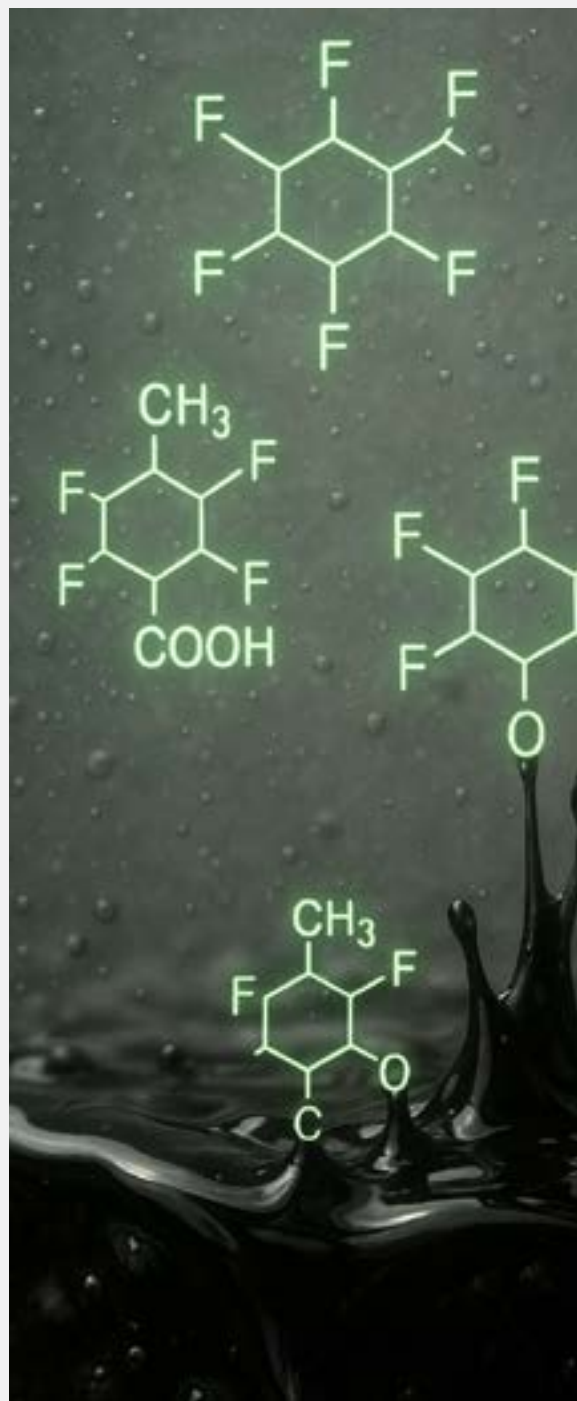
CASE STUDY #1

PFAS INJECTION PILOT TEST WITH CASCADE CHEMISTRIES TEXAS

At a former metal plating facility, Cascade conducted a pilot test for the remediation of PFAS and hexavalent chromium to evaluate full-scale feasibility. The pilot included 10 direct push injection points and injected ColloidalChem + ISCR™ technology, a caustic and colloidal carbon-activated sodium dithionite formulation chosen for improved distribution in heterogeneous lithology.

RESULTS

Post-injection monitoring confirmed reductions in hexavalent chromium and PFOS/PFHxS to below Maximum Contaminant Levels (MCLs). Minor rebound was observed due to upgradient contamination, but the project successfully demonstrated an effective remedial approach and established a clear foundation for full-scale treatment.





CASE STUDY #2

PFAS TREATMENT DEMONSTRATION AT PETERSON SFB - COLORADO

PFAS contamination is a nationwide challenge, particularly for the Department of Defense, which is seeking safe and scalable remediation solutions. TerraTherm, a Cascade company specializing in thermal remediation, was selected to participate in a major ESTCP (Environmental Security Technology Certification Program) demonstration at Peterson Space Force Base.

APPROACH

The project involves piloting ex situ thermal treatment of PFAS-impacted soil and granular activated carbon. This leverages expertise from leading researchers and private-sector experts to evaluate both proven and emerging treatment methods under real-world conditions.

RESULTS AND IMPACT

Thermal treatment shows strong potential in PFAS response, offering high removal efficiencies without the need for chemical additives. TerraTherm's role in this project highlights how thermal technologies can expand the toolbox of effective PFAS remediation options, providing a scalable pathway for large and complex sites.

MEET OUR PFAS EXPERTS

Cascade's PFAS experts bring decades of combined experience across research, field application, and large-scale remediation projects. This team translates complex science into practical solutions that help clients achieve compliance, protect communities, and restore environments.



Rob Danckert, PFAS Specialist and Cost Estimator

Rob focuses on the drilling side of PFAS investigation and remediation. He leverages extensive field and estimating experience to develop accurate cost models, select appropriate drilling methods, and ensure strict decontamination protocols. His work gives clients confidence in both feasibility and predictable budgeting before full-scale implementation.



Eric Moskal, Director of Technical Experts

Eric specializes in injectable remedies and has experience applying Cascade Chemistries to PFAS projects. He is nationally recognized for his work in project optimization and has helped design and implement treatment strategies at complex sites nationwide. Eric also shares his expertise regularly at industry conferences and technical forums.



Paul Lear, Ph.D., Senior Technical Director

Paul specializes in in situ stabilization of PFAS and co-contaminants. Drawing on a strong research background, he develops and applies customized stabilization methods to reduce contaminant mobility and leachability. His work bridges laboratory science and field application, helping clients adopt innovative, science-based solutions.



Alyson Fortune, Senior Scientist

Based at TerraTherm, Alyson focuses on thermal remediation approaches for PFAS. She supports pilot and full-scale thermal treatment projects, applying advanced sampling and treatability testing to validate and optimize remedies. Her expertise ensures thermal technologies are implemented effectively and safely for complex sites.

Together, these experts collaborate with Cascade's nationwide teams of engineers, scientists, and field crews to deliver integrated, performance-based PFAS solutions. Their expertise ensures that every project, from pilot testing to full-scale remediation, benefits from proven technical knowledge and practical field insight.



COMPANY OVERVIEW

Cascade is the premier single-source provider of environmental and infrastructure drilling, site characterization, and environmental remediation services. With 30 offices nationwide and a dedicated team of more than 800 employees, we have the reach, expertise, and resources to deliver projects of any scale and complexity.

Our history of growth through innovation and strategic acquisitions has built a family of specialized brands: Cascade, TerraTherm, and Aquifer Drilling & Testing. Together, these groups offer the industry's most comprehensive portfolio of field services, supported by a nationwide network.

Safety and sustainability are embedded in everything we do. Cascade's CORE Health & Safety program ensures the highest standards of protection for employees, clients, and communities. Our Compass™ sustainability program advances environmental stewardship, social responsibility, and responsible growth through measurable goals and continuous improvement.

CONTACT US

Your journey towards efficient and sustainable environmental solutions begins here. At Cascade, we are committed to delivering exceptional remediation services, and our team of experts is ready to assist you with any inquiries or specific needs you may have regarding PFAS or our wide range of environmental services.

Whether you're seeking expert advice, need detailed information about our capabilities, or want to discuss potential projects, our door is always open. Reach out to us through the contact details below, and let's explore how we can collaborate to achieve your environmental goals.

Email: communications@cascade-env.com

Phone: 425.527.9700

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