

STEVEN M. HAMILTON

Education

B.S. - University of Florida, Zoology/Environmental Studies



Professional Affiliations

Solid Waste Association of North America (SWANA)

Professional Experience

Steve Hamilton has over 30 years of environmental project experience, with particular emphasis in solid waste management. Mr. Hamilton's project experience ranges from hands-on participation in field and design work to direction of solid waste management projects. This work has involved over 700 projects on more than 350 sites throughout the United States and in Argentina, Brazil, Canada, Chile, China, Colombia, El Salvador, Egypt, India, Jamaica, México, Panama, Poland, and Puerto Rico. His project responsibilities have included solid waste planning; solid waste privatization; landfill siting, design, and operations and closure permits and plans; landfill contamination assessments and remedial actions; landfill leachate monitoring and treatment system design; landfill groundwater and landfill gas (LFG) monitoring programs; landfill Clean Air Act (CAA) permitting and compliance; LFG Clean Development Mechanism (CDM) projects, digester gas and LFG-to-energy (LFGE) recovery feasibility due diligence, studies, and investigations; and the testing, design, installation, and operation of digester gas and LFGE facilities, and LFG migration and emission control systems.

Mr. Hamilton is the Director of SCS Energy, which is the Division of SCS Engineers that designs, builds, and operates biogas; primarily LFG and digester gas (DG) to energy projects. SCS Energy has performed over 65 design or design/build biogas-to-energy projects and currently operates/maintains biogas-to-energy projects nationwide. The biogas end-uses include production of Renewable Natural Gas (RNG) from landfills and digesters for injection into natural gas pipelines, electric power generation (reciprocating internal combustion engines, turbines, microturbines, and fuel cells), production of biogas-derived compressed natural gas (CNG) for use as vehicle fuel, and direct-use of biogas in lieu of natural gas at industrial, utility, and institutional facilities.

Mr. Hamilton has served as Director of SWANA's Landfill Gas/Biogas Technical Division. He also served as Chair of SWANA's Landfill Gas Training Program for over 10 years, and remains active in SWANA. He has extensive experience in providing solid waste training and education at numerous venues in the United States and abroad.

Some of the projects in which he has been involved include:

Biogas-to-Energy Design, Construction, and Operation

University of California Office of the President, Renewable Natural Gas (RNG) Design-Build-Operate.

Under Mr. Hamilton's direction, SCS Energy designed, constructed and is now operating a 2,540 standard cubic feet per minute (scfm) inlet LFG to RNG facility for the University of California office of the President (UC) at the Woolworth Road Landfill in Keithville, LA. The product gas is injected into a

nearby natural gas transmission line. The UC uses the renewable gas to replace natural gas in one or more of its on-campus power generation facilities.

University of New Hampshire, Landfill Gas to RNG Facility Operation. Under Mr. Hamilton's direction, SCS Energy operates and maintains a 6,000-scfm inlet landfill gas to RNG facility at the Turnkey Landfill in Rochester, New Hampshire. The facility was designed and constructed by SCS Energy. The facility converts landfill gas to an enhanced quality gas utilizing membrane separation technology. The product gas transmitted via a dedicated pipeline to the University's on-campus turbine power plant. The project also includes a 3.2-MW landfill gas-to-energy facility to power the high-Btu plant. The power generation facility uses two Caterpillar G3520C gensets.

BioFuels Energy, LLC, Digester Gas to RNG Facility Operation. Under Mr. Hamilton's direction, SCS Energy operated and maintained a 1,110-scfm inlet WWTP digester gas to high-Btu gas facility located at the Point Loma WWTP in San Diego, California. The facility was designed and constructed by SCS Energy. The facility converts digester gas to pipeline quality gas utilizing membrane separation technology. The product gas is injected into the local natural gas utility distribution network, where it is transported to the University of California, San Diego to fuel a fuel cell power generation facility. The digester gas facility also fuels an on-site fuel cell to provide power to run the facility.

Confidential Client, Texas, Digester Gas to RNG Facility Operation. Under Mr. Hamilton's direction, SCS Energy operates and maintains a 2,900-scfm inlet dairy digester gas to RNG facility. The facility was designed by SCS Energy. The facility converts digester gas from several dairies to RNG utilizing membrane separation technology. The product gas is injected into a nearby natural gas transmission line. The product gas is sold into the renewable vehicle fuels market

Metrogas, S.A., Digester Gas to RNG Design. Under Mr. Hamilton's direction, SCS Energy designed a 2,500 scfm inlet wastewater treatment plant (WWTP) digester gas to RNG facility for Metrogas, S.A. in Santiago, Chile, which is the local natural gas utility. The facility converts digester gas from the La Farfana Wastewater Treatment Plant into pipeline quality gas for distribution to Metrogas' customers.

City of Fresno, California, Digester Gas to RNG Facility Maintenance. Under Mr. Hamilton's direction, SCS Energy maintains a 1,530-scfm inlet WWTP digester gas to RNG facility located at the City of Fresno's WWTP in Fresno, California. The facility was designed and constructed by SCS Energy. The facility converts digester gas to pipeline quality gas utilizing membrane separation technology. The product gas is used in the City's onsite turbine facility to generate power used in the WWTP.

Orlando Utilities Commission, LFGE Medium-Btu Direct-Use Project Expansion Design-Build. Under Mr. Hamilton's direction, SCS Energy designed and constructed an expansion of an existing 4,000 scfm medium-Btu direct-use projects that dehydrates, compresses, and conveys LFG from the Orange County Landfill to the Stanton Energy Center, both in Orlando, FL, where it is used to supplant natural gas in power generation. The expansion increased the facility's capacity to 8,000 scfm (dry basis).

University of California, Los Angeles, LFGE Medium-Btu Direct-Use Operation. Under Mr. Hamilton's direction, SCS Energy operated and maintained a medium-Btu direct-use facility that dehydrated, treated, compressed, and conveyed LFG from the Mountaingate Landfill through a dedicated 4.5-mile pipeline from the Landfill to the University of California at Los Angeles (UCLA) where the LFG was co-fired with natural gas in an on-campus power plant.

Waste Industries USA, Inc., LFGE Facility Design and Construction. Under Mr. Hamilton's direction, SCS Energy designed and constructed a 9.6-MW landfill gas-to-energy facility at the Sampson County Landfill in Roseboro, North Carolina. The initial facility consisted of four 1.6-MW Caterpillar G3520C gensets, but was designed to accommodate expansion to eight gensets. SCS Energy installed a fifth

genset in 2011, and installed a sixth in 2013. The facility generates power that is sold to the local electric utility, Duke Energy.

Oregon Environmental Industries, Inc., LFGE Facility Operation. Under Mr. Hamilton's direction, SCS Energy operates and maintains a 3.2-MW landfill gas-to-energy facility at the Dry Creek Landfill in Central Point, Oregon. The facility was designed and constructed by SCS Energy. The facility uses LFG from the landfill to fuel two Caterpillar G3520C gensets. The power generated is sold to the local utility, PacificCorp.

DeKalb County, Georgia, LFGE Facility Operation. Under Mr. Hamilton's direction, SCS Energy operated and maintained a 3.2-MW landfill gas-to-energy facility at the Seminole Road Landfill in Ellenwood, Georgia for 10 years. The facility was designed and constructed by SCS Energy. The facility used LFG from the landfill to fuel two Caterpillar G3520C gensets. The power generated was sold to the local utility, Georgia Power. The facility closed in 2015 when Georgia Power declined to renew the renewable energy Power Purchase Agreement.

Northeast Maryland Waste Disposal Authority, LFGE Facility Operation. Under Mr. Hamilton's direction, SCS Energy operated and maintained two landfill gas-to-energy facilities for a period of 6 years. A 2.4-MW facility consisting of one Caterpillar G3520C genset, and one GE/Jenbacher J 316 v81 genset at the Oaks Landfill in Laytonsville, Maryland; and a 0.8-MW facility consisting of one GE/Jenbacher J 316 v81 genset at the Oaks Landfill in Rockville, Maryland. Both facilities were designed and constructed by SCS Energy. Both facilities sold the power generated to the local utility, Pepco.

Flathead Electric Cooperative, Inc. (FEC), LFGE Facility Design, Construction, and Operation. Under Mr. Hamilton's direction, SCS Energy designed, constructed, and continues to operate a 1.6-MW LFGE facility at the Flathead Sanitary Landfill in Kalispell, Montana. The facility generates power for use in FEC's power distribution system.

Manatee County, Florida, LFGE Facility Design, Construction, and Operation. Under Mr. Hamilton's direction, SCS Energy designed, constructed, and operates a 1.6-megawatt (MW) LFGE facility at the County-owned Southwest Wastewater Treatment Plant in Bradenton, Florida. The facility uses LFG from the adjacent Lena Road Landfill to fuel one Caterpillar G3520C reciprocating engine generator set (genset) to generate power to be used in the WWTP.

City of Lafayette, LFGE Facility Design, Lafayette, Louisiana. Design of a 750-kilowatt (kW) LFGE facility at the N. Dugas Landfill in Lafayette, Louisiana for the Lafayette Utilities System. The project was funded by the U.S. Department of Energy as a research and demonstration facility. The facility design included 33 extraction wells, an underground high density polyethylene (HDPE) collection system, an LFG condensate removal and storage system, and a modular power generation facility consisting of one blower module and two internal combustion powered engine generator sets.

Los Angeles County Sanitation District, LFGE Facility Conceptual Design, Brawley, California. Developed conceptual designs for LFG collection and energy recovery for a 100- to 120-MW LFGE facility at the proposed Mesquite Landfill in Brawley, California.

Landfill Gas-to-Energy Feasibility and Due Diligence

Flathead Electric Cooperative, LFGE Feasibility Study, Kalispell, Montana. Assessed the feasibility of developing a LFG-to-power facility at the Flathead County Sanitary Landfill in Kalispell, Montana for Flathead Electric Cooperative. The study recommended a 1.6-megawatt (MW) power plant capacity and configuration, and estimated the power production cost. A 1.6-MW facility was designed and constructed by, and currently is operated by, SCS Energy. It achieved commercial operation in 2009.

Lockhart Power Company, LFGE Feasibility Study, Spartanburg County, South Carolina. Assessed the feasibility of developing a LFG-to-power facility at the Wellford Landfill in Spartanburg County, South Carolina for Lockhart Power Company. The study recommended a 1.6-MW power plant capacity and configuration, and estimated the power production cost. A 1.6-MW facility was designed and constructed at the site by SCS Energy. It achieved commercial operation in 2011.

Waste Industries, Inc., LFGE Feasibility Study, Sampson County, North Carolina. Assessed the feasibility of developing a LFGE facility at the Sampson County Landfill in Sampson County, North Carolina for Waste Industries, Inc. The study examined LFG-to-power, direct-use, and pipeline quality gas options. The study recommended a power plant project and estimated the power production cost. A 9.5-MW facility was designed and constructed at the site by SCS Energy. It achieved commercial operation in 2010.

Anne Arundel County, Maryland, LFG-to-CNG Feasibility Study, Millersville, Maryland. Assessed the feasibility of developing a landfill gas-to-compressed natural gas (CNG) facility at the Millersville Landfill. The study evaluated the landfill's potential for producing CNG without adversely affecting an existing facility; evaluated various low flow technologies for the conversion of LFG to CNG and provided recommendations, and a construction cost estimate for the recommended technology.

Confidential Client, LFGE Feasibility Study, Arizona. Assessed the feasibility of developing a LFG-to-power facility at an Arizona landfill for a confidential client. The study recommended an initial 1.6-MW plant capacity and configuration, and estimated the power production cost.

City of Santa Fe, New Mexico, LFGE Feasibility Study, Santa Fe, New Mexico. Assessed the feasibility of developing a LFG-to-power facility at the Caja del Rio Landfill in Santa Fe, New Mexico for the City of Santa Fe. The study recommended a 1.06-MW power plant capacity and configuration, and estimated the power production cost.

Village of Georgetown, Ohio, LFGE Feasibility Study, Georgetown, Ohio. Assessed the feasibility of developing a LFG-to-power facility at the Brown County Landfill in Brown County, Ohio for the Village of Georgetown, Ohio. The study recommended a 3.2-MW power plant capacity and configuration, and estimated the power production cost.

Municipality of Anchorage, Alaska, LFGE Feasibility Study, Anchorage, Alaska. Assessed the feasibility of developing a LFG-to-power facility at the Anchorage Regional Landfill in Anchorage, Alaska for the Municipality of Anchorage. The study recommended a 3.2-MW power plant capacity and configuration, and estimated the power production cost. The project was constructed and is being operated by a third party. SCS Energy designed the fuel supply skid for the project.

University of Manitoba, LFGE Feasibility Study, Winnipeg, Manitoba. Assessed the feasibility of developing a direct-use and a LFG-to-power facility at the Brady Road Landfill in Winnipeg, Manitoba for the University of Manitoba for use at its Fort Garry Campus Central Energy Plant. The study recommended a combined direct-use and power project. LFG collected from the site would be transmitted to the Central Energy Plant via an 8.2-kilometer (km) long, 20-centimeter (cm) diameter, dedicated pipeline where a portion of the gas would fuel a 1.6-MW power production facility and the balance would be used in the University's boiler plant.

Republic Services, Inc. and Anheuser-Busch Fairfield Brewery, LFGE Feasibility Study, California. Assessed the feasibility of developing a LFG-to-medium Btu fuel facility at the Potrero Hills Landfill in Suisun, California and transmitting the gas to the Anheuser-Busch Fairfield Brewery in Fairfield, California via a 10-mile pipeline. The study also examined the feasibility of compressing the gas at the landfill and trucking it to the brewery, as well as self-generation of electric power at both the landfill and the brewery. The client elected to not perform the project.

Confidential Client, LFGE Feasibility Study, Georgia. Assessed the feasibility of developing a LFG-to-power facility at a Georgia landfill for a confidential client. The study recommended an approximate 9-MW plant capacity with the ultimate facility configuration and costs to be determined by air permitting constraints. The client elected to not perform the project.

Confidential Client, LFGE Feasibility Study, Colorado. Assessed the feasibility of developing a pipeline-quality gas project at a Colorado landfill for a confidential client. The study recommended that the project not be pursued at this site. The client elected to not perform the project.

Confidential Client, LFGE Acquisition Due Diligence. Performed due diligence services for a confidential client interested in acquiring a recently constructed high-Btu pipeline quality gas facility. The study resulted in the client deciding not to acquire the project.

L and D Landfill, L.P., LFGE Feasibility Study, Sacramento, California. Assessed the feasibility of developing a LFGE facility at the L and D Construction and Demolition Debris Landfill in Sacramento, California. The study evaluated several options including transmitting medium-Btu gas to one or more nearby end-users and on-site power generation. The client elected to solicit proposals from developers to implement the project. SCS Energy developed the Request for Proposals, assisted the client in evaluating the responses and in contract negotiations. Ultimately the client elected to not perform the project.

Kent County, Michigan, LFGE Feasibility Study, Grand Rapids, Michigan. Assessed the feasibility of developing a LFGE facility at the South Kent Landfill in Kent County, Michigan. The study evaluated several options including transmitting medium-Btu gas to one or more nearby end-users, on-site power generation, or having an end-user locate a facility on or adjacent to the site. The study also evaluated an unsolicited proposal from a third party to develop an on-site power facility. The client elected to select the third-party proposal for development of the project.

Promotora Ambiental S.A., LFGE Feasibility Study, Valle Verde Landfill, Tijuana, México. Assessed the feasibility of developing a LFG-to-power facility at the Valle Verde Landfill in Tijuana, México.

Merced County, California, LFGE Developer Selection, Merced County, California. Currently assisting the County in the procurement of a third-party developer to implement a LFGE project at the Highway 50 Landfill in Merced County, California. Services provided include a qualitative and quantitative review of developer proposals submitted in response to a County-issued Request for Proposals and assistance in contract negotiations with the highest-ranked respondent.

County of San Diego, Microturbine LFGE Feasibility Study, San Marcos, California. Evaluated the economic benefit of installing a microturbine power plant at the County-owned blower/flare station (BFS) at the San Marcos Landfill in San Marcos, California.

Macquarie Bank Limited, LFGE Acquisition Due Diligence (9 sites). Performed due diligence investigations, LFG generation and collection modeling, and conceptual designs for collection systems for LFG-to-energy facilities at nine California landfills for a potential acquisition.

Bayerische Landesbank, LFGE Due Diligence (3 sites). Performed due diligence investigations and LFG generation and collection modeling for the Bayerische Landesbank, New York Branch in support of their funding three Ameresco-owned LFGE projects at the Buena Vista, Keller Canyon, and Ox Mountain Landfills in California.

DTE Biomass Energy, LFGE Due Diligence (13 sites). Performed due diligence investigations, LFG generation and collection modeling, and conceptual designs for collection systems for LFGE facilities at 13 landfills throughout the United States.

U.S. Agency for International Development (USAID), LFGE Feasibility Study, México City, México. Development and assistance during implementation of a LFG Field Test Program at the Prados de la

Montaña Landfill in México City, México for the Ciudad de México Departamento del Distrito Federal (DDF) Servicios Metropolitanos S.A. de C.V. The purpose of the program was to assess the site's potential for a LFGE recovery project.

Various Clients, LFGE Field Testing (20+ sites). Evaluated over 20 landfills nationwide and abroad for LFGE feasibility, using "pump-test" and/or surface flux test methods.

Sacramento County, California, LFGE Facility Valuation. Conducted a study to determine the financial value of an existing County-owned LFGE facility at the Kiefer Road Landfill in Sacramento, California.

Confidential Client, California, LFGE Facility Valuation. Conducted a study to determine the financial value of an existing LFGE facility at a landfill in California.

Metrogas, S.A., LFGE Pipeline-Quality Gas Assessment at Three Landfills, Santiago, Chile. Assessed three landfills in the Santiago, Chile metropolitan area for their potential for pipeline-quality LFGE projects and assisted in the evaluation of potential technologies to clean the LFG to pipeline quality.

Sacramento Municipal Utility District (SMUD), Potential LFGE Project Search, Sacramento, California. Conducted a search of California landfills for potential LFG-to-electric power sales to SMUD.

Norcal Waste Systems, LFGE Contract Negotiations (2 sites). Assisted Norcal Waste Systems in negotiation of Gas Utilization Agreements with a LFGE developer at two landfills in California.

Confidential Client, LFGE Financing. Directed the preparation of an offer statement to solicit financing for new energy projects resulting in a term sheet from a major international lender.

Confidential Client, LFGE Financing. Assisted in restructuring a municipal bond used to finance an alternative energy facility in Texas.

U.S. Agency for International Development (USAID), LFGE Feasibility Study (13 sites). Developed a program to estimate the total LFGE resource in Brazil. The program involved site visits, LFG generation and collection modeling, and LFG recovery feasibility studies at 13 landfills in Brazil.

Various Clients, LFGE Modeling (100+ sites). Evaluated over 100 landfills nationwide and abroad for LFG generation and recovery rates using computer-based modeling techniques.

California Energy Commission, 250-kW Microturbine Demonstration Project, Burbank, California. Edited the final report and developed and presented a 1-day Seminar on a 250-kW microturbine demonstration project in Burbank, California.

Landfill Gas Collection System Design and Operation for LFGE Facilities

DTE Biomass Energy, LFGE Facility Collection System Design (5 sites). Designed collection systems for LFGE facilities at the City of Arlington Municipal Landfill in Arlington, Texas; the Oklahoma City Landfill in Oklahoma City, Oklahoma; the Southeast Landfill in Kansas City, Missouri; the Perdido Landfill in Escambia County, Florida; and the Cherokee Run Landfill in Bellefontaine, Ohio for DTE Biomass Systems.

Zahren Alternative Power Corporation (ZAPCO), LFGE Facility Collection System Design, Garland, Texas. Designed a collection system for a LFGE facility at the Castle Drive Landfill in Garland, Texas for Zahren Alternative Power Corporation.

Renovar Energy Corp., LFGE Facility Collection System Design, Shreveport, Louisiana. Designed a collection system for a LFGE facility at the Woolworth Road Landfill in Shreveport, Louisiana for Renovar Energy Corp.

NEO Corporation, LFGE Facility Collection System Design, Daytona Beach, Florida. Designed a collection system for a LFGE facility at the Tomoka Farms Road Landfill in Daytona Beach, Florida for NEO Corporation.

GSF Energy, Inc., LFGE Facility Operation (2 sites). As an employee of GSF Energy, operated two medium-Btu, LFGE facilities in Northern California.

Landfill Gas Greenhouse Gas (GHG) Emission Reduction Projects

Promotora Ambiental S.A., Monterrey, México, LFG Collection System Design (6 sites). LFG recovery feasibility studies for Clean Development Mechanism (CDM) projects at the Valle Verde Landfill in Tijuana, the El Verde Landfill in Leon, the Norte Landfill in Culiacan, the Garcia Landfill in Garcia, the Torreon Landfill in Torreon, and the Ahome Sinaloa Landfill in Los Mochis, México. The studies included pump tests at

Promotora Ambiental S.A., Monterrey, México, LFG Collection System Design (3 sites). Design of LFG collection systems and blower/flare stations for CDM projects at the Valle Verde Landfill in Tijuana, the El Verde Landfill in Leon, and the Norte Landfill in Culiacan, México.

Técnicas Medioambientales de México, S.A. de C. V., México, D.F., LFG Collection System Design (4 sites). LFG recovery feasibility studies for CDM projects at the Hermosillo Landfill in Hermosillo, the Las Minitas Landfill in Hermosillo, the La Reserva Landfill in Leon, and the Coyula Landfill in Matatlan, México.

Técnicas Medioambientales de México, S.A. de C. V., México, D.F., LFG Collection System Design (2 sites). Design of LFG collection systems and blower/flare stations for CDM projects at the Hermosillo Landfill in Hermosillo, and the Coyula Landfill in Matatlan, México.

Tecnicas Avanzadas Medioambientales, S De RL, LFG Collection System Design, Hasars Landfill, Zapopan, México. Design of a LFG collection system and blower/flare station for a CDM project at the Hasars Landfill in Zapopan, México.

Urbaser Plotosa, S.A., LFG feasibility Studies and Collection System Design, Panamá. Conducted a CDM LFG recovery feasibility study including a pump test at the Cerró Patacon Landfill in Panamá City, Panamá. Based on the study designed a LFG collection system and blower/flare station and provided assistance during its construction.

Clean Energy Fuels, Monetization of GHG Emission Reductions, Dallas, Texas. Estimated potential Greenhouse Gas emission reductions potentially available from early collection (i.e., in advance of NSPS-requirements) of landfill gas from the McCommas Bluff Landfill in Dallas, Texas. Developed a Request for Proposal (RFP) for firms to monetize the emission reductions. A successful respondent was selected and the emission reductions were monetized.

The World Bank, LFGE and GHG Emission Reduction Pre-Feasibility Study, Gramacho Landfill, Rio de Janeiro, Brazil. Performed a pre-feasibility study on the recovery of LFG for energy production and GHG emission reduction at the Gramacho Landfill in Rio de Janeiro, Brazil. The project included an assessment of site conditions and local energy markets, modeling of site LFG production, a LFG pump test to corroborate the gas production model, conceptual design of gas flaring and energy recovery systems, project financial analyses, and calculation of the project's environmental benefits.

The World Bank, LFGE and GHG Emission Reduction Pre-Feasibility Study, Muribeca Landfill, Recife, Brazil. Performed a pre-feasibility study on the recovery of LFG for energy production and GHG emission reduction at the Muribeca Landfill in Pernambuco, Brazil. The project included an assessment of site conditions and local energy markets, modeling of site LFG production, conceptual

design of gas flaring and energy recovery systems, project financial analyses, and calculation of the project's environmental benefits.

The World Bank, LFGE and GHG Emission Reduction Pre-Feasibility Study, Santa Tecla Landfill, Porto Alegre, Brazil. Performed a pre-feasibility study on the recovery of LFG for energy production and GHG reduction at the Santa Tecla Landfill in Porto Alegre, Brazil. The project included an assessment of site conditions and local energy markets, modeling of site LFG production, conceptual design of gas flaring and energy recovery systems, project financial analyses, and calculation of the project's environmental benefits.

Cooperación Andina de Fomento (CAF), LFGE and GHG Emission Reduction Pre-Feasibility Study, Cerro Patacon Landfill, Panama City, Panama. Assisted a pre-feasibility study on the recovery of LFG for energy production and GHG reduction at the Cerro Patacón Landfill in the Distrito de Panamá, Panamá. The project included an assessment of site conditions and local energy markets, modeling of site LFG production, conceptual design of gas flaring and energy recovery systems, project financial analyses, and calculation of the project's environmental benefits.

Various Confidential Clients, LFG Clean Development Mechanism Project Development (20+ sites). Support to several confidential clients in assessing, negotiating gas rights agreements, and/or implementing landfill GHG emission reduction projects under the Clean Development Mechanism (CDM) at over 20 landfills in Brazil, Colombia, and México.

International Utility Efficiency Partnerships, Inc. (IUEP), LFG Sampling, Muribeca Landfill, Recife, Brazil. Conducted LFG sampling at the Muribeca Landfill in Recife, Brazil in support of a potential GHG reduction project at the site.

U.S. Agency for International Development (USAID), Landfill GHG Emission Reduction Training, India. Conducted landfill GHG reduction training programs for solid waste and political officials in New Delhi and Agra, India.

Landfill Gas Collection and Control

Sonoma County, California, LFG Collection System and Blower/Flare Station Design. Design, permitting, and construction oversight of a LFG odor, migration, and emission control facility at the Sonoma Central Disposal Site, Petaluma, California. The facility included two separate wellfields from which LFG is extracted by a single blower station and destructed in an enclosed 1,700 cubic feet per minute (cfm) flare.

City of Berkeley, California, LFG Collection System and Blower/Flare Station Design. Design, permitting, and construction oversight of a LFG odor, migration, and emission control facility at the North Waterfront Park Landfill, Berkeley, California. The facility was situated on a closed landfill on San Francisco Bay which was being turned into a park. The LFG system included a completely underground wellfield and collection system. The LFG is extracted by a single blower station and destructed in an enclosed flare.

Solid Waste Authority of Palm Beach County, Florida, LFG Collection System and Blower/Flare Station Design. Design, permitting, and engineering services during construction of a LFG odor and migration control system at the 90-acre Dyer Boulevard Landfill, West Palm Beach, Florida. The project included incorporation of 23 existing passive LFG vents as extraction wells, the installation of 23 additional extraction wells, an underground high-density polyethylene (HDPE) collection system, a 1,700 cfm blower station, and an open, candle-type, utility flare for destruction of the LFG. The LFG system was designed to accommodate a potential upgrade to an LFGE system, as well as to prevent "floating" of a geosynthetic cover installed upon closure of the site.

Hillsborough County, Florida, LFG Collection System and Blower/Flare Station Design. Design, permitting, and engineering services during construction of retrofits to an LFG migration control system at the Taylor Road Landfill, Seffner, Florida. The Taylor Road Landfill had an existing LFG control system consisting of 30 extraction wells, a non-loop subsurface polyvinyl chloride (PVC) collection system, a blower station, and two open, candle-type utility flares. The rigid, subsurface PVC collection system had been pulled apart and crushed as a consequence of differential settlement in the landfill resulting in the intrusion of air into the collection system and an inability to extract LFG from most of the wellfield. Additionally, the condensate drains in the collection system were mostly "watered in" resulting in liquids blockage in those portions of the collection system that were still intact. The large concentrations of air in the extracted LFG along with corrosion of the flares also resulted in a dangerous gas mix causing the meltdown of two flame arresters at the flare station. Also, the unlined Taylor Road Landfill had been identified as a contributor to groundwater pollution in the area of the site, making the return of LFG condensate to the unlined landfill undesirable. The retrofits included "salvaging" the existing extraction wells and the blower station, the abandonment of the PVC collection system, and the installation of a new looped, subsurface, HDPE collection system, a condensate removal and storage system, and a new open, candle-type utility flare.

Sonoma County, California, Blower/Flare Station Design. Design and permitting of a replacement 2,250 cfm blower/flare station at the Central Disposal Site in Petaluma, California.

Waste Management, Blower/Flare Station Design, Novato, California. Design and permitting of a new blower/flare station for the Redwood Landfill in Novato, California for Waste Management.

Republic Services, Inc., LFG Collection System Design (3 sites), Northern California. Design, permitting, and construction oversight of LFG collection system expansions and improvements at the Vasco Road, Potrero Hills, and West Contra Costa County Landfills in Northern California.

City of Palo Alto, California, LFG & Leachate Collection System Design. Design and permitting of retrofits to the LFG and leachate collection systems at the Palo Alto Landfill in Palo Alto, California.

City of Islip, New York, LFG Migration Control System Design. Design and installation of an LFG migration control system at the Blydenburg Road Landfill, Hauppauge, New York. The landfill, situated on deep, sandy soils on Long Island was experiencing severe off-site LFG migration problems resulting in the evacuation of several homes and the closure of an elementary school. Pine trees were killed up to several hundred feet from the landfill boundary by migrating LFG. The LFG migration system consisted of a series of LFG extraction wells installed at 50-foot intervals in the sandy soils immediately on the landfill's boundary. LFG was extracted from the wells by a portable blower station and destructed in an open, candle-type, utility flare. After installation of the system, both the homes and the school were reoccupied.

Polk County, Florida, New York, LFG Migration Control System Investigation and Design. LFG migration investigation, drilling program, and remedial action design at the Southeast Sanitary Landfill in Polk County, Florida. The project was conducted in response to an exceedence of permit standards for methane concentrations at the site property boundary.

Confidential Client, LFG Migration Control System Design (2 sites). Designed two LFG migration control systems at two separate landfills in Texas for a confidential client.

Confidential Client, LFG Migration Control System Design. Designed a LFG migration control system at a Texas landfill for a confidential client.

Various Clients, LFG Migration Monitoring System Design (5 sites). Developed LFG migration monitoring plans for five California landfills.

Volusia County, Florida, LFG Migration and Emissions Investigation. LFG migration investigation, drilling program, and emissions assessment at the Plymouth Avenue Landfill, DeLand, Florida. The information developed in the assessment will be used to design an LFG control system for a golf course and ancillary facilities proposed for the site.

City of Jackson, Mississippi, LFG Migration Investigation. LFG migration assessment at the Bryam Closed Landfill Site in Hinds County, Mississippi. The project was conducted in response to an exceedence of permit standards for methane concentrations at the site property boundary.

City of Palo Alto, California, LFG Migration Investigation. LFG migration investigation at the Palo Alto Landfill.

Confidential Client, LFG Migration Investigation. LFG migration evaluation and remedial recommendations at a landfill in Houston, Texas for a confidential client.

Confidential Client, LFG Migration Investigation. LFG migration evaluation and remedial recommendations at a landfill in Houston, Texas for a confidential client.

Dade County, Florida, LFG Migration Testimony Services. Expert testimony services for the Metro-Dade County Department of Solid Waste Management for the North Dade Landfill in response to a law suit filed by local property owners. Allegations in the lawsuit included LFG management issues.

Citrus County, Florida, LFG Migration Assessment. Assessment and recommendations for an existing LFG migration monitoring and control system at the Citrus County Central Landfill near Lecanto, Florida.

Solid Waste Authority of Palm Beach County, Florida, LFG Operations Consulting Services. Operational consulting services for the Lantana Landfill LFG odor and migration control system in Palm Beach County, Florida.

Hillsborough County, Florida, LFG Operations Consulting Services (2 sites). Operational consulting services for the Hillsborough Heights Landfill LFG odor and migration control system and the Taylor Road Landfill LFG migration control system in Seffner, Florida.

Brevard County, Florida, LFG Recovery Estimate and Design Recommendations. LFG extraction "pump test" and conceptual design recommendations for a LFG control facility at the Brevard County Central Solid Waste Facility in Cocoa, Florida.

Various Clients, LFG Migration and Emission Monitoring (45 sites). LFG emissions and migration monitoring programs at 45 landfills and hazardous waste sites in California for various clients.

Confidential Client, LFG Safety. Development of a LFG safety program for the removal of a bagasse pile by a private sugar company in Palm Beach County, Florida.

Various Clients, LFG Migration Control System Evaluation (Multiple Sites). Third-party evaluation of LFG migration control systems at several landfills in California and New York for various clients.

Confidential Client, LFG Assessment. LFG consulting for a private firm responding to an RFP for privatization of a public landfill in Florida.

Domtar-Gypsum, San Leandro, California, Technical Review. Technical review of a LFG surface flux testing procedure for a private client.

Landfill Gas Clean Air Act and Air Permitting Projects

Various Clients, Clean Air Act Consulting (Multiple Sites). Clean Air Act consulting, reporting, and permitting support for over 20 California landfills for various public- and private-sector clients. Work included compliance and reporting under federal requirements including the New Source

Performance Standards/Emission Guidelines (NSPS/EG), Title V, the National Emission Standards for Hazardous Air Pollutants (NESHAPS), New Source Review (NSR), and Prevention of Significant Deterioration (PSD); as well as local air district requirements in the Bay Area Air Quality Management District (BAAQMD), the South Coast Air Quality Management District (SCAQMD), the San Diego County Air Pollution Control District (APCD), The San Joaquin Valley Air Pollution Control District (SJVAPCD), and numerous other local districts.

Various Clients, Clean Air Act Consulting (11 sites). Conducted air compliance audits at 11 California landfills.

Various Clients, Clean Air Act Consulting (Multiple Sites). Preparation of annual and semi-annual New Source Performance Standards (NSPS), Title V, and Start-Up, Shut-Down, and Malfunction (SSM) Reports for over 20 California landfills for various public- and private-sector clients.

Various Clients, Clean Air Act Consulting (3 sites). Preparation of Title V permit renewal applications for three California landfills for various public- and private-sector clients.

Various Clients, Clean Air Act Consulting (Multiple Sites). Preparation of numerous Title V permit modification applications for California landfills for various public- and private-sector clients.

Various Clients, Clean Air Act Consulting (10 sites). Preparation of SSM Plans for over 10 California landfills for various public- and private-sector clients.

Various Clients, Clean Air Act Consulting (Multiple Sites). Preparation of revised SSM Plans for five California landfills for various public- and private-sector clients.

Allied Waste Industries, Inc., Clean Air Act Consulting (2 sites). Preparation of annual and semi-annual NSPS, Title V, and SSM Reports for two Utah landfills.

Allied Waste Industries, Inc., Clean Air Act Consulting (2 sites). Preparation of SSM Plans for two Utah landfills.

Allied Waste Industries, Inc., Clean Air Act Consulting (4 sites). Preparation of SSM Plans for four Colorado landfills.

Various Clients, Clean Air Act Consulting (4 sites). Preparation of NSPS Gas Collection and Control System (GCCS) Plans for four California landfills.

Various Clients, Clean Air Act Consulting (5 sites). Preparation of Compliance Demonstrations requesting local air district United States Environmental Protection Agency, Region IX (U.S. EPA) compliance determinations that landfill gas (LFG)-to-energy (LFGTE) facilities at five California sites were in burning “treated gas” and were therefore exempt from NSPS/SSM requirements.

Various Clients, Clean Air Act Consulting (Multiple Sites). NSPS Initial Design Capacity Reports for over 20 landfills in Texas, Oklahoma, Mississippi, Iowa, and Michigan for various public and private clients.

Various Clients, Clean Air Act Consulting (Multiple Sites). NSPS Tier 1 Emission Rate Reports for over six landfills in Texas, Oklahoma, and Michigan for various clients.

Various Clients, Clean Air Act Consulting (Multiple Sites). NSPS Tier 2 sampling programs at over 40 landfills in Texas, Oklahoma, Mississippi, Alabama, Georgia, Florida, North Carolina, Colorado, Montana, Virginia, Illinois, and Puerto Rico for various public and private clients.

Various Clients, Clean Air Act Consulting (40 sites). Abbreviated Title V Applications for 40 Texas Landfills.

Allied Waste Industries, Inc., Clean Air Act Consulting. Title V Application for an Arizona landfill.

Various Clients, Clean Air Act Consulting (12 sites). Texas Standard Air Permitting Services for 12 landfills in Texas for various clients.

Various Clients, Clean Air Act Consulting (7 sites). Performed environmental air audit services for seven LFG-to-energy facilities for a private client.

Various Clients, Clean Air Act Consulting (Multiple Sites). Performed air permitting services for the flaring of LFG for various clients in California and Florida.

Landfill Gas Management for Developed Sites

California Integrated Waste Management Board (CIWMB), LFG Training. Developed and conducted a 2-day training program on LFG management at developed landfills for the California Integrated Waste Management Board.

Confidential Client, Subchapter T Registration, San Antonio, Texas. Texas Administrative Code, Chapter 330, Subchapter T Registration of a commercial property development over an old, closed landfill in San Antonio, Texas for a private client.

Hillsborough County, Florida, Developed Site LFG Mitigation, Tampa, Florida. LFG investigations and the development of conceptual remedial actions for mitigation of on- and off-site LFG migration from the Gunn Highway Landfill, Hillsborough County, Florida for the Hillsborough County Department of Solid Waste. After closure in 1963, the Gunn Highway Landfill was developed (apartment complex and recreational facility constructed over top of landfill), with housing developments constructed along the landfill property boundaries. Activities included evaluation and design of alternative LFG migration control systems, field investigations, and report preparation.

Confidential Client, Developed Site Methane Mitigation, San Rafael, California. Design, permitting, and engineering services during construction of a methane mitigation system for a hotel built on clean fill over bay tidelands, San Rafael, California for a private client. During geotechnical investigations for the design of the foundation of the hotel, "bubbling" was observed in the boreholes. Testing of the boreholes confirmed the presence of methane in concentrations exceeding methane's lower explosive limit (LEL). Consequently, the foundation design was modified to incorporate a gas venting layer connected to vent risers to allow trapped gases to escape from beneath the foundation. The utility design also was modified to prevent gases from entering the hotel through subsurface utility connections.

Confidential Client, Developed Site LFG Mitigation, Brisbane, California. Design of retrofits and construction quality assurance/quality control (QA/QC) during installation of the retrofits to an existing LFG mitigation Hypalon™ membrane barrier system in a multi-story office building on an inactive landfill, Brisbane, California for a private client. The retrofits consisted of reinstalling the barrier system in areas where renovations to the office building resulted in destruction of a portion of the barrier.

Confidential Client, Developed Site LFG Mitigation, Brisbane, California. Design of a LFG mitigation system for a proposed child care center on an inactive landfill, Brisbane, California for a private client.

Confidential Client, Developed Site Methane Mitigation, Largo, Florida. Monitoring and operational consulting services for a methane mitigation system for an apartment complex built over former wetlands in Largo, Florida for a private client. The methane mitigation system was installed after an explosion at the complex killed two people.

City of Sunnyvale, California, Developed Site Methane Monitoring. Monthly methane monitoring program for a municipal wastewater treatment facility built on an inactive landfill in Sunnyvale, California for the City of Sunnyvale, California.

Confidential Client, Developed Site LFG Mitigation, Tampa, Florida. LFG assessment and recommendations for LFG mitigation for a proposed hotel/retail/commercial office space development on an inactive landfill in Tampa, Florida for a private client.

Confidential Client, Developed Site LFG Mitigation, Tampa, Florida. LFG assessment and recommendations for LFG monitoring and mitigation for a retail department store on an inactive landfill in Tampa, Florida for a private client.

Confidential Client, Developed Site LFG Mitigation, Tampa, Florida. LFG assessment and recommendations for LFG monitoring and mitigation at a paint manufacturing facility built on an inactive landfill in Tampa, Florida for a private client.

Hillsborough County School District Developed Site LFG Mitigation, Tampa, Florida. LFG assessment and recommendations for LFG mitigation for a proposed elementary school on an inactive landfill in Tampa, Florida for the School District of Hillsborough County.

Hillsborough County, Florida, Developed Site LFG Mitigation, Tampa, Florida. LFG assessment and recommendations for LFG mitigation for recreational facilities on the Barry Road Landfill, Tampa, Florida for the Hillsborough County Department of Solid Waste.

Confidential Client, Developed Site Methane Mitigation, Oldsmar, Florida. Soil gas assessment and recommendations for methane mitigation for a single-home residential development in Oldsmar, Florida for a private client.

City of Berkeley, California, Developed Site LFG Mitigation. Recommended conceptual LFG mitigation measures for the development of a park on an inactive landfill in Berkeley, California for the City of Berkeley.

Confidential Client, Developed Site Methane Mitigation, Sunnyvale, California. Development of an LFG safety program for the construction of a road and a bridge abutment on an inactive landfill in Sunnyvale, California for a private client.

Landfill Gas Management for Landfill Closure

Norcal Waste Systems, LFG Post-Closure Care (2 sites). Developed post-closure care costs estimates for LFG management at two California landfills for Norcal Waste Ssyetms.

Lake County, Florida, LFG Closure Design. Design of LFG monitoring and control systems for the closure of the Lady Lake Landfill in Lake County, Florida for Lake County. The project included an LFG venting system designed to prevent "floating" of a geosynthetic cover.

DeSoto County, Florida, LFG Closure Design. Design of LFG monitoring and control systems for the closure of a portion of the Section 16 Landfill in Nocatee, Florida for DeSoto County, Florida. The project included an LFG venting system designed to prevent "floating" of a geosynthetic cover.

Escambia County, Florida, LFG Closure Design. Design of a LFG control system for the closure of the Beulah Landfill in Escambia County, Florida for the Escambia County Department of Solid Waste. The project included an LFG venting system designed to prevent "floating" of a geosynthetic cover.

Volusia County, Florida, LFG Closure Design. Design of a LFG control system for the closure of the Plymouth Avenue Landfill in Volusia County, Florida for the Volusia County Department of Solid

Waste. The project included an LFG venting system designed to prevent "floating" of a geosynthetic clay liner (GCL) cover.

Landfill Engineering & Consulting

City of Santafe de Bogotá, Colombia, Landfill Failure Remediation Design. Under Mr. Hamilton's direction SCS Engineers designed a remediation of a major landfill slope failure for the Doña Juana Landfill in Santafe de Bogotá, Colombia. Over 1,000,000 metric tons of waste slid out of the canyon landfill in September 1997, traveling over 2 kilometers, and dropping over 600 meters. The landfill dammed a river at the base of the canyon and partially filled a quarry on the opposite side of the river. The remedial design consisted of dewatering the existing landfill and slides, closing a portion of the slide in place, and removal of the lower portions of the slide to a new disposal area. The design also included LFG management facilities for the landfill and a wetlands treatment system for leachate management.

City of Panama City, Panama, Landfill Privatization. Assisted the City of Panama City, Panama in privatizing the Cerro Patacon Landfill. Work performed included writing the technical specifications for operating, expanding, and closing the landfill; developing the bid documents; developing contractor evaluation criteria; and providing assistance to the Evaluation Committee in selecting the contractor.

U.S. Agency for International Development (USAID), Leachate Study, México City, México. Evaluation of leachate collection and treatment options for the Prados de la Montaña Landfill in México City, México. The site, closed in 1996, has an estimated 528,000,000 gallons of stored leachate.

Salinas Valley Waste Management Authority, Leachate Evaluation, Gonzales, California. Evaluation of the efficiency of the leachate collection system at the Johnson Canyon Landfill in Gonzales, California for the Salinas Valley Solid Waste Authority.

Salinas Valley Waste Management Authority, Landfill Groundwater Treatment, Salinas, California. Design of a system to incinerate volatile organic compound (VOC)-laden air from a landfill groundwater air-stripping treatment system in an on-site landfill gas flare at the Crazy Horse Landfill in Salinas, California for the Salinas Valley Solid Waste Authority.

Oroville Landfill Properties, Landfill Clean Closure, Oroville, California. Feasibility studies, permitting, and design for a clean closure of the Oroville Properties Woodwaste Landfill in Oroville, California.

City of San Diego, California, Landfill Operations Assessment. An operations assessment of the Miramar Landfill in San Diego, California for the City of San Diego.

Monterey Regional Waste Management District, Landfill Permit Operating Record, Marina, California. Developed a Permit Operating Record for the Marina Landfill in Monterey, California for the Monterey Regional Waste Management District.

Hillsborough County, Florida, Overall Landfill Engineering and Consulting. Overall continuing landfill engineering and consulting services at the Southeast, Northwest, Hillsborough Heights, Gunn Highway, Pleasant Grove, Morris Bridge, Leto High School, Barry Road, and Taylor Road Landfills in Hillsborough County, Florida for the Hillsborough County Department of Solid Waste. Tasks performed included evaluation of leachate quantities, design of a leachate treatment facility, solid waste projections and landfill operating plan, ecological, geotechnical, and hydrogeological site investigations for the design and permitting of a new municipal solid waste (MSW) landfill; on-going consulting for the operation and redesign of two LFG control facilities; construction management of a construction and demolition debris (C&D) landfill closure; drainage improvements at two MSW landfills; retro-fitting a leachate collection system; preparation of a Request for Proposal (RFP) for

LFG recovery and utilization at two MSW landfills; development of a LFG migration monitoring system and Action Plan at an inactive landfill developed into residential property; development of an Interim Remedial Action Plan (IRAP) at an inactive oil sludge disposal site; development of Preliminary Contamination Assessment Plans and Reports (PCAPs and PCARs), CAPs, and CARs at various closed, inactive landfills, and coordination with the U.S. Army Corps of Engineers (U.S. COE), and state and local environmental regulatory agencies.

DeSoto County, Florida, Overall Landfill Engineering and Consulting. Landfill permitting and engineering services for DeSoto County, Florida. Tasks performed included preparation of the application for renewal of the operational permit for the Section 16 Landfill; reparation of a closure permit for a portion of the Section 16 Landfill; and preparation of a operations permit for a waste tire facility; conceptual designs for leachate, stormwater, and LFG management systems; and development of a Site Master Plan that compared nine different options for continuing to operate the landfill with an option for closing the site and exporting solid wastes out-of-county.

Escambia County, Florida, Overall Landfill Engineering and Consulting. Landfill engineering and consulting services for Escambia County, Florida. Tasks performed included a regulatory compliance and operational assessment of the Perdido Landfill; the preparation of the application for renewal of the operational permit for the Perdido Landfill which includes MSW and C&D landfills, design of a C&D landfill, as well as designs for leachate, stormwater, and landfill gas management systems.

Frontier Recycling, Inc., Overall C&D Landfill Engineering and Consulting, Largo, Florida. Landfill engineering, permitting, and consulting services for Frontier Recycling, Inc. The client purchased an existing construction and demolition (C&D) debris transfer station and recycling facility in Largo, Florida. Upon closure of the sale, the client expanded the existing recycling and transfer operations and added a C&D landfill.

Hillsborough County, Florida, Leachate Treatment Engineering and Consulting. Treatment feasibility studies, design, permitting, and engineering services during construction for a 60,000 gallon-per-day (gpd) leachate treatment facility at the Southeast Landfill, Picnic, Florida for the Hillsborough County Department of Solid Waste. The leachate treatment system uses a powdered activated carbon treatment system with nitrification/denitrification and chlorination to treat the leachate. Treated effluent is spray irrigated onto closed portions of the landfill to support the vegetative cover.

Hillsborough County, Florida, Landfill Siting Studies. Conduct and review of geotechnical, hydrogeological, and ecological studies for the siting of a new MSW landfill in Hillsborough County, Florida for the Hillsborough County Department of Solid Waste.

Hillsborough County, Florida, Landfill Design. Preliminary design of a new MSW landfill in Hillsborough County, Florida for the Hillsborough County Department of Solid Waste.

Hillsborough County, Florida, Landfill Permitting. Preparation of an application for renewal of an operating permit for the Southeast Landfill, Picnic, Florida for the Hillsborough County Department of Solid Waste.

DeSoto County, Florida, Landfill Permitting. Preparation of an application for renewal of an operating permit for the Section 16 Landfill, Nocatee, Florida for DeSoto County, Florida.

Escambia County, Florida, Landfill Permitting. Preparation of an application for renewal of an operating permit for the Perdido Landfill, Cantonment, Florida for the Escambia County Solid Waste Department.

Lake County, Florida, Landfill Closure. Preparation of closure design and closure permit application for the Lady Lake Landfill, Lady Lake, Florida for Lake County, Florida.

Escambia County, Florida, Landfill Closure. Preparation of closure design and closure permit application for the Beulah Landfill, Beulah, Florida for the Escambia County Solid Waste Department.

DeSoto County, Florida, Landfill Closure. Preparation of closure design and closure permit application for the Section 16 Landfill, Nocatee, Florida for DeSoto County, Florida.

Hillsborough County, Florida, Landfill Closure. Preparation of an application for renewal of a closure permit for the Hillsborough Heights and Taylor Road Landfills, Seffner, Florida for the Hillsborough County Department of Solid Waste.

Hillsborough County, Florida, Landfill Closure. Engineering services during construction of the closure of the Northwest Landfill, Tampa, Florida for the Hillsborough County Department of Solid Waste.

Napa-Vallejo Waste Management Authority, Leachate Force Main, Vallejo, California. Design of a leachate force main to transport leachate from the American Canyon Landfill in American Canyon, California to a nearby municipal waste water treatment plant.

City of Palo Alto, California, Leachate Collection and Removal. Re-design of the leachate collection and removal system at the Palo Alto Landfill in Palo Alto, California for the City of Palo Alto.

City of Berkeley, California, Leachate Monitoring. Design, installation, and sampling of a leachate monitoring system at the North Waterfront Park Landfill, Berkeley, California for the City of Berkeley.

Clipper Creek Landfill, Landfill Closure, Applegate, California. Closure/post-closure plans for the Clipper Creek Landfill, Placer County, California.

Monterey Regional Waste Management District, Landfill Closure, Laguna Seca, California. Closure/post-closure plans for the Laguna Seca Landfill, Monterey, California for the Monterey Regional Waste Management District.

Monterey Regional Waste Management District, Landfill Groundwater Assessment, Laguna Seca, California. Groundwater assessment program at the Laguna Seca Landfill, Monterey, California for the Monterey Regional Waste Management District.

Calaveras County, California, Landfill Groundwater Assessment. Groundwater assessment program at the San Andreas Burn Dump, Calaveras County, California for Calaveras County.

Calaveras County, California, Landfill Groundwater Assessment. Groundwater assessment program at the Angels Camp Burn Dump, Calaveras County, California for Calaveras County.

Confidential Client, Landfill market Assessment, Alabama. Market study for an east central Alabama landfill for a private firm interested in buying the landfill.

Waste Planning and Management

U.S. Agency for International Development (USAID), Solid, Medical, and Industrial Waste Privatization, Egypt. Managed the development of a "How-To Privatize" procedural manual to be used by Egyptian Governorates in privatizing their solid waste management systems. Subjects covered include: Introduction to Privatization, Solid Waste Planning, Solid Waste Financial Management, Contractor Pre-Qualification, Tendering and Contracting, Contract Monitoring, Public Awareness and Communications, and Residential and Commercial Solid Waste Collection. Disseminated the privatization manual to the Egyptian Environmental Affairs Agency (EEAA) and all 26 Egyptian Governorates in a series of workshops held throughout Egypt. The project was funded by the United States Agency for International Development (USAID).

U.S. Agency for International Development (USAID), Solid, Medical, and Industrial Waste Privatization, Egypt. Managed the development of an additional eight chapters of the “How-To Privatize” procedural manual to be used by Egyptian Governorates in privatizing their solid waste management systems. Subjects covered include: Construction and Demolition Debris Management, Industrial Waste Management, Medical Waste Management, Street Sweeping and Public Facility Cleaning, Waste Transfer, Composting, Waste Reduction and Recycling, and Landfill Development, Operation, and Closure. The project was funded by USAID.

U.S. Agency for International Development (USAID), Solid, Medical, and Industrial Waste Privatization, Egypt. Provided solid waste privatization assistance to the Governorates of Alexandria, Cairo, and Qalyubiya, Egypt. Activities performed included training, review and ranking of responses to previously prepared Requests for Qualifications (RFQs), Request for Tender (RFT) preparation, assistance during the bidding process, Contract Monitoring Plan preparation, and landfill siting recommendations. The project was funded by USAID.

U.S. Agency for International Development (USAID), Solid, Medical, and Industrial Waste Privatization, Egypt. Prepared training specifications for and conducted a study tour with eight Egyptian solid waste managers to the International Solid Waste Association 2002 World Environment Congress and Exhibition in Istanbul, Turkey. The project was funded by USAID.

U.S. Agency for International Development (USAID), Integrated Waste Management Systems, India. Conducted a training workshop on integrated solid waste management systems and greenhouse gas emission reduction in Delhi, India. The project was funded by USAID.

U.S. Agency for International Development (USAID), Integrated Waste Management Systems, India. Conducted a training workshop on integrated solid waste management systems and greenhouse gas emission reduction in Agra, India. The project was funded by USAID.

U.S. Agency for International Development (USAID), Integrated Waste Management Systems, India. Prepared training specifications for and conducted a study tour with Indian solid waste managers in northern California. The project was funded by USAID.

Hillsborough County, Florida, Landfill Operations Contract. Provided assistance to the Hillsborough County Department of Solid Waste, Tampa, Florida in the solicitation and selection of a private company to manage the County’s solid wastes.

Confidential Client, LFGE Financing. Directed the preparation of an offer statement to solicit financing for new energy projects resulting in a term sheet from a major international lender.

Confidential Client, LFGE Financing. Assisted in restructuring a municipal bond used to finance an alternative energy facility in Texas.

Various Clients, Service and Material Procurement, (Multiple Sites). Preparation of Requests for Proposals (RFPs), Requests for Bids (RFBs), and other tender documents for numerous public sector clients for various solid waste service, professional, development, and/or construction services, including privatization of refuse collection and disposal services.

Solid Waste Facility Projects

Frontier Recycling, Inc., Recycling Facility Engineering and Consulting, Largo, Florida. Materials recovery facility (MRF) engineering, permitting, and consulting services for Frontier Recycling, Inc. The client purchased an existing construction and demolition (C&D) debris transfer station and recycling facility in Largo, Florida. Upon closure of the sale, the client expanded the existing recycling and transfer operations and added a C&D landfill.

Solid Waste Authority of Palm Beach County, Florida, Recycling Facility Modification. Throughput and Facility Modification Projection Study for the Solid Waste Authority of Palm Beach County, Florida. This project included projecting recycling rates and quantities, determining when increased processing capacity would be required, and estimating capital costs and impact.

Confidential Client, Recycling Facility Siting, Santa Rosa, California. Ecological & geotechnical site studies for a new 2,000 ton per day waste transfer and recycling facility in Santa Rosa, California for a confidential private client.

Solid Waste/Ecological Studies

Hillsborough County, Florida, Wetlands Delineation and Fauna & Flora Surveys. Wetlands delineation and endangered and threatened species surveys for the siting of a new MSW landfill for the Hillsborough County Department of Solid Waste. The wetlands investigation included identification and mapping of U.S. Army Corps of Engineers, Florida Department of Environmental Protection, Southwest Florida Water Management District, and Environmental Protection Commission of Hillsborough County jurisdictional wetlands on the 700+ acre site.

Florida Department of Environmental Protection, Rule Peer Review. Peer review of the proposed Phosphogypsum Management Rule, 17-673, Florida Administrative Code for the Florida Department of Environmental Protection. Activities included peer review of reports regarding design recommendations and groundwater impacts from phosphogypsum disposal stacks; modeling of phosphogypsum stack hydraulic performance characteristics; and peer review of alternative phosphogypsum stack bottom liner systems designs.

Florida Department of Environmental Protection, Oil Spill Strategy. Assistance to the Florida Department of Environmental Protection in developing strategies for the management of oil spill cleanup debris.

City of San Mateo, California, Landfill Industrial Hygiene Investigation. A preliminary industrial hygiene investigation into potential sources of hypersensitive pneumonitis in site employees at the San Mateo Composting Facility, San Mateo, California for the City of San Mateo.

Florida Keys Marine Institute, Coastal Revegetation. Field supervisor for several revegetation/habitat mitigation projects in Florida for various clients.

Environmental Investigations

Hillsborough County, Florida, RI/FS Review. Third-party review of a Remedial Investigations/Feasibility Study (RI/FS) conducted at the Taylor Road Landfill, Seffner, Florida (U.S. Environmental Protection Agency [U.S. EPA] Region 4) for the Hillsborough County Department of Solid Waste.

Hillsborough County, Florida, Landfill Remedial Action Plan. Development of an Interim Remedial Action Plan (IRAP) for an area of exposed oil sludges that oozed out of the closed Pleasant Grove Landfill, Plant City, Florida onto a county road right-of-way for the Hillsborough County Department of Solid Waste.

Hillsborough County, Florida, Landfill Remedial Action Assessments. Development of Preliminary Contamination Assessment Plans and Reports (PCAPs and PCARs), CAPs, CARs, and RAPs at various closed, inactive landfills in Florida for the Hillsborough County Department of Solid Waste.

Various Clients, RI/FS Confirmation Studies. Remedial Investigations/Feasibility Study (RI/FS) confirmation studies at two hazardous waste sites in California (U.S. EPA Region 9). One for the U.S. Navy Facilities Engineering Command, Western Division and the other for a private client.

ConocoPhillips, Meteorological Study, Kuparek, Alaska. Design, installation, and monitoring of a meteorological station at a hazardous waste site in Kuparek, Alaska for a study on drilling mud disposal ponds.

Solid Waste Training and Education

Served from 1993 to 1999, and again from 2005 to 2010 as the Director of SWANA's Landfill Gas Management Training Program. As Director, coauthored the "Solid Waste Association of North America Course Manual for Managing Landfill Gas at Municipal Solid Waste Landfills, Edition 2", and served as Course Director and instructor at numerous presentations of the Training Program nationwide.

Conducted U.S. Environmental Protection Agency (U.S. EPA) Landfill Methane Outreach Program (LMOP) Workshops in Warsaw, Poland, and in Houston, Texas.

Served as Training Committee Chairperson for the Florida Sunshine Chapter of SWANA. As Training Committee Chair, developed and presented numerous solid waste continuing education programs.

Developed and conducted landfill gas Greenhouse Gas Emission Reduction training programs for solid waste and political officials in New Delhi and Agra, India for the U.S. Agency for International Development.

Developed and conducted a ½-day LFG safety training program for Fresno County, California.

Developed and conducted a 2-day training program on LFG management at developed landfills for the California Integrated Waste Management Board.

Developed and conducted a 1-day seminar on a 250-kW microturbine demonstration project for the California Energy Commission.

Participated in the development and presentation of a 5-day Municipal Solid Waste Management Course in Kingston, Jamaica for the U.S. Environmental Training Institute and the Jamaica Natural Resources Conservation Authority.

Participated in the development and presentation of a 5-day Municipal Solid Waste Management Course in Ciudad Juarez, Chihuahua, México for the U.S. Environmental Training Institute.

Served as an instructor for the State-of-Florida required Landfill Operators Training and Certification Program.

As a member of the faculty of the University of Florida's Center for Training, Research and Education for Environmental Occupations (TREEO), served in curriculum development and as an instructor for TREEO's Landfill Design Series Course.

Developed a 1-day LFG Training Program for the Air and Waste Management Association.

Publications and Presentations

Hamilton, S.M., "Biogas From Municipal WWTP Fuel Cells Viewed as a Value Proposition", Biogas and Fuel Cells Workshop, National Renewable Energy Laboratory Golden, Colorado, June 12, 2012.

Hamilton, S.M. and Argueta, E., "Landfill Gas and Digester Gas Utilization Treatment and Processing Technologies", 2012 International Biomass Conference & Expo, Denver, Colorado, April 17, 2012

- Hamilton, S.M., "Combined Medium-Btu Direct Use & Power Generation Project at the Wellford Landfill", SWANA's 35th Annual Landfill Gas Symposium March 21, 2012, Orlando, Florida.
- Hamilton, S.M., "Collection and Use of Landfill Gas in Power Production", DOE/Russian Renewable & Progressive Energy Technology Transfer, San Diego, California, December 9, 2011.
- Hamilton, S.M. and Pierce, J.L., "Cleaning & Injection of Biogas into Natural Gas Pipelines and CNG", DOE/Russian Renewable & Progressive Energy Technology Transfer, San Diego, California, December 9, 2011.
- Hamilton, S.M., "Current Status and Trends in the Landfill Gas-to-Energy Industry", Environmental Research & Education Foundation Regional Summit on Solid Waste Practice & Research, Raleigh, North Carolina, September 2001.
- Hamilton, S.M., Chamberlin, P., and Talley, C., "Case Studies: Self-Development of Landfill Gas-to-Energy Projects by Universities and Utilities", 61st Annual KU Environmental Engineering Conference, Lawrence, Kansas, February 2, 2011
- Hamilton, S.M. and McConnell, R., "Flathead Electric Cooperative – Montana's First LFGE Project", USEPA LMOP 14th Annual Conference, Baltimore, Maryland, January 19, 2011.
- Hamilton, S.M. and Pierce, J.L., "Addressing the High-Nitrogen Conundrum – Wellfield Versus Plant Modifications", SWANA's 2010 Wastecon, Boston, Massachusetts, August 17, 2010.
- Hamilton, S.M. and Leatherwood, C., "Current Trends in U.S. Landfill Gas Energy and Carbon Markets", DAKOFA and ISWA Conference on Waste and Climate, Copenhagen, Denmark, December 4, 2009.
- Hamilton, S.M., "Light It Up", Cover article on developing landfill gas-to-energy projects, Waste Age Magazine, February 2009.
- Hamilton, S.M., "Overview of LFG Utilization Alternatives", Proceedings of the Arizona Landfill & Solid Waste Management Seminar, Phoenix, Arizona, May 28, 2008.
- Hamilton, S.M., "Flathead Electric Cooperative - Landfill Gas to Energy Feasibility Case Study", Northwest Power and Conservation Council, Whitefish, Montana, April 16, 2008.
- Hamilton, S.M., "Practical Challenges in Producing Carbon Emission Reduction Credits from Landfills in the Developing World," Methane to Markets Partnership Expo, Beijing, China, November 2007.
- Hamilton, S.M., Landfill Gas Utilization Overview, CIFAL Greener Solid Waste Conference, Davis, California, September 2009.
- Hamilton, S.M., "Practical Challenges in Producing Carbon Emission Reduction Credits from Landfills in the Developing World," U.S. EPA Landfill Methane Outreach Program Conference and Project Expo, Baltimore, Maryland, January 23, 2007.
- Hamilton, S.M., "Overview of Landfill Gas Utilization Alternatives - Current Status and Emerging Technologies," SWANA New México Chapter Meeting, December 8, 2006.
- Hamilton, S.M., "Practical Challenges in Producing Carbon Emission Reduction Credits from Landfills in the Developing World," SWANA Wastecon, Charlotte, North Carolina, September 21, 2006.
- Hamilton, S.M., Perkins, R.A., Weitting, N., and Larochelle, L. "Solid Waste Management Privatization Procedural Manual," Chapters 9 through 16, Published by the Egyptian Environmental Policy Program, October 2003. Egyptian Environmental Affairs Agency and the Governorates of Egypt, October 7 through 15, 2003.

Hamilton, S.M. and Ellis, S.K., "Solid Waste Privatization in Egypt," United Nations Development Programme Donor Advisory Group, Cairo, Egypt, June 25, 2003.

Hamilton, S.M., Perkins, R.A., Kane, H., Windolph, G., and Iskandar, L. "Solid Waste Management Privatization Procedural Manual", Chapters 1 through 8, Published by the Egyptian Environmental Policy Program, March 2003. Egyptian Environmental Affairs Agency and the Governorates of Egypt, March 11 through 13, 2003.

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