CHAPTER V

SOLID WASTE

V. SOLID WASTE

A. ISSUES AND OVERVIEW

In a year of great challenge for our nation as a whole, and for local government in particular, Fairfax County's Solid Waste Management Program was able to maintain the general level of success and productivity it has demonstrated in previous years. Once again, the program increased the published recycling rate for the county – it has increased from 38 percent last year to a new record high of 40 percent. As it has for many years now, Fairfax County's recycling rate far exceeds the Virginia minimum requirement of 25 percent. As always, during this same period of increased recycling, the county has also met the minimum 930,750-ton annual waste delivery obligation to the Energy/Resource Recovery Facility, which is located at the county's I-95 landfill complex, and owned and operated by Covanta Fairfax, Inc.

During this same year past, the program continued to provide waste collection and recycling services to over 45,000 homes in designated County Sanitary Districts. The program also moved a daily average of 185 tractor-trailer loads of municipal solid waste from the I-66 Transfer Station to the Energy/Resource Recovery Facility and other appropriate disposal locations.

1. Energy/Resource Recovery Facility and Landfill Capacity

The E/RRF continued to serve as the primary disposal location for the county's municipal solid waste, processing approximately 1,059,000 tons of waste in FY 2009 (up about three percent from the FY 2008 level). Due to the economic downturn (which greatly affects waste generation) and increased availability, the county had to bypass less than 8,000 tons of waste to a municipal solid waste landfill.

This reflects the Solid Waste Management Program's efforts to deliver all of the county's municipal solid waste to the E/RRF if possible. In addition to avoiding the increased cost of hauling that waste to a disposal site far away, the policy of maximizing the use of the E/RRF also provides substantial environmental and public safety benefits due to having fewer trash trucks driving shorter distances on the region's local roads and highways.

Another ancillary benefit of this E/RRF-centered strategy is that the county can, at its discretion, offer a closer and better waste disposal option to its neighboring jurisdictions. Approximately 12 percent of waste processed by the E/RRF was from neighboring jurisdictions, including Prince William and Loudoun Counties, and the District of Columbia.

2. Solid Waste Management Plan Implementation

The 20-year Solid Waste Management Plan was approved by the Board of Supervisors in 2004. Highlights of the implementation actions as the Plan enters its five-year milestone include the following:

a. Environmental Excellence. The Solid Waste Management Program continued to maintain its Environmental Enterprise certification with the Virginia Environmental Excellence Program, administered by the Virginia Department of Environmental Quality.

Other Solid Waste Management Environmental Excellence goals and objectives for 2009 include the following:

- Continue to support a progressive policy through which currently 14 employees telecommute (28 percent of eligible employees).
- Maintain involvement with the Businesses for the Bay Certification Program.
- Continue to celebrate Earth Day as well as support Virginia Recyclers Association's designation of April as Electronic Recycling month.
- Continue to provide technical and logistical support to the project which is developing an alternative water supply for the E/RRF, using effluent from the Noman M. Cole Pollution Control Plant.
- Continue to sponsor community recycling events and, where possible, include computers and peripheral equipment, cellular telephones, rechargeable batteries, bicycles and eye glasses are reused and recycled. These recycling events are conducted in partnership with a variety of non-governmental organizations and private businesses.

Accomplishments of E2 Program in FY 2009

Continued to operate six hybrid vehicles and two electric vehicles, reducing air emissions from the operating fleet.

Completed the new landfill gas-to-energy project at the closed I-66 Landfill and Vehicle Repair Facility.

Continued to operate two landfill gas-to-energy projects at the I-95 Landfill complex and the newest space heating project.

Held 11 E-waste and specialty recycling events in 2008. Collected approximately 100 tons of obsolete electronic equipment and other usable items that were donated to charity. Of particular note is Covanta's generous contribution of $35,000 towards the cost of properly recycling old televisions and computer monitors collected at these events.

Held three Conditionally Exempt Small Quantity Generator events, collecting a total of 8,610 pounds of Hazardous Waste.

Held five remote household hazardous waste collection events, in addition to two permanent drop-off centers.

Worked with property managers to educate them about new recycling requirements.

Expanded recycling in county buildings by providing new containers to collect cans and bottles.

Introduced a new program at the Government Center where the public can properly dispose of used compact fluorescent light bulbs.

b. Non-Residential and Construction Demolition Debris Recycling

The Solid Waste Management Program continues to target education and outreach activities towards these newcomers to the county's requirement to recycle. The focus of these efforts has been not only to educate business owners and contractors, but also to help these important community groups educate their customers about the need to recycle.

c. Remote Household Hazardous Waste Collection Events

In addition to its permanent collection sites at the I-66 and I-95 complexes, the Solid Waste Management Program conducted five remote household hazardous waste collection events during FY 2009. The collection events were held at locations in the Mount Vernon, Mason, Dranesville, Hunter Mill and Springfield Districts. These remote events are part of the county's Environmental Improvement Program and are dependent upon separate funding by the Board of Supervisors on an annual basis.

d. Solid Waste Management Award from the Solid Waste Association of North America.

Fairfax County's Solid Waste Management Program received a national excellence award from the Solid Waste Association of North America for its "No Collection Before 6 AM" campaign, which places multi-lingual notices on dumpsters close to residential communities, reminding the driver not to collect before 6 AM. The program, which was deployed at no cost to the county, has resulted in the complete elimination of early collection complaints in 2008.

3. Solid Waste Disposal Fee

The contract waste disposal fee, offered to companies that sign agreements with the county, remained at $55.00 per ton in FY 2010, due in part to the loss of General Fund support for programs such as recycling education and household hazardous waste. Further restructuring of the program's finances and a general increase in operational costs has forced the program to increase its base solid waste disposal fee from $57.00 per ton to $60.00 for FY 2010. A complete list of fees for various materials is posted on the county's Web site and at the facilities.

B. PROGRAMS, PROJECTS AND ANALYSIS

1. Waste Disposal Program

a. Overview

The Solid Waste Management Program's Division of Solid Waste Disposal and Resource Recovery is responsible for providing the municipal solid waste disposal

capacity demanded by both private- and public-sector waste collectors countywide. This is accomplished through a network of facilities and programs including:

- The I-95 Landfill Complex and Recycling and Disposal Facility.
- The I-95 Energy/Resource Recovery Facility.
- The I-66 Transfer Station Complex & Recycling and Disposal Center.
- The Household Hazardous Waste Program.
- Other Relevant Activities.

Each element of this network is described under separate heading below.

b. I-95 Landfill Complex and Recycling and Disposal Center

i. Groundwater Monitoring

Groundwater Protection Standards were established for the I-95 Sanitary Landfill on November 20, 2000, through an amendment to the facility permit. In accordance with Waste Management Regulation 9 VAC 20-80-250.D.6.g, an Assessment of Corrective Measures report was submitted to the Virginia Department of Environmental Quality in August 2002. VDEQ commented on the ACM and the county addressed VDEQ's comments by submitting a revised ACM and Corrective Action Plan on April 30, 2004. VDEQ commented on the revised ACM and CAP on April 30, 2007 and the county's response to the comments was submitted on May 23, 2007. We are awaiting VDEQ's approval. The reports describe the nature and extent of groundwater contamination, provide a risk assessment for these conditions and establish a proposed program of corrective action. The county has proposed to implement a five-part remedy for groundwater at the I-95 Landfill complex. Proposed components of the program consist of:

- Institutional controls.
- Engineering controls.
- Monitored natural attenuation.
- Accelerated bioremediation (reductive dehalogenation).
- Direct oxidation.

The county will implement institutional controls in accordance with the closure and post-closure care plan. A number of engineering controls (leachate collection, landfill gas system and placement of cover) have been installed. Placement of the cap on the municipal solid waste portion of the landfill was completed during 2008. As presented in the Assessment of Corrective Measures report, the concentration of most regulated constituents began to attenuate relatively abruptly after engineering controls were implemented during the 1990s. Natural attenuation will be enhanced by injection of food grade material that will enhance microbial activity via reductive dehalogenation. Direct oxidation will be employed in one area of the facility. Two common forms of permanganate (potassium and sodium) will be used. Both are strong oxidizing agents. This will be done in the selected areas. The

county will implement the Corrective Action Plan after final approval from VDEQ.

As part of the investigation, the county has drilled and sampled 16 additional monitoring wells to further delineate and remediate any groundwater problems. Staff will continue to perform the groundwater monitoring to comply with VDEQ's requirements of assessment monitoring. Further, staff will monitor the additional parameters at supplemental locations as specified in the CAP.

These proactive steps will be used at the I-95 Landfill to assure protection of the groundwater resources. These advanced steps are believed to be among the first used at a Virginia landfill. The county continues sampling and monitoring the groundwater and is in compliance with VDEQ's regulations.

ii. Landfill Closure

Capping of the municipal solid waste section of the landfill (an area of 260 acres) was completed during 2008. Phases I and II of the closure of this section were completed by placing a synthetic cap over an area of 125 acres, and Phases III and IV of the closure consisted of capping 135 acres of landfill with a thick, low permeability soil layer to minimize surface water infiltration. Additional landfill gas control systems were installed as part of the closure design. The project was awarded Project-of-the-Year by the Virginia-District of Columbia-Maryland Chapter of the American Public Works Association in 2007.

The capping work on some of the side slopes of the Area Three Lined Landfill was conducted during 2008 by using a synthetic landfill cap.

iii. Landfill Gas System and Air Emissions

The I-95 Landfill operates one of the largest landfill gas collection systems in Virginia, with over 330 installed wells extracting landfill gas for energy recovery. Approximately 2,500 cubic feet per minute of this gas is distributed to a variety of energy recovery systems, including the six-megawatt Michigan Cogeneration Systems electric generating facility, and the three-mile landfill gas pipeline that provides fuel as a substitute for natural gas at the Noman M. Cole Pollution Control Plant. The landfill gas pipeline project continues to provide significant energy cost savings at the NMCPCP.

During FY 2009, county staff continued to install new landfill gas wells to replace existing wells that cease to function properly due to normal landfill settlement.

County staff has also converted space heating at the landfill shop facility to landfill gas (the original heating system used bottled propane gas). This conversion is saving approximately $9,000 per year in heating costs, and

received a National Award from the U.S. Environmental Protection Agency in 2006.

During the reporting period, the county continued its solid compliance history with Virginia's air pollution and landfill gas control regulations. Quarterly methane gas surface emission and perimeter monitoring are conducted as per regulations, and annual air emission reports were submitted to the VDEQ. VDEQ has found all submittals to be acceptable.

iv. Ash Landfill

Ash resulting from the E/RRF combustion process reduces the processed waste to only 10 percent of its original volume and about 25 percent of its original weight. Therefore, ash disposal requires significantly less landfill space than that which is consumed by the disposal of raw municipal solid waste. Incinerator ash from the E/RRF, from a similar Covanta facility serving the City of Alexandria and Arlington County and from the NMCPCP are all disposed at the I-95 (Area Three Lined Landfill) Ash Landfill. Ash is placed in a double-composite lined landfill, controlled by state-of-the-art leachate collection and detection systems.

The ash landfill has four phases. Phases I and II have reached the capacity and an intermediate cover has been placed. Approximately 1,000 tons of ash is placed daily in the ash landfill. Approximately 6,000 tons of shredded tires were used as a protective layer during the construction of Phase II of the ash landfill. Using this material not only recycled the tires, but also saved approximately $86,000 in the cost of gravel and other aggregate materials. Construction of Phase IIIA of the ash landfill was completed during March 2008. A certificate to operate from VDEQ was obtained on August 21, 2008 and the county has been placing ash in the new cell since October 2008. Phase IIIA has a disposal capacity for ash for five years.

The E/RRF's suite of pollution control equipment includes a dolomitic lime system that chemically treats the ash to reduce the possibility of metals leaching from the ash after landfilling. During FY 2009, ash produced at the Covanta facilities was analyzed by an independent lab and was found to be within the regulatory limits for all constituents (i.e., it is non-hazardous).

A metallic constituent of the E/RRF's ash of particular concern is cadmium. The Solid Waste Management Program supports and actively publicizes efforts

to collect rechargeable nickel-cadmium batteries separately for recycling. Through a partnership with the Rechargeable Battery Recycling Corporation, large retailers such as Wal-Mart, Radio Shack and Best Buy are collecting old batteries as new ones are sold. The batteries are recycled at a permitted waste management facility specifically designed to recover these metals. This effort is anticipated to significantly reduce the amount of cadmium present in E/RRF ash.

v. Recycling and Disposal Center

The Recycling and Disposal Center allows county residents and small businesses to bring their municipal solid waste and recyclables directly to the I-95 Complex for disposal. The center offers a full range of recycling opportunities, as well as household hazardous waste disposal service. Recycling is free to residents. During FY 2009, users visited the I-95 Recycling and Disposal Center over 88,000 times.

c. Energy/Resource Recovery Facility

i. Overview

Operations at the Energy/Resource Recovery Facility continue to meet or exceed accepted industry standards, as evidenced by the annual independent engineering report prepared by Dvirka and Bartilucci Consulting Engineers in November 2008. This report states, "CFI [Covanta Fairfax, Inc.] has complied with the requirements of the Service Agreement, as amended, and has complied with the Facility's various environmental permit and regulatory obligations."

Since 2008, when CFI was released from the E/RRF's federal output limit of 80 megawatts, the plant now generates an additional 1-2 MW of electricity during peak periods, which is sold at premium prices on the PJM regional energy market (extra revenues being shared with Dominion Virginia Power, which facilitates the sale). Revenue from the sale of the "extra" electricity is used to keep the disposal fees lower.

ii. Quantity of Waste Processed

The county has guaranteed to provide and the E/RRF has agreed to process at least 930,750 tons of municipal solid waste per year. In FY 2009, the E/RRF processed approximately 1,059,000 tons of waste (almost 88,250 tons per month). Approximately 825,000 tons of this waste (78 percent) originated in Fairfax County, with the remainder coming primarily from Prince William County and the District of Columbia. The quantity of Fairfax County waste generated has been reduced, partly due to increased recycling initiatives and the economic slowdown.

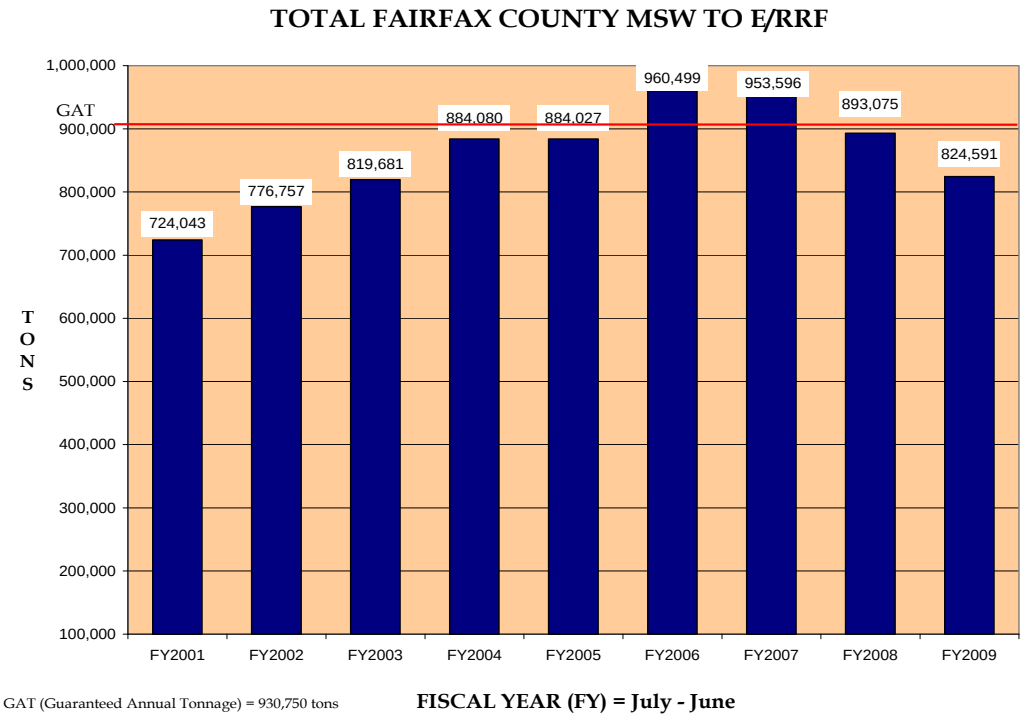

Figure V-1. Total Fairfax County Municipal Solid Waste to E/RRF FY2001-2009

iii. Air Quality

The E/RRF's continuous emissions monitoring systems sample flue gas from the combustion process and alerts CFI operating personnel when monitored emissions are approaching the concentration limits specified in the facility's air pollution control permits. Permit exceedances must be reported to VDEQ, with an explanation as to the circumstances of the event and proposed solutions, as warranted. The E/RRF continues to meet its air permit limits, with most parameters well below their regulatory limits. The following stack emissions were documented by an independent lab test in June 2008 and reported to VDEQ.

Table V–1 Energy/Resource Recovery Facility Emissions Results June 2008		
Parameter	**Permit Limit**	**Average E/RRF Result**
Sulfur Dioxide (SO_2)	29 ppm	7.5 ppm
Carbon Monoxide (CO)	100 ppm	6.25 ppm
Nitrogen Oxides (NO_x)	205 ppm	193 ppm
Hydrochloric Acid (HCl)	29 ppm	4.86 ppm
Particulate Matter (PM)	27 mg/dscm	2.65 mg/dscm
Mercury (Hg)	0.080 mg/dscm	0.00222475 mg/dscm
Dioxin/Furans*	30 ng/Nm3	1.47 ng/Nm3

ppm = parts per million mg = milligram ng = nanogram
Dscm = dry standard cubic meter * only one unit tested annually

Covanta Fairfax, Inc, Annual Compliance Stack & RATA Test Reports, (COV Report No. 326808), 08/05/08

iv. Material Recovery

In addition to recovering energy from municipal solid waste, metals are recovered from the ash residue and recycled. In FY 2009, 27,680 tons of ferrous metal and 1,294 tons of non-ferrous metal were recycled from the ash.

d. I-66 Transfer Station & Recycling and Disposal Center

The I-66 Transfer Station continues to handle approximately 75 percent of the county's municipal solid waste destined for disposal. The Transfer Station consolidates waste delivered by individual residents and businesses, and also private sector and county collection vehicles, into large transfer trailers. These trailers are hauled over the road to a final disposal site, primarily to the E/RRF. Primary benefits from this type of transfer system are a reduction in the number of vehicles traversing the county to reach the final disposal point, and reduced operating costs for the county's solid waste management system as a whole. Further, the Transfer Station plays a pivotal role when waste needs to bypass the E/RRF.

VDEQ regularly inspects the Transfer Station; the facility was found to be in full compliance during all inspections in FY 2009.

i. Transfer Operations

The main role of the Transfer Station is to move waste collected in the northern and western parts of the county to the E/RRF in the south. With increased development and population growth, waste collection companies are bringing more and more waste to the facility. Moreover, technology has given us collection vehicles that can now hold (and deliver) more waste per trip. As a result, the daily tonnage being managed by the transfer operations has grown. In order to meet the growing demand for waste transfer, the county has supplemented its fleet of tractor trailers with private trucking contractors.

The county vehicle fleet, including the transfer trucks at the Transfer Station, now uses ultra-low-sulfur diesel fuel and exhaust after treatment systems. These changes reduce air pollutant emissions as much as possible, while performing the mission of transporting increased amounts of waste.

An automated truck wash system has been installed in the existing truck wash building. The state-of-the-art system will better recover and recycle water, discharging minimal amounts to the sewer while reducing manpower requirements to wash large vehicles. Other county vehicles, including waste collection vehicles, are washed here as well.

In FY 2009, the project to convert space heaters to use landfill gas at the Department of Vehicle Services shop near the closed I-66 landfill was completed. This project is expected to save $50,000 annually on fuel costs.

In a pilot program to reduce fuel consumption and air emissions in the transfer fleet, by decreasing the amount of time idling, six of the program's tractors have been equipped with battery-powered heat and air conditioning systems that provide up to two hours of air conditioning comfort without running the truck's engine. At this early stage, the units seem to be performing well, but computer analysis of the engine idling times will be the true test. Given continued success with this pilot program, it is anticipated that additional trucks will be converted if funding is made available.

ii. Recycling and Disposal Center

Photo of the Recycling and Disposal Center under construction in April 2008

The Transfer Station Complex also has one of the county's two Recycling and Disposal Centers where residents and small businesses self-haul their waste and recyclables. In FY 2009, users visited the I-66 site more than 191,000 times. The facility has undergone

significant modernization to accommodate growing local demands for recycling and disposal services. New scales and booths, improved entrance and egress, and newer technology have been installed to improve customer service and increase capacity.

e. Household Hazardous Waste Program

The Household Hazardous Waste and the Conditionally Exempt Small Quantity Generator collection programs are operated by the Solid Waste Management Program; however, the statistics about the program results are provided in the Hazardous Materials chapter of this report.

f. Other Relevant Activities

All solid waste collection companies in Fairfax County must hold a Certificate to Operate and individual vehicle permits, both issued by the Solid Waste Management Program. An integral requirement of these permitting programs is that permitted collectors must demonstrate that they comply with all applicable provisions of Chapter 109.1, the county's solid waste management ordinance.

The Solid Waste Management Program has responsibility for enforcing Chapter 109.1 and for resolving any potential violations observed by program staff. In addition to this responsibility, the program also coordinates with other county agencies as necessary to lead enforcement of relevant provisions of other chapters of the County Code related to the solid waste management aspects of public health menaces, nuisance noise and debris landfills.

2. Waste Reduction and Recycling Programs

a. Overview

The Solid Waste Management Program's Division of Solid Waste Collection and Recycling assumes the lead role regarding the management and implementation of the countywide recycling program.

The Virginia Department of Environmental Quality is responsible for establishing the regulations that require all municipalities in the Commonwealth to recycle a certain minimum percentage of the total volume (by weight) of Municipal Solid Waste generated in the jurisdiction. These regulations are codified as 9 VAC 20-130-10, and Fairfax County is responsible for meeting a 25 percent threshold. Smaller communities, with low population or low employment statistics, are required to meet a lower threshold, set at 15 percent. Reports documenting the recycling rate for the preceding calendar year are required to be sent to VDEQ each year in the spring. Fairfax County's recycling rate for calendar year 2008 was 40 percent, which represents a full fifteen percentage points above the required rate of 25 percent.

Chapter 109.1 requires annual reports on the tonnages of recyclables collected by a broad spectrum of businesses and commercial establishments, material recovery facilities, and other entities that operate in the county. These reports are compiled to calculate the countywide recycling rate. Figure V-2 depicts the historical quantities of recyclables collected in the county since 1988. Since the recycling program's inception in 1988, the county has recycled over 7.1 million tons and continues to exceed the state-mandated requirement.

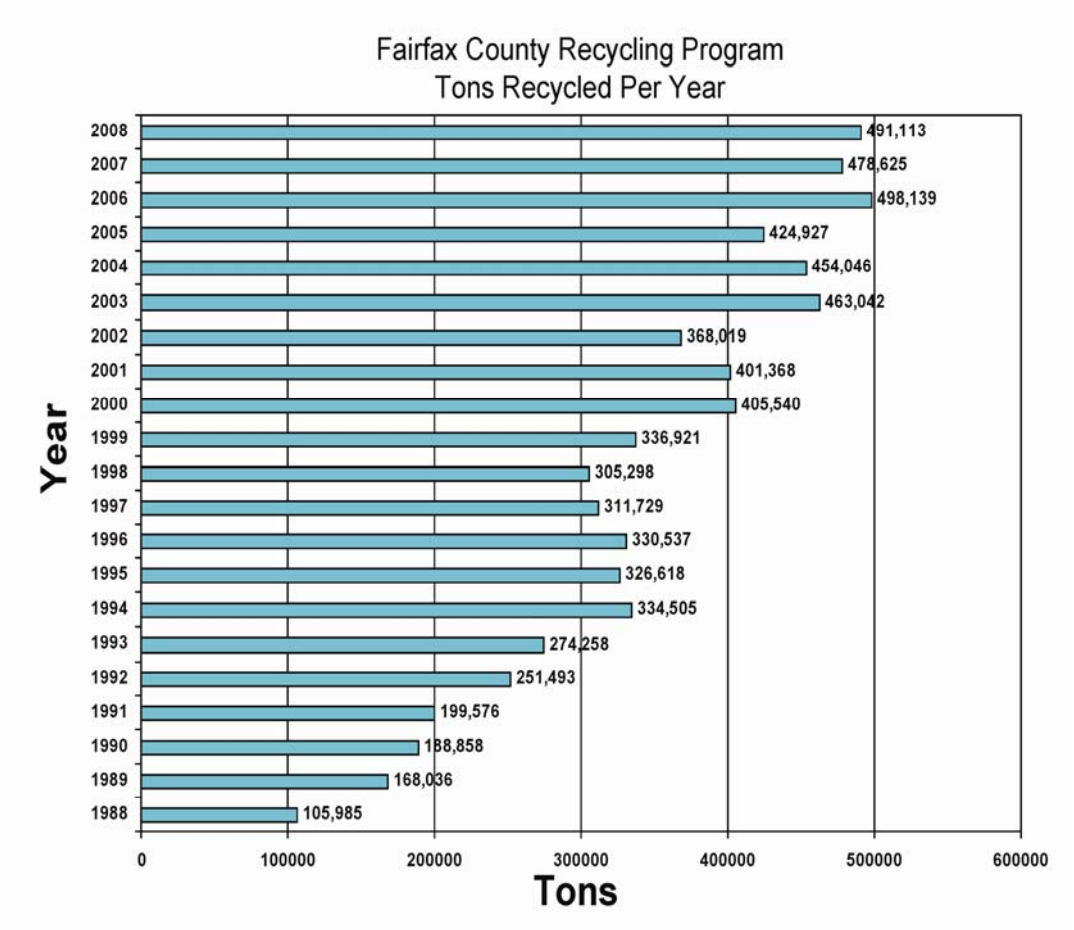

Figure V-2 - Historical Quantities of Materials Recycled in Fairfax County

Currently, all residential properties in Fairfax County receiving curbside trash collection must also be provided with recycling collection. Recyclables that must be collected at the curb, in conformance with Chapter 109.1, include: metal food and beverage containers; glass bottles and jars; plastic bottles and jugs; mixed paper; cardboard; and yard waste.

Recycling of mixed paper and cardboard is required for all nonresidential properties in the county. All nonresidential entities that generate a principal recyclable material other than mixed paper and cardboard are required to recycle that material in addition to the mixed paper and cardboard.

Recycling of mixed paper and cardboard is required for all multifamily buildings in existence prior to July 2007.

Recycling of mixed paper, cardboard, metal food and beverage containers, glass bottles and jars and plastic bottles and jugs is required for all multifamily buildings constructed *after* July 2007. Appliances from these properties are also required to be recycled.

Recycling of mixed paper and cardboard is required for all schools and institutions.

All construction and demolition contractors are required to recycle cardboard.

b. Major Program Additions in FY 2009

Fairfax County constantly reviews its solid waste management practices to accommodate changes in the waste generated within the county. Based on changing community needs, the Solid Waste Management Program attempts to provide solutions for managing new (and thus sometimes) problematic wastes. Two emerging waste streams were identified by the program and new programs were initiated so that these wastes could be better managed. The wastes were compact fluorescent lamps (and other fluorescent lamps) and E-wastes, including old computers and televisions with cathode ray tubes.

Compact Fluorescent Lamps

The management of compact and other fluorescent lamps from residences in the county was addressed in several ways. CFLs and other fluorescent lamps can be taken to either of the county's Household Hazardous Waste facilities at the I-66 Transfer Station complex in Fairfax or the I-95 Landfill complex in Lorton. Both of the facilities take these lamps at no charge to county residents. In FY 2009, the Solid Waste Management Program hosted five household hazardous waste collection events around the county to give residents another convenient way to properly dispose of these light bulbs.

The program also started to collect CFLs at the document shredding events held around the county each year. CFL collection for Fairfax County residents and employees is also available in the program's office location at 12000 Government Center Parkway, Suite 458. Information detailing these recycling opportunities is on the county Web site at: http://www.fairfaxcounty.gov/dpwes/recycling/mat-light.htm. This portion of the Web site also provides information about other organizations in the county that are accepting CFLs for recycling.

E-Wastes

In FY 2009, the Solid Waste Management Program initiated its "Electric Sunday" program whereby, on one Sunday each month, residents can bring their e-wastes for recycling to the I-66 transfer station.

With the end of analog television broadcasting in CY 2009, the Solid waste Management Program is in the process of addressing the disposal of televisions from residents who purchase new digital equipment. The program is now accepting televisions at electronic collection events around the county. In calendar year 2008, 2,305 monitors with cathode ray tubes and 956 televisions were collected for recycling at county sponsored events. As reported to the county from all sources, 560 tons of e-wastes were recycled from residents and businesses in the county.

c. Review of Collection and Recycling Programs

In addition to county-wide recycling program management, the Solid Waste Management Program is responsible for:

- Collection of refuse and recyclables from about 44,000 residences, primarily on the east side of the county in designated Sanitary Districts.
- Collection of refuse and recyclables from county-owned buildings.
- Seasonal curbside vacuum leaf collection for about 23,000 residences.
- The management of eight Recycling Drop-Off Centers.
- Removal of oversized piles of trash through the *Clean Streets Initiatives* and *MegaBulk* programs.
- Refuse removal due to evictions and other court orders.
- Assistance in the removal of materials damaged by storm, floods or other emergency situations.
- Public outreach and education on recycling, household hazardous waste and solid waste management.

The Megabulk program was originally established for county refuse and recycling customers in Sanitary Districts to collect oversized piles of refuse and yard debris. Customers schedule this service and pay an additional fee for the collection of oversized quantities of materials that are not part of the basic level of service for routine weekly collections. The service is now available to residents countywide, based upon equipment and personnel availability.

Working in conjunction with the Fairfax County Health Department, the Solid Waste Management Program's Clean Streets Initiative is designed to address complaints from residents about piles of refuse that are placed in neighborhoods where the property owner does not take responsibility for its timely removal, or where no responsible party can be found. Under this initiative, the property owner is notified that the refuse must be removed, and if he or she fails to do so or otherwise cooperate, the Solid Waste Management Program removes the refuse and bills the owner for removal of the material. If the property owner refuses to pay that bill, a lien is placed on the property.

i. Yard Waste

Recycling of yard waste (brush, leaves and grass) is required for all residential properties in Fairfax County, and collection of that yard waste is required to be provided as part of the base level of service by all permitted collection companies operating in the county from March 1st through December 24th of each year. Yard waste recycling is suspended in the months of January and February is because very few leaves and virtually no grass are generated during that part of the year.

Townhouse communities may apply to the county for approval of an alternative yard waste recycling system. The reason for this flexibility is because lawns are typically small and these communities contract with landscaping firms that groom common areas. For almost three years now, Fairfax County has required all townhouse communities to apply for approval of an alternative yard waste recycling system. Approximately 200 townhouse communities have approved alternative recycling systems for yard waste.

Woody materials, referred to as brush, comprise a significant portion of the yard waste collected in the county. Brush is managed at either the I-66 or I-95 facility and is ground into mulch. The mulch from these facilities is available free to county residents who can self-haul the material to the end use location. Typically, mulch is used as a top-dressing around decorative plantings to reduce weed growth and to maintain soil moisture.

Leaves and grass comprise the balance of the yard waste managed in the county. This material is generally collected in bags or by curbside vacuum collection and is sent to either of two composting facilities where the material undergoes biological decomposition to turn it into compost. Typically, compost is used as a soil amendment or substitute. In 2008, over 200,000 tons of yard waste were recycled in Fairfax County.

Leaves collected in the fall by the county for customers receiving (and paying for) curbside vacuum leaf collection are ground during the vacuuming process. These ground leaves are taken to several Fairfax County parks where the ground leaf mulch is available for use by the Park Authority and by residents who can haul it away themselves for use in their yards.

ii. Recycling Drop-Off Centers

Fairfax County operates eight Recycling Drop-Off Centers at various locations throughout the county. These are unmanned facilities, open 24 hours, and there is no fee to use them. No new centers have been added to the county system in approximately 10 years, but the existing facilities are used frequently by residents and about 5,000 tons of recyclables are collected annually in the drop-off centers. Recycling Drop-Off Centers continue to play an important role in supporting recycling in the community, serving patrons in multifamily units and small businesses. However, the centers appear to be experiencing a gradual downward trend in usage, and the county bears significant costs to clean up illegal dumping of garbage, appliances, demolition debris and other inappropriate materials at these sites.

iii. County Agency Routes

All county agencies receiving refuse collection and recycling services from the Solid Waste Management Program participate in the county recycling program. In FY 2009, county agency locations recycled approximately 911 tons of material. The program provides containers for the collection of bottles and cans (plastic bottles, aluminum beverage cans and glass bottles) from buildings owned and occupied by Fairfax County and its employees. These plastic containers have been placed in all of the county's larger office buildings and most of the smaller agency buildings in areas where beverages are sold and consumed like cafeterias and conference rooms. Existing can and bottle collection containers already placed in county buildings were all relabeled in the hope of refocusing county employee efforts on recycling. Additionally, cardboard containers used to collect paper from county buildings were replaced due to damage or age.

iv. Document Shredding

Fairfax County offers residents the opportunity to shred personal documents at certain locations around the county, usually in conjunction with electronic recycling events or household hazardous waste collection events. This service is offered to help residents protect their personal financial information while directing the shredded paper to a recycling facility. In FY 2009, 10 document shredding events were held. As of June 2009, approximately 100 tons of personal documents had been shredded.

v. Public Education and Outreach

Public education and outreach are key components of any successful municipal recycling program. To that end, the Solid Waste Management Program has focused on developing creative education programs that take advantage of its partnerships with county agencies, Fairfax County Public Schools, community organizations (e.g., scouts, youth groups, Jaycees), commercial businesses and privately-owned collection companies. Outreach programs consist of: activities

and displays at county festivals; support and publicity for several events specifically dedicated to recycling; public speaking opportunities; and technical support in the research of recycling technologies and issues.

The Solid Waste Management Program continues to partner with the Fairfax County Wastewater Treatment Program in its educational effort entitled "Sewer Science." This program is a hands-on class that Wastewater Management employees have introduced into Fairfax County high schools. The program teaches high school students about municipal wastewater treatment through a week-long laboratory that simulates wastewater treatment processes. Sewer Science, which supports the Virginia Standards of Learning for biology and chemistry, is taught by science teachers with assistance and support from county employees.

Both the county's stormwater program and the solid waste management program have been invited to assist in the Sewer Science program to teach high school students about how stormwater is managed and what happens to refuse and recyclables in the county. Staff members from all three of these county environmental programs collaborate with high school science teachers to tailor information to meet the educational needs of the students. To date, the Solid Waste Management Program has made over 100 presentations to Fairfax County high school students about how trash and recycling are managed in the county.

The Solid Waste Management Program continues to work closely with the Northern Virginia Regional Commission on a regional public information program entitled "KnowToxics." The purpose of this program is to educate business owners about their responsibility to comply with federal and state regulations that require proper disposal or recycling of spent fluorescent lamps, rechargeable batteries and computers and related electronics. The program is centered on its Web site: www.KnowToxics.com which provides a resource where businesses can learn how to legally and appropriately manage these materials.

The Solid Waste Management Program has also continued a rechargeable battery recycling program, in collaboration with the Rechargeable Battery Recycling Corporation Program. RBRC is an industry-funded program where rechargeable batteries can be collected and sent for recycling at no charge. Collection boxes for rechargeable batteries are now located at offices of all members of the Fairfax County Board of Supervisors and at major county buildings. A complete listing of collection locations is on the county Web site at: http://www.fairfaxcounty.gov/dpwes/recycling/mat-bat.htm

The Fairfax County Solid Waste Management Program partnered with the Metropolitan Washington Council of Governments to produce the Builder's Guide to Refuse and Recycling.

In years past, the program has participated in Celebrate Fairfax and Fall for Fairfax. Both of these events have been a major portion of the county's overall public outreach campaign, providing the program with opportunities to disseminate technical guidance and practical information on using the county's solid waste management system. However, due to budget constraints, there was no exhibit at Celebrate Fairfax this year. Efforts were instead focused on the Fall for Fairfax event, which was hosted in October 2009.

The Solid Waste Management Program is a proud financial sponsor of the annual Earth Day/Arbor Day celebrations promoted by Clean Fairfax Council. The program also supports the Johnie Forte Jr. Environmental Scholarship, which awarded fourteen $500 grants to applicants from the Fairfax County Public Schools. Student groups receiving the grants are invited to make a presentation regarding their use of the grant in front of members of the Board of Supervisors, at the annual Earth Day/Arbor Day celebration at Northern Virginia Community College. The annual Fairfax County Business Recycling Awards are also presented at this same event, recognizing businesses that excel in their recycling efforts.

This scholarship program is a portion of the Schools/County Recycling Action Partnership. This partnership was created by the Fairfax County Public Schools and the Solid Waste Management Program to provide opportunities for the students of Fairfax County Public Schools to learn about recycling and other environmental issues and to enhance recycling throughout the system. The program developed the scrapbook, a resource tool distributed to all science teachers in the school system, that details all of the opportunities provided by the program and the Clean Fairfax Council to aid in the instruction of students, including training and presentations, tours and how to apply for the Johnie Forte grant award.

The Solid Waste Management Program also supports the county's Employee Recycling Committee. The committee meets monthly and works on projects designed to encourage county employee participation in recycling. The group coordinated the county employee's Earth Day Expo celebration and the Employee Recycling Committee Recycler of the Year Award.

The county Earth Day Expo is held annually at the Government Center, in conjunction with another event for all administrative assistants in the county. Many county agencies with responsibility for environmental protection and stewardship in the county participate, with informational booths staged in the Government Center during the lunch hour. These booths provide an

opportunity for attending employees to better understand the services provided by these agencies.

America Recycles Day 2008 was celebrated on November 10, 2008, with the Community Recycling Roadshow at Herndon High School. At the end of the day, the Solid Waste Management Program collected 193 pairs of eyeglasses for the Lion's Club of Fairfax and 211 cellular telephones for OAR of Fairfax County. Safeguard Shredding reported six tons of paper shredded at the event. Bikes for the World received over 75 bicycles. ServiceSource and CDM E-Cycling received over 30 tons of computer and peripheral equipment (including televisions, CD and DVD players and telephones). Art for Humanity collected sewing machines, window air conditioning units, baby strollers and microwaves and filled a 16-ft. trailer completely with clothing, towels and linens.

The Rechargeable Battery Recycling Corporation Program received more than 275 pounds of rechargeable batteries.

Another aspect of the Solid Waste Management Program's public outreach and education effort is active involvement in community events and public speaking opportunities and support to various community special interest groups such as the Lorton Citizens Alliance Team and the annual Residents Solid Waste Forum. The Residents Solid Waste Forum meeting was held on May 12, 2009.

The program also uses the Internet by posting pertinent information about timely subjects on the program's Web site. Information about the program's involvement in community events, as well as new information about solid waste matters, can be found at: www.fairfaxcounty.gov/living/recycling.

Staff continues to update the Solid Waste Management Program's Web site to improve its ease of use for residents and businesses. More information was

added to help county residents, solid waste industry companies and schools access forms, data and publications about the program.

The program also published an electronic "listserv" to county collection customers to automatically send updates to customers on the program and to provide updates regarding service changes due to inclement weather. A similar "listserv" tool was developed to give vacuum leaf collection customers the most up-to-date information on the exact dates that the leaf collections would be conducted on their streets in order to ensure that residents would have time to rake their leaves to the curb.

The Solid Waste Management Program published for distribution to county residents (and others, upon request) a brochure that consolidates and summarizes information about the program. Printed on recycled paper, the color brochure briefly provides an overview of the program.

vi. Awards and Recognition

The Solid Waste Association of North America recognizes outstanding solid waste programs and facilities through its Excellence Awards Program. These annual awards are presented to governmental organizations that advance the practice of environmentally and economically sound solid waste management through their commitments to: 1) using effective technologies and processes in system design and operations; 2) advancing worker and community health and safety; and 3) implementing successful public education and outreach programs. Programs also must demonstrate that they are fiscally and environmentally responsible through their compliance with all applicable federal, state and local regulations. In 2008, Fairfax County's Solid Waste Management Program was awarded the annual Excellence Award in the category of "Communication" at the silver level by SWANA.

3. Clean Fairfax Council

Clean Fairfax Council is a private, nonprofit (501(c)(3)) corporation dedicated to the education of the residents, students and businesses of Fairfax County on issues relating to litter prevention and recycling. Environmental education and lessons on sustainability are provided to students and adults throughout the county. The council is currently working toward a less paper-intensive outreach program including e-newsletters, an environmental blog and updated website, educational videos, interactive programs for students, community service opportunities for students (i.e., support at the council's office), classroom presentations and presentations to homeowner associations and other groups. All of the council's informational brochures are translated into the six major foreign languages used in Fairfax County: Korean; Spanish; Urdu; Farsi; Vietnamese; and Chinese.

A key effort of the council is the sponsorship of spring and fall cleanups. These cleanups are accomplished by the council sending information regarding the cleanups to all homeowner associations, public schools and assorted churches and businesses.

The council asks volunteers to plan their cleanup by selecting a site, gathering volunteers and setting a date and time. Then, if they fill out a sign-up form and send it to the council, they are provided trash bags, recycling bags, vests and safety tips along with an automobile litter bag and a memento for each participant. In its FY 2009 annual report to the Virginia Department of Environmental Quality, the council notes that there were 8,649 participants at 185 cleanup events; over 532 cubic yards of litter were collected at these events. The value of the volunteer hours (estimating three hours per volunteer) is approximately $466,260.00

The report also notes the distribution of over 200,000 pieces of informational materials (e.g., brochures, newsletters), 30 youth presentations/workshops (with a total attendance of 2,500), six additional group presentations/workshops (again with a total attendance of 2,500) and four staffed displays/events (e.g., fairs, community events) with an estimated attendance of 36,000.

The council also sponsors an "Adopt-A-Spot" program whereby residents can adopt a spot for two years and pledge to clean it up four times a year. Additionally, the council produces the annual Fairfax County Earth Day/Arbor Day Celebration held in late April.

There are many other programs offered by the Clean Fairfax Council, including programs that are beyond litter prevention/control aspects. For more information, please visit the Web site at www.cleanfairfax.org.

4. Alice Ferguson Foundation

The nonprofit Alice Ferguson Foundation was established in 1954. While chartered in Maryland, it has implemented programs throughout the Potomac River watershed, with benefits to the main stem of the river as well as tributaries in Washington, DC, Maryland, Pennsylvania, West Virginia and Virginia. As stated on its Web site, the foundation's mission is "to provide experiences that encourage connections between people, the natural environment, farming and the cultural heritage of the Potomac River Watershed, which lead to personal environmental responsibility."

On April 4, 2009, the foundation held its 21st annual **Potomac River Watershed Cleanup**. This was truly a comprehensive, watershed-wide effort, in that there were over 500 cleanup sites in four states and the District of Columbia. A total of over 291 tons of trash were removed by over 13,500 volunteers. Items removed included over 41,000 plastic bags and over 2,000 tires. Among the more interesting items removed were a bowling ball, a safe filled with concrete, a soccer goalpost, a machete and three tiki torches. In Fairfax County and the City of Fairfax, nearly 1,900 volunteers working at over 100 sites collected over 77,000 pounds of trash, including 248 tires, over 30,000 bottles and over 4,600 cigarette butts.

Other programs implemented by the foundation include:

Trash Free Potomac Watershed Initiative—This is a program to reduce trash and increase recycling, education and awareness of trash issues in the watershed

Potomac Watershed Trash Treaty—As of fall 2008, this treaty commits 100 signers to achieving a "Trash Free Potomac by 2013" and to: support and implement regional strategies aimed at reducing trash and increasing recycling; increase education and awareness of the trash issue throughout the Potomac watershed; and reconvene annually to discuss and evaluate measures and actions addressing trash reduction. Fairfax County was one of the founding signers of the treaty in 2005.

Potomac Watershed Trash Summit—The foundation convenes this meeting annually to provide a venue for key stakeholders to collaborate on strategies to eliminate trash from waterways, communities, streets and public lands, including regional public policy, model best management practices, business actions and public education.
Enforcement—The foundation worked in partnership with the Metropolitan Washington Council of Governments' Police Chief Committee on "Litter Enforcement Week," which provided a focus on litter-related crimes and raised awareness of the harmful effects trash has on communities and the environment.

There are numerous other programs and initiatives that are implemented by the foundation; the reader is encouraged to visit the foundation's Web site at www.fergusonfoundation.org.

C. RECOMMENDATIONS

No new recommendations are proposed this year.

REFERENCES

Much of the narrative and illustrations were supplied by the following agencies of the Department of Public Works and Environmental Services:

- Division of Solid Waste Collection and Recycling.
- Division of Solid Waste Disposal and Resource Recovery.

EQAC also acknowledges Clean Fairfax Council and the Alice Ferguson Foundation for information provided through e-mails.