Environmental Project Experience

Air Permitting

- Developed Title V permit application for major industrial facility in Texas.
- Submitted modification and alteration requests for unit modifications to add boiler and modifications of tail gas routing in Texas and Louisiana.
- Performed analysis for 5 industrial facilities to determine compliance with state and federal air quality requirements.
- Performed file reviews at state regulatory agencies to determine compliance records for competing industrial facilities.

Program Management Assistance

Designed and implemented a comprehensive environmental management program for a manufacturing facility to facilitate its compliance with:

- The terms of a RCRA Facility Investigation being conducted at the facility.
- The requirements and conditions of the facility's hazardous waste management permits, including groundwater protection and corrective action plans.
- The provisions of Compliance Orders issued against the facility.

Developed regulatory reference manuals for multiple facilities used as an index summary of all environmental and safety laws and regulations applicable to the company's operations. They provide a framework for the company's environmental and safety management programs by discussing the laws and regulations applicable to the company's operations and referencing the specific programs and systems the company has implemented to comply with those laws and regulations.

Water / Wastewater

Provided technical expertise in the design and construction of a synthetic wetland to handle 10,000 gallons per day of sewage. System used the biotic fixation of nitrogen on the roots of aquatic plants to reduce the biochemical oxygen demand and total suspended solids. A flow-through chlorination unit was designed and installed at the end of the system to control fecal coliform in the effluent.

Managed study of the effectiveness of a municipal wastewater treatment system on behalf of the municipal water/sewage management board.

Prepared numerous NPDES-equivalent wastewater permit applications and state and local water treatment and use permit applications for various types of facilities in Louisiana and Texas.

Pollution Prevention

Developed Pollution Prevention plans documenting abatement measures and setting goals for further reductions of waste streams for facilities in Louisiana and Texas.

Developed MMS Oil Spill Response Plan for offshore drilling platforms.

Developed integrated contingency plan incorporating DOT, MMS, EPA, LDEQ, and USCG regulations and policies for oil spill prevention, control, and contingency planning for a major chemical/refining complex.

Prepared MMS and USCG Oil Spill Contingency Plans for multiple facilities including development of the

facility emergency response (Incident Command) organization and spill prevention policies.

Industrial Hygiene Services

Researched and prepared summary outlines of all OSHA training requirements applicable to the petroleum production, exploration, and refining operations of a national petroleum company.

Developed site-specific safety plans for worker protection during assessment and remediation activities at UST, RCRA, and CERCLA sites.

Provided instruction for 40-hour HAZWOPER and 8-hour refresher courses.

Developed and/or revised Unit Operation Manuals required under OSHA Process Safety Management Program for a large refining facility. Units for which manuals have been completed or being revised are Fluid Catalytic Cracking Unit, Pipestills, Hydrofiner Unit, Light Ends Unit, Refinery Gas Compression Unit, Light Oils Finishing Unit, Butane-Pentane Spheres, Waste Management Area, Utilities, Wastewater Treatment, Lube Oils and Wax Pumping and Blending, and Salt Dome Storage Facility.

Developed Safety Planning Manuals for Hurricane Preparedness and Emergency Preplanning.

UST Management Services

Provided site assessment and remediation services at leaking underground storage tank site, including installation and sampling of monitor wells, and design, installation, and operation of a soil vapor extraction system.

Provided site assessment and remediation services at leaking underground storage tank site, including installation and sampling of monitor wells, and preparation and implementation of work plan for installation of recovery well and pumping system to remove free phase hydrocarbons and contaminated groundwater.

Provided site assessment and remediation services at leaking underground storage tank site, including excavation and proper disposal of hydrocarbon-contaminated soil, remediation using an aboveground soil vapor extraction system, and installation, operation, and monitoring of groundwater extraction and treatment system.

Performed aquifer tests at numerous leaking underground storage tank sites in order to design and install effective groundwater remediation systems.

Provided project management for Preliminary Site Assessment and acted as client representative in DEQ negotiations for numerous UST sites covered under the LDEQ UST Regulatory Program and the UST Trust Fund.

Environmental Impact Analysis

Evaluated geophysical survey date to delineate man-made and geologic hazards to drilling pursuant to Department of Interior, Minerals Management Service (MMS) requirements. Mapped features and prepared reports for MMS on numerous locations in the Gulf of Mexico and coastal regions.

Examined data generated by a third-party's previous monitoring and remediation work performed at the site of leaking underground storage tanks to determine the impact of residual soil and groundwater contamination on the property's value for a law firm representing the property owner.

Developed a groundwater model using hydrogeologic and potentiometric data collected through well installation and sampling in order to delineate the vertical and horizontal extent of, and predict the migration of, an EDC contaminant plume at a plastics manufacturing facility.

Installed and sampled monitor wells, performed aquifer tests, and installed and operated Soil Vapor Extraction Systems to recover contamination at multiple sites.

Assessed the potential environmental and economic impact of proposed hazardous waste regulations on the State of Louisiana.

CERCLA/RCRA Site Services

Performed RCRA site services, including:

- RCRA Facility Investigation (RFI) Work Plan for a 700-acre CERCLA site.
- Developed work plan objectives and procedures, including an electronic database to facilitate massive data compilation, for implementation of the RFI Work Plan.
- Located, installed, and sample deep soil borings to delineate the horizontal and vertical extent of hydrocarbon contamination.
- Performed groundwater modeling and aquifer testing to determine the most effective well locations for the development and installation of an interim corrective-measure recovery well system for the removal of contaminated groundwater.

Developed a stratigraphic model of the entire 700-acre site to target areas requiring further investigation and to promote a better understanding of subsurface features and conditions by customers and regulators.

Provided geologic and hydrogeologic supervisory, management, design, and implementation services for remediation action at a large CERCLA site in Louisiana, including:

- Preparation and implementation of an investigative work plan to define geology and hydrogeology of main contaminated area (120 acres), including:
  - Supervising installation and logging of 110 deep soil borings and 70 piezometers to define geology and hydrogeology.
  - Using geostatistics to assist in locating significant areas to investigate.
  - Developing and using electronic database to evaluate data.
- Writing a Remedial Planning Activities report with a conceptual design for remediation of one portion of the site using geologic and hydrogeologic data collected at the site.
- Management of a $3 million annual budget for production, operation, and maintenance of equipment and crews. Also managed 18-man drilling and soil sampling crew.
- Preparing and supervising the implementation of a work plan for installation and sampling of 210 shallow soil borings in swamp/bayou area, including:
  - Logging and supervising well installation.
  - Sampling and analysis of results.
  - Providing technical and logistical support for ecological and sediment risk assessment sampling for swamp and bayou environments.
  - Evaluating and reporting on data and the sampling results to the EPA and other interested parties.
- Designing, logging, registering, and supervising installation of 195 recovery wells for removal of hydrocarbon-contaminated groundwater and compiling well information into an electronic database for use in geologic cross-sections and mapping.
- Writing and implementing a work plan for installation and sampling of 27 monitor wells, including:
  - Supervising installation of the wells.
  - Sampling on semi-annual schedule.
  - Analyzing sampling data.

    - Performing statistical analysis to measure accuracy.
    - Reporting sampling results to the EPA.
- Set-up and operation of an onsite hydrogen gas detector to measure groundwater samples.
- Identification of three areas for well installation and sampling in order to evaluate the site hydrogeology and target the risk of contaminant migration into the 400-foot sand of the Baton Rouge Aquifer.
- Preparation of a work plan for installation of wells to sample for hydrocarbons, ions, and dissolved gases. Later, compiled data into electronic database and evaluated and reported the sampling results.
- Selection of two areas of the site for a natural attenuation study by evaluating existing data on soil and groundwater contamination, installing wells, sampling wells, and analyzing and interpreting the results.
- Developing plans for monitoring and depicting surface water and groundwater conditions and flow both at and adjacent to the site, including:
    - Preparing procedure for measurement of groundwater levels in all wells on a monthly basis.
    - Preparing potentiometric maps and hydrographs depicting site conditions using groundwater level data.
    - Planning, installing, and monitoring a stream monitoring system, using data loggers to continuously monitor levels in bayous and the Mississippi River to observe recharge effects on groundwater at the site.
- Participating in development of site models, including:
    - Supervising selection of groundwater models and providing technical support in the development and use of the site models.
    - Providing technical assistance in development of a 3-dimensional stratigraphic model of areas of the site using Earth Vision software.
- Planning, constructing, and operating a test tank based on conditions at the site in order to test hydrocarbon flow on a pilot-scale.
- Providing geologic and hydrogeologic assessment for LDEQ Solid Waste Permit application.

Prepared post-closure permit renewal application for a closed Hazardous Waste Management Facility, including preparation of groundwater protection and corrective action plans for monitoring and remediation of demonstrated EDC contamination of soil and groundwater at the facility site.

Developed and implemented a work plan for installation of monitor wells, including 400- and 600-ft. wells, to sample for EDC, metals, volatiles, and semi-volatiles for the purpose of groundwater remediation and contaminant plume delineation in an area surrounding a chemical manufacturing facility which had vinyl chloride and EDC contamination of soil and groundwater.

Sought and obtained authorization from the federal Environmental Protection Agency for the Louisiana Department of Environmental Quality to administer the LDEQ RCRA I, II, and III Hazardous Waste Programs, and LDEQ Corrective Action Program, in lieu of the federal programs.

Prepared new hazardous waste regulations for LDEQ, including:

- Preparation of the Louisiana Attorney General's Statements addressing the regulations' and enforcement program's consistency with federal regulatory programs for submittal to the EPA in the State's application for authorization of LDEQ hazardous waste regulation program.
- Development of regulations for importation of hazardous waste into Louisiana from foreign nations.
- Assessment of the environmental and economic impact of proposed hazardous waste regulations on the State of Louisiana.

Prepared EPA Grant Packages, including mid-year and end-of-year work plans establishing baseline hazardous waste inspections, permits, and reporting requirements for LDEQ.

Prepared responses for, and negotiated with, the Louisiana Department of Environmental Quality regulatory personnel regarding a Compliance Order issued against a chemical manufacturing facility. The Compliance Order required the facility to modify existing programs for corrective action and remediation of contaminated groundwater, to develop groundwater models of potential contaminant transport, and to accurately delineate the contaminate plume.

Remediation Services

Designed, installed, and monitored recovery systems at numerous UST sites in Mississippi, Louisiana, and Arkansas. These recovery systems consisted of trenches, recovery wells, air strippers, liquid-ring vapor recovery pumps, phase-separated hydrocarbon recovery pumps, bioremediation, and natural attenuation.

Installed 199 recovery wells with pneumatic and electric motor-driven positive displacement pumps for the recovery of DNAPL and groundwater with dissolved chlorinated hydrocarbons at a Superfund site in Louisiana. Water was treated with air strippers and carbon. DNAPL and stripped vapors were incinerated. Over 100 million gallons of water and 600,000 gallons of DNAPL have been recovered.

Successfully negotiated with the Environmental Protection Agency (EPA) for application of Monitored Natural Attenuation (MNA) to treat dissolved chlorinated hydrocarbons at a Louisiana Superfund Site. Project included assessment of chemical and physical properties of soil and groundwater, microcosm experiments to determine degredation rates, groundwater and fate and transport modeling for predictive simulations, and long-term monitoring for continued calibration.

Managed assessments and remediation from first response to closure for sites contaminated with petroleum- based materials including #2 Diesel, lubricating oil, and greases, solvents, benzene, toluene, chlorobenzene, ethylbenzene, and chlorinated solvents across the United States for major transportation companies.

Applied bioremediation at a former barge-cleaning facility in Texas. Site was contaminated with petroleum, aromatics, and base-neutral compounds. The project consisted of soil assessment to determine nutrient and microbial count available before treatment, introduction of microbe and nutrients, soil tilling, soil assessment during treatment, and Risk Assessment.

Applied bioremediation to numerous sites containing diesel in shallow groundwater and soil across the United States.

Performed bioremediation projects at major industrial facility to remediate kerosene, chlorinated hydrocarbons, and aniline-contaminated soil and groundwater. Project was successfully completed with one of the first LDEQ- accepted MO-2 and MO-3 RECAP evaluations.

Applied natural attenuation at major industrial site in Louisiana for remediation of chlorinated hydrocarbons, MCB, and TDA. Projects included evaluations of historical data, groundwater assessment, installation of sampling points, modeling, groundwater monitoring, and analysis.

Environmental Site Assessment

Designed a site investigation and remediation of chlorinated solvent spill at major manufacturing facility. Work plan addressed:

- Delineation of extent of soil and groundwater contamination.
- Performance of pump tests and analysis of results.
- Design of a recovery system.

Designed assessment to delineate the extent of a sulfur contaminant plume in surface and subsurface soils at a manufacturing facility.

Conducted extensive Wetlands Site Assessments and prepared 404 Permits and 401 Certifications for sites in multiple states throughout the U.S.

Designed site investigation for suspected hydrocarbon contamination prior to initiation of construction for refinery expansion.

Performed site assessment services at a refining facility in Louisiana, including:

- Using electro-magnetic sensing method to investigate chloride contamination plume surrounding solid waste landfill.
- Preparing an investigation work plan to fully assess five areas of suspected contamination.
- Installing monitor wells and performing sampling to determine the full extent of chloride contamination of soil and groundwater.

Recommended and performed magnetometer surveys of potentially-contaminated areas to detect buried metal objects at a vinyl chloride manufacturing facility and an oxygen generation plant in Lake Charles, Louisiana.

Performed Phase II Assessment using direct-push technology to investigate the presence of chlorinated solvents and petroleum hydrocarbon compounds in the soil and groundwater surrounding a shopping center in Baton Rouge, Louisiana.

Designed and supervised a seismic reflection survey to locate shallow geologic features at a Superfund Site in Louisiana.

Performed an ASTM Phase I Site Assessment for a 228-acre tract of land in Mississippi. The assessment identified the site of substantial unauthorized dumping of household garbage (30+ years) as well as abandoned oil exploration and production drilling sites and disposal pit.

Performed site assessments and installed monitor and recovery wells at numerous UST sites in Mississippi, Louisiana, and Arkansas.