

NELSON COUNTY

Department of Waste Management

**Solid Waste & Recycling
System Overhaul**



Program Overview:

Solid Waste & Recycling Collection System Overhaul Implemented by the Department of Waste Management Nelson County, Virginia

Nelson County had an expensive solid waste and recycling collection system that did not serve the public well. It took seven years to complete the major changes to the system that are included in this report:

- Closure of unsupervised drop-off sites for the collection of solid waste.
- Construction of four modern staffed Collection Centers with full recycling services.
- Discontinued use of all open-top roll-off containers.
- Joining the Region 2000 Services Authority.
- Purchase of solid waste & recycling equipment.
- Purchase of two roll-off trucks.
- Addition of two drivers, a Solid Waste & Recycling Coordinator, and 18 part-time Collection Center Attendants to County payroll.
- Handling of school waste.

Substantial savings have resulted from these changes, and quality service is now the standard in the County at the staffed Collection Centers. The recycling rate in the County has doubled, and the system now has flexibility to adjust quickly and effectively to any changes in the recycling or waste handling industry that might occur in the future.

2011 VACo Achievement Award Application

Locality: Nelson County

Program Title: Solid Waste & Recycling Collection System Overhaul

Program Category: Environmental

Applicant: Department of Waste Management, Nelson County

Population Category: #2 (U.S. Census Bureau 2009 estimate is 15,487)

Contact Name: Susan E. McSwain

Title: Solid Waste & Recycling Coordinator

Department: Department of Waste Management

Mailing Address: Dept. of Waste Management; 84 Courthouse Square; PO Box 336
Lovington, VA 22949

Telephone: 434-263-7098

Fax: 434-263-7004

Email: smcswain@nelsoncounty.org

Signature of County Administrator

Name: Stephen A. Carter

Title: County Administrator, Nelson County

Signature: _____

The Problem

Garbage collection in Nelson County used to be a messy affair. The first collection system in the 1970s consisted of a few unsupervised drop-off sites that were scattered around the County. Each site had an array of open-top roll-off containers of varying design. Over the years, drop-off locations proliferated until there were 21 in the late 1990s. Environmentally, the sites were unacceptable. They functioned as a major source of blowing trash and litter, and as a dumping ground for people “getting rid” of unwanted dogs and cats. A fair number of people engaged in dumpster diving for aluminum cans and other items of value, wearing sneakers as they walked on top of garbage that might contain broken glass, used medical sharps, and soiled baby diapers. Paint and used motor oil were often emptied on the ground beside the open-tops, and piles of tires and old furniture sometimes prevented people from getting close enough to throw their trash bags into the cans. Every hunting season, deer carcasses would be dumped on the ground at the sites, adding stench and flies to an already ugly scene. Beautiful Nelson County needed a clean-up!

The first contract to service the original sites was awarded to a local citizen, but a major waste hauling company took over the job in the early 1990s. Electric garbage compactors were installed at a few of the busier sites, and recycle cans were added to a third of the sites. However, even with the use of compactors, the system was becoming increasingly inefficient and expensive. With no supervision, a substantial amount of out-of-county trash was being dumped at the sites. Commercial refuse that should have gone to the County Transfer Station was also being dumped by people wanting to avoid paying the County’s tipping fee. Recycle cans were subject to contamination with non-recyclable items, and, too often, entire contents of recycle cans had to be landfilled instead of recycled.

... and the Challenge

No one liked the dirty sites, but there was extreme resistance from citizens when solutions were discussed.

Everyone wanted a disposal location within three miles of their house, but no one wanted a site next door to their property. Some people wanted better recycling, while other people wanted to discontinue recycling entirely. Some citizens approved of spending money to improve services, but others thought improvements could be made at no expense. There were requests to close sites, with an equal number of requests to create more sites. Reaching consensus on the way to proceed was not going to be easy.

Solution Stage 1: First Staffed Collection Center

In a textbook example of cooperation between County staff, elected supervisors, and a volunteer citizen advisory council, a decision was reached in 2003 to consolidate drop-off sites into staffed Collection Centers. The position of Solid Waste and Recycling Coordinator was added to the Department of Waste Management, and, within months, four of the smallest unsupervised sites were closed. Land was purchased for a gated, staffed site in the section of the County with the largest volume of garbage. In early 2005, the Collection Center opened for business, and all three of the large unsupervised sites in this area were closed.

Staffed sites were called "Collection Centers" in a conscious effort to get the public away from the concept of "convenience" centers for dumping garbage, to the more positive emphasis on the *collection* of commodities for recycling. Nelson County's recycle rate was extremely low, and a primary goal of the new system was to increase recycling.

Recycling would not increase, however, if the centers were difficult or time-consuming to use. The design for the new centers was modeled on the lay-out of gas stations, with compactor "islands" that could be accessed on both sides. Dumping time could be kept to a minimum, with good traffic flow maintained. Recycle cans and open-top cans for bulky items were located along the sides of the site, just beyond the

compactor islands. This allowed people to park their vehicles and take their time sorting recycle items and off-loading bulky items without obstructing arriving traffic.

Stage 1 Results

The first staffed Collection Center far exceeded cautious projections from the Department of Waste Management. Site attendants stopped so many non-residents from using the facility that, during the first year of operation, there was a 40 percent decrease in the amount of garbage collected in that part of the County. The 1,080 ton drop resulted in an 8% decrease in the entire tonnage handled in the County that year – and 2005 was a year with a booming economy and increasing garbage tonnage throughout the U.S.! Savings realized by not handling this amount of garbage exceeded the annual cost of the wages paid to part-time attendants to operate the Collection Center.

Attendants also turned away a considerable number of commercial loads at the Collection Center, sending them to the Transfer Station instead. Tipping fee income on commercial garbage at the Transfer Station that year increased \$50,000 in spite of the 8% decrease in total tonnage described above. Between 20 to 40% of the increase in income was attributed to commercial garbage that was no longer being dumped for free at the three large unsupervised sites that had been closed in the vicinity of the staffed Collection Center.

Roadside litter and dumping was recorded both before and after unstaffed sites were closed. As had been predicted, there were very few instances of litter or dumping that could be attributed to the closing of the unstaffed sites. People who do not litter or dump illegally do not suddenly start breaking the law when they have to drive a few extra miles to reach a legal disposal site. Residents who had originally been opposed to the closing of sites near their homes were impressed by the cleanliness of the staffed site and by the helpful attendants who assisted with recycling. No one missed the old unsupervised sites with trash and litter

everywhere on the ground. The first staffed Collection Center became so popular and such a source of pride, that people who lived in other parts of the County began pestering supervisors for a staffed site to be built in *their* part of the County as well!

Solution Stage 2: Cooperation in Creating a Regional Services Authority

Transportation distance is a major factor in the cost of handling both garbage and recycling. After its landfill closed in 1993, Nelson began to send its trash to commercial facilities owned by large waste companies in Virginia. When the decision was made in 2003 to transform the garbage collection system, the County was sending its garbage to a private landfill in Amelia County, a round-trip distance of 190 miles. That same year, the Region 2000 Partnership for economic development had begun studying the possibility of forming a services authority to manage landfills in the region to the south of Nelson. Although Nelson fell under the Thomas Jefferson Solid Waste Management Plan, the County had already participated in Region 2000 discussions for a regional jail. At the County Administrator's request, Nelson was included in the regional landfill study as well. The Solid Waste & Recycling Coordinator became a member of the working group and participated in the efforts that ultimately resulted in the creation of the Region 2000 Services Authority, with Nelson as a member locality.

Stage 2 Results

The landfill in Lynchburg began operating under the Region 2000 Services Authority in 2008, and the distance to a landfill for Nelson was reduced 74%, from 190 to 50 miles round-trip. Landfill tipping fees for Nelson were also reduced 8% over what the County had been paying. The consultant hired to assess the net costs for all of the participating localities to create and join the Services Authority determined that, due to the reduction in transportation and tipping fee expenses, Nelson would recoup its investment by the end of 2011. When the landfill in Campbell County becomes the regional landfill in the near future, the distance for Nelson will still be 67% less than what it had been before the creation of the Authority.

The benefits of belonging to the Authority are not limited to savings; Nelson is now also able to participate in regional household hazardous waste events. It is prohibitively costly for a county the size of Nelson to mount hazardous waste events, but, as a member of the Services Authority, Nelson residents can participate in four such events held every year by the Services Authority. The County pays a per capita fee for its residents who show up at each event.

Solution Stage 3: Purchase of Equipment

As the County proceeded with efforts to build additional staffed Collection Centers, it became clear that new equipment was needed. For example, the recycling containers provided by the hauler were poorly designed. They could not be adapted to meet changes in recycling practices, and they were wasteful of space. New containers would enable the County to improve the quality of recycling, reduce hauling cost through larger payloads per container, and permit flexibility in the program. In 2007, the Solid Waste & Recycling Coordinator worked with the County Finance Office to make a proposal to the Board of Supervisors for the purchase of solid waste and recycling equipment.

Part of the proposal included a trial period during which the open-tops for bulky item disposal would be removed from the staffed Collection Center already in operation. Hauling open-top loads is far more expensive than hauling compactor loads, and it was argued that individuals should be responsible for the cost of hauling their own bulky items to the Transfer Station, just as they are responsible for their own phone or electric usage and resulting bills.

In addition to cost, there were environmental and safety issues related to open-tops. For example, although Freon appliances were not accepted at the Collection Center (they must be taken to the Transfer Station where trained personnel drain the Freon), it was not always possible for attendants to fully monitor items

placed into open-tops. It was not unusual for citizens to toss Freon appliances into the open-tops when the attendant on duty was distracted. Other items – such as propane tanks, hot fireplace ashes, cans containing paint, gasoline, or used oil – were also a concern. Broken glass was an additional hazard when people would toss large mirrors or windows into an open-top, sometimes creating an explosion of shards that would shower down in the area.

Stage 3 Results

The trial period without open-tops went amazingly well, and it was decided to discontinue any future use of open-tops at staffed sites. Only compactors would be used for garbage. Open-tops were not included on the list of containers to be purchased, but the County would continue to rent them for use at the unsupervised sites without electricity until those sites were closed. Land had not yet been purchased for the fourth staffed site, but the County ordered enough equipment to furnish that site when it was built. Buying everything at once allowed the County to obtain lower prices than buying additional, smaller quantities at later dates. Extra equipment was stored at the Transfer Station until it could be moved to new sites as needed.

To further existing good will with other counties, the Solid Waste and Recycling Coordinator included a cooperative procurement clause in the Invitation for Bids (IFB) for the purchase of equipment. Two other counties took advantage of the prices obtained by Nelson, so inclusion of the clause was a success.

Solution Stage 4: Assumption of Hauling Responsibilities

Once the decision was made in late 2007 to purchase waste and recycling equipment, the Department of Waste Management began to consider the possibility of assuming internal hauling (between Collection Centers and the Transfer Station), rather than contract for this service. Three factors spurred the interest.

First, if the County had its own trucks and drivers, fuel could be purchased tax-free. Private hauling companies pay fuel taxes but pass them along as a cost of the service. Second, private haulers need to make a profit on service provided, but the County only has to break even. Third, weekend service was not provided by the contracted hauler except at extra cost, but the Collection Centers were open Saturdays and Sundays. If the County had its own drivers, weekend hauling could be done by drivers on a rotating stand-by basis. The Department of Waste Management again went to the Board of Supervisors with a proposal, this time to purchase two roll-off trucks, hire two full time drivers, discontinue the private internal hauling service contract , and issue a Request for Proposal to hire a company to do external hauling only (between Transfer Station and landfill).

Stage 4 Results

Be careful what you wish for! County supervisors gave a green light to proceed with the proposal, and the Department of Waste Management remained in high gear for all of 2008. The IFB for waste and recycling equipment was released, the IFB for trucks was written and advertised, a Request for Proposal for external hauling was issued, two Collection Centers were opened, new attendants were hired and trained, three more unsupervised sites were closed, job descriptions for drivers were written, and two drivers were hired and trained.

The new trucks and drivers have provided a boost to the system, since all waste employees are now working together as a real team. Also, the County school system was able to discontinue its contract with a private hauler in 2009, and the County started hauling school waste. The County purchased the necessary additional containers for the schools, but by the end of 2011, the money saved on not paying a contractor will equal the cost of buying this equipment.

Program Addendum

The last unsupervised open-top drop-off site was closed in 2010. That site had always been heavily used by residents from neighboring counties. When it was replaced by a staffed Collection Center, trash tonnage from that part of the County dropped 60%. The use of garbage compactors further cut the number of hauls to the Transfer Station by 90%, and the savings on hauling and handling costs have amounted to \$54,000 in one year.

Prior to the start of the new waste system, in excess of 150,000 miles was being logged every year by roll-off trucks belonging to the company that provided internal hauling service to the County. Currently, the County trucks are logging under 50,000 miles a year. Roll-off trucks average 5 miles per gallon, so the County has greatly reduced fuel consumption, greenhouse gas emissions, and a lot of wear and tear on rural roads.

The recycle rate has doubled in the 7 years since the first staffed Collection Center was built, and the quality of the County's recycle commodities is excellent. An unexpected but welcome outcome of the improved recycling is that a local citizen was inspired to open a baling facility within the County. This has cut the hauling distance by 50 miles per trip for recyclables. Along with the provision of Re-Use Sheds at the staffed Collection Centers, Nelson County now offers a system that takes full advantage of the three R's of waste management : Reduce, Re-Use, & Recycle.

Financing Notes

- *Construction of four modern staffed Collection Centers with full recycling services:* Purchase of land and construction of the first site utilized County funds (\$460,000). \$1.7 million was borrowed for the purchase of land and construction of the remaining three sites.
- *Joining the Region 2000 Services Authority:* Nelson's share of start-up costs was \$96,000, which was paid in installments over a three year period through local funding. This initial cost will be completely recouped by early 2012 due to savings from lower costs for hauling waste to a landfill and lower tipping fees.
- *Purchase of equipment:* \$550,000. The money was borrowed, but since the equipment is expected to last for 20 years, the debt service will be much less than the cost to rent equipment for the same period of time.
- *Absorbed handling of school waste:* The equipment to collect and haul school waste was purchased using local funding, and cost \$41,000. This initial cost will be completely recouped by the end of 2011; the total cost of the equipment plus two years of hauling costs using County drivers and County-owned trucks equals two years contract cost with a private hauler.
- *Purchase of two roll-off trucks:* \$250,000 was borrowed. The cost of buying and maintaining trucks was previously imbedded in the fee that was charged by a commercial hauler. The only difference now is that the County owns the trucks instead of the hauler, and costs are more transparent.
- *All borrowing was from the Virginia Resources Authority, at 4.0952% with a 10 yr. term.*

Staffing Notes

Prior to the overhaul of the system, all Department of Waste Management duties were handled by the following employees:

- *2 Full-time Transfer Station Operators* – operate equipment to load garbage onto tractor trailers that are sent to the landfill; operate scale house; submit annual reports to DEQ
- *1 Full-time Maintenance Supervisor* – supervises Transfer Station operations & employees

Department of Waste Management employees that have been added to the current system:

- *1 Part-time Solid Waste & Recycling Coordinator* – supervises Collection Centers; researches equipment & commodities markets; assists with IFBs and RFPs; interfaces with public, Board of Supervisors, DEQ, & other localities; recommends system improvements; analyzes data
- *2 Full-time Drivers* – responsible for hauling between Collection Centers and Transfer Station and to recycling facilities
- *18 Part-time Collection Center Attendants* – open & close gates; operate compactors; supervise recycling & re-use activities at site; verify that people arriving at site are eligible to use site; keep facility clean, tidy, & litter-free

In addition to the above, several other County employees assist with Department of Waste Management operations:

- *1 Full-time Maintenance Worker* – fills in when needed as an Operator at the Transfer Station (and one of the Transfer Station Operators fills in as a Driver when needed)
- *2 Full-time Finance Officers* – handle billing for commercial account holders at the Transfer Station; responsible for payroll for all employees; pay tipping fee bills at landfill
- *1 Finance Director* – oversees payment of loan monies
- *1 County Administrator* – plays an active role in program oversight

Note on employees added to the system:

- The cost of drivers was previously embedded in the private hauler's fee. Labor costs are now transparent, drivers are subject to direct supervision, and costs are probably slightly lower than when using a for-profit contractor.
- The cost of the wages for part-time attendants is offset by the cost that used to be part of the old unsupervised sites (i.e., handling costs for out-of-county dumping and loss of income on commercial loads that should have been subject to tipping fees at the Transfer Station).
- The savings realized in a greatly improved and efficient system outweigh the cost of having a recycling coordinator to oversee the program.

BEFORE ...



Inspiration #1 for Change

After a busy weekend, unsupervised drop-off sites too often looked like this on a Monday morning. Two Department of Waste Management employees cleaned up this particular mess, and it took more than two hours to do so.



Inspiration #2 for Change ...

Open-top containers were not serviced on weekends by the County's contractor, and they could not always accommodate the volume of garbage deposited on busy weekends. When containers were full, people just dumped on the ground. Trash and bags had to be removed from the containers in this photo before they could be loaded onto a roll-off truck.



Inspiration #3 for Change ...

This is one of the recycle cans rented from a vendor before the County purchased its own new equipment. Located at an unsupervised drop-off site, the contents had to be landfilled due to contamination with garbage. The effort of people who had deposited clean recyclable items was not only wasted, but their good will was squandered.



Inspiration #4 for Change ...

At the end of a three-day weekend, the trash pile beside this open-top at an unsupervised site included a refrigerator, a 5-gallon bucket containing an oily liquid, and several tires. Before it was closed, this particular site was one of the worst for attracting people who wanted to dump unwanted cats.

...and

AFTER!

View of a Collection Center



Office for Attendants





Drive-up Compactors



Collection Center Recycling Containers



Compactor for Cardboard



Mixed Paper Container



Container for Plastic



Container for Metal Cans

Collection Center Re-Use Shed

