PROFESSIONAL PROFILE

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EDUCATION

MS, Hydrogeophysics,
University at Buffalo, 2010
BS, Geological Sciences,
University at Buffalo, 2007

PROFESSIONAL LICENSES

Professional Geologist (NY) 2017
Licensed Site Remediation
Professional (NJ) 2018

Adam Orion Flaxman, PG, LSRP

Principal Hydrogeologist

EXPERIENCE SUMMARY

Over fifteen years of experience: Principal Hydrogeologist, Senior Hydrogeologist, and Project Geologist at Roux and Senior Staff Geologist at Langan Engineering & Environmental Services.

TECHNICAL SPECIALTIES

Technical specialties encompass project management and oversight of environmental projects requiring comprehensive site characterization, remedial investigation, and remedial action, encompassing the assessment and remediation of soil and groundwater contamination, hydrogeological characterization utilizing aquifer testing, and the evaluation of vapor intrusion. Expertise includes the investigation of petroleum spills, chlorinated volatile organic compounds, emerging contaminants (e.g., 1,4-dioxane and per- and poly-fluorinated substances [PFAS]), munitions and explosives of concern and unexploded ordnance (MEC/UXO), polychlorinated biphenyls (PCB) remediation subject to United States Environmental Protection Agency (USEPA) Toxic Substances Control Act (TSCA) regulations, complex sites with fractured bedrock, non-aqueous phase liquid (NAPL) contamination, and groundwater fate & transport evaluations evaluation of off-site contamination sources and comingled plumes. Experienced in due diligence, regulatory compliance, and the development of Conceptual Site Models (CSMs) for diverse industrial sites. Proficient in the use of EQuIS and other database resources and coding (e.g., VBA) for data management and evaluation.

REPRESENTATIVE PROJECTS

- **Former Industrial Facility, Project Manager, LSRP.** Coordinated and provided guidance for the implementation of remedial investigation (RI), and remedial action (RA) activities at an 8-acre property. These comprehensive efforts were conducted in accordance with New Jersey Industrial Site Recovery Act (ISRA) requirements at a site with a complex history, formerly operating as a lacquer manufacturing company, trucking terminal, and a facility producing asphalt driveway sealant, asphalt road patches, and roof coatings. Our detailed investigation activities involved characterizing and delineating a range of contaminants in soil, including petroleum-related volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), metals, PCBs (subject to TSCA), extractable petroleum hydrocarbons (EPH), and residual product, as well as VOCs, PAHs, and metals in overburden groundwater. Field investigations included site-wide geophysical/GPR surveys to identify subsurface features and historical underground storage tanks. The findings of this work were documented in an RI report, and an RA work plan was prepared to address identified constituents of concern in both soil and groundwater. Furthermore, remedial action activities include coordination with the United States Environmental Protection Agency (USEPA) to address PCBs subject to TSCA and residual product through the application of an In-Situ Stabilization (ISS) remedy.

- **Commercial Facility, Project Manager.** Coordinated and provided guidance to implement RI activities at a 7.5-acre property that formerly operated as a fuel oil distribution facility and was later redeveloped as a commercial operation with dry cleaning tenants. Investigation activities focused on characterizing and delineating chlorinated VOCs (CVOCs) in overburden and multiple fractured bedrock groundwater zones. Field investigations included a site-wide geophysical/GPR survey to identify the presence of subsurface features and historical underground storage tanks. The groundwater evaluation included the interpretation of downhole geophysical logs, packer testing, and compound-specific isotope analysis (CSIA) to evaluate the potential presence of commingled plumes and confirm the migration of contamination onsite and from offsite sources. Soil vapor intrusion evaluations were performed to identify potential vapor intrusion issues that may exist based on the presence of CVOCs in groundwater.

An RI report was prepared for soil and groundwater, documenting the investigation performed to address VOCs, semi-volatile organic compounds (SVOCs), EPH, and PAHs and metals attributable to historic fill material in soil across the site and chlorinated VOCs in groundwater. An RA scope of work was developed to address constituents of concern in soil and groundwater. Presently providing support to expert (e.g., preparation of expert report) in connection with litigation support for a civil action lawsuit that involves a complaint filed against former dry cleaning operator for breach of tenancy operations contract.

- **Former Industrial Facility, Project Manager.** Conducted remedial investigation of 30-acre property that formerly operated as a facility that was used to manufacture batteries, primarily for the automobile industry. Prepared remedial investigation report, remedial action workplan, and remedial action report for soil, documenting investigation and remediation performed to address VOCs, EPH, PAHs, and metals (notably lead), in soil across the site. Utilized compliance averaging techniques (i.e., spatially-weighted averaging) to support remediation goals and developed alternative remediation standards using synthetic precipitation leachate data and USEPA mass-limited modeling. Developed scope of work for supplemental investigation of CVOCs in multiple aquifers including unconsolidated deposits and weathered bedrock, and shallow and deep bedrock groundwater zones. Groundwater evaluation included interpretation of downhole geophysical logs, packer testing, and aquifer pump test data, and CSIA to evaluate commingled plumes and confirm the migration of contamination onsite, from offsite sources.
- **Litigation Support to Expert, Project Manager.** Provided project management and support to expert for a lawsuit filed against more than two dozen defendants, including manufacturers, distributors, and users of 1,4-dioxane. The cost recovery action was filed by one of the largest public drinking water system suppliers who sought $ 1.6 billion dollars in damages for 1,4-dioxane contamination of more than 250 drinking water wells. This project involved extensive contribution analysis, forensic analysis, fate and transport modeling and evaluation of 1,4-dioxane treatment alternatives and costs. The case involved more than 30 experts. Prepared expert and rebuttal reports that involved expert opinions on remedial alternatives and cost for addressing 1,4-dioxane contamination in drinking water.
- **Two Manufacturing Facilities, Project Manager.** Developed the comprehensive scope of work to initiate RI at two neighboring manufacturing facilities. The investigation involves collection and analysis of soil and groundwater samples to determine the presence and extent of any existing contamination, with a specific focus on the potential presence of PFAS due to historical industrial activities. A significant component of this ongoing work includes performing a detailed hydrogeological evaluation to assess the feasibility of obtaining a Class III aquifer reclassification for the underlying groundwater resources to determine applicability of NJDEP Class II-A groundwater quality standards. Additional investigation and data evaluation is being performed to determine potential contributions from on-site contamination in groundwater to a nearby surface water receptor.
- **Former Industrial Facility, Project Manager.** Provided due diligence services related to a 13-acre industrial complex. Conducted a Phase I Environmental Site Assessment (ESA) and Preliminary Assessment. Developed SI scope of work led the implementation of limited SI activities to identify potential impacts to the environment from historical operations including PFAS from electroplating activities. Following due diligence, provide ongoing third-party oversight of responsible parties on behalf of property owner to ensure that ongoing RA addresses site contaminants (namely VOCs, metals, PCBs, and residual petroleum product) in accordance with NJDEP requirements. As part of property redevelopment, soil vapor intrusion evaluations were performed to evaluate the need for vapor mitigation system in new construction.
- **Former Commercial Facility, Project Manager.** Coordinated and provided technical guidance for the implementation of RA activities at a 1.5-acre property. These efforts addressed gasoline-related constituents (namely, benzene, toluene, ethylbenzene, and xylenes [BTEX]) in soil and groundwater through the application of *in-situ* chemical oxidation (ISCO) and enhanced in-situ bioremediation (EISB). Additionally, I prepared an RA report documenting the historical remedial actions undertaken at the property.
- **Research & Development Facility, Project Manager.** Conducted SI and RI of a discharge identified during construction activities from a historically abandoned waste pipe. Developed scope of work to investigate VOCs and PCBs in soil. Utilized compliance averaging techniques (i.e., arithmetic mean and spatially-weighted averaging) to support remediation goals. In addition, evaluation was performed to successfully classify groundwater at the Site as Class IIIA (non-potable) and remediate accordingly.
- **Former Manufacturing Facility, Project Manager, LSRP.** Conducted and oversaw SI and RI activities at a former specialty coatings manufacturer site. Developed a scope of work to investigate VOCs, PCBs, and EPH in soil and VOCs and PAHs in unconsolidated shallow and deep deposits, and bedrock groundwater zones. Developed a CSM and prepared a scope of work, which included the installation of monitoring

wells in overburden and fractured bedrock. Facilitated downhole geophysical logging, evaluated fracture data, and conducted groundwater sampling to investigate offsite sources of CVOC impact to groundwater. Conducted CSIA to evaluate potential comingled plume conditions. Performed upkeep and maintenance of an active pump and treat system to address CVOCs in groundwater.

- **Commercial Facility, Project Manager.** Provided project management for RI at a commercial facility. Supported the development of a CSM and implementing an active RA remedy comprising EISB and *in-situ* chemical reduction (ISCR) to address CVOCs in the unconsolidated overburden groundwater zone.
- **Former Industrial Facility, Project Manager.** Provided due diligence services related to a 2,800-acre industrial complex. This included a review of existing data to evaluate the adequacy and completeness of sampling or need for additional site investigation to meet PADEP Act 2 requirements. The assessment considered potential impacts from emerging contaminants, specifically PFAS and 1,4-dioxane, and performed soil vapor intrusion evaluations to identify potential vapor intrusion issues that may exist following redevelopment and building construction. Additional support was provided to estimate rough order of magnitude costs associated with identified environmental conditions, including the management of PCB-impacted soils potentially subject to USEPA TSCA regulation, and potential ecological impacts.
- **Former Industrial Facility, Project Manager, LSRP.** Coordinated and provided technical guidance to project team to implement SI, RI, and facilitate future RA. Initial primary objectives include a comprehensive SI to evaluate soil and groundwater quality in identified areas of concern and to characterize the subsurface hydrogeology. A key focus involves installing additional monitoring wells to accurately assess groundwater flow conditions, potential tidal influences, and investigate potential off-site sources of contamination. Subsequent groundwater sampling and hydrogeological testing will further refine the CSM and support the development of appropriate RA strategy for the site.
- **Residential Property, UHOT, Project Manager.** Provided project management, coordination, and guidance to project team for a residential property undergoing remediation related to a historical underground heating oil tank (UHOT) discharge. Developed and implemented SI and RI activities including evaluation of comingled plumes from adjacent property UHOT discharges. Due to the impracticality of extensive soil excavation, *in-situ* RA strategies were evaluated, and ISCO injections are proposed to address residual product impacts in soil.
- **Pharmaceutical Research & Development Facility, Project Manager.** Provided due diligence services related to 45-acre pharmaceutical research and development facility in New Jersey being redeveloped for mixed use (i.e., residential and non-residential) occupancy. Performed high level risk evaluation developed limited SI scope of work to identify potential impacts to the environmental from historical operations.
- **Former Munitions Property, Project Manager and Field Lead.** Conducted remedial investigation of a 400-acre former munitions site. Services provided included investigation and remediation of contaminants related to the manufacturing of munitions and unexploded ordnance. Provided support to natural resources group for ecological investigation of wetlands including plan development and execution. Performed oversight of chromium and arsenic “hot spot” excavations. Oversaw removal of underground storage tank identified during site redevelopment. Developed and executed air monitoring plan to address potential asbestos containing material disturbed during redevelopment earthwork activities. Supported LSRP by preparing the remedial investigation report, remedial action work plan, response action outcome, and three remedial action reports for subdivided property parcels. Completed Phase I Environmental Site Assessment for new leasehold within one of the subdivided parcels.
- **Generating Station, Project Manager and Field Lead.** Conducted remedial investigation at generating station in central New Jersey. Services provided included the investigation of historical discharges of kerosene, transformer oil, lubricating oil, and PCBs impacting soil and groundwater. Prepared scopes of work for various phases of remedial investigation, cost estimates, coordinated field activities, and managed project budget. Documented investigation findings for various phases of investigation for the client. Completed initial light non-aqueous phase liquid (LNAPL) reporting, developed and executed interim remedial measures (IRM) plan, and completed IRM reporting. Prepared memorandums for the client documenting various stages of remedial investigation.
- **Generating Station, Project Manager and Field Lead** Conducted site investigation at generating station in central New Jersey. Services provided included the investigation of unknown source of arsenic and evaluated the presence of historic fill on site. Prepared scope of work, cost estimate, coordinated field activities, and managed project budget. Documented investigation findings for the client.
- **Industrial Facility, Project Manager.** Provided geological evaluation support for the RI of a 12-acre industrial property. Provided support to the project team for RI and RA activities to address VOCs, SVOCs, metals, and PCBs in soil, and CVOCs and

PFAS in groundwater. Based on the presence of VOCs, soil vapor intrusion evaluations were performed to evaluate the need for vapor mitigation system in new construction. Our evaluation included attributing select metals observed in soil and groundwater to naturally occurring background conditions. Supported the development of a scope of work to perform a supplemental RI of contaminants of concern in soil including PFAS.

- **Former Manufactured Gas Plants (MGP) in Central and Northern New Jersey, Field Manager.** Services provided included the investigation and remediation of MGP-related contaminants of concern in soil, sediment, and groundwater. Supported LSRP by preparing various technical documents including conceptual site models, quality assurance project plans, remedial investigation reports, remedial action work plans, and remedial action reports. Served as construction oversight engineering for various portions of remedial action implementation.
- **Multiple Generating Stations in New Jersey, Field Manager.** Conducted remedial investigations at several generating stations in New Jersey. Services provided included the investigation and remediation of various historical discharges impacting soil, sediment, groundwater, surface water, and vapors. Supported LSRP by preparing various technical documents including quality assurance project plans, remedial investigation reports, remedial action work plans, and remedial action reports. Served as construction oversight engineer for various portions of remedial action implementation.
- **Former Industrial Facility, Field Geologist.** Conducted remedial investigation of former industrial site in northern New Jersey. Services included investigation and remediation of petroleum-related contamination in soil, groundwater, sediment, and surface water. Supported LSRP by preparing various technical documents including quality assurance project plans, remedial investigation reports, and remedial action work plans. Served as construction oversight engineer for various portions of remedial action implementation.
- **Hackensack Meadowlands Development Commission Landfill, Field Geologist.** Provided oversight services in connection with demolition and construction project within footprint of Hackensack Meadowlands Development Commission landfill area in New Jersey. Services included preparation and execution of air monitoring plan to evaluate volatile organic vapors, particulate matter, landfill gases concentrations, and odors on site for the duration of the project. Services also included oversight of the installation of a sub-slab ventilation system for the newly constructed building, post-closure soil-gas monitoring ports, and preparation of the major landfill closure report. Performed regular post-closure monitoring, which included measurements of landfill gases inside and along the perimeter of the newly-constructed building, inspections of landfill cap integrity, and confirming that the indoor air monitoring system was functioning normally.
- **Trucking Facility, Field Manager.** Provided remedial investigation and remedial action activities related to an oil-water separator pipeline discharge for a trucking facility in New Jersey. Services included soil and ground water sampling, excavation oversight, and restoration. Supported LSRP by preparing work plans, site investigation report, remedial action report, and response action outcome.
- **Multiple Industrial Facilities in New Jersey, Field Geologist.** Provided remedial investigations at various industrial facilities in New Jersey. Services included completion of vapor intrusion work plan development, sampling, and reporting. Support LSRP by preparing NJDEP remedial investigation reports and closure documentation.
- **Residential and Commercial Buildings, Vapor Intrusion Services in New Jersey, Field Inspector.** Provided oversight for installation of active and passive sub-slab depressurization systems and sub-slab ventilation systems in residential and non-residential buildings in New Jersey. Provided inspection services for existing vapor mitigation system remedial construction inspections in residential homes and buildings in New Jersey.

Water Supply and Geothermal Services

- **Atlantic Highlands, New Jersey Golf Course, Field Lead and Project Manager.** Provided hydrogeological evaluation services to obtain a modified water allocation permit for golf course irrigation improvements. A hydrogeological desktop study was completed to evaluate groundwater resources available and identify any conditions that might restrict obtaining a modified water allocation permit. An aquifer exploration and testing program was developed and executed based on the findings of the hydrogeological study and included installing deep overburden wells and conducting an aquifer pumping test. The golf course had used a combination of groundwater and municipal water to support golf course irrigation and the client sought to increase its total groundwater diversion to rely less upon the relatively costly municipal supply source. By the conclusion of the project, the golf course had quadrupled its groundwater supply and was no longer dependent on a municipal source.
- **Neptune, New Jersey Golf Course, Field Lead and Project Manager.** Provided hydrogeological evaluation services to obtain a water allocation permit for golf course irrigation improvements. A hydrogeological desktop study was completed to evaluate groundwater resources available and

identify any conditions that might restrict obtaining a water allocation permit. An aquifer exploration and testing program was developed and executed based on the findings of the hydrogeological study and included installing deep overburden wells and conducting an aquifer pumping test.

- **Morristown, New Jersey Golf Course, Field Lead and Project Manager.** Provided hydrogeological evaluation services to obtain a water allocation permit for golf course irrigation improvements. A feasibility study was completed including a fracture trace analysis to site bedrock well locations to intercept bedrock fractures having greater water-bearing capacity. An aquifer exploration and testing program was developed and executed based on the findings of the feasibility study and included installing bedrock wells and conducting an aquifer pumping test. A hydrogeological report was prepared to document the aquifer test findings.
- **Princeton, New Jersey Golf Course Water Supply Leak Evaluation, Field Lead and Project Manager.** Conducted a water supply system evaluation at a golf course water supply wells and irrigation pond to identify a source of system leakage. The evaluation included development of a water balance to estimate inflows and outflows of the irrigation pond over a given irrigation season, determination of the pond's catchment area using topographic and GIS data, and review of well records to evaluate well yield capacities. Water level gauging was conducted to monitor surface water levels in the irrigation pond in support of the water balance estimation. The results of the evaluation were used to develop an approach to maintain water levels in the irrigation pond.
- **Westchester County, New York, Geologist.** Performed evaluation of using on-site groundwater and/or surface water to support proposed irrigation improvements to a golf course. A feasibility study was completed including a fracture trace analysis to site bedrock well locations to intercept bedrock fractures having greater water-bearing capacity. An aquifer exploration and testing program was conducted based on the findings of the feasibility study and included installing an overburden and bedrock well and conducting an aquifer pumping test of the new bedrock well.
- **Jefferson, New Jersey, Field Geologist.** Provided potable water supply services that included the evaluation of historical system for property redevelopment, installation of new bedrock well, completion of aquifer testing, and water use registration for a new potable supply.
- **Water Supply Services in New York and New Jersey, Geologist.** Conducted feasibility studies and water supply well installations for various water supply projects in New Jersey and New York.
- **Geothermal Well Permitting Services in New York, Geologist.** Completed permitting for geothermal wells for various projects in New York. Services included preparing and filing permits with New York State Department of Environmental Conservation, New York City Department of Environmental Protection, and United States Environmental Protection Agency. Permitting included supporting the design of the geothermal well in a manner consistent with the requirements of the approval process.