

ROUX

Environmental
Human Health
Economics
Ecological
Data Solutions
Occupational
Health & Safety





A Top 30 Firm

We are proud that for the past three years, with revenue exceeding \$100 million, we were ranked among the Engineering News-Record Top 30 All-Environmental Firms. The list consists of firms reporting 100% gross revenue in environmental services.



13 Nationwide Offices

Roux's headquarters office was first established in New York. We then opened offices in New Jersey and Massachusetts, and continued to expand across the country to the West Coast. We now have thirteen offices nationwide in New York, California, Illinois, Massachusetts, New Jersey, and Virginia, and we are continuing to grow.



Over 40 Years in Business

We have transformed dramatically—both in size and the scope of our services—over the past 40 years. In 1981, Roux was founded by Paul Roux as a groundwater contamination investigation practice. Today, Roux offers a much broader array of consulting services as an employee-owned company with 450+ environmental, health & safety, and economic professionals in a variety of science, economic, and engineering disciplines.



Over 3,000 Clients

Roux is privileged to provide consulting services to some of the largest and most successful companies in the world. We are proud that they have chosen us to handle some of their most demanding environmental needs. Additionally, Roux is honored that the vast majority of our new work is repeat business from existing clients.



450+ Employees

The talent of our people is our most valuable resource and has been central to our firm's sustained growth and profitability. We hire the best people we can find, provide them with support, training, and motivation, and hold on to them for the long term. Our professionals are smart, hardworking, and talented. Roux is employee-owned with each principal in the firm owning stock in the organization. Many of our employees have been with Roux for over 20 years. This stability is a testament to the leadership of the firm, its management style, and its commitment to the growth of its employees. More importantly, it ensures a consistent and experienced team dedicated to our projects.



Supporting Our Communities

Our commitment to corporate social responsibility (CSR) takes many forms, and as a firm, we look to empower our employees to develop new ways to continuously improve the culture of Roux and our communities. Roux has donated thousands of hours of volunteer time annually along with hundreds of thousands of dollars to charitable causes, and we're proud to support active CSR programs in each of our offices.

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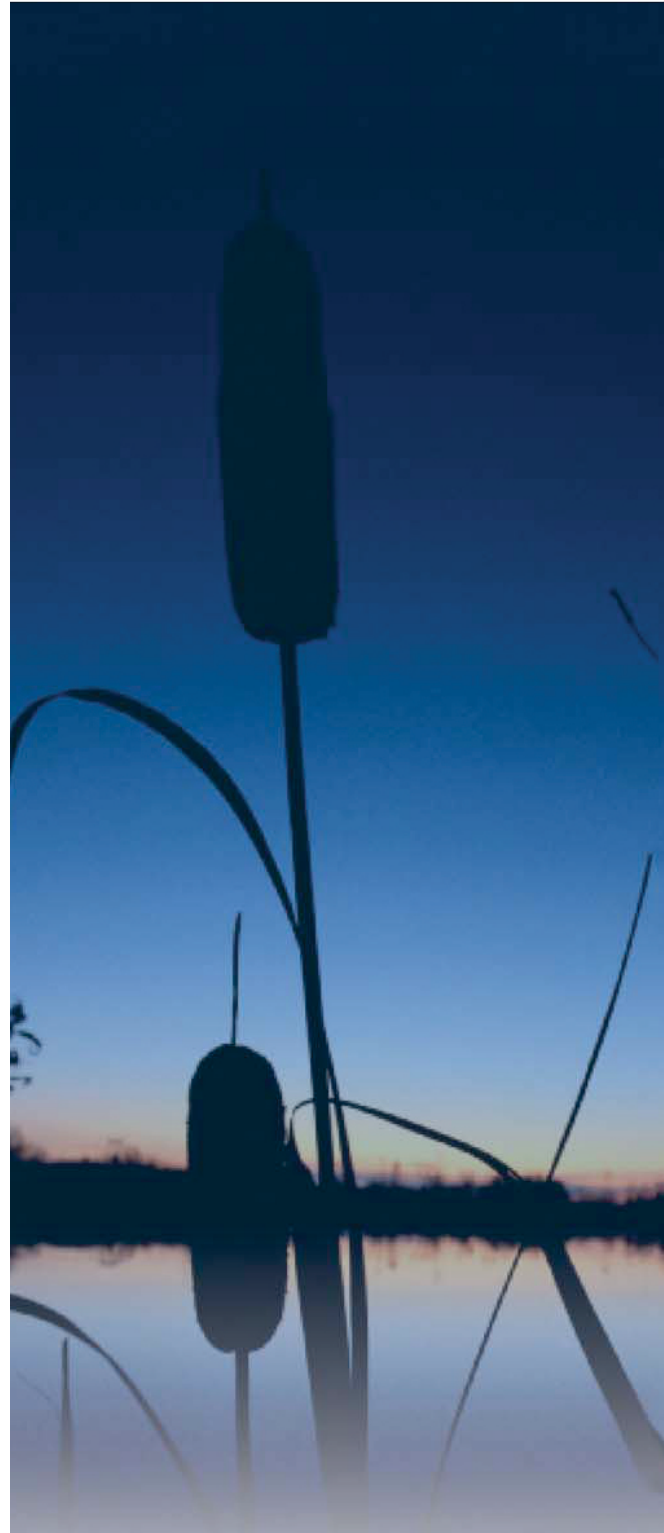
ABOUT ROUX

Roux provides a broad range of advisory, regulatory, and field services that assess potential risks, assure critical compliance, and provide solutions to complex challenges.

The Roux organization applies sophisticated scientific, technical, and managerial resources to develop and implement effective, efficient, and sustainable solutions to our clients' most challenging environmental and environmentally related health and economic issues. We provide our advisory, compliance, and field services to a broad spectrum of both private and public sector clients nationwide, including numerous Fortune 500 companies and their associated law firms.

Founded over 40 years ago, Roux was built upon management and cleanup of large, complex environmental remediation projects, including Superfund sites, chemical and manufacturing plants, and petroleum refineries and distribution terminals. Today, Roux offers a much broader array of consulting services as an employee-owned company with over 450 environmental, health & safety, and economic professionals in a variety of science, economic, and engineering disciplines. Roux's clients span sectors in Real Estate; Financial; Manufacturing/Industrial; Energy; Legal; Insurance; Government/Municipal; Environmental, Social, and Governance (ESG); and Water Resources.

While Roux remains a leading brand across the country for environmental remediation services, the interdisciplinary nature of many of the challenges our clients face is now mirrored by the expansion of Roux's services into areas such as human health and ecological risk, commercial economic damages, natural resources valuation, industrial hygiene, health & safety, and engineered natural/sustainable systems.



THE ROUX TEAM

The talent of our people is our most valuable resource and has been central to the sustained growth and profitability that our firm has experienced year over year. We continually challenge our professionals with new opportunities in a supportive, healthy, sustainable, and safe environment.



We welcome talented and motivated engineers, scientists, and support personnel with backgrounds in earth sciences, as well as civil, chemical, and environmental engineering. We focus on hiring technical professionals with advanced degrees in key disciplines, and we provide an extensive in-house mentoring and technical development program. Equally important is on-the-job training, where we provide diverse project experience under the guidance of Principal level personnel.

Roux promotes a diverse and inclusive environment where every employee feels valued and is motivated to offer their best to the firm every day. We understand and appreciate the value that everyone's unique perspective brings to the firm, and we continuously strive to employ a diverse workforce, recognizing that diversity supports the sustainability of our firm and our ability to provide innovative solutions for our clients. We are committed to Equal Employment Opportunity and Affirmative Action.

Unlike most other environmental consulting firms active in the past four decades that are now either out of business or acquired, we have taken a different path. This chosen path has allowed us to thrive and continue

with the Roux way of doing business, where we have the freedom and ownership to be accountable to ourselves and to our clients. We have been steadfast in carrying out our plan to remain an independent firm, where the current generation's responsibility is to steward the firm forward and pass it to the next generation in better shape than when it was received. Hence, our people have been at the core of our past success and will continue to be the key ingredient in continuing our legacy for years to come.



HEALTH & SAFETY

The health and safety of all employees is of paramount concern to our firm.

Health and safety is a basic responsibility not only for management at all levels—from the Chief Executive Officer to the first-line supervisor—but for each individual, regardless of position or job classification. Health and safety must be treated in the same professional manner as production, quality, marketing, cost control, or any other business fundamental.

Roux complies fully with all applicable laws and government regulations regarding employee health and safety. In addition, we will continue, or initiate where necessary, positive and forceful actions to ensure adequate employee health and safety by supplementing minimum established standards.

Roux utilizes management systems to ensure Environmental Health & Safety (EHS) compliance across all of our operations. We also have over a decade of experience in the implementation of behavior-based safety programs. Over that period, Roux has received multiple major oil company awards recognizing our flawless safety performance and effective application of such programs.

We have full-time Corporate Health and Safety Officers who audit all work sites, providing ongoing training and communications regarding safety matters. In addition, Roux is committed to using subcontractors who also have excellent Health and Safety programs and track records. Subcontractors are required to submit a Health and Safety Pre-Qualification Form (PQF) as part of the selection process for project work.

Attitude is the key factor in accident prevention. The company encourages all employees to develop a positive and continuing concern for safety, both at home and on the job.



Health & Safety Highlights

Roux has a proven track record when it comes to safety and creating a safety culture at large, complex sites. Some of our H&S program highlights include:

- Effective use of Behavior Based Safety Program for more than 20 years.
- Maintained an average Experience Modification Rate (EMR) rating of 0.83.
- No lost-time injuries for more than 10 years.

BROWNFIELDS/ DUE DILIGENCE



Converting Environmental Liabilities into Assets

The professional staff at Roux has extensive experience providing timely and cost-effective consulting services to the real estate industry, particularly at Brownfield sites. Roux routinely advises clients regarding the environmental

conditions and how they will affect the planned redevelopment from budget and schedule perspectives. We are also very familiar with the regulatory programs and challenges that redevelopments may encounter.

Our use of strategic planning and negotiation during site redevelopment focuses on completing the work in minimal time, thereby saving costs. We produce a cleanup outcome that is consistent with intended future use of a property, quickly turning sites into revenue-producing developments.

Wetlands and ecologically sensitive areas such as floodplains, riparian zones, and threatened/endangered species habitats can result in delays and additional costs for development projects. Roux can assist developers early in the due diligence and planning stages all the way through permitting and final development to cost-effectively identify and address these potential concerns.

Brownfield & Site Redevelopment Services

- Property Transfer Support and Due Diligence (Phase Is and Phase IIs)
- Brownfields Redevelopment Support
- Site Investigation and Remedy Selection
- Remedial Design, Construction Oversight, and O&M
- Waste Characterization and Soil Excavation Management
- Facility Decontamination and Demolition
- Asbestos, Lead-Based Paint, and Mold Assessments and Abatements
- Community and Indoor Air Monitoring Programs
- Stormwater and Wastewater Management
- Vapor Intrusion Investigation and Remedy Design
- Site Management Plans
- Wetland Delineation, Permitting, Restoration, and Mitigation
- Jurisdictional Determination
- Evaluation of Wetland-Related Property Development Limitations

Market Sectors

- Affordable/Supportive Housing
- Commercial/Office
- Data Centers
- Entertainment/Sports Facilities
- Healthcare
- Hotel/Hospitality
- Life Sciences
- Mixed Use
- Multifamily Housing
- Municipalities
- Parks and Recreation
- Retail
- Schools, Colleges, and Universities
- Senior Housing
- Transportation
- Warehouse/Industrial

CLAIMS MANAGEMENT & LITIGATION DATA SOLUTIONS

Third-party Administration Claim Services to Help Insurers and Corporations Manage Litigation Risk



For more than 40 years, Roux has provided consulting support from a wide array of technical services to help clients understand and manage both legacy and emerging environmental and product liability risks. Roux's Claims Management & Litigation Data Solutions services leverage Roux's existing technical expertise and help our clients manage a growing—and increasingly expensive and complex—litigation and regulatory landscape.

Product and environmental liabilities often require insurance and corporate parties to evaluate, assess, and resolve hundreds, if not thousands of individual claims. Roux's Claims Management & Litigation Data Solutions team provides our clients technological platforms to efficiently and effectively collect, manage, and analyze claims data; drawing from Roux's expertise in handling large, complex datasets in litigation. Roux's third-party administration (TPA) claim services include cradle-to-grave claims handling for new or existing litigation, litigation management, reserving and settlement valuation support, claim auditing, and legal invoice reviews. Roux's TPA claim and litigation management services are managed by casualty adjuster licensed and experienced claims handlers with in-depth expertise and insight from decades of industry experience. Roux's relevant experience includes the TPA claim and litigation management of legacy long-tail and pollution insurance claims under primary, umbrella, and excess general liability (GL) policies, environmental impairment liability, commercial auto, and employers' liability coverages.

Claims Management Services

- Cradle-to-grave third-party claims administration, and litigation management of defense counsel and coverage counsel in active declaratory judgment actions
- Cloud-based claim database creation, development, and maintenance
- Quality control reviews of claim administrators and outside defense counsel with recommendations on curing identified claim handling deficiencies or indemnity/defense leakage and follow-up staff training presentations
- Claim evaluation, and policy exhaustion or coverage defense quantification audits in support of coverage litigation theories or reinsurance collections
- Exposure, reserving, and settlement valuation for active claims or projected ultimate exposures
- Cost-effective reasonable and necessary defense invoice reviews
- Expert, 30(b)(6), Person Most Knowledgeable ("PMK"), and Fact Testimony pertaining to claim administration and commercial insurance coverage

ECOLOGICAL RISK ASSESSMENT SERVICES



Specializing in Strategic Ecological Risk-Based Remedial Decision-Making

Roux provides a full range of ecological risk assessment services for grasslands, woodlands, freshwater and tidal wetlands, and waterways under various state and federal regulatory programs. Roux is experienced with the

application of innovative risk characterization techniques and applications to effectively characterize and assess ecological exposure risks for all media of concern. Using our expertise, Roux develops comprehensive ecological conceptual site models that serve as the framework for design and implementation of strategically focused ecological remedial investigation efforts.

Applying various risk assessment strategies, tools, and methodologies, including background statistical trend mapping and analysis, modeling, and bioavailability metrics, Roux has successfully limited ecological remedial needs for our clients and ultimately reduced the environmental liability on project costs and schedules.

Areas of Expertise

- Screening Level Evaluations
- Sediment Remedial Investigations
- Ecological Risk Assessments
- Background Evaluations
- Sediment Remediation
- Risk Management Decision-Making
- Regulatory Negotiation
- Natural Resource Damage Assessments
- Multi-media Field Sampling
- Biological Tissue Sampling
- Biological Surveys
- Habitat Assessments
- Bioavailability Studies
- Toxicity Testing
- Bioaccumulation Studies
- Food Chain Modeling
- Natural Resource Permitting
- Wetland Delineations
- Rare, Threatened, and Endangered (RTE) Species Surveys and Management Plans

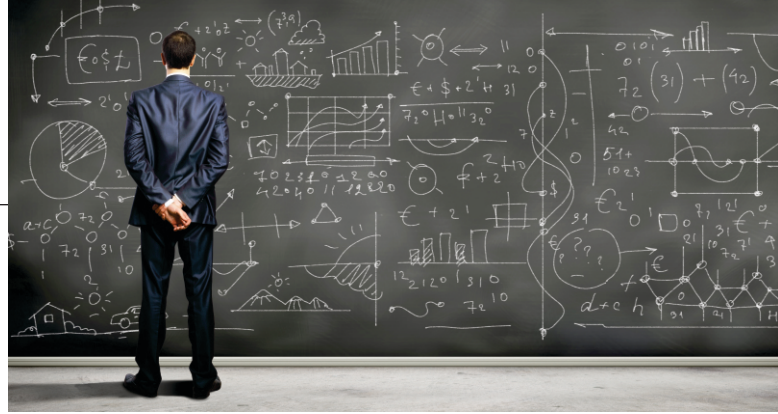
Related Markets/Services

- Brownfields/Due Diligence
- Energy
- Engineering and Remediation Services
- Green and Sustainable Remediation
- Human Health Risk Assessment
- Public Sector



ECONOMIC & COMPLEX ANALYTICS (ECA)

Evaluating the Impact of Environmental, Product, and Litigation Risk



Roux's ECA team is nationally recognized for its expertise in helping clients evaluate the legal, scientific, and financial risks associated with environmental, mass tort, and product liability litigation.

Our ECA professionals provide strategic consulting and expert services that assist clients identify, quantify, forecast, and mitigate current and emerging environmental, toxic tort, and product litigation risks. Our collective expertise has been leveraged in complex insurance coverage disputes, arbitrations, Securities and Exchange Commission (SEC) reserve disclosures, financial due diligence, bankruptcy reorganizations, underlying claim evaluations, and public policy initiatives. ECA experts have analyzed a diverse set of environmental and product liability risks, including asbestos, benzene, talc, perfluorooctanoic acid (PFOA), polychlorinated biphenyls (PCBs), diacetyl, silica, isocyanate, pharmaceutical and medical devices, opioids, glyphosate, natural resource damages, water contamination, sports-related head trauma, tobacco litigation, and various other forms of environmental toxins and deleterious substances. Overall, our analysts work to reduce risks for our clients through better forecasting and predictive modeling.

Expert Opinion Topics

- Forecasting future incidence of latent disease, associated claims, and expenditures for litigation management, insurance reserving, SEC financial reporting disclosures, and bankruptcy reorganization
- Insurance allocation of environmental and product-related losses in coverage disputes, coverage-in-place negotiations, excess policy buyouts, SEC financial reporting disclosures, and bankruptcy reorganization
- Expert report and testimony for analysis related to asbestos bankruptcy trust exposures and recoveries
- Establishing auditing procedures and claim file reviews of underlying cases to measure accuracy and reasonableness
- Long-term discounted cash flow modeling to measure liquidity and solvency risks for distressed companies and asbestos bankruptcy trusts
- Strategic analysis of litigation tactics and associated costs relating to mass torts
- Contingent liability forecasting for environmental damages
- Economic valuation of loss associated with personal injury and wrongful death cases

Areas of Expertise

- Asbestos & Asbestos Bankruptcy
- Insurance Coverage/Allocation
- SEC Financial Reporting
- Insurer Claims Forecasting & Reserving
- Pharmaceuticals & Medical Devices
- Economic Loss & Damage Estimation
- Due Diligence for Mergers & Acquisitions (M&A)
- Environmental Pollution
- Public Policy Analytics
- Business Interruption and Catastrophic Loss

Related Tools/Services

- Microsimulation Modeling
- Decision Analysis
- Applied Economics
- Statistical Analysis
- Financial Modeling
- Forecasting & Predictive Modeling
- Claim File Audit & Reviews



Environmental Consulting and Management Services for the Energy Industry

Roux has provided environmental services to the energy industry since the mid-1980s. We have

successfully completed hundreds of remedial projects throughout the petroleum market (upstream, midstream, and downstream segments), power generation sector, and renewable energy market (solar, wind, battery, and other low carbon solutions). We have experience in remediation of all types of associated contamination, including light non-aqueous phase liquid (LNAPL), dense non-aqueous phase liquid (DNAPL), polychlorinated biphenyls (PCBs), chlorinated solvents, metals, and historic fill concerns. We apply a broad array of technical disciplines to meet the evolving environmental challenges faced by the industry. Roux is also at the forefront in addressing emerging contaminants such as per- and polyfluoroalkyl substances (PFAS), with leading-edge approaches for investigation, remediation, and liability allocation.

Roux has practical experience in the evaluation and implementation of various new and/or innovative in situ technologies for remediation of energy sites, including: chemical oxidation, enhanced bioremediation, natural source zone depletion, and surfactant flooding, among others. In addition to applying remedial technologies, Roux applies modern approaches to regulatory advocacy such as utilizing product transmissivity as opposed to thickness, to evaluate site remedial objectives and closure approaches. For our renewable energy clients, Roux provides the full range of assessment, environmental, and land use permitting necessary for site acquisition and development. As with the rest of our industrial/legal clients, Roux provides significant support to the Energy sector managing and advising on Superfund and complex sediment sites across the country.

Roux continues to support the upstream energy sector (oil and gas exploration and production industry) throughout its varying parts. Litigation support and expert reporting have been completed by Roux for environmental contamination, well construction, and operations of wells and facilities in Texas, New Mexico, Oklahoma, and Louisiana. Roux has completed review and complex reporting of historical oil and gas regulations, current regulations, and regulatory reporting requirements. From produced water management and disposal, review of well construction, and saltwater disposal well operation, Roux has reviewed, documented, and provided expert reporting for litigation and regulatory hearings. Roux provides professional services for our clients to ensure that the appropriate standards, operations, and regulatory reporting are completed, and our clients' objectives are defensible and within regulatory compliance.

Site Assessment & Remediation

- Property Transfer/Due Diligence
- Ecological Resources Evaluation
- Threatened & Endangered Species Evaluation
- Innovative Site Characterization
- Vapor Intrusion Assessment and Mitigation
- Risk Assessments
- NAPL, Groundwater, and Soil Remediation
- Wetlands and Sediments
- Innovative In Situ Treatment Technologies
- Remedial Alternatives Analysis, Design, Construction, and O&M
- Integration of Site Remediation with Redevelopment Activities

Litigation Support & Expert Witness Services

- Environmental Forensics - Source Identification, Release Timing, Apportionment
- Hydrogeology/Contaminant Fate and Transport
- Remediation Cost Evaluations and Cost Allocations

Compliance Services

- Stormwater/Wastewater Solutions
- Contingency and Compliance Plans
- Permitting – Air, Water, Land Use
- UST Management

Project Management/Portfolio Management

- Portfolio Liability Determination
- Contractor/Consultant Review and Oversight
- On-site Management Personnel
- Regulatory Advocacy

ENGINEERING & REMEDIATION SERVICES



Designing Custom Solutions to a Wide Range of Environmental Issues

Roux provides engineering design and permitting services to private industry and public entities. We provide engineering solutions that are practical, cost-effective, and minimize risk. Roux approaches each project from a client perspective and solutions are designed to meet both operational objectives while also complying with regulatory requirements. Roux understands no two sites or clients are identical and each requires a unique approach to achieve project objectives.

The engineering and remediation services Roux provides on a regular basis apply across a multitude of markets and sectors—including manufacturing, real estate, and transportation—providing continuous project support from inception to completion.

Site Remediation and Closure

- Remedial Action Work Plan Preparation
- Remedial Alternative Analyses
- Remedial Cost Estimating and Scheduling
- Bench and Pilot Scale Testing
- Soil, Groundwater, and Soil Vapor Remediation System Design, Management, and Operation & Maintenance
- Indoor Air Mitigation
- Hazardous Building Materials Abatement
- Bid Specifications Package Preparation and Contractor Selection Support
- Construction Oversight, Air Monitoring and Support Services
- Remedial Action Reporting and Closure Support

Infrastructure and Facilities Engineering

- Municipal & Industrial Wastewater Conveyance and Treatment Design
- Industrial Wastewater Treatment System Evaluation and Optimization
- Aboveground and Underground Storage Tank Design
- Potable Water Conveyance Systems
- Stormwater Treatment System Design
- Hazardous Waste Storage Systems and Containment Design
- Decontamination and Demolition Support Services

Solid Waste Engineering

- Landfill Closures and Capping Design and Redevelopment
- Redevelopment of Landfills for beneficial use (e.g., Solar Array Installation Support)
- Methane Mitigation
- Leachate Collection and Treatment





ENVIRONMENTAL, HEALTH & SAFETY COMPLIANCE SERVICES

Expert Advice to Guide You Through Complex EHS Compliance Regulations

Roux provides a wide range of Environmental, Health & Safety (EHS) regulatory compliance consulting services to a myriad of clients in support of plant management, corporate EHS personnel, legal counsel, property managers, and insurance industry managers. Our services reach various industries including chemical manufacturing, petroleum mid-stream operations and refining, research and development, pharmaceutical and biopharmaceutical, food and beverage, real estate development, technology, and freight and transportation.

Services include both internal (Corporate Standards and Management Systems) and external EHS compliance obligations. Our external EHS compliance services assist our clients with meeting the demands of various Federal, State, and local requirements, including the evaluation of facilities and/or facility programs for compliance with state-specific OSHA plans (e.g., Cal/OSHA) and regional/local environmental regulations. Roux and its affiliated professional corporations encompass versatile EHS teams with decades of experience, holding various licenses and certifications, and practicing worldwide. We bring multi-disciplinary expertise to bear in understanding the statutory and regulatory implications, as well as the potential exposure to EHS liabilities associated with all business functions.

Roux works to assist clients in assessing risk and developing practical, cost-effective, and sustainable solutions to eliminate or minimize EHS hazards. A high-level overview of our EHS Compliance service offerings is provided below.

EHS Compliance Services

- Conducting EHS Compliance Audits
- Providing Expert-level Technical Guidance in Response to Regulatory Agency Inspections, Citations, and Notices of Violations
- Developing and Implementing Corporate and Site-level EHS Standards and Programs
- Performing Complex Industrial Hygiene Assessments (Qualitative and Quantitative)
- Conducting EHS Risk Assessments to Identify and Control EHS Hazards and Reduce EHS Liabilities
- Developing and Managing Employee Exposure Assessment Programs
- Developing and Providing EHS Training Programs
- Providing On-site EHS Compliance Support (e.g., Developing Lockout/Tagout Energy Control Procedures, Performing Stormwater Sampling/Inspections)
- Developing and Evaluating the Performance of EHS Management Systems
- Developing Emergency Spill Response and Pollution Prevention Plans
- Completing Indoor Air Quality Assessments
- Obtaining Permits from Federal, State, and Local Agencies
- Air Permitting and Emissions Inventories (Title V, NSR, PSD, etc.)
- Source Stack Testing Management
- Air Emissions Control Evaluation and Engineering
- Atmospheric Dispersion Modeling
- Accidental Release Modeling

ENVIRONMENTAL, SOCIAL, & GOVERNANCE (ESG)



Understanding the New Era of Corporate Compliance & Sustainability

Roux's ESG and corporate sustainability practice was developed to help our clients navigate the complex and evolving landscape of risk stemming from climate change and environmental regulation. Investors and regulators have become increasingly focused on these issues and the anticipated regulatory framework it may bring. Corporations are now seeing greater scrutiny from regulators and investors over how they treat the environment, manage people, and mitigate risk. Companies that fail to address ESG and climate risk issues may face reputational damage, legal challenges, regulatory fines, divestment, and more. As a result, businesses have begun to examine the sustainability of their operations, how they disclose potential liabilities, and manage risk over time.

Roux is highly qualified to provide our clients with strategic and actionable advice on how to comply with this shifting regulatory landscape. As an environmental engineering firm for over 40 years, Roux's multidisciplinary team has the qualitative, quantitative, and technical experience to help companies measure, manage, and disclose their climate risk and ESG performance. We work with clients across industries and sectors, from manufacturing to client service providers, to help them integrate ESG into their core business strategy and operations. We also help them develop and communicate their environmental strategy to stakeholders, from customers and clients to investors and regulators.

Roux's team of experts in data analytics and regulatory compliance will work with your decision makers to develop and communicate the strategy that best fits your corporate goals. Our tailored solutions will help your company turn the burden of ever-shifting environmental regulation into opportunity, and send a strong signal to all stakeholders regarding your commitment to manage risk and change the future for the better.

Areas of Expertise

- Emissions Accounting
- Climate Risk & Resilience Strategic Planning
- Regulatory Disclosure
- Environmental Risk Management
- Contingent Liability
- Due Diligence for Mergers and Acquisitions (M&A)
- Environmental Management Plans
- Evaluation of Supply Chain Risk
- Design of ISO Compliant Systems
- Strategic Planning and Data Analytics
- Natural Resource Damages (NRD)
- Environmental Justice (EJ)
- Environmental Health & Safety

Areas of Industry Expertise

- Real Estate
- Insurance
- Oil and Gas
- Mining
- Life Sciences
- Renewable Energy
- Financial Services
- Healthcare
- Transportation



Sustainable Approaches to Environmental Challenges

Roux specializes in the management, design, and implementation of Ecological Assessment and Mitigation projects. We provide a full range of services

from initial site assessment, to development of restoration design, through to construction oversight and monitoring, ensuring overall project success. We have expertise in a variety of environments ranging from freshwater wetlands and tidal wetlands to riparian ecosystems—including sustainable shoreline stabilization design—to grassland and woodland habitats.

Roux staff develops mitigation plans designed to use and promote the growth of native vegetation, incorporating varying hydrologic zones that in turn support a diverse array of plant communities and wildlife. The Roux team has several professional certifications, including Professional Engineer (PE), International Society of Arboriculture Certified Arborist, and Certified Wetland Delineator.

Roux is a nationally recognized leader in the design and implementation of sustainable “Green” Engineered Natural Systems (ENS) treatment technologies. Our award-winning ENS Group focuses on the application of these technologies to treat groundwater and surface water contamination, soils and sediments, and industrial/municipal wastewaters. Roux’s ENS designs operate passively, require little to no power, and thus reduce O&M requirements and costs.

Ecological Services

- Wetland Delineations and Jurisdictional Determination Evaluations
- Wetlands and Coastal Permitting
- Ecological Risk Assessment
- ArcGIS Mapping and Data Analysis
- Habitat Assessments
- Rare, Threatened, and Endangered (RTE) Species Surveys and Management Plans
- Invasive Species Surveys and Management
- Sediment, Surface Water, and Groundwater Sampling and Analysis
- Benthic Surveys
- Hydrologic Studies
- Sustainable Forest Management
- Federal (NOAA and FWS) Biological Assessments
- Essential Fish Habitat Assessment
- Mitigation Plans
- Wetland Restoration Monitoring



Natural Media Filters (NMF) utilize compost or peat-based systems to remove and sequester heavy metals, oils, greases, nutrients, and organics from various wastestreams.

Phytotechnologies use various trees and grasses to provide in situ treatment and containment of contaminated media (e.g., groundwater, surface water, soils, and sediments).



Since 1993, Roux has designed **Constructed Treatment Wetlands (CTWs)** to improve water quality by maximizing processes that occur in natural wetlands.

HUMAN HEALTH RISK ASSESSMENT (HHRA) SERVICES



Evaluation of Potential Human Health Concerns Associated with a Spectrum of Exposure Scenarios

Roux's team of toxicologists, industrial hygienists, and human health risk assessors have evaluated complex exposure, toxicity, and risk assessment in the context of product safety evaluations, occupational exposure, contaminated site investigation and cleanup, and in toxic tort litigation. Our human health risk assessors guide efficient cleanup of contaminated sites via creative technical approaches to exposure unit/land use assumptions, background contributions, historic fill, and statistical approaches under various regulatory regimes across the United States.

Roux also provides qualitative and quantitative industrial hygiene assessments for commercial and industrial clients in various industries to assist them with both complex and regulatory challenges. Our services include guiding clients through product regulatory testing and compliance and identifying additional potential product exposure hazards. Roux also has a team of experienced expert witnesses who have offered expert opinions on general causation (mechanistic toxicity data, animal bioassays, and epidemiological data), dose reconstruction, and association of exposure-specific health outcomes. Roux has been retained and testified in some of the country's highest profile cases.

Areas of Expertise

- **Site-specific Human Health Risk Assessments from Environmental Media**
 - Contaminated site risk assessment
 - Dose reconstruction/exposure modeling
 - Monte Carlo evaluations (probabilistic risk assessments)
 - Evaluation and modeling of air emissions and concentrations
 - Health-based risk allocation of liability
 - Groundwater flow modeling
 - Environmental Justice concerns and assessments
- **Occupational Exposure Assessments**
 - Area and personal exposure monitoring and measurement
 - Development and/or guidance for sampling strategies
 - Indoor air quality
 - Exposure mapping
 - Evaluation of biomonitoring data
 - Development of workplace controls to mitigate identified or potential employee exposures
- **Consumer Product Safety and Regulatory Compliance**
 - CPSC, Cal/EPA, CA Prop 65
- **Regulatory Basis for Health-based Standard**
 - Critical review of State and Federal regulations and advisory levels (e.g., PFAS, ethylene oxide), derivation of site-specific levels
- **Risk Communication to Non-technical Audiences**
- **Assessment of Potential Health Risk from Emerging Contaminants**
- **Toxic Tort Evaluations**
 - General Causation
 - Integrated analysis of mechanistic, toxicology, and epidemiology literature
 - Specific Causation
 - Evaluation of associations between specific exposures and health outcomes
 - Alternative Causation
 - Assessment of other relevant factors associated with claimed health outcomes



INDUSTRIAL SERVICES

Environmental Solutions for Life Sciences, Chemical, and Manufacturing Companies

For over 40 years, Roux has worked closely with our industrial clients to solve their most challenging environmental issues. Our expertise includes site remediation, restoration, and redevelopment; environmental assessments and permitting; EHS management consulting and compliance; waste management and disposal; and water, waste, and natural resources management.

Roux provides various assessment, remediation, compliance, and risk analysis services to public and private clients across multiple industries and has an outstanding performance record. Some of the key differentiators and benefits of working with Roux include uniquely qualified technical experts, a strong track record of developing practical solutions that reduce total project costs and schedule time, and a seasoned team with success in moving projects through myriad of regulatory programs.

Industrial Services

- Building Investigations and Assessments
- CERCLA RI/FS/RA
- Contingency Planning
- Cost Recovery Litigation Support
- Ecological Risk Assessment
- Environmental, Health & Safety Compliance Services
- Facility Closures and Post-Closure Monitoring
- Facility Decontamination/Demolition
- Human Health Risk Assessment Services
- Permitting and Compliance Audits
- Property Transfer/Due Diligence
- RCRA Facility Assessments, Investigations, and Closure
- Remedial Design, Construction, Oversight
- Remediation System Operation Maintenance and Monitoring (OM&M)
- Sediment Management
- Site Investigation/Remedy Selection
- Stormwater Compliance and Management
- Strategic Planning to Comply with Upcoming Regulations
- UST Management
- Vapor Intrusion Modeling
- Wastewater Management
- Wetland Assessments and Mitigation

Market Subsectors

- Chemical
- Healthcare
- Pharmaceutical and Life Sciences
- Manufacturing and Warehousing
- Transportation and Infrastructure



INSURANCE SUPPORT



Fair Evaluations of Insurance Liabilities and Costs for Environmental Projects

Roux has supported more than 45 national, international, and regional insurance carriers in their efforts to fairly evaluate costs and liabilities related to environmental investigations and remediation activities due to claims brought by their insureds.

Our experience in performing environmental investigations and clean-ups for both Fortune 100 clients and independently owned companies provides us an informed basis to evaluate environmental costs. We use the experience and knowledge we gain from competitively bidding on these projects to fully understand the cost implications associated with an environmental insurance claim. Our staff is highly qualified, having the knowledge of the insurance, financial, and environmental issues that exist for a complex claim.

Our ongoing work at contaminated properties throughout the US and internationally provides us with valuable, front-line knowledge regarding clean-up trends and technologies. All our environmental consulting work, whether for a major oil company, small business, or insurance carrier, is focused on one goal: obtain regulatory closure for the site as quickly and cost effectively as possible.

Several policyholders have hired Roux as their own consultant after we reviewed data submitted as part of a claim. These policyholders, as well as their insurance carriers, recognized the quality of our service. Our areas of service to insurance carriers include:

“Take Over” of Remediation Projects

For our insurance carrier clients and their policy holders, Roux has “taken-over” remediation projects where either remediation costs have spun out of control or previously submitted remediation plans have been rejected by environmental regulators.

Expert Witness Services

Roux has provided expert witness services for our insurance clients for over 20 years. Our experts have testified at trial and dispute resolution hearings across the country and internationally. We have provided opinions on issues related to damages, fate and transport, and historical knowledge.

Oil Spills and Related Claims

Roux has been retained by US and international insurance carriers to provide incident investigation and cost containment services related to oil spills and other environmental releases. We provide cost analysis and have served as an expert witness in both domestic and international litigation and dispute resolution proceedings.

Environmental Claims Evaluation

Since 1997, Roux has been providing national, international, and regional insurance carriers and their outside counsel with technical environmental support as they settle and resolve claims for environmental contamination of both owned and non-owned properties.

Environmental Underwriting Support

Roux supports the insurance industry with underwriting and loss control expertise for various pollution policies.

Remedial Oversight

Roux’s oversight services focus on interlocked aspects of environmental projects: project strategy and quality, and project costs.





LITIGATION SUPPORT

Providing Persuasive in-depth Scientific Analyses and Expert Testimony for Litigation

Roux's team of experts has evaluated complex technical issues in dispute during litigation and formulated expert opinions for presentation in reports, depositions, and trial. Team members have provided expert witness testimony over a broad range of issues including the source and timing of chemical releases, groundwater contaminant fate and transport, the necessity and appropriateness of site cleanup costs, equitable allocation among PRPs, risk assessment, data validity, and compliance of response actions with federal and state regulations.

Expert Opinion Topics

- Determining the source and timing of contaminant releases to soil and groundwater
- Chemical fate and transport analysis to determine groundwater migration pathways and receptors
- Evaluating whether response actions are substantially consistent with the NCP
- Evaluating whether response actions are/were necessary and appropriate
- Projecting future response action costs to bring the sites to regulatory closure
- Determining equitable cost sharing among PRPs
- MGP sites: Calculating historical tar production
- Fraudulent conveyance evaluation in bankruptcy proceedings: Determining life-cycle cleanup costs for portfolio of contaminated sites
- TR-55 analysis of changes in land use and stormwater flows
- Evaluating the source and impacts of air pollutants and point source releases
- Historical standard-of-care and industry state-of-knowledge
- Consultants' compliance with ASTM Standard Practice E1527 during the performance of Phase I environmental site assessments
- Evaluating mechanistic, animal toxicology, and epidemiological studies for potential associations between exposures and health outcomes (both cancer and non-cancer)
- Evaluating potential exposures and health risks associated with chemicals/agents in environment, workplaces, and consumer products

“I want to thank you and the rest of the team for doing a great job on a very important issue in a very important case. You mastered more facts than many will in a lifetime and really understood the issues, which resulted in thorough, thoughtful, truthful, credible and persuasive testimony. Your team’s attention to detail showed, which is key in a case like this. You should all be proud of the work you did on this project. I know my client, the litigation trustee, is very impressed. Thank you for the extraordinary efforts.”

- Jeffery Zeiger, Partner
Kirkland & Ellis LLP

Related Services/Tools

- 2-D and 3-D Data Visualization
- Georeferencing current and historical site features to soil and groundwater data
- Chemical fingerprinting to identify sources of contamination
- Preparing affidavits, declarations, and expert reports
- Assisting in document discovery
- Assisting in preparing for fact and expert witness depositions
- Assisting in preparing for opposing expert depositions
- Trial preparation and demonstratives
- Development of trial exhibits

PUBLIC SECTOR



Environmental Consulting and Engineering Services for Public and Municipal Clients

Roux provides a wide range of environmental consulting and engineering services to public and municipal clients including local and state governments, as well as public sector entities, such as schools, hospitals, and transportation authorities. Our nationwide team of professionals have extensive experience in the following areas:

Capital Projects Environmental Support: In addition to directly supporting public and municipal entities, Roux provides environmental services to heavy construction companies and Design-Build Teams on large, publicly funded infrastructure projects. Services typically include site investigation, remedial design, in situ waste characterization, and construction oversight.

Environmental Site Assessment and Restoration: Providing environmental assessments of public and municipal facilities, including buildings, parks, and transportation infrastructure. These assessments can identify potential environmental risks and provide recommendations for mitigation and remediation.

Environmental Regulatory Compliance: Supporting public and municipal entities to comply with various environmental regulations, such as the Clean Water Act, Clean Air Act, and Resource Conservation and Recovery Act (RCRA). Roux can help these entities navigate complex regulations and ensure compliance, which reduces the risk of fines and penalties.

Grant Funding: Public and municipal entities can apply for grant funding for environmental initiatives, such as energy efficiency upgrades or pollution prevention measures. Environmental consulting services can help these entities identify and apply for grant opportunities, which can provide additional funding for these initiatives.

Hazardous Materials Management: Many public and municipal entities own facilities where soil and groundwater are impacted by hazardous materials. Roux's environmental consulting can provide hazardous materials management services, including site assessment and remediation.

Public Utilities: Municipalities are expected to provide top-notch public utilities to their residents, but encounter hurdles in securing adept technical personnel, enduring infrastructure requirements, and balancing financial considerations. Collaborating with Roux, a private partner, can support public utilities by providing specialized expertise and guidance in managing utility-related environmental concerns.

Sustainability and Green Initiatives: Many public and municipal entities have sustainability and green initiatives in place to reduce their environmental impact. Roux's support services can help develop and implement these initiatives, which can reduce costs and improve an entity's public image.

Public sector organizations improve our infrastructure, economy, and overall society. Because of this, our work with these organizations ultimately creates a lasting, positive impact on our communities. We work with a diverse set of valued clients across multiple sectors to achieve results, and we're proud of the advancements our projects provide.



SEDIMENT MANAGEMENT SERVICES



Using a Multi-criteria Framework to Define Sustainable Sediment Solutions

Roux provides a wide array of sediment management services designed to meet the diverse needs of environmental projects. Roux's sediment experts have extensive experience in all phases at many of the country's large, complex sediment remediation sites, and sediment projects are supported by Roux's

unparalleled expertise in characterization, remediation, and strategic support in adjacent uplands.

As part of our approach to sediment management, Roux always focuses on the big picture but never neglects the details, with the goal of being as effective as possible in client advocacy in every phase of the project. Linking programmatic considerations with comprehensive site information—including point and non-point sources, regional background, and the complex impacts of contaminant transport, comingling, and weathering inherent in sediment sites—is the foundation for our strategic approach.

Roux leverages our extensive expertise in risk analysis, remediation, forensic source assessment, economic damages, and remedial cost modeling to quantify environmental liabilities and determine cost allocation responsibility among potentially responsible parties. Our advanced, scientifically defensible methodologies empower clients to make informed decisions with confidence.

At Roux, client satisfaction and project success are our top priorities. Our multi-disciplinary team collaborates closely with clients to understand their specific needs and goals, tailoring solutions accordingly. We have the expertise and technical know-how to deliver innovative solutions in even the most dynamic, technical, and socially challenging environments.

Areas of Expertise

- Programmatic Strategic, Regulatory, and Risk Management
- Dredged Material Management and Beneficial Use
- Sediment Remedial Investigations
- Sediment Remedy Design and Construction
- Ecological and Human Health Risk Assessments
- Natural Resource Damage Assessment Support
- Forensic Source Identification and Apportionment
- Remedy Cost Allocation and Cost Recovery
- Litigation and Expert Witness Support
- Wetland Delineations

Related Markets/Services

- Brownfields/Due Diligence
- Ecological Risk Assessment Services
- Energy
- Engineering and Remediation Services
- Green and Sustainable Remediation
- Human Health Risk Assessment Services
- Insurance Support
- Litigation Support
- Public Sector



WATER RESOURCES

Offering Sound Scientific Solutions to Water Resource Issues

Roux works with non-profit, public, and private sector clients in the analysis, management, and wise development of their water resources. Because of the complexities involved in managing water resources, those responsible for solving water supply issues and evaluating overall water needs require proven expertise. Roux combines field investigations, laboratory analyses including geochemical isotope analyses, and advanced two- and three-dimensional modeling techniques to conduct our investigations, analyses, and plan development.

Our experience includes evaluating site, watershed, and regional aquifer systems spanning multiple states. Roux routinely evaluates conditions related to groundwater-dependent ecosystems, including groundwater, surface water, and wetlands sampling and characterization; watershed assessments; spring source investigations; determining connectivity between aquifers; design and construction of production wells; and aquifer pumping evaluations.

Expert Opinion Topics

- Groundwater basin analyses
- Evaluation of groundwater and surface water interactions
- Surface water quality evaluation and watershed hydrology studies
- Water use impact assessments
- Mine hydrology investigations
- Groundwater flow modeling
- Groundwater fate and transport modeling
- Spring sourcing and other forensic hydrologic analyses
- Water supply planning and water resource development
- Water rights permitting support
- Design and construction of production wells
- Mine water reclamation facility treatment plant design



Related Services/Tools

- Geologic Mapping
- Remote-sensing Analyses
- Minerals Evaluations

“Andy’s expertise in desert hydrology is unparalleled. His extensive work mapping springs in the Mojave Desert has been a great resource for several conservation clients I work closely with. His firm has also handled environmental assessments (Phase Is) and soil borings and water samples (Phase IIs), which enabled several properties that would otherwise not have been eligible for conservation to be restored and preserved.”

- Ellen A. Fred

Attorney and Partner, Conservation Partners LLP





Photo Credit: Barbara Roux

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Roux is an environmental consulting practice that operates worldwide through separate legal entities including Roux Associates, Inc.; Roux Environmental Engineering and Geology, D.P.C.; and Remedial Engineering, P.C.

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