

# ROUX



*Brownfields/Due Diligence*



*Compliance & Engineering Services*



*Economic & Complex Analytics*



*Ecological Services & ENS*



*Industrial Services*



*Insurance Support*



*Litigation Support*



*Petroleum-Energy*

# OUR CLIENTS

Roux is privileged to provide consulting services to some of the largest and most successful companies in the world. The following are just a handful of our industry-leading clients:



- |                                 |                                 |
|---------------------------------|---------------------------------|
| <b>AIG</b>                      | <b>Matheson Tri-Gas</b>         |
| <b>Alcatel-Lucent</b>           | <b>Monsanto</b>                 |
| <b>Amtrak</b>                   | <b>New Jersey Transit</b>       |
| <b>Archer Daniels Midland</b>   | <b>Novartis</b>                 |
| <b>AstraZeneca</b>              | <b>Pfizer</b>                   |
| <b>BASF Corporation</b>         | <b>Porsche</b>                  |
| <b>BMW</b>                      | <b>Resolute Management Inc.</b> |
| <b>Brixmor Property Group</b>   | <b>Rio Tinto Alcan</b>          |
| <b>Buckeye Partners, L.P.</b>   | <b>Schneider Electric</b>       |
| <b>Chubb &amp; Son</b>          | <b>Shea Properties</b>          |
| <b>Cornell University</b>       | <b>Simon Property Group</b>     |
| <b>FedEx</b>                    | <b>Six Flags</b>                |
| <b>Fisher Scientific</b>        | <b>Solutia</b>                  |
| <b>FMC</b>                      | <b>Sunoco</b>                   |
| <b>Forest City</b>              | <b>SWM</b>                      |
| <b>GATX</b>                     | <b>Target Corporation</b>       |
| <b>GGP</b>                      | <b>Technicolor</b>              |
| <b>Global Partners LP</b>       | <b>The Dow Chemical Company</b> |
| <b>GlaxoSmithKline</b>          | <b>The Hartford</b>             |
| <b>Hercules</b>                 | <b>The Irvine Company</b>       |
| <b>Honeywell</b>                | <b>Tishman Speyer</b>           |
| <b>Johnson Matthey</b>          | <b>Travelers Insurance</b>      |
| <b>Kimberly-Clark</b>           | <b>UPS</b>                      |
| <b>Kimco Realty Corporation</b> | <b>Vornado Realty Trust</b>     |
| <b>Kinder Morgan</b>            | <b>XL Insurance Group</b>       |
| <b>Konica Minolta</b>           |                                 |

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*“Roux consults for some of the largest and most sophisticated industrial corporations, real estate developers, and law firms in the nation, who retain our firm to solve their most complex and challenging environmental problems. We know that earning and maintaining this level of trust from our clients—who can and do hire the best consultants available—requires providing exceptional service and top-notch technical capabilities, project by project, each and every day.”*

*Paul H. Roux, Chairman*

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**ROUX**

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## ABOUT ROUX

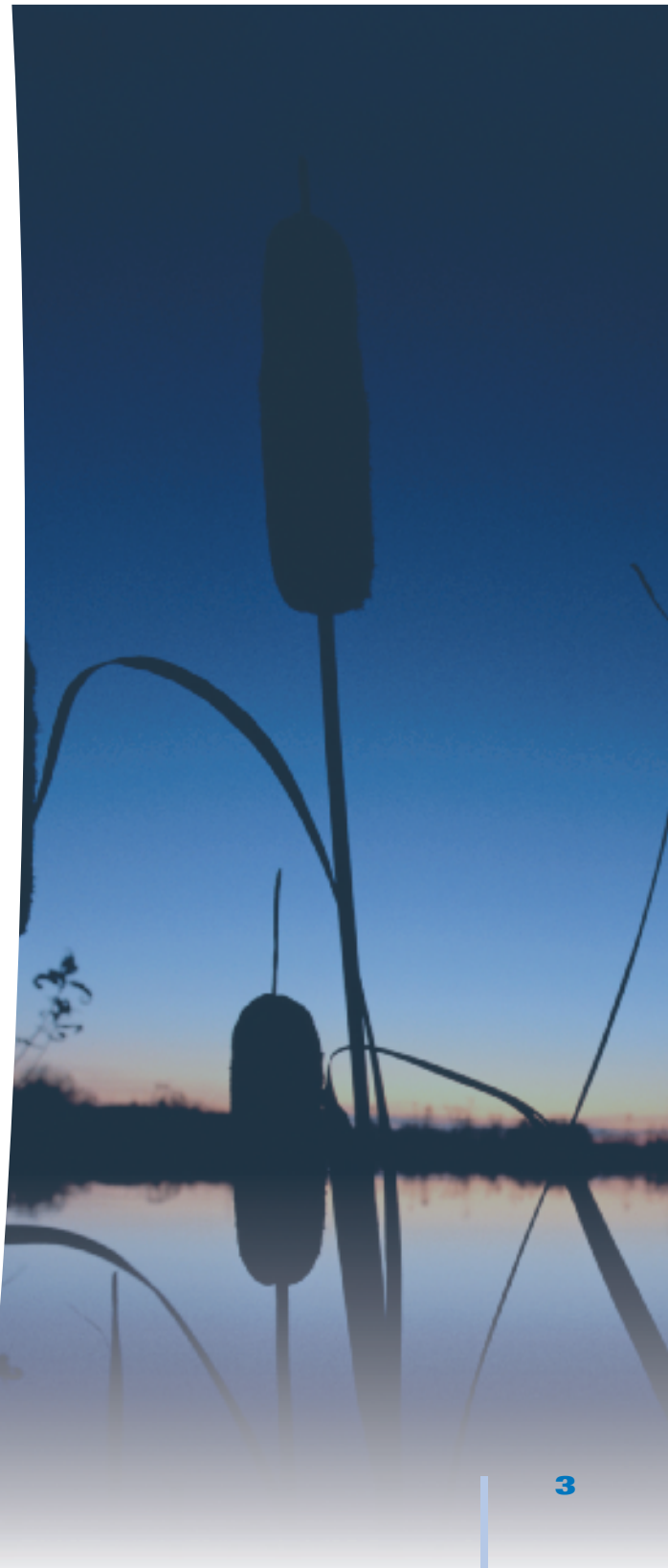
The Roux organization applies sophisticated scientific, technical, and managerial resources to develop and implement effective, efficient, sustainable solutions. In short, we solve our clients' most challenging environmental problems; we provide our consulting and project management services to an impressive list of Fortune 500 and public sector clients nationwide.

Founded over 35 years ago, Roux's work involves large complex environmental remediation projects, including Superfund sites, chemical and manufacturing plants, and petroleum refineries and distribution terminals. Today, we are an employee-owned company with approximately 300 environmental professionals in a variety of science and engineering disciplines, providing a mixture of traditional environmental site remediation and compliance services, as well as cutting-edge technical solutions.

*“Roux continues to provide excellent design, technical support, and guidance on various remediation projects for our company. We are continually impressed with their innovative approach to problem solving and vast knowledge of regulatory issues.”*

*Bryan K. Stolte, Ph.D., C.I.H.,  
Senior Mgr., Env. Systems & Remediation/  
Due Diligence, Alcatel-Lucent*

Our strong history with major Superfund, Resource Conservation and Recovery Act (RCRA), and other regulatory-driven projects is now being applied to some of the most intricate Brownfield redevelopment projects in the United States. Moreover, our innovative Engineered Natural Systems (ENS) technologies are being employed in remediation, stormwater runoff, and restoration projects in a cost-effective and sustainable fashion.



## THE ROUX TEAM

Consulting is all about people. At Roux, our best product is the smart and creative thinking we provide to our clients every day. This means we must hire, develop, and retain the best people in the business.

We recruit from some of the most prestigious environmental and engineering college programs in the United States. 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.

We continually challenge our professionals with new opportunities in a supportive, healthy, and safe environment. The result is a highly motivated group of professionals in the fields of engineering (civil, mechanical, chemical, industrial, and environmental), hydrogeology, geology, geochemistry, chemistry, biology, toxicology, and industrial hygiene, supported by a dedicated staff of database, graphics design, and CADD professionals.

Our professional staff has completed thousands of site assessments and remediation projects nationally and internationally, provided global compliance services to many multinational corporations, and provided expert witness services to hundreds of complex environmental litigation cases.

Collectively, our goals are to provide the best quality and service in the environmental consulting industry. This is achieved by the close involvement of senior management from the proposal stage to project initiation, and through to project completion.



### Focus on Safety:

Safety is always of paramount importance at Roux. Our staff is trained to implement and follow safe practices on all projects—a core value that is reinforced in our field activities every day.

Roux is honored to have received multiple major oil company awards, recognizing our flawless safety performance and effective implementation of behavior-based safety programs.





## 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. 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 the intended future use of a property, quickly turning sites into revenue-producing developments.

### Brownfield and Site Redevelopment Services:

- Property Transfer Support and Due Diligence
- Site Investigations and Remedy Selection
- Remedial Design, Waste Characterization, Construction Oversight, and Operation and Maintenance (O&M)
- Facility Decontamination and Demolition
- Asbestos, Lead-Based Paint, and Mold Assessments and Abatements
- Community and Indoor Air Monitoring Programs
- Stormwater and Wastewater Management
- Wetland Assessments and Mitigation
- Vapor Intrusion Investigations and Remedy Design
- Site Management Plans

### Representative Developer Clients:

- Brixmor Property Group
- Cornell University
- Equity One
- Forest City
- General Growth Properties
- Kimco Realty Corporation
- Related Companies
- Rouse Properties
- Shea Properties
- Simon Property Group
- Storm Properties
- Target Corporation
- Thor Equities
- Tishman Speyer
- Vornado Realty Trust

### MARKET SECTORS:

- Colleges and Universities
- Commercial/Office
- Data Centers
- Entertainment/Sports Facilities
- Healthcare
- Hotel/Hospitality
- Mixed Use
- Multifamily/Residential
- Municipalities
- Parks and Recreation
- Retail
- Senior Housing
- Warehouse/Industrial

*“As a leading developer of urban and Brownfield sites, we have relied exclusively upon Roux’s environmental expertise. Their work has been a significant factor in the success of our projects with environmental challenges.”*

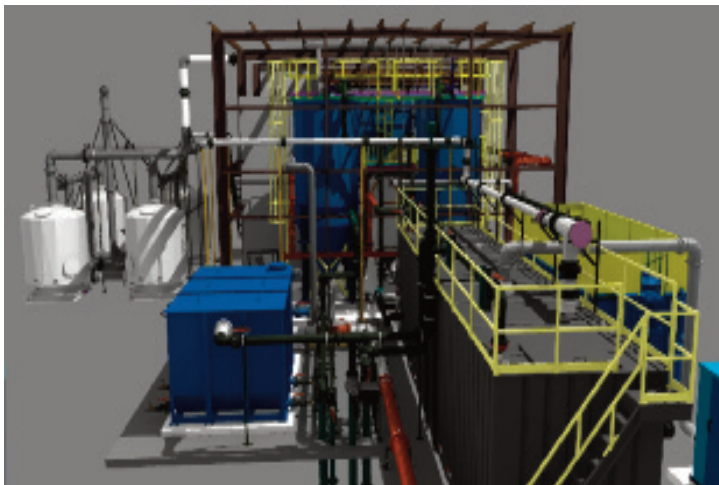
*Robert Sanna, Executive Vice President  
Forest City*

# COMPLIANCE & ENGINEERING SERVICES

## Expert Advice to Help Guide You Through Complex Environmental Regulations

Roux provides a wide range of regulatory compliance, engineering, and management consulting services to plant management, corporate environmental and engineering personnel, legal counsel, and insurance industry managers.

Services are provided for compliance with requirements of CERCLA, RCRA, and OSHA; Underground Storage Tank (UST) Regulations; Oil Pollution Act (OPA); Hazardous Materials Transportation Act (HMTA); and numerous state and local programs. We also assist in developing, implementing, and maintaining environmental management systems according to ISO 14001, as well as client-specific needs.



Roux and its affiliated professional corporations encompass multi-disciplinary engineering teams that are licensed and practicing worldwide. We provide engineering solutions that are practical, cost-effective, and minimize risk. We help our clients achieve regulatory compliance, optimize current operations, and turn environmental liabilities into assets. We bring multi-disciplinary expertise to bear in understanding the statutory and regulatory implications, as well as the potential exposure to environmental liabilities associated with all business functions.



### COMPLIANCE & ENGINEERING SERVICES:

- Environmental, Health and Safety Auditing
- Health and Safety Training
- Industrial Hygiene Assessment and Corrective Measures
- Accidental Release Modeling
- Facility Response Plans
- Spill Prevention Plans
- Stormwater Management, Permitting, and Pollution Prevention Plans
- Hazardous Substance/Community Right-to-Know Reporting
- Air Permitting (Title V, NSR, PSD, etc.)
- Source Stack Testing Management
- Atmospheric Dispersion Modeling
- Continuous Emissions Monitoring (CEM)
- Air Emissions Control Technologies Evaluation and Engineering
- Carbon/Greenhouse Gas Management
- Remediation System Design
- Wastewater Treatment Process Evaluation
- Waste Storage Area Design
- Construction Inspections
- System Operations and Maintenance
- Systems Trouble Shooting and Optimization
- Environmental, Health and Safety Program Development





## ECONOMIC & COMPLEX ANALYTICS (ECA)

### Evaluating the Impact of Environmental, Product, and Litigation Risk

Roux's Economic & Complex Analytics (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 to identify, quantify, forecast, and mitigate current and emerging environmental and product liability 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, 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 and establish a safe, stable future for our clients.

#### EXPERT OPINION TOPICS:

- Contingent Liability Forecasting for Environmental and Product Risk
- SEC Financial Reporting Disclosures for Contingent Liabilities
- Litigation and Environmental Due Diligence
- Insurance Allocation, Reserving, and Excess Policy Buy-outs
- Analysis of Asbestos Bankruptcy Trust Exposures and Recoveries
- Auditing Procedures and Claim File Reviews
- Economic Valuation of Loss
- Mass Tort Litigation
- Assessment of Litigation Impact on Corporate Operations
- Analysis of Liquidity and Solvency Risk
- Environmental and Product Liability Risk
- Public Policy
- Legislative Analysis and Testimony

#### Related Services/Tools:

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

#### 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



# ECOLOGICAL SERVICES & ENGINEERED NATURAL SYSTEMS (ENS)

## Sustainable Approaches to Environmental Challenges

Roux is a nationally recognized leader in the design and implementation of sustainable “Green” 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, Evaluations, and Monitoring
- Land Use Permitting
- ArcGIS Mapping and Data Analysis
- Habitat Assessments
- Vegetation and Wildlife Inventories
- Rare, Threatened, and Endangered (RTE) Species Surveys and Management Plans
- Invasive Species Surveys and Management
- Sediment, Surface Water, and Groundwater Sampling and Analysis
- Benthic Inventories
- Hydrologic Studies
- Habitat Certification
- Sustainable Forest Management



**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 (CTW)** to improve water quality by maximizing processes that occur in natural wetlands.

Roux specializes in the management, design, and implementation of ecological assessment and mitigation projects. 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.



### Finding Environmental Solutions for Pharmaceutical, Chemical, and Manufacturing Companies

Roux has extensive experience with the investigation and remediation of groundwater, soil, and sediment contamination at industrial sites. Over the past 35 years, Roux has provided a full range of services from initial site assessment, to development of the mitigation design, through construction oversight and monitoring to ensure overall project success. Roux specializes in the design and implementation of site-specific, innovative, and cost-effective site investigation and remediation. Our experience and expertise includes sites affected by volatile organic compounds, petroleum hydrocarbons, chlorinated hydrocarbons, metals, pesticides, PCBs, and emerging contaminants. Our clients' goals and objectives are critical components of our remedy selection process.

#### INDUSTRIAL SERVICES:

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



# 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 cleanups 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 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 U.S. and internationally provides us with valuable, front-line knowledge regarding cleanup trends and technologies. All of our environmental consulting work, whether for a major oil company, small business, or insurance carrier, is focused on one goal: to obtain regulatory closure for the site as quickly and cost-effectively as possible.

### INSURANCE SERVICES:

#### 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 environmental contamination claims for both owned and non-owned properties.

#### Environmental Underwriting Support

Roux supports underwriting and loss control expertise for various pollution policies.

#### Remedial Oversight

Oversight services focus on interlocked aspects of environmental projects: project strategy, project quality, and project costs.

#### “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

For over 20 years, we have provided expert witness services for our insurance clients. Our experts have testified at trials and dispute resolution hearings across the country and internationally.

#### Oil Spills and Related Claims

Roux provides incident investigation and cost containment services related to oil spills and other environmental releases.



### 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 trials. 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 potentially responsible parties (PRPs), risk assessment, data validity, and compliance of response actions with federal and state regulations.

#### EXPERT OPINION TOPICS:

- Air Quality Assessment
- Allocation of Liability
- Appropriateness of Remedy
- Contaminant Transport
- Contribution of Contamination Among Various Parties
- Cost Evaluation & Recovery
- Divisibility of Contamination
- Due Diligence
- Economic Damages
- Environmental Response Cost Categorization
- Exposure Assessment
- Extent and Magnitude of Contamination
- Fate & Transport
- Forensic Evaluation
- Historical Reconstruction of Chemical Releases
- Human Health Risk
- Insurance Allocation
- Necessity of Costs
- Public Policy Analytics
- Reasonableness of Costs
- Risk Forecasting & Reserving
- Source of Contamination
- Standard of Care
- Sudden and Accidental Releases
- Timing of Contamination
- Water Resource Assessment
- Water Quality Assessment

#### Related Services/Tools:

- 2D and 3D Data Visualization
- Georeferencing current and historical 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



## Environmental Consulting and Management Services for the Oil and Gas Industry



Roux has provided environmental services to the petroleum-energy industry since the mid-1980s. We have successfully completed hundreds of remedial projects across the upstream, midstream, and downstream segments of the industry. We have experience in remediation of all types of products, ranging from crude oil to gasoline. The Petroleum Industry faces inherent safety hazards at operational petroleum facilities, and corresponding regulatory and public scrutiny. We apply a broad array of technical disciplines to meet the evolving environmental challenges the industry faces.

Roux has practical experience in the evaluation and implementation of various new and/or innovative in situ technologies for remediation of petroleum-impacted sites, including: chemical oxidation, enhanced bioremediation, natural source zone depletion, and surfactant flooding, among others. There are many ways to remediate petroleum contamination. In most cases, the correct approach is based upon technical factors such as the type and amount of contamination, site conditions such as subsurface geology and hydrogeology, work schedule accommodation, and the need to minimize impacts to site business operations. Our combination of scientific expertise and practical hands-on experience results in cost-effective solutions tailored to meet our clients' objectives.

### PETROLEUM-ENERGY SERVICES:

#### Site Assessment and Remediation

- Property Transfer/Due Diligence
- Innovative Site Characterization
- Vapor Intrusion Assessment and Mitigation
- Risk Assessments
- Non-aqueous phase liquid (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

#### Project Management/Portfolio Management

- Strategic Planning
- Contractor/Consultant Review and Oversight
- On-site Management Personnel
- Regulatory Advocacy

#### Litigation Support and 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



*Photo Taken By: Barbara Roux, 2014*

**New York (Headquarters)**

209 Shafter Street  
Islandia, NY 11749  
Phone: (631) 232-2600

**California**

5150 East Pacific Coast Highway  
Suite 450  
Long Beach, CA 90804  
Phone: (310) 879-4900

555 12th Street  
Suite 250  
Oakland, CA 94607  
Phone: (415) 967-6000

**Illinois**

1200 Harger Road  
Suite 800  
Oak Brook, IL 60523  
Phone: (630) 572-3300

**Massachusetts**

12 Gill Street  
Suite 4700  
Woburn, MA 01801  
Phone: (781) 569-4000

**New Jersey**

402 Heron Drive  
Logan Township, NJ 08085  
Phone: (856) 423-8800

300 Atrium Drive  
Suite 403  
Somerset, NJ 08873  
Phone: (732) 584-6500

**Texas**

9595 Six Pines Drive  
Suite 8210  
The Woodlands, TX 77380  
Phone: (832) 631-6047



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.

[www.rouxinc.com](http://www.rouxinc.com) • (800) 322-7689

