



# PROFESSIONAL PROFILE



## Thomas H. Forbes, PE

### Vice President | Principal Engineer | Co-operations Manager

#### EXPERIENCE SUMMARY

Mr. Forbes has more than thirty-six years of environmental engineering experience: Vice President, Principal Engineer, and Co-operations Manager at Roux, July 2023 to Present; Principal Engineer and President at Benchmark Civil/Environmental Engineering & Geology, PLLC, June 1998 to July 2023; and Project Engineer, Malcolm Pirnie, Inc., June 1988 to June 1998.

#### TECHNICAL SPECIALTIES

Mr. Forbes is a registered professional engineer licensed in the States of New York, Ohio, and Pennsylvania. He has over thirty-six years of experience focused on brownfield and hazardous waste site investigation and remediation; petroleum-impacted site remediation; due diligence for environmentally-impaired properties; groundwater and industrial wastewater treatment; and environmental regulatory compliance services. He holds a BS in Chemical Engineering from the University at Buffalo. He is currently a Vice President and Principal Engineer for Roux (2023- present). Mr. Forbes' investigations and cleanups have included well over 250 sites contaminated with a wide range of materials, including per- and polyfluoroalkyl substances (PFAS), chlorinated solvents, polyaromatic hydrocarbons, polychlorinated biphenyls (PCBs), dioxins, heavy metals, cyanide, radioactive isotopes, and petroleum contamination. He has evaluated and successfully implemented cost-saving and innovative treatment technologies on a conventional and design-build basis (e.g., in situ and ex situ physical-chemical, thermal, and biological treatment), as well as removal and containment methods for remediation. Mr. Forbes has also played an instrumental role in extending and improving the New York State Brownfield Cleanup Program (BCP) through voluntary consulting efforts with congressional and senate leaders, as well as the New York State Department of Environmental Conservation (NYSDEC). He has also assisted numerous manufacturing and pharmaceutical clients through the development of strategies, plans, and permit applications necessary to secure and maintain state and federal environmental regulatory compliance.

#### REPRESENTATIVE PROJECTS

- Project manager for remedial investigation, alternatives analysis, and remedial construction to facilitate redevelopment of over 450-acres of former Bethlehem Steel Corp manufacturing site property encompassing 33 separate Brownfield Cleanup Program (BCP) sites in Lackawanna, New York. Contaminants of concern primarily include petroleum organics, solvents, PCBs, and heavy metals. Currently managing remediation of over 500 acres of additional property under an NYSDEC RCRA Corrective Action Program.
- Expert witness to legal defense team for a former electronic parts manufacturer under suit by Orange County Water District, Fullerton, California for primary drinking water aquifer contamination by chlorinated solvents and emergent organic contaminants. Served as technical consultant during mediation and settlement discussions; prepared expert report and lead technical arguments on behalf of defendant to support claim dismissal.
- Project manager for remediation of spill area soils associated with the Lehigh Valley Railroad Derailment National Priority List (NPL) Site in LeRoy, New York. Developed and implemented a USEPA-approved comprehensive remedial design to address chlorinated solvents in site soils via in situ soil vapor extraction.
- Assisted confidential client's legal counsel negotiate a consent decree with New Mexico Environment Department related to cleanup of chlorinated solvent releases to overburden and the fractured bedrock aquifer from a former manufacturing operation in Albuquerque, NM. Presently assisting in management of in situ groundwater cleanup and monitoring work.

#### CONTACT INFORMATION

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#### EDUCATION

BS, Chemical Engineering, State University of New York at Buffalo, 1988

Graduate of State University of New York at Buffalo School of Management Center for Entrepreneurial Leadership, 2002

Graduate-level courses in Biological Principles of Engineering and Hazardous Waste Management through the State University of New York at Buffalo Department of Environmental Engineering

#### PROFESSIONAL LICENSES

Professional Engineer: NY, PA, and OH

- Project Officer for BCP remediation and civil engineering design on a former industrial property to facilitate construction of a 290,000 SF manufacturing building which currently produces a consumer cleaning product for Proctor & Gamble.
- Serve as primary environmental consultant and environmental regulatory compliance manager for a Fortune 500 pharmaceutical manufacturing company in Western New York.
- Assisted in development of an in situ PFAS stabilization pilot test and Remedial Design Work Plan for a western New York Brownfield Cleanup Program Site impacted by suspected firefighting foam practice operations.
- Successfully designed and implemented groundwater pump and treat systems incorporating advanced oxidation processes to remove organic solvents and emerging contaminants at a former municipal landfill and at a former superfund site in central New York.
- Supervised monitoring and remedial measures during redevelopment of the Riverbend Site in Buffalo, New York for a new solar panel and battery system manufacturing operation. Developed a technologically enhanced naturally occurring radioactive material (TENORM) reuse work plan and variance application, which was the first ever employed in New York State. The plan was accepted by New York State, saving tens of millions in disposal costs.
- Served as Project Officer for NYSDEC Brownfield Cleanup Program (BCP) investigation and remediation of 441 Ohio Street, a former freight house located along the Buffalo River. Remedial activities included bank reshaping, hotspot soil/fill removal, and cover system placement to allow redevelopment as a residential apartment building.
- Serving as Project Officer for remedial investigation and cleanup activities at 1176 South Park Avenue, an NYSDEC BCP Site and the location of a former large-scale petroleum storage facility located on the Buffalo River.
- Served as Project Officer for NYSDEC Brownfield Cleanup Program (BCP) investigation and remediation of the former Millard Fillmore Gates Circle hospital complex in Buffalo, New York.
- Project officer for NYSDEC BCP investigation and cleanup of 154 South Ogden Street in concert with construction of the South Buffalo Charter School.
- Project manager for RI/FS, remedial design, and remedial construction at the Sycamore Village Site, a 4-acre New York State Environmental Restoration Program (ERP) site in Buffalo, New York. Responsible for all technical and administrative aspects of the project, involving removal of over 18,000 cubic yards of soil from an impacted residential neighborhood and site restoration.
- Served as project manager and supervising contractor for design-build remedial activities at the Markhams National Priority List (NPL) site in Dayton, NY. Successfully implemented remedial measures leading to USEPA-designated Preliminary Site Closeout status in October 2008 and delisting in 2009.
- Served as project manager representing multiple potential responsible party (PRP)-led remedial construction activities to address heavy metal and chlorinated solvent impacts at the Peter Cooper Landfill NPL site. Responsible for oversight and coordination of RI/FS planning and implementation activities, lead technical contact with USEPA, and remedial measures design and construction. Achieved site closeout in 2011.
- Assisted in the development of a voluntary cleanup plan for remediation of a 120-acre former steel manufacturing site in Buffalo, New York which was contaminated with volatile organic compounds, heavy metals, poly-nuclear aromatic hydrocarbons. Specific assistance involved design of a groundwater remediation system to address VOC and SVOC source area impacts proximate to a residential neighborhood and development and implementation of a Community Air Monitoring Plan involving quantitative monitoring (Summa Canister and respirable particulate analysis) and qualitative monitoring (field instruments).
- Served as Project Manager for RI/FS and cleanup activities related to solvent releases from a former paint and specialty coatings manufacturing facility in Buffalo, New York. The work, carried out under NY State Superfund program, included in situ treatment of soils and groundwater impacted by chlorinated and non-chlorinated volatile organics and heavy metals.
- Currently serving as Project Manager for New York State Voluntary Cleanup efforts for chlorinated solvent cleanup at a former degreasing and electroplating facility in Rochester, NY. Designed and implemented interim remedial measures involving low-profile air stripping and in situ hydrogen infusion.
- Served as Project Manager for multiple EPA Pilot-Grant funded investigations for City of Buffalo Department of Strategic Planning.
- Managed design-build cleanup of former New 7th Street Brownfield Cleanup Program Site in Buffalo, New York. The project involved design-build removal of several hundred tons of petroleum-impacted soil and fill material and preparation of related engineering reports resulting in Certificate of Completion issuance.

- Led remedial efforts for petroleum releases at a Western New York refinery and major oil storage facility, achieving site inactivation within 3 months of the release.
- Managed spill site investigation and cleanup work including underground storage tank removal work at numerous petroleum and chemical spill sites in Western New York.
- Led design-build construction of a 5 MGD capacity cooling water pH adjustment system for PVS Chemical Corporation. The project included design of feed forward pH control system, adjustment tank and mixer construction, process, and chemical feed piping modifications to neutralize sulfuric acid discharges. Successfully implemented startup and demonstration testing.
- Designed a 75 gpm groundwater treatment system and served as quality assurance officer for remedial efforts at the Steelfields site (former LTV Steel/Hanna Furnace Site), Buffalo, New York. The treatment system removes petroleum-based volatile organic and semi-volatile organic compounds prior to discharge to the Buffalo Sewer Authority.
- Assisted the City of Buffalo Department of Community Development in implementing an emergency PCB-contaminated soil removal effort from a residential neighborhood in Buffalo, New York. Responsibilities included coordination of hazmat excavation contractor and secure landfill, preparation of an emergency excavation and confirmatory sampling plan, and oversight of community air monitoring during the removal work.
- Performed a Feasibility Study and prepared an Engineering Design Report for remediation of PCB-contaminated soils and sediments at the Columbus McKinnon Corporation, Tonawanda, New York. Responsibilities included detailed evaluation of several remedial processes, completion of design calculations and remedial cost estimates, and preparation of a final report for submission to NYSDEC.
- Assisted in performance of a Feasibility Study for the West Valley Nuclear Demonstration Site. The Feasibility Study evaluated alternatives for remediation of groundwater contaminated with radioactive isotopes from a former containment area release.
- Assisted in the design and performed start-up of a groundwater remediation system for Moog, Inc., an aerospace parts manufacturer. The project, performed on a design-build basis, involved preparation of design plans, securing contractor bids for construction, and start-up of the remediation system, which incorporates filtration and air stripping to remove chlorinated volatile organic contaminants from groundwater.
- Designed and implemented groundwater monitoring well decommissioning procedures for the Love Canal site, Niagara Falls, New York. The project was performed on behalf of NYSDEC and included abandoning monitoring wells no longer used in the Love Canal landfill or in adjoining neighborhoods.
- Prepared an environmental monitoring plan for remediation of PCB-contaminated sediments in the St. Lawrence River along the General Motors, Inc. Powertrain Division facility in Massena, New York.
- Assisted in the performance of a Feasibility Study for remediation of volatile organic, PCB and heavy metal-contaminated soils and ground water at the Rochester Fire Academy, Rochester, New York.

#### **PUBLICATIONS/PRESENTATIONS**

- Forbes, Thomas H. and Frappa, Richard H. "Innovative Remedial Measures for the Mercury Aircraft Site" Proceedings of the Purdue University 50th Annual Industrial Waste Conference, May 1995.
- Frappa, Richard H., Forbes, Thomas H. and McManus, Anne Marie "A Blast to Remediate" Industrial Wastewater, July/August 1996.
- Forbes, Thomas H. and McManus, Anne Marie "Advanced Oxidation Technology and Application" Proceedings of the University at Buffalo 28th Mid-Atlantic Industrial and Hazardous Waste Conference, July 1996.
- Forbes, Thomas H. et al - "Pay to Throw in Buffalo" Proceedings of 1997 Solid Waste Association of North America annual conference.
- Forbes, T.H. & Werthman, P.H. "Development of Site-Specific Cleanup Levels for Commercial Redevelopment of a Large Former Steel Works," presented at the Brownfields 2000 Conference, Atlantic City NJ, October 2000.
- Forbes, Thomas H. and Frappa, Richard H. "Innovative Remedial Measures Almost 10 Years Later at the Former Mercury Aircraft Site" Proceedings of the National Groundwater Association Northeast Conference, October 2002.
- Forbes, Thomas H. "Ins and Outs of the New York State Brownfield Cleanup Program" Air & Waste Management Association, Niagara Frontier Section, Annual Environmental Seminar (presentation), April 2006.
- Forbes, Thomas H. "Brownfield Redevelopment" Proceedings of Half Moon Seminar's "New York Environmental Compliance for Design Professionals" conference, September 2008.
- Forbes, Thomas H. "New York State Brownfield Cleanup Program Update" Air & Waste Management Association Annual Environmental Seminar (presentation), April 2009.