

Talking... TRASH

The Newsletter of the SWANA Florida Sunshine Chapter

Summer 2017



Summer
Conference
Highlights
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Letter from the President

August 2017

I'm honored to be serving as President of the SWANA Florida Sunshine Chapter for one more term. I think we've accomplished a lot over the past two years and I hope to keep the momentum going. I want to welcome our new board members—Becky Bray, Rebecca Rodriguez and Marissa Segundo—I'm excited to see some new faces in these leadership roles! I also want to congratulate the incumbents who were reelected, and commend Monica Bramble for stepping up to become our new chapter secretary. I also want to recognize those who are stepping down—Deb Bush, Gene Ginn and Randy Rudd—and thank them for their service.



During the chapter membership meeting at our summer conference in Sanibel, I let everyone know that I consider this a “new administration” and with that, I'm going to take another hard look at our committees, make some leadership changes as needed, and encourage broader participation. If you're currently in a role you are no longer comfortable filling or if you'd like to be considered for a chair or vice chair position, please contact me.

One of the accomplishments I alluded to above was updating our Policies & Procedures Manual. This was a major undertaking since it hadn't been revised in many years and couldn't have been done without the diligent efforts of Wei Liu, who won the Rising Star award at our summer conference. You can review this manual on our website, but I'd like to point out that major policy changes were made to implement term limits for officers and directors, and to revamp our awards program.

Speaking of our summer conference, what a wonderful event! We had well over 200 attendees at this 2-day meeting that included a tour of Lee County's Resource Recovery Campus and the Hinkley Center Research Colloquium. Thanks to both of those organizations for partnering with us for a truly great learning experience.

In case you haven't heard, we're hosting the 2017 SWANA International Road-E-O, which will take place on Saturday, October 28th at Orange County's facilities in Orlando. Then on January 28-30th, we will hold a joint meeting with RFT at the B Resort in Lake Buena Vista. Look for details on these and other future events on our website.

Finally, I want to remind everyone that this chapter belongs to all of us and you'll get as much out of it as you put in. Consider attending a board meeting, joining a committee, writing a newsletter article, submitting an abstract, exhibiting and/or sponsoring one of our events. I think you'll be glad you did.

Sincerely,

A handwritten signature in blue ink that reads "Tammy L. Hayes".

Tammy L. Hayes
SWANA FL Chapter President

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Addressing High Gas Pressure Near the Bottom of Landfills

Ali Khatami, Ph.D., P.E., SCS Engineers

Subtitle D requirements for municipal solid waste (MSW) landfills have been around for more than three decades, and many MSW landfills currently have bottom lining systems that meet the federal and local state rules and regulations. With the bottom lining system geomembrane comes a drainage layer placed directly above the geomembrane to laterally convey leachate reaching the geomembrane to a collection point. The past few decades of advancements in developing new drainage media have led to the use of geocomposites as the primary drainage layer above the bottom lining system geomembrane. However, one needs to be watchful for the free flow of leachate through the thin layer of geocomposite under high gas pressures near the bottom lining system.

Those involved in landfill gas modeling and maintenance of gas collection systems are well aware that gas generation begins relatively quickly after disposal of MSW in landfills, and the gas generation rate is a function of time, with increasing trends over time to a peak and then decreasing from there on. The general perception of landfill professionals is that gas pressures near the bottom of landfill lining system are not a concern, especially after installing gas wells and applying vacuum to the system. However, observations and measurements of gas pressures near the bottom lining system have indicated that landfill professionals should be conscious about landfill gas pressures near the bottom lining system and its impact on the flow of leachate through the geocomposite

drainage layer at the bottom of the landfill.

Take, for example when a new cell is placed in service, and 50 feet of waste is deposited in the new cell. Gas pressure near the bottom lining system can increase to such high levels that when removing the blind flange on the leachate collection pipe cleanout, leachate will eject out of the cleanout riser with significant speed and for a long distance. This situation is indicative of high landfill gas pressures developing near the bottom lining system, extending into the voids of the drainage layer geocomposite where leachate is designed to flow

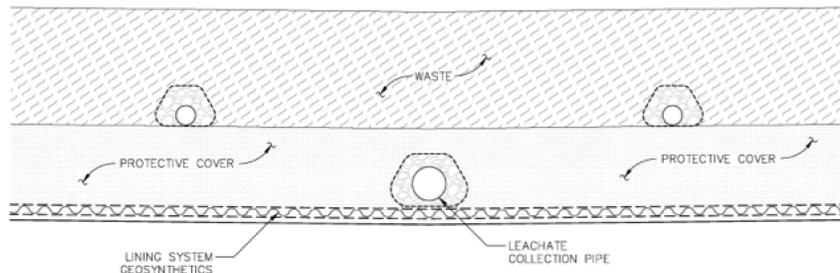


Figure 1 - Pressure relief system near the bottom lining system.

through under gravity freely. The impact of high gas pressures on the free flow of leachate through geocomposite drainage layer will need to be investigated and addressed by solid waste engineers to understand the phenomenon better and devise a means to address the issue.

Short of investigations and clear guidelines for addressing high gas pressure near the bottom lining system, landfill operators can use a gas pressure relief system near the bottom in future new disposal cells. The pressure relief system can simply include a few perforated high density polyethylene pipes laid in parallel directly above the soil layer placed above the bottom lining system drainage layer, as shown in the Figure 1 schematic. The perforated pipes may be embedded in gravel and wrapped in geotextile to prevent intrusion of fine

particles into the pipe.

The pipes are extended to outer limits of the cell and to the top of the perimeter berm where they connect to a vacuum source. These pipes will successfully remove excess gas pressures that may develop near the bottom lining system and prevent adverse impacts of the high pressures on the free flow of leachate through the bottom lining system drainage layer. Constructing this type of gas pressure relief system is typically inexpensive. Landfill operators might consider the benefit of such systems versus their costs and the negative impact that drainage layers might experience in the absence of this design.

The solid waste engineer preparing construction plans of new disposal cells should include in the design the number of perforated

pipes, the spacing of the pipes, and the gravel/geotextile embedment. Installation of the gas pressure relief system is carried out by the cell contractor following completion of the soil layer above the bottom lining system geocomposite drainage layer. Connecting the pipes to a vacuum source is usually the responsibility of the landfill operator, and takes place sometime after placing the cell in service with a specific amount of waste in the cell. The determining factor for the timing of connecting the vacuum source to the system depends on the amount of gas pressure detected in the pipes at the landfill perimeter berm.

Ali Khatami, Ph.D., P.E., is Vice President of SCS Engineers. He may be reached at akhatami@scsengineers.com.

Electric Fan Engine Cooling System Improves Uptime and Operating Cost of Refuse Vehicles

Improving operating cost, uptime and emissions continues to be important to the solid waste industry. With the advent of CNG and hybrid powertrains, refuse vehicles are adopting technologies used in other commercial markets. One such technology has transformed the transit bus market in the last decade, with every major bus system now scrapping mechanical fans for the electric design. This “Mini-Hybrid” approach to engine cooling minimizes parasitic loss by replacing the large mechanically driven fan with a series of electric fans. This new technology now accounts for fuel economy improvements of up to 18 percent, thereby lowering emissions and improving the bottom line. Along with this is the reduction of maintenance on the radiator package through the use of the systems fully reversible fans, offering significant cost savings and increased uptime.

A recent study was undertaken by EMP and five solid waste groups



across the country to determine how the electric fan approach might work for refuse vehicles. Waste disposal vehicles have a harsh duty cycle with a lot of stop and go, along with high loading at low speed. The debris encountered during pickup and at the landfill causes plugging of the heat exchangers. The single large

mechanical fan, that is a slave to engine speed and can consume as much as forty horsepower from the engine, represents a dated technology. By contrast, the use of robust electric fans allows for fan reversal to keep the heat exchangers clean and cools with much lower power than the mechanical fan. In a normal pickup situation, even in high ambient temperatures, the electric fans will only draw a few horsepower from the engine. This savings can improve fuel economy, and thus emissions, while increasing acceleration.

The cooling system that was tested consisted of an array of five electric fans mounted to a shroud that is attached to the existing radiators. The fans use long life brushless motors with variable speed control and reversibility. These fans can be individually controlled to only give what cooling the engine needs. The fans are controlled by a thermal management controller (TMC) that communicates via CAN (J1939) to the engine and transmission. There is also a communication line to a pressure switch on the HVAC. This ‘smart’ system can be controlled in such a way as to maintain tight engine temperatures while decreasing parasitic loss. Because the electric fan system is not reliant on an engine drive, maximum cooling can be achieved during low vehicle or engine speeds. The alternator is upgraded to a more powerful unit, which can handle the increase in electrical load.

The test project was focused on diesel engines but CNG will offer similar results. The vehicles chosen covered a wide range of manufacturers and climates, including the Mack MR688S, Peterbilt 320, and Autocar Xpeditor among others. Here in Florida, Miami was a trial participant using as its test vehicle, a 2005 Peterbilt 320.



Across all models and climates, the system results were remarkable with average fuel economy improving 10%+ (with a range from 5.2% to 18.3%). The average fan power savings was significant, while engine temperature was maintained within +/- 3° C. While these performance numbers are astounding, it is the uptime improvements created by reversible fans and multiple fans offering redundancy that seemed to catch everyone’s attention.

Although the initial focus is retrofitting existing vehicles, several OEMs are considering offering the system on new vehicles. The mini-hybrid system is quickly becoming accepted by the solid waste industry with great support and results.

EMP is a leader in advanced thermal and oil management technologies for the heavy-duty market and has been manufacturing Mini-Hybrid™ Thermal Management Systems since 2006. Based in Escanaba, MI, EMP’s advanced products are used globally by major OEMs. For more information, contact David Allen (906) 280-4370, e-mail david.allen@emp-corp.com or visit www.emp-corp.com.

Advances in Industrial/C & D Waste Characterization

Cynthia M. Mitchell and Charlie Pioli, MSW Consultants

As more attention has turned to waste minimization, waste diversion and reuse over the past few decades, it has become of greater interest to understand what materials are filling up landfills across the country that could be used beneficially elsewhere. While it is feasible to manually sort through MSW samples to get statistically valid data, various approaches have been taken over the years in attempt to realistically estimate the composition of bulkier industrial, construction and demolition (non-MSW) loads. During the 2016-2017 Missouri Waste Characterization Study (WCS), MSW Consultants deployed an electronic field form developed to provide real-time QA/QC on the visual volumetric estimates. With built-in material densities, it also allows comparison of estimated weights with each sample load's scale ticket. The field surveyor navigates the program to accurately reflect the weight of the

load, for instance adjusting average densities when material observations deem so for atypical circumstances, such as moisture, compacted materials, etc. Figure 1 shows the staff getting an initial look at a load of construction and demolition waste.



Figure 1 - Load assessment.

The Visual Surveying phase of the 2016-2017 Missouri WCS involved detailed volumetric measurement of the truck and load dimensions, followed by the systematic observation of the major material components in the tipped load.

Loads were first classified into ten major categories by percentage, then further subcategorized into forty-five materials as percentage of the major category. Figure 2 displays a portion of the form used for in-field immediate characterization. By

characterizing materials in major categories hauled by various vehicle types during field observation at facilities, overall material volumes can be extrapolated by applying the data to the breakdown of the overall waste stream as determined during gate surveying activities.

Organics collection and composting programs are becoming more prevalent, especially in urban areas. Figure 3 shows an industrial load, predominantly containing organic waste. Similar to traditional materials

identified for recycling through large-scale Visual Waste Characterization, such as old corrugated containers (OCC) and metals, compostable quantities identified through this methodology can also play a large role in shaping the future of sustainable material management. Accurate material composition data enables local, regional, and state planners to closer identify contaminants in the waste stream, likely sources of materials that could be diverted, or to assess the BTU value in biogas recovery for anaerobic digestion systems. Educational efforts and any other available resources can be directed toward these targets. MSW characterization data is also useful and important along similar lines, but targeting the non-MSW load materials can ultimately be more impactful on a per generator basis due to large volumes and have not been acutely

MO - DNR Visual Survey				Sum of Class Percentages		100%	
				Total Volume (CY)		13	
				Actual Weight (tons)		1.5	
				Actual Sum of Lbs.		2,960	
				Sum of Estimated Lbs.		2,714	
				Variance		-8%	
Waste Type: Demolition				Total Volume (CY)		13.3	
Vehicle Type: Self-Haul + Trailer							
Paper	3%	1	Flattened OCC	10%	100%	106	4
		2	Unflattened OCC	90%		45	16
		3	R/C and Other Paper			157	-
Plastic	5%	4	Plastic Bottles (Recyclable)		100%	38	-
		5	HDPE Buckets (Stacked)			70	-
		6	HDPE Buckets (Unstacked)			35	-

Figure 2 - Field form excerpt.

captured in past visual waste characterization studies.

Cynthia M. Mitchell recently joined MSW Consultants as a Senior Project Manager after spending 20 years working in the solid waste industry for public sector, non-profit and commercial organizations. Her expertise encompasses all aspects of a full-service collection, disposal and recovery solid waste utility, including planning and budgeting; personnel management; procurement/contracts; capital projects; rolling fleet and routing; heavy equipment; subtitle D and bioreactor landfill;



Figure 3 - Industrial load – organics.

waste analysis, minimization and sustainability programs; facility operation and regulatory compliance.

She can be reached at (573) 818-2281.

Charlie Pioli is a data analyst with MSW Consultants and has been actively involved in the waste and recycling industry for the past year. He has a particular focus on the company's zero waste initiatives and has recently participated in several waste/recycling characterization studies and audits. He can be reached at (407) 401-9143.

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Spotter	\$295	Day 1, 8hr
	Refresher	
Landfill	\$495/295	Day 1 + 2-16hr or Day 1-8hr
Transfer Station	\$295	Day 1-8hr or Day 2-8 hr
Materials Recovery Facility	\$295	Day 1-8hr or Day 2-8 hr
Spotter	\$195	Day 1, 4hr

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Back Office and Customer Information Systems

Marc J. Rogoff, Ph.D. and Laurel Ureña, M.S., SCS Engineers

In this day and age, a back office customer information software system is a “must” for solid waste agencies managing inventories, work orders, and large numbers of customers. However, many solid waste agencies have inadequate computer hardware and software systems to enable tracking of work productivity and customer service. Oftentimes, many use a combination of an Excel-based software system and manual card systems to track residential and commercial accounts. To the world of business operations, these manual systems are analogous to a stone and chisel versus a typewriter.

The lack of adequate software implementation may be due in part because the overwhelming “buffet” of software available for solid waste facilities’ use. As shown in Table 1, there are a wide variety of management information and software products used by solid waste agencies across the U.S. Each has its particular advocates and uses in the solid waste management practice. This article will briefly provide an overview of the major trends in software development.

Trends in Software Development

Proof of Service

One of the major advancements in solid waste technology for collection is providing proof of service, a key detail given that a large percentage of customer complaints are due to missed pickups. In certain cases, the complaint is valid, while in other situations, the container may simply have not been placed out for the collector in the correct location or time.

As a proof of service, many of the software systems noted have the ability of storing real-time, geo-

located service delivery pictures associated with each customer account. For example, if you are providing residential collection and the rolling cart is not at the curb at the time of collection, you can snap a photo of it and e-mail the photo to the customer and explain why you did not provide pickup service that day. In some cases, this photo can even be automatically collected in real-time as the truck reaches the designated pickup location. In the past, without this capability, a driver may say the cart was missing and the customer might say it wasn’t, and typically you are in a he-said/she-said situation. Then a customer call is made and re-service must be provided, whereas if you have that picture proof of deliverable or proof in activity, you can eliminate that extra pickup. This allows the solid waste agency to be more efficient and bill for the appropriate services they are providing.

Dispatch and Routing

Typically, in most systems calls come in from customers indicating that extra service is requested for instances such as overflowing dumpster, extra trash, or bulky waste pickups. In these situations, it may be difficult to manually determine which vehicle would be best suited to dispatch and service the customer call (e.g. Which is closest? Which truck has adequate volume capacity?). Oftentimes, fleet management services are currently managed through a combination of manual processes, desktop computer tools, limited vehicle tracking and management tools, and custom-made databases. This setup can make a service dispatch an arduous and inefficient process.

With an integrated software package like those listed, the solid waste agency is able to come up with an efficient, logical, and reliable dispatch for the particular service needed. Many of the integrated software packages noted provide route management and dispatch

systems that offer enhanced customer communications, and more accurate and real-time operational data analysis through live web-based map displays and dashboards. The service-request-dispatch method described would be similar to many new ride-share programs such as Uber or Lyft, which use GPS software to determine the closest available vehicle that is able to satisfy the customer’s service call. These systems greatly enhance an agency’s ability to react to their customers’ needs in real-time through mobile computing technologies. This new functionality facilitates operational efficiencies, reduces costs, maximizes revenues, and increases customer satisfaction.

On-Board Tablet Interface

One of newest hardware applications of solid waste customer software are interfaces with on-board vehicle tablets. Many agencies are providing specially-designed computer tablets in the cab of the vehicle. The objective is to enable the driver with an up-to-date and accurate picture of his/her route, while at the same time enable the managers back in the home office with relevant information supporting intelligent decision making. Real-time vehicle tracking can also be helpful for route supervisors as they are able to better monitor vehicle progress along each route. Routes can be updated in real-time as necessary (to route around construction or congestion, for example), while the driver can safely see the newly-updated route. This ensures that the most efficient and safe route is elected, reducing cost and safety concerns.

Conclusions

The mantra of doing things quicker, cheaper, and faster is being increasingly applied to solid waste services, and having the appropriate software and hardware is crucial. The application of computer software and hardware is providing solid waste agencies with the analytic tools to measure their performance

Software Provider	Product	Comment
Alpine Technology	Visual RAMS-Pro	Integrated software for billing and customer services
Carolina Software	WasteWorks	Integrated software for billing and customer services
Delta Equipment Systems	Delta Waste System	Integrated software
Desert Micro	RouteManager	Integrated software for billing and customer services
Dilloware	The Billing Clerk	Integrated software for billing and customer services
FASTPace Software	FASTPace	Tracking and billing software
Field Aware	Field Aware	Cloud based, mobile software
Fifth Limb	My Yard	Transfer and recycling facility accounting
Geoware	Geoware	Integrated software for billing and customer services
Green Oak Solutions	Carboncheck	Calculate GHS/carbon emissions
ISB Global	Waste and Recycling One	Integrated software for billing and customer services
Ivy Computer	Trash Flow	Integrated software for billing and customer services
Logical Data Solutions	Manifest	Integrated software for billing and customer services
My Service Depot	Smart Service	Quick Books add on
Normandy Waste	Normandy 2.0	Food waste accounting software
Opensky Data	IWDMS	Efficiency software
Pacifica Systems	Accu-Trax Office	Mobile routing and tracking software
P&L Software Systems	Integrated Waste System	Integrated software for billing and customer services
Paradigm Software	CompuWeigh	Integrated software for billing and customer services
PC Scale	PC Scale Tower	Routing and billing software
Performance Software Technologies	Route Rite Waste Billing	Customer software
Prodware	Prodware	Integrated software for billing and customer services
Public Works Solutions	Trakster	Integrated software for billing and customer services
Reflective Software Solutions	Apex WMS	ROI software
Ritam Technologies	Summit Service Systems	Integrated software for billing and customer services
RouteOptix Management	RouteOptix	Routing software
Routeware	Routeware Back Office	Integrated software for billing and customer services
Soft-Pak	i-Pak	Integrated software for billing and customer services
TerraVista Solutions	TerraTrash	Integrated software for billing and customer services
Thoughtful Systems	Scheduling Manager	Job scheduling software
TMS Solutions	RMS	Integrated software for billing and customer services
TRUX Route Management	Haul- It	Primarily route audit software
WAM Software	WAM Hauler	Integrated software for billing and customer services
Wastebits	Wastebits	Profiling waste and byproducts
WasteBooks	WasteBooks	Comprehensive routing and accounting software
Waste Logics Software	Waste Logics	Integrated software for billing and customer services
Xero Waste Solutions	Xero Waste Solutions	Integrated software for billing and customer services
Zada Partners	FleetCom	Route optimization software

Table 1 - Current customer service software providers to the solid waste industry.

and those of their employees. Being able to optimize routes and service customer work orders more quickly also increases general customer satisfaction. Both the computer hardware and software will continue to improve in the years ahead as these demands only increase. Customer service software can be a very helpful tool for your solid waste operation, and if your agency is undecided about

moving forward with a particular program, many software providers offer free demonstrations and even free trials. In terms of selecting the right software for your solid waste program, the world is your e-Oyster.

Marc J. Rogoff, Ph.D. is a Project Director with SCS Engineers, located in their Florida Regional office. Marc is Chair of the Chapter's Collection

Committee. He can be reached at mrogoff@scsengineers.com.

Laurel C. Ureña, M.S. is a Project Professional working in SCS Engineers' Tampa office. She can be reached at lurena@scsengineers.com.

Four Things to Consider Before Buying a Vehicle Fire Suppression System

Steve Payne, AFEX Fire Suppression Systems

Fire puts operators in danger, leads to costly machine repairs or replacement, and lost productivity due to downtime. The vehicle fire suppression industry is based on these simple facts, but how do you choose the best solution for your unique needs? The following considerations are a good starting point for anyone looking to protect heavy equipment.

#1: Side-Cartridge vs. Pressurized Tanks

Pressurized tanks are filled with propellant, similar to fire extinguishers like you may have at home. In situations where the physical demands on a vehicle are minimal, this type of system is sufficient. They are common in public transportation, as an example.

On the other hand, a side-cartridge system contains the propellant in separate, sealed cartridges. This type of system is generally preferred on equipment used in heavy industries like waste and mining where machine vibration can cause pressurized tanks to leak over time.



#2: Manual Actuation vs. Automatic Actuation

Automatic systems use a detection circuit to monitor temperatures and discharge the system when a fire is detected. These systems do not rely on an operator, and provide a quick response time even if the fire occurs out of sight.

Manual systems require the operator to discharge them. They do not include a detection network, and are therefore less costly than automatic systems. As a result, they are popular on smaller pieces of equipment.

#3: Firefighting Agent Type

The most commonly used agent is A:B:C dry chemical, a multi-purpose agent that protects against debris, fuel, and electrical fires. Dry chemical provides fast flame knockdown, space efficiency, and suppresses fire in 3D space,

making it especially effective in enclosed areas like engine compartments.

A:B liquid agent has recently gained popularity in light of Tier 4 engines. In addition to debris and fuel fire protection, its cooling properties reduce engine surface temperatures and reduce the chances of a fire reflash.

Dual agent systems use both agents together to maximize protection by focusing on the strengths of each agent.

#4: Certifications

Certifications by third-party testing organizations are the best way to confirm that a system is built for withstanding the conditions of your working environment. For example, systems certified for off-road use by Factory Mutual are subject to shock and vibration testing to simulate years in the field. Other systems may not have passed this critical test so it's important to clarify with a potential vendor which specific certifications have been earned, and to ensure that the system is certified for off-road use.

No matter the machine's application, having a fire suppression system on board is critical. They protect operators and work environments from the threat of fire, help you avoid costly equipment replacement, and protect your bottom line from financial losses. By doing your due diligence you can identify the right system for you.



For more information, call Steve Payne at (919) 781-6610 or visit www.afexsystems.com.

Proposed Landfill Methane Rules to be Revised by the EPA

Ramon Rivera, *Diamond Scientific*

The Environmental Protection Agency (EPA) has gone back to the drawing board to reconsider proposed methane emission rules for landfills following a request by the waste sector, who claim that they are simply not feasible to implement.

In 2016 the EPA updated standards for new or reconstructed MSW landfills as well as guidelines for existing landfills, which receive non-hazardous waste from multiple sources. Under the new rules, landfills are required to install and operate landfill gas collection and control systems and to monitor methane emissions, which the EPA estimates would cost landfill operators in excess of \$100 million annually to install and operate.

Organic material, such as food waste and garden refuse, produce emissions as they break down naturally on landfills. Landfill operators are already required to capture methane when emissions are higher than the stipulated threshold. However, these new rules—which are now being reviewed—would reduce that threshold limit, requiring landfill operators to capture methane when emissions are even lower. Waste management companies are concerned that this would mean they would have to install expensive new landfill gas control systems to monitor and control emissions in order to comply with the new rules.

Yet, the waste industry also promotes the capture of methane from landfills, transforming it into a renewable source of energy that can be used to power the waste collection trucks servicing the landfill, as well as other vehicles, or it can be used to supply factories and homes with power.



Image courtesy of Sustainable Sanitation Alliance via [Flickr](#).

Considering that the waste sector supports and promotes the capture of methane from landfills to be recycled into energy, why are they opposing these rules?

According to Kerry Kelly from Waste Management, Inc., the way the rules are currently written is simply not feasible. “It’s never been our desire to repeal the rules,” she told Houston Public Media. “We want the rules on the books, we want them to work.”

It’s not just the waste management industry that are opposing the rules; some environmental organizations are also not happy, but their reasons differ from those of the waste industry. The environmental groups are concerned

that the rules ultimately won’t help reduce methane emissions, and that the government should rather put more effort into keeping organic material out of landfills by promoting composting of organic waste.

On May 23, the EPA announced a 90-day stay for the above emission standards for MSW landfills while they reconsider some aspects of the new emission rules for existing landfills.

According to a statement released by the EPA, it will continue to review emission standards and guidelines to ensure they facilitate a growing economy whilst protecting the environment in alignment with the Energy Independence Executive Order issued by President Donald Trump.

“EPA is continuing to ensure that the public has the opportunity to comment on agency actions,”

said Administrator Scott Pruitt.

“Reconsidering portions of the landfill rules will give stakeholders the opportunity to review these requirements, assess economic impacts and provide feedback to the agency through the reconsideration process.”

The EPA plans to draft a new rule on the issue, and to make it available for public comment.

For more information, contact Ramon Rivera at (321) 223-7500 or visit <https://diamondsci.com>.

Incremental Sampling Method Makes Post-Landfill-Mining Soils Testing More Effective and Accurate

Brent Schneider, PE, Engineering and Environmental Quality Manager, Escambia County and Mark Hadlock, PE, Senior Engineer, Jones Edmunds & Associates, Inc.

As landfill mining becomes more common, so has the need to standardize practices for post-mining soils testing for possible contamination in the remaining soil beneath the mined area. Landfill mining is performed for a number of reasons; the most common is to reuse the recovered area for beneficial uses. Possible uses include commercial development, public spaces, stormwater management, and new Class I landfill expansion. Depending on the intended use, the condition of remaining soil will dictate the allowable end use of the area and the remaining soil.

From 2009 to 2011, approximately 500,000 cubic yards of waste materials and cover soil were mined from 17 acres of the old unlined cells at the Escambia County Perdido Landfill. The area will be reused to construct the new Section 5 Class I landfill.

To maximize the disposal capacity of the new cell, an additional 200,000 cubic yards were excavated into the native soil below the mined area. This results in a savings of millions of dollars by increasing disposal capacity and not importing soil. The soil could be used without additional testing if it was stockpiled and used strictly in the existing Class I landfill. However, for the County, the ideal situation was to have the soil available for unrestricted use within the limits of the Perdido Landfill site.

To determine how the soil could be used, extensive sampling and

analysis were required to determine the horizontal and vertical extent and magnitude of contamination previously identified in the native soils.

In addition, there was no guarantee that additional soil testing would result in the desired outcome. The time and



Sampling team onsite at Escambia County Perdido Landfill.

expense of conducting traditional soils sampling and analytical testing on this scale were considerable. Laboratory analysis alone for the initial sampling was estimated to exceed \$50,000. In addition, and more importantly, traditional soil sampling methods often resulted in poor spatial (horizontal and vertical) coverage of the targeted area for exploration and insufficient sample density.

Additionally, randomly selected samples do not always provide an accurate assessment of actual field conditions. If samples from an individual location revealed high concentrations, additional sampling would be needed to identify the horizontal and vertical limits. With the depth of the excavation ranging from 5 to 15 feet over 15 acres, several rounds of sampling could be needed

to quantify the areas of suitable or unsuitable soils. The County needed a better solution to this costly problem. The answer was found in the use of Incremental Sampling Methodology (ISM).

ISM is an improved approach to soil sampling that provides a structured system of sampling procedures that reduces data variability and increases sample representativeness. Currently, ISM is mostly used at commercial/industrial sites but can be employed at residential, ecological, agricultural, and recreational sites.

Due to its versatility, ISM can be used at sites with a broad range of contaminants, such as explosives, metals, VOCs, pesticides, cyanide, perchlorate, PCBs, dioxins, and TPH. *Overall, the advantages of ISM include more accurate data, less chance of extremes in the data population, and lower costs from fewer samples to run.*

The implementation of ISM over the traditional discrete sampling approach enabled the County to better characterize and interpret the 15-acre expansion site as a whole. The upfront planning for field sampling and quality control was much more labor-intensive than discrete sampling methodologies, but also reduced laboratory cost by more than 50 percent.

During two days of field work, the project team collected 1,800 soil samples from 90 borings across the 15-acre Section 5 cell area. Soil samples were collected from each boring at 2-, 4-, 6-, and 8-foot depths. The collected soil samples were then grouped and/or composited in-field. The testing laboratory took receipt of the samples as they were completed in the field as part of the quality control plan.



Collecting soil samples at the landfill.

After laboratory and statistical analysis, the results demonstrated that the soil from the expansion area is not expected to pose a significant risk to human health via direct exposure or result in a violation of FDEP's groundwater standards. This gave the County the supporting information needed to confidently use the soils without restriction.

The successful use of ISM by the Escambia County Waste Services Department is a great example of the growing interest of ISM in the



Recording sampling results.

environmental field and its increasing acceptance by state and federal regulatory agencies. The lessons learned from this project continue to build the case for ISM and its benefits in conducting post-landfill-mining soils testing more accurately and effectively. The work performed by the County could be used to help standardize the developing landfill mining process.

For more information, contact Mark Hadlock, PE, Senior Engineer for Jones Edmunds & Associates, Inc. at (352) 377-5821 or e-mail mhadlock@jonesedmunds.com.

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Reflections of a Retired Solid Waste Professional

Periodic recounting of events and happenings—some humorous, some not—during the 30+ year career of an industry veteran and SWANA Florida member since 1980.

Warren Smith

Early in my professional career (1970s) I was an environmental regulator, first for the Hillsborough County Environmental Protection Commission (EPC) and then for the Florida Department of Environmental Regulation (DER). In this role, I was quickly introduced to solid waste disposal issues. In Florida, early solid waste disposal operations were often performed by the county mosquito control departments, since as part of their primary function (constructing coastal drainage ditches for mosquito control), they possessed the draglines and dozers needed for the early “sanitary landfills.” Consequently, many new landfills were established in Florida’s coastal areas, considered by some to be just “useless swamp.”

Hillsborough County followed this template. A great public servant, and even better person, Dan Gorman, was Mosquito Control Department Director, and in addition to draglines, he operated his own “air force” of surplus airplanes and helicopters for aerial spraying. In addition, Dan was responsible for operating the county’s several landfills. A reminder: the scientific and environmental advancement for landfilling in the 1960s was basically to cover the garbage daily ... and no more open burning! Hence, the aforementioned “sanitary landfill.” It took over 20 more years for landfilling regulations to evolve to near today’s standard.

In the early 1970s while working enforcement for the EPC, I received a complaint one evening of acrid smoke crossing U.S. Hwy 41, just north of Gibsonton. Upon arrival to investigate, I found the culprit to be the county’s Gibsonton landfill. It was located just a few hundred feet from

the shore of Tampa Bay. A dragline was used to dig long trenches (which quickly filled with water), into which the garbage was dumped, then covered with soil. Landfilling in groundwater was common since there were no liner requirements.

At that time, there were a number of industrial/agricultural chemicals manufacturers/distributors in Tampa and containers of spent, or off-specification chemicals, were routinely disposed of in the county’s landfills. Upon evaluation we determined the cause of the U.S. Hwy 41 “smoke” to have been the mixing of two, or more, reactive chemicals that were released during burial and compaction.

A similar incident at the Taylor Road Landfill was documented where a barrel of spent chemical, being compacted, “popped” and was sprayed on the compactor operator, burning his skin. The remedy was to require landfill personnel to drain barrels of their contents prior to disposal.

Somewhat later, back at the Gibsonton Landfill, in an attempt to limit garbage disposal in groundwater, the county constructed an evaporation pond into which water was pumped to dry the new disposal cells before filling. Upon inspection, it was observed over time, that the water level of the evaporation pond rose and fell with the tides in Tampa Bay. Effectively, the ponded

water was eventually just going into the bay! Soon after, the county ceased operation of the Gibsonton Landfill.

It should be noted here, that as environmental awareness and stewardship became more prevalent in our industry, Hillsborough County proactively addressed these old landfills with implementation of a Closed Landfill Investigation Program (CLIP), which entailed thorough contamination assessment and corrective actions at nine of eleven old closed landfills.

This story may give the reader the impression that “we”, that is society, were not particularly sophisticated environmentally then. Remember though, that the great technological leap was to cover disposed garbage daily. Unfortunately, we were just operating within the scientific and regulatory framework of what was considered acceptable at that time.

Finally, here is my moral to this story, especially for the new solid waste professional: Always be critical of your solid waste disposal operations, and keep striving for better ways, lest someone 30 to 40 years from now writes a story about the crazy, unsophisticated things you were doing.

Warren Smith can be reached at (727) 515-0006, or e-mail wsmithc10@aol.com.

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Member News

Tampa Bay Regional Recycling Campaign

Aleta Kane, City of Tampa Department of Solid Waste and Environmental Program Management

Those of us in the recycling industry are, unfortunately, familiar with the infamous “c” word—contamination: when non-designated materials are placed in recycling, which cannot be processed. Increased contamination has been wreaking havoc on recycling for several years by causing equipment damage at material recovery facilities (MRF), creating safety hazards for workers, reducing the amount of recovered recyclables, and increasing the cost of the recycling process. While it is obvious recycling contamination has become more prevalent, it is hard to determine *why* contamination has become so common and difficult to prevent.

One theory for increased contamination is the transition to carted mixed recycling. Like many other municipalities, the City of Tampa transitioned to carted mixed recycling with a goal of customer convenience. While the convenience of residential carted recycling has significantly boosted participation and tonnage, it

also increased contamination. Since most individuals now dispose of used aluminum, paper, plastic and glass in the same way as trash (i.e., throw them into a same container) it’s easy to misunderstand what can actually be recycled. Moreover, with new regulations on what can be recycled, the over-use of the recycling symbol, and changes in packaging, many



individuals are unclear about how to recycle right.

What is apparent is that new recycling education approaches are needed. Recently, the City of Tampa, Hillsborough County, Pinellas County, and the City of St. Petersburg’s solid waste departments made history by partnering to develop a regional, simple and consistent message to reduce recycling contamination and promote effective recycling. The regional goal is to make it easier to understand recycling rules that will, ultimately, result in behavior changes

that reduce contamination in the regional recycling stream.

Strategically, the partner regional multimedia public education campaign launched April 17, in honor of Earth Day. The campaign was designed to focus on one major recycling issue at a time—starting with the biggest issue right now—plastic bags and the

bagging of recycling material, which get tangled in the sorting equipment causing damage and plant shutdowns. A bay-spanning video and co-branded webpage, TampaBayRecycles.org, provides information about why people need to keep recycling bag-free no matter where they recycle in the Tampa Bay area: home, work, public venues, or collection centers.

Additional focus areas and items will be updated regularly. Everyone is invited to follow the campaign at its designated hash tag ([#TampaBayRecycles](https://twitter.com/TampaBayRecycles)).

For more information, contact Aleta Kane, City of Tampa Department of Solid Waste and Environmental Program Management, at (813) 348-1027 or e-mail

Aleta.Kane@tampagov.net.

Member News

Making Solid Waste Exciting for Students

Danielle Vande Zande, Solid Waste Authority of Palm Beach County

Would you send your middle school student to the landfill for a week-long summer camp? This year, 10 families in Palm Beach County did just that so their child could visit transfer stations, watch mountains of waste and recyclables get sorted or processed, and touch industry equipment.

The Solid Waste Authority of Palm Beach County started the 3R Ambassador Summer program in 2012 to give students an opportunity to learn about solid waste in an engaging way. While it's not easy to get middle school students excited about integrated waste management, the students were thrilled to learn that there is way more to it than just putting their garbage and recyclables at the curb.

Each day, the future 3R Ambassadors focused on specific aspects of the Solid Waste Authority of Palm Beach

County. The week began as the students put on their hard hats for the first time to tour a transfer station. They sat inside an 18-wheeler and saw how tractor-trailer trucks are filled with waste.

Tuesday, the group explored the SWA Greenway Trail System to learn about water quality monitoring. While out, an endangered everglades snail kite flew overhead, patrolling the wetland for 10 minutes. It was a special moment, as the reason the SWA manages trails is to protect the endangered species found on its site.

The group then visited the SWA's Utilities Department. Students assisted staff in melting thick plastic pipes together and testing the temperature of the landfill methane flare. The students ended the day at Resource Depot, a reuse center, where they created repurposed art.

Wednesday began at the SWA's Renewable Energy Facility 2, the cleanest and greenest waste-to-energy facility in North America. Students

traveled to the top of the Pit, designed to hold 15,000 tons of MSW, and watched as giant grapples fed waste into three furnaces. The students saw the turbine generator and got up close to a grapple that was being repaired. The students could not believe how much garbage their county produces.

It was then on to one of the SWA's Home Chemical and Recycling Centers to learn about household hazardous waste management. They were agog at the antique electronics and more. Next stop was the Recovered Materials Processing Center, SWA's MRF. This visit illustrated how dual-stream recyclables are separated. Afterward, the students loved testing their recycling knowledge at the SWA's Education Center with a game on the interactive touch table.

Thursday brought a visit to Grassy Waters Everglades Preserve, one of the SWA's community partners. Students canoed and tromped through the swamp with environmental specialists. In contrast, students then toured the



3R Ambassadors watch as waste is loaded into 18-wheelers at the SWA's Central County Transfer Station in Lantana.



3R Ambassadors learn about testing water quality on the SWA's Greenway Trail System.

SWA landfill and were later tested as they created their own edible landfill from candy. Managers joined the fun by judging the very best “landfill.”

Friday focused on flushed waste. The Loxahatchee River District wastewater treatment facility staff showed how liquid is separated from solids and then cleaned. Students tested water, comparing different tanks throughout the facility. Then, the SWA’s Biosolids Processing Facility highlighted how those wastewater solids are transformed into fertilizer pellets. The pellets resemble brown Nerds candy, so of course the students had to eat Nerds while they learned.

The program culminated in a graduation ceremony where each student became an official 3R Ambassador. Students shared their favorite parts of the week and were encouraged to help tell their friends and neighbors how wastes are managed.

This experience truly is one of the favorites of the SWA’s Education team. Watching as students grow over the course of the week and learn from dozens of experts at the SWA and at partner organizations is rewarding beyond measure.

For more information, contact Danielle Vande Zande, Education Specialist for The Solid Waste Authority of Palm Beach County, at (561) 640-4000, ext. 4422 or e-mail DVandezande@swa.org.



3R Ambassadors tromp through a swamp at Grassy Waters Everglades Preserve.



Wait, don't drink that! 3R Ambassadors play with foam chemicals at one of the SWA's Home Chemical and Recycling Facilities.



One 3R Ambassador peeks into one of the furnaces at the SWA's Renewable Energy Facility 2.



3R Ambassadors test water at the Loxahatchee River District Water Reclamation facility in Jupiter.

SWANA FL Summer Conference Sailed into Sanibel

Marissa Segundo, APR, LEED GA, RRS, SWANA Communications Chair and Board Member

From the shores of the majestic Sanibel Harbour Marriott Resort, more than 200 SWANA FL members convened for this year's Summer Conference and Hinkley Center Colloquium. SWANA FL President Tammy Hayes welcomed attendees during the Chapter Business Meeting. Deb Bush with Pinellas County Solid Waste, Gene Ginn with the City of Lakeland and Randy Rudd with Emerald Coast Utilities Authority were recognized for their years of service on the SWANA FL Board of Directors. The announcement of the new board slate included three new board members: Rebecca Rodriguez with Lee County, Marissa Segundo with RRS and Becky Bray with Nassau County. Three incumbent

board members were also re-elected to the board: Michael Gordan with the City of Largo, Jason Timmons with Sarasota County Solid Waste Division, and Chad Grecsek with the City of Deerfield Beach.

Day one explored best management practices in closed landfill management, mining, and AFC. Public private partnerships and adverse affects of long term power sales wrapped up the morning agenda. More than 40 attendees participated in a tour of Lee County's Resource Recovery Campus while more than two dozen participants stayed for an interactive technology roundtable event (picture "speed dating" about solid waste and recycling hot topics).

After an active first day, SWANA members got a visit from Lady Luck at dinner with casino night complete

with craps tables, roulette, black jack and more. The Young Professionals' popular 50/50 raffle raised \$620 and one exhibit hall drawing winner will return for a 3-day/2-night stay at Sanibel Harbour Marriot Resort.

The final day of the conference began with lively presentations about Pinellas County's Eco Funfest and Lee County's 5 for the Cart campaign. SWANA FL was honored to partner with the Hinkley Center Research Colloquium on landfill and disposal topics like contaminate removal in landfill gas, odor control and elevated temperatures. Dr. Townsend discussed Florida's State of the State followed by an update from FDEP.

For more information, contact Marissa Segundo at msegundo@recycle.com.

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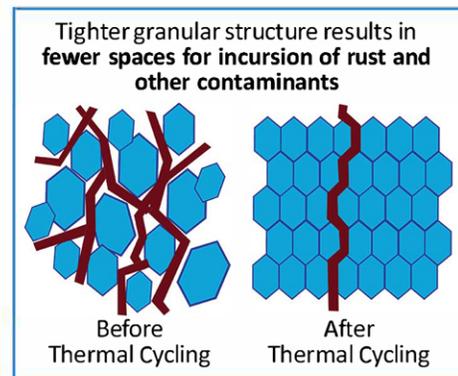
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SWANA FL Committee Chairs

STANDING COMMITTEES

Membership

Matt Locke
(W) 813-247-2267
matmba1@gmail.com

Conference

Tammy Hayes
(W) 813-281-2900
HayesT@cdmsmith.com

Conference Sub Committee – Young Professionals

Wei Liu
(W) 813-281-2900
LiuWT@cdmsmith.com

Conference Sub-Committee – Programs

Jason Timmons
(W) 941-861-1572
jtimmons@scgov.net

Conference Sub-Committee – Golf

Ray Rivera
(W) 321-223-7500
ramon@landfillcontractor.com

Conference Sub-Committee – Exhibits and Sponsors

OPEN

Awards

Mitch Kessler
(W) 813-971-8333
mk@kesconsult.com

Awards Sub-Committee – Scholarships

Karam Singh
(W) 904-598-8930
Karamjit.Singh@hdrinc.com

Bylaws (and Policy)

Keith Howard
(W) 239-533-8000
khoward@leegov.com

Audit

Tammy Hayes
(W) 813-281-2900
HayesT@cdmsmith.com

Nominating

Mitch Kessler
(W) 813-971-8333
mk@kesconsult.com

Legislative

Reginald Ofuani
(W) (850) 891-5450
reginald.ofuani@talgov.com

Communications

Marissa Segundo
(W) (727)278-7909
msegundo@recycle.com

Communications Sub-Committee – Newsletter

Angelina Ruiz
(W) 800-358-2873 x 7
angelina@wasteadvantagemag.com

Finance and Budget

Sam Levin
(W) 407-475-9163
Slevin@S2Li.com

Training and Health & Safety

Monica Bramble
(W) 941-240-8060
mbramble@cityofnorthport.com

Chad Grecsek

(W) 954- 480-4386
941-240-8063
cgrecsek@deerfield-beach.com

TECHNICAL DIVISIONS

Collection and Transfer

Marc Rogoff
(W) 813-804-6729
mrogoff@scsengineers.com

Landfill Management

Rebecca Rodriguez
(W) 561-571-3800
rodriguezr@cdmsmith.com

Planning and Management

Euripides Rodriguez
(W) (321) 633-2042
Euripides.rodriguez@brevardcounty.us

Recycling & Special Waste

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Waste to Energy

John Power
(W) 727-856-0119
jpower@pascocountyfl.net

Landfill Gas & Biogas

Dan Cooper
(W) (813) 621-0080
DCooper@SCSEngineers.com

SPECIAL COMMITTEES

Chapter Road-E-O

Gene Ginn
(W) 727-587-6760
gene.ginn@lakelandgov.net



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Talking Trash Newsletter

Editor in Chief

Angelina Ruiz
Waste Advantage Magazine
angelina@wasteadvantagemag.com

Managing Editor

Molly Schweers
Lee County Solid Waste Division
MSchweers@leegov.com



SWANA Florida
Sunshine Chapter
3724 Johnathon Avenue
Palm Harbor, FL 34685

Phone: (727) 940-8855
Fax: (727) 231-0693
Email: info@swanafl.org

Chapter Administrator:
Crystal Bruce

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2017 SWANA International Road-E-O

October 27-28, 2017
Hilton Orlando Lake Buena Vista
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2018 SWANA/RFT Joint Summit

January 28-30, 2018
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2018 SWANA FL Summer Conference

July 15-17, 2018
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Chapter Officers & Directors

President

Tammy Hayes
(W) 813-281-2900
hayest@cdmsmith.com
CDM Smith

Vice President

Keith Howard
(W) 239-533-8000
khoward@leegov.com
Lee County

Treasurer

Sam Levin
(W) 407-475-9163
Slevin@S2Li.com
S2Li

Secretary

Monica Bramble
(W) 941-240-8060
mbramble@cityofnorthport.com
City of North Port

Immediate Past President

Mitch Kessler
(W) 813-971-8333
mk@kesconsult.com
Kessler Consulting

Director 17-19

Rebecca Rodriguez
(W) 239-533-8932
rrodriguez2@leegov.com
Lee County Solid Waste

Director 17-19

Jason Timmons
(W) 941-861-1572
jtimmons@scgov.net
Sarasota County

Director 17-19

Michael Gordon
(W) 727-587-6760
migordon@largo.com
City of Largo

Director 17-19

Chad Grecsek
(W) 954- 480-4386
cgrecsek@deerfield-beach.com
City of Deerfield Beach

Director 16-18

Nathan Mayer
(W) 561-758-7130
nmayer@swa.org
Solid Waste Authority of
Palm Beach County

Director 16-18

Allan Cole
(W) 407-836-6635
allan.cole@ocfl.net
Orange County Solid Waste

Director 16-18

Marissa Segundo
(W) 727-278-7909
msegundo@recycle.com
Resource Recycling Systems

Director 16-18

Becky Hiers-Bray
(W) 904-491-7330
bbray@nassaucountyfl.com
Nassau County Engineering Services