



Solid Waste Management Consulting Services

Technical Proposal

Presented to:

Government of the District of Columbia



**Office of Contracting and Procurement (OCP)
Transportation and Specialty Equipment Commodity Group**
2000 14th Street, NW, 6th Floor
Washington, DC 20009
(202) 671-2389

Presented by:

SCS ENGINEERS
11260 Roger Bacon Drive
Suite 300
Reston, VA 20190
(703) 471-6150

April 4, 2013
File No. 020093213

Offices Nationwide
www.scsengineers.com

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SCS ENGINEERS

April 4, 2013
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Proposal Selection Committee
District of Columbia
Office of Contracting and Procurement (OCP)
Transportation and Specialty Equipment Commodity Group
2000 14th Street, NW, 6th Floor
Washington, DC 20009

Subject: Request for Proposals – Solid Waste Consulting Services

Dear Proposal Selection Committee:

SCS Engineers (SCS) is pleased to submit our Technical Proposal in response to the subject request for proposals. If we are selected for the project, the work will be managed out of Reston, VA, which is approximately 25 miles from the District's offices. The enclosed proposal demonstrates that the proposed SCS Team has the right mix of solid waste management and engineering staff who have the experience to achieve the District's objectives.

SCS is experienced with assisting local governments plan for and implement major transitions in solid waste management practices and strategies. The highlights of SCS's proposal are summarized below:

- **The District's project is an important, sensitive, and high level assignment.** As such, SCS's proposed Project Director will be Mr. Robert Gardner, PE, BCEE. Mr. Gardner is a senior vice president with SCS and oversees the firm's solid waste management practice nationwide. He has substantial experience and expertise in all phases of solid waste management. His area of expertise is assisting local governments and authorities plan and implement their solid waste management plans, including the facilitation of multi-jurisdictional solid waste management resolutions. Mr. Gardner has been assisting the eight municipal members of the Southeastern Public Service Authority in the south Hampton Roads Virginia area through a similar process since 2007.
- **The District will be well served by the proposed Project Manager, Stacey Demers.** Ms. Demers works in the Reston, VA office and is well-versed in sustainability issues being a LEED AP as well as having recently completed projects to evaluate numerous federal facilities against LEED certification criteria. Ms. Demers is also very strong in her knowledge of local solid waste management programs, having worked on multiple waste diversion programs and studies for Montgomery County, MD and a visible public participation process to site a transfer station in Prince George's County, MD. She was a key person in the District's 2000



Needs Assessment which led to the rehabilitation of the District's two solid waste transfer stations.

- **SCS specializes in Solid Waste Engineering and Consulting.** Solid waste management engineering and consulting is the core of our business and has been since the company's inception over 40 years ago. We possess a comprehensive knowledge covering the entire spectrum of waste industry issues. SCS is a full-service company and intends to perform much of these evaluation services with our expert in-house personnel. The District will benefit from the SCS Team's subject matter experts in the areas of sustainability, waste diversion, waste collection, waste conversion technologies, transfer station design and operation, rate studies and procurements, and waste characterization.
- **SCS is structured for rapid response and accessibility.** Our Reston, VA office is our second largest office, and most of the proposed project team are housed there. This effort will involve sharing knowledge among the team of technical professionals with various specialties using our dedicated, state-of-the-art communications infrastructure that reflects our commitment to bring the best innovative solutions to the District. *Management Solutions Associations LLC (MSA)* is an important member of our project team. They are based in the District of Columbia and the owners have worked together for over 10 years for the District of Columbia Department of Public Works with their solid waste, recycling, street cleaning and enforcement programs. For this project they will perform the financial analysis and modeling of the developed integrated solid waste management scenarios.
- SCS is the number one solid waste consulting firm in the country according to Engineering News Record. Solid waste is not just a part of our business, it is our business.

We appreciate the opportunity to work with the District of Columbia again. Please do not hesitate to contact us to discuss our approach or qualifications.

Sincerely,



Stacey T. Demers, LEED AP
Project Director
SCS ENGINEERS



Robert B. Gardner, P.E., BCEE
Senior Vice President
SCS ENGINEERS

STD

Enclosures

A. TECHNICAL APPROACH

PROJECT UNDERSTANDING

Mayor Gray's Sustainable DC Plan sets waste management goals that go beyond recycling to focus first on reducing wastes and reusing products. Materials left in the remaining waste stream will then be diverted from landfill disposal through recycling, composting, and conversion technologies that recover heat or electricity from waste. Achieving the zero waste vision presented in the Sustainable DC Plan requires a perception shift from viewing waste as a burden to viewing waste materials as a resource with economic, environmental and social value.

Managing waste materials to capture their most productive level requires an understanding of the natural and financial capital investments needed as well as the benefits that will be realized from various options. To this end, the Department of Public Works (DPW) is seeking a solid waste management and engineering consulting firm to collaborate in the development of three to five alternative integrated solid waste management scenarios; quantify the economic, environmental, and social costs and benefits related to each scenario in a format that allows "apples to apples" comparison; and facilitate community input into the selection process.

The SCS Team has strong qualifications in all phases of integrated waste management and has assembled a team that is prepared to provide a fresh look at the District's solid waste system. Our approach includes a blending of seasoned solid waste professionals who have nationwide expertise with sustainability, innovative waste diversion programs, and assessment of new technologies; along with solid waste professionals who are familiar with the solid waste management landscape of the region and who know the workings of the District's current solid waste management program.

The SCS Team's approach focuses on the project objectives presented in the District's RFP, specifically:

- Meet the zero waste goals of the Mayor's Sustainable DC Plan
- Identify how to economically increase the District's recycling diversion rate
- Determine how DC can best capture the economic value and embedded energy of the waste stream that remains until the zero waste goals are achieved
- Identify the optimal set of components to maximize the value of the waste stream while providing economic sustainability over the long term
- Identify whether the District should seek jurisdictional partners for the solid waste management system.

The SCS Team envisions working collaboratively with the District's Contract Administrator (CA) and other DPW staff to meet the project objectives above remaining true to the goals set by the DC Sustainable Plan.

Task 1 - Alternatives for Managing the District's Solid Waste

As per the RFP, SCS will define three to five alternative integrated solid waste management scenarios (including the current state) that capture the energy and embedded value of the managed material streams. Each of these scenarios will be developed collaboratively with staff from the District and will include waste reduction, recycling, reuse, organics composting and residuals processing components.

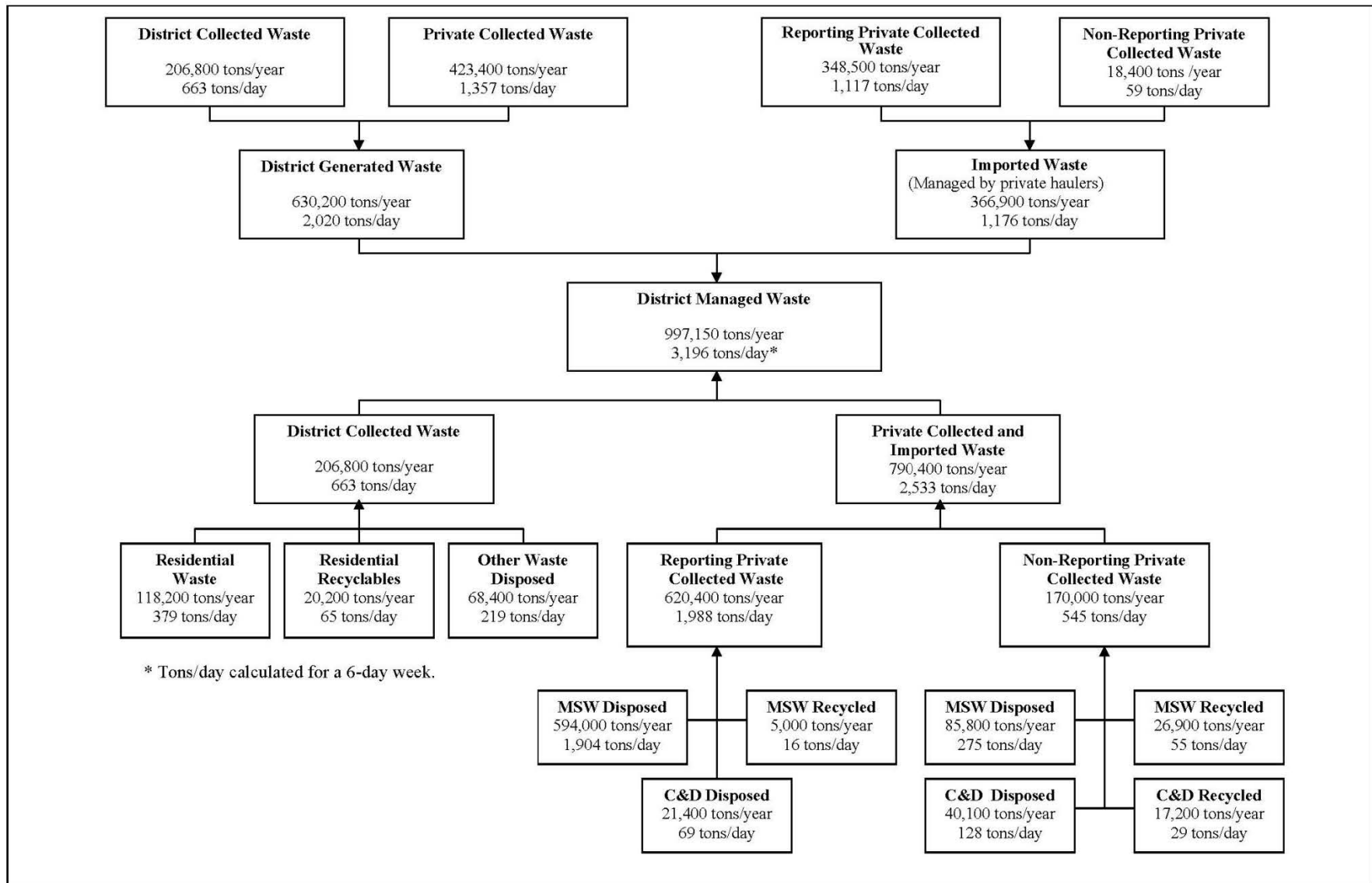
Task 1.1 – Defining Current State

While defining the current state of solid waste management is required in the RFP, the SCS Team believes that understanding the existing system is important to evaluating alternative integrated solid waste management scenarios. As such, the SCS Team can hit the ground running since team members Mel Paret and Edouardo Etienne, from Management Solutions Associates LLC, have worked with the District's DPW SWMA for the past 10 years on a range of management, financial and technology initiatives and projects. Their familiarity with the SWMA operations and customers will help us to quickly and efficiently gather the necessary information and develop unit costs for the various waste streams.

SCS anticipates the following work efforts under this task:

- **Gather Information**
 - **Demographics** - Research, document, and summarize existing demographic information affecting the solid waste management system (e.g., population projection trends, housing density, residential & commercial growth trends). Various business, governmental and non-profit entities as sources of waste will also be documented by industry categories.
 - **Solid Waste Collection Areas and Facilities** - Obtain solid waste system maps (i.e., facilities and collection areas) and supplement this map by locating District, other governmental and privately owned/operated solid waste management facilities within and outside the District. We will also attempt to obtain historical data by facility as relevant to existing District waste and recyclable material flows.
 - **Waste Quantities and Flow** – Identify where waste materials are generated, how they are collected, and where they are disposed or recycled. This will include residential and commercial MSW, bulk/heavy trash, landscape/tree/leaf waste, construction/demolition waste as well as sources of bio-waste. SCS envisions development of a flow diagram similar to the one created by SCS for the 2000 Needs Assessment for the District (see Exhibit 1). This will assist with development of alternatives (Task 2).
 - **Management Structure and Resources** - Document current solid waste management organizational chart, job descriptions, and personnel as well as interactions with other agencies (e.g. Environment, Transportation). SCS will also inventory solid waste resources such as vehicles, waste collection containers, and other equipment.

Exhibit 1. Waste Managed and Generated in the District (FY 1999)



Developed by SCS for the 2000 Needs Assessment

- **Meet with SWMA Staff** – We will meet with District staff to discuss its current residential waste collection and transfer station operations and various public and private stakeholders involved in generating and handling waste/recyclables within the District.
- **Meet with Private Haulers/Facilities** – We will meet with private solid waste haulers and private solid waste/recycling facility operators to discuss their operations in the District and obtain information as provided. (Note: SCS cannot guarantee the cooperation of any private companies.)
- **Meet with representatives of the District’s business community and citizen groups** - With guidance from SWMA, we will conduct initial interviews with selected groups such as the Washington Board of Trade, Restaurant Association of Metropolitan Washington, the Council of Governments, the Grocers association as well as recommended local citizen groups.
- **Assess Services/Finances/Costs** - Obtain and review SWMA’s previous three annual solid waste budgets (including current budget) ; document current costs by service level and customer group; and prepare a summary of the District’s solid waste management system revenues and costs. The level of services provided to customers will also be documented including both type and frequency of service. This information will be used to support the pro-forma financial models prepared for the alternatives analyses.

A spreadsheet-based model in Microsoft Excel will be provided which reflects the District’s annual budget by fund and cost category. The model will include capital expenditures, disposal costs, labor, and other operating expenses (including overhead expenses and any revenue adjustments). This model will also include historical and current budget projections to assist with the identification of key cost elements. In addition, a memorandum will be provided to summarize the findings and provide alternatives for Task 1.2.

Task 1.2 – Defining Alternative Solid Waste Management Scenarios

Working collaboratively with the District CA and SWMA staff, the SCS Team will develop, screen, and analyze alternative institutional models for solid waste management, including public, private or combination systems. As required by the RFP, each scenario will include waste reduction, recycling, reuse, organics composting and residuals processing components. Integrated solid waste management has a myriad of considerations as shown in Exhibit 2.

Exhibit 2. Dimensions of Integrated Solid Waste Management

Institutional	Infrastructure	Materials	Generators
Legal/Ownership	Waste Reduction/Reuse	Recyclables	Single-family Households
Administration/ Enforcement	Collection, Transfer and Processing	Organics	Multi-family Households
Operations	Waste Conversion	Residual Wastes	Commercial/Industrial/ Institutional
Financing	Disposal (i.e., WTE, Landfill)	Other (i.e., special, HHW)	Construction &, Demolition Debris

The development of alternative solid waste management scenarios is also affected by implementation schedules. As required by the RFP, each scenario will be designed to meet the zero waste goals in the Sustainable DC Plan. Action items identified in the Sustainable DC Plan are presented in Exhibit 3 and will be incorporated into the alternatives developed according to the following timeline:

- **Short Term** – Action items to be implemented in the next one to three years.
- **Medium Term** – Action items to be implemented in three to seven years.
- **Long Term** – Action items to be implemented in eight to ten years.

Exhibit 3. Dimensions of Integrated Solid Waste Management

	Goal 1 Reduce Volume of Waste Generated and Disposed	Goal 2 Reuse Materials to Capture Economic Value	Goal 3 Increase Citywide Recycling Rate
Short Term	<p>Action 1.6: Allow nearby businesses to share containers for landfill waste, recycling, and composting</p>	<p>Action 2.4: Complete a waste life-cycle study</p> <p>Action 2.5: Reuse 50% of biosolids treated in the District</p>	<p>Action 3.2: Establish a new organics transfer station in the District</p>
Medium Term	<p>Action 1.1: Develop a robust Waste Action Plan with the objective of decreasing all citywide waste streams</p> <p>Action 1.3: Ban Styrofoam and non-recyclable plastic containers from food and retail outlets</p> <p>Action 1.5: : Implement Sustainable Sites Initiative (SITES) guidelines for park maintenance</p>	<p>Action 2.2: Introduce construction waste management requirements</p>	<p>Action 3.3: Increase the size of recycling bins</p> <p>Action 3.5: Provide incentives for residential composting and recycling</p>
Long Term	<p>Action 1.2: Introduce a Pay-As-You-Throw pricing structure for waste collection services</p> <p>Action 1.4: Introduce a bottle deposit law</p>	<p>Action 2.1: Establish a District product stewardship program</p> <p>Action 2.3: Require the use of recycled and salvaged building materials</p>	<p>Action 3.1: Provide all households with a three track waste collection process</p> <p>Action 3.4: Increase recycling receptacles in the public realm</p>

Using information from Task 1.1 and discussions with SWMA staff, SCS anticipates scenario development to start with brainstorming sessions for which new ideas to be subsequently analyzed by the SCS Team. The analysis will be mainly qualitative at this stage, using screening criteria to reduce the long list of alternatives to a short list of three or four alternatives for more detailed evaluation.

The analysis will include options for changes to the existing institutional structure and the associated advantages and disadvantages of each alternative. Recommendations for changes to the existing structure that might improve efficiency, service delivery, system economics, environmental impacts, or social benefits will be identified.

While ideas that develop through meetings and discussions with SWMA personnel cannot be identified for this proposal, SCS can summarize work elements related to meeting the goals and action items in the DC Sustainable Plan, presented below:

Exhibit 4. SCS Team Approach to DC Sustainable Plan Action Items

Short Term Action Items	SCS Team Approach
<p>Action 1.6: Allow nearby businesses to share containers for landfill waste, recycling, and composting</p>	<p>SCS has gained significant experiences from neighboring Montgomery County, MD on developing cooperative agreements between businesses for sharing waste collection and recycling contracts. SCS will assess the extent of where these agreements are most beneficial, typical collection cost savings, expected increases in waste diversion, and permitting requirements. SCS is also familiar with new technologies that utilize solar compacting technologies and jurisdictions that have utilized these technologies successfully.</p>
<p>Action 2.4: Complete a waste life-cycle study</p>	<p>SCS has experience in reviewing waste conversion technologies and identifying key system and technology metrics by which the District may best position itself to take advantage of waste conversion technologies as they emerge. To help further define scenarios that include waste conversion technologies, SCS will assess facility siting constraints, plant feedstock requirements and options, capital costs, power utility interconnection, and markets or disposal costs for byproducts.</p>
<p>Action 2.5: Reuse 50% of biosolids treated in the District</p>	<p>SCS will assess options to incorporate biosolids into new or existing composting programs and as a feedstock in a waste conversion facility.</p>
<p>Action 3.2: Establish a new organics transfer station in the District</p>	<p>SCS is experienced with the siting and design of solid waste transfer stations including the rehabilitation of the District’s two transfer stations in 2003. Recently, SCS worked with Frederick County, MD to reassign a portion of their solid waste transfer for recyclables processing and transfer. SCS will assess material quantities to be diverted to an organics transfer station or anaerobic digester, siting issues, special equipment to process organics, markets for organics, and associated capital costs, operating costs, and environmental benefits.</p>

Medium Term Action Items	SCS Team Approach
<p>Action 1.1: Develop a robust Waste Action Plan with the objective of decreasing all citywide waste streams</p>	<p>While the District is responsible for most residential waste collection, businesses and institutions must contract with private haulers to collect and process their materials. Even though the District can only control the flow of the residential streams, it can influence what happens in the commercial sector through the policies, incentives, and ordinances it adopts. SCS will assess programs that can be implemented by SWMA to promote waste reduction and diversion. Influencing waste diversion for the non-residential sector may involve a new permitting process to license private haulers, register private solid waste facilities, and/or creating economic incentives. SCS will work out details with SWMA staff and assess costs and benefits in subsequent analyses.</p>
<p>Action 1.3: Ban Styrofoam and non-recyclable plastic containers from food and retail outlets</p>	<p>SCS will review the District’s “bag law” to assess impacts of legislation to be introduced that bans styrofoam and non-recyclable plastic including expected increases in waste reduction and increase in composting through increases in the use of environmentally preferable packaging.</p>
<p>Action 1.5: : Implement Sustainable Sites Initiative (SITES) guidelines for park maintenance</p>	<p>SCS will review data regarding the quantity of organic waste generated by District parks for the past three years, if available. SCS will meet and discuss types and quantities (weight or volume, actual or estimated) of organic waste that will be available for composting. This information will be incorporated into the short-term Action Item 3.2 for establishing a new organics transfer station or reassignment of a portion of an existing solid waste transfer station operated by the District.</p>
<p>Action 2.2: Introduce construction waste management requirements</p>	<p>The District plans to introduce legislation that requires large construction projects to prepare a plan that specifies how materials will be managed so that 75 percent of the waste is reused or recycled. SCS will assess the quantity of construction waste materials that are generated, existing markets for construction materials, and expected progress in meeting the 75% reuse or recycling goal. Additional programs that could reduce costs will be assessed that include permitting fees or requiring deposits refunded when waste diversion goals are met. The District could also use its authority to add fees, taxes, and data reporting requirements on private waste haulers. To reduce the quantity of waste materials generated, the District may implement policies that require advertising of upcoming demolition projects so that maximum deconstruction can be arranged.</p>
<p>Action 3.3: Increase the size of recycling bins</p>	<p>SCS will assess the effect on waste diversion by increasing the size of recycling bins for the residential sector. Costs and benefits of this action item will be correlated with long-term Action Item 1.2 that introduces a PAYT system as well as Action Item 2.1 that requires a three-bin system for all households.</p>
<p>Action 3.5: Provide incentives for residential composting and recycling</p>	<p>Incentives for the residential sector to increase composting and recycling typically involve reduced fees for generating less waste (PAYT) and rewards for meeting recycling goals (RecycleBank). SCS will estimate expected waste diversion quantities through incentives as well as expected benefits (environmental and social) and institutional changes to manage these programs.</p>

Long Term Action Items	SCS Team Approach
Action 1.2: Introduce a Pay-As-You-Throw pricing structure for waste collection services	SCS recently assessed a Pay-As-You-Throw (PAYT) pricing structure for Chapel Hill, NC and is familiar with various implementation strategies for PAYT programs. SCS will assess expected decreases in waste disposal and increases in recycling and reuse through various methods of implementing PAYT (bags, stickers, variable can sizes, and hybrid programs). Capital costs related to collection containers and vehicles will be assessed.
Action 1.4: Introduce a bottle deposit law	SCS will estimate the increase in recycling quantities through implementation of a bottle deposit law and also opportunity for regional collaboration to make this program successful.
Action 2.1: Establish a District product stewardship program	SCS will assess the District’s legal authority and regional cooperation to ban problem products and packaging or require businesses and institutions to take back designated products and packaging sold in the District. SCS will identify opportunities to develop public/private and/or intergovernmental partnerships to setup convenient neighborhood centers for reusables, recyclables, compostables, construction and demolition (C&D) debris and household hazardous wastes funded by producers and/or retailers.
Action 2.3: Require the use of recycled and salvaged building materials	Similar to the LEED certification process, the District will introduce legislation that requires the use of recycled or salvaged materials in large building projects. SCS will reach out to salvage yards and businesses that specialize in reclaimed materials to assess the their availability. Institutional requirements to manage this program and enforce it will be identified.
Action 3.1: Provide all households with a three track waste collection process	SCS will review implementation costs and results on waste diversion experienced by other jurisdictions that have implemented a three track waste collection process. The costs and benefits will be correlated with Action Items 1.2 and 3.3.
Action 3.4: Increase recycling receptacles in the public realm	SCS will assess the number of containers needed and costs for collection from public recycling containers. SCS will also utilize information from Action Item 1.6 to assess the costs and benefits of using solar compacting containers.

Task 2 - Natural and Financial Capital Requirements Comparison

As required by the RFP, the SCS Team will develop an evaluation strategy and framework that will quantitatively compare the natural and financial capital required of each integrated solid waste management alternative. The evaluation will consider and develop more thoroughly a short list of alternatives identified from Task 1 and input received from the public participation process described in Task 4. The strategy will be assembled with careful consideration of financial and legal constraints, while optimizing the social, economic, and environmental benefits. We propose that a sustainability theme be an integrating factor for the strategy. By adopting sustainability as a guiding principle and catalyst, the waste management system will be positioned to evolve in a positive and stable direction.

Task 2.1 - Environmental Impact Comparison

Waste materials that are recovered through reuse, recycling and/or composting have a clear impact on climate change and greenhouse gas production. Significant savings come from avoiding the wastes produced from mining, manufacturing and distribution of products before they get into the waste stream. SCS will utilize the EPA WARM computer model to calculate greenhouse gas (GHG) emissions of in metric tons of carbon dioxide equivalent (MTCO₂E), and energy units (million BTU) across a wide range of material types commonly found in municipal solid waste.

In addition to calculating GHG from waste diversion, SCS will also calculate GHG emissions through program activities such as transportation and energy use. GHG will be estimate for each scenario and used to compare environmental impacts.

Task 2.2 - Social Impact Comparison

Zero waste programs can have a significant impact on the local economy by creating business opportunities and jobs to manage discarded materials as well as by avoiding costs related to disposal of waste. Additionally, facilities required to support zero waste goals can look to brownfields redevelopment which can address environmental justice through community participation, and redevelopment using green building and renewable technologies. The social costs and benefits need to be considered in conjunction with the direct costs related to different scenarios. SCS will assess social impacts through job creation, environmental justice, and other community benefits related to zero waste goals for each of the scenarios.

Task 2.3 - Financial Comparison

The following major efforts are anticipated under this task:

- **Analyze the short list of alternative scenarios to estimate the long-term life-cycle costs of each alternative.**
An in-depth review will be conducted of the various costs each alternative including costs for technology, collection/containerization, and administration. The strategy will include tools to accomplish its implementation which includes recommended policies, funding systems, financial structures needed, incentive programs, information exchanges, direct public services, privatization approaches, monitoring and metrics systems, and others.
- **Identify potential revenue mechanisms to recover costs of programs.**
A range of fees, charges & taxes will be assessed relative to the various programs and projected costs. Relationships between revenue mechanisms and cost drivers (including direct costs as well as social/environmental costs) will be sought to establish equitability among services and groups as well as incentives to encourage sustainable practices.
- **Develop a financial model that can be used to project annual revenues and costs under a variety of institutional and end-use arrangements.**
A base case will be developed that assumes continuation of existing facilities, and the model will be structured to allow for different material end-use methods, contractual

arrangements, and ownership structures for use in the analysis of the short list of alternatives. The model will be structured to allow for testing of “what-if” scenarios among program components and costs with potential revenue mechanisms. Model parameters will be estimated on an annual basis over a short-, medium- and long-term time horizon to allow examination of potential new capital facilities. This approach will also highlight changes that will result in the year 2023.

Task 3 - Siting, Regulatory, Institutional, and Legal Requirements

The purpose of this task is to identify siting, regulatory, institutional, and legal requirements for the alternative integrated solid waste management scenarios developed in Tasks 1 and 2. SCS will review federal legislation and local laws and ordinances that will affect solid waste management in the District including recent court cases involving solid waste. The objective of this task is to provide a listing, description, and discussion of the key regulations that must be considered in managing solid waste, siting constraints of new and existing facilities, institutional changes and other legal requirements for managing and controlling the flow of waste materials generated in the District.

SCS anticipates the following work efforts under this task:

- **Federal Regulations.** Review federal regulations governing solid waste, including Subtitle D, the Clean Air Act (New Source Performance Standards (NSPS), and Title V), the Clean Water Act (National Pollution Discharge Elimination System, (NPDES)), and other pertinent rules and legislation.
- **Local Ordinances or Resolutions.** Review solid waste ordinances or local resolutions regarding solid waste management.
- **Court Cases.** Review court cases affecting solid waste management, with specific focus on flow control (e.g., United Haulers Assoc., Inc. v. Oneida-Herkimer Solid Waste Management Authority).
- **Future Regulatory Trends.** Review of future regulatory initiatives relative to solid waste management at the state and federal levels that could affect the solid waste master planning effort.
- **Siting Considerations.** Review siting criteria relevant to solid waste management facilities such as transfer stations, material recovery facilities (MRFs), composting facilities, and waste processing facilities such as waste conversion facilities.
- **Summary.** Preparation of a regulatory synopsis in tabular form.
- **Draft Section.** Prepare draft regulatory section of the Final Report.

The deliverable for this task will include draft text, figures, and other exhibits for inclusion in the final report addressing the federal and local regulations affecting the District’s existing and

future solid waste management system. The draft section will be submitted separately for review and comment. Finalization of this section is addressed under the Final Report task.

Task 4 - Public, Staff, and Stakeholder Review of Project Progress

Based on the requirements of the RFP, the District is committed to effectively involving the public in its planning activities toward zero waste goals. It is important to be proactive in implementing a public engagement process that provides information and full public access to the process with significant input from stakeholders throughout the community, including District residents and businesses, the Solid Waste Advisory Commission (SWAC), other City Departments, representatives from communities and public agencies throughout the region, nonprofit and private sector service providers, academic institutions, community organizations and environmental groups.

There is no single correct way for a municipality to achieve zero waste. Ensuring a comprehensive public involvement process that includes a diversity of perspectives will help the District build a stronger understanding of zero waste implementation needs and issues. Active public involvement encourages proactive participation by residents who will remain involved throughout the process.

Based on the requirements of the RFP, SCS is planning to conduct three to five public meetings. We recognize that the final framework of the public participation process will be developed collaboratively with District staff; we believe the following work items will enhance public input:

- **Identify Stakeholder Groups and Contacts.** SCS will work with the District CA to identify groups to target for input on implementation aspects of zero waste goals such as other District Agencies (SWMA, Environment, Consumer/Regulatory Affairs, Economic Development, Health), citizen groups and non-profit organizations. SCS will arrange to meet representatives from these groups individually so that their input can better be incorporated into the development of the integrated solid waste management scenarios.
- **Develop Workgroups.** SCS believes that public concerns can best be addressed and managed when issues are identified early on in the process so that innovative ideas can be developed to address and alleviate concerns.

One idea is to engage business entrepreneurs of *1776DC*, a new DC-based initiative to convene and accelerate startups in the heart of the District of Columbia. Mayor Gray's recently released Five Year Economic Development Strategy defines technology entrepreneurship as a key to the City's economic diversification. 1776 leaders have partnered with the City to create a convening space for the District startup ecosystem which will also provide training for unemployed District residents, work with incubators in underserved areas and provide quarterly tours for DC youth.

- **Conduct Online Survey.** SCS will work with District staff to define survey objectives and topics for feedback. Surveys can provide useful feedback for general consensus on planned programs and can involve input from a population that may be unable to make

public meetings. SCS will prepare the online survey and distribute to identified stakeholders, analyze data, and prepare summaries of the results.

- **Plan & Conduct Stakeholder Presentations in Public Meetings.** SCS will use draft findings and recommendations as a basis for content. We will schedule and arrange venues for presentations at the public meetings, prepare agendas and prepare documents and media for the presentation. The SCS Project Manager and technical experts will conduct the presentation and be available to answer questions.
- **Integrate Stakeholder Results.** SCS will summarize results of public meetings, prepare interim reports and distribute feedback as directed by the District CA. Results of the public input process will be integrated into the final report.

MANAGEMENT APPROACH

This section describes SCS's proposed management approach, including our project management plan and organizational structure to complete the requirements as stated in the District's RFP. SCS will strive to provide professional engineering and consulting services of the highest quality and to be responsive to the needs of the District in carrying out this project. SCS has a Quality Management System (QMS), which includes Quality Assurance, Quality Control, project organization, and documentation. We also utilize computerized financial management systems and manpower allocation software to assist with managing assignments.

The key personnel identified for this contract attend rigorous technical and project management training, in the form of in-house workshops and seminars. Furthermore, all officers of the company enter into a structured leadership training program in order to fully recognize the responsibilities and acknowledge the commitment of time and resources and motivation necessary to undertake these project assignments. The workloads of the Task Managers and key technical staff are monitored regularly to confirm that adequate staff resources are available to deliver and complete task order assignments. You have our commitment that SCS staff assigned to your projects will be available for the duration of known assignments.

Project Management Plan

For this project SCS proposes the following project management plan:

- **Project scoping.** SCS will work with the District's CA to develop a detailed scope of services, which will identify key project tasks and deliverables. The scope of services will provide a means for focusing the evaluation to meet the District's study. As required in the RFP, SCS will submit to the District within five days of contract award a proposed project schedule, which outlines the proposed tasks, milestone dates, and project deliverables.
- **Project website.** SCS will establish a secure project website that will facilitate the storage and dissemination of project information to the District and SCS Project Team, including background information, deliverables, project scheduling, tasks, and

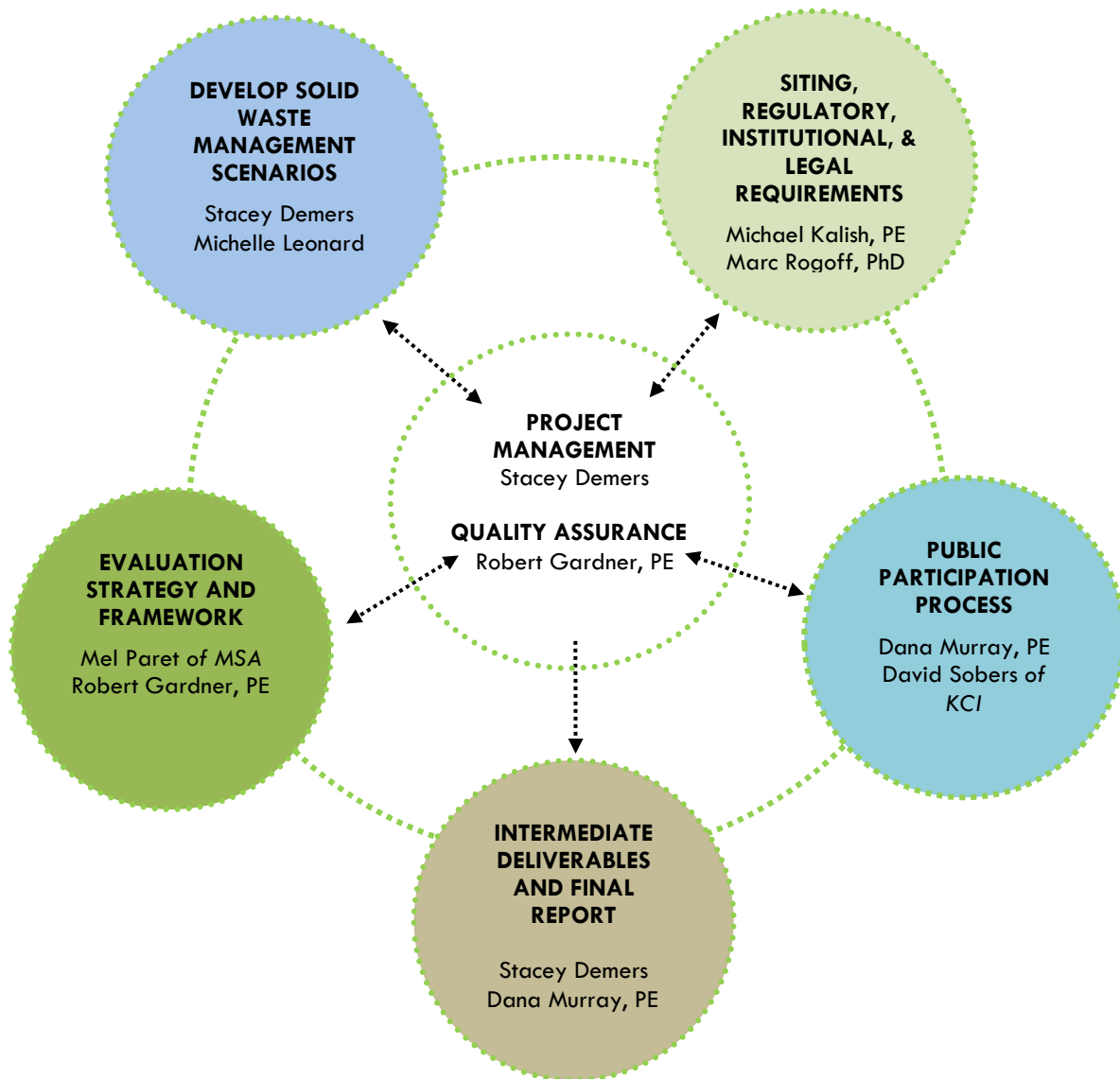
communications. SCS uses this approach on many of its projects and has found it to be an effective tool for project collaboration.

- **Project communication and progress review.** The RFP requires a monthly progress meeting. We recommend that an informal weekly progress meeting (telephone conference call) be held between SCS and the District's CA to discuss project progress, and review schedule updates and project issues. Weekly project meetings facilitate communication and accountability for all project members, especially with respect to project deliverables and critical path tasks.
- **Cost control.** The proposed project cost is based on time and material with a not-to-exceed limit. SCS's price proposal is presented separately but will include key milestone dates and deliverables which will be used for assessing project progress and billings. SCS keeps track of the hours expended on projects. Project personnel are required to provide short descriptions of the work completed for the hours charged to a job. SCS uses accounting software called Vision, which is one of the most widely used A/E accounting software programs in the United States. The program allows for detailed tracking and documentation of all project expenditures, key communications, and preparation of various labor and expense reports to facilitate management of projects. This allows SCS project managers to review the work and efforts expended per task and compare it against the approved project scope and budget, and to communicate during the weekly progress meetings any project scope issues.
- **Quality Assurance (QA).** SCS's QA Program goes beyond the day-to-day Quality Control (QC) we apply to our own work (e.g., checking own work, verifying procedures are followed, etc.). All SCS plans, specifications, reports, work plans, and related materials (called "documents" below) are required to be reviewed internally by a second qualified person (a person other than the primary author) prior to release. Normally, the internal review will be conducted by the Project Director. Whether or not the seal of a licensed professional is required on a given document, internal review is required to help assure the quality of SCS documents. Normally, internal review is reflected by the signatures of the primary author and the reviewer on the transmittal letter. At SCS, QA is not just a final review before the document is delivered to a client. It is inefficient to "add quality" to a report or engineering design at or near the end of a project. While a necessary step, the end-of-project review, plan check, and/or final edit does not substitute for an overall project program that incorporates regular reviews of in-progress work, interaction with clients to confirm their needs, and frequent communication between project team members to verify assumptions. Quality work products are created when all team members focus throughout the project on the achievement of quality in each task. SCS's QMS program identifies the responsibilities of the project team members and processes that SCS follows in the setup, execution, and closeout of a project. Mr. Gardner will be responsible for the implementation of SCS's QMS program on this project.

Organizational Structure to Complete Requirements of RFP

SCS's proposed project organization is presented in Exhibit 5. As Project Director, Mr. Robert Gardner will lead the project team and Ms. Stacey Demers, as Project Manager, will oversee the day to day project activities. Mr. Gardner and Ms. Demers will serve as the primary points of contact with the County. The project organization chart shows the functional responsibilities of the key project team members. These professionals will also be supported by other staff members as required to complete the proposed assignment.

Exhibit 5. Proposed Project Organization



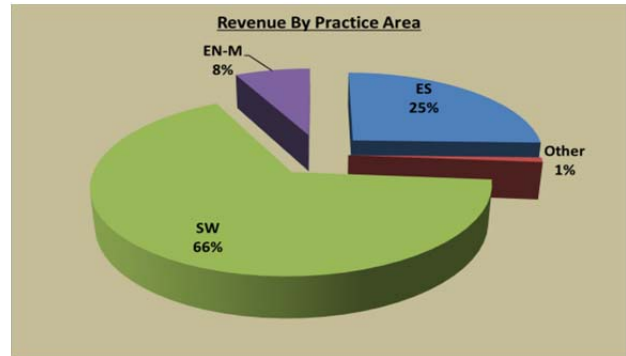
B. TECHNICAL EXPERTISE

This section presents the SCS Team’s expertise relevant to the technical areas referenced in the District’s request for proposal.

COMPANY BACKGROUNDS

SCS Engineers

SCS was established in 1970. We are one of the oldest and most experienced solid waste and environmental consulting firms in the U.S. As an employee-owned company, the firm’s business consists of over \$150 million in annual revenues, of which two-thirds are associated with solid waste projects. The solid waste services we typically provide are listed in Exhibit 6. SCS has been profitable since it began operations and continues on a strong, conservative fiscal foundation.

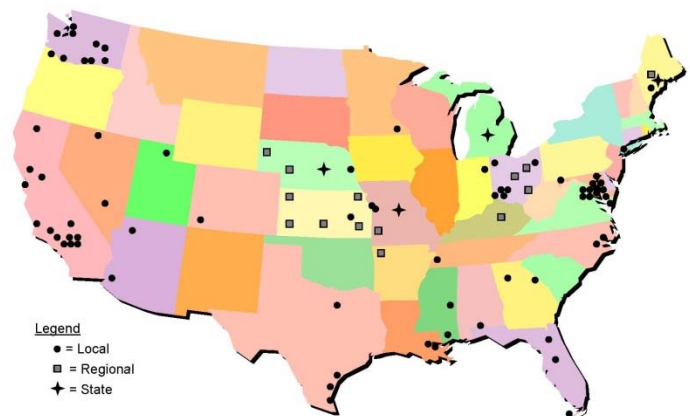


SW=Solid Waste; EN-M = Energy Management;
ES = Environmental Services

SCS specializes in providing comprehensive solid waste services for local government and private industry clients alike. With over four decades of experience, we are recognized worldwide for work in solid waste management planning and studies, recycling, facility design, landfill engineering and waste conversion technologies. This recognition is the result of successfully completing tens of thousands of solid waste assignments for municipal clients like the District of Columbia. The plans we prepare are functional and implementable. Our most recent example is the Town of Chapel Hill, where SCS prepared a detailed list of action items at the end of 2012 relative to its residential and commercial collection, recycling, transfer, and disposal programs, most of which already are being implemented.

Today, SCS’s resources include 800 engineers, scientists, construction and operation staff, and support personnel in 60 offices throughout the United States; specialists in each office are no more than a phone call, fax, or email away. Our Virginia staff is located in Reston, Winchester, Richmond, and Norfolk and our Maryland staff are located in Columbia. These locations, along with offices in the other mid-Atlantic states, combined are the second largest group in the firm with more than 80 professionals.

The map to the right shows client locations and regions where SCS has completed similar planning assignments that are described in the request for proposal. These planning projects have addressed solid waste regulations and ordinances, institutional issues, collection and transfer, waste processing and recycling, materials diversion, landfill disposal and



SCS Solid Waste Planning Projects

operations, recycling, conversion technologies, funding strategies (e.g., Pay-as-you-throw, PAYT and assessments), waste stream analysis, financing, public education and involvement, and project facilitation.

Exhibit 6. SCS Solid Waste Services

Solid Waste Planning and Facilities	<ul style="list-style-type: none"> ➤ Solid Waste Master Planning ➤ Integrated Waste Management Plans ➤ Zero Waste Studies/Implementation ➤ Institutional Analysis ➤ Regulatory Trend Evaluations ➤ Operations Assessments ➤ Feasibility Studies ➤ Technology Evaluations ➤ Rate Studies 	<ul style="list-style-type: none"> ➤ Waste Reduction/Recycling ➤ Waste Stream Characterization ➤ Siting Studies ➤ Procurement Assistance ➤ Public Hearings ➤ Public Participation ➤ Equipment Specifications ➤ Construction Services ➤ Transfer Station/MRF Design
WTE and Conversion Technologies	<ul style="list-style-type: none"> ➤ Siting ➤ Feasibility Studies ➤ Technology Assessments ➤ Planning ➤ Permitting ➤ Operations 	<ul style="list-style-type: none"> ➤ Site Development ➤ Regulatory Coordination ➤ Construction Plans ➤ Bid Documents ➤ Equipment Specifications ➤ Construction Services
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 ➤ Acquisition Due Diligence Reviews 	<ul style="list-style-type: none"> ➤ Public Hearings ➤ Public Participation ➤ Record Keeping ➤ Regulatory Reporting ➤ Waste Reduction and Recycling Programs ➤ Waste Stream Characterization Plans

Management Solutions Associates LLC

Management Solutions Associates LLC (MSA) is a specialized management consulting firm developing creative solutions to improve management, operations and customer services with a thorough understanding of performance metrics, business practices, and information technology applications. Its two founders have over 40 years of experience consulting with municipal solid waste management programs. The firm possesses in-depth management, financial and business capabilities based on years of management consulting experience with municipal utilities and other government agencies. MSA is highly experienced in the effective use of information technology and software tools to extract, analyze and report on complex data sets. MSA is solidly grounded in its ability to conduct business/performance analysis, craft creative and practical business and technology solutions, and present results in a concise and meaningful manner to support government decision-making. To enhance project success and value, MSA actively strives to collaborate with management, employee and stakeholder groups providing routine training, on-site support and presentations/meetings.

MSA is a Certified Business Enterprise (CBE) by the District of Columbia Department of Small and Local Business Development (DSLBD).

KCE Engineering

KCE Engineering is a progressive environmental assessment and engineering company that provides a full array of professional consulting services to the private and public sector. KCE Engineering will provide assistance to the public process through their contract employee, David Sobers, whose qualifications are presented in Section C of this proposal and his resume in Appendix B.

PROFESSIONAL WORK EXPERIENCE

Solid Waste Planning and Facilities

SCS provides full-service capabilities in the area of comprehensive solid waste planning and solid waste facility engineering and consulting as described below.



Taken together, the collection, recycling, and disposal of solid waste are some of the costliest of municipal services. Waste management is one of the costliest public works services. 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
- Economic Analyses
- Rate studies
- Collection service and facility development
- Privatization studies
- Hauler audits



SCS is 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, construction and demolition debris recycling programs, and procurement policies. SCS has experience performing the following activities:

- Integrated Solid Waste Management Planning Services, including implementation support
- Solid Waste Management Program Financial Analyses
- Waste Characterization Studies / Recycling Program Analyses
- Solid Waste Management Facility Siting / Feasibility Studies
- Waste Reduction Studies including procurement, waste diversion, and C&D reuse

Solid Waste Program Planning and Management

SCS has developed solid waste management plans for numerous private, county, and other municipal clients throughout the country. Typical assignments have included estimating composition and quantity of solid waste, facility needs, siting requirements, analysis of alternatives, and recommending short and long-term management strategies. SCS understands how the elements of an integrated solid waste management system function and how they interact.

SCS has conducted some of the largest solid waste composition studies in the United States, including the City of New York; Fairfax County, Virginia; and Montgomery County, MD..

SCS has designed and implemented numerous solid waste facilities including transfer stations, material recovery facilities, and vehicle and maintenance facilities. SCS maintains full 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.

Fleet Management and Collection Services

SCS has performed evaluations of waste collection programs and developed detailed route sheets and route design, itemized fleet upgrade specifications, and analyzed the need for additional convenience sites or transfer stations. These studies often result in establishment of recycling, source reduction, and other targeted waste stream programs to reduce disposal costs and comply with recycling goals.

Solid Waste Convenience, Transfer, and Material Recovery Facilities

Escalating costs for long-distance waste hauling and disposal, community activism, and revenue generation from recyclables have triggered new laws and practices to reduce the flow of solid waste to disposal facilities. As a result, convenience centers and citizen drop-off areas, materials recovery facilities (MRFs), transfer stations, composting, household hazardous waste, and waste-to-energy facilities have become important elements in integrated solid waste management plans.

Depending on the needs of the community, each facility can be set up to operate autonomously, or be integrated with one or more of the others.

We help communities and private haulers develop innovative and cost-effective programs for transfer, recovery, and reuse operations. Because we know the markets nationwide and have the resources to research traditional or emerging markets, we can make recommendations for improvements to existing facilities and programs or give sound advice for new management programs that will meet your waste and recyclable processing requirements and budgets.

- Integrated solid waste transfer and material recovery facility planning, design, permitting, and construction management
- Comparative analysis of alternative sites and equipment
- Market analysis for diverted wastes and recyclable materials
- Environmental impact reports
- Feasibility studies and environmental assessments
- Waste characterization and generation studies
- Waste reduction, recycling, and collection productivity reports
- Cost and alternative financing studies

Exhibit 7 highlights SCS’ extensive solid waste facilities experience in the mid-Atlantic region and elsewhere.

Exhibit 7. Solid Waste Facilities Project Experience

Project Location	Citizens Convenience Center / Drop-Off Facility	Transfer Station	Recyclables Facility / MRF	C&D Processing Facility	Refurbishment / Rehabilitation	Site and Architectural Design	Construction Oversight / CQA
Frederick County, VA	✓						
Fluvanna County LF, VA	✓						
Page County LF, VA		✓					✓
Shoosmith LF, VA			✓				
Zions Crossroads, VA			✓	✓			
Frederick County, MD	✓	✓				✓	✓
Howard County, MD		✓				✓	✓
Montgomery County, MD	✓	✓	✓	✓	✓	✓	✓
Ocean City, MD		✓				✓	
Prince Georges County, MD		✓			✓	✓	✓
Waste Management, Carson, CA		✓	✓		✓	✓	

Project Location	Citizens Convenience Center / Drop-Off Facility	Transfer Station	Recyclables Facility / MRF	C&D Processing Facility	Refurbishment / Rehabilitation	Site and Architectural Design	Construction Oversight / CQA
Disney World, Reedy Creek, FL			✓			✓	✓
Largo, FL		✓		✓			
Monroe County, NY		✓	✓				✓
City of Yonkers, NY	✓	✓	✓			✓	✓
King County, WA			✓			✓	
Richland, WA	✓	✓	✓			✓	
Yakima County, WA		✓				✓	✓
Benning Road, Washington, DC	✓	✓	✓		✓	✓	✓
Fort Totten, Washington, DC	✓	✓	✓		✓	✓	✓

Waste-To-Energy & Conversion Technologies

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.

Exhibit 8. Waste Conversion Project Experience

Client	Plant Capacity (TPD)	Technology	Multiple Feedstock Study	By-Products Market Study	Energy Production
Marion, Iowa	Up to 900	Thermal - Plasma Gasification	Yes	Yes	Electric Power, Fuel, Heat
Confidential , TX	250	Bio-chemical	Yes	No	Fuels
Aquarius	Up to 750	Thermal - Gasification	Yes	No	Fuels
DOD Contractor	35	Thermal – Plasma Gasification	Yes	No	Heat / Steam
McKinney	Up to 2,000	Autoclave	Yes	Yes	Fuel, RDF
Harlingen, TX	100	Thermal - Gasification	Yes	Yes	Power
PASA, Mexico	Up to 150	Thermal (microwave) - Gasification	Yes	Yes	Electric Power, Fuel, Heat
Hamilton County, OH	Up to 1,000	Thermal, Biological, Chemical	Yes	Yes	Electric Power, Fuel, Steam, Heat
Orange County, FL	Up to 1,000	Thermal, Biological, Chemical	Yes	Yes	Electric Power, Fuel
Confidential client	Up to 300	Thermal - Plasma gasification - Westinghouse/Alter NRG	Yes	No	Electric Power
Monterey Regional Waste Management District	Pilot	Thermal, Biological, Chemical	Yes	No	Electric Power, Fuel, Heat
Conduit Capital Partners	100	Thermal - Gasification	No	No	Electric Power
Berkeley County, SC	40	Biological – Anaerobic Digestion	Yes	Yes	Electric Power

Client	Plant Capacity (TPD)	Technology	Multiple Feedstock Study	By-Products Market Study	Energy Production
Hampton Roads Planning District, VA	Up to 1,000	Thermal, Biological, Chemical	Yes	Yes	Electric Power, Steam, Heat
City and Borough of Juneau, AK	100	Thermal	No	No	Electric Power

PROJECT PROFILES

SCS’ experience and range of services is demonstrated by a review of the nine *Project Profiles* that are provided in **Appendix A**. The profiles were chosen as they represent recent and relevant examples of solid waste planning and facilities and sustainability projects including features or issues similar to the District. The proposed SCS Team members, along with supporting staff, performed work that is described in the Project Profiles.

PERSONNEL

Both the professional staff at SCS and the firm itself have been recognized for achievements and innovations in the environmental field. For seven years, SCS has been ranked the #1 solid waste consulting firm in the United States by *Engineering News-Record*. This section addresses the proposed personnel to be assigned to the District’s project, the qualifications of key personnel and SCS’s Certified Business Enterprise subcontractor, MSA. Capsule resumes of key personnel are provided below. Resumes are included in **Appendix B**.

Robert B. Gardner, P.E., BCEE will serve as the Project Director for this assignment. He has over 33 years of experience (all with SCS), is a Senior Vice President, a member of SCS’s Board of Directors, and the firm’s solid waste practice leader. He is actively involved in projects and clients, and recently completed assignments for the Town of Chapel Hill and the Hampton Roads Planning District Commission that are similar to that proposed for the District of Columbia. He has completed siting, design, permitting, construction, and operation projects associated with municipal solid waste facilities. He has been involved in the design and operation of landfill-gas-to-energy facilities, transfer station, material recovery facilities, and waste conversion facilities. He has focused on providing solid waste services on continuing services contracts with private clients, counties and municipalities. He understands the importance of a quality work product, communication, timeliness, and service. Mr. Gardner will be responsible for quality assurance and reviewing the pro forma decision model that will be used to evaluate the various solid waste management alternatives that will be considered in the County’s study.

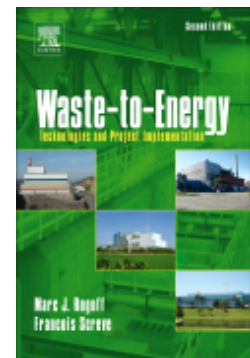
Stacey Demers, LEED AP, will serve as the Project Manager for this assignment. She has more than 22 years of experience in sustainability, solid waste management planning, program assessments, data analysis, and public outreach. She has extensive public sector (Northeast Maryland Solid Waste Authority and Loudoun County) and private sector experience on major solid waste programs. She managed the Needs Assessment for the District in 2000 and has since conducted dozens of waste diversion assessments and plans for neighboring Montgomery County; a large solid waste transfer station siting study with public outreach for Prince George’s

County, and sustainability audits for the National Park Service in the National Capital Region. Ms. Demers was responsible for the recent evaluation of the Town of Chapel Hill's residential and commercial collection programs, which was part of an overall analysis of the Town's solid waste system. She also recently completed one of the most extensive solid waste market studies for a private client detailing available solid waste disposal capacities, existing and proposed tipping fees, and transportation costs in the Baltimore, MD and northern Virginia region. Ms. Demers' "hands on" experience and understanding of solid waste systems in the region as well as her knowledge of sustainability plans will provide timely and cost effective information for the project.

Melvin (Mel) P. Paret (Principal of MSA). Serving as lead consultant on this project with SCS Engineers, Mel is a senior professional with 34 years of management consulting experience with municipal utilities as well as many major municipalities and state governments. Throughout his career, he has served many municipal solid waste clients on major consulting and systems projects, including Washington D.C., Indianapolis, Miami-Dade County, Phoenix, Fairfax County, Dallas and Tidewater Virginia. His experience includes full range of solid waste management practices including waste-to-energy, landfill, recycling, collection operations and customer services. He has also advised on private contract and franchise strategies and operations as well as permitting and enforcement regulatory programs. He founded Public Works Solutions LLC in 2002 and previously worked 20 years with KPMG Consulting as a municipal utility/environmental expert. He has an MBA in business and MPH in environmental sciences from Tulane University.

Edouardo Etienne (Principal of MSA). Edouardo is a highly experienced business/financial analyst with 12 years of professional consulting experience. His background includes municipal utilities and the energy industry. He has expertise with business process evaluation, performance measurement, and financial and operational information systems. He has provided management and application support to DC Department of Public Works for the past 7 years. He received his B.S. in finance from American University.

Marc Rogoff, Ph.D. will be responsible for evaluation of waste to energy technologies, alternative conversion technologies, and rate structures. He 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 U.S. He specializes in solid waste management economic pro forma modeling 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; "*Waste-To-Energy Technologies and Project Implementation*", and the chapter on Principles of Integrated Solid Waste Management in the textbook "*Municipal Solid Waste Combustion Systems*".



Bruce Clark, PE will be responsible for evaluation of alternative conversion technologies, MRFs, composting, and C&D processing. He has 33 years of successful experience in planning, engineering and construction of civil works projects. Mr. Clark has been involved with solid waste management for the past 24 years, and has managed master planning studies, technology evaluations, acquisitions, engineering, permitting, and construction management activities at dozens of facilities including, landfills, recycling facilities, transfer stations, MRFs, composting sites, LFG-to-energy and WTE plants, and C&D processing facilities for municipal and private clients

Michelle Leonard will be responsible for evaluation of recycling options and enhancements for the zero waste goals. She has nearly 30 years successful experience in environmental consulting and project management, with emphasis in dozens waste plan. She has assisted public and private sector clients in the preparation of solid waste management plans; designed and implemented waste reduction, recycling, and reuse programs; and evaluated existing programs to identify opportunities to reduce, reuse, and recycle solid waste. Ms. Leonard has a strong working knowledge of solid waste management regulations and practices, and has presented numerous successful projects to city, county, and state regulators.

David Sobers (with KCE) will assist with the public participation process of the project. Mr. Sobers is a consultant who has more than 30 years of experience in the areas of solid waste management, facility siting, public involvement, dispute resolution, marketing, planning, energy and emergency response. He served with URS (formerly Woodward-Clyde) as a senior project manager and the firm's Vice President and Practice Manager for Solid Waste Management. Prior to his work with URS, he managed Montgomery County's solid waste program for over twenty years. Mr. Sobers worked with the proposed project manager, Stacey Demers, on the public process involved with the Transfer Station Siting Study for Prince George's County, MD through the Maryland-National Capital Parks and Planning Commission (M-NCPPC). His experience with public outreach and dispute resolution, particularly with solid waste management issues, makes him well matched to lead Community Meetings.

Dana Murray, PE will assist with the public input process and development of the final report. She has over twenty years of professional experience in civil/environmental engineering, including landfill gas energy technology evaluation, feasibility analysis, energy user outreach and analysis; and transfer station design and construction. She was involved in the engineering and public process related to the rehabilitation of the District's solid waste transfer stations in 2003 and has served on the board of the Mid Atlantic SWANA Chapter for the past several years. In addition, Ms. Murray has managed multimillion dollar design and construction projects with multiple disciplines and subcontractors.

Michael Kalish, PE will be involved with the evaluation of new solid waste management facilities in the District such as an organics transfer station. As SCS's National Partner for Transfer Stations, Mr. Kalish has been the Project Manager for several major transfer station renovations and expansions in the District of Columbia and new transfer stations in Maryland and Virginia. Mr. Kalish is also an instructor for the SWANA Managing Transfer Stations course and is a LEED Accredited Professional.

C. PAST PERFORMANCE

REFERENCE LETTERS

The District's RFP requested three letters of reference from municipalities for whom SCS r has provided similar solid waste consulting services detailing the types of services and the client's satisfaction. Three reference letters are presented on the following pages, including:

1. Maria Martin, Master Planner
Prince George's County Planning Department, Countywide Planning Division
The Maryland - National Capital Park & Planning Commission
Phone: 301.952.3472
maria.martin@ppd.mncppc.org
2. Mr. Dwight Farmer
Executive Director
Hampton Roads Planning District Commission
Phone: 757.420.8300
dfarmer@hrpdva.gov
3. Venita Hawkins
Fiscal Review specialist
Fairfax County Solid Waste Management Program
Phone: 703.324.5230

Other References

SCS invites the District to contact other municipalities for whom we have performed services that are similar to the District's RFP, including:

1. Ms. Wendy Simmons
Solid Waste Services Superintendent
Town of Chapel Hill, NC
(919) 969-5123
wsimmons@townofchapelhill.org

It is the Town of Chapel Hill's policy not to write reference letters; but they can be contacted regarding our recent performance.

2. Mr. Alan Pultyniewicz
Recycling Coordinator
Montgomery County, MD
(240) 777-6480
Alan.Pultyniewicz@montgomerycountymd.gov

SCS has assisted Montgomery County on waste management studies since 1990.

EXPERIENCE WITH IMPLEMENTATION OF A SOLID WASTE MANAGEMENT RECOMMENDATIONS

As required by the District's RFP, this section describes our experience in assisting in the implementation of a jurisdiction's decision regarding managing solid waste as a result of the recommendations provided by us. The plans we prepare are functional and implementable, specific examples include:

- **District of Columbia** – In 2000, the Solid Waste Transfer Facility Site Selection Advisory Panel contracted with SCS Engineers to provide engineering, technical, and environmental assistance regarding solid waste transfer, conduct a study, and prepare a Needs Assessment Report. SCS's recommendations included:
 - Significant capital and operational improvements for the Fort Totten and Benning Road Transfer Stations to accommodate expected waste volumes through at least 2015.
 - Establishment of citizen convenience centers at the Fort Totten and Benning Road Transfer Stations to accommodate waste and recyclables delivered by the District's citizens.

SCS was then selected as the prime engineering firm to implement the above recommendations.

- **Town of Chapel Hill, NC** - The Town contracted SCS Engineers (SCS) to provide professional engineering services for this Comprehensive Review of Solid Waste Collection and Disposal Options (Study). The purpose of the Study was to examine the Town's current solid waste collections and disposal programs to identify opportunities to enhance these services, improve efficiencies, and evaluate the applicability of innovative technological developments in the solid waste industry, including: recycling, re-use, waste conversion, and waste-to-energy (WTE). Considering the project was completed at the end of 2012, the Town has not had the time to implement all of SCS's recommendations, but progress has been made for the following recommendations:
 - Initiate a new interlocal agreement with Orange County for recycling services
 - Initiate a formal residential and commercial routing study to optimize their curbside waste collection and recycling program. SCS has submitted a scope of work to conduct this study.
 - Implement automated waste and recycling collection in part of the Town's service area. The Town is now soliciting bids for automated collection vehicles.
 - Implement a "wait and see approach" relative to moving forward with WTE or waste conversion technologies. SCS's analysis deemed many of the WTE and waste conversion technologies to be cost prohibitive with the Town's current and projected quantities of municipal solid waste. SCS's opinion is that regional

efforts will be necessary to secure the desired waste flow to provide economies of scale for these technologies.

- **Montgomery County, MD** – SCS has been assisting the County with recommended programs for waste management and diversion since 1990. Some recent example results from our work include:
 - Targeted materials for increased waste diversion programs were identified from a large-scale waste composition study conducted by SCS
 - Placement of recycling collection containers at multi-family properties based on our study that included extensive fieldwork to correlate distance from dwelling unit to recycling container with recycling achievement (lbs/unit/week).
 - Outreach materials specific to commercial business types based on SCS's audits of retail stores, government facilities, recreation facilities, offices, and institutions.
 - Selection of in-unit recycling containers to be purchased by the County and distributed to residents of multi-family properties based on our study of fieldwork that correlated type of in-unit recycling container with recycling achievement (lbs/unit/week).
 - Assessment of system benefit charge to non-residential properties based on waste generation rates derived by SCS for about 60 land use classifications.

Appendix A
Project Profiles

SCS ENGINEERS

Comprehensive Review of Waste Collection and Disposal Options, City of Chapel Hill, North Carolina

Client

City of Chapel Hill, North Carolina

Contact

Wendy Simmons
Solid Waste Services
Superintendent
919.969.5123
Wendy Simmons
wsimmons@townofchapelhill.org

Contract Amount

\$134,000

Dates

2011- 2012

Key Personnel

Robert Gardner, PE
Bob Dick, PE
Marc Rogoff, Ph.D.
Stacey Demers, LEED AP

Relevance to District's RFP

- ✓ Inter-municipality facilitation
- ✓ Public presentations
- ✓ Waste projections
- ✓ Market analysis
- ✓ Waste-to-energy evaluation
- ✓ Waste conversion evaluation
- ✓ Landfill disposal evaluation
- ✓ Organics diversion evaluation
- ✓ Recycling evaluation
- ✓ Yard waste management
- ✓ Transfer station evaluation
- ✓ Collection evaluation
- ✓ Economic analysis
- ✓ Management review
- ✓ Pro forma modeling
- ✓ Capital projections

SCS was engaged to conduct a comprehensive review of the Town's solid waste collections and disposal systems, and to evaluate and identify options for enhancing and improving these systems to assist the Town's solid waste management planning efforts in light of immediate and future regional solid waste management challenges, including the proposed closure of the Orange County Regional Landfill anticipated in 2013.

The objective of this assignment was to provide Town Council and administrative staff with critical information and technical tools necessary to make strategic decisions pursuant to these recognized solid waste management challenges in the best interest of the Town.

SCS completed the following major tasks:

- Review and Document Current Solid Waste Collections and Disposal Systems
- Evaluate Solid Waste Collections Options
- Evaluate Solid Waste Disposal Options
- Evaluate Waste-to-Energy/Waste Conversion Technologies

A comprehensive Pro Forma Model was developed to help assess the relative economic advantages of the City over the 20 year planning horizon of building a new transfer station and direct haul to an out-of-county landfill or transfer station, direct haul to an out-of-county landfill or transfer station, enhanced recycling, constructing an alternative waste conversion facility, and making changes to the City's waste collection to optimize waste reduction and collection costs.

SCS made several presentations to the Town Council during the study and presented the final formal recommendations for approval in early December 2012. The recommendations addressed residential collection service, equipment changes and upgrades, recycling, yard waste management, organics diversion, pay-as-you-throw, commercial collection, multi-family collection, waste conversion, and short-term and long-term disposal options.

SCS ENGINEERS

Solid Waste Management Plan 2018-2048 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
Michelle Leonard
Marc Rogoff, Ph.D.
Bruce Clark, PE, BCEE
Lisa McDaniel

Relevance to District's RFP

- ✓ Inter-municipality facilitation
- ✓ Public presentations
- ✓ Waste projections
- ✓ Market analysis
- ✓ Waste to energy evaluation
- ✓ Landfill disposal evaluation
- ✓ Transfer station evaluation
- ✓ Procurement options
- ✓ Facility evaluations
- ✓ Economic analysis
- ✓ Management review
- ✓ Pro forma modeling
- ✓ Debt evaluation
- ✓ Lender coordination
- ✓ Institutional alternatives

SCS assisted the Hampton Roads Planning District Commission (HRPDC) and its member local governments, to develop and evaluate a solid waste management system for the Southside of Hampton Roads. The HRPDC represents the cities of Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk, and Virginia Beach and the Counties of Isle of Wight and Southampton. The Southeastern Public Service Authority of Virginia (SPSA) currently manages the integrated regional solid waste management system, which includes a regional landfill, waste-to-energy plant, transfer stations, composting facilities, recycling operations, and other specialized facilities.

The HRPDC retained SCS to evaluate and determine, assuming a blank slate, the best approach to solid waste management for the period after 2018, when contracts between SPSA and the eight participating communities expire. SCS conducted the following tasks:

- **Review existing solid waste management systems.** SCS documented current waste management practices (both public and private), met with SPSA and member community staff to identify key issues affecting regional cooperation, and developed a pro forma financial model for evaluating alternatives.
- **Evaluate future needs.** SCS identified alternative technologies and management approaches to collection, recycling, transfer, disposal; evaluated associated costs; and identified implementation approaches.
- **Evaluate institutional models for solid waste management.** SCS evaluated various institutional models for management of waste after 2018 (e.g., new regional authority, public/private partnerships, community partnerships) and identified required organizational structure, staffing, and cooperative agreements needed.
- **Facilitation with Chief Administrative Officers (CAOs).** SCS facilitated a series of five meetings and work sessions with CAOs for the SPSA member communities. The purpose of the meetings was to discuss values, technologies, critical steps, schedule, and approaches to managing solid waste in the region beyond 2018.

SCS ENGINEERS

Recycling Feasibility Study Fort Hood, Texas and Surrounding Cities

Client

Fort Hood Army Installation
Killeen, Texas

Contact

Randy Doyle
(254) 287-1099
randy.a.doyle.civ@mail.mil

Contract Amount

\$67,504

Dates

7/2011 – 12/2011

Key Personnel

Stacey Demers, LEED AP

Relevance to District's RFP

- ✓ Inter-municipality facilitation
- ✓ Public presentations
- ✓ Waste projections
- ✓ Market analysis
- ✓ PAYT Implementation
- ✓ Single Stream Recycling
- ✓ Economic analysis
- ✓ Institutional alternatives



The Cen-Tex Sustainability Partnership (Partnership) was created when Fort Hood signed an innovative Memorandum of Understanding agreement with the surrounding cities of Killeen, Copperas Cove, Harker Heights, and Gatesville to build sustainable communities. The Partnership identified a regional recycling program as the most feasible and economically-viable option for sustainability in the region.

SCS was contracted to perform a feasibility study to gather the pertinent information to help the Partnership make informed decisions about establishing a regional recycling program. SCS collected data from interviews, research, existing reports, and facility tours in the area.

By combining resources, the four cities and Fort Hood can create a regional recycling program that improves their recycling program, reduces their current operating costs, and provides a framework for continued growth. Regional recycling approaches vary in complexity: from little capital investment to significant program modifications. The options assessed included:

- **Existing Recycling Facility.** Use an existing local recycling facility to accept, process, and market the region's recyclable materials.
- **Transfer Program.** Aggregate and transfer recyclable materials to a recycling facility outside the region.
- **New Recycling Facility.** Develop a new recycling facility that will accept, process, and market the region's recyclable materials.

For each option above, SCS assessed capital investment required, equipment needs, estimated revenue, greenhouse gas savings, and waste disposal costs. Additionally, SCS assessed the effects of implementing Pay-As-You-Throw (PAYT) and Residential Curbside Single-Stream Recycling programs. The key for any of the three regional recycling program scenarios above to be successful is continued growth in the quantity of materials diverted to the recycling program.

SCS ENGINEERS

Solid Waste Transfer Station Siting Study Prince George's County, MD

Client

Maryland-National Capital Park
and Planning Commission

Contact

Maria Martin, Master Planner
301.952.3472
Maria.Martin@ppd.mncppc.org

Contract Amount

\$180,000

Dates

3/2007 – 10/2008

Key Personnel

Stacey Demers, LEED AP

Relevance to District's RFP

- ✓ Public presentations
- ✓ Community Workshops
- ✓ Transfer Station Design/Siting
- ✓ Waste projections
- ✓ Economic analysis



Prince George's County is an urbanized county that has a population of over 860,000 persons in an area of 487 square miles. The County is a part of the greater Washington, DC metropolitan area and is growing along at a rate of one percent annually with corresponding, increasing waste volumes. The 2,000 tons of wastes generated daily are collected by private contractors, County-contracted services and municipalities.

The County made as a part of the Ten-Year Solid Waste Management Plan (Plan) the decision to build "a solid waste transfer station to provide for future solid waste management, and increase the life expectancy of the Landfill to beyond the planning period."

The County wanted to site the facility so that it not only met the various technical requirements, but also minimized the impact to the neighboring communities. To this end, the Prince George's County Council directed the Prince George's County Planning Department of The Maryland-National Capital Park and Planning Commission (M-NCPPC) to conduct a community participation process to solicit public input on the siting criteria of a future location of a solid waste transfer station. M-NCPPC contracted with SCS Engineers for a study involving the conduct of four community workshops and an engineering assessment of potential sites. The mission of the study was to:

- Educate the public about Transfer Stations and their role in solid waste management in their community through presentations at community workshops;
- Solicit and summarize commentary from an informed public about transfer station siting criteria; and
- Use informed public commentary and engineering expertise to rank and weight siting criteria.

M-NCPPC used the criteria developed through the public process to identify potential sites. SCS visited each site to assess the suitability for the development and operation of a transfer station and ranked the sites according to the defined criteria.

SCS ENGINEERS

Multiple Studies to Increase Waste Diversion Montgomery County, MD

Client

Montgomery County, Maryland
Department of Transportation
Division of Solid Waste Services

Contact

Alan Pultyniewicz
(240) 777-6480
Alan.Pultyniewicz@montgomerycountymd.gov

Contract Amount

\$Various

Dates

1990 – Present

Key Personnel

Stacey Demers, LEED AP

Relevance to District's RFP

- ✓ Public presentations
- ✓ Waste projections
- ✓ Market analysis
- ✓ Waste Diversion
- ✓ Economic analysis
- ✓ Management review
- ✓ Institutional alternatives

SCS has been providing recycling services as part of a multi-year open end contract (dating continuously since 1990) to make program adjustments based on emerging markets, economic factors, changing regulatory requirements, and fluctuating levels of services provided to residents and businesses.

Some of the projects for the County are described below:

Alternative Collection Study for Commercial and Multi-Family Properties

SCS assisted the County evaluate the feasibility of increasing commercial and multi-family recycling in Montgomery County by implementing alternative waste collection methods (such as franchise agreements) for businesses and multi-family properties. This study included research on comparable jurisdictions that have implemented alternative collection programs, a survey and detailed statistical analysis on recycling participation and costs to businesses and multi-family properties for recycling services, alternative collection scenarios, and an implementation plan.

Cooperative Recycling Study for Businesses

SCS has assisted the County to establish several cooperative waste and recycling programs for businesses in the County. A cooperative recycling program helps multiple adjacent businesses save costs related to waste and recycling collection by joining together for a single contract. This allows small businesses to take advantage of bulk discounts usually afforded to larger businesses that generate greater quantities of waste and recyclables. SCS worked with the businesses to establish service level needs for each business and then solicited bids from various commercial waste collectors. In the end, the businesses participating in the cooperative waste and recycling decreased the quantity of waste requiring collection and disposal, increased the quantity and quality of materials recycled, and reduced associated costs.

Non-Residential Solid Waste Utility Fee

Montgomery established a system benefit charge to support waste diversion programs and to create an economic incentive that encouraged businesses to recycle. The system benefit charge assessed to non-residential property owners is based on the type of business and the improved gross floor area of the property. Business types that generate more waste pay a higher system benefit fee.

SCS has assisted the County estimate the annual quantity of waste generated for over 50 different categories of non-residential properties for three studies conducted in 1997/1998, 2000/2001, and 2008/2009. For the first two studies, SCS conducted fieldwork to estimate waste volume and density information from over 1,500 businesses, institutions and other organizations. The task required a focus on data quality control and data management. For the third study conducted in 2008/2009, SCS partnered with a private hauler to procure and utilize an on-board scale system to measure refuse generated by individual nonresidential properties. The on-board scale system was installed on one waste collection truck to measure wastes contained in dumpsters. The waste collection truck and scale system involved five interconnected technologies:

- Load gauges on the arms that lift containers, to obtain weights before and after emptying waste containers;
- A GPS system to record the latitude and longitude at which the container is emptied;
- A means of transmitting the results from the GPS system and associated weights to a database system;
- A database system to keep track of the data obtained and produce reports; and
- A bar-code system to allow the driver or other operator to associate a particular customer with a particular location, so that subsequent loads collected at that location would be attributed to that customer.

This truck-based data system was used for twelve weeks to record the weights of full and empty waste collection containers serviced by the cooperating hauler. The waste generation estimates developed as part of this study were provided to the County to assist them with developing waste generator categories for non-residential land use classifications

SCS ENGINEERS

Recycling Program Development for the Pentagon Arlington, VA

Client

Washington Headquarters Service
Defense Facility Directorate
Engineering & Technical Services
Division

Contact

Michael Langone
Building Management Specialist
(703) 614-9324
Michael.Langone@whs.mil

Contract Amount

\$256,000

Dates

2006 – 2008

Key Personnel

Stacey Demers, LEED AP

Relevance to District's RFP

- ✓ Public presentations
- ✓ Inter-department coordination
- ✓ Waste projections
- ✓ Market analysis
- ✓ Procurement options
- ✓ Management review
- ✓ Institutional alternatives



Washington Headquarters Service desired to obtain LEED certification and requested SCS to provide technical services to improve their recycling rate. The Pentagon was reportedly recycling 30% of their 3,300 annual tons of solid waste. The goal of this project was to improve recycling in order to meet an internal recycling goal of 50%, which exceeds the DoD goal of 40%. The work under this contract included a Waste Characterization Study and technical support to implement Recycling Program Improvements. Tasks included:

Two-season waste characterization study. Each season consisted of waste sampling and sorting over a 10-day period. Waste streams targeted included office waste, kitchen (food preparation) area waste, dining area waste, retail waste, and bulky items.

- **Critical review of current recycling program operations.** Described and characterized the current recycling program, identified deficiencies, and offered suggestions for improvements.
- **Recycling Promotional Activities.** Developed an inaugural Earth Day workshop to educate and promote recycling programs, designed outreach materials (displays, posters, and tent cards), facilitated Green Team meetings, developed Pentagon recycling logo, and conducted a recycling slogan contest.
- **Recycling Program Communication Tools.** Authored articles for Pentagon newsletters and building circulars, prepared routine email messages and reminders on recycling and green practices, developed orientation brochure on recycling, and designed recycling Webpage.
- **Recycling Bin Placement and Signage.** Developed standardized recycling bin signage, recommended correct placement and dispersion of recycling containers, and prepared map of recycling containers.

SCS ENGINEERS

Sustainability, Energy and Water Audits, National Park Service, National Capital Region

Client

National Park Service
DSC-CS Contracting Services
Division
12795 W. Alameda Parkway
Denver, CO 80225

Contact

Patrick Fleming
Phone: (303) 969-2138
Email: patrick.fleming@nps.gov

Contract Amount

\$142.259

Dates

2/23/2010 – 10/15/2010

Key Personnel

Stacey Demers, LEED AP

Relevance to District's RFP

- ✓ Sustainability Assessment
- ✓ Waste Diversion
- ✓ Procurement options
- ✓ Management review
- ✓ Institutional alternatives



The National Park Service (NPS) contracted with SCS to perform energy and water audits in general accordance with ASHRAE's Level II energy audit and the NPS Energy and Water Audit Guide protocols. To execute the projects, NPS issued a Blanket Purchase Agreement under SCS's GSA Energy Schedule Contract. The parks assessed were Harpers Ferry National Park, Wolf Trap Park for the Performing Arts, Rock Creek Park, Price William Forest Park, Chesapeake & Ohio Canal National Park, and George Washington Memorial Parkway.

Audit functions included reviewing building and equipment data, interviewing site personnel, analyzing utility rate information, observing energy-related equipment operation, and performing a meter inventory. SCS audited 179 buildings comprising 648,000 square feet of varying uses, including administrative offices, operational and maintenance buildings, visitor centers, recreational spaces, and historical buildings.

SCS conducted sustainability assessments of all buildings with replacement values exceeding \$2 million. These assessments covered building functions related to LEED certification. In addition to energy and water use, SCS evaluated environmental impact of building materials (recycled/biobased content and waste management practices) and indoor environmental quality (daylighting, moisture control, ventilation and thermal comfort).

SCS identified Energy Conservation Measures (ECMs) that could save electricity, heating oil, propane, and natural gas consumption with an *annual savings of \$105,000*. SCS also identified Water Conservation Measures (WCMs) that could save 2.8 million gallons of water annually, saving \$25K per year. For each ECM and WCM identified, SCS identified equipment and investment required to achieve reductions with payback periods of 4 years for energy-related investments and 8 years for water-related investments.

SCS ENGINEERS

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

Relevance to the Authority's RFP

- ✓ Long-term disposal planning
- ✓ Procurement assistance
- ✓ Financial analysis
- ✓ Pro forma modeling
- ✓ Capital projections



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

SCS ENGINEERS

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.

Highlights

- ✓ Public presentations
- ✓ Waste projections
- ✓ Long-term disposal planning
- ✓ Procurement evaluation
- ✓ Financial analysis
- ✓ Pro forma modeling
- ✓ Capital projections



Mobile PEM™ plasma arc
plant, courtesy of InEnTec.

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.

SCS ENGINEERS

Benning Road and Fort Totten Transfer Facilities Needs Assessment and Renovation, Washington, DC

Client

Department of Public Works
Solid Waste Administration

Key Personnel

Stacey Demers
W. Gregory Vogt
Michael Kalish, PE
Dana Murray, PE

Contract Amount

\$21,000,000



SCS provided engineering and environmental assistance regarding solid waste management and transfer in the District of Columbia to the Solid Waste Transfer Facility Site Selection Advisory Panel. This Advisory Panel used SCS' Needs Assessment Report to support recommendations to the District of Columbia City Council.

SCS's efforts included:

- Analysis of solid waste quantities generated and managed within the District;
- Projection of future solid waste quantities expected to be generated and managed in the District for the next 15 years;
- Analysis of privatization strategies for solid waste operations;
- Review of existing operating solid waste handling facilities;
- Analysis of siting criteria and application of such criteria to various potential land parcels;
- Preliminary engineering for possible refurbishments at District-owned facilities; and
- Capital cost estimates for new and refurbished solid waste handling facilities.

SCS then assisted the Panel with a strategic analysis of waste management alternatives in light of community concerns, modern technologies, planned and proposed zoning regulations, and regional solid waste management practices. Based on results from the public outreach process and the Panel's final recommendations to the city Council, SCS is providing the design engineering and related environmental services to the Benning Road and Fort Totten Transfer Stations, including zoning hearings, public meetings, permit applications, design reviews, construction bid documents, cost estimating, and construction administration.

Benning Road Transfer Station was constructed in 1970 as an incinerator, and Fort Totten was an old transfer station.



The renovation work for the two sites included:

- Demolition of the 250-foot high stacks at Fort Benning and electrostatic precipitators
- Expanding the tipping floor at both facilities through a building addition, retrofit to create “tunnels” for the transfer trailers for easy loading, and bring both facilities up to capacities of approximately 2,500 tpd
- Installing scales, electronic and computer systems for facility controls, waste flow measurements, accounting/billing, security, and tracking
- Installing and operating odor, dust, noise, and vector control systems so as to eliminate nuisance problems and to comply with the District’s Solid Waste Law
- Creating centralized areas for District citizens to bring in recyclables, household hazardous wastes, and miscellaneous loads of self-haul solid waste materials
- Making various upgrades to the facility with regard to lighting, pavement, landscaping, existing employee locker rooms, service areas, and offices

The demolition work was done in 2002. The construction bid documents for the \$8,000,000 Benning Road and \$13,000,000 Fort Totten projects were completed in 2003. Benning Road construction was complete in 2005 and Fort Totten construction was complete in 2007.

Appendix B
Resumes

STACEY TYLER DEMERS, LEED® AP

Education

B.S. - Statistics, Virginia Polytechnic and State University, 1989

Professional Licenses

LEED® Accredited Professional

Professional Affiliations

Solid Waste Association of North America (SWANA)

Professional Experience

Ms. Demers provides SCS with strong technical and analytical skills in planning, statistics, sample design for environmental programs, and modeling. Project activities have included, program assessments, data analyses, database management, sampling protocols, and associated field sampling specific to sustainability metrics. Ms. Demers has 22 years experience in the environmental field focusing on solid waste and energy. Examples of her project experience include:

Solid Waste Studies

Recycling Feasibility Study for Cities of Killeen, Copperas Cove, Harker Heights, and Gatesville and Fort Hood Army Installation, Texas. Project Manager to assess feasibility of developing a regional recycling program. By combining resources, the four cities and Fort Hood can create a regional recycling program that will reduce operating costs, increase material recycled, and provide a framework for continued growth. SCS collected data from interviews, research, existing reports, and facility tours in the area. SCS developed approaches to a regional recycling program that varied in complexity: from little capital investment to significant program modifications. For each option, SCS assessed equipment needs, estimated revenue, greenhouse gas savings, and waste disposal costs. Additionally, SCS assessed the effects of implementing Pay-As-You-Throw (PAYT) and Residential Curbside Single-Stream Recycling programs.

Recycling Program Development for Public Schools, Government Buildings, and Community College Facilities, Mecklenburg County, NC. Project Director to examine waste generation, collection, and recycling for Charlotte-Mecklenburg Schools, Central Piedmont Community College, and County Facilities. Oversaw sampling plan development, field sampling, interviews with facility recycling managers, and site tours. SCS also researched innovative recycling programs at other school systems, colleges, and government facilities, particularly where there are concrete examples of efficient recycling/waste reduction programs. Using these programs as examples, SCS provided the County with ways to mimic and integrate the successful aspects of other recycling/waste reduction programs.

Transfer Station Siting Study, Prince George's County MD. Project Manager to develop and execute four public meetings that educated residents and other stakeholders about waste management issues and construction and operation of a solid waste transfer station. Based on community feedback and best engineering practices, SCS developed criteria for siting a solid waste transfer station. The County used the developed criteria to select potential sites and SCS performed an engineering assessment on the top-rated sites. Ms. Demers presented results of the public meetings, siting criteria, and the engineering assessment to the Planning Board and County Council.

Waste Reduction and Recycling Study, Pentagon Reservation. Project Manager to characterize waste generation at the Pentagon and to develop and recommend improvements to the Pentagon's recycling program. SCS prepared several recycling program components, including a detailed map of recycling bin placement; a recycling handbook for building managers; a recycling brochure for Pentagon occupants; articles about recycling for newsletters; a database for tracking monthly waste and recycling tonnages and associated revenue; and organization of a recycling slogan contest, recycling posters, and logo.

Modeling the Development of a Leftover Paint Management System, Product Stewardship Institute. Project director for the model development of a nationally-coordinated leftover paint management system that is cost-effective, efficient, and offers the best economies of scale. SCS estimated leftover paint quantities in the U.S., approximated the number of collection points necessary to provide various levels of service and convenience, assessed existing paint processing capacity, and conceptualized an aggregation and transportation system. SCS then developed a system-level cost estimate for capitalization and operation on a per unit paint sales basis.

Evaluation of Special Waste Handling, Anne Arundel County, MD. Project Manager for an evaluation of the County's current special waste programs, analysis of operational and fiscal practices, development of special waste collection options, and recommendation on best management practices for special waste handling, recycling and disposal. Materials studied included household hazardous waste (HHW), e-waste, and latex paint.

Transfer Station Needs Assessment, District of Columbia, Benning Road and Fort Totten. Project Manager and lead author for the D.C. Department of Public Works engineering study to assess existing private and public solid waste transfer facilities and the need for siting new facilities. Examined waste flow capacity, zoning and other regulatory constraints, potential health impacts, transportation alternatives, and expansion alternatives.

Utility Fee Assessment and Waste Generation Study, Rivanna Solid Waste Authority (RSWA), VA. Project Manager and lead analyst for the evaluation and establishment of a solid waste utility fee for all RSWA services and improvements above those funded through existing fees. SCS reviewed financial information for the solid waste system and projected revenue and funding necessary for RSWA operations and obligations. A survey was conducted to estimate the waste generated by households and businesses (by business type) in the RSWA service area. Using this information, SCS developed several combinations of tipping fees and utility fees necessary to cover RSWA funding needs.

Waste Reduction and Recycling Study, University of Maryland. Project Manager to determine specific and cost-effective programmatic strategies to insure the campus was able to achieve and maintain the state mandated recycling goal. Project activities included waste characterization of facility types, evaluation of existing program operations, comparison of recycling programs at peer institutions, and identification of waste reduction strategies.

Solid Waste and Recycling Studies, Montgomery County, MD. Project Manager for several small and large scale projects including:

- **Alternative Collection Study.** Evaluated the feasibility of increasing commercial and multi-family recycling in the County by implementing alternative waste collection methods for businesses and multi-family properties. Tasks included researching alternative collection methods of comparable jurisdictions, benchmarking participation and costs to County businesses and multi-family properties for collection, and developing potential scenarios and implementation plans for various alternative collection plans.
- **Non-Residential Waste Generation Study.** Project Manager for a study to estimate waste generation rates for 69 business type classifications. Results of the study support County-assessed fees for solid waste management and recycling services. Ms. Demers managed the first study in 2000 that included a survey of over 2,200 properties and manual field measurements from almost half of these properties. Ms. Demers also managed a follow-up study in 2008/09 to verify waste generation estimates through coordination with a local hauler using an on-board scale and GPS system.
- **Multi-Family Blue Bag Recycling Pilot Study.** Pilot study to assess the effects on recycling programs at multi-family properties through use of blue bag for collection. Included measuring recycling quantities, participation, and contamination of recyclables before and after issuing residents blue bags at six multi-family properties.
- **Multi-Family Recycling Distance Study.** This study assessed the effect various distances from multi-family dwelling units to communal recycling collection areas on recycling quantities and rates. Waste and recycling quantities were measured for five weeks at 30 multi-family properties encompassing a wide variety of distances (from less than 100 feet to over 600 feet), property types (high rise, mid rise, and garden style), and recycling container placement styles (same floor, basement, parking lot). The final report included a summary of project activities, a statistical analysis of the data, and recommendations on proximity of recycling collection areas to dwelling units.
- **Multi-Family In-Unit Recycling Bin Study.** This study assessed the effect of various types of in-unit recycling bins on recycling quantities and rates. Bin types included a container with a sliding divider, as hard plastic basket-type bin, and a divided mesh bag. Waste and recycling quantities were measured at nine multi-family properties for four weeks prior to distribution of in-unit recycling bins and then for four weeks after distribution. at nine multi-family properties. The final report included a

summary of project activities, a statistical analysis of the data, and recommendations on types of in-unit recycling bins to use to maximize recycling.

- **Cooperative Recycling Pilot Program.** Conducted a recycling pilot program for five selected small businesses in Silver Spring, Maryland. Information and data gathered was used to identify and quantify materials not previously recycled. Two waste sorts per week were conducted for a total of seven weeks and findings were summarized to determine the feasibility of these businesses joining together and procuring a common recycling collection contract for recyclable materials.
- **Research Assistance on Lightweighting of Materials.** Project Manager to assist with researching impacts on recycling rates resulting from the light-weighting of recyclable materials involving classifying changes in a materials size, composition, and usage. Calls were made to trade organizations and associations, processors of the materials, and industry experts to aid in determining the impacts from these materials on the overall County recycling rate.
- **Waste Audit of Selected Businesses.** Project Manager to identify strategies for capturing additional material in the recycling program for five selected businesses. Project activities included waste characterization to determine recyclable material in the waste stream; discussions with the recycling coordinator of each business about deficiencies in the recycling program; identification of business practices that generated large and homogeneous waste streams; analysis of trends in the waste stream based on annual reports submitted to the County.
- **Documentation of Commercial Recycling Activity.** Project Manager to seek out commercial recycling activity not previously reported in annual reports. Over 400 medium and large businesses and 1,000 small businesses were contacted to determine the types and quantities of material recycled, the method of transporting material to a processor or market, and name, address, and phone number of processor. Findings were compiled into a spreadsheet and summarized into a final report that was used to calculate the County's annual recycling rate.
- **Automated Collection Study.** Project Manager and lead author to evaluate the feasibility of instituting automated or semi-automated refuse collection in the County's Refuse Collection District. Detailed program information was acquired from other jurisdictions utilizing automated refuse collection to assess potential changes in operations, equipment, staffing, and funding. Conducted interviews with private haulers and focus groups of County residents to solicit opinions and concerns regarding the implementation of automated refuse collection.
- **Waste Composition Protocol Development.** This project was the first element of a two-phase project to develop and execute a comprehensive waste stream composition study. Responsibilities included developing a 4-season, statistically valid sample design, and creating a PC-based computer model to project waste stream generation and composition.

Waste Generation Study in Support of a Solid Waste Utility Fee, Southeastern Public Service Authority, VA. Project Manager and lead analyst to accurately estimate the quantities of waste generated and managed in the service area by each participating community (eight jurisdictions). Developed an estimate of the amount of commercially-collected waste based on demographic data and other available information related to waste generation trends and factors. Based on waste generation estimates, researched methods to implement a waste utility fee.

Solid Waste Composition Studies

Hamilton County, OH, Waste Composition Study- Project Director for a two-season study in 2010/11 of residential waste collected from the City of Cincinnati and surrounding areas through City and private services. The information developed from this evaluation will be used to assess waste diversion programs and to identify recycling and waste diversion opportunities.

New Hanover County, NC, Waste Composition Study- Project Manager for a two-season study in 2010/11 of residential and commercial waste and a visual characterization of C&D waste loads delivered to the landfill. The information developed from this evaluation will be used in the future design, construction, and operation of waste management facilities in the County; and to identify recycling and waste diversion opportunities.

City of Charlotte, NC, Multi-Family Waste Composition Study- Project Director for a single season study 2011 of multi-family residential waste. Results of the study will be used to establish local waste collection ordinances and assess fees for waste collection services at multi-family properties.

Wake County, NC, Waste Composition Study- Project Director for a municipal solid waste composition sampling and analysis study in May 2011. A statistically valid sampling plan was derived to collect representative waste samples from residential, commercial, and multi-family sources incorporating all contributing geographies. SCS collected 100 samples and sorted waste components into 70 material types. The results of the study will help target outreach efforts and assess and refine the recycling program for the County.

Chatham County, NC, Waste Composition Study- Project Director for a municipal solid waste composition sampling and analysis study in June 2011. Representative waste samples were obtained from the County's 14 residential convenience centers. Additionally, SCS visually characterized bulky waste collected at each of the convenience centers. The goal of the project was to provide the County with data that can be used to help plan reuse, recycling, and waste reduction programs for the residential sector.

Orange County, NC, Waste Stream Characterization Study. Project Manager for the performance of five separate solid waste composition studies (1990, 1995, 2000, 2005, and 2010), which included a comprehensive waste stream analysis of the residential, commercial, and construction/demolition waste sectors. Each study compared results to the preceding studies. Study elements included a characterization and training assignment that focused on assessing the recyclable and reusable component of C&D debris and an analysis of both the single- and multi-family waste streams.

City of Cleveland, OH, Waste Composition Study. Project Director for a two-season study of residential waste collected through City services in 2009/10. SCS examined the waste streams of two separate collection methods to ascertain the effect on waste composition. Results of the study are to be used in the evaluation of disposal technologies.

Anne Arundel County, MD, Waste Composition Study. Project Manager for two multi-season studies of residential waste collected through County services in 2004 and 2009. The studies each included visual characterizations of C&D and bulky wastes, convenience center wastes, and community clean-up wastes. Ms. Demers performed statistical evaluation of data outputs, wrote seasonal reports, and presented findings for the residential, commercial, and construction/demolition waste streams evaluated.

Montgomery County, MD, Waste Composition Study. Project Director to characterize residential (both single- and multi-family) and commercial wastes disposed at the waste transfer station in 2008/09. Responsible for the sampling design, field training, data collection and management, statistical analysis, and final report preparations.

Staten Island, NY, Visy Paper Composition Study. Project Manager to accurately estimate the amount and type of paper waste that was being managed at a paper recycling mill in 2001/02. The one-week field sampling effort included measurements from 12 sanitation districts within Manhattan and three sanitation districts in Staten Island. Study results estimated the paper components that made up the waste stream, condition of the paper components, and an assessment of contamination levels.

NYC, Department of Sanitation, Waste Characterization Study. Sample design and waste stream modeling for multi-seasonal waste characterization study conducted in 1989/90. Designed various sampling schemes and the protocols for determining an effective sample size; performed various mathematical and statistical tests to identify significant variables and trends associated with the generation of municipal solid waste from various residential, commercial, and industrial waste streams.

Philadelphia, PA, Small Commercial Establishment Waste Study. Lead analyst to provide an inventory of small commercial establishments in 1995/96 within the City, characterize the MSW these businesses generate, and thus assist the City's Streets Department to develop long-range SWM and recycling policy.

Onondaga County Resource Recovery Agency, NY, Waste Stream Projections. Responsible for program development and data management for a 4-season waste quantity and characterization study conducted at two sites in 1993. Performed statistical evaluation of data outputs, wrote quarterly reports, and presented findings for the residential, commercial, and construction/demolition waste streams evaluated.

PA, Greater Lebanon Refuse Authority (GLRA), Waste Stream Composition Study. Project Manager for the survey of solid waste from residential, commercial, and industrial sources throughout the municipality in 1995. The study that was conducted at the GLRA landfill in Lebanon County included a unique feature of a separate analysis of construction and demolition materials found in the County's waste stream.

Energy and Sustainability Assessments

Sustainability Audits, General Services Administration, Virginia and West Virginia.- Project Manager on a collaborative effort with Eaton Corporation in 2011/12 to identify compliance with LEED for Existing Buildings Operations and Maintenance (LEED EB O&M), Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings, and GSA's Strategic Sustainability Performance Plan (SSPP). The audit summarized information gathered during fieldwork and developed a work plan for complying with the sustainability requirements. Additionally, the report recommended procedures and equipment necessary for full compliance.

Retro-Commissioning Services (RCx), US Department of Veterans Affairs (VA), New England Healthcare System, New York/New Jersey Healthcare System, and Great Lakes Healthcare System – Project Manager for a collaborative effort with RetroCom Energy Strategies, Inc., and EMC Engineers, Inc., a subsidiary of Eaton Corporation, to retro-commission 24 medical centers comprising over 21 million square feet. This project involves the planning and investigative phases which entails adjusting operations, making simple repairs, and identifying low-cost operational and maintenance improvements that can enhance energy efficiency and help avoid the need for major equipment replacement. Additionally, more capital intensive corrective actions and costs for energy efficiency and other improvements will be identified. The goals of these RCx projects are to achieve improved indoor air quality, comfort, controls, extended systems life, reduced operation and maintenance costs, energy and resource efficiency, and reduced energy costs.

Energy and Water Audits, National Park Service, National Capital Region. Project Manager to perform energy and water audits in 2010 in accordance with ASHRAE's Level II energy audit guidance. Audit functions included reviewing building and equipment data, interviewing site personnel, analyzing utility rate information, observing energy-related equipment operation, and performing a meter inventory. SCS audited 179 buildings comprising 648,000 square feet of varying uses, including administrative offices, operational and maintenance services, visitor centers, recreational spaces, and historical buildings. SCS identified Energy Conservation Measures (ECMs) that could save electricity, heating oil, propane, and natural gas consumption with an annual savings of \$105,000 and water savings of 2.9 million gallons.

Energy and Water Audits, General Services Administration, Region 8, Rocky Mountain Region. Project Manager on a collaborative effort with Abraxas Energy Consulting to examine 10 buildings in 2010 to identify energy and water savings opportunities. Energy Conservation Measures (ECMs) were identified that could save electricity, heating oil, propane, and natural gas consumption with an annual savings of \$57,000 and water savings of 259,000 gallons.

Waste Composition Services for LEED Compliance, The Tower Companies, Virginia and Maryland. SCS conducted waste characterization services at the Tower Building in Rockville, Maryland on and the Millennium Building in Washington, DC in October 2008. The waste assessment was used in the application for LEED certification through the US Green Building Council.

Publications and Presentations

Demers, S. "Assessment of University of Maryland Recycling Program Results," Presented at the 5th Joint Conference of the Maryland Recycling Network and SWANA's Mid Atlantic Chapter, June 25, 2009.

Demers, S. "Beyond the Bin: Lessons Learned in Venue and Event Recycling," Presented at the Recycling Council of Alberta's Annual Fall Conference, September 28, 2007.

Demers, S. "Converting Your HHW Program from Periodic Collection Events to a Permanent Facility," Presented at the Maryland Recycling Coalition & SWANA's Mid-Atlantic Chapter Joint Conference, June 8, 2005.

Demers, S. "Hazardous Waste Management for Maryland Small Quantity Generators," Presented at the SWANA Mid-Atlantic Chapter Annual Meeting/Technical Seminar, Harford, MD, September 10, 2004.

Demers, S. "Effects of Lightweighting on Recycling Rates." Presented at the SWANA Mid-Atlantic Chapter Annual Meeting/Technical Seminar, Rockville, MD, March 14, 2003.

Demers, S. "Making Solid Waste Management Plans Work." Presented at the 10th Annual SCS Engineers Virginia Landfill & Landfill Gas Seminar, Roanoke and Richmond, VA, April 24 and 25, 2003.

Demers, S. "Making Solid Waste Management Plans Work." Presented at the SWANA Old Dominion Chapter Annual Meeting/Technical Seminar, Richmond, VA, September 20, 2002.

Demers, S. "Waste Imports to Virginia from Howard and Anne Arundel Counties." Presented at the SWANA Old Dominion Chapter Annual Meeting/Technical Seminar, Staunton, VA, June 20, 1997.

Demers S. and J. Savage. "Composition Studies: Get to Know Your Waste." *World Wastes*, January 1996.

Demers, S. "Statistical Evaluation of Groundwater Monitoring Data." Presented at the 3rd Annual SCS Engineers Virginia Landfill & Landfill Gas Seminar, VA Beach and Richmond, VA, June 6 and 7, 1995.

Demers, S. "EPA New Source Performance Standards Emissions Model." Presented at the SWANA Mid-Atlantic Chapter Annual Meeting/Technical Seminar, Ellicott City, MD, September 22, 1994.

Demers, S. and J. Savage. "Waste Stream Evaluation Draws Attention to C&D." *World Wastes*, July 1994.

Savage, J. and S. Tyler (Demers). "Comparison of Visual and Manual Classification. Techniques to Estimate Non-Residential Waste Stream Composition." Presented at the Second U.S. Conference of MSW Management, June 1992.

ROBERT B. GARDNER, PE, BCEE

Education

ME – Civil Engineering (Environmental), University of Virginia, 1980
BS – Civil Engineering, University of Virginia, 1979

Professional Licenses

Professional Engineer – Alabama, Arkansas, Florida, Georgia, Louisiana, Maine, Mississippi, New Jersey, New York, South Carolina, South Dakota, Virginia, Washington, Puerto Rico

Specialty Certifications

Board Certified Environmental Engineer (BCEE), Solid Waste Management

Professional Affiliations

American Academy of Environmental Engineers
American Society of Civil Engineers
Solid Waste Association of North America
National Society of Professional Engineers
National Solid Waste Management Association

Professional Experience

As a Senior Vice President, Mr. Gardner is responsible for overseeing SCS's nationwide solid waste management practice, which includes landfill engineering, landfill gas management, solid waste studies, landfill environmental systems, operation and maintenance, and construction. Mr. Gardner works closely with SCS's national and regional clients. Since joining SCS in 1980, he has completed solid waste, hazardous waste, environmental assessment, facility design, compliance audit, and other environmental study projects.

He has participated in or directed solid waste facility design and study projects for numerous municipalities and private companies throughout the United States. Projects typically have involved facility siting, site investigations, environmental studies, permitting, design, and construction services. Facilities have included landfills, landfill gas control facilities, material recovery facilities, transfer stations, wastewater treatment plants, and support facilities (e.g., roadways, buildings, stormwater, utilities). Other projects have included waste composition studies, rate studies, compliance audits, site assessments, and preparation of various procurement documents.

He has participated in or directed numerous environmental site assessments, contamination assessments, remedial action plans, and remedial construction projects throughout the United States. Project sites have included fuel storage facilities, vehicle maintenance facilities, truck stops, chemical processing plants, active and closed landfill sites, abandoned chemical disposal sites, and superfund sites. Chemical contamination encountered in both soil and groundwater

media has included petroleum, heavy metals, dioxin, pesticides, heavy metals, PCBs, and solvents. Notable projects that Mr. Gardner has been involved in are described below.

Solid Waste Studies

Broward Solid Waste Disposal District, Florida, Development of Solid Waste Special Assessment Program. Project Director responsible for development of a solid waste special assessment program for the Broward Solid Waste Disposal District, including evaluation of alternative special assessment strategies and programs used by other counties and municipalities throughout Florida and elsewhere, field testing to develop generation estimates for commercial properties; development of organization and procedures for implementing a special assessment, and preparing final report presenting the special assessment findings and program. The District includes 25 separate municipalities and the unincorporated areas of Broward County.

City of Norfolk, Virginia, Evaluation of Transfer Station Purchase and Operational Alternatives. Reviewing principal responsible for development of a financial pro forma model and quality control review of the analysis of the City's options for purchasing and operating the transfer station and supporting assets (trucks and trailers) located within its jurisdiction from the Southeastern Public Service Authority (SPSA). Tasks included review of SPSA's operational budgets for the facility, development of long-term capital expenditure estimates, evaluation of transportation costs, evaluation of privatization alternatives for operation versus municipally operated, and preparation of a final report and recommendations.

City of Riviera Beach, Florida, Solid Waste Collection Rate Study. Project Director responsible for quality control review of final report for a solid waste collection rate study and evaluation of yard waste processing facility for the City of Riviera Beach, Florida.

City of Riviera Beach, Florida, Cost Accounting Study. Project Director responsible for a cost accounting study of the solid waste collection and management system for the City of Riviera Beach, Florida. Evaluated the actual cost of providing solid waste collection services. The results of this study were used in assessing the feasibility of privatizing the Solid Waste Department.

City of Virginia Beach, Compressed Natural Gas Vehicle Conversion Feasibility Study. Project Director responsible for evaluation of feasibility of converting the City's 100-vehicle solid waste collection diesel fuel fleet to compressed natural gas. Specific responsibilities included pro forma evaluation of the life-cycle costs for the conversion, analysis of phasing alternatives, technical issues, and facility retrofit requirements, assessment of the steps the City would need to take to make the conversion, and identification of the advantages and disadvantages of CNG vehicles and operations. The pro forma analysis included projections of capital, operation, and maintenance costs, including sensitivity analysis on several key cost factors including diesel/CNG fuel escalation, maintenance costs, fuel efficiency, and new vehicle purchase premium.

City of Virginia Beach, Residential Routing Study. Project Director responsible for evaluation of residential collection routes for the City of Virginia Beach, and development of new routes using Fleet Route software to accommodate additional automated vehicles and improve the

efficiency of collection. The project was completed in conjunction with C2Logix. The City of Virginia Beach has a population of approximately 443,000, and services over 121,000 residential customers with residential household and yard waste pickup Tuesday through Friday.

Confidential Client, Confidential Location. Project Director responsible for conduct of a solid waste market study to support the siting, permitting, and construction of a new waste to energy facility within the United States. Tasks included providing overall guidance on the scope and approach to the study and review of the final report. The project involved identification of solid waste generation within a specified geographic area, confirmation of solid waste hauling and disposal contracts, identification of private and municipal haulers, landfills, transfer stations, and waste to energy facilities in the region, and development of a database that could be used to identify waste that could ultimately be captured by a new facility if constructed.

Dorchester County, Maryland, Solid Waste Management Plan. Staff Engineer responsible for field studies and engineering evaluations supporting the development of a 10-year solid waste management plan for Dorchester County, Maryland. Evaluated existing collection systems and landfills; developed conceptual designs and cost estimates for a resource recovery facility (modular incinerator) and an 80-ton-per-day transfer station; assessed current composting operations at the County wastewater treatment facility; supervised a solid waste weighing and characterization program; and recommended modifications to the County's disposal and collection system.

Eight Municipalities in Maine, Expert Witness Services Relative to Penobscot Energy Recovery Corporation. Provided expert witness services to evaluate damages resulting from an alleged breach of contract between Penobscot Energy Recovery Corporation and eight municipalities in Maine. Tasks included document review of independent engineering estimates, preparation of engineering report, and expert witness testimony for the eight municipalities.

Hampton Roads Planning District Commission, Virginia, Update Regional Solid Waste Management Plan. Project Director responsible for updating the solid waste management plan for the Southside Hampton Roads area, which includes the Cities of Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk and Virginia Beach, the Counties of Isle of Wight and Southampton, and the Towns of Boykins, Branchville, Capron, Courtland, Ivor, Newsoms, Smithfield and Windsor. The update was completed pursuant to Section 9 VAC 20-130-175.F of the Solid Waste Planning and Recycling Regulations. It included updates to solid waste generation, composition, demographic, and solid waste management facility information; an assessment of solid waste facility needs for the next 20-years, and an implementation plan for this period.

Hampton Roads Planning District Commission, Virginia, Valuation Study of the Southeastern Public Service Authority's Transfer Station, Landfill, and Waste-to-Energy Facility Assets. Project Director responsible for developing an independent assessment of the value of SPSA's assets. Developed a valuation methodology, assessed condition of assets, and prepared pro forma earnings model in order to establish range of value of assets. This work was done to support the County and City Managers (referred to as the Chief Administrative Officers, or CAO's) of the member communities of SPSA. The CAO's assisted SPSA in its negotiations to divest certain of its assets in the face of significant financial conditions.

Hampton Roads Planning District Commission, Virginia, Evaluate Resulting Municipal Tip Fee Resulting from the Sale of the Southeastern Public Service Authority (SPSA) Refuse Derived Fuel Waste to Energy Facility (RDF WTE Facility). Project Director responsible for the evaluation of bids that were received by SPSA for the purchase of its RDF WTE Facility. This assignment was done to support the Chief Administrative Officers of the SPSA member communities (City and County Managers) in their review of the bids and impacts to their respective communities from the potential sale. The member communities include Chesapeake, Franklin, Isle of Wight County, Norfolk, Portsmouth, Southampton County, Suffolk, and Virginia Beach. Tasks included review of the bids submitted by Covanta Energy Corporation and Wheelabrator Technologies, Inc., review of SPSA's detailed operational budget, preparation of a pro forma model to estimate resulting municipal tip fees following sale of the RDF WTE Facility based on the terms and conditions of the bids through 2018, coordination with Financial Advisors assisting the member communities, and participation in numerous public meetings and presentation.

Hampton Roads Planning District Commission, Virginia, Development of a Solid Waste Management System for 2018 and Beyond (2008). Project Director responsible for evaluation of alternatives and recommendations for managing solid waste in the south Hampton Roads Region after 2018, when the current agreements between Chesapeake, Franklin, Isle of Wight County, Norfolk, Portsmouth, Southampton County, Suffolk, Virginia Beach, and the Southeastern Public Service Authority (SPSA) expire. Tasks included evaluation of solid waste management technologies, evaluation of institutional models for future cooperative arrangements within the region, development of pro forma models to evaluate alternatives, facilitation with the Chief Administrative Officers from each City and County involved in the process, and preparation of final recommendations and report.

Hampton Roads Planning District Commission, Virginia, Development of a Solid Waste Management System for 2010 and Beyond (Update of the 2018 and Beyond Initial Study). Project Director responsible for the update of the evaluation of alternatives and recommendations for managing solid waste in the south Hampton Roads Region after 2018, when the current agreements between Chesapeake, Franklin, Isle of Wight County, Norfolk, Portsmouth, Southampton County, Suffolk, Virginia Beach, and the Southeastern Public Service Authority (SPSA) expire. This updated study builds off the work study completed in November 2008 and accounts for the significant changes in the solid waste system that occurred between 2008 and 2010 (e.g., sale of RDF WTE Facilities to Wheelabrator, significantly reducing landfill operations, and terminating recycling services to the Region). While the previous study focused on what would happen after 2018, this updated study also addresses the steps that need to be taken between now and 2018 to provide for solid waste disposal services after the use and support agreements with SPSA expire. Tasks included evaluation of solid waste management options and institutional models for future cooperative arrangements within the region, development of pro forma models to evaluate alternatives, facilitation with the Chief Administrative Officers from each City and County involved in the process, and preparation of final recommendations and report.

Hillsborough County, Florida, Solid Waste Collection System Evaluation. Project Director responsible for an independent evaluation of Hillsborough County, Florida's proposed solid

waste collection system modifications. Prepared report presenting findings of program review and presented recommendations for system modifications and procurement approaches.

Hillsborough County, Florida, Solid Waste Composition Study. Project Director responsible for evaluation of inclusion of municipal solid waste composting into Hillsborough County, Florida's solid waste system. Evaluation involved assessment of a proposed vendor's proposal for composting solid waste with a new proprietary process. Prepared letter report to County presenting technical review of process and recommendations.

Lake County, Florida, Solid Waste Composition Study. Project Director responsible for oversight of a two-season solid waste composition study for Lake County, Florida.

Macon County, Alabama, Tire Recycling Feasibility Study. Project Director responsible for preparation of a feasibility study for a County owned and financed and contract operated tire recycling facility. Conducted market evaluation for recycled waste tire products including crumb rubber, steel, and nylon; assessed waste tire supply; prepared financial pro forma, and evaluated financing alternatives. The study concluded that development of the project was feasible; however, the County ultimately elected to not proceed with the project.

Multiple Clients, Solid Waste Generation Studies. Project Director responsible for quality assurance review of technical evaluations and reports for projects with Polk County, Lake County, and the City of Lighthouse Point, Florida to calculate solid waste generation factors for each of the residential classes. These factors were then utilized to determine the appropriate disposal and collection rate to be charged to each residential class.

Orange County, Florida, Solid Waste Master Plan. Project Director responsible for preparation of a solid waste master plan for Orange County, including evaluation of the County's landfill, transfer station, and recycling operations for a 50-year planning horizon, review of the County's existing facilities and operations, siting study for new transfer station facilities, evaluation of the maximum disposal capacity of the existing landfill facility, a preliminary siting study for a new Class I landfill, development a commercial recycling plan, and preparation of a master plan report.

Polk County, Florida, Solid Waste Composition Study. Project Director responsible for oversight and quality control review of a two-season solid waste composition study for Polk County, Florida. The study was conducted at the County's three landfills and included 31 waste components. Residential, commercial, and industrial wastes were sampled during the waste characterization events.

Polk County, Florida, Solid Waste Privatization Study. Project Director responsible for evaluation of the economic feasibility of an out-of-county transfer and disposal proposal by USA Waste, including preliminary cost allocation modeling, evaluation of current operation, maintenance, and capital costs, review of yearly budgets, and comparison with actual costs, and preparation of final report to the County.

Polk County, Florida, Solid Waste Rate Study. Project Director responsible for the Solid Waste Rate Stratification Study for Polk County, Florida, to calculate the County's actual cost of

disposing each of the six major elements of the solid waste stream in the County. The results of the study were used in the solid waste planning process to determine whether or not the County should continue with its "single rate program" or begin charging a stratified rate based on the type of solid waste.

Polk County, Florida, Staffing and Budget Evaluations. Project Director responsible for preparation of analysis for Polk County, Florida, Department of Solid Waste to assess long-term staffing, budgets, and schedules to support County projects.

Seminole County, Florida, Solid Waste Generation Study. Project Director responsible for oversight and quality control review route testing and report preparation of a multi-year solid waste generation study for Seminole County, Florida. The County contracts out residential collection services in the unincorporated areas. The contracts between the County and the haulers required that the per household generation rate be verified through field testing.

Seminole County, Florida, Solid Waste Privatization Support. Project Director responsible for engineering and financial evaluations to support Seminole County Solid Waste Management Department prepare a "bid" against private vendors to continue to operate the County's solid waste management system. Services included detailed assessment of County's budget and actual solid waste management expenditures, cost allocation modeling, preparation of "bid" proposal package, and assistance during presentation to the Board of County Commissioners.

Solid Waste Association of North America (SWANA). Update of Construction and Demolition Debris Training Course. Project Director responsible for preparing a comprehensive update of SWANA's training course on construction and demolition debris management. The effort included updating course PowerPoint slides, and the training manual content, graphics, and references. Several new lessons were added to address current trends, storm debris management, and communication.

Southern Waste Systems, Inc., Lantana, Florida, Baseline Testing for Recovered Screened Materials. Project Director responsible for baseline testing for recovered screened material (RSM) for four construction, demolition, and debris recycling operations for Southern Waste Systems in Broward and Palm Beach County. The testing was required pursuant to guidelines published from the Florida Department of Environmental Protection. RSM was tested for heavy metals, semi-volatile and volatile organic compounds, and pesticides, and leachability of these compounds. The purpose of the baseline testing was to determine appropriate end uses for the RSM such as residential, commercial, or industrial fill. Project also included preparation of facility permit modifications to allow for appropriate off-site use of RSM.

Southern Waste Systems, Lantana, Florida, Consulting support for Solid Waste Recycling and Disposal Bid to City of Miramar, Florida. Project Director for evaluation of technical and permitting issues associated with Southern Waste System's bid to provide recycling and disposal services for the City of Miramar. Specific responsibilities included review of consultant's report on the status of Broward County's Contingency Disposal Landfill and presentation of findings to the Broward County Resource Recovery Board and County Commission and other elected officials, preparation of a technical review analysis; and technical support to Southern Waste Systems during the bid preparation and City interview process.

Town of Chapel Hill, North Carolina, Town of Chapel Hill, Comprehensive Review of Solid Waste Collections, Transportation, and Disposal Options. Reviewing Principal responsible for development of the pro forma financial model to evaluate various solid waste scenarios for the Town, which were evaluated as a part of planning efforts in anticipation of the closure of regional solid waste disposal facility, Orange Co. Landfill, in June 2013. Assisted with the assessment of the Town's commercial collection operations, organics diversion analysis, preparation of the study report, and quality assurance review. The study involved evaluating the Town's existing systems, collections operations, recycling, franchising, transfer station, out-of-county disposal, material recovery facility, Pay as You Throw (PAYT) program, and waste conversion technologies. Presentations were also made to the Town Council during public meetings.

Volusia County, Florida, Solid Waste Composition Study. Project Director responsible for oversight and quality control review of a four-season solid waste composition study for Volusia County, Florida.

Solid Waste Facilities

Reedy Creek Improvement District, Lake Buena Vista Florida, Material Recovery Facility Design. Project Director responsible for the complete design, permitting, construction oversight, start-up and shakedown testing of a 110 ton per day material recovery facility for Reedy Creek Improvement District (Walt Disney World), Lake Buena Vista, Florida. The system design included semi-automated segregation of paper, cans, plastic and glass containers; climate controlled processing area; storage for processed materials; employee facilities; and public education and viewing areas.

Solid Waste Authority of Palm Beach County, Commercial Recycling Assessment. Project Director responsible for quality control and final report review for the assessment of commercial recycling for the Solid Waste Authority of Palm Beach County, Florida. The project involved an assessment of County's commercial waste stream, collection methods, and costs.

Southern Waste Systems, Inc., Environmental Investigations and Permitting for C&D Recycling Facilities, Broward and Palm Beach County, Florida. Project Director responsible for preparing various permitting applications and conducting environmental investigations for Southern Waste System's Sun Recycling Construction Demolition and Debris material recovery facilities located in Palm Beach County and Broward County, Florida. Projects included solid waste facility permit modifications for the Sun I, II, III, IV, and V Recycling Facilities, updates to financial assurance documentation, requests for increase in throughput capacity, preparation of Environmental Resource Permits, and preparation of recovered screen material baseline sampling and testing reports for these facilities. Coordinated with the Broward County Department of Planning and Environmental Protection, the Palm Beach County Department of Health Solid Waste Facility permit, Palm Beach County Solid Waste Authority, and the Florida Department of Environmental Protection.

Publications and Presentations

Gardner, Robert B., "Infrastructure from the Ground Up, Civil Engineering Works for Lawyers, Chapter 5 – Solid Waste Management", American Bar Association Publication, 2012

Gardner, R. B.; Matteson, K. M.; Carlock, J., "Solid Waste Management after 2018: Future Options for the South Hampton Roads Region on Virginia", Solid Waste Association of North America WasteCon Proceedings, August 14-16, 2012.

Gardner, R. B. "What's New in Solid Waste", Keynote Address, Solid Waste Association of North America, Northwest Beaver Chapter, Spring Symposium, April 2012.

Gardner, R. B., "Is Garbage a Waste or a Resource", MSW Management, Elements 2011, June 2011.

Gardner, R. B., "What's New for Landfills", MSW Management, Elements 2011, Vol. 20, No. 4, August 2010.

Gardner, R. B., "Landfills and Our Future", MSW Management, Elements 2010, April 2009.

Gardner, R. B.; Leonard, M; Michelle Leonard, Clark, B. J.; Ludt, R., "Waste Processing Facilities and Evolving Markets", MSW Management, Vol. 18, No. 3, April 2008.

Gardner, R. B., "Can Recycled Concrete Be an Industrial Byproduct", Solid Waste Association of North America, Senior Managers Conference, St. Augustine, Florida, January 2008.

Gardner, R. B., "Pro Forma Analysis to Support Solid Waste Systems", SCS Landfill Seminar, Roanoke and Richmond, Virginia and Baltimore, Maryland, May 1, 2, and 14, 2008.

Gardner, R. B., "State-of-the-Practice for Energy Recovery from Bioreactor Landfills", Presented to the 11th Annual Landfill Methane Outreach Program Conference and Expo, January 10, 2008.

Gardner, R. B., "3.2 MW Green Energy Project, DeKalb County, Georgia", Presented at the TN, VA, NC, SC Quad State SWANA Conference, Pigeon Forge, TN, August 20-24, 2007.

Gardner, R.B., "Developing a Landfill Gas to Energy Project, DeKalb County, Georgia", Presented at the Georgia SWANA State Conference, April 5, 2007.

Gardner, R.B., and Clark, B.J., "A Helping Hand", Waste Age, September 2006.

Gardner, R. B., "What Ever Happened to the RD&D Rule Anyways", SWANA Landfill Symposium Proceedings, Nashville, TN, June 2006

Gardner, R. B., and McLaughlin, M.W., "Turning Browns into Greens", Waste Age, December 2005.

Gardner R. B., "Current Trends in Solid Waste and Landfills", Presentation to the Chartwell Landfill Symposium, Tampa, Florida, May 2006.

DANA L. MURRAY, PE

Education

B.S. - Civil Engineering, Old Dominion University, 1987

Professional Licenses

Professional Engineer in VA (22389)

Professional Affiliations

Solid Waste Association of North America (SWANA), Past President of Mid-Atlantic Chapter and Current Secretary

Professional Experience

Ms. Murray has twenty years of professional experience in civil/environmental engineering, including landfill gas emissions modeling and collection system design; landfill gas energy technology evaluation, feasibility analysis, energy user outreach and analysis; landfill closures; transfer station design and construction; and stormwater hydrology and hydraulics. She serves as the Program Manager for SCS's contract with the US EPA Landfill Methane Outreach Program (LMOP). The LMOP mission is to reduce Greenhouse Gas emissions by beneficially capturing and utilizing the methane gas produced at landfills. In addition, Ms. Murray has managed multimillion dollar design and construction projects with multiple disciplines and subcontractors. Examples of her project experience include:

United States Environmental Protection Agency:

- **Office of Solid Waste.** Developed training program covering the implementation of new Subtitle D regulations governing municipal solid waste landfill design, operation, and closure. Presented two-day training sessions for EPA regional personnel and state regulators.
- **Region III Sponsorship.** Project Manager for the development and presentation of a training program for VDEQ landfill permit writers.
- **Solid Waste Disposal Facility Criteria, 40 CFR Part 258.** Technical Editor for the Technical Manual, November 1993. The manual includes guidance for siting, operation, and design of MSW landfills, as well as guidance groundwater monitoring and closure/post-closure care.

Alpha Ridge Landfill, Howard County, MD. Project Manager for the design of the expansion of the residents' area and re-design of the Household Hazardous Waste Area. This work involves the addition of five drop off bays, expansion of the access road, HHW building, and stormwater wet pond for construction and water quality management after construction.

Benning Road Transfer Facility, District of Columbia. Project Coordinator for the redesign and construction of the existing Benning Road Transfer Facility. This work involves the coordination of a Surveyor, Structural Engineer, Electrical Engineer, Mechanical Engineer, Architect, and Civil Engineering. Tasks include the design of the demolition of electrostatic precipitators and

exhaust stacks, partial demolition of the existing structure, the design of an addition onto the facility including tipping floor, load-out pits and scales, remediation of existing bridges, design of a new scalehouse and scales, design of a new citizen's convenience drop-off center and general site improvements. Assistance was also provided for permitting and zoning purposes. During construction, work involves providing quality assurance and coordination of submittal review and contractor's request for information.

Fort Totten Transfer Facility, District of Columbia. Project Director for the redesign and construction of the existing Fort Totten Transfer Facility. This work involves the coordination of a Surveyor, Structural Engineer, Electrical Engineer, Mechanical Engineer, Architect, and Civil Engineering. Tasks include the design of the existing tipping floor repairs and resurfacing, partial demolition of the existing structure, the design of an addition onto the facility including tipping floor, load-out pits and scales, design of new scales, design of a new citizen's convenience drop-off center and general site improvements. Project Manager for the Planned Unit Development zoning process including public hearing testimony, citizen group meetings, and coordination with other District of Columbia Departments.

Construction, Demolition and Land Clearing Debris Disposal Analysis, Prince William County, VA. Project included a review of all private and public sector CD&L Debris Landfills in the region for remaining capacity. The study also looked at the need and the siting of a County owned CD&L Debris Landfill.

Solid Waste Management Plan, Patuxent River Naval Air Station, MD. Project Engineer. Project included a review of existing solid waste management activities and to recommend potential improvements.

Solid Waste Management Alternatives Analysis, Northampton County, VA. Project Engineer for the landfill expansion, landfill closure and transfer station construction.

Landfill Gas Collection System ,Chesapeake, VA. Preliminary design, detail design (including mechanical equipment layout), and preparation of contract.

Anne Arundel County, MD. Facilities Master Plan Project Engineer. Project includes individual facility design and siting for three citizens convenience centers, administration building, maintenance facilities, scale house, fueling facilities, vehicle washing, and internal roadway. The citizens' convenience centers were designed to accommodate 500 to 900 vehicles per day. The majority of the type of vehicle to use the convenience center is pick-up trucks. The design includes a separation of sedan unloading and pick-up truck unloading for aesthetic purposes. The internal roadway was redesigned to eliminate dangerous conditions. The project also included capital cost estimates and land acquisition evaluation.

Charles City County Landfill, VA. Project Engineer for the design of the maintenance and scale house/office facilities, citizens' convenience center, leachate storage and pump out facilities, and entrance road.

Accomack County, VA, Northern and Southern Sanitary Landfill Designs. Project Engineer responsible for preparation of Part A and Part B permit applications for the southern (140 acres) and northern (110 acres) landfills. The southern landfill design encompasses a 10-acre vertical expansion over a previous shallow trench method solid waste disposal area. The northern landfill

design encompasses a 10-acre lateral expansion area adjacent to the existing active cell. The designs incorporate some of the modern features of sanitary landfills including composite liners, leachate collection systems and landfill gas controls. SCS is closely coordinating the designs with the Virginia Department of Waste Management, particularly with regard to the required hydrogeological investigations at each site. Preparation of construction bid documents is included.

Landfill Seminars, VA and MD. Managed development of landfill seminars for landfill owners and operators, local government employees and private industry. She was a presenter at these seminars.

Charles City County Landfill, VA. Project included design of administrative offices, equipment maintenance garage, leachate storage tanks, access road, and vehicle scales. Project deliverables included preliminary, interim, final designs, and construction documents.

Oaks Landfill, Montgomery County, MD. Construction services for the vertical expansion of the existing landfill. Project included leachate management facilities, access road, gate house stormwater management facilities, environmental control facilities and landfill cells.

Water Treatment Plant, Dover, DE. Project included mechanical, electrical, and structural design of a facility to house the groundwater wells and water treatment equipment. The water treatment process included ozonation for VOCs and disinfections, lime addition for pH and alkalinity adjustment, GAC filtration, and Chloramines residual.

Bull Run Mountain Sanitary District Water Storage Alternatives, Knoxville County, TN. Project included feasibility analysis of different water storage alternatives to best address the challenges with difficult topography, limited access, and large pressure difference.

Powells Creek Interceptor / Oak Ridge Force Main, Prince William County, VA. Project consisted of 7,800 feet of force main and 30,000 feet of gravity interceptor sewer.

Water Treatment Plant Feasibility Study, Town of Round Hill, VA. Project include an analysis of an existing lade for potential use as a drinking water source, analysis of appropriate treatment, and a cost analysis.

Stormwater and Sewage Pump Stations Design Upgrades, Norfolk, VA. The project included assessment and recommendations for upgrading of over 50 facilities that pump either stormwater or sewage for the city and preparation of Stormwater and Sewage Pump Stations Operation and Maintenance Manuals.

Landfill Gas Collection System, Chesapeake, VA. Project included design of well field and mechanical, electrical, and structural design of landfill gas collection and flaring facility.

Virginia Department of Highways Secondary Roads. Project included hydrology and hydraulic analysis using HEC-2 and HY-8 for culvert design.

Publications

Hall, C., and D. Murray. "Get the Mercury Out: Implementing a CESQG Program to Collect Mercury and Other Hazardous Wastes." Presented at the Solid Waste Association of North America's 2005 Winter Technical Symposium

Turner, D.L., L.K. McDaniel, and K.B. Gotwals. "Subtitle D Implementation: An Update."

[presented at] SWANA's 4th Annual Southeastern Regional Solid Waste Symposium. Myrtle Beach, South Carolina. November 1-3, 1994.

Briggs, J.L. and D.L. Turner. "Complying with the Wetlands Siting Restrictions in 40 CFR Part 258: Case Study." [presented at] ASTSWMO 1993 National Solid Waste Forum on Integrated Municipal Waste Management. September 1993.

Turner, D.L. and J.R. Harriman. "Leachate Pumping Systems: Side Sloper Riser Pipe vs. Liner Penetration Pipe." [presented at] the International Madison Waste Conference. Madison, Wisconsin. September 22-23, 1993.

Ward, C.G., D.L. Turner, and A.J. DiPuccio. "Subtitle D: You Have A Choice." MSW Management. October 1992. 2 (6): 70-75.

MICHAEL A. KALISH, PE, LEED AP

Education

B.S. - Environmental and Natural Resource Engineering, State University of New York
College of Environmental Science and Forestry at Syracuse University, 1995

Professional Licenses

Civil Engineer, CA, license no. C62112
Professional Engineer, MD license no. 30002
LEED Accredited Professional

Professional Affiliations

Solid Waste Association of North America (SWANA), Instructor

Professional Experience

As SCS's National Partner for Transfer Stations, Mr. Kalish has been the Project Manager for several major transfer station renovations and expansions in Maryland and the District of Columbia and new transfer stations in Maryland and Virginia. Additionally, he has worked on a variety of engineering projects involving LFG, LFG-to-energy, landfill closure, and sub-slab mitigation design for brownfields remediation. Several recent LFG projects have also included the design and implementation of remote SCADA systems for use at flare stations, LFG beneficial use projects and carbon credit projects. Mr. Kalish is also an instructor for the SWANA Managing Transfer Stations course and is a LEED Accredited Professional. Examples of his project experience include:

Transfer Station/Facilities

District of Columbia:

- **Benning Road Transfer Facility.** Project Engineer for the redesign of the existing Benning Road Transfer Facility. This work involves the coordination of a Surveyor, Structural Engineer, Electrical Engineer, Mechanical Engineer and Architect along with performing civil engineering duties. Tasks include the design of the demolition of electrostatic precipitators and exhaust stacks, partial demolition of the existing structure, the design of an addition onto the facility including tipping floor, load-out pits and scales, remediation of existing bridges, design of a new scalehouse and scales, design of a new citizen's convenience drop-off center and general site improvements. An odor control system was also designed for the facility. Assistance was also provided for permitting and zoning purposes and during construction.
- **Fort Totten Transfer Facility.** Project Engineer for the redesign of the existing Fort Totten Transfer Facility. This work involves the coordination of a Surveyor, Structural Engineer, Electrical Engineer, Mechanical Engineer and Architect along with performing civil engineering duties. Tasks include the design of the existing tipping floor repairs and

resurfacing, partial demolition of the existing structure, the design of an addition onto the facility including tipping floor, load-out pits and scales, design of new scales, design of a new citizen's convenience drop-off center and general site improvements. An odor control system was also designed for the facility. Assistance was also provided for permitting and zoning purposes. Served as construction manager for the District.

Ocean City, MD, Ocean City MSW Transfer and Recycling Facility:

- Project Engineer assisting on the conceptual design of site improvements and facility layout for the redesign of the existing MSW transfer and recycling facility.
- Project Manager for the remodeling of the existing solid waste transfer station and design of a new materials recovery facility in Ocean City. Tasks included an evaluation of the existing waste handling procedures and equipment utilized by the City. Waste handling procedures were optimized by converting to top loading transfer trailers from the existing compactors. A new 25,000 square foot building was built to perform separation and baling of recyclable materials. Upon completion the waste and recyclable handling capabilities have better than doubled. Special care was given to building architecture and odor and dust control because of the presence of residential homes directly adjacent to the transfer station property.

Frederick County, MD, New Transfer Station. Project Manager for the design of a new transfer station to handle all of the County's waste. Tasks included the development of conceptual site plans for four potential properties and a corresponding design criteria memorandum. Upon site selection, plans and specs suitable for construction purposes were developed including requirements for Forest Restoration Ordinance work, geotechnical investigations and an archeological survey for the presence of historical resources. This project involved coordination with a citizen's oversight group and special design for odor control and landscaping to address their concerns. Permitting assistance and construction management are also being performed.

Montgomery County, MD, Shady Grove Transfer Station. Project Manager for the design of an approximately 12,000 square foot addition to the existing transfer station to accommodate mostly hand-unloading vehicles. The design included architectural accenting to complement with the existing building, specialized storm water management, new scales at the scale house, and an expansion to the existing public unloading facility. Served as construction manager on behalf of the County.

Page County, VA, Stanley Landfill. Project Manager for the design of a 200 tpd transfer station. Design included a open-walled, roofed structure and concrete tipping floor for waste processing, new scale for weighing both incoming and outgoing waste vehicles, and new water lines for dust control and cleaning.

Montgomery County, MD, Gude Landfill Yard Trim Facility. Project Manager for the design of a Yard Trim Receiving, Processing and Transfer Facility on top of the closed Gude Landfill. Design includes areas for the grinding and handling of yard trim and wood material, along with future facility expansions to include on-site composting. Design also includes stabilizing the closed MSW landfill to account for the new traffic loads, a new scalehouse and scales, truck tarping station, maintenance shop for site equipment, fueling station, site paving and retaining walls and stormwater design for a wetland pond. Special considerations taken into account

because of the landfill redevelopment for settlement, cap integrity and landfill gas issues for all the site facilities.

Zion Crossroads, VA, Construction and Demolition Debris Recycling and Materials Recovery Facility. Project Manager on the design and permitting for a new C&D Debris Recycling Facility and Materials Recovery Facility. Design includes modifications to existing site buildings to accommodate the new use, a new citizen's recycling center, new scale, storage building for processed material, site paving and stormwater design and obtaining local site and zoning permits and the Virginia State Operating permit for a Materials Recovery Facility. Additionally, the existing site building that was relocated to accommodate the C&D facility has been adapted to accommodate a "dirty MRF" operation.

Prince George's County, MD, New Transfer Station Siting Study. Project Manager for the preparation of a siting study for a new transfer station within the County to replace the at capacity landfill. The project includes the planning and participation in multiple public meetings to obtain public input on siting criteria, development of siting criteria based on public comments and engineer recommendations, application of criteria to develop a list of qualified sites, individual site investigations of qualified sites, and preparation and presentation of final recommendations.

Prince George's County, MD, New Transfer Station. Project Manager and responsible for design aspects as member of a design/build team with a construction contractor for the new transfer station in the County. Project involves a new transfer station capable of 3,000 tons/day, 2-story administration office, scalehouse and scales, citizen drop-off facility, and the facility design will accommodate truck and rail haul of processed materials.

Howard County, MD, Transfer Station Expansion. Project Manager for the design of an expansion to the existing County transfer station. Expansion will be designed to handle the anticipated waste quantities, traffic loads, and minimize impacts to the new residential development adjacent to the transfer station.

Landfill Gas/LFGE

Montgomery County, MD, Oaks and Gude Landfills. Project Manager for the design, construction and operation and maintenance of new landfill gas-to-energy facilities at the County's old Oaks and Gude Landfill's. The project includes the design of two facilities including engine-generators, a landfill gas treatment and compression skid, and associated electrical switchgear, obtaining the state operating permit, obtaining all local permits for erosion and sediment control, stormwater management and the building permit.

Berks County, PA, Rolling Hills Landfill. Project Engineer for the installation of new extraction wells and LFG system evaluation on behalf of the energy developer. Tasks include evaluating the existing system to achieve compliance with Title V and NSPS regulations, the design and layout of the new wells to maintain NSPS and Title V compliance, field investigation of the existing LFG collection system and subsequent recommendations to the client for maximizing well field potential and operation oversight of the well field.

Fauquier County, VA, Corral Farms Landfill. Project Engineer for the design of a LFG collection system to be used to provide fuel for a new 1 MW electrical generation plant at the landfill. Tasks include the design of the system, construction oversight, and primary client contact for questions.

Baltimore County, MD, Eastern Landfill. Project Manager for the design of the LFG system expansion for the energy developer. Tasks include the addition of new wells both in active and non-active areas of the landfill. Special consideration was given to ensure the system would not impede landfill operations, and allow for future system expansions.

Howard County, MD, Alpha Ridge Landfill:

- Project Engineer for a LFG to energy feasibility assessment. Tasks include modeling LFG production for an extended period, performing a feasibility assessment and economic analysis, and reporting the results of the study and making recommendations to achieve the outcome of the study.
- Project Manager for Annual Title V compliance reporting and Annual Emissions calculations and Certification.

Prince George's County, MD, Brown Station Road Landfill:

- Project Engineer assisting with construction quality assurance for the construction of a new landfill gas-to-energy facility at the landfill. Other tasks include working with SCS Field Services personnel to operate and maintain the existing LFG system at the landfill to control subsurface methane, maintain Title V and NSPS compliance and supply gas to the on-site and off-site generators
- Project Manager for Annual Title V compliance reporting and Annual Emissions calculations and Certification.

Harford County, MD, various sites.

- Project Manager for a subsurface methane evaluation and recommendations for remediation at the Bush Valley Landfill. This work involves coordinating with the Maryland Department of the Environment and the Environmental Protection Agency as it is a Superfund site. Tasks include the evaluation of the design for the closure of the landfill, the use of a Geoprobe contractor to install monitoring probes adjacent to some residential properties, a pump test and a report outlining recommendations for remediation.
- Project Manager for the design of an active LFG collection and control system at the closed Bush Valley Landfill. The design includes extraction wells in waste and around the perimeter of the landfill designed to “target” areas of highest concern. Special care was given to minimize sight impacts to the surrounding neighbors including the use of an enclosed ground flare, special landscaping, a pavilion to enclose the blowers and panels, and fence blinds. In addition to the LFG system, a condensate treatment system was designed to allow for on-site treatment and eventual discharge to the sanitary sewer.

- Project Manager for environmental monitoring including LFG and groundwater at the Bush Valley Landfill. Monitoring includes subsurface perimeter, and passive vent monitoring of LFG. In addition to gas monitoring, groundwater monitoring is performed. Semi-annual sampling is performed for the groundwater monitoring wells. Semi-annual LFG and groundwater reporting is performed.
- Project Director for an odor investigation and recommendations at the Harford County Waste Disposal Center. Additional services include Title V permitting and compliance and greenhouse gas consulting services.
- Project Director for design modifications to the existing landfill gas collection and control system at the Tollgate Landfill. Modifications are to accommodate the decreased flows of gas at the landfill since the original system was installed 20 years ago.

Pine Grove Sanitary Landfill, PA. Project Engineer for the development of a NSPS design plan of an existing active LFG extraction system at the landfill. Tasks include the analysis of the existing extraction system components and data, development of design criteria, site layout and detail preparation and report generation to be submitted to the State of Pennsylvania.

Cecil County Central Landfill, MD. Project Engineer for an ambient air investigation and remediation at the landfill, as a continuation to previous work. Specific tasks include conducting point and ambient air testing of the landfill and surrounding areas, LFG modeling, investigation into potential off-site odor sources, and developing a report outlining recommendations for remedial action. Additionally a presentation was made at a public meeting to outline the results of the investigation and answer questions from the citizens of a local town.

Millersville Landfill, Anne Arundel County, MD. Project Engineer for the redesign of the existing blower/flare station to make the system more adaptable to existing conditions. Tasks include the preparation of engineering plans and specifications suitable for construction, and coordination with construction personnel on specific requirements for the modification of existing and proposed equipment.

Resh Road Landfill, Washington County, MD. Project Engineer for the design of a LFG system in conjunction with the closure of the landfill. Tasks include the preparation of a design plan for the new LFG system, preparation of engineering plans and specifications, coordination with the landfill closure designer, engineering calculations and permitting assistance.

Carroll County, MD, various sites.

- Project Manager for the investigation and recommendation for remediation of subsurface landfill gas migration from the Northern Landfill. Continued project work included the design, construction and operation of the recommended landfill gas extraction system for migration control. Design utilized horizontal collection trenches to extract landfill gas and direct it to a candlestick flare for combustion.
- Project Manager for the preparation and documentation for a new Title V operating permit at the Northern Landfill.

- Project Manager for the design/build of a comprehensive landfill gas collection and control system at the Northern Landfill. Design includes incorporating existing features and the addition of monitoring equipment to comply with the new Greenhouse Gas Reporting Rule. Additional services include assistance with the development of a greenhouse gas credit project.
- Project Director for the design/build of a landfill gas migration control system at the John Owings Landfill. Project involved a site investigation to determine extent of migration, develop and implement remediation recommendation.

Quarantine Road Landfill, Baltimore City, MD.

- Project Manager for the design of a landfill gas extraction and control system. Design also includes a compression and dehydration system to treat the collected gas where it is then piped to a Coast Guard station where it will be utilized to create electricity.
- Project Manager for the preparation and documentation for a new Title V operating permit at the landfill.

LFG SCADA Design

In support of operations and maintenance for various landfill gas projects, remote SCADA systems have been designed and implemented for the following projects:

- **Frederick County Landfill, Winchester, VA.** Remote SCADA system in support of a carbon credit project. System allows off-site monitoring through the internet of the system operations, performs calculations for carbon credit generation, generates regular reports, automatically uploads data on a daily basis to a secure server for data retention and use, and sends alarm signals via email and text message. Internet access via cellular modem with static IP address.
- **Gude Landfill, Montgomery County, MD.** Remote SCADA system in support of the operations of an enclosed flare station. System allows off-site monitoring through the internet of the system operations, generates regular reports, automatically uploads data on a daily basis to a secure server for data retention and use, and sends alarm signals via email and text message. Internet access via cellular modem with static IP address.
- **Brown Station Road Landfill, Prince Georges County, MD.** Remote SCADA system in support of the operations of an enclosed flare station. System allows off-site monitoring through the internet of the system operations, generates regular reports, automatically uploads data on a daily basis to a secure server for data retention and use, and sends alarm signals via email and text message. Internet access via cellular modem with static IP address.
- **Mount Herman Landfill, Caldwell County, NC.** Remote SCADA system in support of a carbon credit project. System allows off-site monitoring through the internet of the system operations, performs calculations for carbon credit generation, generates regular reports, automatically uploads data on a daily basis to a secure server for data retention

and use, and sends alarm signals via email and text message. Internet access via cellular modem with static IP address.

- **Midshore Regional Solid Waste Facility, Easton, MD.** Remote SCADA system in support of a carbon credit project. System allows off-site monitoring through the internet of the system operations, performs calculations for carbon credit generation, generates regular reports, automatically uploads data on a daily basis to a secure server for data retention and use, and sends alarm signals via email and text message. Internet access via cellular modem with static IP address.
- **Berkeley County Landfill, Moncks Corner, SC.** Remote SCADA system in support of a carbon credit project. System allows off-site monitoring through the internet of the system operations, performs calculations for carbon credit generation, generates regular reports, automatically uploads data on a daily basis to a secure server for data retention and use, and sends alarm signals via email and text message. System replaced an existing SCADA system. Internet access via cellular modem with static IP address.
- **Rockingham County Landfill, Harrisonburg, VA.** Two separate Remote SCADA systems in support of carbon credit and LFG beneficial use projects. Systems allow off-site monitoring through the internet of the system operations, performs calculations for carbon credit generation, generates regular reports, automatically uploads data on a daily basis to a secure server for data retention and use, and sends alarm signals via email and text message. Internet access via cellular modem with static IP address.
- **Frederick County Landfill, Winchester, VA.** Developing a new remote SCADA system to work in conjunction with the existing system and to support the new LFGE project currently under construction. System allows off-site monitoring and control through the internet of the system operations, performs calculations for carbon credit generation, generates regular reports, automatically uploads data on a daily basis to a secure server for data retention and use, and sends alarm signals via email and text message. Internet access via cellular modem with static IP address.

Landfill

Quarantine Road Landfill, City of Baltimore, MD. Project Manager for environmental monitoring including LFG and groundwater at the landfill. Monitoring includes subsurface perimeter, surface emission, and on-site building monitoring of LFG. Semi-annual sampling is performed for the 22 groundwater monitoring wells and 5 leachate monitoring points. An annual surface runoff storm water sample is taken at 5 outfall locations. Quarterly LFG and integrated semi-annual groundwater reporting is performed.

Abingdon Landfill, Harford County, MD. Project Engineer for landfill site improvements and existing cap repair. Specific tasks include preparation of engineering plans and specifications suitable for bidding purposes, development of Erosion and Sediment Control Plan, Stormwater Management Plan development, and development of final grading plan. Performed construction quality assurance and surveying for as-built plans.

Prince William County Landfill, Manassas, VA. Project Engineer for the design of a new impound lot for the police station on the landfill property. Tasks include preparation of plans and specifications, project stake-out, and assistance during construction.

Brownfields

Residence Inn, McLean, VA. Project Manager for the design of a sub-slab VOC remediation system for a new Residence Inn. Design involves sub-slab collection piping and Geo Seal membrane liner system. Construction Engineering services also provided.

Carl M. Freeman Co, Olney, MD. Project Manager for the design of a sub-slab VOC remediation system for a new Harris Teeter grocery store. Design involves sub-slab collection piping and membrane liner system. Construction Engineering services and installation certification also provided.

Lakeside Marketplace, Acworth, GA. Project Engineer for the design of a sub-slab methane remediation system for the commercial building complex. Design involves sub-slab collection piping and Liquid Boot membrane liner system. Construction Engineering services also provided.

Beazer Homes, Cambridge, MD. Project Manager for the design of a sub-slab VOC remediation system for a series of upscale town homes. Design involves collection piping and membrane liner for the building foundations to remediate chlorinated solvent contamination in the soil and groundwater.

Pulte Homes, Greenbelt, MD. Project Manager for the subsurface evaluation and design of a sub-slab methane remediation system for the new Greenbelt Metro Development. Services include field sampling to verify the presence of methane gas in the vicinity of the new townhouse development, a report of findings and recommendations, design of a sub-slab barrier and collection system for methane and to provide engineering services during construction.

Leewood Estates, Fairfax, VA. Project Manager to provide technical assistance to the county Fire Marshall due to the presence of methane in residential homes in a new housing development. Tasks include the review of field sampling and previous reports, review recommended remediation procedures by the developer and provide a report of findings and recommendations to the Fire Marshal.

Fairland Parcel X, Burtonsville, MD. Project Manager for the remediation of an unpermitted rubble landfill as part of a new residential development. Tasks include the preparation of a Response Action Plan for submission to the state, the design of the landfill remediation and methane barrier and collection systems for the residential buildings adjacent to the landfill and construction engineering.

Public Safety & Transportation Operations Center, Fairfax, VA. Project Manager for the design of a sub-slab methane mitigation system for the new PSTOC and Forensics Facility being build adjacent to the I-66 Landfill. Design involves collection piping to vent potential methane from under the building slabs, a spray-on methane barrier to prevent gas from entering the building and the use of the same material for waterproofing of vertical walls below grade.

Bus Operations Center, Fairfax, VA. Project Manager for the design of a sub-slab methane mitigation system for the new Bus Operations Center that is being built adjacent to the new PSTOC and Forensics Facility which are both adjacent to the I-66 Landfill. Design involves collection piping to vent potential methane from under the building slabs.

Coppin State University, Baltimore City, MD. Project Manager for the design of a sub-slab methane mitigation system for the new Health and Human Services Building which includes a child care center. Design involves perforated collection piping under the floor slabs to vent potential methane from building up working in conjunction with a vapor barrier membrane to retard gas flow through the floor slab.

Other Experience

In his previous work experience, Mr. Kalish served as the Solid Waste Engineer for San Joaquin County in California. His responsibilities involved all aspects of the Solid Waste Industry, including landfill and transfer station operations, environmental monitoring, LFG system operation and maintenance, landfill expansion, and regulatory review.

- **Corral Hollow Sanitary LFG Collection and Control System, Tracy, CA.** Project Manager for the design and construction of LFG collection and control system. Tasks included the development of plans and specifications suitable for bidding, choosing and hiring the construction contractor, construction oversight, and startup of the system.
- **Foothill Sanitary LFG Collection and Control System, Linden, CA.** Project Manager for the design of a LFG collection and control system at the landfill. Tasks included a gas to energy feasibility study, preparation of GCCS design plan because this is an NSPS facility, and preparation of plans and specifications suitable for billing purposes.
- **Foothill Sanitary Landfill Entrance Road Resurfacing, Linden, CA.** Project Manager for the design and construction of a new entrance road for the landfill. Tasks included the development of plans and specifications suitable for bidding and construction oversight. This was a unique project in that Rubberized Asphalt Concrete was utilized, requiring unique design considerations. This was the first project in the County to use Rubberized Asphalt Concrete.
- **North County Recycling Center and Sanitary Landfill, Lodi, CA.** Project Manager for the design and construction of internal road resurfacing at the landfill. Tasks included development of plans and specifications for bidding and construction oversight.
- **Lovelace Materials Recovery Facility and Transfer Station, Manteca, CA.** Project Manager for repair of the landfill tipping floor. Tasks included the development of plans and specifications for bidding and construction oversight. This project was unique due to special concrete design considerations, and the facility was fully operational while work was being performed.
- **Foothill Sanitary Landfill, Linden, CA and North County Sanitary Landfill, Lodi, CA.** Project Manager for the pre-design of new landfill cells. Tasks include surveying and data analysis for site life projections, regulatory review for design parameters,

preparation of preliminary design, cell capacity and projected life calculations based on preliminary design, and preparation of RFP to hire engineering firm to prepare final design package. These projects also included investigations into the feasibility of developing bioreactors at the landfills.

- **Harney Lane Sanitary Landfill, Lodi, CA.** Engineer for the operation and maintenance of a LFG collection and control system. Responsible for maintaining environmental compliance for groundwater, post closure maintenance, surface emissions, and subsurface gas migration. Also responsible for operating and maintaining the existing LFG collection and control system. Investigated the feasibility of a gas to energy project at the landfill.

Publications and Presentations

Kalish, M. “The Application of LEED Design to Solid Waste Transfer Stations.” Presented at the 8th annual Landfill and Landfill Gas Seminar presented by SCS Engineers, Baltimore, MD, April 2010; and 17th annual Landfill and Landfill Gas Seminar presented by SCS Engineers, Richmond and Roanoke, VA, April 2010.

Gornto, M., Kalish, M. “A Healthy Shade of Green.” *Waste Age*, February 2010.

Kalish, M. “A Transfer Station – Soup to Nuts.” SWANA E-Session, May 21, 2008.

Kalish, M. “For Your Consideration.” *Waste Age*, February 2008.

Kalish, M. “Gas Collection and Control Phasing Plans – Avoiding Rebuilding Your System.” Presented at SWANA/Maryland Recycling Coalition annual conference, College Park, MD, June 7, 2007.

Kalish, M. “Design Comparisons Between New and Remodeled Transfer Stations.” Presented at Waste Expo 2007, Atlanta, GA, May 7, 2007.

Kalish, M. “Transfer Station Design Elements.” Presented at the 4th annual Landfill and Landfill Gas Seminar presented by SCS Engineers, Baltimore, MD, May 2006.

Dillah, D., Flick, D., Kalish, M. “Lessons Learned During a Landfill’s 10-Year Struggle to Control Landfill Gas Migration.” WasteCon 2005 conference proceedings, Austin, TX, September 2005.

MICHELLE P. LEONARD

Education

BS – Environmental Studies (with honors), University of California, Berkeley, 1980

Affiliations

Solid Waste Association of North America (SWANA), International Board Secretary;
Recycling and Special Waste Technical Division Past Director; Southern California
Founding Chapter, Board of Directors (2009 to Present)

Past Director, Southern California Waste Management Forum
Past President, Women’s Environmental Council

Professional Experience

Ms. Leonard has nearly 30 years of experience in environmental consulting and project management, with emphasis in solid waste management planning and facilities. She has assisted public and private sector clients in the preparation of solid waste management plans; designed and implemented waste reduction, recycling, and reuse programs; and evaluated existing programs to identify opportunities to reduce, reuse, and recycle solid waste. Ms. Leonard has prepared plans and permits for transfer stations, material recovery facilities, and drop-off and buy-back centers. As part of these projects, she has completed CEQA assessments, facility permit applications, odor and dust control plans, and other support documents. Ms. Leonard has a strong working knowledge of solid waste management regulations and practices, and has presented numerous successful projects to city, county, and state regulators.

Solid Waste Planning

- **Zero Waste Strategic Plan, City of Pasadena, CA.** Project Manager for the Zero Waste Strategic Plan for the City, which includes evaluating existing programs and determining needs, performing a waste characterization study, identifying options to address needs, developing guiding principles, and screening and selecting options for implementation. The project also includes a stakeholder engagement process, including workshops and outreach efforts.
- **Zero Waste Strategic Operations Plan, City of Santa Monica, CA.** Project Manager responsible for preparing a strategic operations plan for the City that evaluates the current conditions, and will recommend policies, programs and infrastructure to reach the City’s goal of zero waste by 2030. The project includes the preparation of a zero waste ordinance, guiding principles, waste characterization and generation projections, and the review and recommendation of options. The plan will also evaluate the impacts on the City’s rate structure, and mechanisms to finance the program.
- **Solid Waste Management Plan, Walla Walla County, WA.** Project Manager responsible for updating the Walla Walla County Solid Waste Management in compliance with the all applicable federal, state and local regulations and guidelines, to meet the solid waste and moderate risk waste management goals and existing and future needs of Walla Walla County

residents and businesses. The project also includes developing the Sudbury Road Landfill Master Plan (LMP) for long-term planning of the site, in conjunction with City staff and the goals of the Solid Waste Management Plan.

- **Solid Waste Management Plan, Benton County, WA.** Project Manager responsible for preparation of an update of the County's Comprehensive solid waste management plan. The project includes waste generation projections, and analysis of the existing and projected needs for waste reduction and recycling, organics, collection, transfer, and disposal. The plan will recommend improvements to the County solid waste program over a 20-year planning period, including an analysis of the rate impacts.
- **Solid Waste Management Plan and Moderate Risk Waste Management Plan, Columbia County, WA.** Project Manager. Prepared an update to the County's solid waste plan, and a new moderate risk (household hazardous waste) plan. The project includes an inventory of existing policies, programs, and facilities, and identification and evaluation of alternatives for implementation. The project also includes a financial analysis of program costs and revenues, and environmental review of the potential impacts of the plans.
- **City of Richland Solid Waste Management Plan.** Completed the Preliminary Draft 2009 *City of Richland Solid Waste Management Plan*. The Plan documents existing waste management policies and programs established and operated by the City. It is the first time the City has prepared its own comprehensive solid waste plan that establishes a waste management framework to guide Richland's solid waste management approach in the years ahead. The plan was prepared in accordance with the Washington Solid Waste Management – Reduction and Recycling Act and follows the recommendations outlined in the Department of Ecology Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions (December 1999). The Plan contains the following sections, Waste Generation, Waste Reduction, Recycling, and Organics; Collection, Transfer, and Disposal; Miscellaneous Wastes; Moderate Risk Waste; and Administration, Enforcement, and Implementation.
- **Lincoln County Moderate Risk Waste Management Plan.** Project Manager for preparation of a new Moderate Risk Waste Management Plan for the County, in compliance with new (2009) requirements. The plan includes an inventory of existing moderate risk waste types, quantities, sources, plans and programs, identification of alternatives for future management, and evaluation of the costs and benefits of the various plan components.
- **Lincoln County Solid Waste Management Plan Update.** The County's solid waste plan was last updated in 1999. The project included preparing a survey that was distributed to eight cities and towns, and to the rural haulers, for input on existing programs, policies and procedures, as well as challenges and opportunities. The County owns and operates a transfer station that was built to serve all of the cities and towns refuse needs. Presently, the facility is underutilized, and the County is considering options for its continued use, including a revised fee structure, privatization, and/or addition of processing capabilities. The future of the facility is one of the primary issues to be addressed in the Plan update.

At the inception of the project, a new SWAC was established, as well as new Interlocal Agreements between the cities and County. The project included regular meetings with the

SWAC, and monthly updates between the consultant and County. The Plan was prepared in compliance with the Ecology Guidelines for the Development of Local Solid Waste Management Plans and Plan Revisions (December 1999), and includes a SEPA Checklist, WUTC Cost Estimate, Implementation Schedule and Funding analysis. The Draft Plan is scheduled for completion in the Fall of 2009.

- **Tribal Solid Waste Advisory Network (TSWAN) Solid Waste Management Plan Template.** Developed an SWMP template to be utilized by TSWAN member tribes in the Northwest states of Washington, Oregon, and Idaho. Member tribes currently maintain solid waste systems that vary dramatically in sophistication, funding, geographic area of service, and population. The template, held in conjunction with training, will be used by individual Tribes to address issues of concern, streamline their systems, identify system solutions and options from a template pick list, and proceed with implementation measures.
- **Island County Solid Waste Operational Assessment and Benchmarking Study, Coupeville, WA.** The goal of this study was to develop data and information that would ensure that the County is providing efficient management of solid waste programs, services, and infrastructure. During the course of the study, we explored possible opportunities for improvements, costs savings, and revenue enhancements.

SCS completed the following analysis and provided recommendations in these areas:

- Operational assessment of current drop-off stations.
 - Assessment of transfer stations.
 - Evaluate additional recycling opportunities.
 - Evaluate new capital investment.
 - Expansion of curbside collection programs.
 - Conduct benchmarking survey.
 - Financial analysis of County program.
- **Solid Waste Management Plan, Mecklenburg County, NC.** Senior Technical Advisor. Contributed to the update of the County's solid waste plan, including the design of high diversion, reduction, reuse and C&D policies and programs. Assisted in the financial impact analysis, diversion estimates, and waste characterization study.
 - **Solid Waste Management Master Plan, Miami-Dade County Department of Solid Waste, Miami-Dade County, FL.** Senior Technical Advisor for preparation of a solid waste master plan for the County that identifies options and improvements to the County's solid waste system, including collection, transfer, and processing. A series of public workshops and meetings have been conducted to identify the preferred options for implementation over the planning period.
 - **Solid Waste Management Plan, Kittitas County, WA.** SCS completed the 2010 Solid Waste Management and Moderate Risk Waste Management Plan update for Kittitas County, Washington. The project includes identification of existing conditions, options for waste reduction, recycling, composting, collection, transfer and disposal. The project includes regular meetings with the County Solid Waste Advisory Committee, and public workshops to

solicit input on the proposed plan. Also prepared a new Moderate Risk Waste Management Plan for the county, in compliance with new (2009) requirements. The plan included an inventory of existing moderate risk waste types, quantities, sources, plans and programs, identification of alternatives for future management, and evaluation of the costs and benefits of the various plan components.

- **Spokane County Solid Waste Management Plan Update, Spokane County and the City of Spokane, WA.** Project Director. Spokane County is home to almost 500,000 residents and is served by a solid waste system that consists of public and private operations. The Spokane Solid Waste Management System, a department of the City of Spokane, operates two transfer stations, a waste-to-energy plant, and collection service for City residents. The remaining cities and county unincorporated areas are served by private franchised haulers who utilize the Systems facilities. Update of all elements of the County's solid waste plan, with particular focus on infrastructure, 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.
- **City of Rancho Palos Verdes AB 939 Programs, Rancho Palos Verdes, CA.** Project Director. Provides annual solid waste management services. Work includes a series of projects intended to increase the City's diversion, including expansion of the City's multi-family recycling program. As part of this project, conducted workshops at a number of homeowner association groups to introduce the new program, and to help managers implement the recycling methods. Also conducted a workshop for haulers and contractors on the City's Construction and Demolition debris recycling program, and participated in a variety of other public education and outreach programs.
- **City of Irvine, Zero Waste Technical Assistance, Irvine, CA.** Project Director. This project originated in 2004 to include conducting waste audits and providing information to businesses on recycling and waste reduction. The project was later expanded to include outreach and education to schools and other city facilities, zero waste program for restaurants, preparation of a construction and demolition debris ordinance, preparation and negotiations for a semi-exclusive solid waste franchise agreement, and recycling programs for special events and public venues.
- **City of Lakewood, CA, Solid Waste Generation Study and AB 939 Support Services.** Project Director responsible for City of Lakewood Environmental Programs. In 2000, SCS was selected to prepare a conducting a solid waste generation study in support of a new base year modification and compliance order, and provide AB 939 support services. Based on the success of that project, SCS has provided ongoing AB 939 support services to the City, including disposal reporting system review and analysis, commercial waste audits, public education and outreach, Used Oil Grant administration, Annual Report preparation, and design and implementation of special recycling events.
- **CalTech Waste Audit and Waste Characterization Study, Pasadena, CA. Project Manager.** Conducted a waste audit and waste characterization study at the university to determine the types, quantities, and sources of compostables in the waste stream, material suitable for incineration, and the sources and potential reusability of packaging in the campus waste

stream. A total of 66 samples were collected from 11 generator groups, and sorted according to 27 different material types. The results of the study were also used to evaluate potential costs and savings from the implementation of new and/or expanded recycling programs.

- **City of Baldwin Park, CA, Integrated Waste Management Programs.** Project Director responsible for providing services to the City for compliance with AB 939. In this capacity, SCS completed a variety of tasks, including preparation of a waste generation study, design, and implementation of public outreach materials, conducting backyard composting workshops, participating in franchise negotiations and compliance issues, review of rate requests, residential and commercial recycling program implementation, and program monitoring and reporting.
- **City of Rolling Hills, CA, AB 939 Monitoring and Reporting.** Project Manager responsible for preparing the City's Annual Report for submission to CalRecycle. In support of this work, Ms. Leonard reviewed County Disposal Reporting System reports, traces origin reports, and provides assistance for any necessary changes to these numbers. She also assisted the City in successfully revising their base year, and presented the report before the CIWMB.
- **City of Santa Clarita, CA, Waste Generation Study and Disposal Reporting System Review.** Project Manager responsible for conducting a waste generation study for the City to establish the current and potential recycling rate in the City. As part of the study, SCS completed on-site waste assessments at the City's largest businesses, identified diversion from City programs, and other activities in the City that divert solid waste, including recycling, composting, and source reduction. Also, SCS also completed a comprehensive review and evaluation of the City's 1999 and 2000 DRS reports, after a 65,000-ton spike in disposal was reported in 2000. The project included review of hauler reports and comparison of this data with landfill records. A report to Council was prepared, with recommendations to correct previous errors and avoid future discrepancies.
- **Los Angeles County, CA, Department of Public Works, Countywide Yard Waste Program.** Project Manager responsible for a 2-year project involving the Los Angeles County Department of Public Works Countywide Yard Waste Program. This project was a 2-year effort to design, manage, and implement the Countywide Yard Waste Program. Work involved providing a broad range of public education, outreach, and training related to yard waste composting, worm composting, water-wise gardening, and grass recycling. The project also incorporates a statistical survey of program awareness and efficacy, and evaluation and monitoring of program results.
- **Los Angeles County, CA, Department of Public Works, Recycling Program Study.** Project Director responsible for development of the ACCESS database of over 1,400 County departments and facilities in support of the County's recycling program. SCS is the prime contractor for this project, which involves developing an ACCESS database of over 1,400 Los Angeles County departments and facilities. The information is used to identify and maintain a list of existing recycling efforts. The project also involved providing recommendations for the expansion of existing or new recycling programs for all County facilities/departments.

- **Los Angeles County, CA, New Base Year Generation Study.** Project Director responsible for conducting the Los Angeles County New Base Year Generation Study. Ms. Leonard oversaw preparation of two waste generation studies to potentially establish a new base year of either 2005 or 2006 for the unincorporated area of Los Angeles County. As part of the project, a waste characterization of residential and commercial generators was also conducted. Over 1,000 surveys were distributed to residents, businesses, haulers, and facility operators to determine diversion activities throughout the County. Results from the surveys of grass recycling and organics, inert materials, materials recovery facilities and transfer stations, scrap metal and electronics will be calculated to determine the optimum new base year for the County. The project will be completed in Spring 2008.
- **Sonoma County, California, Solid Waste Management Alternatives Analysis.** Project Manager responsible for evaluating solid waste management alternatives for the Sonoma County Solid Waste Management Alternatives Analysis Project. SCS worked with the County and a 35-member Local Task Force to identify and select alternatives for disposal of the County's waste, following closure of its landfill in 2015. The project included an analysis of the existing solid waste management system, projection of future demographics and solid waste generation, review and evaluation of alternatives, and completion of a strategy that may include options for disposal, alternative technologies, diversion programs, and policies.

Waste Characterization Studies

- **Athens Services, Industry, CA, Waste Composition Study, Athens Services, Industry, CA.** Project Director responsible for conducting a number of waste composition studies at the Athens Services MRF/Transfer Station in Los Angeles County. The studies were conducted in accordance with CIWMB protocol, and included preparation of a sampling plan, sorting of waste into 57 different categories, and preparation of report findings. The results of the analysis were used to determine the recycling rate or recyclable portion of the incoming waste stream from a number of municipalities.
- **Los Angeles County Sanitation District, Waste Characterization Study.** Project Director responsible for conducting a waste characterization study for the Downey Area Recycling and Transfer Facility (DART) in Los Angeles, California. Numerous waste stream analyses were conducted of cities serviced by the facility. The waste streams from the commercial, industrial, and residential sectors were typically sampled for quantities and types of waste and recyclables, and characterizations are established for each individual sector. The information was used in the design of facilities and programs for collection and processing.
- **Orange County, California, Waste Characterization Study.** Project Director responsible for conducting a self-haul waste characterization study in Orange County, California. Waste sampling and analysis was conducted at all three active landfills, and data were 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 in Winter 2004.

- **Santa Barbara County, California, Waste Characterization Study.** Project Director responsible for conducting a waste characterization study in 2003. The 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.
- **State of California, Statewide Generator Study.** Project Director responsible for SCS is conducting the waste generator task of the statewide waste characterization study. The study characterized waste generated, both disposed and diverted, from 10 commercial generators that are major sources of waste in the state. The study consisted of field sampling, sorting, and quantification, used to establish a comprehensive waste generation for each business type.

Conversion Technology

- **Conversion Technology Study, City of Glendale, CA.** Project Manager. The City of Glendale is taking an active role to find a more sustainable solution to process the City's disposed municipal solid waste (MSW). The project includes the initial evaluation of the technologies, establishing a short-list of vendors/technologies from whom to receive more in-depth information, and identification of a site for the potential development of a facility. It is anticipated the first phase of the project will be completed by the end of 2011 or early 2012.
- **Conversion Technology Study, County of San Bernardino, CA.** Project Manager responsible for conducting an in-depth analysis of the feasibility of developing a solid waste conversion facility in the county. The project includes a waste characterization study to determine the feedstock, an evaluation of vendor technologies, including an independent engineering analysis, recommendations of vendors to solicit proposal from, a siting study to identify potential locations of a facility, and coordination with other County agencies and stakeholders. The project will be completed within one year.

Facility Permitting and Compliance

- **Interior Removal Specialist, Inc. (IRS), Permitting for Construction, Demolition, and Inert Debris Processing and Transfer Facility, California.** Project Manager responsible for preparing all documents and assisting IRS in permitting a construction, demolition, and inert debris processing and transfer facility. The facility can handle up to 3,000 tons per day (tpd) of construction and demolition materials, and processes the materials to divert an average of 75 to 85 percent of the incoming waste. Facility improvements include a sorting line, new scale, baler, and other support operations. As part of the project, SCS assisted in preparing the application for a revised Conditional Use Permit, CEQA analysis, and hazardous materials permits.
- **Norwalk Industries/Ecology Auto Parts Facilities, Santa Fe Springs, CA, Permits for Transfer Station and Green Waste Chipping and Grinding Facility.** Project Manager responsible for preparation of revised permits for transfer station and green waste chipping and grinding facility, Norwalk Industries/Ecology Auto Parts Facilities, Santa Fe Springs, CA. The existing transfer station will be expanded to handle up to 100 tpd of municipal solid

waste, and the green waste operation will be expanded to process up to 500 tpd. SCS has prepared the facility plans for both operations, and an Odor Management Plan for the Green Waste facility.

- **Pebble Beach Municipal Landfill, Five-Year Review and Report on Disposal Site Information.** Project Manager responsible for preparing a Five-Year Permit Review and a revised Report of Disposal Site Information for the Pebble Beach municipal solid waste landfill on Santa Catalina Island, including new site plan, facility operations plans. The project also included revisions to the Closure and Post-Closure Maintenance Plans.
- **Reliance Landfill, Disposal Site Information and Waste Discharge Reports and Application for Finding of Conformance, Irwindale, CA.** Project Manager responsible for preparation of Report of Disposal Site Information, Report of Waste Discharge, and application for the Finding of Conformance for Reliance Landfill, an inert, unclassified facility located in Irwindale. The project involved significant negotiations with the regulatory agencies, and in-depth analyses and recommendations regarding the facility operations and plans. The permit was subsequently issued by the Local Enforcement Agency, with concurrence from the California Integrated Waste Management Board.
- **Two Harbors Landfill, Santa Catalina Island, CA, Preliminary Closure and Post-Closure Maintenance Plans.** Project Manager responsible for preparing the Preliminary Closure and Post-Closure Maintenance Plans for Two Harbors Landfill on Santa Catalina Island. The project included coordinating the development of grading, drainage, and revegetation plans, and establishing the availability and compatibility of suitable on-site cover material. Also responsible for establishing requests for exemptions from requirements for groundwater, leachate, and methane gas systems.

MARC J. ROGOFF, PH.D.

Education

M.B.A., University of Tampa, Finance, 1986

Ph.D., Michigan State University, Resource Development, 1979

M.S., Cornell University, Soil Science, 1975

B.S., Cornell University, Environmental Science, 1973

Professional Licenses

Certified Environmental Professional, CEP No. 322

Qualified Environmental Professional, QEP, No. 4970062

Professional Affiliations

American Public Works Association

Chair, Solid Waste Management Committee, 2005-2008
Sustainability Committee

Executive Committee, West Florida Branch 2006-2008
Executive Board, West Coast Branch, 2005-2008

Recycle Florida Today

Solid Waste Association of North America

Director, Florida Sunshine Chapter, 2002-2008

National Professional Certification Board, 2000-2006

Director, Collection and Transfer Technical Division, 2006-2009

Waste-to-Energy Technical Division Director, 1984-2001

International Corporate Director (Consulting), 1993-1999, 2007-2010

International Board, Collection and Transfer Division Representative, 2010-

Technical Program Co-Chair, NAWTEC, 1996-2001

Technical Newsletter Editor, "Talking Trash", Florida Sunshine Chapter, 1993-2001

City of St. Petersburg, Florida, Brownfields Citizens Task Force, 1998-2001

Hillsborough County, Florida, Brownfields Citizens Task Force, 1998-2001

National Advisory Council on Environmental Policy and Technology, U.S.

Environmental Protection Agency, 2000-2003

Honors and Awards

Meritorious Service Award, Florida West Coast Branch, APWA, 2007

Florida Sunshine Chapter Solid Waste Association of North America
Professional Achievement Award, 2006
Outstanding Contribution, 1992, 1993, 1999
Distinguished Service Award, 1991
Professional Achievement Award, Solid Waste Association of North America, 1991
Who's Who in America, 1998

Professional Experience

Dr. Rogoff has over 25 years of experience in solid waste management as a public agency manager and consultant. He has managed more than 200 consulting assignments across the United States on literally all facets of solid waste management including, waste collection studies, facility feasibility assessments, facility site selection, property acquisition, environmental permitting, operation plan development, solid waste facility benchmarking; ordinance development, solid waste plans, financial assessments, rate studies/audits, development of construction procurement documents, bid and RFP evaluation, contract negotiation, and bond financings.

Dr. Rogoff has directed engineer's feasibility reports for nearly two dozen public works projects totaling more than \$1.2 billion in project financings. He has interacted with bond rating agencies, financial advisors, insurance underwriters and investment bankers involved in these financings. His efforts have included the development of detailed spreadsheet rate models establishing the financial feasibility of each projects, long-term economic forecasts, and projected rate impact upon project users and customers. During the course of his governmental and consulting career, Dr. Rogoff has directed or conducted more than two dozen solid waste system rate analyses and delivered testimony before city councils and county commissions regarding their impact on customers. Example project experience includes:

Waste- To-Energy

Dr. Rogoff has extensive experience in the development of waste-to-energy projects from the initial feasibility to commercial operations monitoring. He has conducted bond feasibility studies, operations assessments, and provided recommendation on key procurement issues. Dr. Rogoff has conducted feasibility studies on more than 50 facilities worldwide. The following projects are illustrative of the breadth of his experience.

Abu Dhabi National Energy Company, Waste-to-Energy Pre-Feasibility Project, Task Manager for evaluation of proposed technologies, environmental considerations for plant operations, and Pro Forma modeling of project revenues and expenses. **This project is now proceeding into a full feasibility analysis.**

Synergy Renewables, Harlingen, TX, Task Manager, Synergy Renewables is proposing to design, construct and operate a waste-to-energy plant that will process the City's municipal solid waste into waste gases with an ash residual by-product. The City has retained SCS Engineers to provide an independent assessment of the proposed waste-to-energy (WTE) plant and the technical and economic claims made by Synergy as well as commenting on the proposed Waste Supply Agreement.

Evaluation of SRP Technology Gasification Technology, Task Manager for development of a Pro forma model to project revenues and expenses. This technology is based around the process of gasification of biomass to produce syngas, which is then converted to hydrocarbon or alcohol fuels using the Fisher-Tropsch Synthesis.

Terrabon MixAlco, Houston, TX, Feasibility Assessment of Biomass to Fuels Project, Task Manager for assessment of financial implications of proposed facility.

Lockheed-Martin, Plasma Arc Gasification Feasibility Project. Task Manager for development of a Pro forma economic model evaluating the feasibility of implementing a plasma arc gasification project for solid waste generated at the firm's production facility for the C-130J Super Hercules transport and the F-22 Raptor air dominance fighter.

City of Norfolk, VA, Development of Pro forma Modeling of Mass Burn and Plasma Arc Gasification Alternatives. Task Manager for development of a Pro forma Model to evaluate the financial alternatives of implementation of conventional mass burn and alternative plasma arc gasification facilities for the City and surrounding municipalities in southwest Virginia.

Confidential Client, Evaluation of CR3 Autoclave Technology, Task Manager for development of a economic Pro forma Model to evaluate the financial viability and feasibility of different sized plants using the CR3 autoclave technology. As part of this analysis, cash flow analysis, debt service, and Net Present Value (NPV) were assessed.

Hamilton County Alternative Technologies Committee, Alternative Thermal WTE Technologies, Task Manager for development of a PowerPoint presentation to technical committee members on alternative thermal WTE technologies.

Waste-to-Energy Feasibility Assessment, Republic of the Marshall Islands, Project Manager for technology assessment and economic feasibility of a energy from waste facility to provide both power and landfill disposal needs for the island.

City of Marion, Iowa, Economic Assessment of Plasma Arc Gasification, Task Manager for development of a pro forma economic model to analyze operational and capital costs of a 525 tpd plasma arc gasification facility.

Borough and City of Juneau, Alaska, Plasma Arc Gasification and WTE Feasibility Assessment, Project Manager for technology assessment of a proposed plasma arc gasification and WTE alternatives for disposal of 100 tpd MSW and biosolids.

America Samoa Power Authority (ASPA), Waste to Energy Feasibility Assessment. Project Manager for comprehensive assessment of waste-to-energy opportunities for 150 ton per day facility including assessment of feasible technologies, market assessment, procurement options, and Pro Forma economic analysis.

Conduit Capital Partners, New York, Technology Assessment of Proposed Andres WTE Project, Project Manager for technology assessment and pro forma economic modeling of proposed WTE project.

South Hampton Roads Planning Commission, Virginia, Master Plan Development and System Assessment, Task Manager for development of a pro form economic model to analyze 30 year impacts of expanded development of a regional landfill, WTE, and development of individual eight municipal programs.

Pinellas County, Florida, Expansion Assessment. Project Manager for assessment of expansion needs for the Pinellas County Waste-to-Energy Facility.

Orange County, Florida, Master Plan Technology Assessment. Task Manager of a waste-to-energy technology assessment as a component of a solid waste master plan for Orange County, Florida. This assessment evaluated current viability of the incineration and energy recovery technologies, current capital and operating costs, as well as implementation hurdles.

Multiple Counties and Cities, Waste-to-Energy Ash Management & Recycling. Dr. Rogoff is a national expert in waste-to-energy ash management and recycling. As Chair of SWANA's Waste- To-Energy Committee, he managed three bi-annual surveys of ash recycling in the U.S. He has developed ash management plans for the City of Tampa and Pinellas County and served as Project Manager for a feasibility study of a privatized ash recycling facility serving the Connecticut Resource Recovery Authority.

Multiple Counties in Mississippi, Resource Recovery Feasibility Study. Project Manager for a ten-county, resource recovery feasibility study for the Mississippi Department of Economic and Community Development and Division of Energy and Transportation. This study included an evaluation of existing and proposed transfer facilities as well as long-hauling options.

Hillsborough County, Florida, Siting and Implementation of 1,200 tpd Mass Burn Facility. Dr. Rogoff directed the siting and implementation of the 1,200 ton per day (tpd), mass burn owned by Hillsborough County, Florida. Project responsibilities included: detailed siting studies leading up to the purchase of a 360 acre, government campus (waste-to-energy facility, wastewater plant, and ancillary county offices); rezoning and land use studies; environmental permitting under Florida's Electrical Power Plant Siting Act; drafting of solid waste flow control and solid waste assessment ordinance; negotiation of design, construction and service agreements with plant operator; testimony in bond financing and bond validation hearings; and construction drawdown payment.

Pinellas County, Florida, Engineer of Record Services. Project Director of a multi-year, engineer of record consulting contract with Pinellas County, Florida for their 3,200 tpd, mass burn facility. Projects included: renegotiation of the 30 year energy supply contract with Florida Power for increased revenues; system expansion feasibility report; implementation of electrical power plant siting permit application related with their Clean Air Act retrofit; design of a storm water and plant water use program; scale house expansion; redesign of ash and metals recovery building; assistance to County team for renegotiation of plant service agreement; managing an ash recycling demonstration project; preparation of two consulting engineer's reports resulting in issuance of \$200 million of bond financings; and annual inspection/audit of plant for bondholders.

Broward County, Florida, Independent Engineering Services. Project Director for a multi year, independent engineering services for Broward County, Florida. Responsible for periodic construction observation reports during construction of the two 2,250 tpd mass burn facilities. Also served as independent engineer during plant operations providing on call independent "arbitration like" reviews of contractor requested change orders and reviews of reports issued by engineer of record.

Solid Waste Authority of Palm Beach County, Engineer of Record Services. Project Director of multi-year engineer of record services for 3,200 tpd refuse derived fuel plant owned by the Solid Waste Authority of Palm Beach County. Projects included: design of entrance facility and scale house; arbitration assistance on several unresolved change orders with service operator; and completion of annual inspection/audit of plant for bondholders.

City of Tampa, Florida, Engineer of Record Contract. Project Director a multi-year, engineer of record consulting contract with City of Tampa, Florida for their 1,000 tpd, mass burn facility. Projects included: renegotiation of the energy supply contract with Tampa Electric Company for increased revenues; system expansion feasibility report; scale house expansion; ash recycling studies; and completion of annual inspection/audit of plant for bondholders.

City of Huntsville, Alabama, Engineer of Record Contract. Project Director a multi-year, engineer of record consulting contract with City of Huntsville, Alabama for their 690 tpd, mass burn facility. Projects included: completion of annual inspection/audit of plant for bondholders; review and approval of performance incentive plan for plant operator; and arbitration assistance on several unresolved change orders with service operator.

City of Key West, Florida, Plant Performance Evaluation. Project Director for evaluation of plant performance of 250 tpd, mass burn facility owned by the City of Key West, Florida.

Lake County Florida, Engineer of Record Consulting Contract. Project Director a multi-year, engineer of record consulting contract with Lake County, Florida for their 528 tpd, mass burn facility. Projects included: completion of annual inspection/audit of plant for bondholders; arbitration assistance on several unresolved change orders with service operator; and completed consulting engineers report for plant refinancing.

Connecticut Resource Recovery Authority, Privatized Ash Recycling Assessment. Project Manager for review and assessment of a privatized ash recycling facility to serve four waste-to-energy facilities owned by the Connecticut Resource Recovery Authority.

Solid Waste Association of North America. Dr. Rogoff served as Technical Director for SWANA's Waste-to-Energy Technical Division from 1984 to 2001. During the course of his tenure, he visited more than 30 waste-to-energy facilities in the United States for evaluation of SWANA's Excellence Awards Applications. He also served on joint association (SWANA, ASME, and MWMA) technical committees responsible for development of 12 national waste-to-energy annual conferences.

Solid Waste Rate Studies

Dr. Rogoff has extensive experiences in completing financial studies and analyses of public works systems, including solid waste systems, water and wastewater utilities, park and recreation facilities, military base operations, and municipal street light programs. He has developed rate models that allow solid waste providers to evaluate variable cost of service rates and determination of appropriate rates of return for franchised or privatized operations. He has worked with a variety of clients to develop changes in solid waste collection operations to improve revenue funding and budgetary goals.

Escambia County, Florida, ECUA Valuation Study. Project Manager for analysis of ECUA collection system and to develop an economic value of fixed assets, rolling stock, and customer accounts.

Escambia County, Florida, Landfill Valuation Study. Project Director/Manager for conducting an economic valuation study analyzing the long-term income stream of the facility as well as fixed assets (land, buildings, and facilities).

Island County, Washington. Operational Assessment and Benchmarking Study. Project Manager of an assessment of County's solid Waste transfer system. Study involved benchmarking of staffing and financial areas (operations costs, required reserves) with similar facilities nationally

For more than 100 projects across the United States, Dr. Rogoff has provided comprehensive financial studies and analyses services including:

- Financial Planning
- Feasibility Studies
- Capital Equipment Needs Projections
- Operational Efficiency Evaluations Asset Valuation
- Annual Budgeting
- Cost of Service Studies
- Benchmarking Assessments
- Non-Ad Valorem Assessment Program
- Renewal and Replacement Funds
- Financial Assurance for Waste Facility Closures
- Rate Structure Design and Evaluation
- Collection and Tipping Fee Rates
- Rate Modeling
- Revenue Financing Strategies
- Independent Engineers Reports for Bond Financing
- Review of Privatization Opportunities

Recent rate and cost of service studies include the following:

- City/Borough of Juneau, Alaska

- City of Lakeland, Florida
- Matanuska- Susitna Borough, Alaska
- City of Pasadena, California
- City of Brooksville, Florida
- City of Dunedin, Florida
- City of Lakeland, Florida
- City of Madeira Beach, Florida
- City of Pensacola, Florida
- City of Port Arthur, Florida
- City of Santa Maria, California
- City of Springfield, MA
- Charlotte County, Florida
- Escambia County, Florida
- Imperial County, California
- Island County, Washington
- Oklahoma Environmental Management Authority, Oklahoma
- Orange County, Florida
- Southside Hampton Roads, Virginia

Independent Engineer for Bond Financing and Annual Certifications

Dr. Rogoff has been actively involved in conducting Independent Consulting Engineer’s Reports and Certifications for solid waste projects including landfills, transfer stations, collection systems, recycling/composting facilities, landfill gas-to-energy, and waste-to-energy facilities. Collectively, these evaluations and reports have been responsible for the bond/equity financing and construction of more than \$1.1 billion in solid waste projects across the nation over the past 25 years. Most recently, SCS served as Independent Consulting Engineer for the Cumberland County Improvement Authority in its issuance of \$22,780,000 in Solid Waste System Revenue Bonds, Series 2009.

Client	Bond Issue	Size (\$)
Broward County, FL	Resource Recovery Revenue Bonds (WTE)	524,000,000
Charlotte County, FL	Solid Waste Disposal System Revenue Bonds (Landfill)	11,295,000
	Solid Waste Disposal System Revenue Bonds (Landfill)	9,190,000
Hillsborough County, FL	Solid Waste and Resource Recovery Revenue Bonds (WTE)	144,045,000
Lake County, FL	Industrial Development and Solid Waste Refunding Bonds (WTE)	83,725,000
Orange County, FL	Solid Waste Facility Revenue Bonds (Landfill)	32,435,000
Pinellas County, FL	Solid Waste System Revenue Bonds (WTE)	129,360,000

	Resource Recovery Revenue Bonds (WTE)	83,250,000
Sarasota County, FL	Solid Waste System Refunding Bonds (Landfill)	15,500,000
Cumberland County, NJ	Solid Waste System Revenue Bonds (Landfill)	22,780,000
Spokane, WA	Solid Waste System Revenue Bonds (WTE)	105,250,000
Totals		\$1,160,830,000

Additionally, across the nation, he has served as Independent Consulting Engineer for 25 of the largest solid waste agencies in the U.S. helping provide ongoing annual certifications with respect to:

- Financial Planning
- Feasibility Studies
- Capital Equipment Needs Projections
- Operational Efficiency Evaluations Asset Valuation
- Annual Budgeting (annual income and operating expenses)
- Verification of Landfill Life Capacity
- Tier II LFG Reports and Landfill Gas Testing
- Title V Fee and other permit reports to State agencies
- Cost of Service Studies
- Benchmarking Assessments
- Debt Service Coverage
- Assessment of Non-Ad Valorem Assessment Program
- Renewal and Replacement Fund Balances
- Financial Assurance for Waste Facility Closures
- Rate Structure Design and Evaluation
- Collection and Tipping Fee Rates
- Rate Modeling
- Revenue Financing Strategies
- Groundwater Monitoring Reports
- Annual Bondholder Reports

International Solid Waste Studies

Abu Dhabi National Energy Company, Waste-to-Energy Pre-Feasibility Project, Task Manager for evaluation of proposed technologies, environmental considerations for plant operations, and Pro Forma modeling of project revenues and expenses. **This project is now proceeding into a full feasibility analysis.**

Solid Waste Collection Efficiency Study, Ciudad Juárez, Mexico, Promotora Ambiental, S.A.B. de C.V. (PASA) Project Manager for assessment of the integrated solid waste collection program

provided by PASA in the City of Juarez, Mexico. Provided detailed assessment of opportunities for cost savings.

Waste to Energy Feasibility Assessment, Republic of the Marshall Islands, Project Manager for technology assessment and economic feasibility of a energy from waste facility to provide both power and landfill disposal needs for the island.

Waste Characterization and Waste to Energy Feasibility Assessment, American Samoa Power Authority, Task Manager Project Manager for technology assessment and economic feasibility of a energy from waste facility to provide both power and landfill disposal needs for the island.

Conduit Capital Partners, New York, Technology Assessment of Proposed Andres WTE Project, Project Manager for technology assessment and pro forma economic modeling of proposed WTE project.

Review of Guatemala City Solid Waste Management System. Dr. Rogoff directed an analysis of solid waste collection and disposal practices in Metro Guatemala City. This work is now proceeding onto an evaluation of a privatized landfill disposal or transfer station option. A fatal flaw analysis is being undertaken of proposed landfill disposal sites.

Waste-to-Energy Feasibility Study, Ponce, Puerto Rico. Project Director for evaluation of Waste-to-Energy options for multi-national cement manufacturer desiring to provide alternative energy for Ponce facility. The analysis took into account waste flow, permitting, and infrastructure needs. Reviewed the solid waste flow control needs, analyzed preliminary financial feasibility, and developed a preliminary site plan for a proposed location for the project.

Waste-to-Energy Feasibility Analysis, Guantanamo Bay Naval Air Station, Cuba. Conducted an analysis of waste-to-energy options to dispose of solid waste stream for Naval Air Station. Developed pro-forma economic analysis detailing construction, operation, and life cycle costs for 30 tpd facility with energy recovery.

Publications and Presentations

Books

Rogoff, Marc J. and Francois Screve, Waste-to-Energy Technologies and Project Implementation, Second Edition.(Oxford, U.K., William Andrew/Elsevier, 2011).

Talking Trash: A Collection of Stories About the Wonderful World of Solid Waste (Kansas City, MO, American Public Works Association, 2010)

Solid Waste Pocket Guide: Facts, Figures, Conversions and Other Handy Information for the Solid Waste Professional (Kansas City, MO, American Public Works Association, 2008).

Analyzing Cost of Service and Designing Rates for Solid Waste Agencies (Kansas City, MO, American Public Works Association, 2007).

Implementing Municipal Solid Waste Recycling Programs. (Park Ridge, New Jersey: Noyes

Publications, 1994).

"Municipal Solid Waste Combustion Systems" in Principles of Integrated Solid Waste Management. Chapter 7: 333-403 (Annapolis, Maryland: American Academy of Environmental Engineers, 1999).

How to Implement Waste-to-Energy Projects. (Park Ridge, New Jersey: Noyes Publications, 1987).

Expert Witness

"Expert Witness for Cedar Rapids/Linn County Solid Waste Agency", Marion County Landfill litigation assistance to Ahlers and Cooney, P.C.

"Expert Witness Testimony for Rolite, Inc. v. Wheelabrator Environmental Systems and WMX Technologies, Inc., United States District Court for the Eastern District of Pennsylvania, Civil Action No. 94-5894". Prepared for Federal District Court. July 1999.

Professional Juried Awards

Charlotte County, Florida, Solid Waste Collection System Bronze Excellence Award Competition, Solid Waste Association of North America, 2011.

City of Lakeland, Florida, Environmental Project of the Year: EZCan Automated Collection System, West Coast Branch, American Public Works Association, 2011.

Escambia County, Florida, Recycling Education Bronze Excellence Award Competition, Solid Waste Association of North America, 2010.

Charlotte County, Florida, Solid Waste Management System Gold Excellence Award Competition, Solid Waste Association of North America, 2006.

Pinellas County, Florida Refuse-to-Energy Facility, Silver Award Excellence Award Competition, Solid Waste Association of North America, 2001.

Zemel Road Landfill Design, Charlotte County, Florida, Honorable Mention Award in the 2000 Florida Institute of Consulting Engineers Engineering Excellence Award Competition

Pinellas County Solid Waste System, Florida, Integrated System Gold Excellence Award Competition, Solid Waste Association of North America, 2000.

Charlotte County Zemel Road Landfill, Florida, Landfill Gold Excellence Award Competition, Solid Waste Association of North America, 1999.

Publications

Bruce Clark and Marc J. Rogoff, "Turning Your Landfill Into a Solar Power Factory," *Waste Advantage Magazine*, February 2012.

Marc J. Rogoff, Bruce Clark, and Jose Davila, “Ask the Right Questions First,” *Waste Advantage Magazine*, December, 2011.

Bruce Clark, Marc J. Rogoff and Gregory McCarron, “Emerging Waste Conversion Technology for a “Greener” Environmental Footprint,” *Waste Age*, April 2011.

Marc J. Rogoff, “Lakeland Moves Ahead With Automated Collection and PAYT Program,” *Talking Trash*, Spring, 2011.

Marc J. Rogoff, “Do Your Ordinances and Franchise Agreements Deserve a Tune-Up?,” *Talking Trash*, Spring, 2011.

Marc J. Rogoff and Shani Kruljac, “Implementing a Solid Waste Franchise System,” *APWA Reporter*, March 2011.

Marc J. Rogoff and David Bonvouloir, “Islands in the Waste Stream,” *Waste Age*, February 2011.

Marc J. Rogoff and Donald Ross, “Automated Waste Collection, Analysis of Advantages and Disadvantages,” *APWA Reporter*, March 2010.

Marc J. Rogoff, Michelle Nicholls, and Raymond Dever, “Solid Waste Management Trends 2010”, *APWA Reporter*, March 2010.

Lisa Skumatz and Marc J. Rogoff, “Pay and You Throw Now: Increase Recycling and Decrease Greenhouse Gases, Quickly, Fairly and Cost-Effectively”, *APWA Reporter*, March 2010.

Marc J. Rogoff, Michelle M. Nicholls, Michael Keyser, and Petero Lafaele, “WTE in American Samoa: Developing and Planning a Plant”, *Waste Management World*, November-December 2009.

Marc J. Rogoff, Bruce Clark, James Howes, and Jerry Moore, “Recycling a MRF”, *Recycling Product News*, September 2009.

Marc J. Rogoff and Robert Gardner, “Cost Escalation for Operating Contracts”, *SCS Technical Bulletin*, June 2009.

Marc J. Rogoff and Robert Gardner, “Tips for Operating Agencies in Difficult Economic Times”, *SCS Technical Bulletin*, June 2009.

Marc J. Rogoff, Allison Trulock, and Bruce Clark, “Efficiency and Cost Effectiveness Are the Names of the Game for Solid Waste Collection Programs, *MSW Management*, April 2009.

Marc J. Rogoff, Bruce Clark, and Amanda Moore, “Solid Waste Déjà vu – Waste-to-Energy Technologies Break New Ground”, *APWA Reporter*, March 2009.

Marc J. Rogoff and Amanda Moore, “Recent Twists and Turns in Solid Waste Flow Control”, *APWA Reporter*, March 2009.

Melvin (Mel) P. Paret
Principal/Vice President

(703) 516-9220
mparet@msadc.com

As Principal of MSA, Mel has 34 years of consulting experience with local governments and municipal utilities - directing many projects with complex management, financial and/or operational issues. Mel worked for 20 years with KPMG Consulting and served as the company's national resource for municipal utility management consulting. Throughout his career, he has served many municipal solid waste clients on major consulting and systems projects, including Washington D.C., Indianapolis, Miami-Dade County, Phoenix, Fairfax County, Dallas and Tidewater Virginia. His experience includes full range of solid waste management practices including waste-to-energy, landfill, recycling, collection operations and customer services. He has also advised on private contract and franchise strategies and operations as well as permitting and enforcement regulatory programs. For DC government, Mel has supported the Department of Public Works (Solid Waste Administration) with a range of management, financial and information systems consulting work. A summary of selected project experience is summarized below.

- District of Columbia Solid Waste Management Administration. Responsible for management and technical consulting services to improve operations and finances of collections, recycling and disposal programs. Developed and support Trakster software application for field operations and customer services.
- Fairfax County, Va. Conducted a solid waste rate study to support the financial and operational integrity of the County's residential collection and recycling operations. Analyzed potential of automated collection operations and equipment operations, maintenance & replacement costs and replacement schedules. Analyzed business processes & financial transactions related to citizen/small commercial customers at the County waste-to-energy and transfer station facilities.
- City of Phoenix. Served as lead business analyst and software designer for integrated solid waste management system (SWIIS) incorporating custom applications for customer services and contractor performance tracking as well as installation of a new scale system.
- Loudoun County, Va. Conducted solid waste financial analyses to assess revenues, costs and landfill capacity to assist the County in setting 'contract' fees for major haulers and other disposal fees at the County landfill. Development of financial projection software using a range of material, cost, capacity and fee inputs to project the financial condition of the solid waste program. (conducted annually for a period of 5 years).
- Long-range strategic analysis of U.S. Navy's Norfolk refuse derived fuel (RDF) power plant (2,000 tons per day). Evaluated existing costs, risks, and operations relative to several options involving transfer, privatizing, and closing the facility. Participated in the negotiations and transfer of this facility to the regional solid waste authority.
- Solid waste management consulting for the City of Indianapolis. For over 10 years, Mr. Paret managed KPMG's consulting work with the City including financial/institutional analysis of the City's 2,200 ton per day resource recovery facility, expansion of the City's

collection and disposal districts, development of tipping and user fees, and evaluation of the City's own collection and contractor operations.

- Charlotte County (FL) solid waste franchise. Conducted cost of service/rate consulting services for franchising a large private hauler providing residential collection operations in this County. Provided testimony before County Board and facilitated negotiations with County staff, consultant and attorneys.
- Activity-based costing for Fairfax County (Virginia) integrated waste management program. Evaluated costs and service levels for each component of the County's program including collection, waste-to-energy, landfill, recycling, and transfer operations. Costs were then benchmarked against industry and other jurisdictions.
- Fee/billing systems for Charleston County (SC) solid waste program. A number of fee and tax alternatives were developed to support the financing of the County's resource recovery facility and landfill program. The evaluation included revenues from the US Navy energy purchases as well as commercial waste generation, proposed fee structure, and tax assessment data to implement the fees via the County tax bill.
- Solid waste enterprise fund/fee study for Howard County, Maryland. To support transition of the County's solid waste services to an enterprise fund, a financing plan and user fees were developed for the \$70 million landfill and recycling program. A range of different billing system alternatives were evaluated to implement the user fees.
- Performance audit for Prince William County (VA). Assessed the efficiency and effectiveness of the County's landfill, recycling, and composting operations and developed recommendations for public-private contracting options. Identified areas for streamlining operations with operating cost savings of 15%.
- Revenue study for the City of Tampa solid waste disposal program. Electricity rates and alternate rate structures were evaluated to enhance City revenues. Options for utilizing electricity output within the City for net savings was evaluated using a financial model to project waste quantities, cogeneration revenues, disposal and transfer costs, and tipping fees.
- State of Indiana Cost Accounting Reports. Mr. Paret developed a reporting program to be used by municipalities in reporting the full and unit costs of solid waste management to the Indiana Institute on Recycling.

Environmental Program Experience

Mel also has significant experience with state and federal environmental programs including the following projects:

- Rhode Island Department of Environmental Management - agency-wide permit application and process re-engineering evaluation
- Mississippi Department of Environmental Quality and Air Advisory Council - performance and cost evaluation of Title V air program and development of permitting fees
- Connecticut Department of Environmental Protection – agency-wide management and operations improvement study

- Maryland Department of the Environment - a performance, organizational and staffing study of water programs
- Southwest Florida Water Management District - process re-engineering and information technology study for agency permitting and compliance functions
- Florida Department of Environmental Regulation – agency-wide workload, costing and permit fee study
- Maine Department of Environmental Protection – agency-wide management study of regulatory programs and administrative functions
- Ohio Departments of Health and Environmental Protection - development of management, financial, and legal criteria for state's onsite sewage disposal program
- Massachusetts Department of Environmental Protection - organization and staffing study for water pollution control, water supply, and solid waste programs
- State of South Carolina - assessed future remediation risks, potential costs, financial capability of owner, and establishment of a trust fund as conditions for re-permitting a major hazardous waste disposal facility.
- Revolving loan fund programs - projects to develop and implement water quality revolving loan programs for the states of Florida, Indiana, and Delaware.

Education

- Tulane University - Master of Business Administration (1978) - finance and accounting
- Tulane University - Master of Public Health (1978) - environmental sciences
- Tulane University - Bachelor of Arts (1975)

Affiliations

His professional memberships and assignments have included the following:

- Solid Waste Association of North America (SWANA) – currently serves as Treasurer and Board member for Virginia chapter
- American Public Works Association (APWA)
- Public-Private Partnership Advisory Committee for the International City/County Management Association (sponsored by the U.S. Environmental Protection Agency).

Edouardo Etienne
Principal/President

(202) 271-2884
eetienne@msadc.com

Edouardo is a Principal and founder of MSA who specializes in management, operational, training and technical support services for public works and other government agencies. With 10 years professional experience, he is highly proficient in preparation, analysis and reporting of management, operational and financial data to support client decision-making. He also provides a range of technical support and training functions for software applications including application administration, business process re-engineering, and policy/procedure development. His work experience is summarized below.

Public Works Solutions LLC

Senior Management/ Analyst. Responsible for providing operational and technology consulting services to District of Columbia Department of Public Works. Accomplishments include but are not limited to:

- Extensive use of client-server software solution (*DPW Works & Trakster*) – providing application administration and user training/support of overall system. Using the system, conducts analysis of operational performance, equipment utilization, and employee time & attendance for the Solid Waste operations (approx. 120 users)
- Analyzing activity based costing and generating both cost reports and cost models for snow and ice removal, citywide landscaping and citywide leaf collection. The reports include costing for labor, equipment and disposal materials.
- Measuring the effectiveness of the application of route optimization software by reviewing route boundaries on Arc GIS, generating reports on pre- and post optimization route performance measures and providing recommendations on further route adjustments
- Preparing custom time and attendance reports displaying analyzing overtime abuse, leave time seasonal trends and employee specific summaries
- Evaluating customer service requests, generating custom reports on responsive times and developing workflow procedures for improving service request response time
- Design support for new web-based application (*Trakster*) to track solid waste containers, service requests and field operations.
- Working with management and operational staff to improve quality and control of system use and outputs
- Provides technical support to users in installation and configuration of the Trakster system
- Training personnel to improve application use as well as supervisory and reporting procedures
- Conducted cost/fee studies for Fairfax County's collection & recycling program and disposal programs for citizen/small commercial customers

Competitive Power Ventures

Financial Analyst. Responsibilities included but are not limited to:

- Extensive use of Excel, specifically with financial models
- Constructed financial pro formas for power plant projects
- Developed pricing models for the purposes of bidding into an energy power purchase agreement
- Work with various companies in the energy industry and attorneys and consultants
- Researched current and future trends in specific regions of the country within the energy industry
- Wrote financial section of offering statement for potential buyers of power plant projects

First Annapolis Consulting

Analyst. Responsibilities included but not limited to:

- Extensive use of Excel, specifically with financial models
- Assisted in writing sales letters, proposals for engagements, and competitor profiles
- Created internal database to track business development
- Developed valuation models for merger and acquisition engagements

Education

American University

Washington, DC

Bachelor of Science (B.S.) double-major of Finance and Economics; University Honors Program; Dean's List

Other Information

Fluent in speaking Portuguese and basic speaking knowledge of Spanish

Computer skills include EXCEL, MS SQL Server, MS Access, Word, PowerPoint, and web design packages.

David G. Sobers

- University of Maryland: M.S., Resource Economics
- University of Maryland: B.S., Agronomy

Mr. Sobers is a consultant who has more than 35 years experience in the areas of solid waste management, facility siting, public involvement, dispute resolution, water resources, wastewater, privatization, marketing, planning, energy and emergency response.

From 1992 to 2000, Mr. Sobers served with URS (formerly Woodward-Clyde) as a senior project manager and their Vice President for Solid Waste Management.

Prior to joining Woodward-Clyde in 1992, Mr. Sobers managed Montgomery County, Maryland's solid waste, water supply, wastewater, sludge, storm water, hazardous waste, sewerage, emergency response, environmental public information and sustainable programs for over twenty years as a planner through DEP Director.

His experience has been domestic and overseas. His offshore work includes Bangkok, Ethiopia, Egypt, Turkey, Puerto Rico, Western Europe, Russia, Korea and the Philippines.

A sampling of Mr. Sobers' experience in the fields of solid waste management, public outreach and dispute resolution are summarized below. Omitted are projects and programs relating to wastewater, water, energy and code enforcement.

Public Outreach/Siting Criteria Development, Prince George's County, MD. Assisted SCS Engineers in developing a public outreach program and selection criteria for the selection of a new solid waste transfer station.

Decision Analysis, Landfill Expansion, Anne Arundel County, MD. Assisted SCS Engineers in developing and the County in selecting criteria for expanding their landfill.

Project Manager, Montgomery County Transfer Station, Collection District, Recycling Center, Waste-to-Energy Facility and Four Landfills Siting, Montgomery County, MD. With active community involvement, mediation and litigation.

Project Manager, Landfill Site Selection, Henry County, VA. For a landfill siting study using Decision Analysis for public involvement in addition to engineering analyses.

Project Manager, Harford County, Maryland Solid Waste Full Cost Analysis. To accurately account for all the County's system elements relating to landfilling, recycling, composting and waste-to-energy.

Project Manager, Maryland Midshore Waste Collection Plan. In behalf of four counties and Maryland for privatized collection and transfer districts with aggressive public outreach.

Project Manager, Waste Management Plans and Energy and Sustainability Plans, Montgomery County, MD. With active outreach and two standing advisory committees.

Senior Reviewer, Illinois Solid Waste Management Plan, IL. For a comprehensive solid waste management plan and public outreach program for five counties near Decatur.

Director, Compost Facilities, Montgomery County, MD. Three sludge and yard waste facilities, static pile and windrow composting technologies, with active public involvement.

Co-Manager, Odor Control, Montgomery County, MD. For a sludge composting including citizens committee and instrumented monitoring and process control systems.

Manager, Compost Marketing. With Maryland Environmental Service to test, market and distribute Compro (sewage sludge) and Leafgro (yard wastes) with public outreach.

Member, Recycled Materials Task Force, USEPA. Committee member to structure outreach, purchase, processing and sale for domestic and foreign markets.

Chair, Recycling Committee, Metropolitan Washington COG. Helped establish and chair committee for mutual materials, sales, advertising, outreach and information exchange.

Manager, World Bank, Waste Management Plan, Bangkok, Thailand. For nine million residents that is affordable and sustainable. Presented to the City's management.

Technical Advisor, USAID, Philippines Waste Management. Consultant for cities (Bais, Tacurong, Bayawan and Negros Oriental) on sustainably transitioning from open dumping to landfills with limited resources. Key was outreach programs on public acceptance.

Chief of Party, USAID, Egyptian Solid Waste Privatization Program. To instruct 600 managers (Federal, Cairo, Qalyoubiya, Luxor, Minia, Marsa Matrough, Fayoum and Sharm el Sheikh) on waste sustainability, privatization and outreach programs.

Manager, ASEAN, Philippines and Indonesian Workshops. On improving solid waste management standards and practices addressing public participation.

Advisor, Ankara, Turkey Solid Waste Management Programs. To the mayor on improving the city's programs addressing privatization and public participation.

Project Manager, Novorossiysk, Russia Solid Waste Management. Develop a solid waste management with improved public participation.

PUBLIC INVOLVEMENT AND DISPUTE RESOLUTION

Programs Director, Citizen Advisory Committees, Montgomery County, MD. Managed nine (9) standing committees on environmental and sustainability programs.

Public Information Programs. Developed written, video and narrated elements for numerous outreach programs. Have extensive media relations experience.

Task Manager, WSSC Duckett Dam Rehabilitation. Public outreach component.

Certified Mediator. For dispute resolution by Institute for Environmental Mediation.

Expert Witness, Montgomery County, MD. Expert witness in several proceedings.

Lead Mediator, Sewer Moratoria, Montgomery County, MD. For multi-jurisdictional lawsuit/State Health Orders on sewerage capacity, sludge disposal and building moratoria.

Mediator, Grosvenor Metro Noise Mediation, Bethesda, MD. For noise complaint and attenuation programs among government, WMATA and community leaders.

Vice Chair, Local Emergency Planning Council, Montgomery County, MD. Appointed by Governor for first hazardous materials registry and public outreach program.

Montgomery County Representative, Metropolitan Washington COG Environmental Policy Committee. Overseeing waste, water, energy and outreach programs.

Member, U.S. EPA Rulemaking Committee. Developing emission control for lead processors and manufacturers including battery outreach and recovery programs.

Member, U.S. DOE Energy Public Outreach Task Force. Local jurisdictional representative for review and improvement of nuclear waste transportation practices.

Manager, Pesticide Community Notification, Montgomery County, MD. Initiated a state posting/disclosure requirement for commercial pesticide applicators.

Member, Environmental Task Force, Public Technology, Inc. Advisor to the USEPA Office of Research and Development work and outreach programs.

Project Director, Health Effects Study, Montgomery County, MD. To identify and communicate cancer, other risks and control systems for a proposed 2250 tpd WTE plant.

Task Manager, Reengineering of FEMA Public Assistance Program. URS manager for revision of FEMA's disaster aid program to non-profit and governmental agencies.

Reviewer/Narrator, FEMA Training on National Environmental Policy Compliance.

Reviewer/Narrator, FEMA Training on National Historic Protection Act.

Task Manager, FEMA Training on Community Relations.

References:

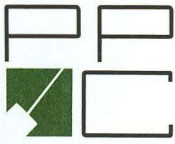
Margo Bailey, Mayor, Chestertown, MD
PH: 410-778-0500
margo.chestertown@verizon.net
118N Cross Street | Chestertown, MD 21620 |

Marty Holden, Chief Division of Solid Waste
PH: 410-778-7439
mholden@kentgov.org
709 Morgnac Road, Suite 104, Chestertown MD 21620

Peter Karasik, Chief, Central Operations Section
PH: 240-777-6569
peter.karasik@montgomerycountymd.gov
16101 Frederick Road, Derwood, Maryland 20850

Appendix C
Letters of Reference

MIN
THE MARYLAND-NATIONAL CAPITAL PARK AND PLANNING COMMISSION



Prince George's County Planning Department
Countywide Planning Division

14741 Governor Oden Bowie Drive
Upper Marlboro, Maryland 20772
TTY: (301) 952-4366
www.mncppc.org/pgco
301-952-3472

March 15, 2013

RE: SCS Engineers

To Whom It May Concern:

The Maryland-National Capital Park and Planning Commission (M-NCPPC) contracted with SCS Engineers from 2007 through 2008 for a study to site a MSW Transfer Station in Prince George's County that met various technical requirements, minimized the impact to the neighboring communities, and sought citizen input. SCS conducted four community workshops to 1) educate the public about MSW Transfer Stations and their role in solid waste management, 2) solicit and summarize commentary from an informed public about transfer station siting criteria, 3) use informed public commentary and engineering expertise to rank and weight siting criteria; and 4) apply the siting criteria to evaluate potential transfer station sites.

Stacey Demers served as the SCS Project Manager and was assisted by their sub-consultant, David Sobers and other technical experts of SCS. They prepared and conducted the community workshops; gathered useful input from the public on various siting criteria such as setback, screening, transportation considerations, and economic matters; and collated the information which was used in selecting potential sites. During field visits to potential sites, they worked very cooperatively with our environmental staff to evaluate the sites. Their draft reports and background information were complete and comprehensive. The County Council heavily relied upon their work to make a final decision.

We have found SCS Engineers to be knowledgeable about solid waste management, helpful at conducting our public meetings, assessing potential sites, and educating staff and public officials on the operation of a MSW Transfer Station. We also appreciate their professionalism and timeliness.

Sincerely,

Maria Martin
Supervisor, Special Projects Section
Countywide Planning Division

January 10, 2012

MEMBER
JURISDICTIONS

CHESAPEAKE

RE: Letter of Reference – SCS Engineers
Hampton Roads Planning District Commission
Regional Solid Waste Program (POL: 2018)

FRANKLIN

To Whom It May Concern:

GLOUCESTER

SCS Engineers (SCS) was selected by the Hampton Roads Planning District Commission (HRPDC) in November 2007 to evaluate technical and institutional alternatives and recommend an approach for managing solid waste in the South Hampton Roads Region (Region) after the intergovernmental agreements between the Southeastern Public Service Authority (SPSA) and its member communities expire in January 2018. SCS was authorized to begin the 10-month study in February 2008. The governmental entities involved in the HRPDC study include the cities of Chesapeake, Franklin, Norfolk, Portsmouth, Suffolk, and Virginia Beach, and the counties of Isle of Wight and Southampton. These communities are collectively referred to as “the Region”.

HAMPTON

ISLE OF WIGHT

JAMES CITY

NEWPORT NEWS

NORFOLK

POQUOSON

The study was intended to provide information and analysis to the current SPSA member communities to aid in their decision as to whether they should continue to cooperate together to manage the Region’s solid waste or pursue an alternative course of action. The study was primarily forward looking, considering solid waste management approaches for the Region post-2018 that best fit the current and anticipated regulatory, institutional, facility, financial, market, and legal drivers and constraints, which differ significantly from when the local Agreements with SPSA were originally established in 1983 and 1984. Due to substantial changes that were occurring within SPSA in 2008, the report was treated as an Interim Final Report. It was revisited beginning in 2010.

PORTSMOUTH

SOUTHAMPTON

SUFFOLK

SURRY

Since completion of the 2008 Interim Report, the localities through the HRPDC have retained SCS Engineers for a number of additional studies. These efforts have included asset valuation of the various regional solid waste facilities, review of several Public-Private proposals to acquire regional solid waste facility assets, preparation of a Regional Solid Waste Management Plan to comply with state regulatory requirements and preparation of a comprehensive update to the 2008 Interim Report.

VIRGINIA BEACH

WILLIAMSBURG

YORK

To Whom It May Concern
January 10, 2012
Page 2

Through these efforts, SCS has evaluated existing solid waste management programs, facilities, and operations in the Region. In addition, future solid waste technology and facility needs for a 30-year planning horizon (2018-2047) were assessed; various institutional and cooperative models for managing solid waste were considered; economic analyses were performed, and meetings with the Chief Administrative Officers (CAOs) from the member communities and private solid waste companies and interests were held to discuss the results, conclusions, and recommendations of the study. Support provided by SCS Engineers to the CAOs and to SPSA facilitated the region's efforts to sell certain key facilities and to restructure the financial arrangements for the regional system.

SCS completed these very high profile projects on time and on budget. They worked effectively with the CAO's from the member communities. Their well-documented and articulated reports and briefings have contributed significantly to the region's efforts to address future solid waste management in the most cost-effective manner.

The HRPDC appreciates that SCS assigned its most senior solid waste practice leader, Mr. Robert Gardner, PE to direct the study. He and his staff developed an effective working relationship with the HRPDC, the CAOs and their senior staff. They quickly addressed all comments and concerns raised by the HRPDC, the CAOs and senior local government financial and technical staff during the course of the original study and several follow-on efforts.

Please do not hesitate to call me if you have any questions regarding the performance of SCS Engineers on the Region's Solid Waste Management Program.

Sincerely,



Dwight Farmer
Executive Director/Secretary

JMC:DLF/fh



County of Fairfax, Virginia

To protect and enrich the quality of life for the people, neighborhoods and diverse communities of Fairfax County

March 13, 2013

To Whom It May Concern:

It is a distinct pleasure to recommend the consultant services of Mr. Melvin P. Paret, and to write this letter on his behalf. In my capacity as the Fiscal Review Specialist for the Fairfax County Solid Waste Management Program, I have worked very closely with him for almost five years.

As our consultant, he was hired to develop a financial rate model, a capital equipment planning/budget model and he also conducted a rate evaluation study to help my division to improve our refuse collection and recycling operations. In my observation, he seemed to know exactly what the project required and how to get it done effectively in a timely manner.

On the interpersonal side, Mr. Paret demonstrated excellent written and verbal communication skills related to financial analysis, rate setting, strategic planning, and providing recommendations to improve financial planning and budgeting as I mentioned previously.

Again, he has been a great consultant to work with, one that has contributed greatly by providing advice on future rate adjustments for our program.

If you would like to discuss this further, please feel free to contact me at (703) 324-5222.

Sincerely,

Venita Hawkins

Venita Hawkins

Fiscal Review Specialist

Fairfax County Solid Waste Management Program



Department of Public Works and Environmental Services
Solid Waste Management Program

12000 Government Center Parkway, Suite 458
Fairfax, Virginia 22035

Phone: 703-324-5230, TTY: 1-800-828-1120, Fax: 703-324-3950
www.fairfaxcounty.gov/dpwes