

Qualifications

Comprehensive Solid Waste Services

Presented by

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Offices Nationwide
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1 INTRODUCTION

This qualification statement summarizes SCS Engineers (SCS) overall capabilities and experience in landfill engineering, landfill gas, landfill gas to energy, transfer station, material recovery facility (MRF), solid waste planning and waste-to-energy services. Included are summaries of SCS's background, key SCS staff, our landfill capabilities, project profiles, and a list of our client references.

The design, permitting, construction, and operation of landfills and transfer facilities, and related environmental systems are fundamental services provided by SCS. SCS has been providing these services since its inception in 1970. SCS is one of only a few firms in the country that has specialized in solid waste management, and we have established a leadership role in this industry. In 2004, 2005, 2006, and 2007 and 2009 Engineering News Record ranked SCS the #1 solid waste consulting firm in the United States. SCS applies a combination of skills and experience in engineering, natural and physical sciences, construction, project management, and operations to support the needs of our solid waste clients and enhance project value.

SCS CONTACTS

SCS has regional offices throughout the United States. We also serve clients in many other parts of the world, from offices in the United States and abroad. Clients are encouraged to contact any of the SCS landfill professionals listed in Exhibit 1 to discuss specifics about their landfills. (See Appendix A for a complete listing of office addresses, fax numbers, and other contact information for all SCS offices.)

Exhibit 1. SCS Engineers Contacts	
Region	Contact Person(s)
Mid-Atlantic USA	Bob Isenberg, PE Reston, Virginia bisenberg@scsengineers.com (800) 767-4727
	Bob Dick, PE Richmond, Virginia bdick@scsengineers.com (704) 377-4766
	Steve Lamb, PE Charlotte, North Carolina slamb@scsengineers.com (704) 337-4766

Exhibit 1. SCS Engineers Contacts

Region	Contact Person(s)
Northeast USA	Greg McCarron, PE Valley Cottage, New York gmccarron@scsengineers.com (845) 353-5727 Eric Peterson, PE Medford, NJ epeterson@scsengineers.com (609) 654-4000
Southern USA	Ed Hilton, PE Tampa, Florida ehilton@scsengineers.com (813) 621-0080
Midwest USA	Tony DiPuccio, PE Cincinnati, Ohio tdipuccio@scsengineers.com (513) 421-5353
Western USA	Pat Sullivan Sacramento, California psullivan@scsengineers.com (916) 361-1297
Northwest USA	John Richards, PE Bellevue, Washington jrichards@scsengineers.com (800) 727-6393
Texas	Kevin Yard, PE Dallas, Texas kyard@scsengineers.com (972) 523-2414
International	Dave Ross, PE, BCEE dross@scsengineers.com +64-9-355-1782 (800) 326-9544
SCS FIELD SERVICES CONTACTS	
Western USA	Ken Ayster, PE Regional Manager O&M Long Beach, California kayster@scsengineers.com (800) 326-9544

Exhibit 1. SCS Engineers Contacts	
Region	Contact Person(s)
Eastern USA	<p>Tom Barham Reston, Virginia tbarham@scsengineers.com (800) 669-7998</p> <p>Pete Carrico Regional Manager, O&M Reston, Virginia pcarrico@scsengineers.com (800) 669-7998</p>
Southwest and Midwest USA	<p>Ron Wilks Regional Manager Dallas, Texas rwilks@scsengineers.com (800) 339-3034</p>
National USA	<p>Bob Gardner, PE, BCEE Senior Vice President, Solid Waste Division Norfolk, Virginia rgardner@scsengineers.com (757) 466-3361</p> <p>Tom Shuput V.P., Business Development Long Beach, California tshuput@scsengineers.com (800) 869-0235</p>
SCS ENERGY CONTACT National USA and International	<p>Jeff Pierce, PE Energy Services Long Beach, California jpierce@scsengineers.com (562) 426-9544</p>

BACKGROUND AND CAPABILITIES

SCS is an independent, employee-owned environmental engineering, construction, and operation and maintenance (O&M) services firm. Founded in 1970, SCS has focused on the solid waste management and site remediation industries. The firm has grown to a staff of nearly 700 engineers, geologists, scientists, constructors, and technicians with offices located throughout the United States (<http://www.scsengineers.com/OfficeLocations.html>). We specialize in solid waste and hazardous waste engineering services for local government and private industry clients alike, and are recognized worldwide for work in both landfill engineering and LFG management. This recognition is the result of successfully completing more than 500 landfill siting, design, permitting, construction, closure, and investigation projects, over 5,700 LFG projects, and

hundreds of solid waste study projects. Exhibit 2 summarizes the solid waste and environmental services provided by the firm.

In response to client needs for “one stop shopping,” SCS established Field Services in 1985 to provide under one roof design-build and construction services for LFG control and recovery facilities. The Field Services Division also provides operation, monitoring, and maintenance (OM&M) services for LFG facilities. SCS’s Field Services Division operates more than 180 LFG and other emission control systems nationally from its regional centers.

SCS is a well-established company consistently ranking strongly in the annual McGraw-Hill Engineering News-Record lists of engineering and specialty environmental firms. About 70 percent of SCS’s business is landfill-related services.

The company’s strong track record continues to be bolstered by both project and volunteer work by SCS’s team of professionals, technicians, and support staff, many with tenures of 10 to 20 years or more. SCS personnel have long been active in and leaders of industry and professional associations, through which they organize and participate in workshops and conferences, author and present technical papers, conduct research, and participate in national and state-level legislative and rule-making processes regarding the regulation of landfill and LFG management practices.

For example, many of SCS’s staff has been active in the National Solid Waste Management Association (NSWMA) and the Solid Waste Association of North America (SWANA) since 1970. The firm and individuals in the firm have earned leadership roles and national reputations through these and other associations and on project activities, including:

- **Pete Carrico and Bob Gardner** are the current directors of SWANA’s landfill gas and landfill management technical divisions of SWANA, respectively.
- **Jim Walsh and Tom Shuput** are past Directors of the SWANA LFG Division.
- **Jim Walsh and Eric Peterson** were program chairs for SWANA's LFG Seminars in 1988 and 1991, respectively.
- **Bob Stearns** received the Robert Lawrence Award, SWANA's top annual award, and he was on SWANA's International Board of Directors for several years.
- **Bob Stearns** was elected into NSWMA Hall of Fame in 2003, which recognized him and several others as leaders in solid waste management, having provided at least 40 years of creative ideas, innovative concepts and contributions that have made a significant difference to the industry as a whole. Mr. Stearns serves as the chairman of the Environmental Research and Education Foundation.
- **Jim Walsh and Pat Sullivan** have prepared testimony and comments to EPA regarding LFG-related regulations on behalf of SWANA and to State Legislatures regarding LFG utilization.

Exhibit 2. SCS Solid Waste Services

Landfill Services	Design and Permitting <ul style="list-style-type: none"> ➤ Alternative Liner Demonstrations ➤ Alternatives Evaluation ➤ Bid Documents ➤ Bioreactors ➤ Capacity Optimization ➤ Construction Plans ➤ Construction Services ➤ Feasibility Studies ➤ Geotechnical Engineering ➤ Hydraulics ➤ Hydrogeology ➤ Landfill Designs (all phases) ➤ Leachate Collection Systems ➤ Liner System Design ➤ Permitting, Expansions ➤ Permitting, Greenfield Sites ➤ Site Investigations ➤ Siting LFG Management <ul style="list-style-type: none"> ➤ Air Quality Permitting ➤ Construction ➤ Design and Permitting ➤ Due Diligence for Financing ➤ LFG Control Systems ➤ LFG-to-Energy (LFGE) ➤ Operation and Maintenance ➤ Site Investigations 	Operations Program Development <ul style="list-style-type: none"> ➤ Airspace Management ➤ Alternate Daily Cover ➤ Alternate Materials Application ➤ Hazardous Waste Exclusions ➤ Special Waste Management Remediation <ul style="list-style-type: none"> ➤ LFG Migration ➤ Remedial Measures ➤ Feasibility Studies ➤ Design ➤ Construction Management Closure/Post Closure <ul style="list-style-type: none"> ➤ Planning and Permitting ➤ Final Cover Designs ➤ Closure Documentation ➤ End Use Planning ➤ Post Closure Monitoring and Inspection ➤ Financial Assurance ➤ Landfill Redevelopment Groundwater Monitoring <ul style="list-style-type: none"> ➤ Well Installation ➤ Monitoring Plan ➤ Reporting ➤ Corrective Action ➤ Investigation and Modeling
Compliance Management and Regulatory Compliance	<ul style="list-style-type: none"> ➤ Computerized Compliance Tracking Systems ➤ Economic Analysis ➤ Environmental Compliance Audits ➤ Expert Testimony ➤ Feasibility Studies ➤ Integrated Solid Waste Management Plans ➤ Pre-acquisition Due Diligence Reviews 	<ul style="list-style-type: none"> ➤ Public Hearings ➤ Public Participation ➤ Rate Studies ➤ Record Keeping ➤ Regulatory Reporting ➤ Waste Reduction and Recycling Programs ➤ Waste Stream Characterization
Solid Waste Facilities	<ul style="list-style-type: none"> ➤ Transfer Station ➤ MRF's ➤ WTE & Conversion Technologies ➤ Siting ➤ Feasibility Studies ➤ Permit Documents 	<ul style="list-style-type: none"> ➤ Operations Assessments ➤ Design/Build ➤ Construction Plans ➤ Bid Documents ➤ Equipment Specifications ➤ Construction Services

- **Bob Gardner** served on the state-wide board that assisted the Florida Department of Environmental Protection develop its Subtitle D regulations and serves as the chairman for the American Academy of Environmental Engineers solid waste oral exam committee. He serves on the Research Council for the Environmental Research and Education Foundation Research Council, and SWANA's Applied Research Foundation.

AWARDS AND INDUSTRY RECOGNITION

Both the professional staff at SCS and the firm itself have been recognized for research achievements and technology innovations in the solid waste management, and has received many awards and industry recognition through the Solid Waste Association of North America (SWANA), the National Association of Solid Waste Management (NSWMA), the U. S. EPA's Landfill Methane Outreach Program (LMOP), the American Society of Civil Engineers (ASCE), and the National Society of Professional Engineers.

2 LANDFILL ENGINEERING SERVICES

Landfill engineering is the primary business of SCS. We have grown to become the # ranked solid waste engineering firm in the country. We have conducted the full range of landfill and other solid waste facility-related study, design, and construction projects for county governments and private clients.

SCS currently serves as the solid waste consultant to numerous counties and private solid waste companies. Our staff includes experienced engineers and scientists specifically in the specialized areas of solid waste engineering, solid waste planning and solid waste environmental services.

SCS provides the following range of specialized landfill services to meet the needs of our clients:

- Clean Air Act (CAA) services (e.g., NSPS, MACT, Title V)
- Closure and post-closure care plans
- Construction plans, specifications and contract documents
- Contractor selection and negotiation
- Cost estimating and scheduling
- Environmental impact assessments and reports
- Erosion control assessment and mitigation
- Facility master planning
- Facility design engineering, analysis and technical support
- Financial assurance plans
- Groundwater sampling, statistical analysis, and reporting
- Hydrogeological and geotechnical investigations
- LFG monitoring and reporting
- Landfill risk assessments
- Landfill siting and feasibility studies
- LFG migration, control, and recovery
- Liner quality assurance services
- New cell design
- Operations and maintenance plans
- Permitting and regulatory compliance
- Remedial investigations and mitigation designs
- Resident engineering and third-party certification services
- Stormwater management and permitting
- Tipping fee analysis

Specific project experience relative to several of these topic areas is provided below.

LANDFILL SITING

Landfill siting involves the interplay of engineering, science, and politics. The engineering disciplines required include civil, environmental, geotechnical, hydrogeological, and

transportation. The science disciplines required include archeology (in some cases), biology, geology, horticulture, hydrogeology, and wetlands. Through its in-house resources, or through associations with other consultants, SCS provides these disciplines to its clients to complete landfill siting projects. SCS has worked extensively with local governments, governing boards, citizens groups, and regulatory agencies in siting landfill facilities.

Local governments and waste management companies ask SCS to perform a feasibility analysis for a prospective landfill development. SCS assesses the suitability of the site for landfill development and defines overall project economics. We have performed these analyses at locations across the U.S. and Canada. SCS has also performed land availability analyses for solid waste and sludge disposal in light of various regulations.

Several example projects are outlined below:

Orange County, Florida. SCS completed a comprehensive siting study for a new municipal solid waste landfill and supporting transfer stations for Orange County (Orlando Area). The study included an assessment of future solid waste generation and disposal characteristics, identification of candidate sites, site evaluations, and ranking of candidate sites. Geographical Information System (GIS) technologies were used to facilitate identification of candidate areas and sites, the site screening, and site evaluations. A 50-year planning horizon was established for the project. The project involved significant interaction with many departments within

Eastern Ohio, Confidential Client. SCS used overlay mapping to identify prospective landfill sites across an entire county. Based upon available information, physical inspections, and on-site drilling, we identified, scored, and ranked suitable sites.

Fulton County, New York. SCS performed a large landfill site selection effort for Fulton County, New York. Local political authorities and state technical representatives eventually approved the recommended site. The siting process involved developing screening and ranking criteria, evaluation of candidate sites, and development of recommendations. Representatives of the New York State Department of Environmental Conservation commented that this was the *first* thorough site selection effort in the state.

Hillsborough County, Florida, Southeast Landfill Capacity Expansion. SCS was retained to perform a landfill siting analysis on the nearly 2,000 acres of land owned by the County. SCS identified two potential areas for development of a new Class I landfill and prepared conceptual designs for each. Archeological, historical, flora and fauna, wetlands, hydrogeological, and geotechnical investigations were subsequently completed. The alternative areas were ranked and recommendations made to the Board of County Commissioners for selection of the new expansion area.

Jacksonville, Florida, Browning Ferris Industries (now Allied). BFI made an initial selection of a site to respond to an RFP issued by the City of Jacksonville to site, design, construct, and operate a new Class I landfill for the City. BFI retained SCS to evaluate the site relative to the Subtitle D landfill siting prohibitions and other siting restrictions, prepare conceptual designs based on regulatory setbacks and other considerations, and estimation of landfill capacity.



Perdido Landfill, Section 3B Expansion,
Escambia County, FL

Ohio, Chambers Development Company. SCS prepared a site selection report for Chambers Development Company, and submitted it to Ohio EPA and U.S. EPA. The study confirmed the developers' reasons for selecting a specific site, and discouraged re-locating this landfill.

Prince William County, Virginia. SCS conducted a greenfield landfill siting study for Prince William County for a new C& D disposal facility. The project involved developing county-specific screening and siting criteria, application of those criteria, identification of candidate areas and sites for siting the disposal facility. The process involved a citizens advisory committee, which served as

the liaison between the Board of Supervisors and County technical staff and SCS. The siting study successfully identified and ranked candidate sites, and included preliminary design and cost estimates for the preferred site.

LANDFILL PERMITTING AND EXPANSION DESIGN

A substantial portion of SCS's solid waste management projects involves preparation of design and permit applications for solid waste disposal facilities. Specific experience relative to landfill design, permitting and construction services is given in project profiles provided at the end of this section. SCS is a recognized expert in current and proposed solid waste regulations throughout the country and has excellent working relationships with state and federal regulatory agencies.

SCS has developed design documents, prepared permit applications, and negotiated permit conditions for landfill and other solid waste management facilities throughout the United States and abroad. Selected relevant projects are listed in Exhibit 3.

Exhibit 3. Representative SCS Landfill Projects

Landfill Expansion Projects	State	Waste Type	Liner Configuration Top to Bottom)	Size (acres)
Allied Waste Industries, Southwest Regional Landfill, Buckeye, Arizona	AZ	MSW	Geocomposite, 60 mil HDPE, compacted clay	240
Pinal County, Apache Junction Landfill	AZ	MSW	Geocomposite, 60 mil HDPE, compacted clay	80
City of San Diego, West Miramar Landfill	CA	MSW	Master plan for site development	264
Orange County, Prima Deshecha Landfill Master Plan	CA	MSW	Master plan for site development	545

Exhibit 3. Representative SCS Landfill Projects

Landfill Expansion Projects	State	Waste Type	Liner Configuration Top to Bottom)	Size (acres)
Stanislaus County Fink Road Landfill Master Plan	CA	MSW	Geocomposite, 60 mil HDPE, compacted clay	560
Citrus County Central Landfill Expansion	FL	MSW	Geocomposite, 60 mil HDPE, Geocomposite, 60 mil HDPE, compacted clay	6
DeSoto County, Class I Landfill, Zone 3	FL	MSW	Geocomposite, 60 mil HDPE, Geocomposite, 60 mil HDPE, compacted clay	6
Escambia County, Perdido Class I Landfill, Sections 3B and 3C	FL	MSW	Geocomposite, 60 mil HDPE, compacted clay	20
Hillsborough County, Southeast Landfill	FL	MSW Ash	Geocomposite, 60 mil HDPE, Geocomposite, 60 mil HDPE, compacted clay	147
Volusia County, Class I Landfill, North and East Cell Expansions	FL	MSW	Geocomposite, 60 mil HDPE, GCL, Geocomposite, 60 mil, GCLDouble	93
City of Wichita, Brooks Landfill	KS	MSW	Composite 60 mil HDPE, compacted clay	300
Frederick County, Cell 2A and 2B Landfill	MD	MSW	Geocomposite, 60 mil HDPE, GCL, Geocomposite, 60 mil HDPE, GCL	29
City of St. Joseph, Areas 1, 2 and 3, Free Property Landfills	MO	MSW	Composite, 60 mil HDPE, compacted clay	30
Omaha Public Power District, Ashfill	NB	Ash		
Mingo Junction, Wheeling-Pittsburgh Steel Corporation, Steubenville Mill Landfill	OH	Industrial	3-feet of compacted clay	30
Ross County, Mead Corporation Industrial Landfill	OH	Industrial	60 mil HDPE/compacted clay	90
Solid Waste Authority of Central Ohio (SWACO), Franklin County Sanitary Landfill, Columbus, Ohio	OH	MSW	Geocomposite, 60 mil HDPE, compacted clay	330
City of Beaumont, Lafin Road Landfill	TX	MSW	Geocomposite, 60 mil HDPE, GCL or Compacted Clay	186
City of Port Arthur, Landfill Vertical and Horizontal Expansion	TX	MSW	Geocomposite, 60 Mil HDPE, GCL or Compacted Clay	160

Exhibit 3. Representative SCS Landfill Projects

Landfill Expansion Projects	State	Waste Type	Liner Configuration Top to Bottom)	Size (acres)
Brunswick Landfill, Allied Waste Industries	VA	MSW Industrial	Geocomposite, 60 mil HDPE, compacted clay	33 24
Frederick County Landfill	VA	MSW	Geocomposite, 60 mil HDPE, Geocomposite, 60 mil HDPE, GCL	8
Prince William County Landfill	VA	MSW	Geocomposite, 60 mil HDPE, GCL, Geocomposite, 60 mil HDPE, compacted clay	8.5
Shenandoah County Landfill, Cell I	VA	MSW	Geocomposite, 60 mil HDPE, compacted clay, Geogrid reinforcement	10

LANDFILL CLOSURE DESIGN AND PERMITTING

Along with our landfill design and construction services, SCS also understands the long-term requirements to properly close a landfill



Fresh Kills Landfill Closure

and use it for beneficial purposes; capping, stormwater control, erosion control, LFG, leachate collection and management, re-vegetation, groundwater monitoring, mitigation of settlement, and environmental compliance. SCS has prepared closure designs for some of the largest closure projects in the world, including the Fresh Kills Landfill in New York City. SCS has prepared closure designs incorporating innovative final cover designs, use of light-weight fills, retrofitted side slope drainage configurations, leachate management systems, LFG controls, and end use plans.

SCS also offers clients post-closure care operation and maintenance through SCS Field Services O&M division. Typical post-closure service areas offered by SCS include the following:

- Final Cover System Monitoring and Maintenance
- Surface Water Monitoring and Drainage System Maintenance
- Gas and Vapor Extraction Systems Operation, Monitoring, and Maintenance

- Groundwater Sampling and Treatment System Operation, Monitoring, and Maintenance
- Odor and Air Emissions Monitoring, Investigations, Modeling and Remediation
- Regulatory Reporting and Compliance Management.

SCS has full, in-house technical capabilities including slope stability modeling (global and veneer), settlement estimates, hydraulic and hydrologic modeling for control of stormwater runoff, water balances and leachate generation estimates, design erosion controls, vegetative cover designs, comparisons of cover design options, constructability reviews and related areas. As landfills have the potential for end-uses, SCS is a leader in the industry in promoting and designing closures that allow active and passive end-uses that are environmentally safe and cost effective. Successful end use projects completed by SCS have included recreational facilities, resort hotels and conference centers, golf courses, and passive parks.

Selected landfill closure projects completed by SCS are presented in Exhibit 4:

Exhibit 4. Representative SCS Landfill Closure Projects

Project Location and Facility Name	State	Size (acres)
City of Oracle Page-Trowbridge Ranch Landfill Closure	AZ	4
City of Tucson Los Reales Landfill West Side Closure	AZ	30
Navajo County, Lone Pine Landfill	AZ	60
Pinal County, Page-Trowbridge Ranch Landfill	AZ	3.2
City of Los Angeles Bishops Canyon Landfill	CA	45
Salinas Valley Solid Waste Authority Lewis Road Landfill	CA	15
Butte County, Neal Road Landfill	CA	33
Norcal, City of Auburn Landfill	CA	20
Stanislaus County, Fink Road Landfill	CA	18
City of Riverside, Tequesquite Landfill	CA	40
Republic Services, Inc., Potrero Hills Landfill	CA	150
Republic Services, Inc., West Contra Costa	CA	60
DeSoto County Landfill, Zone 1	FL	3
Escambia County Beulah Road Landfill	FL	100
Hillsborough County Pleasant Grove Class I Landfill	FL	11
Lake County Lady Lake Landfill	FL	32
Polk County North Central Class III Landfill	FL	11
Volusia County Plymouth Ave. Class I Landfill	FL	41
Regional Waste System Balefills, Portland	ME	40
City of Las Vegas, Republic Services' Sunrise Mountain Landfill	NV	800
City of New York Edgemere Landfill	NY	150
City of New York Fountain Avenue Landfill	NY	280
City of New York Fresh Kills Landfill, Sections 3/4 and 2/8	NY	140

Exhibit 4. Representative SCS Landfill Closure Projects

Project Location and Facility Name	State	Size (acres)
City of New York Pennsylvania Avenue	NY	90
City of Oxford Sanitary Landfill	OH	25
Department of Energy (DOE) facilities, X-749 and X-749A, Portsmouth Gas Diffusion Plant, Piketon, Ohio	OH	12

LEACHATE TREATMENT SYSTEM DESIGN AND PERMITTING

SCS staff has been involved in design of leachate treatment systems in many regions of the country. SCS has employed various technologies including extended aeration, nitrification/denitrification, activated carbon, constructed wetlands, and chemical treatment to address site-specific leachate characteristics and site conditions. The selection of a treatment approach is dependent on many variables, including site location, leachate quality and quantity, availability of utilities, discharge limitations, and environmental regulations. Because of variability in leachate quality, treatment approaches must be evaluated on a case by case basis. Several relevant projects are listed below:

Fort Gordon, Georgia. Design, permitting, and construction of a metals pretreatment facility to treat leachate from the 17th Street Landfill, Fort Gordon, Georgia.

Hillsborough County, Florida. Feasibility study, design, permitting, and construction for 60,000 gallon per day (gpd) leachate treatment and reclamation facility, Southeast Landfill, Hillsborough County, Florida. The treatment facility includes 575,000-gallon storage tanks, powdered-carbon activated sludge, nitrification/ denitrification, pH adjustment, and chlorination treatment units, and spray irrigation of treated effluent.

Portland, Maine. Design, permitting, and construction of a wetlands treatment system for contaminated groundwater beneath the Regional Waste System, closed Balefills. The system included a multiple stage treatment system to treat specific contaminants in the groundwater.

Volusia County, Florida. Design, permitting, and construction for major modifications to the leachate management systems at the Tomoka Farms Road Landfill, including new 5 million gallon capacity, double-lined, leachate storage basins recirculation/ evaporation system and new conveyance systems.

STORMWATER MANAGEMENT

Stormwater management is an important consideration for manufacturers, solid waste facility owners, and real estate developers alike. SCS designs and helps implement simple, effective approaches to minimizing and controlling erosion, sediment, and contaminant discharges from new construction and established facilities.

We also sample and analyze stormwater discharges to confirm compliance with government regulations, and perform routine audits to evaluate compliance with the facility Stormwater Pollution Prevention Plan (SWPPP).

Regulations and site-specific permits normally designate the maximum levels of contaminants allowed for specified chemicals and inorganics. SCS has identified the required levels of water quality protection and designed modifications to comply with these requirements.

Landfill environments present unique challenges for stormwater management systems. Settlement, slope length, elevation drop, energy dissipation, sedimentation, and erosion control are several of the factors we consider in preparing stormwater management designs. Specific stormwater management services provided include:

- Erosion & sediment control plans & specifications
- National Pollutant Discharge Elimination System (NPDES) permitting
- Stormwater pollution prevention plans
- Stormwater monitoring plan implementation
- Stormwater compliance inspections & reports
- Compliance training for client personnel



Sideslope Bench Intercept Drain, Maryland

CONSTRUCTION ENGINEERING SERVICES



Big Bend Power Plan Ash Holding Basin
Tampa Electric Company

A critical element of any construction project is to verify that the final product meets the design requirements and complies with drawings, specifications, permit conditions and designer's intent. This is a necessary step for both documentation and certification purposes, and to give the owner and regulators confidence that the work has been completed correctly.

SCS provides the full-range of construction engineering and quality assurance services for construction of all elements of municipal and hazardous waste landfills, and solid waste facilities, remediation projects involving groundwater and soil extraction and treatment, LFG extraction and migration controls, and other environmental construction projects.

We offer a well-trained staff of field engineers and technicians that serve as resident engineers/owner's representatives, soil and geosynthetics technicians, and LFG and groundwater well inspectors. Our experience encompasses construction projects of all sizes that include low hydraulic conductivity soil liner and cover systems, granular drainage media, the various types of geomembrane liners, geocomposite drainage products, geosynthetic clay liners, general earthwork, concrete, and mechanical and electrical systems.

SCS routinely provides the following construction services on municipal type solid waste assignments:

- Bidding assistance for construction services
- Bid evaluations
- Pre-construction meetings
- Full-time resident engineering services
- Periodic inspection services
- Construction documentation
- Liner Quality Assurance/Quality Control (QA/QC)

- Shop drawing review
- Field engineering
- Closure certification.

Landfill construction service projects are highlighted below:

Cochise County, Arizona, Eastern Regional Landfill. Provided full-time resident engineering and liner CQA services for an 8-acre Subtitle D base lining system, storm water channels, storm water retention basin, riprap erosion control, and a leachate evaporation pond (LEP).

New Cut, Carrs Mill, and Alpha Ridge Landfills Landfill Closure. Provided full-time resident engineering and construction engineering services. The construction was completed in 2001. Construction change orders (not including add-on tasks requested by the County) were less than 5 percent of the original bid.

City of Suffolk, Virginia. Provided full-time resident engineering and CQA services during the closure construction of the Hosier Road Landfill.

DeSoto County, Florida. Provided full-time resident engineering and liner CQA for the 6-acre Class I landfill expansion, and 3-acre landfill closure project.

Escambia County, Florida. Provided full-time resident engineering and liner CQA services during construction of the 100-acre Beulah Landfill closure project.

Escambia County, Florida. Provided full-time resident engineering, liner CQA, and construction certification services for expansion of the Perdido Landfill, Section 3a (9 acres) and 3b (11 acres).

Fauquier County, Virginia. Provided full-time CQA service during construction of the first new cell for Corral Farm Landfill.

Frederick County, Maryland. Provided full-time resident engineering during construction of Cell 2A and Cell 2B of the Reichs Ford Road Landfill, which are 14 acres each. Services included bid assistance, (e.g. pre-bid meeting, addenda preparation bid review and award recommendation): review of contractor submittals; periodic inspection of contractor work progress; attendance at monthly progress meetings; inspections of completed work elements; and clarification of design elements.

Hillsborough County, Florida. Provided full-time resident engineering, liner CQA, and construction certification services for the 11-acre, Section 7, expansion of the Southeast Landfill.

Montgomery County, Maryland. Designer and construction engineer for the Oaks Landfill closure, which covers an area of 130 acres. SCS provided full-time resident engineer and construction engineering services. The construction was completed in 2001. Total construction change orders for both phases of this \$10 million construction project were less than 1 percent of the total cost.

Montgomery County, Maryland. For nearly 10 years SCS has served as the County's owner's representative, resident engineer for CQA and contract administration services on the \$70 million vertical expansion and subsequent closure projects at the Oaks Landfill. Through the first 4 years, construction change orders were less than 2 percent. In many cases, SCS negotiated with the contractors to control change orders.

Prince William County Virginia. Provided full-time resident engineer and CQA services during the construction of Cell Part 2 in Phase I. Construction work for this 9-acre sanitary landfill cell was completed in 2001. The only significant change orders are due to additional work outside the limits of the cell construction that were requested by the County. Inclement weather during December and January delayed construction completion, but the work was ultimately completed within budget.

Shenandoah County, Virginia. Provided full-time resident engineering and liner CQA during the construction of the 10-acre Cell 1. The construction was completed and the certification report was accepted by VDEQ in March 2003.

Volusia County, Florida. Provided full-time resident engineering and liner CQA services during the construction of the 33-acre Class I landfill expansion at the County's Tomoka Farms Road Landfill.

Lincoln, Nebraska. Prepared the construction documentation report for submittal to the NDEQ for the North 48th Street Landfill LFG migration control system.

Omaha Public Power District. SCS provided construction plans, specifications, and bid documents for the construction of the closure cap at the Ft. Calhoun Nuclear Power Station's Process Water Landfill. SCS also prepared the construction documentation report for submittal to the NDEQ.

Waste Management, Inc. SCS prepared the construction documents, assisted with bid preparation and contractor selection, and provided CQA for the closure of Farmer's Landfill located near Chillicothe, Missouri. SCS prepared the construction documentation report for submittal to MDNR.

City of St. Joseph, Missouri. SCS prepared the construction documents, assisted with bid preparation and contractor selection services for the construction of Stages 1, 2, 3, and 4 of Area 3 at the City's landfill. Stage 1 was completed prior to Subtitle D and included a soil liner. Stage 2 was constructed by a general contractor using typical procurement methods. Stages 3 and 4 were constructed by City forces with the use of a contractor to install the geosynthetics.

WATER QUALITY AND ENVIRONMENTAL PROJECTS

SCS has substantial experience in all aspects of water quality and environmental issues related to landfills. SCS provides expertise in hydrogeology, environmental monitoring and water quality assessment, landfill closure assessment, and landfill closure design and remediation. SCS has performed environmental engineering services at numerous sites around the nation and in Florida

facility, which was closed in 1980. The facility has been investigated under the U. S. EPA's Superfund Program. The Hillsborough Heights Landfill consists of two separate disposal areas comprising approximately 72 acre, which were closed in 1984. SCS has been involved with these facilities since 1985. During that time, SCS has conducted closure assessments, prepared post-closure care permit renewals for the facilities, conducted environmental investigations, designed improvements to the landfill cover and drainage systems, conducted LFG migration investigations, designed LFG controls for the landfill areas, prepare air permits, and provided construction services for various projects.

Pleasant Grove Landfill, Florida. The Pleasant Grove Landfill was constructed by the Hillsborough County in the 1960's and 1970's on leased property. One of the County's major recreational reservoirs ultimately was constructed just down gradient of the landfill. The landfill received Class I and various industrial wastes. The landfill was never officially closed. Over the years, the facility became overgrown and was not maintained. Various waste products were discovered discharging to the surface during site inspections, which resulted in regulatory action by the Florida Department of Environmental Protection. SCS was retained to conduct a contamination assessment of the site, prepare a remedial closure design, and provide construction services. The remediation and closure involved removing waste drums and exposed sludges, regrading the site to promote drainage, and installation of a geosynthetic cap system. The 11-acre closure project was successfully completed in 2000.

Prince William County, Virginia. Provided groundwater statistics and data evaluation, and reporting for the PWC Landfill. Prepared permit amendment for GPS, and have begun assessment of corrective measures assessment (CMA). Installed and tested additional CMA wells to delineate the nature and extent of impacted groundwater.

Prince George's County, Maryland. SCS was hired to oversee the groundwater monitoring program at the Browns Station Road Landfill in 2001. Tasks assigned included specifying, purchasing, and installing dedicated sampling pumps, sample collection and analysis, statistics and reporting. Reporting requirements included statistical evaluation of the data and direct comparison to Drinking Water Standards.

Fairfax County, Virginia, I-95 Sanitary Landfill. Provided groundwater statistical evaluation and consulting, reporting, and negotiations with the Virginia Department of Environmental Quality (VDEQ). Performed semi-annual groundwater statistical evaluations and assisted with other solid waste groundwater issues as needed. Other tasks included development of groundwater protection standards, permit amendment review, VDEQ negotiations, and human health risk assessment.

Stump Dump Closed CDD Landfill, Virginia. Provided groundwater sampling and analysis, statistical evaluations, reporting, VDEQ Negotiations, permit amendment update, variance petition, groundwater protection standards, LFG monitoring and reporting for site in Great Fall.

Upper Occoquan Sewage Authority Industrial Landfill, Virginia. Provided groundwater consulting, statistical evaluations, reporting, well installation and development, and assisted USOA with all facets of the solid waste groundwater monitoring program for its facility located in Centreville.

Town of Marion, Virginia. Provided groundwater sampling, analysis, statistics, reporting, and negotiations with the VDEQ to approve existing groundwater monitoring system.

Hercules Incorporated, Closed Industrial Landfill, Virginia. Provided groundwater sampling, analysis, statistics, and reporting for facility in Covington. Also, prepared permit amendment for Groundwater Protection Standards (GPS). Received approval of a Variance Petition to reduce the analyte list.

Cumberland County, Virginia. Multiple County Landfill Facilities, Groundwater Statistics and Reporting

Accomack County, Virginia. Provided groundwater sampling, analysis, statistics, and reporting for multiple county landfill facilities.

Chesterfield County, Virginia. Provided groundwater sampling, analysis, statistics, and reporting for multiple county landfill facilities.

C-K Company, South Boston, Virginia. Provided groundwater monitoring, statistics, reporting, closure, and post-closure care services for a hazardous waste landfill.

Harford County, Maryland. Provided groundwater statistics, consulting, and reporting for the Harford Waste Disposal Facility (Scarboro). Tasks also included updating the facility Groundwater Monitoring Plan and completing semi-annual data evaluation and statistical reviews.

Montgomery County, Maryland. Provided groundwater statistics and reporting for the Oaks Landfill. SCS performed data analysis, statistics, and reporting for multiple County-owned solid waste facilities.

Howard County, Maryland. Provided groundwater consulting and remediation system design for the New Cut, Carrs Mill, and Alpha Ridge Landfills.

3 LFG COLLECTION & CONTROL

SCS has expertise in the area of LFG management. LFG management is a specialized engineering discipline. SCS has been a leader in this area since the inception of the LFG industry. The first project the firm performed upon inception in 1970 was a LFG project. The firm has earned an international reputation in this specialty area, and is one of the few consulting firms in North America with a track record in LFG management. SCS has completed over thousands of LFG projects throughout North America and internationally.

SCS LFG projects have included utilization feasibility studies, New Source Performance Standards (NSPS) and other LFG emission and migration monitoring and control system designs, LFG recovery system design and construction, LFG modeling, Title V permitting, LFG to energy (LFGE), construction, system operation and maintenance, and technical support to the United States Environmental Protection Agency (U.S. EPA) on LFG issues. Several relevant LFG projects are listed below. SCS's LFG to energy projects are discussed in Section 4:

LFG GENERATION AND RECOVERY PROJECTS

Exhibit 5 identifies more than 200 landfill gas generation/recovery projections prepared by SCS Engineers since 1996. Projections prepared prior to 1996 are not listed. The landfills range in size from less than 0.1 million tonnes to over 100 million tonnes. You will note that in addition to our experience in the United States, SCS has prepared landfill gas generation/recovery projections for landfills in Korea, Hong Kong, Thailand, the Philippines, Taiwan, Australia, New Zealand, Mexico, Columbia, Peru and Chile.



Jamacha Landfill Microturbine
Spring Valley, California

Exhibit 5 indicates whether the landfill gas generation/recovery projection was prepared to support an energy recovery project, to satisfy a regulatory requirement, or to satisfy some other purpose. For landfills which are closed, Exhibit 5 identifies waste in-place. For landfills which are open, Exhibit 5 identifies the design capacity of the landfill.

**Exhibit 5. Landfill Gas Generation/Recovery Projections
Recently Prepared By SCS Engineers**

Landfill Name	Location	Landfill Size Metric Tonnes	Energy Recovery	Regulatory	Other
Group 79	Kamphaengsaen, THAI	10,000,000	◆		
Hartford	Connecticut, USA	3,800,000	◆		
Heaps Peak	California, USA	37,000		◆	
Hesperia	California, USA	15,100,000		◆	
Hickory Hills	South Carolina, USA	9,100,000	◆		
Hidden Valley	Washington, USA	4,600,000	◆		
Highgrove	California, USA	3,700,000	◆		
HMDC-Balefill	New Jersey, USA	13,000,000	◆		
HMDC-Kearny	New Jersey, USA	16,900,000	◆		
HMDC-Kingsland	New Jersey, USA	8,800,000	◆		
Huayoloro	Lima, PERU	28,840,000	◆		
Huntsville	Alabama, USA	2,100,000	◆		
Huskisson	New South Wales, AUS	500,000		◆	
Industrial Landfill Reclaiming	New Jersey, USA	5,600,000	◆		
Johnson County	Missouri, USA	29,000,000	◆		
Keumgo-Dong	Taejon, KOREA	5,000,000	◆		
Kinsley	New Jersey, USA	8,100,000	◆		
Lacy Lakeview RDF	Texas, USA	4,200,000	◆		
Lancaster	California, USA	9,500,000			
Lanchester	Pennsylvania, USA	9,300,000	◆		
Landers	California, USA	4,500,000		◆	
LaSalle	Louisiana, USA	9,300,000	◆		
Lenwood	California, USA	330,000		◆	
Live Oak	Georgia, USA	13,000,000	◆		
Lopez Canyon	California, USA	15,000,000	◆		
Los Colorados	Santiago, CHILE	130,000,000	◆		
Lowell	Massachusetts, USA	2,000,000	◆		
Lowry	Colorado, USA	6,400,000			
Luceme	California, USA	48,000		◆	
Magnolia Sanitary RDF	Louisiana, USA	13,000,000	◆		
Main Avenue	Massachusetts, USA	1,100,000	◆		
McCarty Road	Texas, USA	45,000,000	◆		
McCommas Bluff	Texas, USA	71,200,000	◆		
Medellin	Medellin, COL	8,730,000	◆		
Medley	Florida, USA	17,000,000	◆		
Middlesex Cty Utilities Authority	New Jersey, USA	14,000,000	◆		

**Exhibit 5. Landfill Gas Generation/Recovery Projections
Recently Prepared By SCS Engineers**

Landfill Name	Location	Landfill Size Metric Tonnes	Energy Recovery	Regulatory	Other
Mid-Valley	California, USA	25,000,000	◆	◆	◆
Milliken	California, USA	13,000,000	◆	◆	◆
Miramar	California, USA	47,000,000	◆		◆
Mission Hills (Mountaingate)	California, USA	19,400,000	◆		
Monmouth County	New Jersey, USA	17,000,000	◆		
Monroeville	Pennsylvania, USA	12,000,000	◆		
Moronogo	California, USA	340,000		◆	
Muskogee RDF	Oklahoma, USA	3,600,000	◆		
Needles	California, USA	48,000		◆	
Nelson Gardens	Texas, USA	13,000,000	◆		
Newberry	California, USA	31,000		◆	
Newby Island	California, USA	35,000,000	◆		
North Center	Arizona, USA	1,800,000		◆	
North Waikato	Waikato, NZ	25,000,000	◆		
Northern Tier	Pennsylvania, USA	2,500,000	◆		
Northwest Regional	Arizona, USA	39,000,000		◆	
Oakridge	South Carolina, USA	9,900,000	◆		
Olinda Alpha	California, USA	62,000,000	◆	◆	
On Nuch	Bangkok, THAI	1,500,000	◆		
Operating Industries, Inc.	California, USA	27,000,000	◆	◆	◆
Ostrom Road	California, USA	7,600,000		◆	
Otay	California, USA	2,000,000		◆	
Ox Mountain	California, USA	27,000,000	◆		
Palmetto	South Carolina, USA	37,000,000	◆		
Parker	California, USA	37,000		◆	
Payatas	Payatas, PHILIPPINES	4,000,000	◆		
Pecan Grove RDF	Mississippi, USA	4,500,000	◆		
Pen-Rob	Arizona, USA	10,000,000		◆	
Phelan	California, USA	430,000		◆	
Piedmont	North Carolina, USA	3,800,000	◆		
Pigeon Point	Delaware, USA	5,500,000	◆		
Pine Ridge	Mississippi, USA	6,200,000	◆		
Plantation Oaks RDF	Mississippi, USA	7,800,000	◆		
Plunge Creek	California, USA	2,800,000		◆	
Prados de la Montana	Mexico City, MX	3,600,000	◆	◆	◆
Prairie Bluff	Mississippi, USA	15,000,000	◆		

**Exhibit 5. Landfill Gas Generation/Recovery Projections
Recently Prepared By SCS Engineers**

Landfill Name	Location	Landfill Size Metric Tonnes	Energy Recovery	Regulatory	Other
Prairie Bluff RDF	Mississippi, USA	11,000,000	◆		
Prima Deshecha	California, USA	39,000,000	◆	◆	
Prince William County	Virginia, USA	4,600,000	◆		◆
Ramona	California, USA	300,000		◆	
Redruth	Canterbury, NZ	500,000	◆		
Rio Rico	Arizona, USA	520,000		◆	
Rosedale	Auckland, NZ	2,500,000	◆		
Rosenberg	Texas, USA	2,400,000	◆		
Rotorua	Bay of Plenty, NZ	1,000,000	◆		
Rumpke	Ohio, USA	25,000,000	◆		
Rutherford County	Tennessee, USA	2,300,000	◆		
Sai Tso Wan	Kowloon, HONG KONG	1,600,000	◆		◆
Salem Waste Disposal	Alabama, USA	17,000,000	◆		
Salt River	Arizona, USA	7,900,000		◆	◆
San Marcos	California, USA	10,000,000		◆	◆
San Mateo	San Mateo, PHILIPPINES	5,000,000	◆		
San Timoteo	California, USA	15,000,000	◆	◆	◆
Sang-Am	Seoul, KOREA	165,000,000	◆		
Security	Texas, USA	11,000,000	◆		
Security	Texas, USA	6,000,000	◆		
Semi Prodeso	Monterey, MX	7,500,000	◆		
Shafter-Wasco	California, USA	1,200,000		◆	
Shreveport	Louisiana, USA	12,000,000	◆		
Sierra Estrella	Arizona, USA	15,000,000		◆	
Simi Valley	California, USA	16,000,000	◆		◆
Skyline	Texas, USA	33,000,000	◆		
Sonoita-Elgin	Arizona, USA	47,000		◆	
Sotts Creek	New South Wales, AUS	1,000,000	◆		
South Chollas	California, USA	1,500,000	◆		
South Dade	Florida, USA	9,000,000	◆		
South Hills	Pennsylvania, USA	10,000,000	◆		
South Morang	Victoria, AUS	1,000,000		◆	
Southern Plains	Oklahoma, USA	4,600,000	◆		
Spokane	Washington, USA	3,200,000	◆		
Springhill Sanitary	Florida, USA	17,000,000	◆		
Sudokwon	Inchon, KOREA	64,000,000	◆		

**Exhibit 5. Landfill Gas Generation/Recovery Projections
Recently Prepared By SCS Engineers**

Landfill Name	Location	Landfill Size Metric Tonnes	Energy Recovery	Regulatory	Other
Summerhill	New South Wales, AUS	500,000	◆		
Sunshine Canyon	California, USA	105,000,000	◆		
Superior	Georgia, USA	6,700,000	◆		
Superior Greentree	Pennsylvania, USA	16,000,000	◆		
Sussex Inlet	New South Wales, AUS	500,000		◆	
Sycamore	California, USA	5,500,000		◆	
Tacoma	Washington, USA	5,400,000	◆		
Taft	California, USA	4,800,000		◆	
Tajiguas	California, USA	6,700,000	◆		
Taunton	Massachusetts, USA	3,700,000	◆		
Temple RDF	Texas, USA	2,700,000	◆		
Tiachung	Tiachung, TAIWAN	3,200,000			◆
Tontitown	Arkansas, USA	9,600,000	◆		
Tri-Cities	Arizona, USA	10,000,000		◆	
Trona-Argus	California, USA	240,000		◆	
Twenty-Nine Palms	California, USA	490,000		◆	
Twenty-Seventh Avenue	Arizona, USA	7,600,000	◆		◆
Two Pine	Arkansas, USA	9,200,000	◆		
Ulladulla	New South Wales, AUS	750,000		◆	
Union County	Arkansas, USA	5,700,000	◆		
Valley	Pennsylvania, USA	12,000,000	◆		
Victorville	California, USA	1,600,000		◆	
Villa Park	California, USA	860,000		◆	
Virginia Beach	Virginia, USA	5,800,000	◆		
Visalia	California, USA	5,500,000	◆		
Volusia	Florida, USA	8,500,000	◆		
Webster Parish	Louisiana, USA	8,600,000	◆		
West Camden	Mississippi, USA	16,000,000	◆		
West Camden	Tennessee, USA	13,000,000	◆		
West Nowra	New South Wales, AUS	2,200,000	◆		
Westmoreland	Pennsylvania, USA	2,900,000	◆		
Westside	Texas, USA	11,000,000	◆		
Williamson County RDF	Texas, USA	8,100,000	◆		
Woodside RDF	Louisiana, USA	22,000,000	◆		
Woodville	California, USA	15,000,000	◆		
Yermo	California, USA	94,000		◆	

**Exhibit 5. Landfill Gas Generation/Recovery Projections
Recently Prepared By SCS Engineers**

Landfill Name	Location	Landfill Size Metric Tonnes	Energy Recovery	Regulatory	Other
Yolo County	California, USA	12,000,000	◆		
York Valley	Nelson, NZ	2,000,000		◆	
Yuba Sutter	California, USA	1,900,000	◆		
Yucaipa	California, USA	470,000		◆	

LFG COLLECTION AND CONTROL

Amesbury, Massachusetts. Engineering Evaluation of Existing LFG Control System and Design Improvements, Titcomb Pit.

Carson, California. Active LFG Control System for a Drive-In Theater, and subsequent design modifications for LFG use.

Lanchester Landfill. Pennsylvania Evaluation of Existing LFG Control System and Flare and Design Improvements.

Long Beach, Modesto, Burbank, Commerce, and San Diego, California. Perimeter Air Injection Systems (Air Curtains), various clients and locations.

Lorton, Virginia. Protection Systems for a prison situated near a closed landfill, including air injection, extraction, ventilation and sensor detection systems.

Louisville, Kentucky. Perimeter Collection Well Field (in native soil), Lees Lane Landfill.

Pittsburgh, Pennsylvania. LFG Control and Utilization at Parkway Center Mall..

Various Locations throughout the United States and Internationally. Perimeter LFG Collection and Flaring.

LFG O&M

Carson, California. Monitoring, Adjustment, Maintenance and Reporting for Six Screen Drive-In Theater Protection Facilities (50 LFG collection wells) and Truck Sales and Service Center Protection Facilities (14 LFG collection wells)

Lorton, Virginia. Operation, Monitoring and Maintenance for Air Injection and Methane Sensor/Ventilation Systems, I-95 Landfill (64 air injection wells). In addition, SCS Field Services, a division of SCS Engineers, specializes in the construction, operation, maintenance, and monitoring of LFG recovery and control systems

Monmouth County, New Jersey. Operation and Maintenance (O&M) Oversight and Trouble-Shooting for a LFG Extraction/Flaring System and for an Odor Control System.

Oceanside California. Monitoring, Adjustment, Maintenance and Reporting for Protection Facilities (43 LFG collection wells), Mission Avenue Landfill.

Sun Valley, California. Collection Header Replacement, Penrose Sanitary Landfill (20 LFG collection wells).

Various Locations. Monitoring and Reporting of Passive LFG Ventilation/Membrane Protection Systems including the Alpine Village Inn and Market, Torrance, California; Hyundai Office Park, Gardena, California; Goodyear Airship Operations, Gardena, California; and Bixby Market Place, Long Beach, California.

SCS-FS O&M Services Provided	No. of Landfills
LFG O&M	180
Surface Emission Monitoring	108
Groundwater and Leachate Monitoring	22
Leachate and Groundwater Pump and Treat O&M	14
LFGE Plant O&M	6
Air Injection System O&M	11
Post-Closure Care	12

LFG RECOVERY SYSTEM CONSTRUCTION

SCS's Field Services provides design-build and construction of LFG recovery systems, including the installation of well fields, blowers, standby flares, etc. Representative LFG recovery facility construction projects are as follows:

Detroit, Michigan. Construction/Installation of LFG Collection System, Riverview Landfill.

Escambia County, Florida. Construction of LFG Collection System (53 extraction wells, 15,000 feet of piping and construction of the recovery facility), Perdido Landfill. This site received SWANA's silver award for LFG utilization (direct use of the LFG in industrial boilers).

Johnston, Rhode Island. Construction/Installation of LFG Collection System (extraction wells, collection header, condensate handling system), earthwork and grading, drainage, and miscellaneous upgrading and repairs, Central Landfill.

Lewisville, Texas. Construction/Installation of LFG Collection System, trenching, piping, condensate tanks, DFW Landfill.

Mount Holly, New Jersey. Construction/Installation of LFG Collection System (12,000 ft. of header piping and condensate tank) L & D Landfill.

Phoenix, Arizona. Construction of LFG Collection Systems (120 extraction wells, 17 horizontal extraction wells, 30,000 feet of piping, 39 condensate drains, and blower/flare stations at three landfills), Salt River Landfills.

San Diego, California. Construction of LFG Collection and Flaring System (200 extraction wells, 73,000 feet of piping, automatic condensate handling system, three blowers and two flares), Miramar Landfill. This site received SWANA's bronze award for LFG utilization.

Uniontown, Ohio. Construction/Installation of LFG Collection System, USEPA Superfund cleanup site emergency response effort, Industrial Excess Landfill.

LANDFILL GAS CROSS-COUNTRY PIPELINES

SCS is experienced in the design, construction, operation and maintenance of landfill gas cross-country transmission pipelines, including high and low pressure conveyance systems (motors, compressors and blowers), operational and alarm system controls between the LFG supplier and the end user, metering systems, gas treatment systems, and communication systems.

All of the HDPE fusion technicians utilized by SCS have completed the training required and are certified under the provisions set forth under DOT 192.283 and 192.285. SCS pipeline employees are Registered Flaggers by the American Traffic Safety Services Associated for traffic control during transmission line projects through public transportation areas. SCS utilizes the McElroy Track Star 500 fusion machine on all DOT regulated pipeline projects. The Track Star 500 is self-contained, self-propelled, all-terrain hydraulic fusion machines that will butt fuse all pipe sizes from 6-inch IPS – 18-inch DIPS. It is a computer-controlled machine that features programmable multiple pressure set points and performs pressure calculations, with drag compensation. It also contains an integral data-logging feature that allows us to provide the client with a printout of each butt weld on the pipeline.

Representative pipeline design, build, operation and maintenance projects are as follows:

ALZA Landfill Pipeline, Mountain View, California. The project involved the design and construction of a 1.5 mile LFG pipeline mostly in City streets. The pipeline serves three buildings conveying approximately 1,100 scfm of landfill gas. Construction was completed in August 2005.

Boral Bricks LFG Transmission Pipeline, Union City, Oklahoma (southwest of Oklahoma City). The project included the design, permitting, and installation of approximately 2 miles HDPE SDR 17 pipe, a gas pretreatment treatment system, and compressor station. SCS provided complete turnkey services for the project. The transmission line connects the new Boral Brick manufacturing facility kilns to the OEMA Landfill. The pipeline was installed in a rural setting

and included three roadway crossings and one railroad crossing. Directional drilling and trenching techniques were used for installation of the pipeline. This transmission line did not include any condensate sumps or traps and was designed as a “piggable” line with pig launching/receiving facilities at both ends of the transmission pipeline.

Bradley/Penrose Landfill Pipeline, Los Angeles, California. The project involves the operation and maintenance a 2,500 scfm, 5 mile LFG pipeline, mostly in City streets. SCS maintains the pipeline and compressor plant.

Cape May County Landfill Pipeline, Woodbine, New Jersey. The Cape May County Municipal Utilities Authority (CMCMUA), Zahren Alternative Power Corporation (ZAPCO), and SCS collaborated on development of a landfill gas energy recovery project at the CMCMUA’s Environmental Complex in Cape May County, New Jersey. The project was awarded the gold medal in the LFG utilization category of SWANA’s 2000 Excellence in Solid Waste Management Awards program. A pipeline was designed by SCS to transport LFG from the Landfill to the Woodbine Developmental Center (WDC), located approximately 1.2 miles from the flare facility site. The pipeline was sized for 750 scfm and includes 10-inch and 12-inch HDPE pipe. An innovative condensate management system was developed for the Project. The LFG is not dehydrated nor are pumps needed to manage the condensate that collects at the low points. Instead, pressure in the pipeline is used to push the condensate back to the blower inlet header via dedicated 2-inch HDPE lines.

Fort Smith Landfill Gas Transmission Pipeline, Fort Smith, Arkansas. NEO Corporation retained SCS to design, construct and operate a LFG collection and transmission system at the Fort Smith Landfill. In the design, it was important to maximize the collection efficiency of this system because the site consisted of less than 3.0 million cubic yards of waste in two separate waste hills. SCS designed and constructed a mile long 10-inch, 1,400 scfm HDPE transmission and distribution line to two large industrial gas users adjacent to the City’s property full compliance with DOT and state transmission line requirements. MacSteel, the primary customer, uses the LFG in pre-heating its steel and Owens Corning uses it in its manufacturing process. SCS was responsible for design, CQA documentation, right-of-way acquisition, permitting for the collection system, blower/flare complex, and transmission lines. SCS Field Services has performed most of the construction of the collection and distribution systems and operated the system from startup in 1997 to 2002 when NEO internalized operations.

Garland LFG Transmission Pipeline, Garland, Texas. The project included the installation of a landfill gas transmission pipeline consisting of approximately 14,700 linear feet of 16-inch HDPE SDR 21 and SDR 11 piping. The pipeline connects the LFG utilization facility at the Castle Road Landfill to an energy recovery application at the City of Garland Wastewater Recycling Facility. The project included a total of approximately 850 linear feet of directional drilling. Six hundred linear feet was bored underneath Rowlett Creek at a depth of 40 - 60 feet below bank grade level. Additionally, a smaller branch of Rowlett Creek and a railroad spur line were crossed. The work was conducted along the Rowlett Creek watershed in a nature preserve area owned by the City of Garland, TX and the City of Dallas, TX. The work also included the installation of 10 condensate sumps, of which 4 are pneumatically operated. In addition to the 16-inch HDPE, a 2-inch HDPE SDR 11 condensate line and a 2-inch HDPE SDR 9 compressed air line was installed the entire length of the pipeline. The directional drilling included the

installation of both the 16-inch HDPE transmission line as well as both of the 2-inch HDPE lines through the bore.

Los Reales LFG Transmission Pipeline, Tucson, Arizona. The project included the installation of approximately 19,200 linear feet of 14-inch HDPE SDR 21 piping and 10 moisture knockouts. The transmission line connects the LFG utilization facility at the Los Reales Landfill to the Tucson Electric power plant. The pipeline was installed through environmentally sensitive areas with protected species of flora and fauna. The installation included approximately 800 linear feet of jacking and boring underneath Interstate 10, Valencia Road/Benson Highway, and a main railroad line.

MCUA Landfill Pipeline, East Brunswick, New Jersey. SCS Engineers, PC (SCS) was retained by NERC - Middlesex Generating Co. in 2000 – 2002 to assist with the design and permitting of a 6 mile LFG pipeline that connects three landfills and transports 6,000 cfm of LFG to a 20-megawatt power plant in Middlesex County, NJ. Middlesex County Utilities Authority (MCUA) owns and operates the largest landfill in New Jersey, NERC connected the MCUA, Edison and ILR landfills with a pipeline and constructed a 20 MW combined cycle electric power plant at the MCUA wastewater treatment plant. This project completed construction in 2001. SCS designed the pipeline in conjunction with the compressor/dryer stations provided by NERC. The pipeline included two major river crossings, several stream crossings, an above ground Superfund site crossing, a rail line crossing and many road crossings.

Mountaingate Landfill Gas Transmission Pipeline, Los Angeles, California. The project involves the operation and maintenance of a 2,500 scfm LFG compression/treatment plant and a 5.5 mile pipeline located in City streets. SCS has operated the pipeline since May 2003.

NVWMA Pipeline, Napa, California. The project involved the design of a 1.5 mile LFG pipeline sized to convey 300 scfm. Construction was completed in June 2005.

Onslow County Leachate Pump Station and Force Main, Jacksonville, North Carolina. The project included the installation of approximately 10,700 linear feet of 4-inch ductile iron pipe, HDPE pipe, replacement of existing leachate pumps, modification to existing pump controls, 2,660 linear feet of 2.5-inch PVC leachate forced main piping, tracer wire, test stations and removal of sludge from an existing leachate storage tank. The line connects the leachate storage tanks at the landfill to a local municipal waste water treatment facility. SCS Field Services was responsible for traffic control throughout the phase of work which involved the installation of piping adjacent to, and under Jacksonville city streets.

Rumble/Lafarge Transmission System Sugar Creek, Missouri. SCS-FS OM&M operates and maintains the pipeline transmission system which Waste Management developed to provide LFG to Lafarge's cement plant from the closed Rumble Landfill. Services included start-up of the 60 hp compressor supplied by CPL Systems and support for the compressor/flare unit as well as wellfield maintenance. Several technicians in the Kansas City office are trained to support this project on routine and emergency basis.

SPSA LFG Transmission Pipeline, Suffolk, Virginia. The project included the installation of approximately 13,400 linear feet of 14-inch HDPE SDR 21 and SDR 17 piping. The

transmission line connects the LFG utilization facility at the SPSA Landfill to a boiler facility located at the adjacent CIBA Chemical facility. The pipeline was placed in right-of-ways through numerous private and commercial properties which were secured by the owner. In addition, the pipeline crosses through the Dismal Swamp, and environmentally sensitive and protected area. The project also includes approximately 2,875 linear feet of directional boring and jacking & boring. The longest directional drill was approximately 1,100 linear feet along a busy Virginia Department of Transportation (VADOT) highway. The Dismal Swamp crossing was directionally drilled for a length of approximately 600 linear feet. Several railroad crossings were completed by installing 20-inch carbon steel casings for the HDPE pipe. Additionally, several public roads under the control of VADOT were either jacked and bored or directionally drilled. This transmission line did not include any condensate sumps or traps and was designed as a “piggable” line with pig launching/receiving facilities at both ends of the transmission pipeline.

ODOR AND AIR EMISSIONS INVESTIGATIONS, MODELING, AND REMEDIATION

Recent regulations have focused on measures to reduce the emission of LFG to the atmosphere, since LFG can contribute to local air pollution, odors, and trace constituents in the gas may be harmful to public health. Also, uncontrolled release of LFG can contribute substantially to global warming. SCS is often called on to assess these impacts, recommend preventative measures, and design emission reduction systems. Representative SCS projects:

West Covina, California. Ambient Air Quality Monitoring in residential community for methane and vinyl chloride gases, BKK Class I (hazardous wastes allowed) Landfill.

Town of North Hempstead, New York. Control of Toxic and Combustible Gas Emissions..

Gas Research Institute. Development of a nationwide database and evaluation of best available technologies to remove trace constituents from recovered LFG.

Monroeville, Pennsylvania. Landfill Air Emissions Control and Air Monitoring Programs at the Monroeville Landfill.

Chicago, Illinois. Evaluation of LFG Flare Efficiencies and Gas Characterization Work, Hillside Landfill.

Various Sites. Personnel Protection and Worker Decontamination Methods at uncontrolled hazardous waste sites.

Gardena, California. Landfill Site Excavation and Removal (ambient air quality and excavation compliance monitoring), Rapid Transit District Bus Facilities Property.

Long Beach, California. Partial Landfill Site Excavation and Removal (ambient air quality monitoring), Whalers Cove Development.

Tampa, Florida. Investigation of the Source of Odors and Assessment of Alternative Remedial Measures, Manhattan Landfill.

Lorton, Virginia. Monitoring for Volatile Organic Compounds in Youth Detention Center, I-95 Landfill.

NEW SOURCE PERFORMANCE STANDARDS (NSPS) AND TITLE V PERMITS (CLEAN AIR ACT), PER USEPA REQUIREMENTS

Under EPA's Clean Air Act regulations, New Source Performance Standards (NSPS) and Emission Guidelines (EG) have been promulgated that require LFG emissions modeling and subsequent control. Both the NSPS and EG apply to landfills with capacities exceeding 2.75 million tons. The NSPS apply to municipal solid waste (MSW) landfills that were constructed or expanded after May 1991, and the EG apply to MSW landfills that received waste after November 1987, but have not been expanded since May 1991. The NSPS and EG presents a three-tiered approach for assessing the need for and types of emission controls are required. The tiers begin with desktop calculations to estimate air emissions, and then continue with field sampling and gas flow testing, depending on results obtained at each tier.

Significant Project Experience. SCS has conducted air regulatory compliance at more than 200 landfills nationwide, including over 150 NSPS/EG projects and 75 Title V projects.

Working Relationship with the EPA. SCS actively works with EPA as new air regulations pertaining to landfills are revised and promulgated. SCS has provided technical comments and supporting documentation on numerous occasions, helped design the EPA's Landfill Emissions Model, and has assisted in regulatory negotiations and interpretations. SCS is well known and respected by EPA staff.

Industry Leader through the Solid Waste Association of North America (SWANA). SCS developed course materials and provided instructors for air quality regulatory workshops held throughout the United States.

EPA's Landfill Methane Outreach Program (LMOP). SCS, the prime contractor for the EPA's LMOP, has developed technical bulletins, landfill owner handbooks, and has conducted associated training workshops in the United States, Asia, Eastern Europe, Brazil, the Ukraine, Mexico, the Philippines, and New Zealand.

TITLE V PERMITS

SCS has prepared and administered Title V permits for some of the largest landfills in the United States. Services have included emissions inventories, preparation of the permit application, and negotiations with regulatory agencies. SCS's engineers, scientists and field personnel are well-informed about the requirements of the NSPS, EG, and MACT through hands-on study and analysis of the regulations; performance of the tier modeling and gas testing at landfill sites; and preparation of Title V permit applications and emission inventories.

LANDFILL FIRE CONTAINMENT, CONTROL AND EMERGENCY RESPONSE

SCS has substantial experience in locating, containing, and extinguishing subsurface landfill fires, and we provide engineering, management, and turnkey services for landfill fire suppression. Representative landfill fire control projects include:

Carson, California. Subsurface Landfill Fire Control and Extinguishment via Carbon Dioxide Injection, South Bay Six Drive-In Theater.

Wilmington, California. Landfill Fire Control Utilizing Subsurface Flooding, Excavation and Addition of Suitable Cover Material at five adjacent landfill sites, and repair of fire damaged LFG recovery facilities.

Los Angeles, California. Identification and Monitoring of Subsurface Landfill Fire Impacting LFG Migration Control Facilities, Mountaingate Development.

Industry Hills, California. Identification and Control Plan Development for Subsurface Landfill Fire, Industry Hills Development.

Guam. Development of Landfill Fire Control Program.

Snohomish County, Washington. Landfill Fire Status Evaluation and Development of Short-Term Mitigation Plan, Including Health and Safety Risk Assessment, Go East Landfill.

Town of North Hempstead, New York . Investigation of Underground Combustion, Including Thermographic Surveys, Port Washington Landfill.

Salem, New Hampshire. Consulting for Landfill Fire, LLS Landfill.

Acworth, Georgia. Consulting for landfill fire control and extinguishing for redevelopment of a completed landfill for a shopping center for North American Properties.

4 LANDFILL GAS TO ENERGY (LFGE)

OVERVIEW

SCS Engineers (SCS) currently employs a staff of 600 and has an annual revenue of \$140 million. SCS has ten major offices across the United States, and is headquartered in Long Beach, California. SCS was founded in 1970. SCS was ranked the largest solid waste engineering firm in the United States by Engineering News Record (ENR) in five of the last six years. SCS's principal area of practice is landfill gas collection, utilization and control.

SCS's experience with waste gas utilization is focused in SCS Energy (SCS-E), an operating division of SCS. SCS-E was formed in 2001. SCS-E's waste gas experience includes landfill gas, digester gas and coal mine methane. Digester gas and coal mine methane have characteristics similar to landfill gas and their utilization presents challenges similar to those presented by landfill gas. SCS-E's experience also includes natural gas fired power generation.

SCS-E performs projects on a design-only, design/construct, design/construct/operate, construct-only and operate-only basis.

ELECTRIC POWER GENERATION

SCS-E has completed or has underway the design of 27 biogas fueled power plants. The power plants are fueled on landfill gas or digester gas and employ reciprocating engines, combustion turbines, microturbines or fuel cells. The aggregated capacity of these 27 power plants is 58.4 MW. SCS-E has constructed 18 of these 27 power plants on a design/construct basis. The capacity of these plants totals 25.8 MW.

In addition to these 27 projects, involving new facilities, SCS-E has rehabilitated and restarted three shut down landfill gas fueled reciprocating engine plants and converted one natural gas fueled reciprocating engine plant to landfill gas co-firing. The aggregated installed capacity of these four power plants is 11.2 MW.

SCS-E is currently under contract to operate 17 power plants with an aggregated capacity of 31.5 MW.

SCS-E has provided consulting engineering services in support of coal mine methane power projects up to 120 MW in size, and for landfill gas fired projects up to 50 MW in size.

Feasibility Studies and Consulting Services

SCS-E has completed more than 50 feasibility studies for potential biogas electric power generation projects. These studies resulted in selecting the size and technology for the facilities; developed construction and operation/maintenance cost estimates; investigated interconnection issues; and investigated permitting issues. The studies have recommended facilities from less than 1 MW to 50 MW in size, and have recommended projects that employ reciprocating engines, combustion turbines, microturbines and a steam cycle power plant. SCS-E has

conducted due diligence investigations on more than 100 currently operating landfill gas fired power plants.

SCS-E has obtained interconnection approvals for 20 power projects from ten utilities in seven states. SCS-E has secured air permits for more than two dozen projects in ten different air districts.

SCS-E has provided consulting services in support of the largest coal mine methane fired power plant in the world (120 MW), located at the Sihe Mine in Jincheng, China, and consulting services in support of the largest landfill gas fired power plant (50 MW) in Asia, located at the Sudokwon Landfill in Seoul, Korea. On the Sihe project, SCS-E: prepared a conceptual design review report; assisted in preparation of specifications for major equipment; participated in selection of equipment suppliers; provided limited construction observation; and participated in plant performance testing. On the Sudokwon project, SCS-E was a subcontractor to Korea Power Engineering Company (KOPEC). SCS-E assisted KOPEC in the detailed design of the power plant and in the design of the interface between the wellfield's flare station and the power plant.

Design and Design/Construction

SCS-E has completed, or has underway, the design of 27 power plants. The power plants are fueled on landfill gas or digester gas and have an aggregated capacity of 58.4 MW. They employ reciprocating engines (Caterpillar and Jenbacher), combustion turbines (Solar), microturbines (Capstone and Ingersoll-Rand) or fuel cells (Fuel Cell Energy). Seven of these facilities produce hot water or steam in addition to electric power. SCS-E has constructed 18 of these 27 power plants on a design/construct basis. The capacity of these plants totals 25.8 MW.

Operation/Maintenance

SCS-E currently operates 17 biogas fueled power plants with an aggregated capacity of 31.5 MW. SCS-E has in-house capability to undertake all maintenance required by reciprocating engines, including major overhauls. Engines currently in SCS-E's operating fleet include engines from Caterpillar, Jenbacher, Deutz and Cooper Superior.

Exhibit 6, attached hereto, provides information on many of SCS-E's design, design/construct and operation/maintenance projects.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Projects**Dry Creek Landfill Gas to Energy Facility****Owner:**

Oregon Environmental Industries

Location:

Eagle Point, Oregon

SCS Scope:

Design/construct plus five-year operation/maintenance contract.
Turnkey SCADA system.

Description:

Two Caterpillar 3520 reciprocating engines with a combined output of 3.2 MW

Status:

Commercial operation achieved in September 2007

Seminole Road Landfill Gas to Energy Facility**Owner:**

DeKalb County Public Works

Location:

Ellenwood, Georgia

SCS Scope:

Design/construct plus five-year operation/maintenance contract.
Turnkey SCADA system.

Description:

Two Caterpillar 3520 reciprocating engines with a combined output of 3.2 MW

Status:

Commercial operation achieved in October 2006

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Frey Farm Landfill Gas to Energy Facility

**Owner:**

PPL Energy

Location:

Kreswell, Pennsylvania

SCS Scope:

Design/construct. Turnkey SCADA system.

Description:

Two Caterpillar 3520 reciprocating engines with a combined output of 3.2 MW. Exports steam to an off-site customer.

Status:

Commercial operation achieved in December 2005.

Pennsauken Landfill Gas to Energy Facility

**Owner:**

PPL Energy

Location:

Pennsauken, New Jersey

SCS Scope:

Design/construct. Turnkey SCADA system.

Description:

Three Caterpillar 3516 reciprocating engines with a combined output of 2.7 MW

Status:

Commercial operation achieved in November 2004.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Coffin Butte Landfill Gas to Energy Facility

**Owner:**

Pacific Northwest Generating Cooperative

Location:

Corvallis, Oregon

SCS Scope:

Design. Construction oversight. Turnkey SCADA system.

Description:

Two Caterpillar 3520 reciprocating engines with a combined output of 3.2 MW

Status:

Commercial operation achieved in October 2007.

Google Landfill Gas to Energy Facility

**Owner:**

Google

Location:

Mountain View, California

SCS Scope:

Design three landfill gas fired cogeneration plants. Design/construct a 2.0-mile landfill gas pipeline connecting the three plants to the Mountain View Landfill. Turnkey SCADA system.

Description:

Three Jenbacher 320 engines with a combined output of 3.0 MW. Hot water recovery for use on-site.

Status:

Commercial operation achieved in March 2006.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Monmouth County Reclamation Center Landfill Gas to Energy Facility

**Owner:**

Monmouth County

Location:

Tinton Falls, New Jersey

SCS Scope:

Design/construct plus two-year operation/maintenance contract.
Turnkey SCADA system.

Description:

One Jenbacher 320 reciprocating engine with an output of 1.0 MW

Status:

Commercial operation achieved in November 2007.

Finley Buttes Landfill Gas to Energy Facility

**Owner:**

Halton Power/Finley Bioenergy

Location:

Boardman, Oregon

SCS Scope:

Process and mechanical design. Turnkey SCADA system.

Description:

Two Caterpillar 3520 reciprocating engines with a combined output of 3.2 MW. Export of hot water to an off-site customer.

Status:

Commercial operation achieved in February 2008.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Oaks Landfill Gas to Energy Facility

**Owner:**

Montgomery County

Location:

Laytonsville, Maryland

SCS Scope:

Design/construct plus five-year operation/maintenance contract.
Turnkey SCADA system.

Description:

One Caterpillar 3520 reciprocating engine and one Jenbacher 316 reciprocating engine with a combined output of 2.4 MW

Status:

Commercial operation achieved in July 2009.

Gude Landfill Gas to Energy Facility

**Owner:**

Montgomery County

Location:

Rockville, Maryland

SCS Scope:

Design/construct plus five-year operation/maintenance contract.
Turnkey SCADA system.

Description:

Jenbacher 316 reciprocating engine with an output of 0.8 MW

Status:

Commercial operation achieved in July 2009.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

University of New Hampshire Landfill Gas to Energy Facility

**Owner:**

University of New Hampshire

Location:

Rochester, New Hampshire

SCS Scope:

Design/construct plus five-year operation/maintenance contract.
Turnkey SCADA system.

Description:

Two Caterpillar 3520 reciprocating engines with a combined output of 3.2 MW

Status:

Commercial operation achieved in May 2009.

Flathead Landfill Gas to Energy Facility

**Owner:**

Flathead Electric Cooperative

Location:

Kalispell, Montana

SCS Scope:

Design/construct plus five-year operation/maintenance contract.
Turnkey SCADA system.

Description:

One Caterpillar 3516 reciprocating engine with an output of 1.6 MW

Status:

Commercial operation achieved in June 2009.

**Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance
Of Landfill Gas to Energy and Other Power Project**

Sampson County Landfill Gas to Energy Facility**Owner:**

Waste Industries USA

Location:

Roseboro, North Carolina

SCS Scope:

Design

Description:

Four Caterpillar 3516 reciprocating engines with a combined output of 6.4 MW

Status:

Project in design. Target commercial operation date is February 2011.

Dart Landfill Gas to Energy Facility**Owner:**

Dart Industries

Location:

Leola, Pennsylvania

SCS Scope:

Design

Description:

Two Solar Taurus combustion turbines with steam recovery, with a combined output of 11.8 MW.

Status:

Project in design. Target commercial operation date is December 2010.

**Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance
Of Landfill Gas to Energy and Other Power Project**

Lockhart Power Landfill Gas to Energy Facility**Owner:**

Lockhart Power

Location:

Spartanburg, South Carolina

SCS Scope:

Design/construct. Turnkey SCADA system.

Description:

One Caterpillar 3520 reciprocating engine with an output of 1.6 MW

Status:

Target commercial operation date is March 2010.

MCLB Landfill Gas to Energy Facility**Owner:**

Chevron Energy

Location:

Albany, Georgia

SCS Scope:

Design/construct. Turnkey SCADA system.

Description:

One Jenbacher 616 with steam recovery, with an output of 1.9 MW.

Status:

Target commercial operation date is December 2010.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Penrose Landfill Gas to Energy Facility

**Owner:**

Viridis Energy

Location:

Sun Valley, California

SCS Scope:

Operation/maintenance contract, plus design/construction of a \$3.2 million plant upgrade. Supply turnkey SCADA system.

Description:

Four Cooper Superior reciprocating engines with a combined output of 7.0 MW

Status:

SCS assumed operation/maintenance responsibility in February 2005

Toyon Landfill Gas to Energy Facility

**Owner:**

Viridis Energy

Location:

West Hollywood, California

SCS Scope:

Operation/maintenance contract

Description:

Two Cooper Superior reciprocating engines with a combined output of 3.2 MW

Status:

SCS assumed operation/maintenance responsibility in January 2006.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Redlands WWTP Cogeneration Facility

**Owner:**

City of Redlands

Location:

Redlands, California

SCS Scope:

Operation/maintenance contract. Turnkey plant upgrades, including a SCADA system and siloxane treatment system.

Description:

One Deutz TBG 620 (V12) engine, co-fired on landfill gas and digester gas, with a capacity of 1.0 MW. Hot water is used for digester heating at a municipal wastewater treatment plant.

Status:

SCS assumed operation/maintenance responsibility in August 2006

Badlands Landfill Gas to Energy Facility

**Owner:**

County of Riverside

Location:

Riverside, California

SCS Scope:

Operation/maintenance contract. Supply turnkey siloxane treatment system.

Description:

One Deutz TBG 620 (V16) engine with an output of 1.3 MW

Status:

SCS assumed operation/maintenance responsibility in July 2007

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Hidden Hollow Landfill Gas to Energy Facility

**Owner:**

G2 Energy

Location:

Boise, Idaho

SCS Scope:

Operation/maintenance contract

Description:

Two Caterpillar 3520 reciprocating engines with a combined output of 3.2 MW

Status:

SCS had operation/maintenance responsibility from February 2007 to December 2008. In December 2008, the owner assumed responsibility.

Sierra Nevada Brewing Company Fuel Cell Project

**Owner:**

Sierra Nevada Brewing Company

Location:

Chico, California

SCS Scope:

Design

Description:

Four natural gas fuel cells with a total output of 1.0 MW. Steam recovery for on-site use.

Status:

Project achieved commercial operation in May 2005.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Jamacha Landfill Gas to Energy Facility

**Owner:**

County of San Diego

Location:

Spring Valley, California

SCS Scope:

Design/construct. Turnkey SCADA system and siloxane treatment system.
Operation/maintenance.

Description:

Three Ingersoll-Rand microturbines with a combined output of 280 kW

Status:

Project achieved commercial operation in March 2008.

Calabasas Landfill Gas to Energy Facility

**Owner:**

Sanitation Districts of Los Angeles County

Location:

Calabasas, California

SCS Scope:

Design/construct. Turnkey SCADA system and siloxane treatment system.
Operation/maintenance contract.

Description:

Ten Capstone microturbines with a combined output of 300 kW

Status:

Project achieved commercial operation in August 2002.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Burbank Landfill Gas to Energy Facility


Owner:

City of Burbank

Location:

Burbank, California

SCS Scope:

Design/construct. Turnkey SCADA system and siloxane treatment system. Operation/maintenance contract.

Description:

Ten Capstone 30 kW microturbines and one 250 kW Ingersoll-Rand microturbine with a total output of 550 kW

Status:

Project achieved commercial operation in April 2005.

Oll Landfill Gas to Energy Facility


Owner:

New Cure, Inc.

Location:

Monterey Park, California

SCS Scope:

Design/construct. Turnkey SCADA system and siloxane treatment system.

Description:

Six Ingersoll-Rand microturbines with a combined output of 420 kW

Status:

Project achieved commercial operation in September 2002.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Allentown WWTP Microturbine Cogeneration Facility

**Owner:**

PPL Energy

Location:

Allentown, Pennsylvania

SCS Scope:

Design/construct. Turnkey SCADA system and siloxane treatment system. Operation/maintenance contract.

Description:

Twelve 30 kW Capstone microturbines. Hot water recovery for on-site digester heating.

Status:

Project achieved commercial operation in November 2003.

Toland Road Landfill Gas to Energy Project

**Owner:**

Ventura Regional Sanitation District

Location:

Santa Paula, California

SCS Scope:

Design/construct. Turnkey SCADA system.

Description:

One 70 kW Ingersoll-Rand microturbine

Status:

Project achieved commercial operation in August 2004.

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Sihe Mine Coal Mine Methane Power Plant


Owner:

Shanxi Jincheng Anthracite Coal Mining Group

Location:

Jincheng City, Shanxi Province, Peoples' Republic of China

SCS Scope:

Technical and engineering assistance in process design, procurement specifications, equipment procurement, construction oversight, startup/performance testing, and operator training.

Description:

Sixty Caterpillar 3520 reciprocating engines, in combined cycle mode, with a total output of 120 MW

Status:

Project achieved commercial operation in June 2008.

Sudokwon Landfill Gas to Energy Facility


Owner:

Korea Power Engineering Company/EcoEnergy

Location:

Incheon, South Korea

SCS Scope:

Feasibility study, conceptual design, and subcontractor to KEPCO in support of detailed design

Description:

50 MW steam cycle power plant

Status:

Project achieved commercial operation in March 2006

Exhibit 6. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Landfill Gas to Energy and Other Power Project

Sang Am Landfill Gas to Energy Facility

**Owner:**

Korea District Heating Engineering Company

Location:

Seoul, South Korea

SCS Scope:

Conceptual design and subcontractor to KDHEC in support of detailed design

Description:

25 MW_t hot water generation facility

Status:

Project achieved commercial operation in 2003

BIOGAS CONVERSION AND CLEAN-UP PROJECTS

SCS-E has completed, or has underway, the design or design/construction of 11 facilities to convert landfill gas or digester gas to higher Btu gas or to clean up landfill gas or digester gas to high quality medium-Btu gas. The installed capacity of these facilities totals 25 mmscfd.

SCS-E is under contract to operate 11 landfill gas or digester gas plants that process these waste gases into pipeline quality gas, compressed natural gas (CNG) equivalent, or high quality medium-Btu gas. The aggregated capacity of these 11 facilities totals 26 mmscfd.

Feasibility Studies and Consulting Services

SCS-E has conducted due diligence evaluations on eight currently operating landfill gas to pipeline quality gas plants. The evaluations were performed to support the potential acquisition of the projects by new owners or to support project financing. The evaluations addressed plant performance, plant operation/maintenance costs, compliance with pipeline quality specifications, compliance with environmental permits, and in some cases, the capital costs of plant expansions and upgrades. The technologies covered by these revisions included Selexol, membranes and pressure swing adsorption.

SCS-E has completed several feasibility studies for new landfill gas to pipeline quality gas projects and in the course of these studies, directly compared the economics and performance of membranes to pressure swing adsorption.

Biogas Conversion Projects

SCS-E's biogas treatment and conversion projects employ a broad range of technologies, including:

- Pressure swing adsorption (low and high pressure);
- Membranes (low pressure);
- Physical absorption (Selexol);
- Thermal swing adsorption;
- Hydrogen sulfide removal (SulfaTreat and other media-based systems); and
- Non-regenerative activated carbon.

University of New Hampshire Gas Plant

Under a design/construct assignment, SCS-E is currently constructing a 7,500 scfm (10.8 mmscfd) gas plant for the University of New Hampshire (UNH). The gas plant will convert landfill gas to near pipeline quality gas. The process chain at UNH includes:

- Landfill gas pressurization and cooling;

- Hydrogen sulfide removal (SulfaTreat);
- Compression (to 200 psig), chilling to 40° F and reheat to 80° F;
- Thermal swing adsorption for gas cleanup;
- Pressure swing adsorption for carbon dioxide removal; and
- A thermal oxidizer for destruction of waste regeneration gases.

The project also incorporates 3.2 MW of landfill gas fired self-generation to satisfy the gas plant's power requirements.

The UNH Gas Plant commenced commercial operation in May 2009. SCS-E is currently operating this facility.

Mountaingate Gas Plant

SCS-E currently owns and operates, through a wholly-owned subsidiary, a 1,400 scfm (2.0 mmscfd) gas plant which processes landfill gas and delivers it to the University of California at Los Angeles (UCLA) for co-firing with natural gas in UCLA's combustion turbine combined cycle cogeneration facility. The UCLA application requires ultra-pure landfill gas since UCLA's cogeneration facility employs post-combustion SCR and oxidizing catalysts for advanced NO_x and CO air emissions control. The Mountaingate Gas Plant employs reciprocating compressors, dehydration, Selexol absorption, Selexol regeneration by air stripping, a stripper gas thermal oxidizer, and activated carbon polishing of the product gas.

SCS-E has operated the Mountaingate Gas Plant for over six years.

McCommas Bluff Gas Plant

SCS-E currently operates the 6,500 scfm (9.4 mmscfd) McCommas Bluff Gas Plant on a contract basis. The McCommas Bluff Gas Plant converts landfill gas into pipeline quality gas. SCS-E has operated the McCommas Bluff Gas Plant for over three years. The product gas is sold as natural gas and is injected directly into the natural gas piping network in Dallas, Texas. The McCommas Bluff Gas Plant employs compression, dehydration, thermal swing adsorption, pressure swing adsorption for carbon dioxide removal, and a thermal oxidizer for destruction of waste regeneration gases. The pressure swing adsorption system operates at 100 psig.

SCS-E has been engaged to undertake improvements to the McCommas Bluff Gas Plant on a design/construct basis. The improvements include:

- Replacement of the inlet landfill gas vacuum blowers and gas cooling equipment;
- Installation of SulfaTreat vessels;

- Replacement of an engine-drive compression facility with separate electric-drive compression facilities for raw landfill gas, product gas and carbon dioxide rinse gas; and
- Replacement of the waste gas thermal oxidizer.

The above improvements will be completely implemented by October 2009. The work will be undertaken contemporaneously with the ongoing operation of the gas plant. SCS-E is currently evaluating alternatives for a 6 mmscfd plant expansion.

Metrogas Gas Plant

Metrogas is the largest natural gas distribution company in Chile. SCS-E has completed conceptual designs, obtained quotations for major equipment, and prepared construction and operation/maintenance cost estimates for gas plants based on two different technologies (membranes and pressure swing adsorption) for conversion of landfill gas into pipeline quality gas. In both configurations, the plants will receive landfill gas on an “as delivered” basis (i.e., the landfill owner will not make an effort to minimize air infiltration into the landfill gas collection system). As a consequence, the plants must incorporate equipment for oxygen and nitrogen removal in addition to carbon dioxide removal. Nitrogen removal will be achieved by pressure swing adsorption. Oxygen removal will be accomplished by catalytic oxidation.

It is expected that the 4,700 scfm (6.8 mmscfd) gas plant will achieve commercial operation in late 2010.

Sonoma Vehicle Fuel Project

The Sonoma vehicle fuel project converts landfill gas to CNG for use by Sonoma County Transit. SCS-E undertook this project on a design/construct basis. The process chain in use at Sonoma includes: pressurization; chilling; primary compression; activated carbon polishing; membrane carbon dioxide separation; and post-compression to 3,500 psig. Sonoma is a demonstration project sized for an inlet capacity of 100 scfm. SCS-E is currently operating the facility.

BioFuels Energy CNG Facility

SCS-E has been engaged to design/construct a 1,500 scfm (2.2 mmscfd) digester gas to CNG conversion facility for BioFuels Energy at the City of San Diego’s Point Loma Wastewater Treatment Plant. The facilities will employ: pressurization; SulfaTreat; primary compression; thermal swing adsorption; activated carbon polishing; membrane carbon dioxide separation; and post-compression to 3,500 psig.

It is expected that this facility will achieve commercial operation in late 2010.

Biogas Clean-Up Projects

La Farfana WWTP Gas Plant

SCS-E completed the design, procured major equipment for, and assisted in startup of a 2,500 scfm (3.6 mmscfd) digester gas treatment facility for Santiago, Chile's largest municipal wastewater treatment plant. The digester gas is treated for hydrogen sulfide, volatile organic compound and siloxane removal. The digester gas is pressured and delivered by 10-mile dedicated pipeline to a town gas production facility (reformer plant) owned by Metrogas, S.A. The reformer requires ultra-pure gas. The facility commenced commercial operation in August 2008.

El Estero WWTP Fuel Cell Project

In November 2004, SCS-E completed, on a design/construct basis, a 500 kW digester gas fuel cell power plant at the City of Santa Barbara's El Estero municipal wastewater treatment plant. SCS-E continues to provide operation and maintenance service at this plant.

The fuel cell requires an ultra-pure biogas. The biogas pretreatment system employs facilities for moisture, volatile organic compound, hydrogen sulfide and siloxane removal.

Palmdale WWTP Fuel Cell Project

In September 2004, SCS-E completed, on a design/construct basis, a 250 kW digester gas fuel cell power plant at the County Sanitation Districts of Los Angeles' Palmdale municipal wastewater treatment plant. SCS-E continues to provide maintenance service at this plant.

The fuel cell requires an ultra-pure biogas. The biogas pretreatment system employs facilities for moisture, volatile organic compound, hydrogen sulfide and siloxane removal.

City of Industry Cogeneration Facility

SCS-E designed, constructed and currently operates a 200 scfm landfill gas treatment facility at the Pacific Palms Conference Resort in the City of Industry, California. The landfill gas is co-fired with natural gas at a 980 kW reciprocating engine plant. The engine is equipped with SCR and oxidizing catalysts. Post-combustion catalysts are very susceptible to fouling in biogas applications, and in order to prevent fouling, the biogas must be treated to ultra-pure level. The treatment system completed over 15,000 hours of operation without catalyst damage.

Other Biogas Cleanup Facilities

SCS-E has also provided landfill gas or digester gas compression and treatment skids for four microturbine-based power generation facilities, including:

- City of Allentown, PA – 200 scfm of digester gas; startup in November 2003;
- Calabasas Landfill, CA – 200 scfm of landfill gas; startup in August 2002;
- OII Landfill, CA – 300 scfm of landfill gas; startup in September 2002; and

- Burbank Landfill, CA – 400 scfm of landfill gas; startup in December 2004.

These four systems, while a little more tolerant to landfill gas impurities than SCS's catalyst and fuel cell assignments, were designed for 100 percent removal of hydrogen sulfide, siloxanes and halogenated organic compounds.

Exhibit 7, attached hereto, provides information on many of SCS-E's design/construct and operation/maintenance projects.

Exhibit 7. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Biogas Conversion and Treatment Facilities

University of New Hampshire Gas Cleanup Facility

**Owner:**

University of New Hampshire

Location:

Rochester, New Hampshire

SCS Scope:

Design/construction plus five-year operation/maintenance contract

Description:

Conversion of 8.6 mmscfd of raw landfill gas to purified 810 Btu/ft³ product gas for use in the University's combined cycle power plant and to satisfy other campus energy requirements.

Status:

Commercial operation was achieved in May 2009.

Mountaingate Gas Plant

**Owner:**

SCS Renewable Energy -- Mountaingate, LLC

Location:

Los Angeles, California

SCS Scope:

Operation/maintenance contract

Description:

Cleanup and compression of 2.0 mmscfd of landfill gas, which is then delivered by a 5.2-mile pipeline to UCLA's on-campus cogeneration plant. Siloxane treatment system.

Status:

SCS assumed operation/maintenance responsibility in May 2003.

Exhibit 7. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Biogas Conversion and Treatment Facilities

McCommas Bluff Gas Plant


Owner:

Dallas Clean Energy, LLC

Location:

Dallas, Texas

SCS Scope:

Operation/maintenance contract. Design/construct of plant improvements.

Description:

Pipeline quality gas is produced from landfill gas using pressure swing adsorption. The inlet capacity is 9.4 mmscfd.

Status:

SCS assumed operation/maintenance responsibility in June 2005.

Metrogas Digester Gas Cleanup Facility


Owner:

Metrogas, SA and Gestion y Services, SA

Location:

Santiago, Chile

SCS Scope:

Design.

Description:

Design of a 3.6 mmscfd WWTP digester gas compression and treatment facility to deliver purified digester gas through a 10-mile pipeline to a town gas manufacturing plant.

Status:

Commercial operation achieved in August 2008.

Exhibit 7. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Biogas Conversion and Treatment Facilities

Sonoma County Vehicle Fuel Facility


Owner:

County of Sonoma

Location:

Petaluma, California

SCS Scope:

Design/construct plus one-year operation/maintenance contract

Description:

Conversion of 100 scfm of raw landfill gas to purified 960 Btu/ft³ product gas for use in County's transit fleet

Status:

The project began operation in December 2008.

El Estero WWTP Fuel Cell Cogeneration Facility


Owner:

Alliance Power

Location:

Santa Barbara, California

SCS Scope:

Design/construct. Turnkey SCADA system and siloxane treatment system. Operation/maintenance.

Description:

Two digester gas fueled fuel cells with a combined output of 500 kW. Hot water recovery for on-site digester heating.

Status:

Project achieved commercial operation in November 2004.

Exhibit 7. SCS Energy Experience with Design, Construction and Operation/Maintenance Of Biogas Conversion and Treatment Facilities

Palmdale WWTP Fuel Cell Cogeneration Facility


Owner:

Sanitation Districts of Los Angeles County

Location:

Palmdale, California

SCS Scope:

Design/construct. Turnkey SCADA and siloxane treatment system.

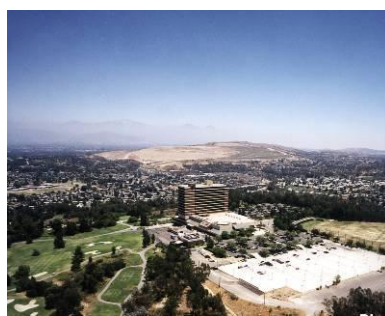
Description:

One digester gas fuel cell with an output of 250 kW. Hot water recovery for on-site digester heating.

Status:

Project achieved commercial operation in September 2004.

Industry Hills Cogeneration Facility


Owner:

City of Industry

Location:

City of Industry, California

SCS Scope:

Operation/maintenance contract, plus turnkey plant upgrades including: SCADA system, landfill gas co-firing system, and siloxane treatment system.

Description:

Two Jenbacher 320 engines, with natural gas and landfill gas co-firing. Hot water recovery for on-site use.

Status:

SCS assumed operation/maintenance responsibility in October 2002.

MEDIUM-BTU PROJECTS

Feasibility Studies

SCS-E has completed more than a dozen feasibility studies that evaluated the feasibility of delivery of lightly cleaned landfill gas from landfills by dedicated pipeline to end users. The projects have ranged in size from 500 scfm (0.7 mmscfd) to 10,000 scfm (14.4 mmscfd), with pressures varying from 30 psig to 100 psig, and with pipelines as long as eight miles. The studies addressed: project size; selection of compression and treatment technology; pipeline route and right-of-way issues; capital and operation/maintenance costs; and issues related to conversion of the end user's fuel utilization equipment to allow landfill gas to be substituted for natural gas.

Design and Design/Construction

SCS has designed or design/constructed nine landfill gas delivery pipelines having a total length of 28 miles. The pipelines are in rural and urban areas and have employed both open cut and directly drilled installation.

SCS has designed or designed/constructed five medium-Btu compression and light treatment facilities.

SCS is currently operating/maintaining four medium-Btu compression, treatment and delivery facilities. The facilities employ reciprocating compressor, flooded screw compressors or sliding vane compressors.

Exhibit 8 lists many of SCS's medium-Btu projects.

SCADA SYSTEMS

SCS-E provides turnkey SCADA systems for power plants and other types of energy facilities. SCS-E's SCADA systems provide internet-based facility monitoring and remote control using what SCS-E calls iSCADA. SCS-E has installed its iSCADA at 25 biogas plants and 11 landfill gas flare stations.

**Exhibit 8. SCS Energy Experience with Design, Construction and Operation/Maintenance Of
Landfill Gas Compression and Pipeline Projects**

Client/Location		Description
BMW Spartanburg, South Carolina	Scope:	Design, permitting and construction engineering for a 9.5-mile LFG transmission pipeline. Prepared various plans and manuals in support of 49 CFR Part 192.
	Description:	12-inch diameter, 9.5-mile pipeline. Included 1,300 linear foot horizontal directional drilling under I-85.
	Timeframe:	2001
Middlesex County, New Jersey	Scope:	Design, permitting and construction observation of LFG transmission pipeline, connecting three landfills transporting 6,000 cfm of LFG to a 20-MW power plant.
	Description:	6-mile transmission pipeline
	Timeframe:	1999-2001
Fort Smith, Arkansas	Scope:	Design, permitting, construction and operation and maintenance of a 1-mile transmission pipeline for medium-Btu use of LFG by an industrial facility.
	Description:	1,400 scfm compressors and dryer system.
	Timeframe:	1998 to 2007 until replacement with high-Btu project
Tucson, Arizona	Scope:	Design, permitting and construction of a transmission pipeline for medium-Btu LFG to be used at a Tucson Electric Power power plant.
	Description:	3.5-mile LFG transmission pipeline.
	Timeframe:	1998-1999

**Exhibit 8. SCS Energy Experience with Design, Construction and Operation/Maintenance Of
Landfill Gas Compression and Pipeline Projects**

Client/Location		Description
County of San Diego Spring Valley, California	Scope:	Design and construction observation of LFG transmission pipeline. Design and supply of LFG compression and refrigeration skid. Operation/maintenance of pipeline and skid.
	Description:	0.8-mile LFG transmission pipeline. 200 scfm LFG compression and refrigeration skid.
	Timeframe:	2007 to present
Boral Brick Union City, Oklahoma	Scope:	Design, permitting and construction of LFG transmission pipeline. Design and supply of LFG compression and refrigeration skid. Operation/maintenance of pipeline and skid.
	Description:	2.5-mile LFG transmission pipeline. 1,000 scfm LFG compression and refrigeration skid.
	Timeframe:	2007
Scholl Canyon Glendale, California	Scope:	Operation/maintenance of LFG compression and refrigeration skid and LFG transmission pipeline. Design of condensate treatment facility.
	Description:	5.0-mile LFG transmission pipeline. 6,000 scfm compression and LFG treatment system.
	Timeframe:	1995 through 1997

**Exhibit 8. SCS Energy Experience with Design, Construction and Operation/Maintenance Of
Landfill Gas Compression and Pipeline Projects**

Client/Location		Description
Google Mountain View, California	Scope:	Design, right-of-way acquisition, environmental permits, and construction of an LFG transmission pipeline. Design of LFG compression and refrigeration skid.
	Description:	2.5 miles of LFG transmission pipeline. 1.0 miles of pipeline were directionally drilled. Pipeline traverses two streams and a protected species habitat.
	Timeframe:	2004-2005
Mountaingate Renewable Energy Los Angeles, California	Scope:	Operation/maintenance of LFG treatment and compression facility and LFG transmission pipeline. Transfer of ownership of pipeline right-of-way agreements.
	Description:	5.3 miles of LFG transmission pipeline. 2,000 scfm LFG treatment and compression facility. Pipeline conveys landfill gas to UCLA's cogeneration plant.
	Timeframe:	2003 to present
Napa-Vallejo Waste Management Authority American Canyon, CA	Scope:	Design, right-of-way acquisition and construction observation of LFG transmission pipeline. Design and supply of LFG compression and refrigeration skid.
	Description:	1.8 miles of LFG transmission pipeline. 150 scfm LFG compression and refrigeration skid.
	Timeframe:	2005

**Exhibit 8. SCS Energy Experience with Design, Construction and Operation/Maintenance Of
Landfill Gas Compression and Pipeline Projects**

Client/Location		Description
Penrose Landfill Gas Conversion, LLC Sun Valley, California	Scope:	Operation/maintenance of LFG compression and refrigeration skid.
	Description:	2,400 scfm LFG compression and refrigeration skid.
	Timeframe:	2005 to 2009.
Anheuser-Busch Fairfield, California	Scope:	Evaluate alternative pipeline routings and right-of-way issues for a proposed LFG transmission pipeline. Cost estimate for LFG compression and refrigeration system and pipeline.
	Description:	8-mile LFG transmission pipeline from Potrero Hills Landfill to brewery. Capacity of 4,000 scfm.
	Timeframe:	2008
Orlando Utilities Commission Orlando, Florida	Scope:	Design and construction of an LFG compression and refrigeration facility and transmission pipeline.
	Description:	7-mile, 18-inch diameter LFG transmission pipeline. 4,000 scfm capacity compression and refrigeration facility.
	Timeframe:	2009

5 TRANSFER STATIONS AND MATERIAL RECOVERY FACILITIES

GENERAL OVERVIEW

SCS has designed and implemented numerous solid waste facilities including transfer stations, material recovery facilities, and vehicle and maintenance facilities. SCS maintains full architectural and engineering capabilities that have been developed specifically for the planning, design, and construction administration of various types of solid waste facilities.

Transfer stations and material recovery facilities (MRFs) designed by SCS range in size from 50 to over 5,000-tons per day and operate in a wide range of conditions. We have designed transfer stations and MRFs for the public sector and the private sector. While providing engineering solutions for these projects, SCS routinely addresses economic concerns, operational challenges and permitting/regulatory issues.

We are well-versed in the advantages and the limitations of both approaches. Similarly, we have assisted our clients in developing transfer stations through the design/build approach and through the design/bid/build (as well as other procurement mechanisms). Given our experience in various procurement mechanisms, we are prepared to assist our clients in selecting the most cost-effective approach for their projects.

TRANSFER STATION PROJECTS AND PROFILES

Exhibit 9 provides a select list of SCS Transfer Station and Material Recovery Facility (MRF) projects. Project profiles for several of these facilities are provided below.

Exhibit 9. SCS Transfer and MRF Projects

Arlington, OR	Ketchikan, AK	San Diego, CA
Aurora, MO	Kirkland, WA	San Lorenzo, CA
Bellevue, WA	Lakeport, CA	San Marcos, CA
Berkeley, CA	Largo, FL	Santa Ana, CA
Beverly Hills, CA	Los Angeles, CA	Santa Monica, CA
Bisbee, AZ	Milliken, CA	Santa Rosa, CA
Blue Springs, MO	Morgan Hill, CA	Scotts Bluff, NE
Bronx, NY	Morristown, NJ	Seattle, WA
Brunswick, ME	Naples, ME	Sierra Vista, AZ
Cabool, MO	Nashville, IN	South Portland, ME
Camano Island, WA	Newport Beach, CA	Sunnyvale, CA
Cambridge, MD	Ogden, Utah	Sun Valley, ID
Carson, CA	Olympia, WA	Syracuse, KS
Chula Vista, CA	Ontario, CA	Tampa, FL
City of Industry, CA	Orlando, FL	Twin Falls, ID
Coachella, CA	Ottawa, KS	Ulysses, KS
Coupeville, WA	Oxnard, CA	Warrenton, VA

Exhibit 9. SCS Transfer and MRF Projects

Dallas, TX	Page, AZ	Wells, ME
David City, NE	Palm Springs, CA	Westlake, OH
Denver, CO	Palmdale, CA	Wichita Falls, TX
Douglas, AZ	Palo Alto, CA	Wichita, KS
Escambia County, FL	Parsippany, NJ	Wilmington, CA
Everett, WA	Pasadena, CA	Yakima, WA
Fontana, CA	Passaic County, NJ	Yates Center, KS
Fresno, CA	Pittsburgh, CA	Pago Pago, American Samoa
Friday Harbor, WA	Poland, ME	Pemberton, British Columbia
Gardena, CA	Pomona, CA	Vancouver, British Columbia
Gorham, ME	Portland, OR	
Holtville, CA	Redmond, WA	
Hugoton, KS	Richland, WA	
Huntsville, TX	Rockville, MD	
Kansas City, MO	Rushville, IN	
Kent, OH		

**Design/Permitting of Transfer/Material Recovery Facility
Confidential Client in Texas**

SCS provided design and permitting services for a 2500 ton per day transfer/material recovery facility (T/MRF). SCS principals developed the re-zoning and special use permit application for this facility, including meetings with neighborhood groups and negotiations with city staff on various issues. Working closely with the company's owner, SCS developed the strategy for permitting the T/MRF and integrating current operations into the long term plan. Other features of this project included working with the MRF equipment provider, provisions for short-term efficiencies and long-term improvements, a drainage design consistent with city and state requirements, inter-agency coordination (e.g., obtaining concurrence from the regional planning commission on the concurrence with the solid waste regional plan) and other related services.

Richland Transfer Station, Richland, Washington

SCS designed a transfer station and recycling center for the City of Richland, Washington. The station integrated a household hazardous waste collection facility, recycling center, yard waste processing facility and transfer station into a "one stop shop" for handling the solid waste needs of the Richland citizens. Project activities include project management, establishing design criteria, design of facility master plan and site layout, and design of the transfer station and recycling facilities. Facility specifications consist of the following:

- Designed for severe winter conditions
- 7,500 ft² transfer building
- 2,000 ft² household hazardous waste building
- 22,5000 ft² public access area for roll-off recycling containers

The transfer station included extensive roads for smooth traffic flow, three tipping buildings to provide sufficient tipping stalls for the public and commercial haulers, and a radio operated vehicle weight scale. The transfer station was designed for expansion in the configuration of the transfer buildings. In addition to these solid waste facilities and site storm drainage and retention system was design as well as a waste water collection system. Litter control was accomplished through orientation of the buildings, use of wind fences, and perimeter fencing. The drive-through household hazardous waste collection area included a covered area for sorting and packing of materials, pre-fabricated waste storage containers, a spill containment slab and an adjacent administrative office. The recyclables drop off area included a large paved area for customer parking and recyclables containers. The yard waste processing area included a tipping area for yard waste with an adjacent yard waste processing area for staging of yard waste, operation of a tub grinder, and storage of finished mulch.



Weber County Transfer Station, Ogden, Utah

SCS designed the Weber County transfer station, a 1,200-ton-per-day facility serving Weber County, Utah. The facility was completed in late 2000 and consists of the following:

- Designed for severe winter conditions
- 43,000 ft² transfer building
- 5,000 ft² administration building (attached to transfer building)
- 400 ft² scalehouse building (detached from transfer building)
- 1,600 ft² maintenance building
- 24,000 ft² public access area and recycling structure

The facility is designed to collect the following source-separated recyclables in the recycling structure: corrugated cardboard; news print, mixed waste paper; aluminum cans; tin cans; mixed ferrous metals; mixed non-ferrous metals; HDPE and PET plastic bottles; clear, brown and green glass; motor oil; antifreeze; automobile tires; automobile batteries; white goods; scrap metal; and yard/wood waste.

The transfer building is designed to receive and transfer 10 tons per day of commingled paper and containers, and 1,200 tons per day of mixed municipal solid waste.



Yakima County Transfer Station Yakima County, Washington

SCS developed a flat floor transfer station to serve the needs of the Lower Yakima Valley area. This was necessary due to the closure of the Snipes Mountain Landfill. SCS conducted site selection, environmental review, concept development, detailed design, permitting, bidding assistance, and construction management. An extensive siting and public participation process to successfully site the facility was completed.

The facility was designed to accept waste from both commercial and municipal haulers, and self-haulers, and handles approximately 120 tons of waste per day with a peak hourly rate of 25 tons. Facility specifications consist of the following:

- Designed for severe winter conditions
- 7,300 ft² flat floor transfer building
- 360 ft² administration building
- 284 ft² scalehouse building
- 192 ft² storage building
- 900 ft² household hazardous waste area
- 9,000 ft² public access area for roll-off recycling containers



Ohio Gulch / Sun Valley Transfer Station Southern Idaho Regional Solid Waste District, Blaine County, Idaho

SCS provided siting, engineering, and construction period services for the siting and design of an entire solid waste transfer system using a design/build approach. The transfer system consisted of a series of roll-off container stations, larger dropbox-type facilities, and state-of-the-art recycling and transfer stations, ranging in size from 1 ton per day to 60 tons per day. Of the 10 facilities, two were designed for a semi-arid climate which receives substantial snowfall. The construction costs for the facilities ranged in price from \$35,000 to \$700,000. All facilities were designed to use interchangeable equipment, and included provisions for multi-material recycling including tires and white goods. The transfer system serves the newly constructed Milner Butte Regional Landfill.

The Ohio gulch Transfer Station serves the Sun Valley, Idaho resort area. The station includes a public transfer station, public recycling area, an equipment maintenance building, office building, scalehouse, and waste disposal areas. Facility specifications consist of the following:

- Designed for severe winter conditions
- 4,800 ft² transfer building
- 1,000 ft² administration building
- 140 ft² scalehouse building
- 800 ft² storage building
- 7,000 ft² public access area for roll-off recycling containers



Eastmont Transfer Station Expansion, Seattle, Washington

SCS was retained for the design and construction of a 600 ton-per-day flat floor transfer station expansion in Seattle, WA. The project expanded an existing municipal solid waste transfer station with a new 17,000 ft² transfer building. Facility specifications consist of the following:

- 17,000 ft² transfer building
- 1,600 ft² administration building
- 800 ft² scalehouse building

The site is extremely small at less than two acres and accommodates several hundred customer vehicles per day. The facility recovers recyclables from the CDL waste stream by manual separation and with mechanical handling equipment. Processes are also in place for the conversion of concrete, rock, asphalt and wood into saleable products. The waste is prepared for disposal with pre-load waste compactors. The transfer station is served by a long-term waste export contract.

The station features a recyclable recovery sorting conveyor, residual compaction equipment, vehicle weigh scale facility, and on-site queuing for all facility users. SCS also designed the systems for control of storm water and dust. SCS Engineers prepared the conceptual and preliminary designs, prepared permit applications, conducted construction administration, and prepared the final engineering certification for compliance with the state Department of Ecology regulations.

Waste Management, Inc., MRF/Transfer Station, Carson, California

SCS was hired to coordinate construction of a new 54,000-square-foot, clearspan transfer station building, including all related electrical systems, plumbing, waste water systems, and removal and replacement of approximately 2.5 acres of reinforced concrete paving and floor slabs. The project also included the demolition of the existing 28,800-square-foot transfer station building. Complicating the project was the need to maintain transfer operations at $2,400 \pm$ tons per day throughout the construction period. SCS accomplished this by scheduling the construction of the 4-foot-diameter by 27-foot-deep supporting drilled piers, demolition of the existing steel structure and concrete paving/floor slabs, excavation of $2.5 \pm$ feet of undocumented fill throughout the paving and floor areas, and construction of the new 224-foot clearspan building in stages during normal working hours, such that there was no lost time in transfer operations. Also included in this project were the review and modification of the design and construction documents and the assumption of Engineer of Record status in order to assist the owner in expediting the project.

SCS also prepared design and construction documents for a 34,000-square-foot material recovery facility addition to the transfer station, which includes the remodel of an existing two-story, 3,900-square-foot office building.



Action Transfer Station, Gardena, California

SCS provided planning, permitting, and architectural/engineering design services for improvements to this 2,250-tpd transfer station with adjacent office/truck maintenance building and household hazardous waste storage facility. Improvements included construction of a new 10,000-square-foot office/truck maintenance facility, a 2,000-square-foot steel supported roof structure over the transfer pit, an enlarged tipping floor, new transfer ramp retaining walls, new steel push walls, a fueling facility, and a household hazardous waste storage facility. SCS also developed a phasing plan for the demolition of three existing buildings and uneven paving so that improvements could be constructed without interrupting the operation of the facility.

Lakeport Transfer Station, Lakeport, California

SCS performed site planning and design of proposed modifications to an existing 75-ton-per-day transfer station in Lakeport, California for the County of Lake. SCS's scope of work consisted of the site planning and complete architectural/ engineering design and preparation of construction documents and cost estimate. The proposed transfer station modifications included a new entry scale and relocated scalehouse, a split-level citizens' drop-off area, and self-haul disposal and commercial disposal areas. MSW is tipped onto a completely enclosed tipping floor from which it is loaded into a compactor located in a tunnel area below the tipping floor. Once filled, the compactor ejects a 45-foot long MSW "log" into a transfer trailer for transport to the County landfill. The design throughput of the modified transfer station is 400 tons per day.



Newport Beach Transfer Station, Newport Beach, California

This 400-tpd transfer facility is operational based on design and construction management services provided by SCS. SCS completed concept planning, cost analysis, final civil and structural engineering design, and construction management / oversight services for the facility. Construction included removal of existing paving; addition of 5 feet to the top of the existing reinforced concrete retaining walls; new retaining walls; grading and paving of the site and access road; and installation of two cantilevered steel hoppers to contain and channel municipal solid waste into 45-foot transfer trailers.



Perdido Landfill MRF Evaluation, Escambia County, Florida

SCS was retained by Escambia County, Florida, to evaluate the County's existing material recovery facility located at the Perdido Landfill. The initial facility evaluation included structural, mechanical, and electrical system evaluations, as well as review of industrial safety issues. Deficiencies were identified and corrective measures proposed. SCS designed the corrective measures.



Reedy Creek Materials Recovery Facility, Orlando, Florida

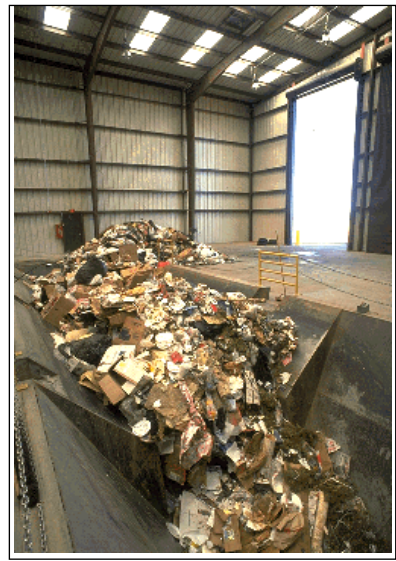
The Reedy Creek Materials Recovery Facility is a medium size facility that processes source separated and commingled recyclables. The facility features included an office complex, conference center, visitor viewing areas and design promoting high natural light levels and good ventilation. SCS performed Architectural and Engineering services for this project that consisted of (1) design of the materials handling system; (2) site and architectural design; (3) specifications and construction oversight; and (4) assistance with shakedown and startup of the processing system.



Sierra Vista and Douglas, Arizona, Transfer Stations

These transfer stations comprise two of five solid waste facilities in Cochise County. SCS conducted planning and siting studies for these facilities, as well as all A&E design, preparation of construction documents, and construction quality assurance services.

The transfer stations are designed such that commercial and self-haul users enter the 6,400-square-foot, pre-engineered metal buildings from opposite sides, thereby maintaining separation of commercial and public vehicles. Trash is deposited directly onto live-floor conveyors that feed subterranean compactors. Each station has a capacity of approximately 150 to 250 tons per day.



6 SOLID WASTE STUDIES

INTEGRATED SOLID WASTE PLANNING



Taken together, the collection, recycling, and disposal of solid waste are some of the costliest of municipal services. Waste handling is also becoming more expensive because of recycling mandates, tighter landfill standards, and unstable markets for recyclable materials. The careful planning and implementation of solid waste management programs are high priorities for government and industry. SCS offers comprehensive integrated planning services to assist in achieving your goals in integrated waste management. SCS's planning practice includes:

- Waste generation studies.
- Waste characterization studies.
- Waste management plans and reports.
- Program design, implementation, and monitoring.
- Grant writing.
- Ordinance preparation and implementation.
- Business waste assessments and technical assistance.
- Rate studies.
- Collection service and facility development procurements.
- Privatization studies.
- Hauler audits.

SCS is also an innovative force in new waste diversion programs. We designed one of the first e-waste collection events in California and studied the feasibility of a diaper recycling facility—the first in the United States. We are also leading the charge to sustainability through innovative programs, green building design and specifications, construction and demolition debris recycling programs, and procurement policies.

The following profiles document SCS's experience in performing integrated waste management planning services.

PROJECT EXPERIENCE

Integrated Solid Waste Management Services

City of Baldwin Park, CA, AB 939 Services

SCS was originally contracted in 1999 to provide solid waste management consulting services to the City. Since then, SCS has undertaken a variety of projects, including a waste generation study, recycling program design and implementation, reporting and monitoring for AB 939

compliance, and a financial and operational review of the franchised hauler. SCS has provided the following AB 939 support services to the City:

- Preparation of solid waste generation and base year studies.
- Completion of business audits and technical assistance.
- Review and analysis of the City's solid waste management plan (SWMP).
- Program planning and implementation.
- Evaluation of franchise agreement compliance.
- Service and rate negotiations.
- Public education and outreach.
- Backyard composting workshops.
- Development and monitoring of the construction and demolition debris recycling ordinance.
- Update of municipal codes to incorporate new policies and programs.
- Disposal and diversion report review and analysis.



City of Lakewood, CA, AB 939 Services

In July 2000, SCS prepared a Waste Generation Study for the City of Lakewood in support of establishing a new base year. Data from business audits and ongoing diversion activities were used to establish the new base year. As a result of the initial project, SCS has been retained by the City to provide ongoing AB 939 support services, including:

- On-site recycling coordinator.
- Public education and outreach.
- Business and restaurant waste audits and technical assistance.
- Green waste drop-off program.
- Electronics recycling collection events.
- Disposal and diversion report review and analysis.
- Annual Report preparation.
- Management of state-funded grant programs.



SCS assisted in organizing an electronics recycling collection event for the City of Lakewood, CA.

- Other program planning and implementation activities.
- Special event and public venue recycling.
- Stormwater compliance services.

County of Orange Integrated Waste Management Department, AB 939 Services

SCS was the prime contractor for the AB 939 on-call services in Orange County. Under this 3-year contract, SCS undertook a variety of studies for the County, including the Waste Generation/New Base Year Study, AB 939 Fee Study, Diversion Facility Study, Hauler Audits, and other AB 939 compliance activities. Projects completed by SCS include:

- Analysis of the existing waste diversion and disposal quantities in the County unincorporated area.
- Identification of opportunities to increase landfill diversion, including inventory of green waste composting and chipping and grinding facilities, inert (asphalt and concrete) diversion facilities, and other non-disposal facilities.
- Analysis of a potential fee structure for increasing diversion of recyclables from the landfills.
- Analysis of self-haul waste stream, including the facilities utilized by self-haulers for the disposal of construction, demolition, and other waste streams.
- Hauler fee audits to determine compliance with franchise agreement.
- Hauler address audits to determine waste origin reporting errors.
- 5-year update of the Countywide integrated waste management plan.



SCS is conducting a variety of studies under AB 939 in Orange County, CA.

City of Rancho Palos Verdes, CA, AB 939 Services

The City of Rancho Palos Verdes is a beachside community located near Los Angeles. SCS was initially retained by the City to provide annual solid waste management (AB 939) services in 2001, and since that time has initiated a number of projects intended to increase the City's diversion. Projects include:

- Expansion of multi-family recycling.
- Education and outreach.
- Special event and public venue recycling.
- City facility recycling program review and expansion.



SCS has provided AB 939 services to the City of Rancho Palos Verdes, CA since 2001

- University recycling program design and implementation.
- Annual report preparation.
- Disposal reporting system review.
- Commercial recycling guide.

City of Rolling Hills, CA, AB 939 Services

The City of Rolling Hills is served exclusively by a single franchised hauler, and has implemented a variety of source reduction and recycling programs, including residential recycling, green waste collection, and public outreach methods such as newsletter articles and flyers.

Since 1999, SCS's work has included:

- Preparation of base-year modification application.
- Presentation of new base-year modification at California Integrated Waste Management Board (CIWMB) meeting.
- Review and analysis of the City's approved SRRE.
- Preparation of AB 939 Annual Reports.
- Review and analysis of disposal reporting system numbers.
- Research and review of waste disposal origins.
- Recommendations on program planning and implementation.

Waste Characterization Studies

County of Santa Barbara, CA Waste Characterization Study



SCS characterized municipal solid waste at the Tajiguas Landfill in Santa Barbara County, CA.

This study characterized 110 loads of municipal solid waste at the Tajiguas Landfill and the Santa Barbara County transfer station in order to provide detailed composition estimates of waste disposed in Santa Barbara County. The study results include composition estimates, both for the overall waste stream and for the franchised residential (single-family waste), franchised commercial (multi-family and business waste), and self-haul (all sources) loads. As part of the project, SCS, and subcontractor Cascadia Consulting Group, Inc., undertook the following:

- Developed a detailed sampling plan for the City of Santa Barbara, City of Goleta, and other cities/unincorporated areas. This sampling plan is statistically valid and allows for the projection of results.

- Scheduled and collected waste samples. Based on data from vehicle counts and tonnage estimates for the three sub streams, samples were collected by jurisdiction of origin, at each facility, and sampling quotas and daily vehicle selection sheets were established to ensure the correct number and types of vehicles were sampled each day.
- Captured and sorted samples. Selected vehicles were directed to the sorting area, where the sampling crew supervisor directed the loader operator to scoop a portion of the waste tipped from the selected vehicle. The samples were then sorted into 57 waste component categories.
- Analyzed data and prepared report. Following the sampling, all composition data were entered into a customized database. Waste composition estimates were then calculated by aggregating sampling data utilizing a weighted average procedure.

County of Orange Integrated Waste Management Department Waste Characterization Study

SCS was the prime contractor for the self-haul waste characterization study in Orange County, California. Waste sampling and analysis was conducted at all three active landfills, and the data was analyzed to determine the quantity and composition of waste from self-haul and roll-off loads from all jurisdictions within the County. The project included a two-season sort, the first of which was conducted in Summer 2003, and the second season in Winter 2004. Tasks undertaken by SCS included:

- Regulatory review and analysis of statutes and regulations impacting the study.
- Development of waste sampling work plan.
- Conducting vehicle surveys at gatehouse.
- Collection of activity and origin data for waste samples.
- Data analysis and report preparation.
- Design and maintenance of project website.



SCS oversaw waste characterization activities at all three active Orange County, CA landfills.

Athens Services, City of Industry, CA Waste Composition Study



SCS has provided numerous waste composition studies for Athens Services.

SCS has conducted a number of waste composition studies at the Athens Services MRF/Transfer Station in Los Angeles County. The studies are conducted in accordance with CIWMB protocol, and include preparation of a sampling plan, sorting of waste into 57 different categories, and preparation of report findings. The results of the analysis are used to determine the recycling rate or recyclable portion of the incoming waste stream from a number of municipalities.

Los Angeles International Airport, CA Waste Assessments and Characterization Study



SCS's services provided to LAX were used to design and implement new recycling and diversion programs.

SCS completed a two-season study of waste disposed at the Los Angeles International Airport (LAX). The study entailed over 150 tenant interviews designed to obtain detailed waste generation and recycling information. Over 200 samples were collected directly from selected tenants and hand-sorted into 58 material categories. An additional 30 loads of construction and demolition waste were visually sampled.

In addition to estimating the overall composition and quantity of waste that is disposed at LAX, the study's analysis developed composition profiles and generation rates for seven generator groups:

- Terminal areas.
- Hangers.
- Vehicle/fleet maintenance.
- Cargo facilities.
- Catering/kitchens.
- Construction and demolition.
- Mixed uses.

The information was used by the Los Angeles World Airports to design and implement new recycling and diversion programs.

County Sanitation Districts of Los Angeles County, CA Waste Composition Study

SCS conducted a variety of waste composition studies (sorts) for the Districts' MRF in Downey. These sorts were conducted to serve a variety of purposes:

- Quarterly sorts to determine the quantities and percentages of recyclable material found in residential recycling loads to determine diversion percentages for facility client jurisdictions.
- Sorts to determine the recycling potential of select residential routes.
- Sorts to determine the recycling potential of select commercial accounts.
- Sorts to determine the quantity and percentages of residual wastes from the facility's sorting line.



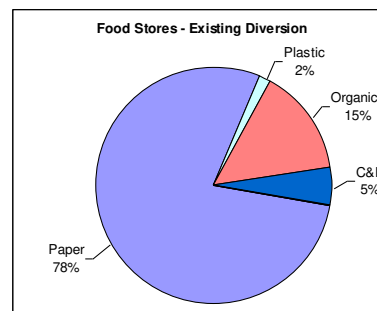
SCS conducted waste composition studies for a MRF in Downey, CA

Waste Generation Studies

California Integrated Waste Management Board (CIWMB) Statewide Waste Generator Study

SCS conducted the waste generator task of the statewide waste characterization study under subcontract to Cascadia Consulting Group. The study characterized the waste generated, both disposed and diverted, from 10 commercial generator groups that are major sources of waste in the state. The study consisted of field sampling, sorting, and quantification, which were used to establish a comprehensive waste generation for each business type. As part of this study, SCS was responsible for:

- Assisting in the study design, including selection of generator groups, sample sizes, and material types.
- Recruiting businesses to participate in the study.
- Conducting waste assessments at 400 businesses located in the Sacramento, Bay Area, Los Angeles, and San Diego regions.
- Compiling data on waste diversion, by material type, diversion activity, and quantity.
- Preparing final report on waste generation by business group.



SCS assisted with a statewide waste characterization study for the CIWMB.

County of Los Angeles, CA Department of Public Works New Base Year Study

SCS is the lead contractor for the County of Los Angeles 2005 and 2006 Base Year Study project. This two-year effort includes a waste generation study for each year that will be used to identify existing diversion and disposal within the unincorporated portions of the County, as well as potential diversion and waste minimization opportunities for future program planning.

SCS is directly responsible for the following elements of the project:

- Contract / Project Management.
- Project Plan and Preliminary Report.
- Thrift Goods Study: survey of the largest regional stores to obtain the total quantity diverted from landfill disposal.
- Hauler Survey: identify waste diversion programs being offered or implemented and total tonnage by material type diverted by each type of program and attributed to the County.
- Government Facilities: identify and survey all non-County governmental agencies located within the unincorporated areas of the County regarding their existing and planned solid waste diversion programs and practices.
- Construction and Demolition Materials: identify the quantities of Construction and Demolition (C&D) materials that are diverted in the County on a regular basis by solid waste and inert landfills, C&D recyclers and processors, concrete crushing and manufacturing plants, and asphalt concrete crushing and manufacturing plants.
- Transfer Stations and MRF: document the diversion of wastes at transfer stations, recycling facilities, and MRFs that originates from the County unincorporated areas.
- Food Services: survey the largest food waste diversion activities by food banks, markets, and other charitable organizations, as well as rendering companies, food manufacturing and processing, and/or composting.
- Special Waste: survey facilities that recycle materials such as tires, scrap metal, and electronic waste.
- Preparation of certification forms for 2005 and 2006.
- Preparation of report for 2005 and 2006.



SCS is the lead contractor for the County of Los Angeles, CA's 2005 and 2006 Base Year Study.

City of Lancaster, CA **Solid Waste Generation/Base Year Study**

SCS has been retained by the City's franchised waste hauler to conduct a waste generation study for the purpose of establishing a new base year for 2005. After a cursory review of the City's available waste generation data, including verification of recent third party audit information and review of the City's disposal over the past few years, it was determined that correcting the base year study was necessary. To complete the project in cooperation with the hauler, SCS will:

- Review disposal and diversion data from the Disposal Reporting System and landfills.
- Diversion analysis, including surveys of recycling facilities, drop-off centers, construction/demolition debris facilities, government agencies, schools, and onsite waste audits.
- Construction/demolition debris and greenwaste diversion activities from City projects and facilities.
- Review of municipal collection reports and diversion programs within the City.
- Preparation of certification forms and supporting documentation submitted to CIWMB.
- Preparation of project report to City and hauler.

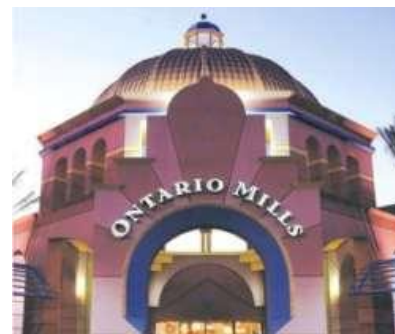


SCS completed a waste generation study for the City of Lancaster, CA's franchised waste hauler.

City of Ontario, CA **Solid Waste Generation/Base Year Study**

The City of Ontario retained SCS to conduct a waste generation study for the purpose of establishing a new base year. The City chose not to extrapolate any data obtained in order for the study to be acceptable by the CIWMB. A new 2003 base year diversion rate of 60% was submitted to the CIWMB and is pending approval. Project tasks included:

- Review of disposal data from the Disposal Reporting System and landfills.
- Diversion analysis, including surveys of recycling facilities, construction/demolition debris and greenwaste recycling facilities, government agencies, and schools.
- QA/QC of commercial waste assessments conducted by City staff.



SCS conducted a waste generation study to establish a new base year for the City of Ontario, CA

- Review of municipal collection reports, composting of sludge from wastewater treatment facility, and aggregate tonnage from drop-off centers and programs within the City.
- Preparation of certification forms and supporting documentation submitted to CIWMB.
- Preparation of project report to City.

West Contra Costa Integrated Waste Management Authority, CA Solid Waste Generation Study

The Authority retained SCS to conduct a waste generation and base year study. The project included residential surveys for source reduction, commercial waste assessments and analysis of DRS data, and review of hauler disposal and recycling information. A new 2001 base year diversion rate of 43 percent was established as a result of the project. The study was the first 2001 New Base Year approved by the CIWMB. Tasks included:

- Review of disposal data from disposal reporting system and landfills.
- Diversion analysis, including governmental agencies, residential surveys, and recyclers.
- Franchised haulers' construction and demolition source reduction.
- Commercial waste assessments of 100 businesses.
- Identification of diversion opportunities.
- Preparation of CIWMB Base Year Modification Certification forms.
- Identification of top 10 generators.
- Identification of all diversion by material type and diversion type (source reduction, reuse, recycling, composting, etc.).

City of Santa Clarita, CA **Solid Waste Generation/Base Year Study**

The City of Santa Clara retained SCS to conduct a waste generation and base year study. The project included residential surveys for source reduction, commercial waste assessments and analysis of DRS data, and review of hauler disposal and recycling information. A new 2000 base year diversion rate of 42 percent was established for the City as a result of the project. The study was approved by the CIWMB.

Tasks included:

- Review of disposal data from disposal reporting system and landfills.
- Diversion analysis, including governmental agencies, residential surveys, and recyclers.
- Franchised haulers' construction and demolition source reduction.
- Commercial diversion waste assessments of 100 businesses.
- Identification of diversion opportunities.
- Preparation of CIWMB Base Year Modification Certification forms.
- Identification of top 10 generators.
- Identification of all diversion by material type and diversion type (source reduction, reuse, recycling, composting).



A new base year diversion rate of 42 percent was established for the City of Santa Clarita, CA based on the study conducted by SCS.

SCS also investigated disposal reporting discrepancies for 1999 and 2000 from the local landfill, and provided recommendations to inhibit future errors in reporting at the scalehouse. SCS conducted this study to investigate the potential causes for the decrease in the City's diversion and increase in disposal. The scope of work included a review of landfill weigh tickets, invoices, and reporting databases, disposal collection information from the City's major haulers, and recommendations to improve reporting at the landfill and how to report to the CIWMB for compliance year 2000.

Waste Management Planning

County of Sonoma, CA **Solid Waste Management Alternatives Analysis**

The Sonoma County Department of Transportation and Public Works hired SCS to define and evaluate options for the County's Solid Waste Management system for the years 2015 through 2050. The purpose of the project was to produce a long-term integrated waste management strategy to meet the long-term disposal needs of the County. The project participants included

the County's Integrated Waste Management Task Force, made up of public agencies, private industry, environmental groups, community activists, and others, and County staff.

The 13-month process included the following elements:

- Examining existing and future needs of the solid waste system.
- Establishing methodology for reviewing and selecting plan alternatives.
- Identifying waste management alternatives, including policies, programs, facilities, and emerging technologies.
- Formulating management scenarios.
- Estimating system costs.
- Creating implementation guidelines and timeline.
- Selecting a preferred plan scenario to meet the future disposal needs of the community.
- Coordinating Solid Waste Task Force meetings and presentations.



The County Board of Supervisors approved the project recommendations in February 2001, paving the way for implementation of the adopted strategy.

South Bayside Waste Management Authority. CA Public Venue/Special Events Project

The South Bayside Waste Management Authority (SBWMA) hired SCS to assist in the implementation of AB 2176, including designing outreach materials, communicating with the 11 jurisdictions under SBWMA, assisting in grant writing, and collecting data. SCS identified the top 10% venues and events within the 11 jurisdictions, provided a brief description of the types of waste generated, and estimated the amount of materials disposed and diverted. SCS assisted in the development of a local ordinance to facilitate solid waste reduction, reuse, and recycling at venues and events. SCS contacted the top 10% of venues and events and gathered annual waste generation tonnage, diversion tonnage, and a waste reduction program description. SCS developed education and outreach materials for venues and events including a recycling program implementation checklist, vendor recycling procedures, and/or recycling guidelines. On behalf of the SBWMA, SCS prepared a grant provided by the Department of Conservation (DOC). SCS successfully obtained \$64,000 in grant funds for the development of two self-contained mobile recycling trailers, including bins, liners, signage, and toters, for use by special events throughout the SBWMA jurisdictions.

SCS was recently hired to oversee and implement all aspects of the DOC grant including hiring and training interns to deliver the mobile trailers, selecting equipment, developing a special event tracking database, and preparing grant reports. SCS currently manages the AB 2176 reporting, data tracking, and implementation.

The Pentagon, Washington, DC Implementation of Recycling Program



SCS was recently hired by the Pentagon to improve its recycling program.

SCS was recently hired by the Pentagon to gather data concerning the types and quantities of waste generated and to develop and implement improvements to the Pentagon's recycling program. Based on the information, SCS will recommend alternative approaches to achieve significant waste reduction through recycling, reuse, and source reduction activities. SCS will prepare an implementation plan based on the waste audit and the recycling report. SCS will also implement and oversee the recycling program components,

including strategic recycling bin placement, recycling green team development, training, material collection and transportation, staging area logistics, and program design. A recycling handbook will be developed for building managers and other stakeholders responsible for implementing the recycling program. SCS will recommend source reduction and procurement program alternatives that will encourage the efficient use of materials, develop and promote reduction and reuse strategies, and integrate the strategies with recycling. A diversion database will be developed for tracking monthly waste and recycling tonnages. The database will also be used to track monthly cost savings, revenue generated, program costs and net savings. In an effort to increase employee ownership, SCS will organize and execute a recycling program slogan contest, develop posters, and organize recycling communication between divisions. An official logo representing the Pentagon recycling program will be created and included on recycling program materials.

Alameda County, CA Implementation of Recycling Program

The Alameda County Waste Management Authority (ACWMA) hired SCS to implement waste reduction and recycling programs at a farmers market and swap meet. The two events were selected because each occurs multiple times per month within each jurisdiction (fourteen cities and two sanitary districts) and the recycling program design can be easily emulated. SCS assisted the event planners and ACWMA staff in reducing waste and increasing diversion at the two events and collected and tracked data from the events for use in the AB 2176 report. SCS also provided additional recommendations to the Best Practices Guide for Special Events. Information in the guide included an introduction to recycling and AB 2176, planning checklist, questions to ask haulers, and a post-event recycling



SCS implemented a waste reduction and recycling program at a swap meet in Alameda County, CA.

worksheet to be submitted to a local jurisdiction after an event. The ACWMA local jurisdictions, event planners, food service providers, and venues will use the guide.

Spokane Regional Solid Waste System, WA SWMP Update

SCS is preparing the update of the Spokane Regional Solid Waste System (Spokane County and the City of Spokane) SWMP. All elements of the County's solid waste system will be addressed with particular focus on updated waste stream projections, financial impacts of alternatives, transfer system improvements, moderate risk waste, composting options, and addressing construction, demolition, and land clearing (CDL) waste options. Sections of the SSWP will be prepared in draft form and provided to the County SWAC for review.

Adams County, WA Solid Waste Planning

SCS worked with Adams County to evaluate waste export services procurement, assess transfer station design and operations, and provide a feasibility evaluation of recycling alternatives. To address waste export, SCS prepared a bid document for both waste export services and the operation of two county solid waste transfer stations. An evaluation was performed to determine if the facilities were in compliance with applicable codes, standards, and regulations. Under a separate task order, recommendations for the improvement of the County's recycling programs and utilization of available grant funding were also presented.

Benton County SWMP Update Prosser, WA

SCS is presently preparing the Benton County 2005 SWMP update. In the past, Benton County had worked with neighboring Franklin County to prepare a joint SWMP. For 2005, Benton County will have its own independent plan. The process includes a review of the previous plan recommendation, and updating all of the information to reflect current conditions in the County. An important aspect of this project is participation and involvement of the planning committee, a subcommittee of the local solid waste advisory committee (SWAC). SCS has presented a number of options for review and consideration by planning committee members, and the recommendations will be forwarded to the SWAC for their final recommendation to the County Commissioners. As part of the Plan, SCS has presented options for the implementation of e-waste programs, in compliance with Senate Bill 6428.

Mason County SWMP Update Shelton, WA

SCS is nearing completion of Mason County's SWMP update. After drafting several chapters of their plan update, SCS was retained to develop new chapters, complete the document, and work with



SCS has provided SWMP updates for several government agencies in the state of Washington.

stakeholders prior to submitting the draft plan for review and approval. The purpose of the plan is to comply with the State-mandated update schedule, as well as to review prior initiatives and develop new goals. Other drivers pushing the planning process are coordination with the County Comprehensive Plan, growth in the communities of Shelton and Belfair, planned development of event venues in adjacent counties, and maintaining continuity with north peninsula counties moving waste through Mason County.

Kittitas County SWMP Ellensburg, WA

SCS completed the preparation of Kittitas County's SWMP. The purpose of the plan is to comply with the State-mandated update schedule, and to review prior initiatives and develop new goals. An important aspect of this project was participation and involvement of the local SWAC, which represented a broad diversity of geographic and community interests. Throughout the project, SCS utilized the monthly SWAC meetings to facilitate the plan review and development. At each meeting, SCS would present specific aspects of the project—such as reviewing methodology or solid waste management alternatives—and solicit input from the SWAC members on these topics. During the month following the meeting, SCS would forward to the County and SWAC members updated information for discussion at the next meeting. This process was most effective in keeping the SWAC members involved in the project, as well as keeping the project moving forward. It ensures that at the end of the process, the SWAC members are satisfied with the outcome and are able to present the report for review and approval by their City or town.

City and County of San Francisco, CA Candlestick Park SWMP

SCS assisted Candlestick Park and the 49ers football organization in applying for and receiving a solid waste management grant. SCS used the funding to implement of a number of solid waste management tasks, which included:

- Waste management characterization study.
- Organizing and leading recycling planning meetings with the City and County of San Francisco, 49ers, contract food services, and contracted cleaning services.
- Designing and implementing a comprehensive recycling program for 49er football games and special events.
- Selecting recycling equipment.
- Creating a diversion database.
- Recycling education and training of in house and contracted staff.



SCS assisted Candlestick Park and the 49ers football organization with a number of solid waste management tasks.

- Designing a recycling incentive program for event attendees.

City and County of San Francisco, CA

San Francisco War Memorial & Performing Arts Center Diversion Program



SCS designed and implemented a comprehensive diversion program for the San Francisco War Memorial and Performing Arts Center.

SCS was awarded a grant from the City and County of San Francisco to design and implement a comprehensive diversion program for the San Francisco War Memorial and Performing Arts Center. Tasks included developing a comprehensive diversion program; educating in-house, contracted, and Performing Arts staff regarding recycling procedures; and overseeing all recycling program elements, including employee training, coordination of the proper flow of waste, developing waste diversion database, public education outreach, and promotional material production.

The San Francisco War Memorial and Performing Arts Center had an informal recycling program at the various Performing Arts facilities. Recommendations for improvement included developing a consistent program, purchasing equipment, training staff regarding recycling procedures, and implementing a formal diversion program. Designing and implementing a comprehensive diversion program were successful throughout these facilities. The recycling program was incorporated in March 2004. The San Francisco War Memorial and Performing Arts Center have already seen a reduction in disposal costs without any increase in labor.

Waste Assessments and Technical Assistance

City of Irvine, CA

Commercial Waste Assessment and Technical Assistance



SCS is helping the City of Irvine, CA promote its various waste diversion programs through new media and public outreach campaigns.

The City initially retained SCS in 2002 to conduct onsite waste assessments to businesses. SCS continues to work with businesses to estimate the amount of waste diversion taking place among commercial accounts, identify potential diversion programs for each commercial establishment, and provide technical assistance and additional support to each business to encourage the establishment of new or expanded recycling and waste minimization programs. Additionally, SCS has identified a number of candidates for the statewide waste reduction award program and has provided assistance in completing of the applications.

In light of recent legislation mandating diversion programs at large venues and events, SCS is working with applicable venues and events to implement and monitor waste diversion programs, and provide data to the City for incorporation into its state-mandated annual report. This year, SCS will be helping the City promote its various waste diversion programs through new media and public outreach campaigns.

City of Fontana, CA

Solid Waste Management Programs Review



SCS identified ways to increase the efficacy of existing waste diversion programs for the City of Fontana, CA.

SCS reviewed the City's existing waste diversion programs to evaluate the contribution of each program to the existing diversion rate. Based on that evaluation, enhancements were identified to increase the efficacy of existing programs. SCS also identified new diversion programs that could enhance the City's overall diversion rate. In total, seven residential, four non-residential, two city, seven policy, and one household hazardous waste programs were recommended for expansion or addition. Additionally, recommendations were made to incorporate new city ordinances and household hazardous waste program alternatives in the City's stable of diversion programs and supporting policies. Waste generation projections included in the study will help the City plan for

increases in waste disposal and the amount of and diversion needs for the City to exceed diversion goals. These projections were used to estimate the potential effectiveness and diversion rates for the recommended programs.

City of Carlsbad, CA

Five Year Diversion Plan

SCS reviewed the City's existing waste diversion programs in order to evaluate the contribution of each program to the existing diversion rate. Based on that evaluation, enhancements were identified to increase the efficacy of existing programs. SCS also identified new diversion programs that could enhance the City's overall diversion rate. In total, seven residential, four non-residential, and four city programs were recommended for expansion or addition. Also, recommendations were made to incorporate new city ordinances and household hazardous waste program alternatives that could be included in the City's stable of diversion programs and supporting policies. Waste generation projections included in the study will help the city to anticipate potential increases in waste disposal, as well as the amount of waste needing diversion for the City to exceed diversion goals. These projections were also used to estimate the potential effectiveness and diversion rates for the recommended programs.



SCS identified new diversion programs that could enhance the overall diversion rate for the City of Carlsbad, CA.

Construction and Demolition Services

City of Lakewood, CA

Multiplex Theater Deconstruction Project

SCS developed a comprehensive deconstruction analysis and a materials management plan for the deconstruction of the Pacific Regency Theater, originally built in 1990 to seat 2,200 people. In addition, SCS prepared an in-depth study to support the pending C&D Debris Ordinance of

the City of Lakewood. Project monitoring and evaluation provided valuable information and a guide to successful diversion of all feasibly recyclable and reusable materials. Tasks included:

- Deconstruction analysis.
- C&D materials management plan.
- Project monitoring and evaluation.
- Resource database.

SCS was directly responsible for all of the above activities and served as liaison between engineers, contractors, subcontractors, and architects. Of the 14,000 tons of waste generated at the site, 13,400 tons were diverted, a very successful 97 percent. Some of the unusual items diverted included 2,200 theater seats, 500 pounds of drapes, and 59 palm trees. The deconstruction was completed in only 5 weeks.



SCS assisted in successfully diverting 97% of the C&D materials generated during the deconstruction of a multiplex theater.

Interior Removal Specialists, Inc. C&D Facility Permit

SCS is working with Interior Removal Specialists, Inc. to design and permit a Construction and Demolition Processing Facility. The facility will be designed to handle 1,500 tons per day, with a diversion rate of over 65%. The facility will be open to commercial and self-haulers for the diversion of materials from C&D sites. Special aspects of the facility include ability to divert drywall, carpet, and fluorescent tubes, and the salvage and donation of building materials, including furniture, fixtures, and electronics.

Tasks included:

- Preparing design elements.
- Preparing all permit documents, including facility plan.
- Preparing CEQA documents.
- Preparing Non Disposal Facility Element Amendment.
- Preparing site plan.
- Truck routing.



SCS is helping design and permit a Construction and Demolition Processing Facility for Interior Removal Specialists, Inc.

Bechard & Associates LEED C&D Certification

SCS assisted Bechard & Associates in meeting the Materials & Resources credit in association with the U.S. Green Building Council's LEED Construction Waste Management section for the SmartCorner Project located in San Diego, CA. The project included commercial and retail uses and transportation services.



SCS assisted with a LEED construction project in San Diego, CA.

SCS provided the following services:

- **Preparation of Waste Management Plan.** SCS developed the Waste Management Plan for the project, highlighting recycling and salvage requirements, goals, and methods. SCS prepared a materials estimate of the types and quantities of materials generated during project demolition and construction, and estimated the types and quantities of materials that potentially can be recycled or salvaged.
- **Development of Resource/Reuse Vendors and Facilities.** In order to facilitate the maximum amount of materials to be recycled and/or salvaged, SCS identified local facilities or vendors that would accept and/or collect specific materials, and provided a list of best-cost options for diverting the various recyclable and salvageable materials.

Hauler Contract Services

City of Redondo Beach, CA Audit of Solid Waste Franchise Agreement

SCS was retained by the City to perform an independent audit of the Solid Waste Handling Services Agreement between the City of Redondo Beach and Consolidated Disposal Service.

In conducting the audit, SCS performed the following tasks:

- Reviewed background information relative to the operation of the City's solid waste system, including the Solid Waste Handling Services Agreement between the City of Redondo Beach and Consolidated Disposal Service.
- Issued a request to Consolidated for pertinent financial and operational data and documents and verified supporting documents and schedules.
- Verified the supporting documentation and recalculated the AB 939, administration, and HHW fees.
- Selected a 15% sample of commercial bin service accounts for testing and performed selected site inspections to document service levels.



SCS performs audits of residential and commercial collection and transfer and recovery services to identify opportunities to increase efficiency and stabilize costs.

- Selected a sample of the 100 largest multi-family accounts and contacted accounts by telephone and/or performed selected site inspections to identify any differences with Consolidated's customer database.
- Prepared a report that documented our findings and recommendations.

City of Pasadena, CA Residential Collection Rate Study

The City of Pasadena currently provides solid waste and recycling collection service to approximately 27,000 residential units (single-family residences and multi-family units) within the City's incorporated limits. Based on the results of a pilot program in response to AB 939, the City implemented a "Pay As You Throw" subscription program, which allows homeowners to select a 32-, 60-, or 100-gallon, mixed-waste rolling cart (green lid), based on their individual waste collection needs, thus providing a monetary incentive to recycle. A rate model was developed that enabled SCS to make projections of financial performance of residential refuse collection for the upcoming 10-year planning period (2006 to 2015), and model various user rate structures to help eliminate the Refuse Fund's existing negative cash balance.



SCS developed a rate model to make financial performance projections for a 10-year planning period for the City of Pasadena, CA.

At the outset of the work effort, SCS developed a Microsoft Excel™ spreadsheet-based rate model to assist in the evaluation of several feasible residential rate structures. The model includes the following facets:

- Analysis of operational funds (personnel, services and supplies, landfill disposal charges, internal service charges, abatements).
- Analysis of fleet replacement and financing program (vehicle replacement by year).
- Funds analysis (reserve requirements, transfers to general fund, beginning and ending fund balances).
- Revenue sufficiency analysis (annual revenue projections and rate plan to provide sufficient revenues).
- Based on data and information provided by City staff, these individual spreadsheets were linked to develop an overall rate model to evaluate the impact of critical City cost and program revenues areas on different potential rate options.

NASA Services / City of West Hollywood, CA Request for Proposals Preparation for Solid Waste Collection Services

SCS assisted NASA Services (NASA) in responding to the City of West Hollywood's Request for Proposals (RFP) for solid waste collection services. SCS prepared scope items that included preparing technical and cost proposals, discussing state-mandated (AB 939) requirements, and

final review to ensure RFP compliance with general industry standards. The technical proposal recommended strategies for refuse collection, analyzed container and equipment requirements, and discussed recyclables processing and marketing services, green waste and food processing and marketing, and public education. SCS completed the proposal package within the timeframe necessary to meet the City's deadline for submittal.

Other Solid Waste Planning Projects

Cities of Inglewood, Baldwin Park, and Lakewood, CA E-Waste Collection Support Services



SCS developed outreach materials as part of our E-waste Collection Support Services for the City of Inglewood, CA.

E-waste is what remains when consumer electronic devices become obsolete or unwanted and require disposal. Televisions, computers, monitors, printers, stereos, cellular telephones, fax machines, and even electronic toys are considered e-waste once their useful life is over.

Due to the hazardous material in many electronic devices, it is necessary to divert this material from local landfills. SCS has developed good working relationships with reputable recyclers who are knowledgeable of regulations pertaining to the proper handling of e-waste.

SCS staff members have been involved in the challenge of proper e-waste handling and recycling since 2001, and we provided input at stakeholder meetings during the development of landmark legislation passed in 2003.

Since 2001, SCS has worked with municipal clients, including the cities of Inglewood, Baldwin Park, and Lakewood, to provide comprehensive e-waste event planning services. These include:

- Site evaluation and selection.
- Recycling vendor selection.
- Event staffing and supervision.
- Event-day logistics.
- Day-of-event supervision.
- Survey instrument.
- Post-event reports.
- Promotion and outreach:
 - Press releases
 - Articles
 - Banners
 - Newspaper ads
 - Bill inserts
 - Flyers
 - Corporate support

- Event promotion

City of Santa Clarita Diaper Recycling Feasibility Study

SCS compared the technical and financial costs and benefits associated with purchasing and operating an unproven diaper recycling machine and implementation of a diaper recycling program in the City.

SCS conducted this study with two major objectives: (1) to evaluate the technology used in the diaper recycling process, and (2) to evaluate the feasibility of developing a program to collect diapers from residents. The scope of work included a cost estimate to install and operate the diaper recycling machine, marketability of separated materials, potential customers of service, operational fees and charges, and review of other diaper recycling programs.

City of Santa Clarita Analysis of Disposal Reporting Errors

SCS investigated disposal reporting discrepancies for 1999 and 2000 from the local landfill and provided recommendations to inhibit future errors in reporting at the scalehouse.

SCS conducted this study to investigate the potential causes for the decrease in the City's diversion and increase in disposal with two major objectives: (1) determine the source of reporting errors at Chiquita Canyon Landfill, and (2) calculate a more accurate disposal total for the years 1999 and 2000. The scope of work included a review of landfill weigh tickets, invoices, and reporting databases, disposal collection information from the City's major haulers, and recommendations to improve reporting at the landfill and how to report to the CIWMB for compliance year 2000

County of Los Angeles Countywide Database and Facilities Recycling Project

SCS was the prime contractor for the County Departmental Recycling Program Study. This project involved the development of a database of all Los Angeles County departments and facilities that will be used to identify and maintain a list of existing recycling efforts. The project also involved formulating recommendations for the expansion of existing or new recycling programs for all County facilities/departments. Major project tasks include:

- Developing a format for the County Facilities Database, incorporating user requirements and user instructions.
- Developing a report on waste generation data at all County facilities.
- Preparing recommendations on how to successfully expand and fully implement existing County Departmental Recycling Programs.
- Designing a guidebook and programs to successfully implement approved recommendations.

- Preparing a final project report for submittal in the year 2000.

PUBLIC VENUE RECYCLING PROGRAMS

In major population centers, recycling at public venues poses immense challenges. SCS specializes in the design of site-specific diversion programs for public venues, including convention centers, arenas, fairgrounds, stadiums, theme parks, and zoos. Due to the nature of large public gatherings held at these facilities, a tremendous amount of waste is generated annually. Our expertise in developing and implementing diversion programs not only has significant environmental value, but also saves money in waste hauling services while generating revenue.



Our Public Venue Planning Practice provides the following services:

- Design and implementation of diversion programs.
- Waste characterization and generation studies.
- Program monitoring and evaluation.
- Grant writing and administration.
- Promotional material and brochure design.
- Equipment recommendation.
- Program recognition through awards and media articles.

FACILITY PLANNING AND DESIGN



Solid waste transfer stations and material recovery facilities are solving the problems that arise from local landfill closure and limited landfill airspace. Efficiency and dollars are lost when packer-truck drivers spend more time on the road to the landfill than they do on their routes. In addition, recyclables that can be economically separated from the waste stream rapidly consume landfill airspace. SCS's Facilities Engineering Group provides planning, design, and construction management needed to develop cost-effective facilities for handling the transfer of refuse from commercial trucks and self-haulers to long-haul transfer vehicles. We're helping communities remove recyclable materials from the waste stream.

Our Planning and Facilities Practice provides the following services:

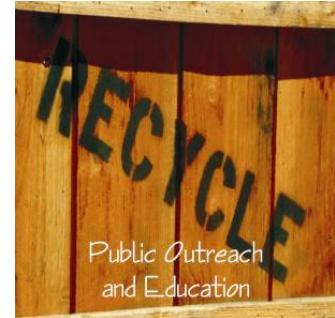
- Siting concept planning and design.
- Feasibility studies and economic analyses.
- Site planning and development.
- On-site traffic circulation.

- Architectural and engineering design.
- Environmental analysis and permitting.
- Construction quality assurance or full construction management.
- Post-construction services and client representation.
- Public Outreach and Education

If your company is looking for creative ways to implement and publicize its recycling programs, SCS's Public Outreach and Education specialists can help. SCS works hand in hand with municipalities and private industry to create and execute public awareness programs using a variety of methods to "get the word out."

SCS has developed a wide variety of public outreach materials including:

- Recycling guides.
- Informational brochures.
- Promotional and event flyers.
- Street banners.
- Truck signs.
- Posters.
- Bill inserts.
- Calendar magnets.
- Doorhangers.



SCS has written press articles discussing the benefits of reducing yard waste, composting and grass recycling, the use of native plants in landscaping, and informational pamphlets regarding construction and demolition waste for a number of municipal clients.

SCS can also help coordinate recycling events including obtaining event sponsors and volunteers, recycling vendor selection, site evaluation and selection, site logistics for event day, participant survey design, public outreach and media contact, and post-event reports.

7 WASTE-TO-ENERGY & CONVERSION TECHNOLOGIES

SERVICES

Relative to WTE facilities and conversion technologies, SCS can provide the following services:

- Air permitting, including Title V compliance assistance and renewal applications.
- Technical assessment of design and operations.
- Feasibility studies for financing.
- Owner's/bank's engineering representative during construction and/or operation.
- Siting studies.
- Assistance with grant funding applications.
- Solid waste management plans.

Not since the 1970s has the municipal sector expressed such high interest in various waste conversion technologies, including organics diversion and processing, WTE, and bio-fuels. Driven by emerging state and federal incentives programs for renewable forms of energy and the dynamic, but ever increasing price of petroleum-derived energy, technology vendors have been literally inundating every major municipality in the country with information on their systems.

The conversion technologies include thermal, biological and bio-chemical based processes, some that had a relatively brief, but not very successful tenure in the 1970s. They all are back and are clamoring for an opportunity to build and operate a plant to prove that they are here to stay and can compete financially with conventional WTE plants and landfills.

The claims being made by some developers seem “too good to be true”, as the saying goes. SCS can help communities evaluate the claims being made and applicability of these emerging technologies to their specific communities and circumstances.

SCS has been focusing on this emerging sector for several years and has a staff devoted to staying current with the latest technologies. SCS has been disseminating unbiased information on these technologies so that municipal officials can make informed decisions for their communities. Consider some of SCS's recent accomplishments in this field:

- Economic Feasibility Study of Plasma Arc WTE Plant, Marion, Iowa.
- Evaluation of Plasma Arc WTE Plant, Juneau, Alaska.
- Feasibility study of Anaerobic Digestion WTE Plant, South Carolina.
- Feasibility Evaluation of alternative thermal WTE technologies for Master Plan, Southeastern Public Service Authority (SPSA), Virginia.
- Asset valuation of SPSA's 2,000 ton-per-day Refuse Derived Fuel WTE Facility.

- SWANA Ohio Chapter - Presentation on status of emerging alternative WTE technologies.
- WTE Summit, San Diego, CA – Presentation on status of emerging alternative WTE technologies.
- WTE Conference, South Pacific – Presentation on small-scale WTE regional system.
- *APWA Reporter* – Article on Emerging Alternative WTE Technologies.

SCS has included on its team Deltaway Energy, a specialty firm focused on design, performance, and operational aspects of WTE plants. Many of the firm's staff have, in addition to being trained in power plant design and operations, have been licensed operators of major WTE plants in the U.S and abroad, and thus bring a wealth of actual working knowledge and helpful experience with a vast array of related WTE equipment and systems.

PROJECTS

We believe our reputation is best described by our association with reputable clients who choose SCS over any other environmental engineering firm. On the following pages, project profiles are provided that highlight several relevant projects. A listing of relevant projects that Deltaway Energy has completed relative to detailed assessment, operation, and design of WTE facilities and operations is provided in Exhibit 10. These projects demonstrate that the SCS team has the capabilities and personnel to provide a wide range of services relative to WTE and other waste conversion technologies.

Alternative Waste Conversion Technologies Monterey, California

Client

Monterey Regional Waste
Management District, Monterey,
California

Contact

William Merry, P.E.,
Managing Director

Contract Amount

\$15,000

Construction

N/A

Dates

2007

Key Personnel

Bruce J. Clark, P.E., BCEE

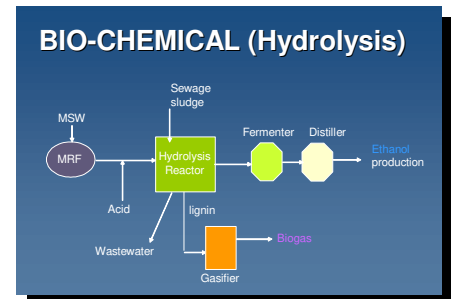
SCS provided an assessment and presentation of findings to a western U.S. regional waste Authority related to emerging and sustainable municipal solid waste (MSW) conversion technologies. Several major types of technologies were reviewed including;

- Bio-Chemical (i.e., hydrolysis, etc)
- Biological (i.e., aerobic composting, etc.)
- Thermal (i.e., pyrolysis, gasification, plasma)

Key factors that were assessed for the technologies included;

- Status for commercialization
- Projected Capital and O&M costs
- Projected tipping fees
- Syngas/Biogas production (biological and thermal only)
- Estimated power output
- Expected by-products and potential markets for re-use
- Regulatory permitting issues
- Overall advantages and disadvantages

A written report was prepared and SCS also delivered an oral power-point presentation summary to the Authority's board members.



Alternative Disposal Technologies Assessment for Solid Waste Master Plan Orange County, Florida

Client

Orange County Utilities
Solid Waste Division
5901 Young Pine Road
Orlando, Florida 32829

Contact

James Flynt, Jr., PE
(407) 836-6605
James.Flynt@ocfl.net

Contract Amount

\$840,741

Dates

2004 to 2007

Key Personnel

Robert Gardner, P.E.
Bruce Clark, P.E.
Marc Rogoff, Ph.D.

Highlights

- ✓ Solid Waste Planning
- ✓ Integrated Systems Analysis
- ✓ Alternative Disposal Technologies
- ✓ Landfill Siting
- ✓ Transfer Station Siting
- ✓ Recycling
- ✓ Financial Analysis

SCS completed the Solid Waste Master Plan Study for Orange County, Florida, one of the larger counties in Florida. The comprehensive study provides a roadmap for rationally expanding the County's system to serve its residents for the next 50 years. SCS's services included:

- An assessment of alternative waste disposal technologies including thermal, biological and bio-chemical systems. The assessment included;
 - review of key technical aspects
 - advantages & disadvantages
 - capital and operating costs
 - capacity aspects
 - implementation issues
 - permitting aspects, and
 - overview of existing systems.
- Build-out Study for the existing 1,500 acre Landfill to maximize airspace.
- Solid waste generation projections for the next 50 years.
- Future Landfill Site Screening Study – Conducted a GIS-based assessment of the County for areas that would be suitable for a 2,000 acre future landfill.
- Multi-Family (MF) Recycling Study – Prepared a report on ways to increase MF recycling.
- Transfer Station Master Plan - Assessed more than a dozen potential combinations of existing and new stations, identified parcels and made site inspections..
- Pro-Forma Financial Analysis - Prepared a detailed analysis that would assist the County in evaluating future tipping fees as well as debt servicing.

The County's Integrated System includes; a large franchise collection operation for unincorporated residential areas, 8 Intra-Local Agreements with cities, collection agreements with several cities, several transfer stations, a 1, 500-acre landfill, a recycling program, and special waste programs.

ConsuTech Waste-to-Energy Plant – Pre-Feasibility Study San Andrés, Colombia

Client

Conduit Capital Partners, LLC
477 Madison Avenue
New York, New York 10022

Contact

Ricardo A. Sagraera
Assistant Vice President
Conduit Capital Partners
488 Madison Avenue
New York, NY 10022
(212) 485-8914

Contract Amount

\$2,500

Dates

May 2008-June 2008

Key Personnel

Marc Rogoff, Ph.D.
Bruce Clark, P.E.
C. Ed Hilton, Jr., P.E.

A private developer is planning to construct a 100 ton per day (tpd) waste-to-energy (WTE) plant to provide electric power to serve a resort on San Andres, an island off the coast of Colombia, S.A. SCS was engaged by Conduit Capital Partners (CCP) to conduct a pre-feasibility assessment of the proposed WTE plant.

Preliminary plans are that the plant will be furnished by Consutech Systems, LLC, a company that has been providing conventional, modular WTE plants for over 20 years. The plant is primarily based on a two-stage waste processing system that includes;

- Gasification of the initial waste charge in a nearly oxygen-free atmosphere that is designed to produce a more even decomposition and low particulate gas stream.
- The gases flow to the second stage where it is combusted in a high temperature converter. The heat produced is captured and used to produce steam. The steam is directed to a turbine to produce electrical power.

The combustion air is routed through a series of air pollution control devices that are designed to reduce the concentrations of problematic gases and other constituents to below regulatory levels, including; NOx, SOx and particulates.

The study assessed many factors for the projected plant including:

- Viability and commercialization of the technology
- Waste flows and collection contracts,
- Ash management aspects
- Coordination with the power company
- Environmental issues
- Suitable plant vendors/operators and contractual aspects, (i.e, design-build-operate DBO)
- Pro-forma economic analysis

A final written report was prepared for the client.

Waste-to-Energy Assessment Naval Station Guantanamo Bay (GTMO), Cuba

Client

NAVSTA GTMO
Environmental
and NAVFAC-Southern Division
2155 Eagle Drive
North Charleston, SC 29406-
4804

Contact

Maxie Kiesler
(84) 820-7322

Contract Amount

\$35,000

Dates

3/12/07 - 4/30/08

Key Personnel

Stacey Demers
Marc J. Rogoff, PhD

Waste-to-energy appears to be a viable solid waste management alternative for Naval Station Guantanamo Bay Cuba (GTMO). This facility can produce clean, renewable electrical energy and/or heat through the combustion of municipal solid waste (MSW) in specially-designed power plants equipped with state-of-the-art air pollution control equipment. Trash volume can be reduced by 90 percent. Further, implementation of such a solid waste-to-energy solution would enable GTMO and the Department of Defense to achieve the renewable energy goals identified in Section 203 of the Energy Policy Act of 2005 and the President's Executive Order 13423.

SCS utilized the methodology developed in the Unified Facilities Criteria (UFC 3-240-05A) and the EPA Resource Recovery Management Model (SW-768) for the completion of the Incineration Assessment for implementation of a modular incineration facility. This assessment provided information on the following key decision-making variables such as: facility sizing; environmental permit requirements; and ash disposal options.

SCS collected data to quantify the volume of potential waste quantities, seasonal fluctuations, if any, composition (and average waste heating values) which would be available for incineration. An assessment was made of future projections of combustible waste to be generated, which then would be available for potential incineration. This information was used to correctly size the incineration unit.

A list of potential manufacturers/contractors was developed and contacted to gather pertinent information as part of the specification process. A survey form was then developed to help assist in this effort, and enabled SCS to compare key parameters about each technology and/or manufacturer.

As part of the effort, SCS developed an economic/financial spreadsheet model of the proposed incineration facility along with supporting assumptions, calculations, and references. The model enabled evaluation of potential options in terms of present value costs. The overall economic model summarized details on the following cost parameters:

- Initial capital costs
- Operating and Maintenance Cost
- Equipment life and replacement
- Cost per ton in terms of present value costs

The Navy has requested funding for the project and anticipates procurement in 2009.



Economic Feasibility Study of a Plasma Arc WTE Plant Marion, Iowa

Client



City of Marion Iowa
City Hall
1225 6th Avenue
Marion, Iowa

Contact

Mr. Lon Pluckhahn
City Manager
(319) 743-6301

Contract Amount

\$149,000

Dates

April 2009- October 2009

Key Personnel

Marc Rogoff, Ph.D
Bruce Clark, P.E.
C. Ed Hilton, Jr., P.E.

The city of Marion Iowa retained SCS Engineers to conduct an economic feasibility study of a plasma arc gasification WTE plant.

The city had been studying the technology for the past 2 years and with the help of a state grant was able to continue their assessment of whether this technology would allow them to begin to reduce the amount of waste they sent to the county landfill.

The University of Iowa has two campuses in the region and is interested in potentially being the sole source user of the power produced from this plant.

- SCS scope of work included the following:
- Summary of population projections and future waste volume.
- Study of potential supplemental waste feedstocks in the region.
- Study of potential markets for plant by-products.
- Review of technical information and preliminary economic prospectus from several plant vendors.
- Right-sizing of the plant.
- Assessment for the marketing of power.
- Formal economic pro-forma analysis of a hypothetical plant.
- Final report
- Oral presentation to the city.

The work was completed in the fall of 2009.



Mobile PEM™ plasma arc plant,
courtesy of InEnTec.

Southeastern Public Services Authority WTE Facilities Sale South Hampton Roads, Virginia

Client

Southeastern Public Services
Authority
Chesapeake, Virginia

Contact

Mr. Bucky Taylor
Executive Director
(757) 420-4700
rtaylor@spsa.com

Contract Amount

\$80,000

Construction

Not Applicable

Dates

December 2009-May 2009

Key Personnel

Robert B. Gardner, PE

Highlights (optional)

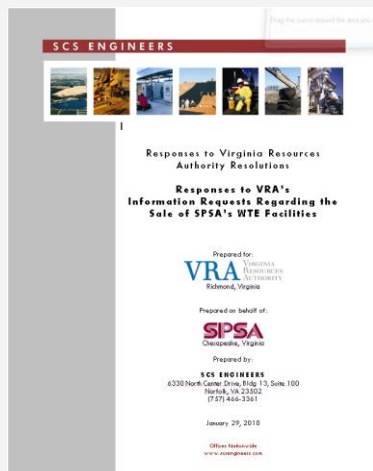
- ✓ Facility valuation
- ✓ Financial review
- ✓ Management review
- ✓ Pro forma modeling
- ✓ Debt evaluation

SPSA is currently indebted to the Virginia Resources Authority (VRA) in the amount of approximately \$140.7 million in bonds issued to finance and refinance various capital expenditures. SPSA is required to obtain approval from the VRA for the sale of any of its assets, and requested on October 22, 2009 for the sale of the Refuse Derived Fuel Waste to Energy Facility (RDF WTE Facility) to Wheelabrator Corporation (Wheelabrator) and all assets of SPSA's recycling department. VRA adopted a resolution on April 14, 2009 requiring that the proceeds of any sale of SPSA assets be equitably applied to all outstanding SPSA debt and that the SPSA assets remaining after any such sale be sufficient to support SPSA operations and provide for the payment of debt service on SPSA debt.

VRA's Executive Director sent a letter dated October 7, 2009, to the SPSA Executive Director outlining the following major categories of information that would be required for VRA's consideration of approval of any SPSA sale of assets:

- The timing and scope of sale of the assets.
- The specific debt retirement plan, expecting all SPSA creditors to be treated equitably.
- The business plan and pro forma of SPSA's remaining operations if all of the debt is not retired, and the timetable for consideration of such a sale by the VRA Board at its December 2009 meeting.

SCS was retained to lead the effort of preparing SPSA's responses to the VRA resolutions. SCS worked closely with SPSA senior executives, the SPSA Board, its financial and legal advisors, and the County and City Managers of the region in preparing the response document and coordinating with the VRA. SCS also prepared independent review of SPSA complex financial structure, and pro forma analysis of the projected operational expenses, capital expenses, debt service, and resulting tipping fees through 2018, when the use and support agreements with its member communities expire.



Alternative Waste Conversion Technologies Southside Hampton Roads, Virginia

Client

Hampton Roads Planning District
Commission
723 Woodlake Drive
Chesapeake, VA 23320

Contact

John Carlock
(757) 420-8300
jcarlock@hrpdcva.gov

Contract Amount

\$248,000

Dates

2/2008 – 11/2008

Key Personnel

Robert Gardner, PE, BCEE
Keith Matteson, PE
Marc Rogoff, Ph.D.
Bruce Clark, PE, BCEE
Lisa McDaniel

SCS was retained by the Hampton Roads Planning District (HRPDC) Commission to evaluate alternative solid waste management strategies for eight communities in the South Hampton Roads Region. The study was initiated to address technologies, institutional approaches, disposal alternatives, transportation, and economic factors that may affect the management of solid waste after the inter-local agreements between the communities and the Southeast Public Services Authority (SPSA) expire in 2018.

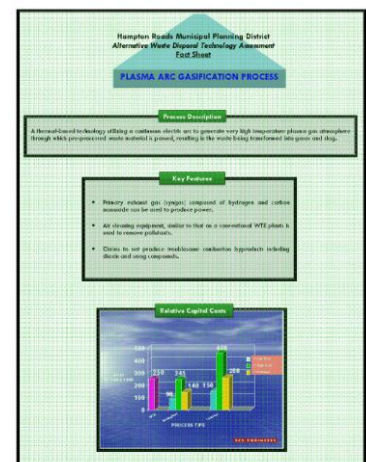
As a part of this study, an assessment was conducted of new and emerging technologies that could potentially be viable options in 2018 and beyond. The assessment included discussion of the primary characteristics, emissions and useful by-products, main advantages and disadvantages of the technologies, how they would fit into the county's infrastructure, estimated costs, and regulatory permitting aspects.

Several major types of technologies were reviewed including bio-chemical (i.e., hydrolysis, etc), biological (i.e., aerobic composting, etc.), and thermal (i.e., pyrolysis, gasification, plasma)

Key factors that were assessed for the technologies included:

- Status for commercialization
- Projected Capital and O&M costs
- Projected tipping fees
- Syngas/Biogas production (biological and thermal only)
- Estimated power output
- Expected by-products and potential markets for re-use
- Regulatory permitting issues
- Overall advantages and disadvantages

A written report was prepared and SCS also presented its findings to the joint boards of the HRPDC and SPSA.



Valuation of Southeastern Public Service Authority's WTE, Landfill, and Transfer Station Assets

Client

Hampton Roads Planning District
Commission
723 Woodlake Drive
Chesapeake, VA 23320

Contact

John Carlock
(757) 420-8300
jcarlock@hrpdcva.gov

Contract Amount

\$140,000

Dates

4/2009 – 10/2009

Key Personnel/Consultants

Robert Gardner, PE, BCEE
Keith Matteson, PE
Tony Tomlin
Deltaway Energy
J. A. Hayden Associates

The Southeastern Public Service Authority (SPSA) provides comprehensive solid waste services for eight member communities in the South Hampton Roads, Virginia area. Due to declining revenues from commercial waste being diverted from its system, combined with high debt service costs, SPSA has been forced to consider the sale of part or all of its major solid waste assets, including its 2,000 tons per day Refuse Derived Fuel Waste to Energy Facility (RDF WTE Facility), Regional Landfill, and Transfer Station Network. The Chief Administrative Officers (CAOs) of the member communities requested, through the Hampton Roads Planning District Commission (HRPDC), that SCS provide an independent assessment of the value of SPSA's key assets. The valuation was used to judge the reasonableness the purchase offers received and negotiated.

The scope of services for the valuation task included the following major tasks:

- Technical assessment of the current facilities.
- Identification of potential improvements that will increase the value of the facilities.
- Financial assessment of assets including projected revenues, O&M cost estimate and recommended capital expenditures (Capex), an estimate of free cash flow to assess the potential market value of the facilities, and financial modeling of these facilities as a function of projected facility performance and tip fee structures.

The assessment was done from the perspective of a private company purchasing the assets from SPSA and taking over the ownership and operation of the facilities. The facility assessment of the RDF WTE Facility prepared by Deltaway Energy identified potential improvements and upgrades to increase throughput and energy production of the facility. The landfill assessment considered the value of three expansion scenarios. The asset valuations were developed as a function a range of tip fees for member communities, the Navy, and commercial wastes. J. A. Hayden Associates provided peer review of the valuation.



Air Permitting Services at Municipal Waste Combustor Waste to Energy Facilities, Portsmouth, VA

Client

Southeastern Public Service
Authority (SPSA)

Contact

Richard Childress
(757) 420-4700

Contract Amount

\$18,000

Dates

2006

Key Personnel

Bob Dick, PE
Greg Wade

Highlights

- ✓ Title V Permit Renewal
- ✓ Emissions Rate Calculations
- ✓ Documentation
- ✓ Application Preparation



The Southeastern Public Service Authority (SPSA) owns and operates the Refuse Derived Fuel (RDF) Plant and the Steam Generating Facility, which together constitute the Municipal Waste Combustor Facilities in Portsmouth, Virginia. The steam produced is used to generate electricity and is then routed to various areas of the Naval Shipyard to provide heat for buildings and ships.

SCS prepared the application, as well as develop the supporting calculations and documentation, necessary to renew the Title V Air Operating Permit issued to the Facilities, which are also permitted under the Prevention of Significant Deterioration program. The Title V Air Permit Renewal Application developed by SCS was submitted to the Virginia Department of Environmental Quality (VDEQ) in 2006 and documented the potential pollutant emission rates from the sources located at these facilities.

Title V Permit Renewal. This Title V Permit Renewal Application detailed the potential emissions generated by the emission units at the Facility. The Renewal Application consisted of VDEQ Form 805 and an emissions inventory that summarized the potential and actual emissions at the site. The documentation requested that VDEQ issue the renewal Permit considering the calculated potential emission rates and the current permitted pollutant emission limits.

Pollutant Emissions Calculations. SCS calculated the pollutant emission rates for the four combustion trains (boilers) at the Power Plant correlating to three Alternate Operating Scenarios (AOS), which correspond to the three different fuel sources: RDF, coal, and No. 2 fuel oil. For purposes of the emission calculations, the RDF was assumed to have non-hazardous solid waste in liquid form applied prior to entering the boilers. The pollutant emission rates for combustion of RDF were calculated using two distinct methods: the emission factors cited in 40 CFR 60 Subpart Cb and the emission factors cited in AP-42 Section 2.1.

SCS also calculated pollutant emission rates for the other emission sources at the Power Plant, including the coal handling units equipped with fabric filters (baghouses), the coal storage pile equipped with a wet suppression system, the 2,500 kW standby diesel generator, the ash conveyor that transports

bottom ash and flyash to the truck loadout area, the lime storage silo equipped with a fabric filter, the 290 hp fire pump diesel engine, and the No. 2 fuel oil storage tanks.

Pollutant emission rates were calculated for other emission sources at the RDF Plant, including the tipping floor, the bulky waste shredder equipped with a fabric filter (baghouse), the three RDF process lines (conveyors, shredders, sorters, separators), the RDF conveyor used to transport processed waste to the nearby power plant, and the fire pump diesel engine and fuel oil storage tanks.



Design and Permitting for Ash/Bypass Landfill Hudson County, New Jersey

Client

Hudson County Improvement
Authority
574 Summit Ave.
Jersey City, NJ 07306]

Contact

Mr. John Hayden, PE, PhD
Lead Technical Consultant
(561) 626-6284

Contract Amount

\$1,000,000

Dates

1986 - 1990

Key Personnel

E. T. Conrad, PE
Robert Gardner, PE

Highlights (optional)

- ✓ Landfill Design
- ✓ Permitting
- ✓ EHIS
- ✓ Bond Support

SCS Engineers (SCS) was retained by the Hudson County Improvement Authority (HCIA) to provide comprehensive landfill engineering and permitting services associated with an ash/bypass landfill, which would support the HCIA's proposed waste to energy facility. SCS provided the following services:

Feasibility Study. Assessed the feasibility of establishing a landfill to dispose of residual ash from a solid waste resource recovery facility, develop conceptual designs, and provide support in evaluating site remediation plans (the landfill is sited on top of an existing hazardous waste site).

Interim Disposal Plan. In association with William F. Cosulich, evaluated interim disposal options for the HCIA within Hudson County and the surrounding regions. Conducted site visits to verify existing conditions at Hackensack Meadowlands Development Commission (HMDC) landfill and other potential sites in the HMDC jurisdiction. Provided expert testimony for client in case against HMDC regarding landfill capacity and disposal costs.

HMDC Balefill and 1C Landfills Evaluation. Evaluated the Hackensack Meadows Development Commission Balefill and 1C Landfills as to their capacity to accept Hudson county's solid waste prior to startup of the resource recovery facility. Prepared a report summarizing the evaluations for introduction into evidence at the trial. Assisted in pretrial discovery and preparation for the trial. Provide expert testimony and other technical support as needed.

Landfill Design and Permitting. Performed final design engineering for the residue landfill, including aerial and site surveying; review the remediation plans (the landfill will be on top of a state designated Superfund site); tested materials compatibility; prepared construction drawings, specifications, contract documents, and cost estimate; prepared an operation and maintenance manual; provided technical documentation and coordination to acquire the permits to construct and operate the landfill. Also participated in the preparation of the Environmental Health Impact Statement (EHIS), which was submitted to the New Jersey Department of Environmental Protection (NJDEP).

Engineering Opinion to Support Bonds. Provided engineering evaluations to support the bonds that were being issued for the resource recovery facility and ash/bypass landfill

Waste Characterization and Waste-to-Energy Feasibility Study Pago Pago, American Samoa

Client

American Samoa Power Authority
PO Box PPB
1st Road Airport
Pago Pago, American Samoa
96799



Contact

Michael Keyser
Executive Director

Contract Amount

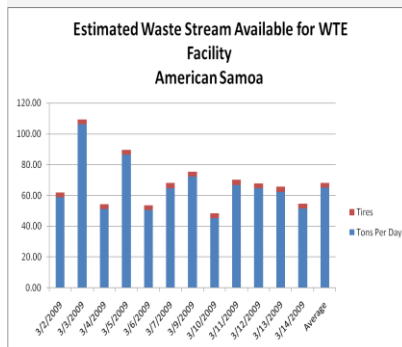
\$144,000

Dates

January 2009 - October 2009

Key Personnel

Michelle Nicholls
Marc Rogoff, PhD
Scott Walby



American Samoa is part of the Samoan archipelago, a group of volcanic islands in the South Pacific, which are located midway between Hawaii and Australia. The main islands are Aunu'u, Ofu, Ta'u, and the main island of Tutuila. The volcanic topography of Tutuila limits the availability of government-owned lands for the further development of landfills. The cost of energy has rapidly increased in recent years along with population growth suggesting an evaluation of renewable energy supplies.

The American Samoa Power Authority (ASPA) is a public-run, municipal utility which provides electric, water, wastewater, and solid services to the residents of American Samoa. Under its enabling legislation, ASPA is mandated to operate self-sufficiently at full-cost recovery. In essence, ASPA possesses the ability and the mandate to charge fees in return for its services. This ability to assess customers provides ASPA with a mechanism to fund solid waste projects, which could not be funded under a fully-subsidized program.

On October 20, 2008, ASPA was awarded a technical assistance grant from DOI to fund a waste composition study at the Futiga Landfill. Pursuant to a RFP, SCS was awarded a contract by ASPA to conduct a waste composition study to quantify and characterize the waste stream composition of waste disposed at the Futiga Landfill for use in the future design, construction, and operation of a WTE power generation facility. The results of this study will form a baseline of the existing waste characteristics of the main island of American Samoa -Tutuila.

The overall objectives of the project are to develop reliable estimates of the quantity and composition of all waste disposed by key generator groups on the Island. Data gathered during the two waste sampling seasons (wet and dry) will present a more complete picture of disposal by each generator, and an analysis of the data from many samples results in statistical averages that can be assigned to the generator groups. The data is being used to identify the potential WTE facility options for Tutuila, including the type of processing facility, facility costs, and energy generation. In addition, discussions of possible recycling or diversion opportunities will be included in the analysis. Currently, the project team is planning implementation of the second seasonable waste characterization.

Ponce Waste-to-Energy Plant – Pre-Feasibility Study Ponce, Puerto Rico

Client

CEMEX USA
8705 NE 117th Avenue
Vancouver, Washington 98662

Conduit Capital Partners, LLC
477 Madison Avenue
New York, New York 10022

Contact

Dr. Antonio Noyola (CEMEX)
(360) 260-6018
Antonio.noyola@cemex.com

Mark Frishman (Conduit)
(212) 485-8900
mark.frishman@conduitcap.com

Contract Amount

\$35,000

Dates

October 2007- February 2008

Key Personnel

Marc Rogoff, Ph.D
Bruce Clark, P.E.
C. Ed Hilton, Jr., P.E.

CEMEX owns a large cement manufacturing complex in Ponce, Puerto Rico, with an expected useful remaining life of about 50 years. The plant purchases most of its power from the island's utility, the Puerto Rico Electric Power Authority (PREPA).

CEMEX and the proposed owner of a Waste-to-Energy (WTE) plant, Conduit Capital Partners (CCP), have engaged SCS Engineers (SCS) to begin initial planning efforts to secure a long-term, stable cost of power for the complex through the construction and operation of the proposed WTE plant (the Project).

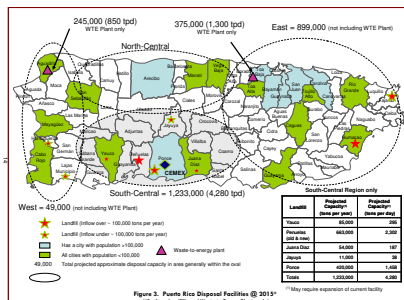
CEMEX and CCP initially assessed the feasibility of a wind turbine farm on the eastern part of the island. However, the PREPA was not receptive to the power wheeling process that was inherent in such a plan and that plan was set aside. Subsequently, CCP contracted with SCS to do a preliminary feasibility assessment of developing a waste-to-energy (WTE) plant in Ponce to produce electrical power to run the CEMEX cement manufacturing complex.

The study assessed many factors for the projected 30 MW, 1,000 ton per day (TPD) plant including:

- Waste flows and collection contracts,
- Existing landfill disposal facilities and life span,
- Use of landfill gas for auxiliary power,
- Power transmission line corridor acquisition,
- Coordination with the power company,
- Waste transfer and transportation issues,
- Socio-economic and environmental issues,
- suitable plant vendors/operators and contractual aspects, (i.e, design-build-operate DBO)
- Pro-forma economic analysis.

A final written report was prepared for the client.

SCS is currently engaged in assisting CEMEX and Conduit Capital in conducting additional engineering and economic analysis of the project.



Consulting Engineer's Feasibility Report \$22,750,000, Solid Waste System Revenue Bonds Cumberland County, N.J.

Client

Cumberland County Improvement
Authority
2 North High Street
Millville, N.J. 08332

Contact

Steven Wymbs, Executive Director
(856) 825-3700
swymbs@ccia-net.com

Contract Amount

\$80,000

Dates

2008 to 2009

Key Personnel

Marc J. Rogoff, Ph.D.
Eric Peterson, P.E.
Shani Kruljac

Highlights

- ✓ Served as Independent Consulting Engineer's Report for \$22,780,000 Solid Waste System Revenue Bonds, Series 2009
- ✓ Underlying Rating: Moody's Baa1



The Cumberland County Improvement Authority needed substantial capital improvements to its existing Solid Waste Center facility including construction of lining and pump systems, installation of a temporary rain cover and related work to existing cells, the design and construction of three new landfill cells, and upgrades to the existing landfill sump and leachate management system ("2009 Project").

As a key player in the Authority's financing team, SCS conducted the following assessments:

- Reviewed the contract documents which set forth the respective responsibilities among all the parties;
- Assessed Project designs and equipment configurations;
- Critical solid waste system agreements;
- Available solid waste data and information; and
- Project and system permits.

Based on this information and knowledge of similar landfill design and construction projects and landfill operations, SCS was able to prepare various opinions to the investment bankers and potential bondholders regarding the technical and financial feasibility of the 2009 Project. Pro Forma modeling was conducted to estimate operating revenues and expenses and the ability of the Authority to meet required bond coverage ratios based on net revenues of the solid waste system.

Although the Authority had seen declines in waste deliveries in recent years, the Authority's competitive rate structure and liquidity enabled Moody's to provide a favorable rating.



Exhibit 10. Deltaway Energy Project References

Hampton Roads Planning District Commission 2,000 TPD RDF/WTE	System Review / Performance Monitoring / Cost Evaluations / Financial Modelling	
Miami-Dade, Florida 4,200 TPD Zurn RDF / WTE	Revenue Improvement Program / Technical Assistance / Engineering / Performance Monitoring and Optimization Project dates: 2003-2008	
Bay, Florida 490 TPD O'Connor Rotary Combustor - WTE	Revenue Improvement Program / Technical Assistance / Engineering / Performance Monitoring and Optimization Project dates: 2006-2007	
Pinellas, Florida 3,000 TPD Martin Massburn – WTE	Revenue Improvement Program / Technical Assistance / Engineering / Performance Optimization Project dates: 2007-2008	
Long Beach, California 1,380 TPD Steinmuller Massburn – WTE	Revenue Improvement Program / Technical Assistance / Engineering / Performance Monitoring and Optimization Project dates: 2003-2008	
Montgomery, Pennsylvania 1,380 TPD Steinmuller Massburn – WTE	Revenue Improvement Program / Technical Assistance / Engineering / Performance Monitoring and Optimization Project dates: 2006-2007	

Exhibit 10. Deltaway Energy Project References

York, Pennsylvania 1,344 TPD O'Connor Rotary Combustor - WTE	Revenue Improvement Program / Technical Assistance / Engineering / Performance Monitoring and Optimization Project dates: 2005-2006	
Dutchess, New York 456 TPD O'Connor Rotary Combustor - WTE	Revenue Improvement Program / Technical Assistance / Engineering / Performance Monitoring and Optimization Project dates: 2005-2006	
Islip, New York 485 TPD O'Connor Rotary Combustor - WTE	Revenue Improvement Program / Technical Assistance / Fly ash handling engineering / Performance Monitoring and Optimization Project dates: 2006-2007	
Savannah, Georgia 500 TPD Seghers Massburn – WTE	Addition of Turbine/Generator / Preliminary Design and Cost Estimation Project dates: 2006-2007	
Quebec City, Canada 1,000 TPD Von-Roll Massburn – WTE	Revenue Improvement / Steam Sales optimization / Technical Assistance Project dates: 2007-2009	

8 PROFESSIONAL STAFF

SCS ORGANIZATION FOR SOLID WASTE PROJECTS

SCS's solid waste practice is lead by experienced professionals strategically located throughout the country. Professional staff includes engineers in many disciplines, including environmental, civil, geotechnical, chemical, mechanical, electrical, and structural; geologists, hydrogeologists, and hydrologists; chemists, biologists, ecologists, zoologists, botanists, and geophysicists; construction specialists and estimators; O&M managers and superintendents; planners; community relations specialists; computer scientists and data processing specialists; health and safety specialists; technical writers and editors; a statistician; and environmental attorneys. Experienced designers and CAD operators, field technicians, and administrative personnel support the professional staff. Several key SCS solid waste practice leaders are highlighted below.

SCS addresses solid waste, landfill, LFG, and transfer station projects through the following closely-linked divisions.

Engineering. Site investigations, feasibility studies, system design, permitting, expert witness testimony, and other professional services.

Construction and Operations (through our Field Services group). Construction of new and expanded LFG recovery systems, leachate management systems, closure systems (e.g., final cover), contract O&M operations and emission monitoring of LFG systems.

Design/Build (through both our Field Services. Development and installation of complete landfill and LFG collection and energy recovery facilities.

SCS Energy. Provides engineering, financing, construction and operations/ maintenance services for renewable energy and cogeneration projects sized in the range of 30 kW to 1 MW. SCS Energy specializes in systems that use LFG, digester gas, flare gas, and natural gas as fuel for microturbine, fuel cell, and reciprocating engine power plants.

Assignment of project teams is made based on a project by project basis dependent on the specific needs of the client and/or project. Overall, SCS professionals provide clients demonstrated expertise in all facets of landfill siting, permitting, design, construction, operation, and maintenance.

CAPSULE RESUMES

Capsule resumes of our key landfill, LFG, and transfer station personnel are provided below. A personnel matrix demonstrating the specific expertise of these key personnel is provided in Exhibit 11 at the end of this section.

Ambrose McCready, PE has over 33 years of experience in engineering design and construction related to containment facilities for mining, hazardous waste, and solid waste. He has utilized synthetic liner and cover materials since 1977 and has assisted in the development of guidelines

for their use in disposal facilities. He has managed landfill siting projects ranging up to 100 million tons including site selection, field investigation, environmental documentation, and conceptual, preliminary, and final design. Mr. McCready has performed economic studies for waste systems and has authored and co-authored technical papers on solid waste bioreactors, postclosure monitoring, and the Remaining Capacity Method of calculating site life in solid waste landfills.

Bob Dick, PE has over 17 years experience working on civil and environmental engineering projects related to solid and hazardous waste management and is a Project Director responsible for SCS's operations in the Richmond, Virginia office. Most of his work has been on landfill and LFG design, permitting, and construction projects. He has worked at over 20 landfills in 9 states involving new cell construction, site expansion, closure, post-closure care, and has performed over 75 LFG projects in 14 states involving migration control, odor control, emissions control and Clean Air Act compliance, and energy recovery/utilization. He serves as Vice-Chairman of the Virginia Waste Industries Association and has authored several publications and made numerous presentations on landfill and LFG management/control, design/operations, and regulatory compliance.

Bob Gardner, PE, BCEE has over 27 years experience and is a Senior Vice President and a member of the Board of Directors for SCS. He is the firm's solid waste practice leader, and in this role oversees the firm's solid waste practice and is actively involved in numerous landfill, LFG, and transfer station, and other solid waste projects. He has been with SCS since 1980 and during that time has been involved in siting, studies, permitting, design, and construction services for the full range of solid waste facilities.

Bob Isenberg, PE, CPG has nearly 33 years of consulting engineering experience in solid waste facility design and geotechnical engineering. He is a Vice President in SCS's Reston, Virginia office and specializes in sanitary landfill design, regulatory permitting, construction quality assurance, siting studies, closure/post-closure engineering, and end-use development. Mr. Isenberg typically serves as the Principal/Project Director, or as a Senior Technical Advisor, on solid waste projects of all sizes. He has worked on approximately 200 landfill projects throughout the US and internationally, including municipal and private facilities that accept sanitary waste, industrial waste, hazardous waste, construction debris, and incinerator ash. With a strong geotechnical background, Mr. Isenberg is a recognized leader in the application of geosynthetics in landfill construction, slope stability and settlement evaluations, and bioreactor technology.

Bob Westly, PG is one of SCS's senior geologist and hydrogeologists, and oversees the firm's ISO 14000 practice and development of environmental management systems for solid waste and industrial clients. He has over 35 years experience and has been involved in various landfill siting investigations, closed landfill investigations, water resource projects, and other environmental studies. He also is an instructor of landfill groundwater courses for the University of Florida's TREEO Center.

Bruce Clark, PE, LEED AP has over 30 years experience in civil and environmental engineering. He has focused on solid waste management planning, permitting, design and construction for the past 20 years and has worked on every major type of solid waste facility including; WTE Plants,

sanitary municipal and industrial landfills, landfill gas-to-energy plants, transfer stations, material recovery facilities (MRFs), composting facilities, rail haul systems, and alternative conversion disposal technologies. He has studied alternative waste conversion technologies extensively in the last 2 years, including Plasma Arc, and has been Technical Advisor on three recent Master Plan projects where the technologies were considered in depth, and has presented to clients and industry groups on their emergence and potential. He has managed solid waste projects with a combined value of more than \$30 million. Some of those projects were “firsts” in new technology that reduced environmental impacts. Mr. Clark holds professional certifications in Green Buildings, Hazardous Wastes Engineering and Safety Engineering from nationally recognized organizations.

Dan Brennan, PE has over 18 years experience working on environmental engineering projects related to solid waste management. The majority of his work has been on landfill design and permitting, landfill gas design and permitting, and Clean Air Act compliance. He has worked on over 20 landfill designs in 6 states involving new landfill design, landfill expansions, and closure. He has also worked on over 50 landfill gas projects in 12 states involving migration control, energy recovery/utilization, due diligence studies, and Clean Air Act compliance. Mr. Brennan is a skilled CADD designer and is regularly involved in all projects using CADD, and provides quality assurance for CADD outputs.

David Mezzacappa, PE has over 15 years of experience in landfill permitting, engineering, and study. He specializes in air-related and final cover/alternate cap issues. He has worked extensively in Texas, Arizona and the southwest. His air experience includes NSPS, Title V, MACT, and air-related pre-construction permitting in several states. He has also worked on several large landfill expansions for both private and municipal clients throughout all phases of design and permitting. As an engineer in the southwest he has also specialized in landfill cap erosion issues and soil-only landfill covers.

Ed Hilton, PE is a vice president of SCS and the Solid Waste Director for the Florida offices. Mr. Hilton is responsible for directing the firm’s solid waste practice throughout Florida and the southeast. In over 33 years of professional experience, he has been responsible for a wide variety of waste-to-energy, solid waste planning and management, and other solid waste related projects. His recent activities have include WTE project evaluations in Puerto Rico, Florida, Iowa, and Alaska. Prior to joining SCS, Mr. Hilton was the Director of Engineering and Facilities for the New Hanover County, North Carolina with responsibilities including the development of the solid waste program including managing the bidding, construction, operation, and expansion of a mass-burn waste-to-energy (WTE) facility.

Eric Peterson, PE leads the LFG practice in SCS’s Reston, Virginia office. He has 23 years of experience in LFG and solid waste engineering, 21 of which have been with SCS. His LFG expertise has led to consulting assignments around the world, including LFG system design, system construction and startup engineering, gas utilization evaluation, and greenhouse gas emissions control. He has designed over 100 LFG systems for energy recovery, and control of odors, emissions, subsurface migration. Mr. Peterson also is an expert in air regulations and permitting for landfills.

Francois Screve (Deltaway Energy). Mr. Screve is the founder of Deltaway Energy, Inc., a sub-consultant to SCS Engineers. He has 20 years experience in the municipal solid waste-to-energy (WTE) plant design and operation field with six years in Europe, 12 years in the USA, and two years in Asia. Francois holds mechanical engineering and MBA degrees, as well as a WTE Chief Operator certificate from the ASME/EPA in the USA. He is an expert in WTE plant operations and performance analysis, maximizing revenue potential, reducing downtime, and adapting for co-combustion of multiple waste types. Example facilities and overall responsibilities have included:

- Management of the Long Beach Steinmuller 1,400 TPD waste-to-energy facility in California.
- Responsibility for the operation of the 4,200 TPD refuse-derived fuel (RDF) facility of Miami-Dade County, Florida, one of the largest facilities in the world.
- Vice president for Onyx, a subsidiary of Vivendi Environment, overseeing the operation of eight WTE facilities and the design of three new plants in Asia.

George Namie. Mr. Namie brings 32 years of experience in regulatory and technical issues relating to negotiation of consent orders, RCRA programs, Superfund, Clean Water Act, Clean Air Act, TSCA, Process Hazard Analysis, and process Safety Management. He has negotiated permit conditions with regulatory agencies associated with these programs. Mr. Namie has prepared permit applications for construction and Title V applications for operations of several WTE facilities.

Greg McCarron, PE. has 23 years of progressively responsible experience in solid waste management, including waste-to-energy systems, waste composition studies, landfill gas systems, landfill design, recycling, composting, and transfer stations. His experience includes project management, feasibility studies, design, regulatory support, construction oversight, system start-up, economic analysis, and technology assessment. Mr. McCarron directs feasibility studies; provides regulatory support, including permit applications, NSPS and Title V reporting and compliance.

James Law, PE has over 22 years experience in geotechnical engineering related to subsurface site investigations, highway and building foundation evaluations, and various design aspects of landfill facilities including CQA and resident/construction engineering services. He has successfully completed slope stability analyses for new cell designs, closure projects, failed slopes, and other specialty facility designs and alternative liner and leachate collection system demonstrations. He has conducted material interface friction angle studies for various geosynthetic and geocomposite liner designs, and overseen the CQA of various liner installations. Mr. Law is on the Board of Directors of the SWANA Mid-Atlantic Chapter and the ASCE National Capital Section. He was the past Chairman of the ASCE national Capital Section, Geotechnical Committee.

Jeff Pierce, PE has over 33 years of engineering, construction and operations/maintenance experience on a wide range of environmental and energy projects. Over the last 19 years, he has worked on several hundred LFG to energy projects, beginning with the 50 MW Puente Hills

project, which is the world's largest LFG fired power plant. He is the former Chairman of SWANA's LFG Generation and Modeling Committee.

James Roy Murray, III, PE, has over 21 years experience in civil and environmental permitting, design and construction including municipal solid waste landfills and associated systems, liner systems, leachate collection systems, utilities, roadways, hydrologic analysis and hydraulic design including open channel systems, storm drainage pipe systems, culverts, bridges, basins, and other systems for the conveyance and control of stormwater. Mr. Murray also has extensive experience in landfill design, operation and construction having served for several years as a consultant preparing landfill expansion permit applications.

Jeff Reed, PE has over 20 years of experience working predominantly on solid waste landfill projects. Project experience includes storm water management, erosion control, hydrogeologic/hydraulic analysis, landfill design, landfill permitting, geosynthetic lining and cover systems, landfill leachate control, slope stability analysis, and construction quality assurance (CQA). He has provided design and consulting services for projects at over 80 landfill facilities in 26 states across the U.S. and in Canada.

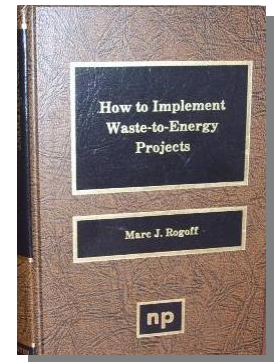
Jim Michelsen is a senior manager experienced in developing and managing projects in diverse infrastructure technologies. He has a proven ability to lead the development of new energy projects, acquisitions and divestitures, including due diligence, valuation, arranging debt and negotiating contracts. He has demonstrated competence in financial analysis, modeling, budgeting and forecasting. He has managed diverse energy generation technologies worldwide, energy project development, valuation, due diligence, acquisition and divestiture. He has an MBA in international finance and a BS in civil engineering.

Jim Walsh, PE, BCEE is the CEO/President of SCS and has 33 years experience in landfill siting investigations, landfill design, LFG management, and other related solid waste facilities. He has worked on hundreds of landfill facilities and is active in SWANA, serving as a board member and committee chair for the LFG Division for many years.

Kevin Yard, PE, BCEE has 28 years of engineering experience that has encompassed a broad range of projects including feasibility studies, permitting projects, conceptual designs, construction plans and specifications, construction-related services, and operations consulting. He has made significant contributions to numerous operating facilities, including landfill gas (LFG) recovery/control plants, landfill closures, new disposal sites, landfill expansions, material recovery facilities and transfer stations. He has directed numerous landfill permitting and design and construction projects, ranging from canyon fills to landfills in deserts. He served as the project director for various LFG design and construction projects, as well as LFG modeling and air quality permitting projects. Having worked in numerous states, he has developed considerable expertise in implementing the NSPS/EG and Subtitle D rules under the jurisdiction of various state agencies. Mr. Yard is a registered professional engineer in five states. Mr. Yard has presented expert testimony before legislative committees, district court and at numerous permit hearings. He has previously served in key positions with two other national engineering firms and with a national waste management company.

Lisa McDaniel has 10 years of experience in the environmental field and provides SCS with experience in both solid and hazardous waste management. Her experience includes work for private consulting firms and for the U.S. Environmental Protection Agency (EPA). Her specific experience includes waste characterization, waste reduction and management planning, regulatory development, training program development, and hazardous waste enforcement.

Marc Rogoff, Ph.D. Dr. Rogoff has been focused on the solid waste management field for more than 30 years. He has managed economic analyses for every major type of solid waste activity and facility including; collection systems, fleet management, transfer stations, material recovery facilities (MRFs) rail haul systems, sanitary landfills, WTE Plants, and alternative waste conversion facilities (including Plasma Arc). He has been a part of management teams that conceived and brought to fruition two of the first modern municipal WTE plants in the southeastern U.S. He specializes in solid waste management economic pro-formas and has completed more than 100 pro-forma assignments for private and municipal waste management entities. Dr. Rogoff also has authored several books and technical publications on WTE including; *"How to Implement Waste-to-Energy Projects"*, and the chapter on Principles of Integrated Solid Waste Management in the textbook "Municipal Solid Waste Combustion Systems". Dr. Rogoff also recently completed an extensive economic impact study and valuation for the construction and operation of a 5,000 acre sanitary landfill complex in southern Alabama.



Dr. Rogoff's WTE Textbook

Michelle Nicholls has over 8 years of diverse experience in environmental program design and implementation. She works with municipalities and private industry in a variety of solid waste management planning elements, including waste characterization and composition studies, on-site waste assessments, coordination of collection and community events, recycling program support, and preparation of solid waste management plans. Other work includes waste diversion surveys, solid waste facility diversion studies, annual reporting of solid waste and used oil programs, reviewing disposal reporting data, developing e-waste recycling programs, and developing various public outreach and education materials.

Mike Leonard, PE has over 33 years of practical engineering experience including over 15 years of direct involvement in most aspects of solid and hazardous waste landfills and is a Senior Technical Manager in the SCS Long Beach, California office. He has functioned as Project Manager, Design Engineer, QA/QC Officer, and Construction Manager while providing services for over 100 landfill projects, both private and public. His landfill experience has included siting and permitting, geotechnical investigations and seismicity, stability analyses, earthworks computations, liner designs, compliance monitoring, LFG system design, and preparation of closure and post-closure maintenance and monitoring plans and cost estimates. During a three-year period he also served as the Construction Manager for over \$15 million of construction work at a major Orange County MSW landfill. Mr. Leonard is active in SWANA and ASCE and has published several technical papers on landfill topics including seismic engineering, settlement, liner leakage and LFG investigations and extraction.

Pat Sullivan, REA, CPP has a bachelor's degree in Biology/Ecology from Harvard University and 18 years experience in the fields of LFG management and air quality permitting and

compliance for MSW landfills, all with SCS. He is SCS's National Partner for Clean Air Act issues for landfills and the team leader for SCS's LFG engineering and technical services practice in California and a company Vice President. He is a Certified Permitting Professional (CPP) in the South Coast Air Quality Management District and Registered Environmental Assessor (REA) in the State of California. Pat is also the Vice Chairman of the Rules and Regulations Committee for the LFG Division of SWANA and recognized national expert on LFG and air quality issues. He is a Board of Director Member of the Mother Chapter of the AWMA and an Executive Board member for the California Biomass Collaboration.

Paul Mandeville, PE, has over 27 years experience, is a Vice President of SCS, and serves as office director of the firm's mid-Atlantic operations based in Reston, Virginia. He has completed solid waste planning, design, permitting, and construction projects for the full range of solid waste management facilities, including landfills expansions, landfill closures, LFG control, and transfer stations. Paul is a member SWANA-Virginia chapter Technical Committee.

Pete Carrico has over 21 years experience and is the Eastern Regional Manager for SCS Field Services Operations, Maintenance, and Monitoring Division. Based in the Reston, Virginia office, he is responsible for direction of the firm's LFG O&M projects throughout the Eastern United States. He is active in SWANA at the national and state levels, serving in a training and educational capacity within both.

Peter Kuniholm, PE has over 33 years of experience, is a Vice President of SCS and serves as office director of the New York office. He has directed a wide variety of solid waste planning, feasibility studies, designs, permitting, and construction oversight projects for municipal and private clients. Mr. Kuniholm is a member of the Board of Directors of the New York SWANA Chapter, a registered PE in five states and author of many published papers and presentations.

Ray Dever, PE, BCEE has over 28 years experience, is a Vice President of SCS, and serves as office director of the firm's southeast operations based in Tampa, Florida. He has completed solid planning, design, permitting, and construction projects for the full range of solid waste management facilities. Mr. Dever is on the Board of Directors of the SWANA Florida Chapter, is a course director and instructor of solid waste courses for the University of Florida's TREEO Center, and is one of the most well-respected solid waste engineers in the State.

Steve Hamilton, REP has over 27 years of environmental project experience with an emphasis in solid waste management. He has worked on more than 350 solid waste projects on more than 240 sites throughout the United States and abroad. His responsibilities have included solid waste privatization and planning projects, landfill siting, design, and operations and closure permits and plans; landfill contamination assessment and remediation and leachate and landfill gas (LFG) management.

Steve Lamb, PE has over 19 years experience and directs the Carolina SCS's solid waste management practice. Mr. Lamb has completed numerous engineering studies, designs, permits, and construction projects at over 75 landfill sites, including twelve landfill projects involving lateral expansions and/or new "greenfield" sites.

Tom Barham serves as Senior Vice President for SCS's Field Services Division. Mr. Barham has had a career long commitment to the construction industry. In his over 23 years of experience, Mr. Barham has risen from the field to senior management through hard work, tenacity and demonstrated excellence in every aspect of his work. His commitment to the construction industry is reflected in his work as an adjunct professor in civil engineering at the University of Maryland, a member of the American Bar Association's steering and membership committees for its Forum on Construction Law, and his employment in the industry for over 20 years. Prior to joining SCS, he worked as a project engineer in the hospital division of a large general contractor. During this time, Mr. Barham was involved in a variety of projects, including projects at Johns Hopkins Hospital and Church Hospital in Baltimore, Maryland.

Tom Conrad, PE, founder and principal of SCS, has 43 years experience in civil and environmental engineering and construction. Thirty years of his environmental engineering experience has been in solid waste management: landfill engineering and construction, landfill gas (LFG) control and recovery, transfer stations, and solid waste planning and recycling. He has carried out hundreds of solid waste projects, ranging from site investigations and site selection studies to designs, operations plans, master plans, corrective actions, closure plans and post-closure care, contingency plans, cost analyses, O&M manuals, design manuals, and research

Tom Lock has over 21 years of landfill gas collection system O&M, landfill environmental compliance and post-closure care related experience. As a Project Manager based in the Pine Grove, Pennsylvania office, Mr. Lock oversees SCS Field Services' LFG related projects throughout the Northeastern U.S. His project related experience includes the management of LFG collection system construction projects; startup, operations and maintenance of LFG control and recovery (LFGE) projects; environmental monitoring and sampling including ambient air, surface emissions, stormwater, and groundwater quality; and due diligence investigations of LFG collection systems.

Tony DiPuccio, PE is a Project Director in the Cincinnati, Ohio office with over 25 years of experience with SCS Engineers. Mr. DiPuccio has a diversified and extensive background in environmental and civil engineering. He has performed design and study projects in the areas of solid and hazardous waste, wastewater, water supply, and stormwater. For the past 21 years, most of his assignments have been in solid and hazardous waste management. Mr. DiPuccio has recently directed a number of environmental due diligence site assessments in Ohio and surrounding states. He regularly serves as technical advisor on waste collection and transport, landfill gas, waste characterization, waste collection and solid waste planning projects.

Exhibit 11. Personnel Matrix

Expertise	A. McCready, PE	B. Dick, PE	B. Gardner, PE, BCEE	B. Isenberg, PE, CPG	B. Westly, PG	B. Clark, PE, BCEE	D. Brennan, PE	D. Mezzacappa, PE	E. Hilton, PE	E. Peterson, PE	F. Screve (Deltaway)	G. Namie	G. McCarron, PE	J. Law, PE, BCEE	J. Pierce, PE	J. Roy Murray, PE	J. Reed, PE
Construction Services	◆	◆	◆	◆		◆	◆	◆	◆	◆	◆		◆	◆	◆	◆	◆
Environmental Investigations	◆		◆	◆	◆	◆			◆	◆		◆			◆	◆	◆
Facility Design	◆	◆	◆	◆		◆	◆	◆	◆	◆		◆	◆	◆	◆	◆	◆
Feasibility Studies	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆	◆	◆	◆	◆	◆	◆
Financial Analysis	◆	◆	◆	◆		◆			◆	◆	◆	◆	◆	◆	◆	◆	◆
Geotechnical Engineering	◆		◆	◆										◆		◆	◆
Groundwater Services			◆	◆	◆	◆											
Hydrogeologic Studies			◆	◆	◆	◆										◆	◆
Landfill Design (all aspects)	◆	◆	◆	◆		◆	◆	◆	◆					◆		◆	◆
Leachate Management	◆	◆	◆	◆		◆	◆	◆	◆					◆		◆	◆
LFG Clean Air Act/NSPS/MACT		◆	◆				◆	◆	◆	◆			◆		◆		
LFG Collection and Control Systems		◆	◆				◆	◆	◆	◆			◆		◆		
LFG-to-Energy (LFGE)		◆	◆					◆		◆			◆		◆		
Permitting	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆	◆	◆	◆
Remedial Design and Construction	◆		◆	◆	◆	◆						◆					
Sludge Management			◆														
Solid Waste Planning/Recycling	◆	◆	◆	◆	◆	◆	◆		◆	◆				◆	◆	◆	◆
Stormwater Management	◆	◆	◆	◆		◆	◆	◆	◆					◆		◆	◆
Wastewater			◆														
Waste to Energy			◆			◆					◆	◆					

Exhibit 11 (Continued)

Expertise	J. Michelsen	J. Walsh, PE	K. Yard, PE	L. McDaniel	M. Leonard, PE	M. Rogoff, PhD	M. Nicholls	P. Sullivan, R.E.A., CPP	P. Mandeville, PE	P. Carrico	R. Dever, PE, BCEE	S. Hamilton, R.E.P.	S. Lamb, PE	T. Barham	T. Conrad, PE	T. DiPuccio, PE	T. Lock
Construction Services	◆	◆	◆		◆	◆			◆	◆	◆	◆	◆	◆	◆	◆	◆
Environmental Investigations		◆	◆		◆			◆	◆		◆	◆	◆		◆	◆	
Facility Design	◆	◆	◆		◆	◆			◆		◆	◆	◆		◆	◆	
Feasibility Studies	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆	◆	◆	◆	
Financial Analysis	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆	◆	◆	◆	
Geotechnical Engineering		◆							◆		◆				◆		
Hydrogeologic Studies		◆			◆				◆		◆				◆		
Landfill Design (all aspects)		◆			◆				◆		◆		◆		◆	◆	
Leachate Management		◆	◆		◆				◆		◆	◆	◆		◆	◆	
LFG Clean Air Act/NSPS/MACT	◆	◆	◆		◆			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
LFG Collection and Control Systems	◆	◆	◆		◆			◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
LFG-to-Energy (LFGE)	◆	◆	◆					◆		◆	◆	◆	◆	◆		◆	◆
Permitting	◆	◆	◆	◆	◆	◆	◆	◆	◆		◆	◆	◆	◆	◆	◆	
Remedial Design and Construction		◆	◆		◆			◆	◆		◆	◆	◆	◆		◆	◆
Sludge Management		◆	◆								◆						
Solid Waste Planning/Recycling	◆	◆		◆	◆	◆	◆	◆	◆		◆	◆	◆		◆	◆	
Stormwater Management		◆	◆		◆				◆		◆		◆		◆	◆	
Transfer Stations		◆	◆			◆			◆		◆		◆		◆	◆	
Wastewater									◆		◆						
Waste to Energy	◆					◆											

Appendix A

Office Locations for SCS Engineers, SCS Field Services and SCS Energy

ARIZONA**Phoenix**

4222 East Thomas Road
Suite 310
Phoenix, AZ 85018-7609
Tel: 602-840-2596
1-800-223-8784
Fax: 602-224-0572

Tucson

2410 W. Ruthrauff Rd.
Suite 110
Tucson, AZ 85705
Tel: 520-696-1617
Fax: 520-696-1618

ARKANSAS**Lowell**

15364 Twin Pines Road
Lowell, AR 72745
Tel: 479-713-0145
Fax: 913-451-7513

CALIFORNIA**Brentwood**

Only overnight packages
(no mail). Call first to
confirm someone can take
delivery.
420 Beatrice Court, Suite B
Brentwood, CA 94513
Tel: 925-240-5152
Fax: 925-240-5629

Long Beach**SCS Engineers &
SCS Energy**

3900 Kilroy Airport Way
Suite 100
Long Beach, CA 90806
Tel: 562-426-9544
1-800-326-9544
Engrs Fax: 562-427-0805
Energy Fax: 562-988-3183

SCS Field Services

Tel: 562-426-9544
1-800-869-0235
Fax: 562-492-6210
Western Region Fax: 562-
492-9292

Modesto

4707 Greenleaf Circle
Suite F
Modesto, CA 95356
Tel: 209-545-8490
1-800-359-3881
Fax: 209-545-8391

Petaluma

500 Meham Rd.
Petaluma, CA 94525
Tel: 707-795-7100
Fax: 707-795-7100

Pleasanton

6601 Koll Center Pkwy
Suite 140
Pleasanton, CA 94566
Tel: 925-426-0080
Fax: 925-426-0707

Rancho Cucamonga

10300 Fourth Street, #150
Rancho Cucamonga, CA
91730
Tel: 909 373-2508
Fax: 909 373-2518

Sacramento

3117 Fite Circle, Suite 108
Sacramento, CA 95827
Tel: 916-361-1297
Fax: 916-361-1299

West Sacramento

852 Northport Drive
Suite #5
W. Sacramento, CA
95691
Tel: 916-361-1297
Fax: 916-361-1299

Salinas

350 Crazy Horse Road
Salinas, CA 93906
Tel: 831-663-1095
Fax: 831-663-1489

San Diego

8799 Balboa Ave., Ste 290
San Diego, CA 92123
Tel: 858-571-5500
Fax: 858-571-5357

SCS Tracer Environmental

970 Los Vallecitos Blvd.
Suite 100
San Marcos, CA 92069
Tel: 760-744-9611
Fax: 760-744-8616

Santa Maria

SCS Tracer Environmental
2601 Skyway Drive
Suite A1
Santa Maria, CA 93455
Tel: 805-346-6591
Fax: 805-346-6127

Santa Rosa

3843 Brickway Blvd.
Suite 208
Santa Rosa, CA 95403
Tel: 707-546-9461
Fax: 707-544-5769

COLORADO**Denver**

17202 East 98th
Commerce City, CO 80022
Tel: 303-288-1965
Fax: 303-288-1973

FLORIDA**Daytona Beach**

501 N. Grandview Ave.
Suite 400
Daytona Beach, FL 32118
Tel: 386-238-7770
Fax: 386-238-7046

Pensacola

3298 Summit Blvd.
Suite 31 - A
Pensacola, FL 32503
Tel: 850-432-6211
Fax: 850-432-6220

Tampa

4041 Park Oaks Blvd.
Suite 100
Tampa, FL 33610
Engineers:
Tel: 813-621-0080
1-800-569-9702
Fax: 813-623-6757
Field Services:
Tel: 813-630-2109
Fax: 813-630-1790

West Palm Beach

1665 Palm Beach Lakes
Blvd., Suite 750
WPB, FL 33401
Tel: 561-616-1061 or 62
Fax: 561-616-1063

GEORGIA**Atlanta**

3025 Windward Plaza
Suite 105
Alpharetta, GA 30005
Tel: 678-319-9849
Fax: 678-319-9851

ILLINOIS**Chicago**

2600 Warrenville Road
Suite 207
Downers Grove, IL 60515
Tel: 630-219-1645
Fax: 630-219-1646

KANSAS**Kansas City**

10975 El Monte, Suite 100
Overland Park, KS 66211
Tel: 913-451-7510
1-800-366-9232
Fax: 913-451-7513

MARYLAND**Columbia**

10630 Little Patuxent Pkwy
Bldg. 1000, Suite 127
Columbia, MD 21044
Tel: 410-995-4040
Fax: 410-995-4045

MASSACHUSETTS**Shrewsbury**

560 Boston Turnpike (Rt 9)
Suite 570-574
Shrewsbury, MA 01545
Tel: 508-845-4300
Fax: 508-845-4301

NEVADA**Las Vegas**

3460 West Cheyenne Ave
Suite 100
N. Las Vegas, NV 89032
Tel: 702-645-1521
1-888-229-7668
Fax: 702-645-0088

NEW JERSEY**Medford**

53 S. Main St., Suite A
Medford, NJ 08055
Tel: 609-654-4000
Fax: 609-654-4438

NEW MEXICO**Albuquerque**

3351 Candelaria Road, NE
Albuquerque, NM 87107
Tel: 505-349-8060
Fax: 505-349-8061

NEW YORK**Valley Cottage**

SCS Engineers, PC
140 Route 303
Valley Cottage, NY 10989
Tel: 845-353-5727
1-800-597-2769
Fax: 845-353-5731

NORTH CAROLINA**Asheville**

SCS Engineers, PC
20 Battery Park Avenue
Suite 504
Asheville, NC 28801
Tel: 828-285-8951
Fax: 828-285-8953

Charlotte

SCS Engineers, PC
2520 Whitehall Park Dr.
Suite 450
Charlotte, NC 28273
Engineers

Tel: 704-504-3107

Fax: 704-504-3174

Field Services

Tel: 704-504-3170

Fax: 704-504-3174

Raleigh

SCS Engineers, PC
322 Chapanoke Road
Suite 101
Raleigh, NC 27603-3415
Tel: 919-662-3015
Fax: 919-662-3017

OHIO**Cincinnati**

2060 Reading Rd.
Suite 200
Cincinnati, OH 45202
Tel: 513-421-5353
1-866-303-5353
Fax: 513-421-2847

Cleveland

5145 Brecksville Road
Suite 205
Richfield, OH 44286
Tel: 330-659-0827
Fax: 330-659-0583

OREGON**Portland**

14945 SW Sequoia Pkwy
Suite 180
Portland, OR 97224
Tel: 503-639-9201
Fax: 503-684-6948

PENNSYLVANIA**Harrisburg**

4309 Linglestown Road
#115
Harrisburg, PA 17112
Tel: 717-671-5102
1-888-703-0300
Fax: 717-671-5103

RHODE ISLAND**Providence**

166 Valley Street
Building 7, Unit 7108
Providence, RI 02909
Tel: 401-274-4300
Fax 401-274-4330

SOUTH CAROLINA**Charleston ***

1360 Truxtun Ave, Ste 100
N. Charleston, SC 29405
Tel: 843 746-8525
Fax: 843-746-8865

TEXAS**Austin**

3809 So. Second St.
Suite C-400
Austin, TX 78704
Tel: 512-440-1888
1-800-339-3034
Fax: 512-440-8393

Dallas/Ft. Worth

1901 Central Dr., Suite 550
Bedford, TX 76021
Tel: 817-571-2288
1-800-579-6671
Fax: 817-571-2188

Houston

12651 Briar Forest Drive
Suite 205
Houston, Texas 77077
Tel: 281-397-6747
Fax: 281-293-7878

SCS Tracer Environmental

12837 Louetta Road
Suite 203
Cypress, TX 77429
Tel: 281-882-3210
Fax: 281-984-1900

VIRGINIA**Norfolk**

6330 North Center Dr.
Bldg. 13, Suite 100
Norfolk, VA 23502
Tel: 757-466-3361
Fax: 757-466-4344

Richmond

3229 Anderson Hwy.
Suite 100
Powhatan, VA 23139
Tel: 804-598-9480
Fax: 804-598-9485

SCS O&M

5715 Charles City Circle
Richmond, VA 23231
Tel: 804-222-1667
Fax: 804-222-3316

Reston

11260 Roger Bacon Dr. #300
Reston, VA 20190

Engineers:

Tel: 703-471-6150
1-800-767-4727
Fax: 703-471-6676

Field Services:

Tel: 703-709-0004
1-800-669-7998
Fax: 703-709-0268

Winchester

600 Pegasus Court #102
Winchester, VA 22602
Tel: 540-450-2175
Fax: 540-662-8468

Lorton

I-95 Trailer
9850 Furnace Road
Lorton, VA 22079

WASHINGTON**Bellevue**

2405 140th Ave. NE, Ste 107
Bellevue, WA 98005
Tel: 425-746-4600
1-800-727-6393
Fax: 425-746-6747

INTERNATIONAL**KOREA****Seoul**

SCS Engineers Korea, Ltd.
Dongyang Hangang Trevelle B/D 1517
Seokyo-Dong Mapo-Gu, Seoul, Korea
Phone - +82-2-323-3390
FAX - +82-505-323-3390

OFFICES NATIONWIDE