

TECHNICAL SPECIALTIES

Design and implementation of project completion/closure strategies. Design and implementation of soil, sediment and groundwater investigations. Management of Property Transfer/Merger/Acquisition projects. Preliminary design and supervision of remediation projects. Evaluation of necessity and appropriateness of both past and future costs to meet closure requirements. Regulatory coordination and negotiations. Interpretation of Federal and State regulations.

EXPERIENCE SUMMARY

Over thirty years of experience: Vice President, Principal Hydrogeologist, Senior Hydrogeologist, Project Hydrogeologist, and Staff Geologist with Roux Associates, Inc.; Director of Corporate Quality Assurance and Quality Control; Office Equipment Manager.

Conducted State-lead investigative and remedial activities under NJDEP, PADEP, MDE, DNREC, MADEP, and NYSDEC, among others. Conducted USEPA-lead investigations and activities under the jurisdiction of RCRA, CERCLA, CWA, CAA, TSCA and FIFRA.

CREDENTIALS

- B.A. Geology, Colgate University, 1985
- Professional Geologist, Pennsylvania (PG-000269-G); NJDEP LSRP #573805
- Former NJDEP UST Certification #0011155 (Closure/Subsurface)
- Former NJDEP Cleanup Star
- 40 Hour OSHA Training (1987); Current 8 Hour OSHA Annual Update
- Applications of Groundwater Geochemistry (NGWA, 2011); Practical Applications: NJ Site Remediation Program (2011); NJDEP's Site Remediation Reform Act and LSRP Program (November 9, 2009)
- New Jersey's NJDEP Site Remediation Basics (May, 2009); Environmental Forensics: Methods & Applications (NGWA, 2007)
- NJ UST Refresher Training (May 1, 2007)
- NJ Groundwater in Fractured Bedrock (Rutgers, 2005) New Jersey's NJDEP Site Remediation Basics (2003)
- New Jersey NJDEP Remediation in New Jersey: Current Issues & Regulatory Insight (2003)
- Pennsylvania's Act 2 Training Course
- Delaware DNREC Training; June 1998; Remediation Standards Guidance Under the Delaware Hazardous Substance Cleanup Act
- Delaware DNREC Training-March 1999: The Delaware Risk- Based Corrective Action Program (DERBCAP)
- RCRA Corrective Action (1990)
- Hazardous Waste Management Under RCRA (1990); Analysis and Design of Aquifer Tests (NWWA, 1989)

Fundamentals of Ground Water and Well Technology (NWWA, 1987)

PROFESSIONAL AFFILIATIONS

National Ground Water Association
Licensed Site Remediation Professional Association 2009 to present (Executive Board Member, 2009 to 2012)

KEY PROJECTS

Litigation/Mediation/Litigation Support: Non-Petroleum Hydrocarbons

- Expert Witness regarding environmental liabilities associated with a nationally-known waste hauling firm cited as a Potentially Responsible Party at a number of Superfund Sites across the United States. Provided opinions regarding the following Superfund sites: Evor Phillips Leasing Company Site in Old Bridge, New Jersey; Fort Wayne Reduction Site in Fort Wayne, Indiana; Modern Landfill in York County, Pennsylvania; and Cinnaminson Landfill in Cinnaminson, New Jersey. Provided technical opinions regarding the nature and extent of ground water impact, the timing of disposal and environmental harm, and whether off-site harm had occurred. Primary contaminants of concern included CVOCs and metals in groundwater.
- Expert Witness at a mercury reclamation facility with extensive on-site disposal. The subject of the expert report and testimony included the nature and extent of environmental harm, identification of acceptable remedial criteria under NJDEP regulations, application of available and appropriate cleanup standards and identification of a reasonable remedial approach. The site was located in New Jersey.
- Expert Witness responsible for analysis of a major pharmaceutical manufacturer's liability associated with four CERCLA sites including several landfills and a solvent recycling facility. The sites were located in Ohio, New York, Maryland and Pennsylvania. Chlorinated organic compounds were the primary constituents of concern in soil, sediment and groundwater.
- Expert Witness in the areas of hydrogeology and remediation for three major foundry/manufacturing facilities, two CERCLA landfills and four other off-site disposal areas. The expert report and testimony addressed the nature and extent of the environmental harm. The expert reports and testimony also focused on property redevelopment issues, potential ground water impact and off-site migration of contaminants. The sites located in Connecticut, Massachusetts and New York.
- Expert Witness in the area of environmental harm at a pharmaceutical manufacturing facility and at an off-site disposal location. A major chlorinated solvent plume was produced from the off-site disposal operations. Both sites were located in Pennsylvania.

- Served as Project Director for settlement support project which involved technical and financial review of claims pertaining to environmental investigation and remediation of 20 automotive manufacturing facilities and CERCLA sites throughout North America and Europe. Reviewed the technical and regulatory basis for the completed and proposed remedial investigations and remediations. Prepared an evaluation report which identified existing technical approaches, regulatory programs and guidance which would result in significant savings for site closure.
- Served as Project Director for settlement support services regarding a major energy group with current and historical environmental liabilities in 10 states. The project included analysis of past and future costs associated with 39 MGP sites, 38 compressor stations, thousands of liquid removal points and mercury metering stations and numerous service/operating stations. The analysis also included assessment of off-site disposal locations and property value diminution.
- Served as Project Director for settlement support project which involved technical and financial review of claims pertaining to environmental investigation and remediation of
- 24 former manufactured gas plants in the eastern United States. Reviewed the technical and regulatory basis for the completed and proposed investigation and remediation. Prepared an evaluation report which identified existing regulatory programs and guidance which, if followed, would result in significant savings for site closure over the proposed strategy.
- Served as Project Director for settlement support project which involved a detailed analysis of past and future cost estimates for a 1,400-acre chemical manufacturing facility in Florida. The project included an evaluation as to what components of the chosen remedy were selected to facilitate future plant operations. Settlement was successfully achieved.

Litigation/Mediation/Litigation Support: Petroleum Hydrocarbons

- Consulting Expert in matter involving a reported estimated release of 25,000 gallons of gasoline in a bedrock aquifer setting being used for individual private supply wells. Responsible for technical oversight of investigation and remediation, property access, private well sampling program, point-of-entry treatment (POET) systems, regulatory interaction, and community interactions.
- Consulting Expert in matter which is the subject of a class action lawsuit with respect to MTBE in ground water. Responsible for strategic direction, remedial investigation, remedial action, regulatory interaction, public meetings and community interactions.
- Expert in matter on behalf of major oil company where Plaintiff's consultant alleged that an enormous gasoline release resulted in impact of an upgradient

property. Provided opinions regarding the sources of petroleum released, the estimated quantities released and the nature and extent of contamination.

- Consulting Expert in settlement support role with regard to allocation of responsibility and associated costs for multiple owners and operators of a retail service station. A key issue was preparation of a defensible estimate of future cost to achieve regulatory-approved closure.
- Expert for major oil company in a cost recovery case involving a dispute over the nature and source of petroleum contamination at a former retail petroleum station. Provided opinions regarding the sources of petroleum impact based on types of petroleum, possible release mechanisms, fate and transport of constituents and distribution of certain gasoline additives.
- Expert for an equipment delivery company in a cost recovery case involving contamination of soil and ground water from a former UST system. Provided opinions regarding the nature and extent of contamination and the timing of the release.
- Expert in matter involving assessment of the adequacy of remedial actions in a dispute between a responsible party and a remediation consultant/contractor. Provided opinions regarding technical provisions in the contract between the two parties as well as the NJDEP's regulatory framework. A key issue was whether or not the performance standards of a fixed-price remediation had been achieved.
- Expert regarding a claim by a homeowner that a UST removal contractor's actions caused damage to a septic system, its piping and the basement foundation. The homeowner alleged that water infiltration into the basement was caused by contractor's actions. Provided opinions which demonstrated that the UST contractor's actions did not cause the alleged damages and that the water problem in the basement pre-dated any of the UST contractor's activities at the property.
- Provided an Expert Report and testimony in a mediation hearing regarding a dispute associated with the nature and extent of contamination and how contract-defined damages would be applied. The case was for the defendant in a California dispute. The mediator ruled in favor of the defendant.
- Provided Technical Support to an expert witness for third party claim involving alleged migration of petroleum hydrocarbons through ground-water and sewer system pathways from former petroleum refinery in southeastern Pennsylvania. Multiple sources were identified at the third-party site which served as a former coal gas manufacturing facility, and a favorable out-of-court settlement was reached for all environmental liability claims.

- Provided Technical Support to an expert witness for oil company client in case where current property owner was seeking cost recovery for cleanup of site impacted by petroleum hydrocarbons. Roux Associates, Inc. demonstrated that buyer knowingly purchased impacted site after conducting due diligence review, that buyer's contractor improperly removed tanks and lines resulting in a release, and that remedies implemented were inappropriate. The case settled on the morning of the scheduled trial date for one-tenth of the amount sought.
- Provided Technical Support to an expert witness in case involving release of petroleum hydrocarbons from an active retail station. Current site operator alleged petroleum loss resulted from previous operations by client. Roux Associates, Inc. demonstrated that ground-water impact resulted from releases by the current operator and a downgradient, off-site source, resulting in favorable settlement of the case.

Project Management

- Project Principal for an Act 2 soil and ground water remediation project at a southeastern Pennsylvania rail yard. Constituents of concern (COCs) included light non-aqueous phase liquid (LNAPL) on ground water and volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), and metals in soil and ground water. A key point in the project was the negotiation of cleanup standards for COCs which were acceptable to both the seller and the buyer as well as being consistent with their private contractual obligations and future site uses. Two limited areas of impacted soil were identified and remediated to the statewide health standards. A Release of Liability for soils was received for the site from the PADEP. An LNAPL remediation plan was prepared and implemented and consisted of using high-vacuum, hot-spot LNAPL recovery on a periodic basis. This remediation approach has reduced the LNAPL remediation costs by an estimated \$250,000 as compared to a permanently installed, continuously operating LNAPL recovery system which was proposed to PADEP by the prior consultant. It was demonstrated through fate and transport modeling that ongoing monitoring and natural attenuation (no active remediation) adequately addressed any remaining ground water concerns.
- Project Director in Pennsylvania HSCA matter involving metals contamination in soils and CVOCs in groundwater, surface water and springs located in vicinity of a former stainless-steel tube manufacturing facility. Project involves comprehensive bedrock investigation, assessment of groundwater/surface water interaction, assessment of potential vapor intrusion pathway and evaluation of contributing source(s).
- Project Principal responsible for the development of an investigation and remediation analysis for a former chromium pigments manufacturing facility in Pennsylvania in full compliance with PADEP's Act II program. A comprehensive RIWP was prepared and approved by PADEP. Implementation of the RIWP included multiple deep well clusters to evaluate the vertical distribution of constituents in a fractured bedrock aquifer. Off-site access was secured from adjacent property owners. Wetland delineation and permitting has been completed to allow investigation and remediation of an off-site landfill. A potable well sampling program, surface water sampling program, and a community relations plan have been completed. Closure of the former wastewater treatment plant and the associated lagoons was conducted. The NPDES permit has been terminated. All raw material ASTs have been cleaned, removed and delisted. Site building demolition and site grading has been completed.
- Managed a \$0.5 MM soil, sediment, ground-water and surface-water investigation at a CERCLA listed viscose manufacturing facility located in Pennsylvania. All activities were completed in accordance with CLP protocols under the direct supervision of USEPA Region II or their contractors. Based on the report of findings and completion of removal actions, the USEPA terminated the existing Administrative Consent Order. USEPA listing of the site is currently being disputed and delisting is expected in the near future. The regulatory oversight is currently being moved from USEPA-lead to PADEP-lead for ultimate closure under an Act II release of liability.
- Project Director for an Act 2 project involving soil and ground water at a 388-acre former limestone quarry in southeastern Pennsylvania. This project involved evaluation of extensive existing soil data, review regional geologic and hydrogeologic data, extensive negotiations with the PADEP, and implementing soil and ground water investigative activities in a limited timeframe. Pre-meetings with the PADEP and the buyer helped ensure the project would be completed in a timely manner with the Final Report to be approved by the PADEP with minimal comments. One major complexity to this project was that the ground water, which occurs within limestone bedrock, is known to be regionally impacted with chlorinated solvents. This regional impact, in conjunction with the complex nature of ground water flow within limestone bedrock, presented a challenge to demonstrate attainment of a background or area-wide standard. Attainment of the statewide health and background standards for soils was demonstrated for VOCs, SVOCs, metals, and PCBs in soils. The Final Report for soils, submitted to the PADEP less than three months after the project was awarded, was subsequently approved by the PADEP, granting a Release of Liability for site soils.

- Project Principal of Preliminary Assessment/Site Investigation/ Remedial Investigation/Remedial Action at 100-acre paper manufacturing facility in Central New Jersey. The PA/SI/RI was completed and accepted by the NJDEP within 60 days of authorization to proceed. A field team of 10 people was carefully managed throughout the 3-week field phase to ensure project objectives, schedule and budget were achieved. The project included evaluation of 41 Areas of Concern (AOCs) and remediation of 14 AOCs. The scope of work included file reviews, aerial photograph surveys, facility inspection, utility clearance, Geoprobe sampling, drilling of soil borings, soil, ground-water and sediment sampling, and report preparation. The remedial actions included reconstruction of containment systems, UST integrity testing, closure of former septic systems, excavation of soil hot spots, and sediment removal from outfall areas. Extensive wetland permits and waivers were required. Work was completed successfully and under budget allowing property transfer to occur on the scheduled date. The total project budget was in excess of \$0.5MM.
- Project Principal of ACO/ISRA Remedial Investigation (RI) and Remedial Action (RA) under N.J.A.C. 7:26E procedures. The \$5MM remedy included one of the first NJDEP-approved site-specific soil cleanup standards. A PCB soil cleanup criteria of 25 ppm was established for the site, well above the NJDEP's most stringent published standard of 0.49 ppm. A careful balance of risk assessment, fate and transport techniques and regulatory negotiations were employed to achieve the site-specific remediation standards. The previous remediation cost estimate was \$60MM and the former industrial property was expected to remain unusable. The site has been remediated, sold, and is currently being operated as a trucking facility.
- Project Principal responsible for ISRA investigation and remediation of a 10-acre former solvents and coatings manufacturing facility located in Southern New Jersey. Assisted the current owner in its due diligence investigations, contract negotiations and calculation of an "environmental deduct" to be assigned against the purchase price of the property. Based on the due diligence investigation, an area of concern (AOC) was identified which was not being addressed by the seller's ISRA consultant and was not disclosed to the NJDEP. This AOC was, by far, the costliest feature to remediate and its \$600,000 cost was taken as a deduct on the purchase price.
- Project Principal responsible for due diligence evaluation in support of the potential purchase of a 30-acre parcel which is the subject of a RCRA Corrective Action at a major petroleum refinery. The analysis has included review of extensive historical soil, sediment and ground water data, an analysis of potential ecological concerns associated with 20 acres of wetlands and development of a remedial strategy for the entire site. The remedial strategy includes ecological risk assessment to illustrate background conditions and the overall absence of ecological risk, capping of certain portions of the site and wetlands creation and enhancement activities.
- Project Principal for development and implementation of ISRA activities at a polypropylene manufacturing facility in Southern New Jersey. Activities included completion of a Preliminary Assessment identifying over 30 areas of concern, site and remedial investigations and remediation of over 800 tons of petroleum impacted soils. Groundwater remediation was precluded by the successful petition for a Class III aquifer designation. The remedial strategy was also successful in eliminating the adjacent wetlands and surface water as receptors despite initial NJDEP demands of a full ecological assessment. Areas of concern included: ASTs, USTs, a wastewater treatment plant, an on-site laboratory, a flare and separator basin, transformers, hazardous waste storage areas, rail and truck loading and unloading areas, a former RCRA boiler, a RCRA treatment and storage area and process areas including pits, sumps, floor drains, and process vessels. Project responsibilities have included development of investigative scope of work and remedial strategies and negotiations with the NJDEP regarding closure. ISRA clearance was achieved within 1 year of project startup as was required to meet the client's business objectives.
- Project Principal responsible for preparation of preliminary assessments and development, implementation and management of site/remedial investigations for soil and ground water under ISRA for two composite laminating facilities in Paterson, New Jersey. Areas of concern include underground storage tanks, transformers, boilers, process equipment, floor drains and sumps and hazardous materials storage areas. Primary constituents of concern include #6 fuel oil, PAHs, TPH and benzene. Project successes have included NJDEP's acceptance that chlorinated hydrocarbons are due to unrelated background conditions despite its earlier position that these compounds had to be remediated. In addition, successfully secured acceptance to allow separate-phase product to remain at the site despite NJDEP's policy position to the contrary.
- Project Principal for development and implementation of ISRA activities at a veterinary pharmaceutical research and manufacturing facility in Southern New Jersey. Activities included the closure and investigation of 13 USTs and the investigation of a network of historic floor drains, piping and septic systems that received production waste. Primary

constituents of concern included #2 fuel oil and mercury.

- Project Principal for the investigation of an asbestos disposal site in southern New Jersey. Activities included utilization of geophysical techniques to identify extent of fill area, a confirmatory soil boring program, the utilization of x-ray diffraction to “fingerprint” asbestos type and a public relations program. The fingerprinting program was successful in proving that the asbestos material could not have disposed by our client and the NJDEP was persuaded to pursue an alternate responsible party.
- Project Principal of an ISRA triggered Remedial Investigation/Remedial Action of a ten-acre site formally used to dump manufactured gas waste (including coal tar) and construction debris. Soil was impacted with PAHs, VOCs, metals and cyanide and limited ground-water contamination with low concentrations of VOCs. The NJDEP initially requested complete removal of all impacted soil and debris and an active ground-water treatment system. However, close coordination with the client and their counsel during negotiations with the NJDEP case manager and technical support team generated a more favorable remedial scenario for the client. The NJDEP ultimately approved capping of the site, after removal of only a limited quantity of surface debris, with a DER for soils, and a CEA, with no active treatment, was approved for the ground-water.
- Project Principal of an ISRA triggered Remedial Investigation/ Remedial Action of a former metal tool and die manufacturing facility. Several potential Areas of Concern were identified, and a soil investigation identified elevated metals in soils in one area of the site. The soils exceeding the NJDEP soil cleanup criteria were delineated and excavated. The site was issued a No Further Action letter within 3 months of authorization to proceed.
- Project Manager and Project Principal providing technical research and strategic support in the development of litigation settlement strategies for third party claims at multiple retail service stations.
- Managed the implementation of property transfer assessments/environmental investigations at over 60 retail service stations in New Jersey, New York, Connecticut, Rhode Island, Massachusetts, Delaware, Pennsylvania, Maryland and New Hampshire, including project direction, data review, regulatory interaction, and client support. Remediation activities including vapor extraction, pump and treat, and excavation have been conducted at approximately 15 locations.
- Project Principal responsible for tracking the NJDEP’s procedures and policies regarding Natural Resources Damages (NRD). Supporting PRPs at one of the named sites in the Passaic River NRD Directive. Supporting numerous clients to analyze

their ground water NRD liabilities, determine the most appropriate strategy and negotiating NRD settlements with the NJDEP. With respect to groundwater NRDs, liability has been analyzed for single sites as well as review of clients’ entire portfolio of sites in New Jersey.

- Project Principal responsible for determining effectiveness of a remedial investigation and the existing groundwater interceptor system at a major penicillin manufacturing facility in Northern New Jersey. Successfully refocused NJDEP on the pertinent remedial objectives and gained the NJDEP’s confidence in the process. This resulted in the elimination of numerous NJDEP “requirements” which were unproductive and distracting to the overall remedial strategy. Within one year, the NJDEP had agreed to minor modifications and upgrades to the existing remedial system which was addressing “percent level” solvent contamination in ground water. The NJDEP also accepted that the co-existing chlorinated solvent contamination was an unrelated background condition.
- Project Principal responsible for supporting the sale of a 100- acre agricultural research and development facility and associated farm property. The property was purchased by the State of New Jersey under its Green Acres program based on its acceptance of the investigation and remediation conducted by the seller.
- Project Principal responsible for due diligence inquiry on behalf of developer interested in constructing a “big box” store at the location of a major chemical manufacturing facility in Northern New Jersey. Significant soil and ground water contamination at the site require extensive remediation actions. Provided analysis of site conditions, opinions regarding the adequacy and effectiveness of the proposed remedial action and assisted in the negotiation of the contract language. Brownfield protections and insurance products are being employed to protect the developer and the subsequent commercial owner operator from liability.
- Project Principal responsible for completion of ISRA obligations at 1,200+ acre site associated with manufacturing and peat harvesting activities. The project required extensive coordination between the NJDEP’s Site Remediation and Green Acres programs to facilitate a timely sale of the property. A no further action/covenant not to sue (NFA/CNS) has been secured and the property sale is pending final contract negotiations.
- Project Principal of ECRA/ISRA approved property transfer of \$20MM metal fasteners manufacturing facility. Regulatory approved closure was achieved within 12 months of the triggering event. Project challenges included developing strategic plans consistent with ECRA, but also in compliance with the proposed ISRA requirements; effective

management of both the plant and corporate interests; and oversight and guidance for the due diligence work being conducted by the buyer's consultant. None of the original investigative work had to be redone due to effective anticipation of changing regulatory requirements.

- Project Principal responsible for the evaluation of a former paint and coal tar coating facility in Sayreville, New Jersey. Project activities involved test pitting and magnetometer surveys which identified three abandoned USTs, two buried drum and container areas, and isolated pockets of coal tars released to the subsurface. The primary constituents of concern are TPHCs, PAHs, and metals. Remediation efforts to date have been focused on wetlands delineation, conducting and overseeing the removal of tanks, drums, and containers. The \$2MM source removal phase has been completed. A clean up activity report was prepared and submitted to the NJDEP. A remedial investigation work plan was approved by the NJDEP for implementation of further investigative activities which have been conducted under an MOA between the client and NJDEP. Based on the results of the RI, final closure strategies and site-specific cleanup standards are being negotiated with the NJDEP.
- Project Principal responsible for the ISRA Preliminary Assessment and Site Investigation at a 125-acre fiberglass insulation manufacturing facility in Barrington, New Jersey. The field activities focused on the potential environmental impacts associated with 25 ASTs, 12 USTs, three drum storage areas and a suspected waste disposal area. Contaminants of concern included PCBs, formaldehyde, ammonia, resins and petroleum hydrocarbons. UST closure activities have been completed. Through an aggressive closure approach including localized remediation, compliance averaging and classification exceptions area (CEA) techniques, only one area of concern (AOC) remains. This AOC is expected to be remediated in 1997 with complete closure of ISRA responsibilities in less than 3 years.
- Project Manager for two 10 to 15-acre bulk storage petroleum terminals which were under investigation and remediation through the New Jersey ISRA program. Activities to date included installation of a ground-water monitoring well network and soil removal and treatment by both bioremediation and off-site recycling. NJDEP approval of no further action for soils has been secured for one of the sites where 18,000 tons of petroleum-impacted soils was remediated to meet NJDEP's residential SCC.
- Project Principal responsible for due diligence/facility audits at over 30 retail petroleum facilities. Turnaround time was 10 business days from authorization of work to completion of each written report. The audits include site reconnaissance, file

reviews, aerial photograph review and interpretation of hydrogeologic conditions. The final reports provided an estimate of financial liabilities associated with site conditions.

- Project Principal for retail petroleum facility which required re-evaluation of historical investigative and remedial activities in light of NJDEP's Technical Requirements for Site Remediation. Within 90 days all supplementary RI activities were completed and a Remedial Action Work Plan RAWP was prepared and submitted to the NJDEP. The NJDEP Case Manager has approved the natural attenuation closure plan for the site. A ground-water Classification Exception Area petition has been prepared to allow localized exceedance of New Jersey's GWQC for an extended period of time.
- Project Principal responsible for the ISRA investigation at a 45-acre insulation manufacturing facility in Berlin, New Jersey. Field activities focused on several existing and former lagoons and surface impoundments previously used to manage wastewater and stormwater at the site. Soil and ground-water evaluations focused on PCBs, asbestos and petroleum products at over 15 AOCs. The evaluation of potential remedial alternatives is ongoing.
- Participated in a 20-state research project to determine hydrogeologic areas which were sensitive to pesticide applications. This research project involved fate and transport issues related to the soils, geology, hydrogeology and chemical characteristics of various agrichemicals.
- Project Manager for design and installation of separate-phase product and dissolved-phase ground-water remediation system. The 15 gpm system included product recovery, ground-water pre-treatment prior to discharge to the local POTW. All system components were explosion-proof and a remote telemetry system was installed to significantly reduce travel and O&M costs. Extremely favorable discharge limits were negotiated with the local POTW which dramatically reduced the long-term treatment costs.
- Project Principal responsible for establishing remedial scenarios and cost estimates for major cosmetics manufacturing facility. Supported the interested party in understanding the potential liabilities associated with the property. The entire \$15,000 project was completed in four business days as was needed to meet the clients' schedule. The facility had widespread PCB contamination which resulted from historical mishandling of PCB oils from a heat transfer system. The estimated remedial liabilities ranged from \$7 to \$8MM. The findings were employed to negotiate both cost and contract liability terms.
- Negotiated regulatory approval of work plan at a RCRA Hazardous Waste Facility undergoing a Post Closure Plan. The facility conducted oil recycling/fuel

blending operations. Historical operations by others resulted both soil, ground water and sediment impact due to both poor housekeeping and several catastrophic releases. The current owner was facing fines prior to successful negotiations of an affordable work plan.

- Project Principal for property transfer of 35-acre laboratory and farm property where experimental application of various herbicides and pesticides was conducted. The project was complete under the jurisdiction of DNREC as part of Delaware's Voluntary Cleanup Program. The scope of work included soil, sediment and ground-water sampling, file reviews, aerial photograph surveys, etc. The primary constituents of concern were toxaphene, arsenic and lead which was found in soils, vaults, septic systems, piping runs and, to a limited extent, in ground water. Site demolition, soils remediation via delineation and hot-spot removal, and regrading have been completed. A release of liability from DNREC has been secured and the property transfer is complete.
- Supervised an extensive test pit program to define and map the extent of subsurface disposal of off-specification product at an agricultural chemical processing plant. A multi-aquifer investigation into the distribution of the unregistered experimental agrichemical is ongoing.
- Conducted extensive domestic well sampling program in a five-county area of the Central Sands region of Wisconsin to evaluate the presence and distribution of an agricultural pesticide. The results of this investigation were submitted and accepted by the USEPA under the Good Laboratory Procedures (GLP) program.
- Assumed principal responsibility for training entry-level personnel regarding the use of field equipment, proper procedures for conducting field activities, documentation requirements, requirements, and data reduction methods.
- Responsible for developing and refining corporate standard operating procedures (SOPs), auditing field activities and reports, and implementing ongoing training programs on a corporate-wide basis. Conducted over 100 report audits for site investigations in seven states.
- Conducted an electrical earth resistivity survey at a landfill to determine the horizontal and vertical extent of leachate migration.
- Designed and conducted TCLP sampling and analysis plan for four facilities to determine whether RCRA TSDF requirements were applicable.

- Participated in preparation of RI/FS submission for a listed Superfund site in New York.
- Completed 1993 and 1994 Hazardous Waste Generator's Reports for a facility which terminated manufacturing operations. This required reporting of numerous "atypical" waste streams due to laboratory and equipment decommissioning and site demolition activities. Each time the work was authorized within one week of the reporting due date and the filing deadline was met.
- Provided technical and managerial services for a litigation support project at a major petroleum refinery in Philadelphia. The scope of work included an historical evaluation of over 15 years of remedial investigation and remedial action activities to determine the technical quality and compliance with NCP procedures. The adjacent property had extensive petroleum and tar contamination which necessitated detailed fingerprinting work to allow plume segregation and cost allocation.
- Prepared an ECRA Cleanup Plan for submission to NJDEP for a 61-acre bulk oil storage and distribution terminal. The Plan included a passive free-phase recovery system and negotiations of remediation requirements. The remedial action included soil removal, thermal treatment and soil re-emplacment in an active facility.
- Assisted client in challenge of NJPDES-DSW Notices of Violation (NOVs) including re-evaluation of site storm-water system and dye testing, development of revised sampling procedures, and preparation of Standard Operating Procedures for future compliance. The compliance evaluation work resulted in a reduction of the financial penalty from \$50,000 to \$12,000. Furthermore, it was successfully argued, and the NJDEP agreed, that the permit was unnecessary. The permit was subsequently terminated resulting in a \$10,000 annual cost savings.
- Managed the completion of several \$100K plus multi-site property transfer environmental assessments at numerous industrial facilities in approximately twenty states. Activities included scheduling and managing personnel from multiple offices having different disciplines (geologist, hydrogeologist, engineer, scientist, etc.), project direction, data review, report preparation, and negotiation assistance between purchaser and owner. In both cases a significant escrow account was negotiated to handle the environmental issues identified during the assessments and the transactions were able to proceed on schedule.