



PROFESSIONAL PROFILE



Alexandra Bailey, PE

Project Engineer

EXPERIENCE SUMMARY

Ms. Bailey has seven years of experience offering environmental services in support of environmental compliance and remediation. Her professional experience at Roux includes Project Engineer (2022–Present) and Staff Engineer (2018–2021).

TECHNICAL SPECIALTIES

Ms. Bailey has experience with subsurface investigations and characterizations (multi-media sampling, monitoring point installation, high-resolution site characterization, UST removals); the design, implementation, and field management of remedial systems (in situ solidification/stabilization, in situ remedial amendment [ISCO and ISCR] injections or soil mixing, groundwater pump and treatment systems, sub-slab depressurization system [SSDS], soil vapor extraction [SVE], and excavation and disposal); and compliance work based on local, state, and federal regulations (NPDES, SWPPP, SPCC, and HWCP inspections and permitting). She has implemented remedial measures under RCRA, NPL and CERCLA, MassDEP MCP, NY State BCP, NY State VCP, and other state and voluntary cleanup programs. She has prepared and implemented numerous health and safety programs and managed compliance of subcontractors or third parties during oversight activities. Ms. Bailey serves as the head of the Massachusetts office database team and has developed Standard Operating Procedures for the quality control and management of laboratory data, management of project-specific databases, a state and federal standards database, and the creation of standardized data tables.

REPRESENTATIVE PROJECTS

- **Former Dry-Cleaning Facility (Sunrise), Burlington Massachusetts (2018–Present).**
Assisted in the design of a multi-system remedial project for mitigation of indoor air impacts and remediation of a chlorinated solvent plume. Provided field management of traditional soil and groundwater sample collection as well as a Membrane Interface Probe Hydraulic Profile Tool Survey (MiHPT) survey to further characterize the nature and extent of contamination. Conducted surface water sampling and assisted with a quantitative human health risk assessment to evaluate potential child and adult residential and recreational exposures to surface water along an off-site, downgradient stream. Determined that the cumulative cancer risk and non-cancer hazard estimates did not exceed target health goals. Remedial measures included performing a pilot test and two rounds of in-situ chemical reduction (ISCR) injections and quarterly groundwater sampling. Coordinated and reviewed results of a ground penetrating radar (GPR) survey of the work area prior to implementing injections. Ms. Bailey performed a vapor intrusion survey to determine if any cracks, ports, sumps, or utilities were acting as a corridor for soil gas to enter the building; the survey was conducted using a photoionization detector (PID) capable of detecting volatile organic compounds (VOCs) at the parts per billion. Vapor intrusion mitigation measures included the field management of soil gas sampling, indoor air sampling, soil vapor extraction (SVE) and sub-slab depressurization system (SSDS) pilot tests, and the design and installation of a SSDS to address indoor air quality concerns within an operating restaurant. Perform semi-annual monitoring and maintenance of SSDS through collection of sub-slab vapor, indoor air samples, and evaluation of the propagation of the subsurface vacuum.
- **National Priority List Superfund Site; Massachusetts (2021–Present).** Ms. Bailey provided due diligence support to a client throughout acquisition of an Environmental Protection Agency (EPA) NPL Superfund Site that was found to be contributing to the contamination of a public water supply.

CONTACT INFORMATION

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EDUCATION

Master of Civil Engineering,
University of Delaware,
December 2018
Bachelor of Environmental
Engineering, University of
Delaware, May 2018

PROFESSIONAL LICENSES

Professional Engineer
Commonwealth of
Massachusetts, License No.
58681
Commonwealth of
Massachusetts Grade II
Industrial Wastewater
Treatment, License No. 19366

PROFESSIONAL TRAININGS

OSHA 40-Hour/HAZWOPER
Health and Safety Training

PROFESSIONAL AFFILIATIONS

Licensed Site Professionals
Emerging Professionals
Committee, Co-Chair

The compounds of concern at this site included various chlorinated solvents (e.g., chlorinated CVOs [CVOs] such as PCE, TCE, cis-1,2-DCE, vinyl chloride, primarily within the top 30 feet of soil) as a result of an unknown party depositing drums at the site that later degraded. The area of concern on site is proximal to subsurface sewer lines, therefore a GPR survey was employed to identify the utilities and identify any unexpected subsurface structures. Ms. Bailey led the design and execution of the site characterization work (60+ sample locations, 250+ soil and groundwater samples, MiHPT high resolution site characterization and flexible liner underground technologies (FLUTE) for DNAPL detection). She sampled and profiled soil and investigation-derived waste that was containerized in 55-gallon drums during characterization activities, then coordinated the disposal of the drums. She performed a time-critical removal action alternatives analysis evaluating in-situ chemical oxidation (ISCO), ISCR, in-situ thermal heating, excavation and disposal, and a combination of those technologies, then developed costing of the selected remedial approach (ISCO Soil Mixing) in line with EPA site goals and within the client's desired timeline. Ms. Bailey drafted bid specifications and request for bid proposals, reviewed contractor proposals, is currently writing the Removal Action Work Plan, and will serve as the Project Engineer during removal action implementation in Fall of 2025, pending EPA approvals.

- **Fulton Former Manufactured Gas Plant; Brooklyn, New York (2023–Present).** Project Engineer of a NYSDEC Superfund remediation at a one-acre, former manufactured gas plant (MGP) site. Remedy includes the In-Situ Stabilization (ISS) of 56,000 CY of soil which was incorporated into the design of the planned site redevelopment building as ground improvement. During remedy development, Ms. Bailey managed the production of technical specifications and review and leveling of contractor bids. During on-going remedy implementation, she reviews submittals to ensure the contractor maintains compliance with the approved Remedial Action Work Plan, directs the field manager overseeing daily operations, reviews daily reports and deliverables for compliance, reviews wet sample results, advises on QA/QC sampling locations, and prepares work plans for NYSDEC approval.
- **Active Paper and Fabric Products Manufacturing Facility; Rochester, New Hampshire (2024–Present).** Project Engineer for the preparation of work plans, design technical specifications, and permitting for dredging, waste processing and stabilization, and geomembrane liner replacement of industrial wastewater lagoons. The contaminants of concern include Per- and Polyfluoroalkyl Substances (PFAS) and asbestos containing material (ACM). The permitting and work plan approvals required coordination with the City of Rochester

Public Works Department, NHES Permitting and Enforcement, Wastewater Engineering Bureau, Hazardous Waste Remediation Bureau, NH Bureau of Trails Department of Natural and Cultural Resources, and the NH Alteration of Terrain Bureau. This work also involved the creation of a Construction Stormwater Pollution Prevention Plan (SWPPP). Ms. Bailey will oversee contractor selection and execution of the work in Summer of 2025.

- **Parcel Service Facility; Bozrah, Connecticut (2024).** Project manager for the excavation and removal of an underground storage tank (UST) at an active package parcel facility in Bozrah, CT. Activities included creation of the project-specific HASP, the management of the excavation, UST removal, soil and groundwater confirmatory sampling program, import and compaction of clean backfill, asphalt restoration, subsequent data tabulation, analysis and UST Closure Reporting to CTDEEP.
- **Historic Oil Refinery Property; Olean, New York (2020–Present).** Field managed and assisted in the design, costing, and implementation of BCP remediation at a 9-acre site. Characterization work included implanting a pre-design investigation (PDI) of soil and groundwater sampling. Ms. Bailey used PDI data to design an excavation and disposal plan to address over 10,500+ tons of grossly contaminated material within soil in the top 12 feet beneath site grade. Beneath the excavation and in areas of the site where excavation was not technically feasible (property boundaries) Ms. Bailey contributed to the ISS design of 35,000+ CY of soil, including the development of the Community Air Monitoring Program, and contributing to the design of a SSDS for site redevelopment. Ms. Bailey prepared portions of the technical specifications and was responsible for reviewing and evaluating contractor bids. During remedy implementation, she reviewed submittals and provided feedback, ensuring contractors maintained compliance with the Remedial Action Work Plan and Technical Specifications. She served as the field manager overseeing daily operations, which included directing contractors with regard to excavation location and depths, stockpile management, disposal coordination with trucking and landfill companies, and tracking ISS implementation (review changes to reagent water to cement ratios, review and approve ISS sequencing plan on a daily basis, track QA/QC sample collection and results, monitor mix depth, time, uniformity, and review ISS contractor daily reports for accuracy). Ms. Bailey helped to prepare the Final Engineering Report for this work to obtain a Certificate of Completion.
- **Former Gasoline Service Station; Morrisonville, New York (2023).** Led the removal and demolition of gasoline and heating oil USTs at a former gasoline service station and former residential property in New York per NYSDEC regulations.

Oversaw GPR survey of the site to determine the quantity and location of underground tanks at the Site and performed review of property historical records to determine the likely type of tanks present. Tasks included the oversight of test pitting activities, writing and implementation of the UST removal work plan, daily oversight of subcontractors, tank grave soil compliance sampling, and planning and implementation of additional soil sampling to delineate the extents of contamination. Assisted in the proposal, permitting, and regulatory reporting associated with the project.

- **Active Nonwoven Sheet Products Manufacturing Facility; Green Island, New York (2024–Present).** The Site consists of an active manufacturing facility that produces nonwoven sheet products from inorganic fibers and other raw materials. The manufacturing process utilizes significant volumes of production water (approximately 1,500,000 gallons per day). Wastewater produced from these operations is pre-treated within the production facility to remove suspended solids and adjust the pH as necessary to comply with the facility's Industrial Discharge Permit prior to discharge to the County Water Purification District Sewer System. Ms. Bailey served as the Project Engineer helping to upgrade the treatment system for more effective solids removal. Ms. Bailey reviewed existing documentation for the Site wastewater treatment systems, including as-built drawings, permits, operational records and data, and sampling data. She performed the database work to tabulate additional sample data and coordinated with vendors for the performance of bench scale testing to determine appropriate coagulation and flocculation in conjunction with either a gravity settling clarifier, dissolved air flotation (DAF) clarifier, or a filtration system. She solicited full-scale clarifier proposals from the vendors, compared technologies, presented the County with the proposed clarifier (design includes coagulation, flocculation, DAF clarification, and solids filtration via a screw press), to be tested via a pilot system prior to full-scale technology implementation.
- **Former Metal Processing Facility; Plainville, Massachusetts (2019–Present).** Managed a groundwater pump and treat system including six extraction wells and an HDPE barrier wall in support of an EPA Groundwater Stabilization Measure (GSM) to address VOCs in overburden, bedrock, and deep bedrock (>70 ft below ground surface). GWTP uptime of 95% maintained for this 75 gpm system. System was authorized to discharge treated groundwater to a surface water body under a Remediation General Permit (RGP) by the EPA and MassDEP. Completed Notice of Intent under the new RGP permit. During this work, Ms. Bailey obtained her grade II industrial wastewater treatment plant operator license. Extracted groundwater was treated for VOCs, metals, and suspended solids via settling, clarification, bag filtering, air stripping, granular activated

carbon treatment, secondary filtering, and ion exchange vessel treatment. Managed the routine O&M schedule as well as RGP compliance sampling of the GWTP. Prepared semi-annual reporting to the EPA summarizing O&M activities and RGP sample results. Site transitioned from a pump and treat strategy to in-situ injections in 2021. Ms. Bailey provided ISCR injection support to further treat VOC source areas. ISCR amendment was intended to enhance anaerobic degradation of VOCs. The amendment included a microemulsion phospholipid blend, zero valent iron and sulfate, and potassium bicarbonate. Ms. Bailey helped to coordinate implementation of the injections and manages the groundwater sampling in support of the ISCR injection effectiveness evaluation (annual sampling of 50+ monitoring wells, and quarterly sampling of 30+ wells). Additionally, Ms. Bailey performs management of property and improvements (one building), including lawn care and landscaping, snow and ice removal, and maintenance of the building and utilities. Ms. Bailey coordinated the decommissioning of the antiquated electrical source and worked with the local utility company on behalf of the client to negotiate the installation of a new electrical source.

- **Los Angeles County Department of Health, Wildfire Sampling Response (2025).** Performed soil sampling in neighborhoods in and around the Pacific Palisades and Malibu wildfires on behalf of the LA County Department of Health (DOH). Ms. Bailey helped to determine sample locations based on the likelihood for ash deposition and collected soil samples from affected areas for heavy metals, polycyclic aromatic hydrocarbons (PAHs) and dioxins with the goal of assessing potential fire-related impacts, and communicating the results to the public. Samples were collected from parcels with varying degree of damage, and from within and outside of the fire boundary/burn zone. Ms. Bailey collected GPS and sample location description data for use during spatial data analysis. A total of 780 parcels were sampled. Ms. Bailey interacted with members of the community during sampling and worked alongside DOH officials to communicate the goals of the sampling to residents in the area. Ms. Bailey also performed a quality control review of the laboratory data prior to data analysis. Roux has presented to results of the sampling and data analysis to the public during several community town-hall meetings, and results are published on the DOH website for residents to review.
- **Gasoline Service Stations throughout Massachusetts (2023).** Provided engineering oversight of inspections of gasoline service station components throughout MA to assist with assigning environmental liability during service station acquisition. Worked included oversight of UST tank and line

tightness testing, evaluation of the condition of system appurtenances, and oversight of repairs to UST risers.

- **Parcel Service Facilities throughout the Northeast (2021).** Prepared numerous Hazardous Waste Contingency Plans (HWCPs) for facilities in New England and New York. Conducted site visits to evaluate compliance with Federal regulations and recommended best management practices for storing hazardous waste and spill containment equipment. Prepared SWPPPs and Stormwater Management Plans (SWMPs) in accordance with Federal and state industrial discharge permits. Prepared and facilitated certification of numerous Spill Prevention Control and Countermeasure (SPCC) Plans and 5-year reviews for industrial facilities in Massachusetts. Conducted site visits to evaluate compliance with Federal and State regulations and recommended best management practices for preventing leaks and spills of oil at the Facilities.
- **Stormwater Permitting and Compliance under Federal and State Industrial Stormwater General Permits; New England (2018-Present).** Manage stormwater permitting and compliance in Massachusetts under federal and state industrial stormwater general permits, including the EPA's Multi-Sector General Permit (MSGP). Coordinate on-site field activities, including routine site inspections, visual stormwater assessments, and stormwater sampling. Evaluate stormwater sampling for benchmark, impaired waters, and indicator monitoring parameters. Prepare or coordinate the preparation of Discharge Monitoring Reports (DMRs) and Annual Reports for certification by clients. Identified, recommended, and tracked corrective actions to address potential pollutant sources or permit exceedances.
- **Ohio Voluntary Cleanup Program; Wadsworth, Ohio (2019-Present).** Unknown former site manufacturing activities impacted soil and groundwater with chlorinated volatile organic compounds, including 1,1,1-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, and xylenes. A phytoremediation plot was installed previously to maintain the groundwater plume on-site and prevent off-site migration. Ms. Bailey performs annual monitoring of the plot for health of the trees, evaluates the vertical hydraulic gradient induced by the trees, and coordinates and analyzes the collection of groundwater samples. In 2025, Ms. Bailey performed a feasibility study to bring the site to closure through an evaluation of additional soil characterization, excavation and disposal, and in-situ chemical oxidation (sodium persulfate).
- **Petroleum Product Bulk Storage and Distribution Facility; Boston, Massachusetts (2018-2022).** Collected soil samples and assisted in performing a Massachusetts Contingency Plan (MCP) Method 3 Risk Characterization and human health risk

assessment for a petroleum product bulk storage and distribution facility impacted with petroleum hydrocarbons and metals. Exposure media of concern included soil, indoor air, and groundwater. Evaluated current and future scenarios at various exposure units in accordance with Massachusetts Department of Environmental Protection guidance.

- **LNAPL Delineation Investigation; Everett, Massachusetts (2020-2021).** Contributed to the development and field oversight of a light non-aqueous phase liquid (LNAPL) investigation across an active petroleum storage and distribution facility, which included delineation of 8 different plumes, advancement of over 50 soil borings, installation of over 40 monitoring wells, and collection of over 100 soil samples. Maintained compliance with site-specific HASP.
- **Petroleum Product Bulk Storage and Distribution Facility; Rhode Island (2022).** Aided in the construction, installation, and startup testing of an engineered Natural Media Filter to treat BTEX, MBTE, and ethanol in groundwater. Provided system startup oversight and troubleshooting and evaluated system performance/efficiency. Provided Design support for new water main connection and associated meter pit for an existing fire protection system.
- **Former Bulk Petroleum Storage Facility; New Hampshire (2019).** Field oversight of soil borings and Optical Imaging Profiler and Hydraulic Profile Tool survey to investigate contaminated media attributed to former petroleum storage operations in NH. Field work consisted of soil screening with a PID, soil sampling, soil characterization based on the Unified Soil Classification System (USCS), monitoring well installation, oversight and management of subcontractors.
- **Former Petroleum Bulk Storage Facility; Vermont (2018-2024).** Collected and managed the collection of groundwater samples associated with site closure activities. Performed a modified Risk Assessment Guidance for Superfund (RAGs) Human Health Risk Assessment consistent with VTDOH methodology. Evaluated five complex exposure units from a current and future land use perspective; coordinated deed restrictions limiting future use of the property to facilitate closure.

PROFESSIONAL TRAININGS

OSHA 29 CFR 1910.120 40-Hour Safety Training

OSHA 29 CFR 1910.120(e) (8) 8-Hour Refresher Training OSHA 29 CFR 1926 - 10 Hour Construction Training Loss Prevention System Training (2018)

First Aid and CPR/AED Training (2019)