STEVEN C. LAMB, PE

Education

B.S. – Civil Engineering, University of Arizona, 1987

Registrations and Certifications

Professional Engineer – Arizona, North Carolina, South Carolina, Tennessee, and Ohio

40-hour CFR §1910.120 Health and Safety

Professional Affiliations

American Society of Civil Engineers

Solid Waste Association of North American

Professional Experience

Mr. Lamb is a Vice President with over 35 years of experience in solid and hazardous waste management, environmental engineering, civil engineering, hydrology and hydraulics, erosion and sediment, landfill engineering, landfill gas engineering, brownfields, air permitting, remedial design, and regulatory compliance. He is located in Charlotte, North Carolina office.

He has served as Project Manager and Project Director for siting, design, construction quality assurance testing for solid waste facilities, permitting and remediation of older facilities and brownfields, and civil site/stormwater projects throughout the US. Mr. Lamb has worked on over 200 solid waste disposal facilities throughout the US. Representative examples of his project experience include the following:

Landfill Gas and Landfill Gas-to-Energy Projects

**Confidential Client,**

**Berkeley County Water & Sanitation Landfill, Moncks Corner, SC.** Certifying engineer and engineering manager of a design-build project for a landfill gas collection and control system (GCCS). The project included over 45 new landfill gas extraction wells, header and lateral pipe, and a 2,500 scfm utility flare. Managed air, solid waste, and NESHAP (asbestos) permit applications and notifications.

**Berkeley County Water & Sanitation Landfill, Moncks Corner, SC.** Certifying engineer for two separate expansions to the landfill’s landfill gas collection and control system (GCCS). Each project included engineering assessments of the existing GCCS, preparation of construction drawings, bid documents, contract administration, and CQA.

**Berkeley County Water & Sanitation Landfill, Moncks Corner, SC Emergency Odor Assessment, Design, and Remedial Action.** In 2017, the site was experiencing complaints from neighbors caused by severe landfill gas odors. Under a directive from SCDHEC, SCS provided engineering and assessment to identify the cause and develop remedial designs to control the odors. SCS identified the source of odors and developed an innovated design to remedy. The design consisted of installing 20 “pin wells” to extract landfill gas from the affected area. SCS installed and operated the wells, thereby controlling the off-site odors.

**Spartanburg County, Wellford Landfill, Wellford, SC.** Managed engineering activities associated with an expansion to the Wellford landfill’s landfill gas collection and control system (GCCS), and for a 6.5‑mile landfill gas transmission pipeline. Prepared construction drawings and bid documents for both the GCCS expansion and LFGE pipeline. Following installation, prepared required plans in accordance with 49 CFR Part 192 including the Public Awareness Plan, Integrity Management Plan, and Emergency Response Plan.

**Republic Services, Lee County Landfill, Bishopville, SC.** Since 2003, served as Project Manager for all landfill gas engineering and permitting projects. Prepared engineering assessment, construction drawings and specifications for over 20 major landfill gas system expansion projects totaling over 200 landfill gas extraction wells. Prepared permit to construct applications for a 3,000 scfm utility flare and a 6,000 scfm enclosed flare. Prepared Title V and NSPS Semi-Annual Reports, annual emissions inventories, and Title V Annual Compliance Certifications.

**Allied Waste, Anderson Regional Landfill, Belton, SC.** Designed and permitted several expansions to the landfill’s gas collection and control system (GCCS). Assignments included the preparation of construction drawings, specifications, permit applications, and certification reports. Managed Clean Air Act assignments including the initial Title V permit application, emission inventories, semi-annual Title V reports, and Tier 2 non-methane organic compound (NMOC) emission report.

**Ameresco/BMW LFG Pipeline, Wellford, SC.** Provided construction engineering during the construction of 9.5-mile-long, 12-inch-diameter landfill gas (LFG) transmission pipeline from the Palmetto Landfill to the BMW plant. Following installation, prepared required plans in accordance with 49 CFR Part 192 including the Public Awareness Plan, Integrity Management Plan, and Emergency Response Plan.

**Waste Management, Palmetto Landfill and Recycling Center, Wellford, SC.** Prepared Title V and NSPS Semi-Annual reports, emissions inventories, and certifications in accordance with the facility’s Title V Air Operating Permit and the NSPS.

**Republic Services, Charlotte Motor Speedway Landfill, Concord, NC.** Since 2002, served as Project Manager for all landfill gas engineering and permitting projects. Prepared engineering assessment, construction drawings and specifications for over 20 major landfill gas system expansion projects. Prepared air permit to construct applications for a 3,000 scfm utility flare and a 6,000 scfm enclosed flare. Prepared Title V and NSPS Semi-Annual Reports, annual emissions inventories, and Title V Annual Compliance Certifications.

**Johnson County Landfill, Smithfield, NC.** Certifying Engineer and Project Manager for the permitting and design of the initial landfill gas collection and control system (GCCS) at the Johnson County Landfill. The GCCS included over 40 extraction wells and a 2,000 scfm utility flare. Prepared solid waste permit modification application and asbestos control plans in support of the GCCS construction. The project also includes a landfill gas-to-energy (LFGE) plant. The entire project was constructed by SCS Field Services under a design-build contract with the LFGE developer.

**New Hanover County Landfill, Wilmington, NC.** Prepared landfill gas-to-energy (LFGE) Feasibility Study for the New Hanover County Landfill. We evaluated several options for the beneficial use of landfill gas generated by the landfill.

**White Street Landfill, Greensboro, NC.** Managed Clean Air Act and Title V air permitting assignments including preparation of a Tier 2 non-methane organic compound (NMOC) report, NSPS GCCS Design Plan, and Initial NSPS Annual Report.

**White Street Landfill, Greensboro, NC.** Managed engineering activities in support of a design/build project for the landfill gas collection and control system (GCCS). The project included installing over 25 vertical landfill gas (LFG) extraction wells and associated LFG piping in Phases 1 and 3. The design in Phase 2 (existing system) involved replacing all existing LFG pipe and 85 wellheads. Managed construction quality assurance (CQA) services including preparation of the Construction Certification Report.

**Gaston County Landfill, Gaston County, NC.** Managed the preparation of construction drawings, specifications, and bidding documents for a 24-LFG well expansion at the Gaston County Landfill.

**Anson County Landfill, Polkton, NC.** Permitted and designed the initial landfill gas collection and control system (GCCS) including a 2,000 scfm utility flare at the Anson County Landfill. Assignments included preparing construction drawings, specifications, GCCS Master Plan, and related air and solid waste permitting.

**Wellford, South Carolina, Bayerische Landesbank** – Performed due diligence activities for the landfill gas to energy (LFGE) project located at Waste Management’s Palmetto Landfill and the BMW facility in Spartanburg County, South Carolina. Activities included preparing the Due Diligence Report, reviewing LFG projections, and providing independent engineering certifications in support of construction draws on the construction loan.

**Republic Services, Swift Creek Environmental Landfill, Macon, GA.** Served as Engineer and Project Manager for several assignments including the permitting and design of several expansions to the landfill gas collection and control system; preparation of LFG migration mitigation plans, conducting a Tier 2 non-methane organic compound (NMOC) emissions report, Title V renewal application, and Title V/CAA reporting. Prepared construction drawings, specifications, and bid documents. Managed construction quality assurance (CQA) services including preparation of the Construction Certification Report.

**Republic Services, Broadhurst Environmental Landfill, Wayne County, GA.** Served as Engineer and Project Manager for the design and permitting of the initial LFG collection and control system at the Broadhurst Landfill. Prepared construction drawings, specifications, and bid documents. Managed construction quality assurance (CQA) services including preparation of the Construction Certification Report.

**Landfill Gas Transmission Pipeline, Tucson, AZ.** Prepared construction drawings and bid documents for a 4-mile-long landfill gas transmission pipeline. The pipeline was constructed of 14-inch diameter HDPE pipe and traversed through Pima County, ADOT, and Union Pacific Railroad properties and supplied gas to the Tucson Electric Company. This was a design-build project with SCS Field Services.

**Newberry County, Newberry County Landfill, Newberry, SC.** Prepared a Corrective Measures Study to address groundwater contamination and landfill gas migration at the closed MSW landfill. The selected remedy design consisted of an active soil gas extraction system with 25 active soil gas extraction wells. Prepared construction drawings, bidding documents and provided construction quality assurance and construction administration services.

**Republic Services, Sunrise Mountain Landfill, Las Vegas, NV.** Prepared Gas Collection and Control (GCCS) Design Plan for the 700-acre closed Sunrise Mountain Landfill.

Landfill Closure, Design, Permitting, and CQA Projects

**Berkeley County Water & Sanitation Landfill, Cell 9, Moncks Corner, SC.** Certifying Engineer for the preparation of the construction drawings, specifications, and bidding documents for a 5.5-acre MSW landfill cell. The cell is part of the Berkeley County Class 3 landfill. The liner system included a geosynthetic clay liner (GCL) and a 60-mil HDPE geomembrane liner. Managed CQA activities and prepared construction certification report.

**Berkeley County Water & Sanitation Landfill, Cell 13, Moncks Corner, SC.** Certifying Engineer for the preparation of the construction drawings, specifications, and bidding documents for a 5.5-acre MSW landfill cell. The cell is part of the Berkeley County Class 3 landfill. The liner system included a geosynthetic clay liner (GCL) and a 60-mil HDPE geomembrane liner. Managed CQA activities and prepared construction certification report.

**Berkeley County Water & Sanitation Landfill, Cell 14, Moncks Corner, SC.** Certifying Engineer for the preparation of the construction drawings, specifications, and bidding documents for a 6.4-acre MSW landfill cell. The cell is part of the Berkeley County Class 3 landfill. The liner system included a geosynthetic clay liner (GCL) and a 60-mil HDPE geomembrane liner. Managed CQA activities and prepared construction certification report.

**Berkeley County Water & Sanitation Landfill, East Slope Closure, Moncks Corner, SC.** Certifying Engineer for the preparation of the construction drawings, specifications, and bidding documents for a 10-acre closure of the east slope at the Berkeley County MSW landfill. The closure system consisted of a 18‑inch thick compacted soil liner and the ClosureTurf lining system. Managed CQA activities and prepared construction certification report.

**Berkeley County Water & Sanitation Landfill, Flood Damage Remedial Design, Moncks Corner, SC.** In 2015, the site received 25 inches of rain in a 24-hour period causing over $1,000,000 in damage to the Site. Severe erosion occurred on the landfill cap and significant sediment was disposed in the sediment basin. SCS was on site the next day to document damages and begin the remedial designs. SCS worked with the site for reimbursement from FEMA, prepared construction drawings for the repairs, and provided construction oversight.

**Waste Management, Inc., Great Oak Landfill, Cell 1, Asheboro, NC.**  Managed all CQA activities associated with the construction and certification of the initial cell at the Great Oak Landfill in Asheboro, NC. Cell 1 is a 15.5-acre, triple-lined MSW cell constructed in 2016-17.

**Waste Management, Inc., Great Oak Landfill, Cell 2, Asheboro, NC.**  Certifying Engineer for the preparation of the construction drawings, specifications, bidding documents, and Erosion & Sediment (E&S) Control Plan for a 10-acre cell. The project also included E&S permitting to obtain the NSPES Construction General Permit from NCDEQ. The cell’s liner system consisted of three geomembrane liners, geosynthetic clay liner (GCL), leak detection geocomposite, and leachate collection geocomposite. Managed CQA activities and prepared construction certification report.

**Waste Management, Inc., Great Oak Landfill, Cell 3, Asheboro, NC.**  Certifying Engineer for the preparation of the construction drawings, specifications, bidding documents, and erosion & sediment control plan for an 8-acre cell. The cell’s liner system consisted of three geomembrane liners, geosynthetic clay liner (GCL), leak detection geocomposite, and leachate collection geocomposite. Managed CQA activities and prepared construction certification report.

**ECM of Ridgely, LLC, ECM Landfill, Cell 1E and Sediment Basin #2, Ridgely, TN.**  Certifying Engineer for the preparation of a Minor Permit Modification, construction drawings, specifications, bidding documents, and erosion & sediment control plan for a 4.2-acre cell and a stormwater detention basin. The cell’s liner system consisted of a 3-ft thick clay liner, HDPE geomembrane liner, and a leachate collection geocomposite.

**Cumberland County, Ann Street Landfill, East Slope Closure, Fayetteville, NC.** Certifying Engineer for the preparation of the construction drawings, specifications, and bidding documents for a 12-acre closure at the Ann Street Landfill. The closure system consisted of a 12‑inch thick intermediate soil cover, 40-mil LLDPE liner, drainage geocomposite, and 24-inch-thick vegetative soil layer. Managed CQA activities and prepared construction certification report.

**Cumberland County, Ann Street Landfill, C&D Landfill Permit Modifications, Fayetteville, NC.** Certifying Engineer for the preparation of the permit application for a Life of Site permit modification for the facility’s C&D landfill. The application included revised operations plan, closure plan, post-closure plan, facility drawings, calculations and closure cost estimates.

**Waste Corporation, Yarnell Road Landfill, Knoxville, TN.**  Prepared a major permit modification for a vertical expansion of the landfill. The application included stormwater and slope stability calculations, revised drawings, and Closure/Post Closure Plan.

**Allied Waste, Anson County Landfill, Polkton, NC.**  Managed all CQA activities in accordance with the landfill’s CQA Plan and NCDEQ regulations associated with the construction and certification of Cell 1C, Subcell 2, constructed in 2007. This cell is a 5.5-acre, composite-lined, solid waste cell. The composite liner included prepared subgrade, compacted soil liner, HDPE geomembrane liner, geocomposite, and leachate collection layer.

**SALT and LG Aerobic Systems, Fort McMurray Landfill, Wood Buffalo, Canada.**  Provided engineering and technical support for the development of design drawings and equipment requirements for an aerobic bioreactor landfill. The project area is approximately 62 acres (238,000 square meters) of landfill area. The areas include three phases. The initial construction and majority of the design SCS reviewed was the design of the system to be installed in Phase 3. Phase 3 is designed to have 335 vent wells spaced on a 20-meter grid for the extraction of landfill gas (LFG). The LFG is extracted through the vents using associated HDPE pipe and two 40-horsepower blowers rated at 4,000 scfm. In addition to LFG extraction, air will be injected into the landfill using 281 injection wells spaced on a 20-meter grid.

**Duke Energy, Lee Steam Station Landfill, Anderson County, SC.**  Managed all engineering, permitting, and hydrogeologic work related to the preparation of the Site Suitability Study and Engineering Permit Application for an 18-acre Class 3 landfill. The landfill was designed for the disposal of coal combustion residuals (CCR) generated at the station. The hydrogeological assessment involved drilling/installation of 12 groundwater piezometers, water level measurements, and aquifer testing.

**Republic Services, Lee County Landfill, Bishopville, SC.**  Prepared permit modification to the landfill’s Solid Waste Permit to modify the landfill’s final cover system. The alternative final cover system included a landfill gas collection layer (geocomposite) placed beneath the cap geomembrane. Prepared construction drawings, bid documents, and provided construction quality assurance (CQA) services for a 15-acre partial closure in 2007 and for a 20-acre partial closure in 2010.

**Cincinnati Gas & Electric, Zimmer Station Landfill, Moscow, OH.**  Prepared final grading plans, stormwater management, and closure plan drawings for a 200-acre fly ash landfill for Cincinnati Gas & Electric.

**Former Celanese Plant Industrial Landfills, Rock Hill, SC.** Prepared solid waste permit modification to revise the closure plan and final grading plans for an industrial landfill. Calculated disposal volumes for revised final cover grades. Prepared annual post-closure care engineer’s cost estimate in accordance with facility’s RCRA Part B permit.

**Shoosmith Brothers Landfill, Chesterfield County, VA.** Prepared drawings and calculations for the cell layout, cell grading plans, leachate management system, and stormwater controls for a 52-acre lateral expansion for the landfill.

**Allied Waste, Charlotte Motor Speedway Landfill V, Concord, NC.** Prepared construction drawings, CQA Plan, and specifications for Cells 1A and 1B. Both cells included a Subtitle D composite liner system.

**Cherokee County Landfill, SC.** Prepared solid waste landfill permit for Cherokee County’s 80-acre landfill. Prepared permit drawings and performed engineering calculations for leachate management system and for stormwater control systems.

**Rumpke Sanitary Landfill, Cincinnati, OH.** Prepared Permit-to-Construct application for 120-acre lateral expansion. Prepared permit drawings and performed engineering calculations for leachate management system and stormwater control systems.

**Browning-Ferris Industries, Big Foot Run Sanitary Landfill, Warren County, OH.** Managed and served as Engineer-of-Record for preparation of construction drawings and specifications for a 7.5-acre landfill closure project located in southern Ohio. The design, completed in 1996, included a 4.5-foot-thick composite cap, rock-lined surface water control structures, and sedimentation basin. Developed bid documents, bid quantities, and QA/QC procedures.

**Brown County Landfill, OH.** Prepared permit to construct application for an 80-acre lateral expansion. Prepared grading plans and landfill phasing plans. Performed engineering calculations for leachate management system and for stormwater control systems.

**Los Reales Landfill, Tucson, AZ.** Performed an evaluation of erosion control Best Management Practices (BMPs). The evaluation focused on erosion control measures and re-vegetation alternatives for landfill slopes, diversions channels, and downchutes. The report included several recommended BMPs and a pilot test program to evaluate BMPs.

**Allied Waste, Southwest Regional Landfill, Buckeye, AZ.** Prepared construction drawings, specifications, and bid documents for Cell 4, an 8-acre composite-lined solid waste cell that was constructed in 2001.

**Santa Cruz County Landfill, Santa Cruz AZ.** Prepared engineering, permitting documents, and a Solid Waste Facility Plan (SWFP) for two county-operated solid waste landfills. Duties included drawing preparation, stormwater management design, and the development of the technical specifications.

**Waste Management, Inc., Northwest Regional Landfill, Surprise, AZ.**  Provided construction quality assurance activities associated with the construction and certification of the Module 6 landfill cell. The Module 6 cell construction included a composite liner system consisting of a geosynthetic clay liner, HDPE geomembrane liner, geocomposite, and leachate collection layer.

**City of Winslow Landfill Closure, Winslow, AZ.** Provided construction quality assurance services associated with the closure of the City of Winslow Landfill. Closure activities included the construction of a 2-foot-thick low permeable soil barrier layer and preparation of a detailed Construction Documentation Report.

**Allied Waste, Apache Junction Landfill Projects, AZ.** Prepared construction drawings, specifications, and bid documents for Cells 2B and 4B. The liner system for both cells included a geosynthetic clay liner, 60-mil HDPE geomembrane liner, and leachate collection layer. Managed a 17-acre lateral expansion including obtaining a 404 Permit and 401 Permit from the Army Corps of Engineers and ADEQ, respectively.

Solid Waste Facilities and Studies

**Berkeley County Water & Sanitation Landfill, Leachate Storage and Treatment, Moncks Corner, SC.** Certifying Engineer and Engineering Manager for the design and permitting of a leachate storage and pre-treatment plant. The project included three 240,000-gallon, aboveground tanks. Pretreatment included aeration and mixing. Permitting included submitting a Construction Activity Application to Berkeley County Engineering, which is a MS4. Permitting also included the preparation of a Storm Water Pollution and Prevention Plan (SWPPP), obtaining a NPDES General Permit for Stormwater Discharges from Construction Activities and the Coastal Zone Consistency (CZC) Certification.

**Berkeley County Water & Sanitation Landfill, Compost Facility, Moncks Corner, SC.** The compost facility was designed and permitted to meet the SCDHEC Solid Waste Management (SWM) Regulation 61-107.4 – Yard Trash and Land-Clearing Debris, and Compost. The permit application contained the registration, buffer, and operating criteria and closure and post-closure procedures for the Composting Facility. A NPDES General Permit for Stormwater Discharges from Construction Activities and the Coastal Zone Consistency (CZC) Certification was obtained.

**Berkeley County Water & Sanitation Landfill, Moncks Corner, SC.** Designed and permitted a 25-acre soil borrow pit. Permitting included the preparation of a Storm Water Pollution and Prevention Plan (SWPPP) and obtaining a NPDES General Permit for Stormwater Discharges from Construction Activities. The Coastal Zone Consistency (CZC) Certification was also obtained.

**Cumberland County, Ann Street Landfill, Scale and Site Entrance Project, Fayetteville, NC.** Certifying Engineer for the preparation of the construction drawings, specifications, and bidding documents for a site entrance at the Ann Street Landfill. Components includes three truck scales, scale house, and new pavement. Prepared and submitted permit applications for erosion and sediment control and stormwater permitting to the City of Fayetteville.

**Republic Services, Five North Carolina Landfills.** Provided master life-of-site planning services and budget modeling for the development of the site’s landfill gas systems.

**Numerous Solid Waste Facilities.** Prepared over thirty (30) Stormwater Pollution Prevention Plans (SWPPP) and over twenty Spill Prevention Control and Countermeasures (SPCC) Plans for various solid waste management hauling facilities and solid waste transfer stations in North Carolina, South Carolina, and other states. Conducted site evaluation and provided employee training.

**Rumpke Waste Systems, Dayton, OH.** Prepared designs to modify an existing solid waste transfer system. The designs improved the stormwater management system and increased the tipping floor capacity.

Landfill Post-Closure, Redevelopment and Brownfield

**Greens of Rock Hill, Rock Hill, SC.** Prepared Closure and Post-Closure Plan for two landfills located on the former Celanese Plant. The Plan, which was approved by SCDHEC, included engineering and permitting requirements to allow for the construction of athletic fields (BMX track, soccer, and softball) on top of the closed landfills. Prepared construction drawings and specifications for the fields and also performed construction quality assurance during the construction. The final capping included a 30-mil LLDPE liner to minimize infiltration of irrigation water.

**Holston Landfill, Charleston, SC.** Evaluated the potential for methane gas migration from the landfill into the proposed residential development planned on top of the closed Holston Landfill. Prepared a Methane Gas Migration Control Plan as part of the Voluntary Cleanup Contract (VCC) between the owner and SCDHEC.

**Elk Mountain Landfill, Woodfin, NC.** Designed remedial measures to control methane migration from the landfill to a planned 500-unit residential development for the Elk Mountain Brownfields Project. Worked closely with NCDEQ to develop language in the Brownfields Agreement that addresses investigation, engineering, and development with respect to methane gas.

**ABCO Desert Market, Phoenix, AZ.** Prepared construction drawings for a LFG migration barrier control system for a 100,000-square-foot, commercial development constructed over an old solid waste landfill. The barrier controls included a geomembrane liner installed below the concrete foundation, passive vent pipes, and internal methane sensors.

**Renaissance Park Golf Course, Charlotte, NC.**  Prepared construction drawings and specifications for remediating settlement and drainage problems at the golf course, which was constructed in 1986 over the closed York Road Sanitary Landfill. The design covered areas on the Driving Range, and Holes 6 and 8. SCS Field Services performed the remediation.

**Del Rio Landfill, Phoenix, AZ.** Managed the environmental aspects of the feasibility study to construct a municipal golf course on top of the existing landfill. The project involved evaluating the infiltration potential of irrigation waters on the new golf course, investigating LFG issues, and negotiating with City and State regulators.

**City of Henderson Landfill, Henderson, NV.** As a consultant to the golf course architect, evaluated the impacts of constructing and operating a golf course at this closed landfill site. Developed designs and construction cost estimates to mitigate landfill gas impacts and floodplain issues.

**City Landfill, Calgary, Alberta.** Evaluated the impacts of constructing and operating a golf course at the City Landfill. Items evaluated includes: landfill gas impacts, infiltration of irrigation waters through the golf course cover, and construction cost estimates for landfill-related work.

Miscellaneous Engineering Projects

**Duke Energy, Ash Basin Third Party Engineering Review, Sixteen Coal-Fired Stations, North Carolina, South Carolina, Ohio, Indiana, and Kentucky**. Served as Project Manager to provide third-party engineering review of ash basin assessments and engineering reports prepared by others at 16 coal-fired, power generating facilities across five states. The primary two engineering issues SCS reviewed included the stability of the existing ash basin embankments, and hydrological and hydraulic conditions of ash basin outlet structures.

**Duke Energy, Cliffside Steam Station, NC**. Conducted site assessment and provided third-party engineering review of a hydraulic and hydrologic analysis of Suck Creek and the potential impacts to an inactive ash basin. SCS also conducted a third-party engineering review of slope stability analyses of three existing ash basin impoundment dams.

**Rumpke Sanitary Landfill, Cincinnati, OH**. Managed and served as Engineer-of-Record for preparation of construction plans and specifications for a 4,000-linear-foot stream enclosure project. The enclosure included a 7.5-foot-diameter and 9.5-foot-diameter corrugated steel and structural plate pipes. Federal, state, and local permits were obtained.

**Fire Station No. 10, Tucson, AR**. Prepared construction drawings, specifications, and bid documents for a soil vapor extraction system and a total fluids recovery system to treat petroleum-impacted soils and groundwater. The treatment system included 19 soil vapor extraction wells, a total-fluids extraction wells, a thermal oxidizer for vapor phase treatment, and granular activated carbon for groundwater treatment.

**Air National Guard Base, Sky Harbor International Airport, AR**. Provided engineering oversight/construction management during the construction, operation, and maintenance of a full-scale soil vapor extraction (SVE)/air sparging system.

**Colony Bay Coal Company, Beckley, WV**. Managed and served as the Engineer-of-Record for preparation of a 1,470-acre surface mine permit revision. The revision included redesigning six durable rock fills (80,000,000 cubic yards of capacity), redesigning sediment ponds and ditches, and developing a new mining plan.