Advancing **PFAS** Solutions

Beyond Compliance. Beyond Conventional.

EnSafe combines technical expertise and strategic insight to support confident PFAS decisions.

- Strategic Advisory, Compliance & Product Stewardship
- Investigation & Characterization
- Forensics & Decision Support
- Modeling & Predictive Analytics
- Remediation & Optimization
- Technology Transfer, Training & Implementation



ENSAFE

STRATEGIC CONSULTING SERVICES

Bridget Morello, PE
bmorello@ensafe.com
(813) 734-7985

Dan Longbrake
dlongbrake@ensafe.com
(614) 357-7450

David A. Warren, PG
dwarren@ensafe.com
(843) 628-1785

Grant Carey, PhD, P.Eng.
gcarey@ensafe.com
(613) 890-2286

www.ensafe.com



PFAS Solutions

Challenges related to per- and polyfluoroalkyl substances, better known as PFAS, are evolving rapidly. Regulatory requirements continue to change, new analytical methods are emerging, treatment technologies are advancing, and organizations across multiple industries are being asked to make complex decisions with incomplete information. Successfully navigating these challenges requires more than sampling and compliance support—it requires a strategic understanding of PFAS sources, behavior, risks, liabilities, and long-term management options.

EnSafe helps clients address PFAS challenges across the entire project lifecycle. Our multidisciplinary team combines expertise in strategic advisory, investigation, characterization, forensics, predictive analytics, remediation, compliance, product stewardship, and technology transfer to develop practical, technically defensible solutions tailored to each client's needs.

Through continued investment in PFAS expertise, advanced modeling and analytics capabilities, and participation in leading federal research and technology transfer programs, EnSafe provides clients with access to specialized tools, technical leadership, and practical solutions that support better decision-making and improved project outcomes. Our nationally recognized PFAS technical leaders leverage expertise gained from federal research, technology transfer, litigation support, remediation optimization, waste minimization, and supply/product chain due diligence to address PFAS issues for clients in both the public and private sectors.

EnSafe's integrated PFAS capabilities span six core areas that are applied across the specialized services described on the following pages:

- Strategic Advisory, Compliance & Product Stewardship
- Investigation & Characterization
- Forensics & Decision Support
- Modeling & Predictive Analytics
- Remediation & Optimization
- Technology Transfer, Training & Implementation

By integrating traditional environmental consulting with advanced PFAS analytics, modeling, and technical leadership, EnSafe helps clients move beyond simply identifying PFAS impacts and toward developing effective, long-term solutions.

WE ARE ENSAFE
SCIENCE. STRATEGY. CLARITY.

EnSafe began as a two-person firm in 1980, navigating complex regulatory compliance issues associated with RCRA on behalf of our clients. While having grown to 475+ employees nationwide, including a dedicated PFAS team of diverse professionals from various service lines, we have maintained the same nimble mindset allowing us to quickly adapt to ever-changing policy.

In addition to assisting our clients anticipate regulatory ramifications, we develop strategies to minimize PFAS liabilities and craft end-game solutions. Our vigilance ensures our clients' compliance, investigation, remediation, and due-diligence decisions are based on the most recent technically defensible science and reflect a sound strategy for managing PFAS over the long term.

EnSafe provides the technical expertise, regulatory insight, and strategic guidance needed to support informed decision-making throughout every stage of a PFAS project. From planning through implementation and long-term management, we help clients maintain regulatory compliance, mitigate risk, and build lasting resilience.

ENSAFE

creative thinking. custom solutions.

SPECIALIZED PFAS SERVICE AREAS



AFFF MANAGEMENT & TRANSITION

Many of our clients have historically used Aqueous Film Forming Foam (AFFF) for fire suppression, training, and emergency response activities. As federal and state regulations continue to evolve and organizations transition away from legacy fluorinated foams, EnSafe helps clients evaluate liabilities, develop transition strategies, and implement practical solutions that balance operational needs, regulatory requirements, and long-term risk management.

Whether transitioning to fluorine-free foams (FFF), maintaining compliance with Military Specifications (MIL-SPEC) requirements, or managing legacy PFAS-containing materials and infrastructure, EnSafe provides strategic and technical support throughout the process.

In partnership with EnSafe's wholly owned subsidiary, GR2, we offer turnkey services including:

- AFFF inventory and transition planning
- Evaluation of fluorine-free foam alternatives
- Fire suppression system assessments and modifications
- Decommissioning and decontamination of tanks, piping, vehicles, and equipment
- AFFF concentrate removal and replacement
- Investigation of historical release areas
- PFAS waste characterization, management, and disposal
- Regulatory compliance and stakeholder coordination

Our goal is to help clients safely and efficiently transition from legacy AFFF systems while minimizing future liabilities and maintaining mission-critical fire protection capabilities.



DUE DILIGENCE & PFAS LIABILITY EVALUATION

As PFAS regulations continue to evolve, organizations are increasingly evaluating PFAS-related liabilities during property transactions, mergers and acquisitions, portfolio reviews, redevelopment projects, and long-term asset management planning. Federal and state regulations, lender concerns, emerging reporting requirements, and growing litigation trends have elevated PFAS from an emerging contaminant issue to a material business risk in many sectors.

EnSafe helps clients identify, evaluate, and manage potential PFAS liabilities associated with both current and historical operations. Our multidisciplinary team combines environmental due diligence, regulatory expertise, forensics, risk assessment, and PFAS-specific technical knowledge to support informed decision-making.

Our services include:

- PFAS-focused Phase I and transaction support
- Historical use evaluations and source identification
- Assessment of nearby PFAS contributors and offsite risks
- Environmental liability evaluations and reserve planning
- Regulatory and compliance reviews
- Redevelopment and Brownfields planning
- Supply chain and product-related PFAS evaluations
- Product stewardship and PFAS compliance strategy
- Site characterization and risk screening
- Forensic evaluations and source attribution support
- Strategic planning for future PFAS obligations

Whether supporting a property transaction, evaluating an operating facility, or assessing long-term liabilities across a portfolio of assets, EnSafe provides clients with practical, technically defensible information to support business, regulatory, and investment decisions.



ASSESSMENT, INVESTIGATION & CLEANUP

Where PFAS are identified and response actions are necessary, EnSafe provides comprehensive support throughout the entire project lifecycle. We develop data quality objectives, sampling and analysis plans, and quality assurance project plans that address evolving regulatory requirements and project-specific objectives. Our teams execute efficient site investigations, manage investigation-derived waste, and generate technically defensible data that support informed decision-making.

Our integrated approach combines investigation, forensics, modeling, visualization, engineering, remediation, and regulatory strategy to develop technically defensible solutions throughout the project lifecycle.

EnSafe's multidisciplinary PFAS specialists—including chemists, hydrogeologists, engineers, risk assessors, forensic experts, and data analysts—work together to evaluate PFAS sources, release histories, transport mechanisms, and potential risks to human health and the environment. We leverage advanced analytical techniques, conceptual site models, forensic evaluations, visualization and decision-support tools, and predictive modeling to better understand site conditions and support strategic decision-making.

Our experience includes:

- Site characterization and delineation
- Source identification and release history evaluations
- Soil, groundwater, surface water, sediment, wastewater, and biosolids investigations
- Investigation-derived waste characterization, management, and disposal
- Conceptual site model development
- PFAS fate and transport evaluations
- Site-specific criteria development
- Risk assessment and exposure evaluations
- Drinking water investigations, alternate water response, and treatment-system performance monitoring
- Community outreach and stakeholder engagement
- Remedial investigations and feasibility studies
- Treatment technology evaluations
- Remediation design, implementation, and optimization

Whether supporting a screening-level assessment, a complex multi-media investigation, or long-term remedial response actions, EnSafe develops practical, technically defensible solutions tailored to each site's regulatory, operational, and risk-management objectives.

ADVANCED PFAS ANALYTICS, MODELING & DECISION SUPPORT

EnSafe provides advanced PFAS analytics, modeling, visualization, and decision-support services that help clients better understand contaminant behavior, identify sources, reduce uncertainty, evaluate remedial alternatives, and communicate complex technical findings to regulators, stakeholders, and decision-makers. Our proprietary technologies, including Visual PFAS™ and the In-Situ Remediation (ISR) Model™, are key differentiators that provide advanced capabilities for interpreting complex PFAS data, evaluating contaminant behavior, and optimizing investigation and remediation strategies.

Capabilities include:

Analytics & Forensics

- Source attribution and forensic evaluations
- Multivariate statistical analyses and multiple-lines-of-evidence assessments
- PFAS fingerprinting and source differentiation using multiple lines of evidence including our proprietary Visual PFAS™ platform
- Primary and secondary source delineation
- Precursor biodegradation potential

Modeling

- In situ adsorption barrier feasibility, design optimization, performance assessment, and longevity forecasting using our proprietary In-Situ Remediation Model
- Vadose zone characterization and PFAS mobility assessments supporting site-specific cleanup goals and remedial prioritization
- Vadose zone mass discharge estimation
- Reactive transport modeling
- PFAS LEACH and HYDRUS applications

Visualization & Decision Support

- Improved conceptual site model development
- Powerful and cost-effective Visual PFAS™ analyses
- 3D visualization and analytics
- Decision-support and stakeholder communication tools
- Scenario analysis
- Cost-benefit evaluations

Remedial Support

- Site-specific remedial design
- Mass flux analysis
- Site-specific adsorption testing
- Remedial optimization
- Treatment performance evaluations
- Long-term management strategy support



LITIGATION & FORENSIC SUPPORT

As PFAS-related litigation, regulatory enforcement actions, and cost-recovery claims continue to increase nationwide, reliable forensic evaluations have become critical for understanding PFAS sources, release histories, liability allocation, and long-term remediation obligations.

EnSafe's multidisciplinary PFAS specialists provide technical support for litigation, regulatory negotiations, cost-allocation evaluations, and complex site investigations. Our team utilizes multiple forensic techniques including chemical fingerprinting, signature chemicals, historical document review, contaminant transport modeling, and source attribution methodologies to evaluate potential PFAS sources and release mechanisms.

Additional forensic tools include multivariate statistical analyses, advanced visualization and decision-support techniques, conceptual site model development, and multiple-lines-of-evidence evaluations that help clients better understand site conditions and support technically defensible conclusions. Our visualization and modeling capabilities help communicate complex technical findings to regulators, attorneys, and other non-technical audiences.

Our experience includes:

- Source attribution and differentiation
- Chemical fingerprinting and signature chemical evaluations
- Historical release investigations
- Fate and transport analyses and modeling
- Data analytics, including multivariate statistical analysis
- Cost-allocation support
- Litigation and regulatory support
- Conceptual site model development, including interactive 3D CSMs
- Advanced visualization and communication tools

By integrating forensic science, modeling, analytics, and visualization, EnSafe helps clients communicate complex technical findings, support legal and regulatory strategies, and make informed decisions regarding investigation, remediation, and long-term liability management.



POLLUTION PREVENTION & SOURCE REDUCTION

Whether PFAS are identified in wastewater, storm water, biosolids, products, raw materials, or other waste streams, Pollution Prevention (P2) remains one of the most effective tools for reducing long-term liabilities and managing future compliance obligations. Rather than relying solely on treatment and disposal, EnSafe helps clients identify and reduce PFAS at the source whenever practical.

Because PFAS can be difficult to identify within complex operations and supply chains, our approach includes detailed evaluations of processes, raw materials, products, wastewater streams, and procurement practices. We work closely with facility personnel, suppliers, process engineers, and management teams to understand where PFAS may be entering operations and how potential impacts can be minimized.

Our services include:

- PFAS source identification and tracking
- Process and operational evaluations
- Product and raw material reviews
- Supplier and supply chain assessments
- Waste minimization strategies
- Industrial pretreatment evaluations
- Wastewater source tracking
- PFAS substitution and alternative product evaluations
- Segregation, characterization, management, and disposal of PFAS-impacted waste streams
- Long-term PFAS management planning

Where PFAS use remains mission-critical, EnSafe helps clients evaluate treatment, containment, and waste management options while developing practical strategies to reduce future liabilities, improve operational efficiency, and support evolving regulatory requirements.



PERMITTING & COMPLIANCE

PFAS regulations continue to evolve at both the federal and state levels, creating new compliance obligations, reporting requirements, permitting challenges, and potential liabilities for a wide range of industries. Managing PFAS-related compliance increasingly requires organizations to evaluate not only wastewater and waste streams, but also products, raw materials, supply chains, historical operations, and future regulatory exposure.

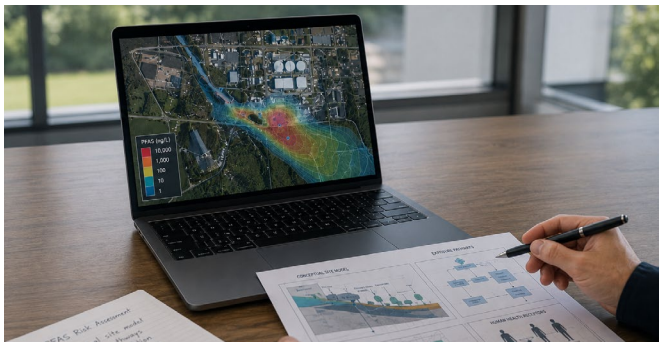
EnSafe helps clients understand, anticipate, and manage evolving PFAS requirements through a combination of regulatory expertise, technical evaluations, and practical implementation strategies. Our team continuously tracks emerging federal and state developments and works closely with clients to assess potential impacts to operations, facilities, permits, and long-term compliance programs.

Our services include:

- NPDES and Industrial Wastewater Discharge Permit support
- Industrial pretreatment evaluations
- TSCA reporting and compliance support
- TRI reporting and PFAS tracking programs
- CERCLA and liability evaluations
- Drinking water and wastewater regulatory assessments
- Product stewardship and PFAS content evaluations
- California Proposition 65 support
- PFAS sampling and compliance monitoring programs
- Waste management and disposal evaluations
- Regulatory Strategy & Long-Term Compliance Planning
- Agency negotiations and stakeholder coordination
- PFAS air emissions evaluations, permitting, and regulatory support

Whether responding to existing requirements or preparing for future regulatory changes, EnSafe helps clients develop practical, defensible compliance strategies that minimize risk, support operational objectives, and reduce long-term liabilities.

Recent regulatory changes and revised guidance continue to affect how PFAS-containing materials, wastes, wastewaters, and air emissions are evaluated and managed, creating additional compliance, operational, and cost considerations for many organizations. We help clients navigate NPDES and Industrial Wastewater Discharge Permits, and associated changes to operations and treatment systems. We also support clients in PFAS usage tracking and reporting under both TSCA and TRI. We can assist companies as they navigate evolving TSCA and TRI requirements, which can trigger substantive due diligence and reporting obligations. EnSafe also helps clients identify and manage PFAS in products regulated by California Proposition 65, including strategies to sample and document PFAS content.



RISK ASSESSMENT

EnSafe's risk assessors track evolving PFAS science, toxicity research, fate and transport considerations, and regulatory guidance to develop risk assessment approaches tailored to site-specific needs. We work closely with federal and state agencies to support defensible human health and ecological evaluations, while balancing current guidance with practical project experience.

Our risk evaluations may incorporate site-specific modeling, forensic evaluations, visualization and decision support, and transport analyses to support regulatory negotiations, exposure evaluations, remedial decisions, and long-term PFAS management strategies.



When PFAS are present in wastewater, storm water, leachate, sludge, or other water management systems, increasingly stringent discharge criteria and potential impacts to downstream receptors may require treatment, source control, or operational changes. Because PFAS are often co-located with other contaminants and influenced by site-specific water chemistry, effective solutions require a comprehensive understanding of both treatment technologies and facility operations.

WASTEWATER & STORM WATER

EnSafe helps clients evaluate PFAS sources, optimize wastewater and storm water management systems, assess treatment alternatives, and develop long-term compliance strategies. Our multidisciplinary team supports industrial pretreatment evaluations, wastewater and storm water investigations, treatment system design, remedial optimization, and regulatory permitting efforts.

We develop practical, site-specific solutions that reduce risk, minimize treatment volumes, optimize infrastructure investments, and support long-term environmental and operational objectives.

ADVANCED PFAS CAPABILITIES & DECISION SUPPORT

The following technologies, proprietary methods, and research initiatives are key technical differentiators that strengthen EnSafe's integrated PFAS solutions throughout the project lifecycle.

VISUAL PFAS™

Advanced visualization and data management for PFAS site characterization and fingerprinting.

ISR MODEL™

In-situ remediation modeling to design barriers and forecast their performance and longevity.

PFAS LEACH

Site-specific evaluation of PFAS leaching potential to support soil criteria, source-management decisions, and long-term risk evaluation.

HYDRUS

Vadose-zone modeling to evaluate PFAS migration from soil to groundwater and support site-specific decision-making.

REACTIVE TRANSPORT

Predictive PFAS transport modeling used to evaluate source behavior, remedial performance, and long-term outcomes.

SITE-SPECIFIC BATCH TESTING

Custom lab and in-situ testing to support site-specific remedial decisions.

ESTCP

Leveraging DoW environmental research and technology demonstrations.

SERDP

Applying DoW environmental research to complex, real-world PFAS challenges.

The following pages describe how these capabilities are supported through nationally recognized research, technology transfer, technical leadership, and real-world project applications.

WHY ENSAFE?

Organizations today face increasing pressure to understand, manage, and reduce PFAS-related risks. Regulatory requirements continue to evolve, liabilities are expanding, and stakeholders are demanding greater transparency regarding PFAS in products, facilities, waste streams, and the environment.

What sets EnSafe apart is our ability to connect specialized expertise across disciplines—helping clients better understand PFAS sources and behavior, reduce uncertainty, evaluate liabilities, optimize response strategies, and make informed decisions throughout the project lifecycle.

WHY CLIENTS CHOOSE ENSAFE



Multidisciplinary PFAS expertise across technical, regulatory, and strategic disciplines



Advanced modeling, visualization, forensic, and decision-support capabilities



Active involvement in SERDP, ESTCP, ITRC, and other leading research and technology-transfer initiatives



Experience applying emerging PFAS science to real-world client challenges



Integrated support from initial strategy and investigation through remediation and long-term management



Practical, technically defensible solutions focused on reducing risk, uncertainty, and long-term liability

COMMON PFAS APPLICATIONS INCLUDE:

- Firefighting foams (AFFF)
- Industrial manufacturing
- Aerospace and defense
- Wastewater and biosolids
- Landfills and waste management
- Construction materials and coatings
- Consumer products and packaging
- Electronics and semiconductors
- Energy and transportation sectors

PFAS have been identified in hundreds of industrial, commercial, and consumer applications, often in locations where organizations may not realize they are present

Research. Innovation. Results.

National Leadership in PFAS Science, Technology, and Decision Support

MULTIPLE SERDP & ESTCP RESEARCH PROJECTS

Active investigators and contributors on multiple SERDP and ESTCP projects advancing PFAS science, technology, and remediation solutions.

INTERSTATE TECHNOLOGY & REGULATORY COUNCIL (ITRC) PFAS TEAM

Active participation in the ITRC PFAS Team supporting the development of nationally recognized technical guidance.

PEER-REVIEWED PUBLICATIONS

Authors of numerous peer-reviewed publications advancing PFAS investigation, modeling, remediation, and decision-support technologies.

INVITED NATIONAL WEBINARS & CONFERENCE PRESENTATIONS

Frequent invited speakers and technical presenters sharing PFAS expertise at national conferences, webinars, and industry events.

DoW E-LEARNING & TECHNOLOGY TRANSFER

Developers of DoW PFAS e-learning modules supporting technology transfer and technical workforce development.

FEDERAL GUIDANCE DEVELOPMENT

Contributors to federal technical guidance, best practices, and regulatory frameworks supporting PFAS investigation and remediation.

INTERNATIONAL LITIGATION & EXPERT ADVISORY SUPPORT

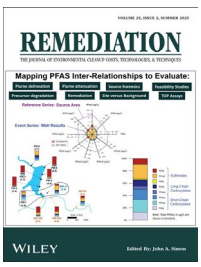
Trusted technical advisors providing forensic analysis, expert support, and strategic guidance for complex domestic and international PFAS matters.

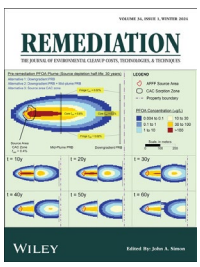


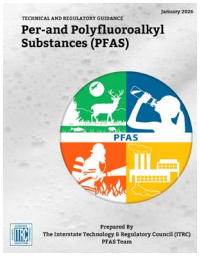
"EnSafe combines advanced PFAS research, innovative technologies, and real-world experience to deliver defensible solutions for clients nationwide."

SELECTED PUBLICATIONS & TECHNICAL CONTRIBUTIONS









PFAS Vadose Zone Mass Discharge (2026) | Visual PFAS™ Applications (2025) | CAC Barrier Modeling & Longevity | Groundwater Modeling & Remediation | ITRC PFAS Guidance

Additional Publications & Technical Contributions

PFAS LEADERSHIP TEAM

EnSafe's multidisciplinary PFAS practice combines nationally recognized expertise in investigation, forensics, modeling, visualization and decision support, remediation, technology transfer, regulatory strategy, and strategic advisory services. Our leadership team integrates these capabilities to deliver comprehensive PFAS solutions for clients nationwide, supporting every phase of the project lifecycle—from planning and investigation through remediation and long-term management.



Dan Longbrake

National Commercial Business Development Director / PFAS Practice Market Lead

Dan leads EnSafe's national PFAS commercialization, business development, and market strategy while supporting federal, industrial, and commercial clients. He focuses on expanding EnSafe's PFAS practice through strategic client engagement, thought leadership, and commercialization of EnSafe's integrated PFAS service offerings, technical capabilities, and strategic partnerships.

PRIMARY EXPERTISE

- Strategic Advisory
- Client Stewardship
- Value-Driven Solutions
- Engagement and Advocacy



Bridget Morello, PE

Director of Remediation, Industrial Wastewater and Process Engineering

Bridget provides national leadership for PFAS investigation, remediation, regulatory strategy, and program management. She leads multidisciplinary teams in developing practical, science-based solutions for complex PFAS challenges, supporting federal, municipal, and industrial clients from site investigation through remediation and long-term management.

PRIMARY EXPERTISE

- Investigation
- Remediation
- Regulatory Strategy
- Program Management



David Warren, PG

Principal / Vice President, Scientific Services

Dave provides leadership for EnSafe's PFAS strategy and technical program development, with particular focus on PFAS investigations, conceptual site models, regulatory strategy, stakeholder engagement, and integration of multidisciplinary capabilities across the firm. He coordinates the firm's multidisciplinary PFAS initiatives, technical standards, and knowledge management efforts while supporting complex federal, municipal, and industrial projects.

PRIMARY EXPERTISE

- Investigation
- Conceptual Site Models
- Regulatory Strategy
- Technical Leadership
- Strategic Planning



Grant Carey, PhD, P.Eng.

Modeling, Predictive Analytics & Innovation Subject Matter Expert

Grant is an internationally recognized expert in PFAS modeling, visualization, remedial optimization, and technology transfer. He serves as a senior investigator and contributor on multiple SERDP and ESTCP research projects, is the author of numerous peer-reviewed publications, and is the developer of the proprietary ISR Model™ and co-developer of the Visual PFAS™ platform, supporting advanced PFAS investigation and remedial decision-making.

PRIMARY EXPERTISE

- Modeling
- Visualization
- Litigation Support
- Technology Transfer
- Remediation Optimization



Ioana G. Petrisor, PhD

Forensics Lead

Ioana is Chief Chemist and a nationally recognized environmental forensics and PFAS specialist. She provides technical leadership in PFAS chemical fingerprinting, source attribution, conceptual site models, forensic investigations, and litigation support, helping clients identify contaminant sources, resolve complex liability questions, and make defensible technical and regulatory decisions.

PRIMARY EXPERTISE

- Forensics
- Source Attribution
- Litigation Support
- Conceptual Site Models

Supported by EnSafe's National PFAS Workgroup

Our leadership team is supported by a multidisciplinary network of engineers, hydrogeologists, chemists, toxicologists, risk assessors, environmental scientists, technology specialists, remediation professionals, and GR2 construction personnel located across the United States and Canada.

PFAS EXPERIENCE THAT DELIVERS VALUE

PFAS challenges continue to evolve as regulations, analytical methods, treatment technologies, and scientific understanding advance. Organizations are increasingly faced with complex decisions regarding investigation, compliance, remediation, liability management, litigation, and long-term risk reduction. Successfully navigating these challenges requires more than simply keeping pace with changing regulations—it requires integrating technical expertise, practical project experience, emerging science, and lessons learned from diverse projects across multiple industries and regulatory environments.

EnSafe's multidisciplinary PFAS team leverages experience gained from federal, state, municipal, industrial, commercial, and legal-sector projects nationwide. Our integrated approach combines strategic advisory services, investigation, forensics, modeling, visualization and decision support, remediation, regulatory strategy, and technology transfer to develop practical, technically defensible solutions tailored to each client's objectives.

The following project examples highlight the breadth of EnSafe's PFAS experience and demonstrate how our multidisciplinary team helps clients understand complex site conditions, reduce uncertainty, optimize remedial strategies, and make informed decisions throughout the lifecycle of PFAS projects.

PFAS EXPERIENCE THAT DELIVERS VALUE

- National PFAS expertise across federal, industrial, municipal, commercial, and legal sectors
- Integrated PFAS solutions combining strategic advisory, compliance, investigation and characterization, forensics and decision support, predictive analytics, remediation and optimization, technology transfer, and engineering
- Active participation in SERDP, ESTCP, ITRC, and other leading research, technology-transfer, and guidance-development initiatives
- Proprietary visualization, modeling, and decision-support capabilities that strengthen conceptual site models, optimize remedial strategies, improve stakeholder communication, and support more cost-effective project execution
- Ability to integrate lessons learned from projects nationwide into practical client solutions
- Practical, technically defensible solutions tailored to site-specific conditions and client objectives
- Strategic consulting focused on reducing uncertainty, managing long-term liabilities, and supporting informed business and regulatory decisions



ADVANCED PFAS MODELING, RESEARCH & TECHNOLOGY TRANSFER

Representative Research & Innovation Experience

EnSafe combines practical field experience with advanced research, predictive modeling, technology transfer, and applied science to help clients better understand PFAS behavior, reduce uncertainty, optimize remedial strategies, and support technically defensible decision-making.

Through participation in multiple U.S. Department of Defense Strategic Environmental Research and Development Program (SERDP), Environmental Security Technology Certification Program (ESTCP), and other federally sponsored research initiatives, EnSafe professionals continue to advance the science and practical application of PFAS investigation, characterization, modeling, remediation, and long-term management.

01 PFAS VADOSE ZONE CHARACTERIZATION & MASS DISCHARGE

Department of Defense Research Program

SERVICES

- **Vadose zone characterization**
- **Multiple-lines-of-evidence evaluations**
- **PFAS LEACH modeling**
- **Mass discharge estimation**
- **Conceptual site model development**

PROJECT SUMMARY

EnSafe conducted a comprehensive research program at a Department of Defense site evaluating PFAS mobility within the vadose zone to improve understanding of soil-to-groundwater transport and support development of site-specific cleanup strategies. The project demonstrated how vadose zone characterization, porewater evaluations, and mass discharge analyses can improve conceptual site models and help prioritize soil versus groundwater remediation.

CLIENT BENEFIT

Improves conceptual site models, supports technically defensible site-specific cleanup goals, reduces uncertainty, and helps prioritize remedial investments.

02 ADVANCED PFAS VISUALIZATION & DECISION SUPPORT

Multiple Federal & Industrial Sites

SERVICES

- **Visual PFAS™**
- **Three-dimensional visualization**
- **PFAS analytics**
- **Conceptual site model development**
- **Decision support**

PROJECT SUMMARY

EnSafe applies proprietary visualization and analytics capabilities to improve interpretation of complex PFAS datasets, communicate site conditions to regulators and stakeholders, evaluate remedial performance, and support forensic investigations and long-term site management.

CLIENT BENEFIT

Transforms complex datasets into practical decision-support tools that improve investigation planning, stakeholder communication, and remedial decision-making.

03 ADVANCED PFAS MODELING & REMEDIATION OPTIMIZATION

Department of Defense Research Programs

SERVICES

- **Reactive transport modeling**
- **Site-specific adsorption testing**
- **Barrier performance evaluation**
- **Long-term performance forecasting**
- **Remedial optimization**

PROJECT SUMMARY

EnSafe supports Department of Defense research programs focused on evaluating in-situ PFAS remediation technologies through advanced groundwater flow and reactive transport modeling, site-specific adsorption testing, visualization, and performance monitoring. Research includes evaluation of colloidal activated carbon adsorption barriers under varying hydrogeologic and geochemical conditions to improve remedial design and optimize long-term treatment performance.

CLIENT BENEFIT

Improves conceptual site models, supports technically defensible site-specific cleanup goals, reduces uncertainty, and helps prioritize remedial investments.

04 DoW RESEARCH, TECHNOLOGY TRANSFER & INDUSTRY LEADERSHIP

SERDP • ESTCP • AFCEC • Noblis

PROJECT SUMMARY

EnSafe professionals actively participate in multiple federally sponsored research and technology-transfer initiatives focused on advancing PFAS investigation, characterization, modeling, visualization, remediation, and long-term management. Team members have authored numerous peer-reviewed publications, developed DoD e-learning modules, participated in development of technical guidance, and are regularly invited to present technical findings to federal agencies, regulators, consultants, and industry organizations.

LESSONS LEARNED

Findings from these research and technology-transfer programs are used to refine EnSafe's investigation strategies, modeling approaches, remedial evaluations, and technical guidance so that emerging PFAS science can be applied efficiently and appropriately on client projects.

The following representative client projects demonstrate how these advanced capabilities are applied to solve complex PFAS challenges across federal, industrial, municipal, and commercial sectors.

DEPARTMENT OF DEFENSE, MULTIPLE LOCATIONS

Strategic Advisory • Investigation • Forensics • Remediation • Long-Term Program Support

Since 2013, long before PFAS became a national regulatory priority, EnSafe has partnered with the U.S. Department of Defense (DoD) to support PFAS investigations, remedial planning, regulatory strategy, and long-term program implementation at installations across the United States. Our support spans the entire project lifecycle—from development of data quality objectives, sampling and analysis plans, and quality assurance programs through site characterization, conceptual site model development, risk evaluation, remediation, stakeholder engagement, and long-term management. Project efforts have included interim response actions, community outreach, regulatory coordination, and support for providing impacted residents with safe drinking water where needed.

EnSafe has supported PFAS investigations at active and former military installations, including Base Realignment and Closure (BRAC) properties and Formerly Used Defense Sites (FUDS). Our multidisciplinary teams have conducted soil, groundwater, surface water, sediment, wastewater, and private potable well investigations while working closely with installation personnel, regulators, and affected communities. Services have included development of sampling strategies, laboratory coordination, quality assurance, data validation, public outreach, stakeholder coordination, and preparation of reports supporting both property owners and regulatory agencies.

Our experience extends beyond traditional site characterization to include historical research, source identification, forensic evaluations, conceptual site model development, and advanced interpretation of PFAS fate and transport. These capabilities support identification of historical release areas, reconstruction of release histories, evaluation of multiple potential source areas, and implementation of CERCLA Preliminary Assessment and Site Inspection activities.

EnSafe has also worked closely with DoD stakeholders to evaluate treatment technologies, optimize remedial approaches, and manage PFAS investigation-derived wastes. Services have included treatment technology evaluations, pilot testing, regulatory permitting, onsite treatment, waste characterization, disposal planning, and long-term performance monitoring. Our multidisciplinary approach recognizes that effective PFAS management requires flexibility as regulations, analytical methods, and treatment technologies continue to evolve.

Through our long-standing partnership with DoD, EnSafe has also supported development and implementation of standardized analytical methods, sampling procedures, data management practices, and quality assurance protocols. We continue to work closely with DoD technical leaders and research organizations to ensure our investigation and remediation strategies reflect the latest validated science, regulatory guidance, and industry best practices.



CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION, STATEWIDE, CONNECTICUT

Investigation • Conceptual Site Models • Stakeholder Engagement • Program Management

In 2021, EnSafe was selected by the Connecticut Department of Energy and Environmental Protection (CTDEEP) to support statewide PFAS investigations involving private potable wells and potential source areas. The work included development of a comprehensive PFAS Sampling and Analysis Plan, quality assurance procedures, standard operating procedures, and data usability assessment protocols to ensure technically defensible investigations and consistent statewide implementation.

EnSafe coordinated and completed PFAS sampling at more than 100 private properties and two surface water bodies. Field teams collected detailed information regarding well construction, water systems, utilities, treatment systems, and site conditions using survey-grade GPS equipment and digital field data collection tools. Analytical results were integrated into conceptual site models to evaluate potential PFAS sources, support regulatory decision-making, and prioritize additional investigation and corrective actions.

EnSafe also supported CTDEEP's public outreach efforts by preparing technical materials, participating in community meetings, and communicating investigation results to residents and stakeholders. Based on the investigation findings, whole-house granular activated carbon treatment systems were installed at 18 residences, and EnSafe continues to assist CTDEEP with long-term monitoring, treatment performance evaluations, and public reporting.

As part of a separate CTDEEP project, EnSafe investigated a municipal property containing maintenance facilities and former fire-training areas to evaluate potential PFAS release areas. Historical records reviews, interviews, site reconnaissance, soil borings, and groundwater investigations were integrated to identify historical source areas, characterize PFAS impacts, and support planning of interim response actions. Findings from these investigations were incorporated into conceptual site models that continue to guide regulatory decision-making, prioritization of response actions, and long-term PFAS management.

SULLIVAN COUNTY INTERNATIONAL AIRPORT, SULLIVAN COUNTY, NY

Investigation • Forensics • Conceptual Site Model Development

Since 2017, EnSafe has supported Sullivan County, the New York State Department of Environmental Conservation (NYSDEC), and the New York State Department of Health in evaluating PFAS impacts associated with historical AFFF use at Sullivan County



EnSafe is working at airports and other sites across the country to evaluate PFAS in soil, groundwater, and other media.

International Airport (SCIA). EnSafe developed and implemented a comprehensive investigation strategy to characterize PFAS in soil, groundwater, surface water, sediment, and private potable wells while supporting regulatory coordination and long-term remedial planning.

The investigation began with a detailed Records Search Report (RSR) that evaluated historical airport operations, firefighter training activities, maintenance facilities, fuel systems, utilities, and other potential PFAS source areas. Historical records reviews, site reconnaissance, and evaluation of surrounding land uses were integrated to identify both onsite and potential offsite PFAS sources and establish a technically defensible investigation strategy. Findings from the RSR were incorporated into a Site Characterization Work Plan (SCWP) that guided subsequent soil, groundwater, and surface water investigations.



Field sampling requires PFAS-specific SOPs to ensure data quality and minimize the chances of cross contamination from ubiquitous PFAS sources.

EnSafe integrated historical research, forensic evaluations, analytical data, and conceptual site model development to evaluate PFAS source areas and migration pathways. Comparative evaluation of PFAS fingerprints in soil, groundwater, and potable water demonstrated that historical AFFF use at the airport was the likely source of offsite drinking water impacts. The investigation also identified residual PFAS mass within overlying soils and fine-grained aquifer materials that continues to contribute to long-term groundwater impacts.

The project has progressed through multiple phases of investigation, including additional soil, groundwater, sediment, surface water, fish and wildlife evaluations, borehole geophysics, and offsite potable well sampling. EnSafe also supported implementation of interim response actions, including bottled water service for affected residents, while continuing to refine the conceptual site model and support preparation of the Remedial Investigation Report and future feasibility study.

PFAS SUPPORT, TRI REPORTING, MULTIPLE INDUSTRIES

Regulatory Compliance • Reporting • Strategic Advisory

EnSafe provides PFAS-related Toxic Release Inventory (TRI) reporting and compliance support to clients across multiple industries. Our team helps facilities evaluate PFAS use and reporting obligations, develop practical data collection and tracking systems, and prepare technically defensible regulatory reporting.

As PFAS reporting requirements continue to evolve, EnSafe works with clients to evaluate impacts to their operations and establish sustainable processes for tracking PFAS in raw materials, products, processes, and waste streams. Our support also extends to evaluating potential PFAS releases to wastewater and stormwater systems, anticipating evolving permitting requirements, and developing long-term compliance strategies.

MICHIGAN WATER SUPPLY SUPERFUND SITE

EnSafe's ongoing management of this Superfund site has included assessment, remediation, and long-term management of PFAS in site groundwater. EnSafe prepared a Quality Assurance Project Plan Addendum for assessment of PFAS and 1,4-dioxane and completed multiple rounds of groundwater monitoring and treatment performance evaluation. PFAS results are compared to Federal drinking water maximum contaminant levels (MCLs), and PFAS and 1,4-dioxane results are compared to Michigan department of Environment, Great Lakes, and Energy (EGLE) promulgated drinking water criteria. One of the site source areas has a dual soil vapor and groundwater extraction system with treatment via granular activated carbon adsorption, and discharge to the City's WWTP pursuant to an Industrial Use Permit. System influent and effluent are routinely monitored for PFAS. The granular activated carbon system has consistently reduced PFAS concentrations below Industrial Use Permit discharge limits. EnSafe is working with stakeholders to develop a Contingency Plan for protecting the City's water supply from potential PFAS impacts from this site. Groundwater trend analyses, treatment performance evaluations, and long-term management planning support protection of municipal water supplies and future remedial decision-making.

CALIFORNIA PROPOSITION 65 SUPPORT

Addition of PFOS and PFOA to California's Prop 65 consumer protection regulations required a client that manufactures aluminum shower doors to evaluate next steps. Given the complexity of the manufacturing process and the absence of Safe Harbor Levels, EnSafe compliance experts and toxicologists reviewed process information, chemical usage data, and Prop 65 requirements and worked closely with the client and legal counsel to develop a practical compliance strategy and path forward.

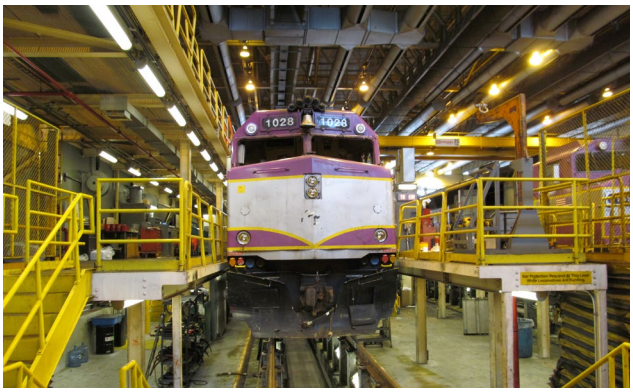


INDUSTRIAL WASTEWATER PFAS EVALUATION & TREATMENT PLANNING

Wastewater Evaluation • Source Identification • Regulatory Compliance

EnSafe provided design engineering and construction oversight services to upgrade an industrial wastewater pretreatment system at a Massachusetts Bay Transportation Authority (MBTA) rail maintenance facility in Somerville, Massachusetts. While designing upgrades to address acrolein removal, EnSafe recommended incorporating PFAS treatment into the overall treatment strategy to address potential future PFAS discharge requirements and space limitations within the existing building. As part of the design process, EnSafe completed treatability and bench-scale testing and pilot studies to develop a customized treatment approach for both acrolein and PFAS. The resulting design integrated treatment objectives across the wastewater system to maximize treatment efficiency, operational practicality, and cost effectiveness.

EnSafe finalized a baseline PFAS sampling plan at the railroad maintenance facility to identify potential sources, establish background levels in City water, and evaluate variation and ranges in PFAS concentrations.



Potential PFAS sources were evaluated as part of upgrades for a wastewater treatment plant at a rail maintenance facility.

CUSTOMS AND BORDER PROTECTION, JACKSONVILLE, FL

AFFF Systems Replacement • Decommissioning • Waste Management

EnSafe and its subsidiary, GR2, supported the removal and replacement of legacy AFFF concentrate from a fire suppression system serving a U.S. Customs hangar located within a Naval Air Station in Florida. The project included removal of legacy AFFF concentrate and rinse waters from the tank and associated piping, replacement with MIL-SPEC-compliant (MIL-F-24385) AFFF concentrate, testing of the fire suppression system, and management of all PFAS-containing waste streams. Generated wastes included AFFF concentrate, rinsate water, and decontamination fluids that were disposed of at an approved Waste-to-Energy facility for incineration. The project demonstrates EnSafe's ability to provide turnkey AFFF system replacement services, including planning, decontamination, waste characterization and disposal, system restoration, performance testing, and regulatory compliance while maintaining mission-critical fire protection capabilities.



Bladder tank with MILSPEC-compliant (Mil-F-24385) AFFF concentrate

ENSAFE INC. — WHO WE ARE

creative thinking. custom solutions.

EnSafe Inc. is a national professional services firm providing engineering, environmental, health & safety, technology, remediation, and strategic consulting services to industrial, commercial, utility, federal, and municipal clients. Through a multidisciplinary team of engineers, scientists, environmental professionals, data analysts, software developers, and technology specialists, EnSafe helps clients solve complex technical, regulatory, operational, and business challenges while reducing risk and creating long-term value.

Our dedication to the stewardship of our clients' resources is best explained by one of our longstanding clients: "EnSafe personnel always think about the issues as if they were in your shoes as owners of the business." Regulators know us as technically competent and appropriately assertive in representing our clients' best interests. What really sets us apart is our outside-the-box thinking that leads to innovative and cost-effective solutions. This approach has enabled EnSafe to develop nationally recognized expertise across a wide range of environmental, engineering, remediation, compliance, and emerging contaminant challenges.

Environmental Management & Planning

Environmental stewardship requires robust management and planning. Our diverse staff of environmental specialists, supported by advanced analytics, visualization, and decision-support tools, are ready to apply innovation and creativity to whatever challenges your business currently faces within the myriad of local, state, and federal regulations. Whether we are charged with evaluating the compliance status of an industrial facility, quantifying environmental liabilities and risks, or assessing properties for real estate transactions, we are committed to providing you with pragmatic, cost-effective strategies for maintaining compliance, minimizing liabilities, and improving environmental performance.

That's why EnSafe's engineering solutions are customized to the unique requirements of each client and each project. Whether working on site development, storm water management, water/wastewater treatment, soil or groundwater remediation, or solid waste management, EnSafe's team of experienced engineers is committed to developing cost-effective, site-specific solutions to accomplish both long- and short-term goals.

EnSafe offers the personal attention of a small firm with the national resources of a large firm. Local flavor, nationwide.



Our solutions stand out because we provide our clients with the complete picture – specific goals, constraints, and risks clearly communicated. This "front and center" approach drives strategic, nimble delivery. Our engineers do more than just satisfy budget and schedule. Our tailored solutions validate the trust and care upon which our long-standing relationships are built.

Health & Safety

EnSafe understands that the lifeblood of any successful organization originates with its people. When workers are protected, they are freed to focus on your company's core business. Our top priority at EnSafe is providing cost-effective, creative solutions to your most challenging health and safety issues. EnSafe's Health & Safety Team helps you protect your most valuable resource … your people.

Environmental Restoration

EnSafe's experienced environmental restoration professionals are equipped to restore your resources to renewed productive reuse – whether environmental remediation of a previously contaminated site, redevelopment of a Brownfields property to serve the local community, or decontamination and decommissioning of a site for reuse by an incoming industry. Our multidisciplinary teams integrate engineering, investigation, modeling, remediation, and construction expertise to develop practical solutions that balance technical performance, regulatory requirements, budget, schedule, long-term liability, and stakeholder expectations.

Natural & Water Resources

Protection and management of natural resources (our streams, wetlands, and endangered species) can have a significant impact on project schedules and budgets. Given today's complex regulations and the ever-increasing emphasis on judicious natural-resource management methods, partnering with a knowledgeable, responsive, and reliable consultant is essential. EnSafe's track record of technical and regulatory expertise has earned us the high regard of both our clients and environmental regulatory agencies.

Technology

EnSafe's Technology Team supports environmental investigations, engineering, and remediation through advanced analytics, modeling, visualization, software development, GIS, artificial intelligence–enabled workflows, and decision-support tools. Recent additions include specialized PFAS modeling, visualization, predictive analytics, and proprietary decision-support capabilities that strengthen conceptual site models, forensic evaluations, remedial optimization, and stakeholder communication for complex environmental projects. EnSafe develops technology solutions that improve technical understanding, streamline project delivery, optimize client decision-making, and enhance communication of complex environmental issues.

GR2

Remediation and Restoration Services

GR2 is a wholly-owned subsidiary of EnSafe Inc., specializing in remediation, demolition, decommissioning, abatement, and civil construction services. GR2 has been providing quality services to our clients since 2000. Originally founded as Operations Contracting Services, the company was re-branded as GR2 in 2013. Based in Memphis with offices in Jackson, MS and Titusville, FL, GR2's project approach allows us to successfully service our clients across the U.S. in a variety of industries and locations with a strong focus on quality, customer service, and safety.

GR2 provides specialized support for PFAS-related projects, including AFFF transition programs, decommissioning and decontamination of fire suppression systems, management of PFAS-containing wastes, remedial construction, and implementation of PFAS response actions. Together, EnSafe and GR2 provide fully integrated consulting, engineering, remediation, construction, and long-term management capabilities that support projects from strategic planning through implementation and site closure.

GR2 Services

GR2 industrial, abatement, and remediation services include the following:

- Asbestos abatement
- Confined-space entry
- Construction of industrial waste landfill caps
- Decommissioning and decontaminating industrial facilities
- Hydroblasting
- Lab packs
- Lagoon closure
- Management of transportation and disposal of waste and contaminated media
- Mold services
- Monitored natural attenuation
- Remediation construction (including piping and trenching for groundwater remediation systems, soil bioremediation and venting systems, etc.)
- Removal and containerization of waste and contaminated media
- Removal and disposal of underground storage tanks
- Site characterization and remedial design
- Structural/industrial demolition
- Tank (pit and sump) cleaning
- Vacuum truck services

GR2
Remediation and Restoration Services

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5724 Summer Trees Drive | Memphis, TN 38134 | 800-588-7962 | www.ensafe.com