

TECHNICAL SPECIALTIES

Design and implementation of soil and groundwater investigations and remedial actions for industrial, brownfields and insurance clients. Development of NJDEP ISRA, UST, and Spill Act Discharge compliance strategies. Regulatory compliance specialist for Federal and State UST compliance and discharge corrective action regulations. Insurance consulting, oversight and project management. Design and installation of UST systems and development of compliance programs for federal and state required UST inspection, testing and monitoring activities. Construction oversight, management.

EXPERIENCE SUMMARY

17 years of experience: Principal Scientist and Office Manager with Roux Associates, Inc.; Senior Scientist with Roux Associates, Inc.; Principal/Senior Project Manager with DeMaio's Environmental Contracting and Consulting Inc.

CREDENTIALS

B.S. Environmental Science, The American Military University

Professional Education Courses: Geology, Hydrogeology & Chemistry – Rutgers University

Groundwater in Fractured Bedrock – Rutgers University

NJ Licensed Site Remediation Professional Lic # 591583

NJDEP UST Certification # 248987 - UST Closure, Install Entire

Systems, Corrosion Tester, Tank Tester & Subsurface Evaluator

Veeder-Root Certified UST Monitoring Systems Tech # B34129

Xerxes Certified UST Installation Cert. #6509

Ameron Fiberglass Petroleum Product Piping Certified Technician

Steel Tank Institute UST Cathodic Protection Tester Cert #CPEN-04

40-hour OSHA Health and Safety Training

8-hour Refresher OSHA Health and Safety Training

Member, NJ Licensed Site Remediation Professionals Association

Member, National Groundwater Association

KEY PROJECTS

New Jersey Licensed Site Remediation Professional (LSRP) Projects

- LSRP of Record/Project Principal for the demolition of a 120+ year old powerhouse in Gloucester City, New Jersey. The scope included the demolition of a 200' water tower, 150' smokestack, asbestos abatement throughout the building and within the boilers and furnaces, removal and remediation of a 40' diameter above ground storage tank (AST) and

building demolition. Remediation and site restoration activities included excavation of petroleum impacted soil, and characterizing, crushing and reusing concrete and brick onsite to reduce the volume of clean fill needed to restore the site resulting in a cost savings to the client.

- Project Manager for landfill triggered remedial investigation and remedial action at an existing retail store in Elizabeth, New Jersey. PCB-impacted LNAPL, chlorinated volatile organic compounds (CVOCs) and elevated methane levels were encountered beneath the footprint of the site in vadose zone soils and the overburden aquifer. Designed, implemented and managed full scale remedial investigation/remedial action activities including free phase LNAPL recovery, groundwater characterization and delineation and groundwater fate and transport modeling of dissolved phase contaminants of concern. Managed LNAPL recovery system repair, upgrade and operation and maintenance (O&M) for ongoing PCB-impacted LNAPL recovery activities at site. Managed methane mitigation system design evaluation, repair and O&M activities. Performed CVOc Vapor and Methane Intrusion evaluations in existing site buildings and evaluated and managed PCB waste characterization and disposal activities for PCB-impacted LNAPL in accordance with USEPA Toxic Substance Control Act (TSCA) regulations.
- Project Manager for ISRA triggered remedial investigation/remedial action at a former electronics materials manufacturing facility in Trenton, New Jersey. Designed, implemented and managed groundwater remedial investigation activities related to CVOc, including 1,4-dioxane, impacted groundwater. Groundwater remedial investigation activities included performing downhole geophysics, evaluating structural bedrock geology and installing monitoring wells relative to strike and dip of bedrock for the purpose of evaluating multi-aquifer groundwater impacts. Remedial action activities included managing the design of a pilot ISCO remedy which is effective in treating the 1,4-dioxane in addition to other CVOcs.
- LSRP of Record for ISRA triggered Site Investigation and Remedial Investigation at a 15-acre former metal etching and machine shop facility in Burlington County, New Jersey. Groundwater contamination, TCE and PCE, was detected in the overburden aquifer. Conducted full scale groundwater remedial investigation activities, baseline ecological evaluation and sensitive receptor evaluation activities including the evaluation of the vapor pathway. VI investigation activities included the design, implementation and management of a subslab and interior air sampling plan at facility locations and nearby residential structures. Demonstrated decreasing contaminant trend through statistical analysis of historic groundwater analytical data, established a Classification Exception Area and implemented a

Monitored Natural Attenuation groundwater remedy at the site.

- LSRP of Record for ISRA triggered Preliminary Assessment due to cessation of operations for a leasehold portion of the industrial site located in Vineland, Cumberland County, New Jersey. Prepared and submitted General Information Notice (GIN) conducted Preliminary Assessment certified and submitted all associated documents and issued Response Action Outcome (RAO) document to client.
- LSRP of Record for UST triggered Site Investigation, Remedial Investigation and Remedial Action for regulated gasoline UST area of concern at a former antique car shop in Lower Cape May, New Jersey. Investigation activities included supervising the closure and initial Site Investigation activities of a 1,000-gallon gasoline UST. Certified and submitted UST required Site Investigation Report and associated NJDEP required documents. Designed and implemented full scale Remedial Investigation activities to include the delineation of all media (soil and groundwater) impacted with benzene, toluene, ethylbenzene and xylenes (BTEX). Remedial investigation activities also encompassed the investigation of sensitive receptors potentially impacted by the discharge. Prepared, certified and submitted a Remedial Investigation Report/Remedial Action Work Plan and all associated documents to the NJDEP. Designed and implemented remediation activities to address BTEX constituents in soil and groundwater. Designed and implemented a post remedial action soil sampling plan which demonstrated the effectiveness of the remedial action by demonstrating attainment of the current NJDEP Soil Remediation Standards (SRS). Designed and implemented a post-remediation groundwater monitoring and sampling plan, which demonstrated the effectiveness of the remedial action through the attainment of Class II A Groundwater Quality Standards. Certified and filed a Remedial Action Report and all associated technical submittals to the NJDEP. Issued a Response Action Outcome (RAO) to client and filed associated documents with the NJDEP.
- LSRP of Record for a UST triggered Remedial investigation/Action for the New Jersey State Police Point Pleasant Marine Police Station. Investigation activities included the design and implementation of a remedial investigation activities which resulted in the delineation of gasoline (benzene, ethylbenzene and total xylenes) impacted soils and groundwater adjacent to an existing bulkhead. Designed and implemented a remedial action, which consisted of the removal of 100 tons of gasoline impacted soils, the installation of a multi-point dewatering system which was used to depress the water table in order to remove impacted saturated zone soils acting as a source of groundwater contamination. Designed and implemented a post-remediation soil sampling program which demonstrated attainment with the NJDEP Soil Impacted to Groundwater Remediation Standards from the perimeter of the excavation at the groundwater interface and from the base of the excavation. Designed and implemented a post-remediation groundwater monitoring and sampling program, which demonstrated compliance with the NJDEP Class II A Groundwater Standards with respect to the contaminants of concern (benzene, ethylbenzene and total xylenes). Prepared, certified and submitted NJDEP required Remedial Investigation/Action Reports and associated technical submittals and issued a Response Action Outcome (RAO) closing out the area of concern at the site.
- LSRP of Record for UST triggered Remedial Investigation/Action at an auto repair service station in Cape May Court House, NJ. Investigation activities included evaluating the source of historic groundwater impacts for Volatile (benzene, total xylenes) and Semi-Volatile (naphthalene and 2-methylnaphthalene) Organics and Targeted Analyte List (TAL) Metals (aluminum, arsenic and manganese). Multiple soil samples were collected from vadose zone and saturated zone soils to demonstrate compliance with NJDEP Soil Impact to Groundwater and Direct Contact Soil Remediation Standards. Statistical evaluation of groundwater data collected, with regard to seasonal fluctuation, revealed degradation of Volatile Organic and Semi-Volatile Organic Compounds. Since TAL Metals persisted in groundwater at sporadic levels not indicative of a discharge, a thorough background investigation of groundwater was performed to determine if TAL Metals were from a discharge or from ambient conditions related to regional groundwater background levels. The existing monitoring well network was modified to include additional upgradient wells and additional groundwater samples were collected from multiple wells thorough the monitoring well network. Data collected was compared to US Geological Survey data obtained from regional wells installed to monitoring ambient conditions and found to be consistent with USGS background data for the region. Since TAL Metals were unrelated to a discharge at the site and statistical analysis of historic VOC's and SVOC's groundwater data demonstrated degradation, a classification exception area (CEA) was established and a Monitored Natural Attenuation (MNA) groundwater remedy was implemented at the site.
- LSRP of Record for a UST triggered Remedial Investigation at an auto repair service station in Middle Twp., Cape May County, New Jersey. Investigation activities included the design and implementation of an engineered light non-aqueous phase liquid (LNAPL) recovery response action necessary to address free gasoline product present on the groundwater table. Activities included the installation of multiple LNAPL recovery wells equipped with a Multi-Well FRH-TRSO Automatic

Product-Only Recover System. The system consists of hydrophobic selective oil skimmers operated by air actuated bladder pumps. The hydrophobic oil skimmers are capable of discriminating between petroleum and groundwater and adjust for groundwater fluctuation in order to target and remove petroleum floating on the groundwater interface. The system included a holding tank with a high-level system shut-off switch which allows for system shut-down once the holding tank capacity reaches a predetermined level in order to prevent a system overflow. Activities also included the certification and submittal of an LNAPL Interim Remedial Measures Report documenting the removal of free product. The LNAPL Interim Response Action was accepted by the NJDEP upon review and inspection of the submittal.

- LSRP of Record for UST triggered Site Investigation and Remedial Investigation at a supply company warehouse in Atlantic County, New Jersey. Activities included the closure of two regulated # 2 heating oil USTs, full scale remedial investigation activities to include delineation of contaminants of concern (benzene, naphthalene and 2-methylnaphthalene) in all media (soil and groundwater), receptor evaluation activities, and the design of a remedial action which included the use of chemical oxidation technologies. Design activities included reviewing geochemical groundwater data, soil porosity, permeability and textural profiles, evaluating remediation technologies which could reduce contaminant mass in vadose zone soils and remediation technologies, which could restore oxygen to the saturated zone to allow for attenuation of residual contaminants not addressed by chemical oxidation. Additionally, design activities included the preparation of a strategic groundwater program necessary to monitor contaminant fate and transport during and after injection activities. Certified and submitted a Remedial Action Work Plan and requested an NJDEP Discharge to Groundwater Permit. Obtained NJDEP permit approval to conduct chemical injections at the site.
- Third party LSRP retained by trust to monitor remediation activities conducted by petroleum company formerly leasing trust owned property for site operations. Third party LSRP activities included a comprehensive review of all key phase documents to include PA/SI, RI and RA. Evaluate technical and strategic approach for site closure and scope of final remedy, attend meetings with counsel and petroleum company's LSRP and representatives and assist with the negotiation of the final remedy and the scope of the response action outcome, which was most protective of the trust's interest.

New Jersey Insurance Remediation and Claims Evaluation Projects

- Project Manager for complex multi-tenant condominium project, which included conducting remedial investigation/action of heating oil UST discharge for Harleysville Insurance. Project consisted of a sizeable heating oil discharge which

migrated under a large portion of multiple structures. Project management responsibilities included preparing scopes of work and budgets for remedial investigation activities necessary to characterize the nature and extent of the discharge; conduct remediation activities necessary to obtain a "No Further Action," (NFA) determination from the NJDEP and construction activities necessary to facilitate remediation and restore property to pre-existing conditions. Project management activities also included managing financial budgets, coordinating, scheduling and managing field crews, coordinating and interacting with insurance adjusters and managing all aspects of construction and environmental compliance. Served concurrently as the NJDEP certified Subsurface Evaluator directly responsible for ensuring remedial investigation/action activities were conducted in accordance with the NJDEP Technical Requirements for Site Remediation. Assisted Harleysville Insurance in achieving site closure, which included managing the preparation of technical documents and certifying all remedial investigation/action activities. Received NFA determination from the NJDEP.

- Insurance oversight consultant for several insurance companies for multiple UST triggered claims. Insurance companies include Selective Insurance, State Farm and Farmer's of Flemington of New Jersey, NJM and Brandywine. Oversight responsibilities included conducting third party insurance investigations to provide insurance adjusters a basis for determining coverage, conducting forensic investigations to evaluate the approximate age of a discharge relative to policy coverage periods, reviewing technical proposals from contractors solicited by property owners to perform remediation activities and managing remediation contractor costs and rates schedules to assist insurance adjusters with financial control and management of covered claims. Consulting activities included assisting insurance adjusters in determine coverage allocations in situations where multiple carriers were involved and providing litigation support for insurance carriers subrogating against other carriers. Consulting responsibilities also consisted of ensuring selected contractors complied with industry standards and NJDEP technical requirements while performing work for claims covered by insurance.
- Project Manager and environmental consultant for Zurich Insurance N/A for petroleum UST trigger insurance claims. Responsibilities included designing technical strategies for environmental compliance, preparing cost proposals and technical scopes of work, managing environmental drilling and construction crews, budgets and technical compliance and interacting with and providing project updates to Zurich Insurance adjusters. Responsibilities also included managing technical submissions and coordinating with the NJDEP to receive NFA determinations.

UST Design, Installation, Upgrade, Testing and Compliance Projects

- Project Manager for major UST installation for a marina in Egg Harbor Twp. NJ. Performed all aspects of UST system design for the installation of two 12,000 gallon and one 8,000-gallon Fiberglass Reinforced Plastic-Coated Steel Highland underground storage tanks. System design included calculating and specifying appropriate dead men, soil cover, concrete pad thickness and hold down strap placement in order to ensure adequate compensation for UST buoyant force. Specified UST tank, piping and monitoring system products to be used in accordance with client's needs at the facility. Design of UST system was subsequently reviewed and approved by a NJ Licensed Professional Engineer. Performed project and construction management of subsequent installation activities which included obtaining all associated permits and approvals, providing construction oversight and management, performing system programming and start up activities for UST monitoring system and reviewing installation activities for compliance, preparing and submitting UST installation checklist and designing and implementing a post construction testing program to ensure proper system operation prior to the commencement of initial fueling operations. Designed and implemented annual UST system compliance testing and inspection program for UST system owner/operator subsequent to UST system start-up activities.
- Project Manager for NJ Transit Washington Twp., which included emergency response activities and subsequent UST system upgrades associated with release of approximately 30,000 gallons of diesel fuel from UST system H-Pit piping. Initial project activities included troubleshooting UST systems mechanical and monitoring systems operation to determine the cause of the release, the replacement of flange gaskets associated with gate valves located within the H-Pit of UST system, evaluating extensive pressure buildup in aboveground steel product piping inside the bus garage due to thermal expansion, installing a 5-gallon accumulator within the product piping flow in order to absorb pressure created by thermal expansion when system is idle, conducting extensive system product line precision testing and evaluated and installed appropriate mechanical leak detectors necessary to detect a minimum of a 3 gallon per hour leak rate at 10 psi per current state and federal UST regulations. Project activities also included conducting initial assessment of Veeder-Root Monitoring system for facility manager to determine if discharge activities were/could be detected by Veeder-Root monitoring system. Demonstrated to facility manager that system operated correctly and re-enacted system alarms to demonstrate that system could detector release of fuel appropriately. Subsequent monitoring system activities included the upgrade of the TLS-350 Veeder-Root to a TLS-450 Veeder-Root Monitoring

System. Upgrade activities included system installation, startup and programming. System programming included sensor discrimination between fuel and water in system sumps and shutdown of UST system operations in the event that fuel is detected in system H-pits, sumps, etc. or if suspect conditions are identified by automatic tank gauging equipment. Programming also included setting system to conduct in tank testing using Continuous Statistical Leak Detection to provide 12 months of static tank testing as required by current state and federal UST regulations as part of monitoring system upgrades, multiple alarm boxes were installed throughout the facility to ensure that alarms from the monitoring system would be noticed by facility personnel.

- Project Manager for the installation of one 8,000-gallon double wall fiberglass Xerxes Diesel Emissions Fluid (DEF) UST at Flying J site located in Salem, NJ. Project responsibilities included coordinating with design engineer to specify DEF UST system components to be installed at the site, preparing construction management plan, coordinating with appropriate government agencies to obtain installation and electrical permits and zoning approvals for the installation project. Provided construction and tank installation oversight which included functioning as the NJ Certified Underground Storage Tank Installation Supervisor in responsible charge for the site, as required by the New Jersey Department of Environmental Protection Underground Storage Tank Certification Program, ensuring that all New Jersey State UST installation requirements were met. Additionally, provided technical oversight to ensure the installation was performed in accordance with manufacturer's installation specifications as a Xerxes Certified UST Installation Technician. Project activities also included the oversight of all post-construction testing and the preparation and submittal of the manufacturer's installation checklist on behalf of the UST owner/operator.
- Project Manager on various NJ Transit projects to include Camden, Howell, Hamilton and Egg Harbor Twp. locations which included the redesign and upgrade of Veeder-Root monitoring systems to include integration of monitoring systems with Fleetwatch Fuel Management Systems to streamline system factuality and simplify system operations, the programming of Veeder-Root systems to discriminate between fuel and water in system sumps, dispenser pans and interstitial tanks spaces and to equip the monitoring systems to shut down UST system operation in the event of a detected fuel leak or suspect condition detected by the system liquid sensors, automatic tank gauging magnetostrictive probes, interstitial sensors, etc. Project activities also included responding to numerous calls for service to troubleshoot, repair and replace monitoring system and UST system components. Instrumental in the design of facility monitoring system component specification and functionality programming to meet

client and facility specific needs at multiple NJ Transit facilities in Southern and Central New Jersey.

- Project Manager for NJ Transit Howell location, which included the replacement and retrofit of UST system overhead product piping inside the building. Project responsibilities included working with NJ Transit in designing a layout appropriate to the project, specifying product materials, to include piping, valves, locations for unions, system shear valves, fire valves, etc for installation in accordance with building and fire codes applicable to the project. Project activities also included the installation of a 5-gallon accumulator on product piping to absorb thermal expansion created by temperature changes for fuel entering the building, the raising of dispensers to allow for dispenser piping and electrical conduit to be aboveground in order to eliminate underground piping and filling former underground dispenser pans with concrete to floor grade inside the structure.
- Project Manager for Kingswick Apartment Complex which included the system design and installation of a 3,000 double wall fiberglass UST system to provide a heat source to buildings on the premises. System design included specifying appropriate UST system components to include a 3,000 gallon double-walled fiberglass Xerxes UST equipped with interstitial monitoring, materials for product lines with a 4" outer diameter protective PVC sleeve for product piping protection and secondary containment, a shallow burial containment sump to house product lines and provide an area to monitor, service product lines, a 5-gallon stainless steel spill bucket, to provide spill prevention from filling operations and a scully fill and a whistle vent alarm to provide overfill protection during delivery. Design activities also included specifying appropriate UST excavation specifications to include appropriate bedding material quantities and thickness, specifying deaden anchoring components, anchoring straps, strap placement, etc. Project Management activities included coordinating and managing permitting, construction management and oversight and post construction testing management and oversight.
- Project Manager for multiple repeat clients annually for the performance of annual UST compliance testing required in accordance with state and federal regulations. UST compliance testing activities included UST vacuum tightness testing, passive and active cathodic protection systems testing, product piping tightness testing, Veeder-Root functionality testing, records evaluation and compliance verification and state and federally regulated UST systems facility inspections.