

# Draft Solid Waste Management Plan

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## 1.0 EXECUTIVE SUMMARY

The Prince William County Solid Waste Management Plan (SWMP) provides a comprehensive evaluation of the current solid waste infrastructure, policies, programs, and practices. The findings support the development of future enhancements and improvements to its collection, diversion, recovery, and disposal programs. The planning process is further described in Section 7.

The SWMP complies with State law (Code of Virginia, Section 10.1-1411) and regulations implemented through the Virginia Department of Environmental Quality for solid waste planning. The Plan is comprised of nine sections. Following is a brief description of their contents.

- **Section 2 - Introduction and Purpose of Plan** presents members of the planning district, goals for the SWMP, and participants in the planning process.
- **Section 3 - Planning District Description and Conditions** presents county characteristics, including climate, geology, and transportation conditions, which may influence waste collection practices. General demographic data such as population, housing, urban concentrations and employment are also presented.
- **Section 4 - Waste Generation and Composition** presents historical MSW and construction and demolition waste (CDD) quantities, estimates per capital waste generation, and projects future waste quantities. Waste diverted from landfill disposal through reuse, recycling, and composting and other programs is also estimated as well as future waste diversion potential.
- **Section 5 - Waste Management System Overview** presents administration as well as and federal, state, and regional governance related to the management of MSW and CDD generated in the County. Waste collection, diversion, and disposal programs are described and public and private waste management facilities are identified. Public education activities are also identified.
- **Section 6 - System Funding** presents the FY2022 Solid Waste Program budget and describes annual revenue and expenses.
- **Section 7 - Public Participation** presents engagement of the Solid Waste Advisory Group and Incorporated Towns.
- **Section 8 - Needs Assessment** identifies opportunities to improve efficiency of existing collection programs, achievement of waste diversion programs, capacity for waste disposal needs, and regional cooperation with adjacent jurisdictions.
- **Section 9 - Waste Management Initiatives** brings together the findings and recommendations of the planning process into an implementation schedule. The implementation timeframe helps achieve the goals of the Prince William County Solid Waste Management Plan for the next 20 years.

## 2.0 INTRODUCTION AND PURPOSE OF PLAN

The Prince William County Solid Waste Division (SWD) provides an integrated waste management system for the County that is well received and respected by the community. The SWD recognizes that increasing population, new single and multi-family home developments, and growth in commercial establishments will require additional services, resources, and infrastructure to continue the same level of service.

The County’s most recent Solid Waste Management Plan was developed in 2004. To be current with industry trends and conditions and address growth, the SWD contracted with SCS Engineers to update the Solid Waste Management Plan (Plan), which included a review of existing programs and identification of future needs. This Plan provides Prince William County’s integrated strategy for the management of non-hazardous solid waste generated within the County over the next 20 years.

### 2.1 PLANNING DISTRICT

Prince William County and the Towns of Dumfries, Haymarket, Occoquan, and Quantico have formed a region for solid waste management that is addressed by this Plan (Appendix A). When the term County is used in this plan, it shall include the County and the Towns cited above.

### 2.2 PLAN GOALS

The intent of the Plan is to establish a foundation for long-term management of solid waste in Prince William County. The Plan’s goals are continued from the 2004 Plan and are presented below.

Table 1. Solid Waste Management Goals

Goal	Description
1	Continue to provide a cost-effective and environmentally protective <b>sanitary landfill</b> within the County for the disposal of non-recycled municipal solid waste (MSW) and to extend the life of the landfill for as long as possible.
2	Ensure that efficient <b>MSW collection services</b> are available for County residents at a reasonable cost.
3	Continue the implementation of a County-wide <b>recycling plan</b> , including yard waste composting, that will meet or exceed the recycling rate mandated by the Virginia DEQ.
4	Continue and expand solid waste <b>source reduction and reuse</b> programs.
5	Encourage private sector efforts that bring cost-effective recycling and disposal options for <b>construction and demolition debris (CDD)</b> to the County.
6	Continue to provide adequate collection services for <b>special wastes</b> (e.g., oil, oil filters, antifreeze, tires, batteries, etc.) generated within the County.
7	Provide for adequate <b>funding</b> of County solid waste management programs and capital improvement.
8	Continue <b>cooperation with adjacent jurisdictions</b> to implement beneficial solid waste management programs on a regional basis.

## 2.3 PARTICIPANTS

The County's SWD staff provided data and input into the Plan along with review and comment throughout the development of the Plan. A Solid Waste Advisory Group (SWAG) consisting of 16 members, who are appointed by the Prince William Board of County Supervisors. Current and alternative solid waste management policies and procedures were presented to the SWAG between October 2020 and April 2021 during monthly meetings. SWAG feedback was solicited and is incorporated into the Plan.

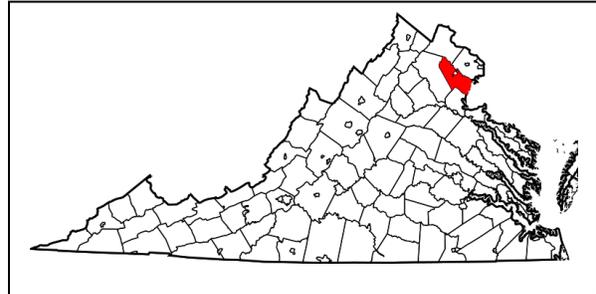
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### 3.0 PLANNING DISTRICT DESCRIPTION AND CONDITIONS

Natural conditions such as geography and transportation as well as population growth and commercial development influence a solid waste system and the strategies to manage waste in an environmentally sustainable and socially acceptable manner. This section of the Plan describes the County’s geography, transportation, population, and economic characteristics.

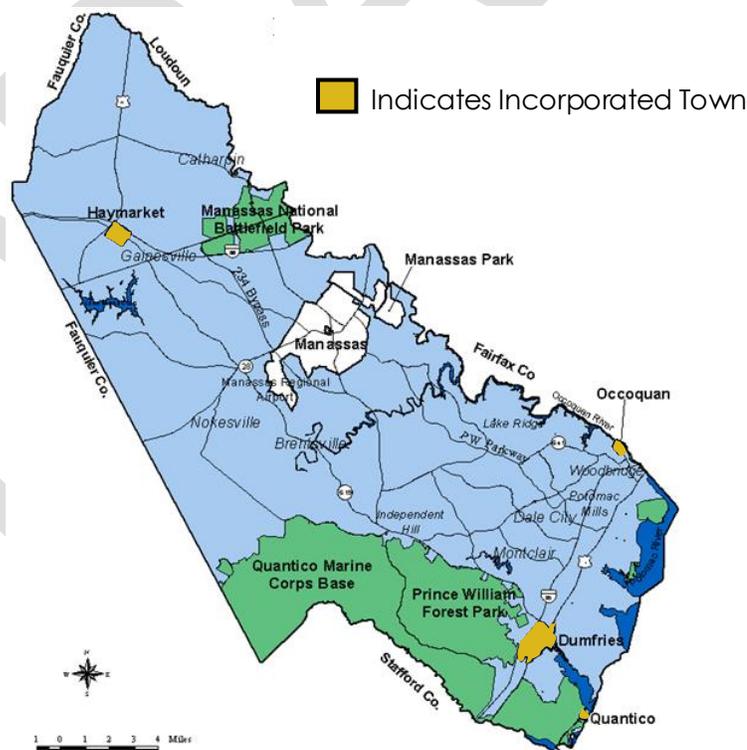
#### 3.1 GEOGRAPHY

Prince William County is located in Northern Virginia, approximately 35 miles southwest of Washington, D.C. The County encompasses the Quantico Marine Corps Base and the Towns of Dumfries, Occoquan and Quantico in the south and east, and the Cities of Manassas and Manassas Park and the Town of Haymarket in the central and northwestern part of the County.



The County encompasses a total area of 347 square miles. It is bordered by the Potomac River to the east, Fairfax and Loudoun Counties to the north, Fauquier County to the west, and Stafford County to the south and includes approximately eight (8) square miles of water. The aforementioned Towns utilize the County's solid waste disposal facilities as well as other public and private facilities in the region. **Figure 1** depicts Prince William County and its municipalities.

Figure 1. Prince William County and Incorporated Towns



Prince William County's highest elevation is 1,280 feet above sea level on Bull Run Mountain along its western boundary with Fauquier County; its lowest natural elevation is at sea level along the Potomac River, and its lowest man-made elevation is 120 feet below sea level at a quarry site near Manassas. The geographic center of the County is located near Brentsville at 38.55 degrees N. Latitude and 77.40 degrees W. Longitude.

Prince William County lies primarily within the Piedmont Province of Northern Virginia. The extreme eastern portion of the County lies within the Coastal Plain Province. The morphology of the County contrasts sharply between the salt marshes and tidal flats along the Potomac River and the prominent ridge of Bull Run Mountain. The intervening area, known as the Piedmont Uplands and the Triassic Lowlands, consists of rolling hills and lowlands. **The existing County sanitary landfill is located in the Piedmont Uplands.**

### 3.2 CLIMATE AND GEOLOGY

The climate of Prince William County is temperate. The prevailing wind directions are north/northwest for winter and south or east for summer. Rainfall is fairly evenly distributed throughout the year but is highest in July and August and lowest from October through February.

The County's 11 watersheds lie within the Potomac River Basin. The Prince William County Landfill is located within the Powells Creek Watershed. The Balls Ford Road Compost facility is located within the Broad Run Watershed.

Ground water is widely used in Prince William County in domestic and public water systems. Domestic water supplies in rural areas of the County depend almost exclusively on ground water.

Prince William County consists of 18 generalized soils, which can be further categorized into 94 soil types. Each geologic region has soils that are indigenous to that region. The Piedmont Uplands in which the current landfill is located contains silty and sandy soils, and occasionally clayey soils. Depth to bedrock ranges from three to eight feet on steeper slopes and from six to over twenty feet on smoother slopes.

### 3.3 TRANSPORTATION

Prince William County is traversed by two of the main road transportation arteries of Northern Virginia. As shown in **Figure 2**, Interstate 95 parallels the Potomac River passing Woodbridge, Dale City, Occoquan, Dumfries, and the Quantico Marine Corps Base. Interstate 66 runs roughly east-west through Gainesville and Haymarket, passing three miles north of the City of Manassas. These two corridors, as well as other primary and major secondary roads including State Routes 1, 28, 29, and 234 and the Prince William Parkway, are the main avenues of development and growth in the County.

The County is also served by the OmniRide bus system, which has routes within the County and to points in Northern Virginia and Washington DC. The Virginia Railway Express provides commuter rail services to County residents along rail lines in the west (Manassas Line) and the east (Fredericksburg Line). These two rail lines, which are owned by CSX and Norfolk Southern Railway, also serve the County's industrial areas. Manassas Regional Airport provides general aviation services in the County and is the busiest general aviation airport in Virginia.

Figure 2. Prince William County Transportation Network



Source: Metropolitan Washington Council of Governments

### 3.4 POPULATION

The County population estimate for 2020 is 482,204 according to the U.S. Census, making it the second most-populous county in Virginia. The population has grown about 20 percent in the past 10 years. **Table 2** presents historical population for the County.

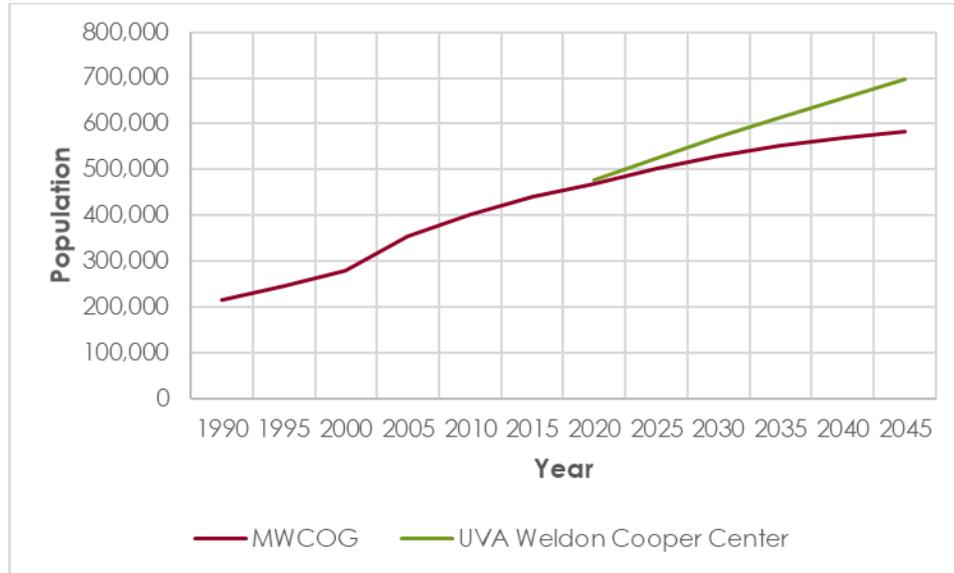
Table 2. Prince William County Historical Population, 1990 - 2015

Year	Population		DATA SOURCE
	Population	% Change	
1990	215,686	--	U.S. Census 1990
1995	246,595	14.3%	PWC Office of Information Technology
2000	280,813	13.9%	U.S. Census 2000
2005	354,383	26.2%	PWC Office of Information Technology
2010	402,002	13.4%	U.S. Census 2010
2015	441,627	9.9%	PWC Office of Information Technology
2020	482,204	9.2%	U.S. Census 2020

The Metropolitan Washington Council of Governments (MWCOCG) expects population growth to slow for the next 20 years, reaching 569,200 in 2040 (18 percent growth between 2020 and 2040 or an average of 0.8 percent per year). The University of Virginia’s (UVA) Weldon Cooper Center for Public Service forecasts higher growth for the County’s population, reaching 656,178 in 2040 (36 percent

growth between 2020 and 2040 or an average of 1.6 percent per year). **Figure 3** presents both sources of population projections for the County.

Figure 3. Population Projections



### 3.5 HOUSING

As a suburb of Washington, D.C., and due to overall growth in the region, housing in the County has dramatically increased over the last five decades. According to the U.S. Census, there were 29,885 housing units in the County in 1970. This increased to 98,052 units in 2000. As of the 2020 Census, there are an estimated 158,525 housing units in the County.

**Table 3** presents housing forecasts for the County developed by the Metropolitan Washington Council of Governments (MWCOG) 9.2 Cooperative Forecasts, April 2021.

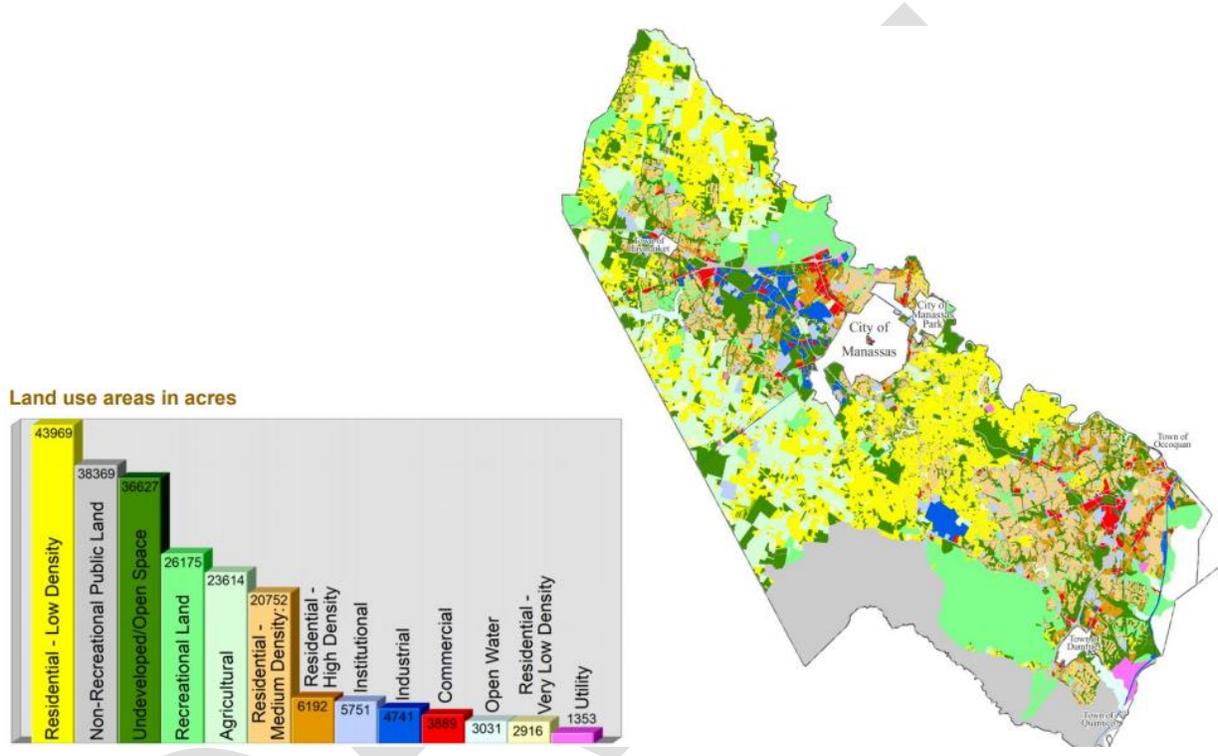
Table 3. Household Projections

Year	Number of Households
2020	158,525
2025	167,100
2030	176,900
2035	185,200
2040	191,800
2045	197,100

### 3.6 URBAN CONCENTRATIONS

The Prince William County Planning Office annually prepares a build-out analysis to show the maximum planned future development in the County. **Figure 4** presents the 2019 build-out analysis. Urban concentrations, indicated by medium/high density residential (brown) and commercial (red) land uses are near the Towns of Dumfries, Occoquan and Quantico in the south and east, and just north and west of the Cities of Manassas and Manassas Park.

Figure 4. 2019 Land Use Analysis Map



### 3.7 EMPLOYMENT

Over the past five decades the County has evolved from a predominantly rural community into a suburban community. The expansion of the County has resulted in considerable job growth. According to the Virginia Employment Commission, in 2003 there were 90,282 jobs in market, and in December 2020 there were an estimated 227,521. This growth has occurred as the expansion and development of the Washington D.C. Metropolitan area has continued. The County’s unemployment rate has mirrored the U.S. rate however at consistently lower levels.

The County has a labor force of 241,800 of which 125,600 are employed at establishments within the County. **Figure 5** presents the County’s employment by industry. Over half of the County’s employment is in the top four industries of retail trade, local government, construction, and health care.

Figure 5. County Employment by Industry



## 4.0 WASTE GENERATION AND COMPOSITION

Solid waste management planning requires information on the quantities, composition, and projected changes to the County’s waste stream. This information helps identify waste diversion and recycling potential, measure existing program and policy effectiveness, highlight market needs, and estimate capacity for current and future processing and disposal infrastructure.

### 4.1 EXISTING WASTE GENERATION

#### 4.1.1 Municipal Solid Waste (MSW)

Waste generation is defined as the sum of the quantity of materials disposed and diverted (reused, recycled, and composted). Based on the available data, estimated MSW generation was calculated for 2005 through 2019, as shown in **Table 4**.

Table 4. Annual MSW Generation and Population

Year	Annual Tons			Population	MSW Generation (lbs/person/day)	Diversion Rate
	Disposal	Diversion	Generation			
2005	298,691	160,643	459,334	354,383	7.1	35.0%
2006	310,666	147,755	458,421	371,178	6.8	32.2%
2007	306,830	159,952	466,782	381,221	6.7	34.3%
2008	285,099	124,547	409,646	388,269	5.8	30.4%
2009	276,231	124,396	400,627	392,900	5.6	31.1%
2010	281,564	132,296	413,860	402,002	5.6	32.0%
2011	293,049	165,414	458,463	410,454	6.1	36.1%
2012	303,642	172,794	476,436	418,107	6.2	36.3%
2013	309,417	170,517	479,933	425,681	6.2	35.5%
2014	319,788	162,675	482,464	433,624	6.1	33.7%
2015	372,779	133,326	506,105	441,627	6.3	26.3%
2016	364,423	153,098	517,521	449,864	6.3	29.6%
2017	351,971	146,147	498,118	456,126	6.0	29.3%
2018	387,548	147,341	534,889	459,966	6.4	27.5%
2019	297,661	147,784	445,445	463,867	5.3	33.2%
2020	337,838	134,692	472,530	482,204	5.4	28.5%

Annual MSW disposal tons in Table 4 includes MSW generated in Prince William County and disposed of at the following locations:

- **County landfill** - delivered by residents, businesses and private waste haulers. The landfill site processes the majority of waste disposed and accounts for more than 75 percent of the total disposed tons.
- **Fairfax County I95 Energy Resource Recovery Facility** - delivered by private haulers for refuse generated close to the Fairfax County border.
- **Convenience Centers** – located at both the landfill and Balls Ford Road Composting Facility and receive waste from residential sources (landfill site also accepts waste from small contractors).

- **Rappahannock Regional Solid Waste Management Board in Stafford, VA** – accepts waste from the Quantico Marine Corps Base.
- **Waste Management Transfer Station** – located in Manassas City but receives MSW from private waste haulers serving Prince William County.

Disposed MSW includes mixed waste from households, businesses, and institutions. No historical records exist on the breakdown of the MSW stream attributable to each of these sectors; however, the County estimates disposed MSW to be 60 percent residential, 32.5 percent commercial, and 7.5 percent institutional.

Total MSW generation has remained relatively flat with some years increasing and some years decreasing as shown in **Figure 6**. While population is a significant contributor to the County’s waste generation, other factors such as economy impact waste. During times of economic growth, consumption increases which leads to greater quantities of products and packaging being disposed. Similarly, when the economy slows, waste generation decreases.

As presented in **Figure 6**, the population in the County has increased slightly between 2005 and 2020. Waste generation has similarly increased with decreases correlating to the 2008 recession and the onset of the COVID 19 pandemic in 2019. Per capita waste generation (pounds of MSW per person per year) has been decreasing due to effects of “lightweighting” which is the process of making products and packaging less heavy. Lightweighting includes replacing heavier packaging such as steel cans and glass with plastic, reducing printed newspapers and magazines with increased use of digital media, and production of smaller and multi-use electronics (cell phone replacing camera, video recorder, landline phone).

Figure 6. Increasing Population and Waste Generation with Decreasing Per Capita Waste Generation

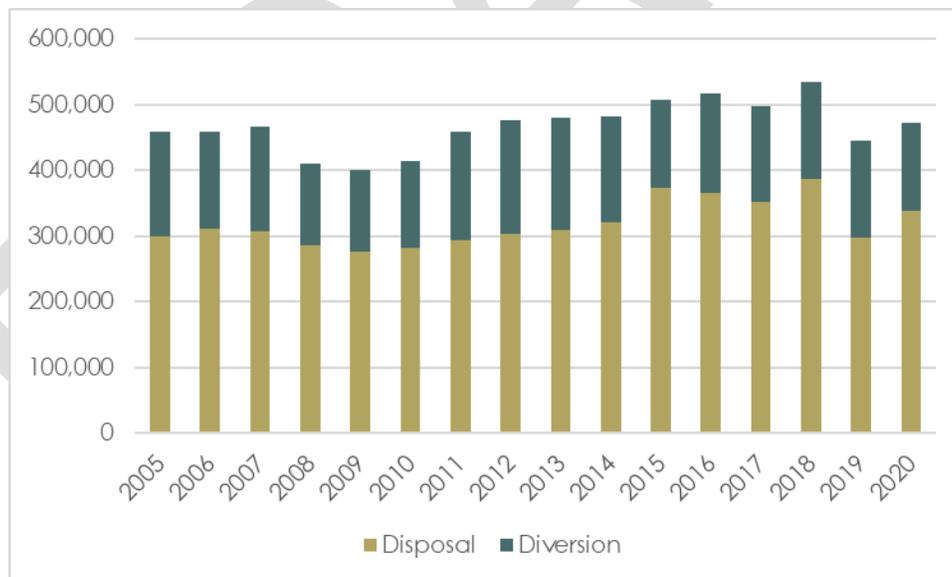


Annual diversion tons in Table 4 include the following:

- **Residential/Commercial Collection of Recycling** - approximately 80 commercial refuse and/or recycling removers collect recyclables from residential, commercial, institutional and industrial properties in the County.
- **County Recycling Drop-Off Programs** - the County provides residential drop-off programs for single-stream, cardboard, glass, automotive materials (e.g., oil, antifreeze, filters, etc.), lead-acid and household batteries, electronics, scrap metal, appliances, and recyclables at 16 Drop-Off Trailers, two Convenience Centers, and two Saturday Refuse/Recycling Collection Sites and Recycling Drop-Off Trailers.
- **Composting/Organic** - residents may drop-off yard waste and brush at the Prince William County Landfill and the Balls Ford Road Composting facilities.
- **Commercial Recycling Programs** – numerous businesses offer recycling drop-off programs for scrap metal, electronics, rechargeable batteries.
- **Reuse Programs** – a robust second hand and consignment market exist for reusable materials in Prince William County. The County has also historically provided a reuse drop-off program for reusable materials at the two Convenience Sites. These programs were suspended in February 2020 but the County plans to resume these programs again in the future.

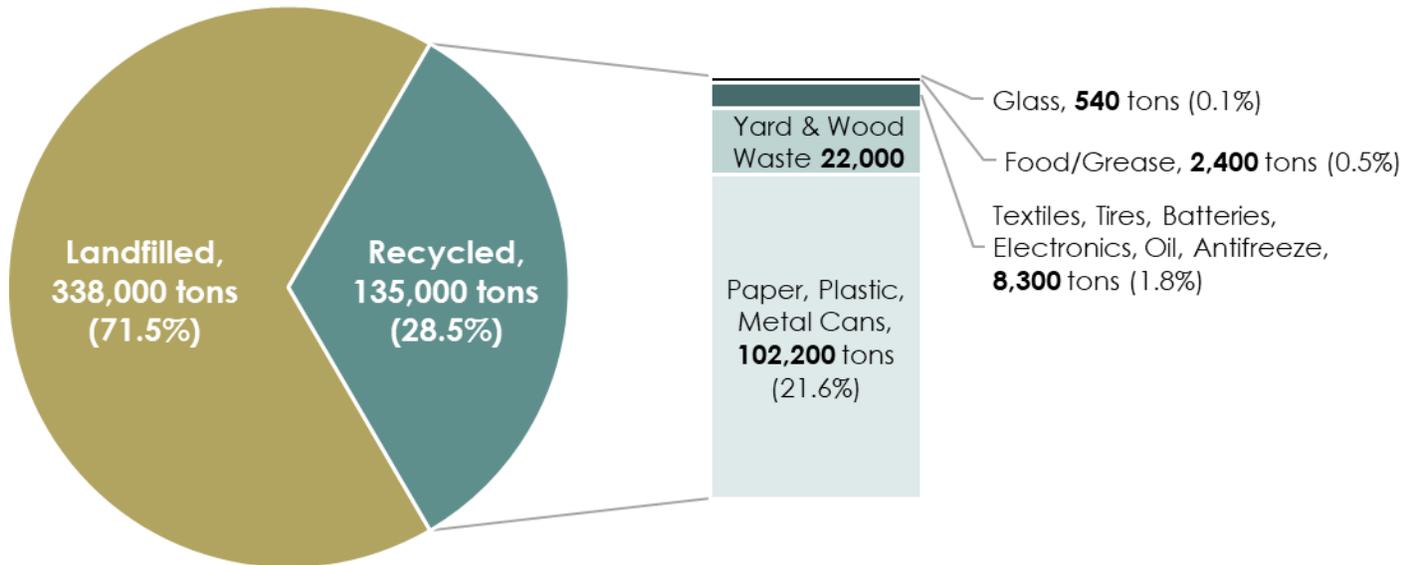
Figure 7 presents disposal (landfilled) and diverted MSW tons between 2005 and 2020

Figure 7. Annual MSW Generation



A diversion rate indicates the quantity of generated waste that is being reused, recycled, composted, or otherwise diverted from the landfill. The County’s diversion rate, presented in Table 4, has ranged between 26.3 and 36.3 percent, averaging about 32 percent for the past ten years. **Figure 8** presents the County’s 2020 diversion rate by material type.

Figure 8. 2020 Waste Diversion Rate



#### 4.1.1.1 County Landfill Disposal

Between 2018 and 2020, the landfill accepted between 323,000 and 385,000 tons annually for disposal. Disposal quantities presented in Table 4 and Figure 7 exclude between 68,000 and 114,000 tons annually that are not classified as MSW or are generated from outside the County, including:

- **CDD delivered by residents to the Convenience Centers** – assumed to be half of waste delivered to the Convenience Centers, or about 20,000 tons annually.
- **Industrial waste** - assumed to be five percent of all waste disposed at the landfill, between 19,000 and 22,000 tons annually from 2018 to 2020.
- **MSW from Cities of Manassas and Manassas Park** - assumed to be two percent of all waste disposed at the landfill, between 7,800 and 8,700 tons from 2018 to 2020.
- **Recycling Facility Residue** - between 54,000 and 63,000 from 2017 to 2019; however the quantity decreased sharply in 2020 to about 14,000 tons.
- **Residue from Balls Ford Road Compost Facility attributed to Fairfax County** - between 2,500 and 3,800 tons annually between 2018 and 2020.

#### 4.1.1.2 Per Capita Waste Generation

Per capita waste generation measures the population’s effect on waste generation, creating a normalized comparison. The equation below shows how per capita waste generation is calculated.

$$\text{Per Capita Waste Generation} = \frac{\frac{\text{Annual Waste Tons Generated}}{\text{Population}} * \frac{2000 \text{ lbs}}{\text{ton}}}{365 \text{ days/year}}$$

Based on the available data presented in Table 4, per capita waste generation for the County has ranged between 5.3 and 7.1, averaging about 6.0 in the past 10 years. Other waste generation rates (lbs/person/day) published include:

- 4.5 nationwide (reported by EPA)
- 4.8 for Virginia in 2018 (reported by VA DEQ)
- 6.0 for Northern Virginia (reported by NVRC Northern Virginia Waste Management Board)

#### 4.1.2 Construction and Demolition Debris (CDD)

Construction wastes include, but are not limited to lumber, wire, drywall, broken brick, shingles, glass, pipes, concrete, paving materials, and metal and plastics if the metal or plastics are a part of the materials of construction or empty containers for such materials. Paints, coatings, solvents, asbestos, any liquid, compressed gases or semi-liquids and garbage are not construction wastes. Debris wastes include, but are not limited to stumps, wood, brush, leaves, soil, and road spoils.

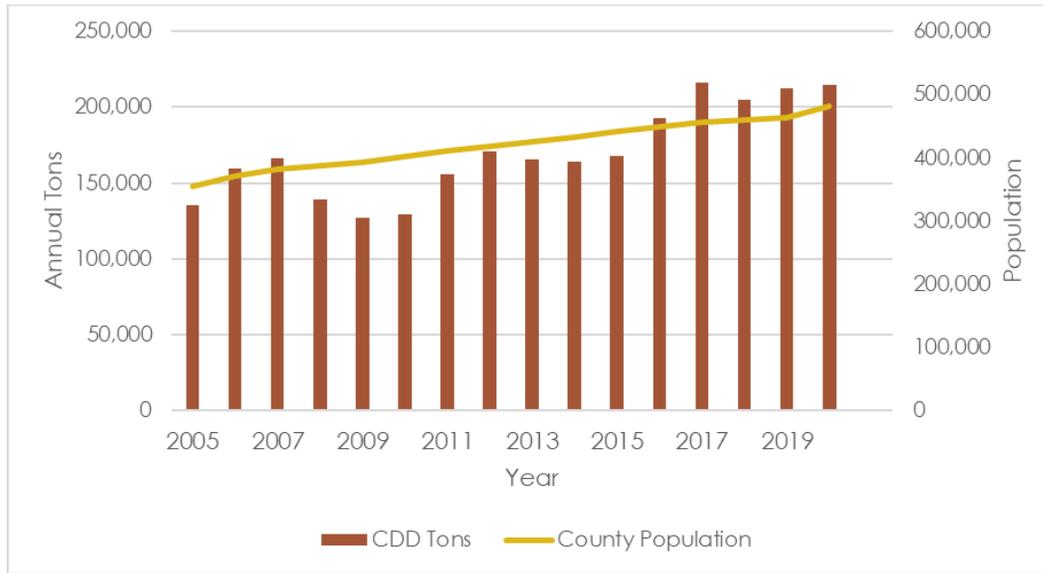
The County landfill accepts only small amounts of CDD from residents (up to 2.5 cubic yards, the size of a standard pick-up truck). It is assumed that half of the roughly 40,000 tons of waste materials delivered to the Convenience Centers each year consists of CDD (assumed to be about 20,000 tons annually). Most CDD generated in the County is disposed of at facilities not owned or operated by the County, which include landfills, transfer stations, and reclamation activities. The quantity of CDD generated in the County was estimated using waste generation rates developed from the quantities of CDD disposed of at facilities in Virginia and reported annually to VADEQ. As presented in **Table 5**, just over 200,000 tons of CDD is generated in the County annually.

Table 5. Annual CDD Generation Estimates

Year	Virginia			County CDD Generation (tons)
	CDD Disposal (tons)	Population	Waste Generation (lbs/person/day)	
2005	2,895,506	7,600,467	2.1	135,000
2006	3,302,422	7,683,718	2.4	159,500
2007	3,376,383	7,749,603	2.4	166,100
2008	2,815,865	7,854,031	2.0	139,200
2009	2,565,696	7,928,779	1.8	127,100
2010	2,585,061	8,025,514	1.8	129,500
2011	3,076,168	8,096,604	2.1	155,900
2012	3,351,168	8,185,867	2.2	171,200
2013	3,216,231	8,260,405	2.1	165,700
2014	3,156,142	8,326,289	2.1	164,400
2015	3,188,953	8,382,993	2.1	168,000
2016	3,608,290	8,411,808	2.4	193,000
2017	4,011,835	8,470,020	2.6	216,000
2018	3,791,406	8,517,685	2.4	204,700
2019	3,916,123	8,535,519	2.5	212,800
2020	3,836,864	8,631,393	2.4	214,400

As presented in **Figure 9**, estimated CDD generation in the County was lowest between 2008 and 2010, which correlates to the recession. 2016 through 2020 represent the highest CDD generation in the past 15 years.

Figure 9. Annual CDD Generation



## 4.2 PROJECTED WASTE GENERATION

### 4.2.1 Municipal Solid Waste (MSW)

Waste generation projections are based on the predicted per capita waste generation rate and population projections for the planning period. **Table 6** presents population projections for the County from two sources: Metropolitan Washington Council of Governments (MWCOCG), which forecasts 22 percent population growth between 2020 and 2040; and The University of Virginia’s Weldon Cooper Center for Public Service, which forecasts 37 percent population growth between 2020 and 2040. Population estimates were multiplied by the County’s and NVRC’s waste generation rate of 6.0 pounds per person per day to estimate annual waste generation.

The proportion of MSW that will require landfilling is dependent on the County’s diversion rate, which has been flat over the past ten years. The status quo diversion rate of 32 percent represents the average base recycling rate for the past ten years. An increasing diversion rate assumes the recycling and composting can increase two percent every five years.

Annual quantities of landfilled waste were estimated for varying waste generation rates and diversion rates as further described below:

- **Scenario A:** This represents a “best case” scenario of lower waste generation and higher diversion (increasing gradually up to 40 percent by 2040). The recent capacity expansion at Balls Ford Road Composting Facility in conjunction with new regulations that require separate collection for yard waste makes this a plausible outcome.
- **Scenario B:** This represents a “worst case” scenario of higher waste generation and lower diversion (remaining steady at 32 percent). Impacts of China’s National Sword policies and a reluctance by Congress or the Virginia General Assembly to interfere with

commerce makes this a plausible outcome; however, recent requirements for separation of yard waste will likely offset issues from marketing recyclables.

Table 6 presents projected MSW generation and estimated landfill disposal for years 2020 to 2045 based on varying levels of diversion. Without significantly increasing waste diversion, the County landfill may need capacity for disposal of about 490,000 tons per year in 2040.

Table 6. MSW Generation and Disposal Projections

Year	MSW Generation (tons)		Diversion Rate		Landfilled (tons)	
	MWCOG	UVAWCC	Status Quo <sup>1</sup>	Increasing <sup>2</sup>	Scenario A <sup>3</sup>	Scenario B <sup>4</sup>
2020	512,000	524,000	32%	32%	348,390	356,555
2025	551,000	575,000	32%	34%	363,908	391,258
2030	580,000	626,000	32%	36%	371,461	425,961
2035	604,000	672,000	32%	38%	374,751	457,262
2040	623,000	719,000	32%	40%	374,080	489,243
2045	639,000	765,000	32%	42%	370,907	520,544

<sup>1</sup> Status quo recycling rate assumes recycling will remain flat at an average of 32.0 percent annually

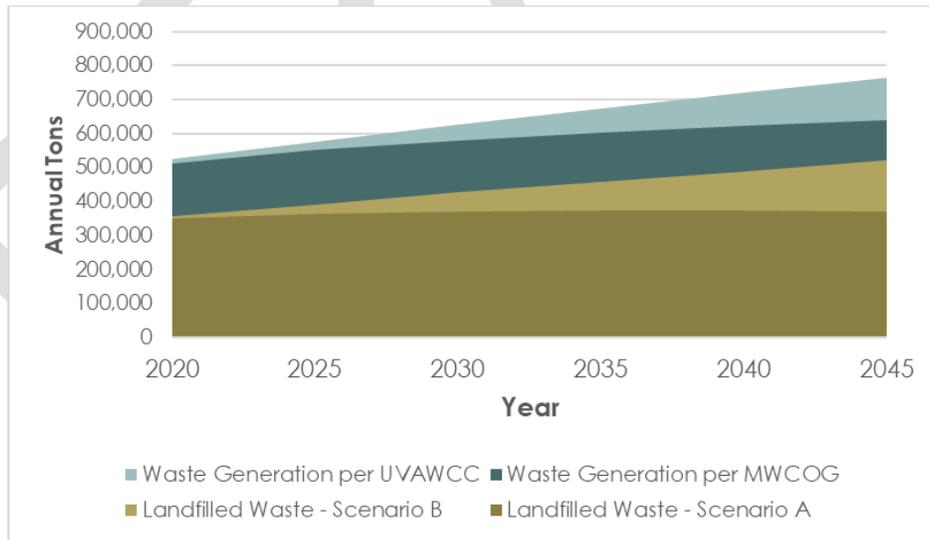
<sup>2</sup> Increasing diversion rate assumes a gradual increase to 40 percent by 2040.

<sup>3</sup> Scenario A is "best case": waste generation based on MW COG population projections and increasing diversion rate.

<sup>4</sup> Scenario B is "worst case": waste generation based on UVAWCC population projections and status quo diversion rate.

Figure 10 presents projected MSW generation and disposal quantities graphically.

Figure 10. MSW Generation and Disposal Projections

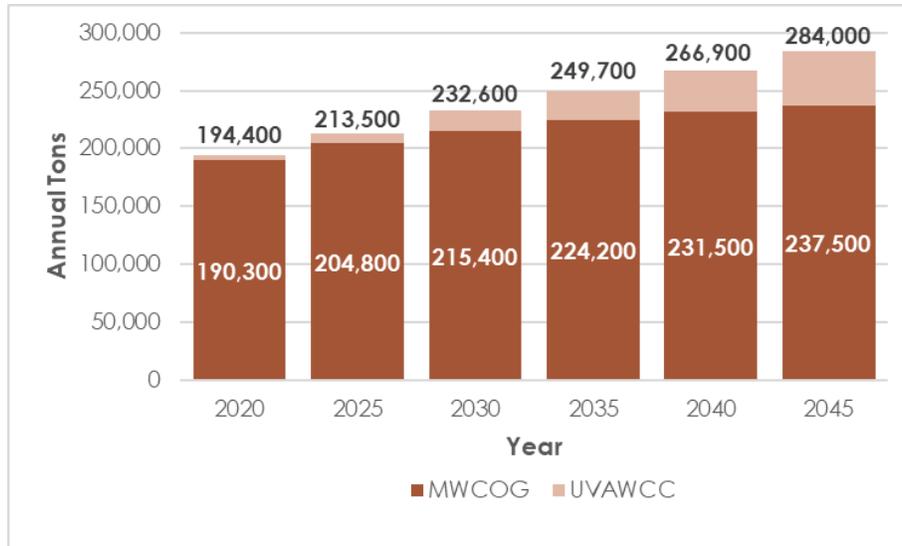


## 4.2.2 Construction and Demolition Debris (CDD)

Similar to MSW projections, CDD projections are based on the predicted per capita waste generation rate, estimated at 2.2 pounds per person per year (average of CDD generation rate for past 10 years) and population projections for the planning period, which are estimated by MWCOG and UVA's

Weldon Cooper Center. **Figure 11** presents the annual CDD generation projections for 2020 through 2045.

Figure 11. CDD Generation Projections



CDD is often correlated with both economic and population growth and therefore the projections based on population alone, as presented in Figure 11, may not be complete. Even though CDD is not accepted at the County’s landfill, it represents a significant quantity of waste for which the County may want to support increased recycling or other diversion efforts.

### 4.3 WASTE COMPOSITION

Prince William County commissioned a two-season waste composition study of the residential and commercial MSW disposed at the Prince William County Landfill in Manassas. The primary objective of the study was to estimate the types and quantities of recyclable and compostable materials disposed to understand what opportunities exist for further material diversion. The study targeted waste delivered to the landfill from residential, both single-family and multi-family, and commercial generating sectors in the fall of 2013 and spring of 2014.

Waste materials were sorted into 11 main categories and 46 different material types. A total of 100 waste samples were obtained and sorted for this study. The waste characterization study conformed to ASTM D 5231-92 Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste.

**Table 7** provides the detailed breakdown of material composition for all 46 materials measured. The overall waste characterization data is an aggregation of the residential and commercial waste composition data. Materials that comprise the largest portions of the disposed waste stream are not very recyclable and include:

- Vegetative Food – 10.7%
- Non-Recyclable Paper – 7.3%
- Other Organics – 7.8%
- Plastic Film – 7.0%

Table 7. Detailed Prince William County Waste Composition Data

Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
<b>PAPER</b>				
1 Recyclable Corrugated Cardboard	6.5%	8.6%	4.8%	8.1%
2 Paperboard	2.4%	1.7%	2.0%	2.7%
3 Newspaper/Print	1.7%	2.2%	1.3%	2.1%
4 White Office Paper	1.4%	3.5%	0.7%	2.1%
5 Glossy/Magazines	1.3%	2.0%	0.9%	1.7%
6 Phone Books	<0.1%	0.4%	<0.1%	0.1%
7 Other Recyclable Paper	3.0%	2.7%	2.5%	3.5%
8 Aseptic/Polycoated	1.1%	2.2%	0.6%	1.5%
9 Non-Recyclable Paper	7.3%	5.4%	6.2%	8.3%
<b>Total Paper</b>	<b>24.7%</b>			
<b>PLASTIC</b>				
10 PET (#1) Bottles	1.7%	1.5%	1.4%	2.0%
11 HDPE (#2) Bottles	0.9%	0.8%	0.8%	1.1%
12 Other (#3-#7) Bottles	<0.1%	0.2%	<0.1%	<0.1%
13 Jars, Jugs, Tubs, Trays	1.8%	2.0%	1.5%	2.2%
14 Plastic Film	7.0%	3.7%	6.3%	7.7%
15 Shopping Bags	1.0%	1.1%	0.8%	1.3%
16 Polystyrene	1.2%	1.2%	1.0%	1.4%
17 Other Rigid Plastic	2.1%	2.3%	1.6%	2.6%
<b>Total Plastic</b>	<b>16.0%</b>			
<b>FOOD WASTE</b>				
18 Vegetative Food	10.7%	8.5%	9.0%	12.3%
19 Other Food	3.5%	4.4%	2.7%	4.4%
<b>Total Food Waste</b>	<b>14.2%</b>			
<b>ORGANICS</b>				
20 Pet Waste	1.1%	2.7%	0.6%	1.7%
21 Fines	2.7%	1.6%	2.4%	3.0%
22 Wood	2.7%	4.0%	1.9%	3.5%
23 Pallets	0.2%	2.1%	<0.1%	0.6%
24 Other Organics	7.8%	3.0%	7.2%	8.4%
25 Textiles	4.8%	9.0%	3.1%	6.6%
<b>Total Organics</b>	<b>19.3%</b>			
<b>YARD WASTE</b>				
26 Leaves	5.6%	11.7%	3.3%	7.9%
27 Grass	3.2%	9.3%	1.4%	5.1%
28 Brush	1.3%	3.3%	0.6%	1.9%
29 Other Yard Waste	3.4%	10.2%	1.4%	5.4%
<b>Total Yard Waste</b>	<b>13.5%</b>			
<b>GLASS</b>				
30 Glass Bottles and Jars	2.1%	2.7%	1.6%	2.7%

Table 4(continued). Detailed Prince William County Waste Composition Data

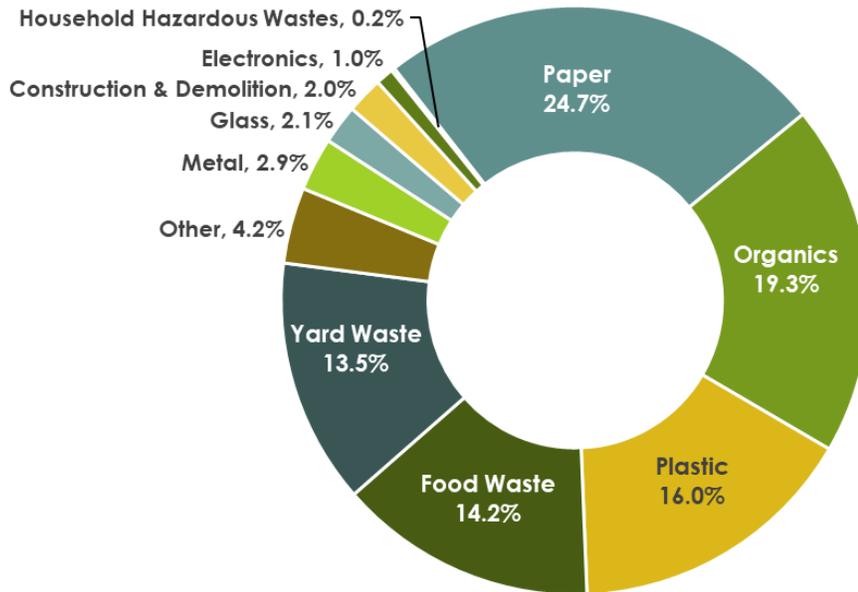
Material Components	Mean Composition	Standard Deviation	95% Confidence Limits	
			Lower	Upper
<b>METAL</b>				
31 Ferrous Cans	0.7%	0.8%	0.6%	0.9%
32 Other Ferrous	1.1%	2.6%	0.6%	1.7%
33 Aluminum Cans	0.6%	1.0%	0.4%	0.8%
34 Aluminum Tins/Foil	0.4%	0.4%	0.3%	0.5%
35 Other Non-Ferrous	<0.1%	0.1%	<0.1%	<0.1%
<b>Total Metal</b>	<b>2.9%</b>			
<b>OTHER</b>				
36 Carpet	1.2%	9.0%	<0.1%	2.9%
37 Mattresses	0.2%	1.7%	<0.1%	0.5%
38 Diapers	2.3%	3.1%	1.7%	2.9%
39 Other Materials	0.5%	1.3%	0.3%	0.8%
<b>Total Other Waste</b>	<b>4.2%</b>			
<b>ELECTRONICS</b>				
40 Electronics	1.0%	2.6%	0.5%	1.5%
<b>C&amp;D</b>				
41 C&D Debris	2.0%	5.6%	0.9%	3.1%
42 Vinyl Siding	<0.1%	<0.1%	<0.1%	<0.1%
<b>Total C&amp;D</b>	<b>2.0%</b>			
<b>HOUSEHOLD HAZARDOUS WASTES</b>				
43 Paint	<0.1%	0.7%	<0.1%	0.2%
44 Automotive Fluids	<0.1%	0.5%	<0.1%	0.2%
45 Batteries	<0.1%	0.2%	<0.1%	<0.1%
46 Other HHW	<0.1%	0.1%	<0.1%	<0.1%
<b>Total HHW</b>	<b>0.2%</b>			
<b>TOTALS</b>	<b>100.0%</b>			

Note: Composition based on 100 samples.

Note that the Other Organics portion of the waste stream does not include food waste and yard waste. When these material categories are combined the study results indicate that 47 percent of the waste disposed at the Prince William County Landfill is organic.

Figure 12 provides a breakdown of the overall waste composition data by major material category.

Figure 12. Prince William County Waste Composition Data in 2014



#### 4.4 DIVERSION OPPORTUNITIES

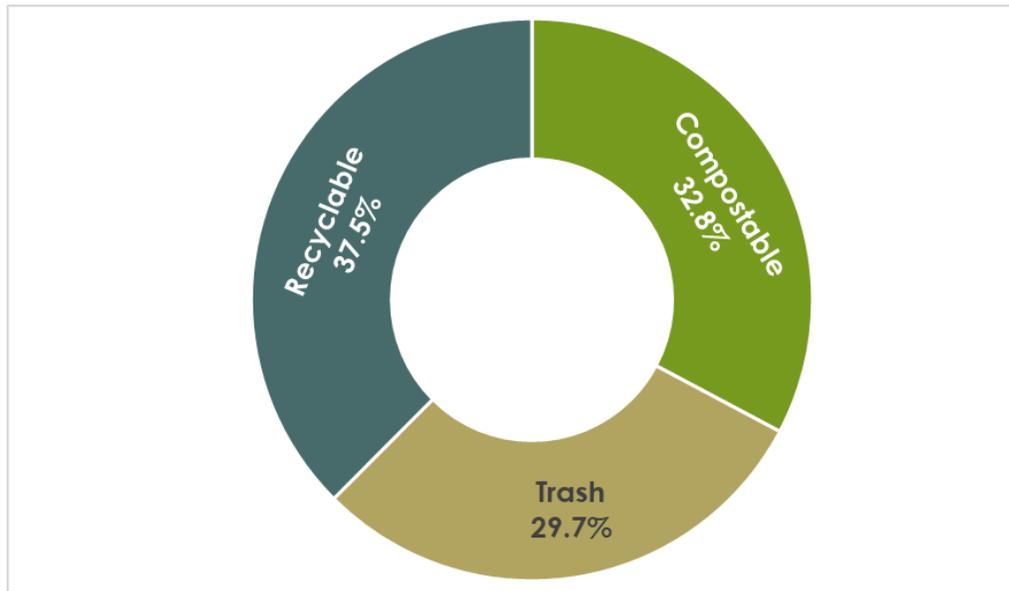
A significant portion of the disposed waste stream could potentially be diverted from disposal through existing programs managed by SWD. Each material type measured for the waste characterization study was classified as either compostable, recyclable, or trash based on programs available in the County. Note that materials listed as compostable include organic materials, such as clean wood and pallets, which may be processed into mulch or a similar product. **Table 8** lists each material type by classification to better understand how much of the disposed waste stream could be diverted.

Table 8. Classification for Each Material Type

Compostable Materials	Recyclable Materials		Trash
Non-Recyclable Paper Vegetative Food Other Food Wood Pallets Leaves Grass Brush Other Yard Waste	Corrugated Cardboard Paperboard Newspaper/Print White Office Paper Glossy/Magazines Phone Books Other Recyclable Paper Aseptic/Polycoated Electronics Glass Bottles and Jars Other Rigid Plastic Paint	PET (#1) Bottles HDPE (#2) Bottles Jars, Jugs, Tubs, Trays Shopping Bags Ferrous Cans Other Ferrous Aluminum Cans Aluminum Tins/Foil Other Non-Ferrous Textiles Automotive Fluids Batteries Other HHW	Plastic Film Other (#3-#7) Bottles Polystyrene Pet Waste Fines Other Organics Carpet Mattresses Diapers Other Materials C&D Debris Vinyl Siding

Based on analysis of the data, it is estimated that about 37.5 percent of landfilled MSW consists of recyclable materials while 32.8 percent consists of materials that could be composted. In total about 70 percent of the waste disposed at the landfill could be diverted through existing programs in the County as presented in **Figure 13**.

Figure 13. Prince William County Waste Composition Data by Material Classification

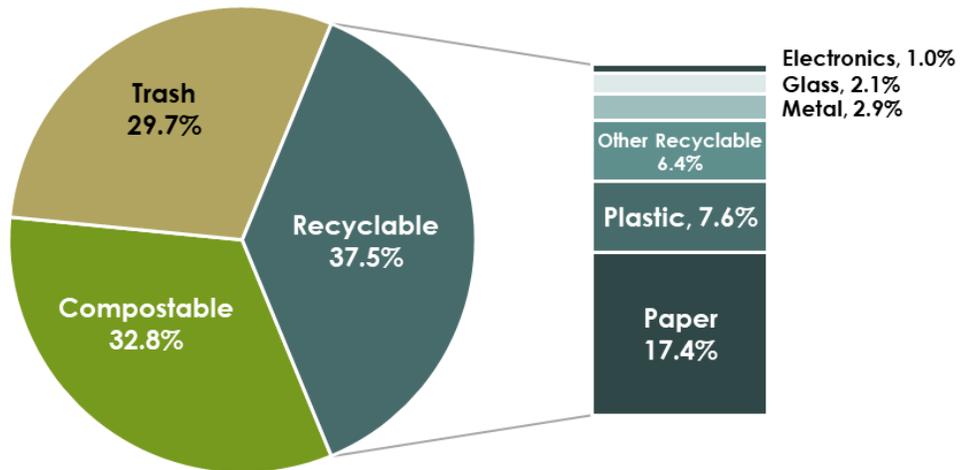


Additional analysis of the recyclable portion of the waste stream indicates the following:

- **Recyclable Paper comprises 17.4 percent** - The largest portions of the recyclable paper stream include corrugated cardboard (6.5 percent), other recyclable paper (3.0 percent) and paperboard (2.4 percent).
- **Recyclable Plastic comprises 7.6 percent** - This includes #1 PET and #2 HDPE containers only.
- **Recyclable Metal comprises 2.9 percent** - This includes metal cans/containers (1.3 percent), with the remainder being ferrous and non-ferrous scrap metal.

**Figure 14** provides detailed data on the portion of the waste stream that comprises recyclable materials.

Figure 14. Composition of Disposed Recyclable Materials

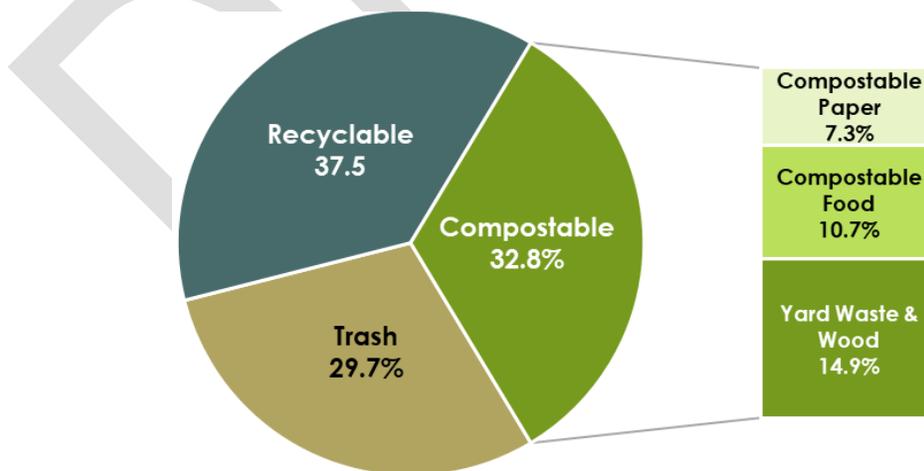


Additional analysis of the compostable portion of the waste stream indicates the following:

- **Food scraps comprise 10.7 percent** – This includes both vegetative and non-vegetative food scraps.
- **Yard waste and Wood comprise 14.9 percent** – This includes both woody and non-woody yard waste materials.
- **Compostable (non-recyclable) paper comprises 7.3 percent** – This includes all types of paper that can be composted such as paper towels, napkins, tissues, etc.

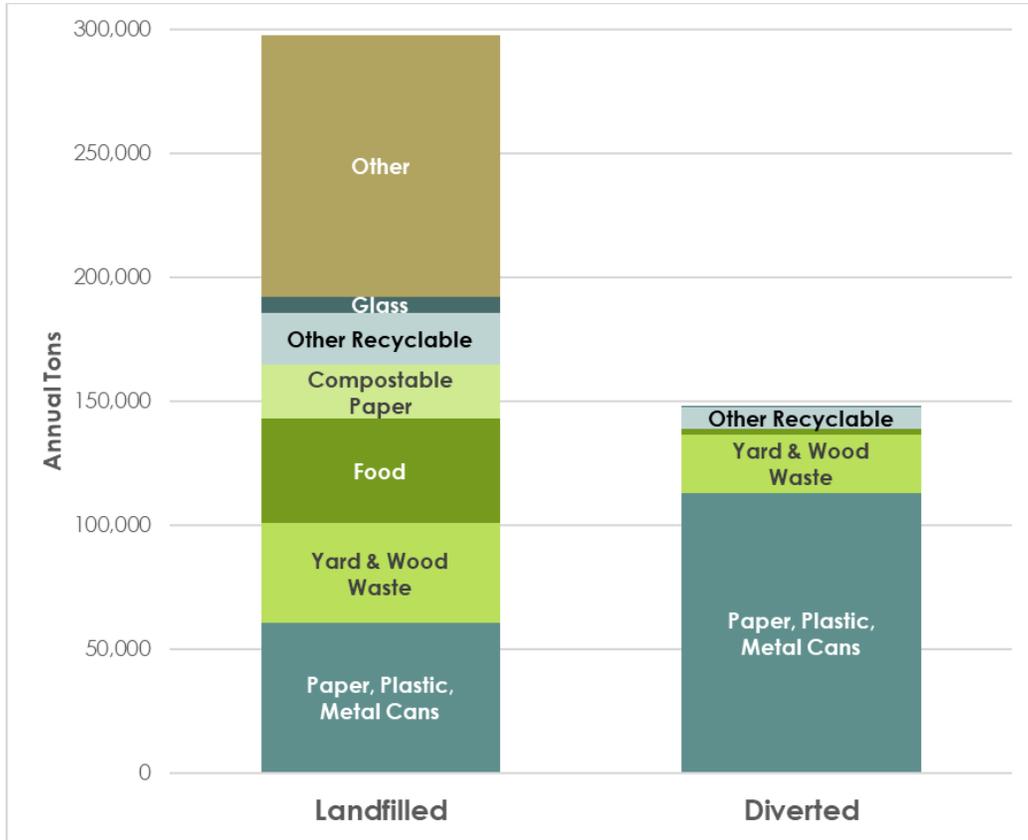
Figure 15 provides detailed data on the portion of the waste stream that comprises compostable materials.

Figure 15. Composition of Disposed Compostable Materials



Diverting increased quantities of food scraps and compostable paper from landfill disposal could increase the County's waste diversion rate to 50 percent as presented in **Figure 16**.

Figure 16. Disposed and Diverted Waste Quantities by Material Type, 2019



## 5.0 WASTE MANAGEMENT SYSTEM OVERVIEW

### 5.1 ADMINISTRATIVE MANAGEMENT

The Solid Waste Division (SWD) is part of the Public Works Department and is responsible for the operation of the landfill, trash disposal, recycling, composting, household hazardous waste collection, and environmental controls to safeguard the community. The organization of the County's solid waste management staff includes: the Director of Public Works, the Deputy Director of Public Works, the Assistant Director of Public Works for Solid Waste, and staff engineers and managers responsible for landfill operation, recycling programs, and future planning. There are 65 employees in the Solid Division: 12 administrative, 45 at the landfill, and eight at Balls Ford Road Composting Facility.

### 5.2 FEDERAL, STATE AND REGIONAL GOVERNANCE

#### 5.2.1 Federal Level

There are a number of federal rules, regulations, statutes, and policies governing MSW management. The primary federal legislation governing solid waste management is the Resource Conservation and Recovery Act (RCRA), which was initially enacted in 1976. RCRA was the enabling legislation for the federal regulations governing solid waste landfills, commonly referred to as the Subtitle D rules, found in Title 40, Part 258 Criteria for MSW landfills. Development, implementation, and enforcement of the federal rules is the responsibility of the U.S. Environmental Protection Agency (USEPA). In addition to rules governing landfills, the USEPA has implemented requirements that address landfill air emissions as provided for in the 1990 Clean Air Act, including New Source Performance Standards and New Emission Guidelines for MSW landfills. Currently, there are no federal rules, regulations, statutes, or policies that pertain to landfill diversion activities, such as recycling and composting.

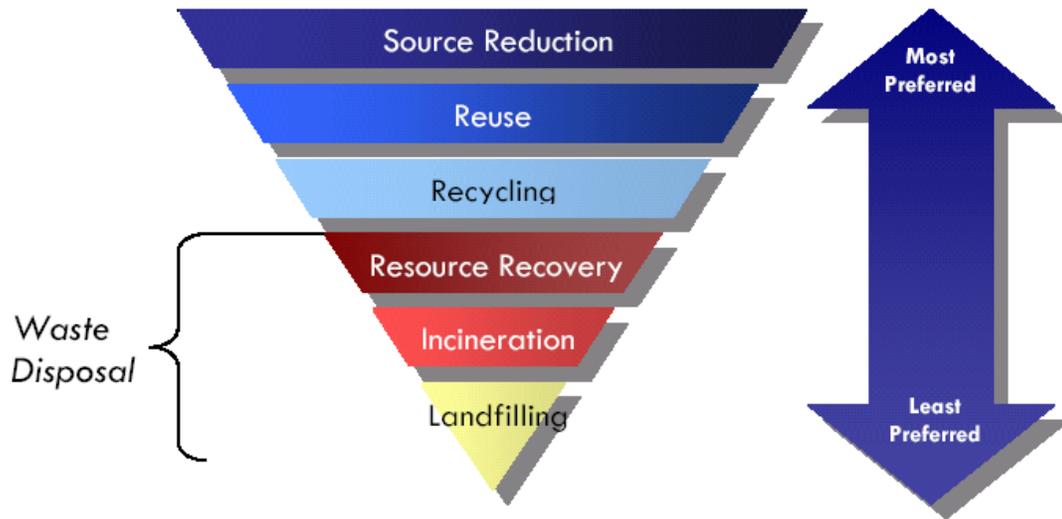
#### 5.2.2 State Level

The Virginia Waste Management Board (board) is responsible for carrying out the purposes and provisions of the Virginia Waste Management Act and compatible federal provisions. It is the policy of the board to require all designated regions in Virginia to develop comprehensive and integrated solid waste management plans to support and promote the hierarchy set forth at 9VAC20-130-30 and presented in **Figure 17**.

The solid waste management hierarchy ranks methods of handling solid waste from most preferred methods (source reduction, reuse, and recycling) to the least preferred methods (energy/resource recovery/incineration and landfilling).

The Virginia Department of Environmental Quality (VDEQ) administers day-to-day activities of the waste programs and has permitting authority. In compliance with VDEQ regulations, this Plan establishes minimum solid waste management standards and planning requirements for protection of the public health, public safety, the environment, and natural resources.

Figure 17. VDEQ Waste Management Hierarchy



The hierarchy presented in Figure 17 presents the strategic goals for waste management outlined by VDEQ. Actual waste management programs and disposal are constrained by available processing technology and markets for recovered materials.

## 5.2.3 Regional Level

### 5.2.3.1 Northern Virginia Regional Commission

The Northern Virginia Regional Commission (NVRC) is a regional council of thirteen members from local governments in the Northern Virginia suburbs of Washington DC. According to Virginia's Regional Cooperation Act, NVRC is a political subdivision (a government agency) within the Commonwealth.<sup>1</sup> Each member jurisdiction appoints one or more representative(s) from its governing body to serve on NVRC's board of 24 Commissioners. NVRC's chief roles and functions have focused on providing information, performing professional and technical services for its members, and serving as a mechanism for regional coordination. Current programs and projects address a wide array of local government interests and include coordination and support for the Northern Virginia Waste Management Board.

### 5.2.3.2 Metropolitan Washington Council of Governments

Metropolitan Washington Council of Governments (MWCOCG) is an independent, nonprofit association, with a membership of 300 elected officials from 24 local governments, the Maryland and Virginia state legislatures, and U.S. Congress. The Board of Directors is COG's governing body and is responsible for its overall policies. In addition, a wide network of city and county managers, police and fire chiefs, housing and planning directors, environmental experts, public health officials, transportation planners, and more coordinate through COG's committees. The County's Solid Waste Division is active in the Recycling Committee and the Solid Waste Managers Groups.

<sup>1</sup> <https://www.novaregion.org/8/About-NVRC>

## **5.2.4 Local Level**

The eight-member Board of County Supervisors makes policy for the administration of the Prince William County government. Seven members are elected from Magisterial Districts, while the Chair is elected at-large. The board adopts local laws, sets policies, adopts a budget and capital improvement program, sets local tax rates, approves local land use decisions, and makes appointments to various positions.

### **5.2.4.1 County Regulations on Solid Waste**

The County's rules, regulations, policies, and rate provisions affecting solid waste within the county limits are contained in Chapter 22 of the Prince William County Code of Ordinances (Refuse). The ordinances establish regulations governing the accumulation, storage, and disposal of MSW for residential and nonresidential generators. Article VIII establishes the Solid Waste Disposal Fee System.

### **5.2.4.2 Incorporated Towns**

The four incorporated towns (Dumfries, Haymarket, Occoquan and Quantico) located within the County each regulate solid waste management within their corporate limits.

### **5.2.4.3 County Litter Control Measures**

The County established a litter control program in 1997. The Litter Control Crew, operates under the Department of Public Works Neighborhood Services' Division. The Litter Control Program's overall goal is to improve the appearance and image of the County and to complement the efforts of the Virginia Department of Transportation and community groups beautification efforts. The Litter Crew currently has four teams with two crew members.

### **5.2.4.4 Keep Prince William Beautiful (KPWB)**

KPWB, a Keep America Beautiful affiliate, is a non-profit organization made up of resident and business volunteers. It coordinates community clean ups and education to the general public and schools for proper management of solid waste including litter prevention and recycling. Working with the Virginia Department of Transportation and the Adopt-a-Highway program, the County makes a concentrated effort to keep the roads and neighborhoods litter free.

## **5.3 COLLECTION**

### **5.3.1 Licensing and Permitting of Private Haulers**

Collection of refuse, recycling and yard waste is provided by private companies in Prince William County. All refuse and food waste removers operating in the County are required to be licensed and permitted by the Department of Public Works. Recycling removers are required to register with the Department of Public Works and report annually. Currently, there are approximately 21 refuse and food waste removers permitted by the County (Note: "\*" denotes food waste collectors).

1. American Disposal Services (Waste Connections)
2. Apex Organic\*
3. Bates Trucking Company, Inc.
4. Cardinal Disposal, Inc.
5. Compost Crew\*
6. Disposal Services, LLC
7. Georgetown Paper Stock of Rockville, Inc.
8. Industrial Disposal Service
9. KMG Hauling, Inc.
10. Liberty Waste Services, LLC
11. Natural Upcycling\*
12. Nova Recon
13. Patriot Disposal, Inc.
14. PWW Construction (dba Handyman Dumpster Services)
15. Republic Services (AAA Recycling & Trash Removal)
16. Shifflett Waste Services L.L.C.
17. Trash Away, Inc.
18. Waggy's Towing and Truck Services, LLC
19. Waste Management of Virginia (Fredericksburg)
20. Waste Management of Virginia (Northern Virginia)

### 5.3.2 Curbside Collection

Prince William County relies solely on private haulers for curbside collection of solid waste and recyclables. County residents and businesses contract directly with a private hauler for collection service with the following exceptions:

- **Homeowner Associations (HOAs):** Some HOAs contract for collection on behalf of its residents or members.
- **Towns:** The Towns of Dumfries, Haymarket, and Occoquan provide collection service to their residents through private contractors. See Appendix A for additional information regarding the Towns' waste collection programs.
- **Yorkshire Neighborhood:** The Prince William County Service Authority (providing water and sewer service) currently provides refuse and recycling collection services, under contract with a private refuse hauler, to approximately 1,700 residential units in the Yorkshire Sanitary District subdivision (Coles Magisterial District).

On December 15, 2020, the Prince William Board of County Supervisors unanimously approved changes to Chapter 22 (Refuse) of the County Code to include mandatory separation and curbside collection of yard waste. The yard waste program began October 1, 2021 runs from March through December of each year and also includes the collection of Christmas trees during the first two weeks of January.

Residents, businesses, apartments, landscapers, etc. will be required to arrange for a separate collection of yard waste, leaves and brush. Once the program starts, residents may place yard waste in biodegradable paper yard waste bags, or a personal container labeled for "yard waste." Additionally, residents will also have access to Christmas tree recycling during the first two weeks of January each year.

The new curbside collection requirements will be:

- Once a week refuse
- Once a week recycling
- Once a week yard waste (March-December)
- Once a week Christmas Tree pick up (First two weeks of January)

### 5.3.3 Convenience Centers

Residents and businesses within the County may transport their solid waste to either of two Convenience Centers located at the County landfill and the Balls Ford Road Compost facility. Refuse from the convenience centers is deposited in roll-off boxes and transported to the County landfill for final disposal.

## 5.4 WASTE DIVERSION PROGRAMS

### 5.4.1 Reuse

The Prince William County Landfill Convenience Center has historically included a Donation Center. Operation of the Donation Center is contracted out and the County ended its most recent partnership. The County is currently seeking a new partnership for its donation programs. When the donation program was in operation, it diverted about 19 tons per month from landfill disposal. Donation bins at the Balls Ford Road Compost Facility diverted approximately one ton per month when the program was operational.



### 5.4.2 Recycling

Prince William County officially began a formal County recycling program in FY 1988. Before this time, recycling in the County primarily consisted of volunteer paper drives, a drop-off center at the landfill for newspaper and glass, scrap metal recycling at the landfill, and an aluminum buy-back center.

Expansion of the County's Recycling Program since 1988 has continued to reduce the amount of waste requiring disposal. These efforts enabled the County to meet and exceed Virginia mandates and achieve a recycling rate (by weight) of 38.2 percent in 2019. Recycling rates have plateaued in the past ten years due to market conditions for recovered materials and the additional cost and resources needed to achieve higher recycling rates.

#### 5.4.2.1 Mandatory Recycling

The County adopted a mandatory recycling ordinance in 1992, which requires participation by residents with collection by private refuse haulers. The County's mandatory ordinance also requires all businesses and refuse haulers to establish a program to recycle the principal recyclable material generated by the business. Annual surveys of all businesses and refuse haulers provide quantities of materials recycled in the County, which is used by SWD to calculate the County's annual recycling rate and report to the Virginia Department of Environmental Quality.

#### 5.4.2.2 Convenience Centers

Residents within the County may transport their solid waste to either of two Convenience Centers located at the County landfill and the Balls Ford Road Compost Facility. The Convenience Centers accept single stream recycling, cardboard, glass, used motor oil, oil filters, antifreeze, lead-acid automotive batteries, household and rechargeable batteries, scrap metal, appliances/white goods and a bin for retired American flags. Recycling from the Convenience Centers is collected in roll-off

containers and transported by County crews to area recycling processing facilities for processing. Automotive waste and batteries are collected in tanks, drums, or other specialized bins and serviced by a private contractor on a regular schedule. Refrigerant-containing appliances are inspected by trained County personnel who remove any refrigerant. Once refrigerant has been removed, the appliance is transferred to a scrap metal consolidation area along with other scrap metal collected on site. The County’s scrap metal vendor collects and transports the scrap metal back to the contractor’s facility for further processing.

### 5.4.2.3 Saturday Trash and Recycling Collection Sites

The County contracts with a private hauler to accept waste from residents in two locations in the County:

- The Nokesville School at 12375 Aden Rd., 7:30 a.m. to 1 p.m.
- Evergreen Volunteer Fire Department and Rescue Squad at 3510 James Madison Hwy., 7 a.m. to noon.

Residents may drop off household waste and single-stream recyclables at these sites. No medical, household hazardous waste, bulky items, or appliances are accepted.

### 5.4.2.4 Recycling Drop-Off Trailers

Through cooperative agreements with private and municipal properties, the County provides recycling drop-off trailers at 16 locations, presented in **Table 9**. The SWD services these containers by transporting full trailers to area recycling centers. Single stream recyclables are collected in the trailers and include plastic bottles (#1 and #2 resin only), aluminum cans, steel food and beverage cans, mixed paper, and cardboard.



Recycling drop-off trailers are at unmanned locations and do not accept other recyclable materials such as plastic bags, scrap metal, or plastics with resin numbers #3 through #7. Two of the sites also have trailers for glass container recycling.

Table 9. Recycling Drop-Off Trailer Locations

Geographic Area	Site	Address
Woodbridge	Cokesbury Methodist Church	14806 Blackburn Rd., Woodbridge
	Birchdale Recreation Center	14730 Birchdale Ave., Woodbridge
Dale City	Hillendale Commuter Lot	Hillendale Road near Dale Blvd., Woodbridge
	Lindendale Commuter Lot	5100 Dale Blvd., Woodbridge
	Dale City Commuter Lot	Gemini Way near Minnieville Rd., Woodbridge
	Dr. A. J. Ferlazzo Building*	Donald Curtis Dr. and Cardinal Dr., Woodbridge
Dumfries	Town of Quantico	Virginia Street at Potomac Ave., Quantico

Geographic Area	Site	Address
Lake Ridge/ Occoquan	Occoquan Commuter lot	Route 123 and Old Bridge Rd., Woodbridge
	Town of Occoquan	Mill St. parking lot under Route 123 bridge, Occoquan
Manassas	Ben Lomond Park	7500 Ben Lomond Dr., Manassas
Mid-County	The James J. McCoart Administration Building	Greatbridge Rd. and Rictor Way, Woodbridge
	Exxon at the Glen	4255 Seeton Square, Woodbridge
Western County	Linton Hall School	9535 Linton Hall Rd., Bristow
	James S. Long Regional Park*	4603 James Madison Hwy., Haymarket
	Nokesville Park	12560 Aden Rd., Nokesville
	Town of Haymarket	6707 Jefferson St., Haymarket

\*Denotes sites which have purple glass recycling bins

### 5.4.2.5 Glass Recycling

The SWD provides purple recycling collection containers for glass at both of its Convenience Centers and two of its Recycling Drop-Off Container locations at:

- James S. Long Regional Park in Haymarket, and
- The Dr. A. J. Ferlazzo Building in Woodbridge



Glass Recycling Collection Container

When the purple bins are full, the SWD empties them into a consolidation bunker located at the County landfill. When the bunker contains about 25 tons of glass, the County arranges with a glass processor to collect the glass and haul it back to their processing facility.

### 5.4.3 Organics Processing

#### 5.4.3.1 Balls Ford Road Compost Facility

In 2015, the County awarded a 20-year contract to Freestate Farms to upgrade the Balls Ford Road Compost Facility. As part of a public-private partnership, the County supplied the land and space needed for the facility, and Freestate Farms financed and built an advanced composting facility, which opened in September 2020.

Before September 2020, the compost facility was using windrow composting technology, which required a lot of space and time, and maximum capacity was about 30,000 tons a year. The facility currently has a capacity of approximately 100,000 tons per year and uses the latest technology to shorten the composting time to approximately two months. Freestate first shreds the yard waste to prepare the material for active composting. The shredded material then goes through a “pick line,” where workers remove plastic bags and as many contaminants as possible. Next, Freestate mixes the appropriate ratios of carbon and nitrogen materials with moisture in an industrial-sized mixing bowl.



*Aerated Concrete Bunkers*

After the material is mixed, it is then moved to one of 14 aerated bunkers where it begins decomposing for about two weeks. After that, the material is transferred to an aeration pad where it completes the active composting process, which takes about a month. After that, the compost is ready to be marketed.

Currently, yard waste material (leaves, grass, and brush) is accepted from Prince William and Fairfax County, as well as the Cities of Manassas and Manassas Park. Source separated organic waste (mixed yard and food waste) is also accepted from Arlington County.

Since the new facility opened, segregated food waste will also be accepted from schools, grocery stores, restaurants, and other institutions. Currently, most food waste is disposed as refuse in the County. A food scraps collection bin is available in the Convenience Center at the Balls Ford Compost facility. It is the County's intent to make the Balls Ford Road Compost Facility a regional compost facility for food and organic waste.

#### **5.4.4 Specialty Wastes**

Certain wastes require special handling or contain hazardous properties that require additional precautions or management prior to recycling or disposal. Some of these wastes are also subject to additional regulatory requirements enforced by Virginia DEQ or other local, state, or federal entities.

Specialty waste includes common items such as household hazardous waste (paints, cleaners, oils, batteries, pesticides), electronic or "e-waste" (e.g., computers, TV, VCRs, stereos, copiers, fax machines, etc.), white goods (e.g., refrigerators, freezers, etc.) and other materials. It is important to note that County facilities accept waste generated by households and permitted refuse removers only. No specialty waste is accepted from businesses or other non-residential properties with the exception of white goods which may be dropped off at the landfill providing that the business can produce certification indicating that refrigerants have been properly removed.

##### **5.4.4.1 Household Hazardous Waste and Electronic Recycling Program**

The County has a permanent Household Hazardous Waste (HHW) and Electronics facility located at the County Landfill. Veolia Environmental Services is the current contracted operator of the HHW facility which is open two days a week, year-round (Wednesdays and Saturdays), from 10 am to 5 pm. Veolia is responsible for acceptance of HHW and electronics from residents, proper storage, packaging, and transportation of HHW to various permitted disposal facilities.

Electronics such as computers, laptops, monitors, VCRs, DVDs, cell phones and other electronic equipment can be brought to the HHW facility. The County currently contracts with PC Recycling, Inc for transportation and processing of electronics. The County's HHW vendor receives and packages up the electronics according to specifications determined by the County's electronics recycling vendor.

Residents are urged to properly dispose of HHW and to recycle electronics at the County landfill. Residents are limited to 15 gallons or 40 pounds of HHW disposal and up to three electronic items, per visit. There is no charge to County residents for this service.

#### 5.4.4.2 Regulated Medical Waste (RMW)

Regulated medical waste (RMW) is a subset of solid waste that is subject to more stringent management standards in order to prevent potential exposure to pathogens that could transmit an infectious disease. RMW is generated by a wide variety of entities, including but not limited to, hospitals, doctor's offices, urgent care and other healthcare facilities, schools, laboratories, veterinary clinics, pharmacies, and commercial or industrial facilities with on-site healthcare services.

Medical waste generated in the County is primarily regulated by the Virginia Department of Environmental Quality (VDEQ). Prior to disposal, all regulated medical waste must be properly treated at a permitted RMW Treatment Facility using steam sterilization (autoclaving), incineration, or an approved alternative treatment method. Properly treated RMW can be disposed of at a permitted solid waste management facility (e.g., sanitary landfill), provided the facility's permit allows for acceptance of the material.

The three main medical facilities in the County are the Sentara Northern Virginia Medical Center in Woodbridge, the Novant Health UVA Prince William Medical Center in Manassas, and the Novant Health UVA Haymarket Medical Center in Haymarket. Each facility contracts with a regulated medical waste hauler who transports the medical waste to an out-of-County incinerator for disposal. Properly treated medical waste is classified as municipal solid waste and can be disposed in a sanitary landfill.

#### 5.4.4.3 Other Specialty Waste

Other specialty waste managed by the County includes:

- **Tires** – tires are accepted at both the landfill and Balls Ford sites and consolidated at the Prince William County Landfill. A contractor loads and hauls the tires back to their location where they are shredded and then returned to the County for use as alternative daily cover.
- **Waste Oil, Used Oil Filters, Antifreeze, and Batteries** – recycled through private contractors.
- **Sludges and Septage** – disposed through the local wastewater treatment facility operated by the Prince William County Service Authority.
- **Ash** - ash from the wastewater treatment sludge incinerator is disposed of at the County landfill. Ash from the Virginia Power Possum Point Power Plant is disposed of in an on-site ash landfill at the power plant.
- **Spill Residues** - typically transported and disposed by the responsible party in an out-of-County disposal facility in coordination with the County's Fire and Rescue Department.

#### 5.4.5 CDD Recovery

The SWD does not process or recover CDD waste materials; however, there are several facilities in the County that accept CDD for processing and recovery, including:

- Broad Run Recycling, Manassas
- C&D Recovery, LLC, Manassas
- Rainwater Landfill, Lorton
- Daniel H. Barrett, Manassas
- Potomac Landfill, Inc., Dumfries
- Manassas Transfer Station, Manassas

## 5.5 WASTE DISPOSAL

### 5.5.1 Municipal Solid Waste (MSW)

#### 5.5.1.1 Prince William County Landfill

The Prince William County Landfill is located at 14811 Dumfries Road in Manassas and has been the County's only solid waste disposal option since the late 1960s. The Solid Waste Division operates the approximately 1000-acre landfill under Solid Waste Facilities Permit No. 29, as amended. County government landfill operations began in 1969 and the State initially permitted 90 acres of the site for landfilling on October 29, 1971.

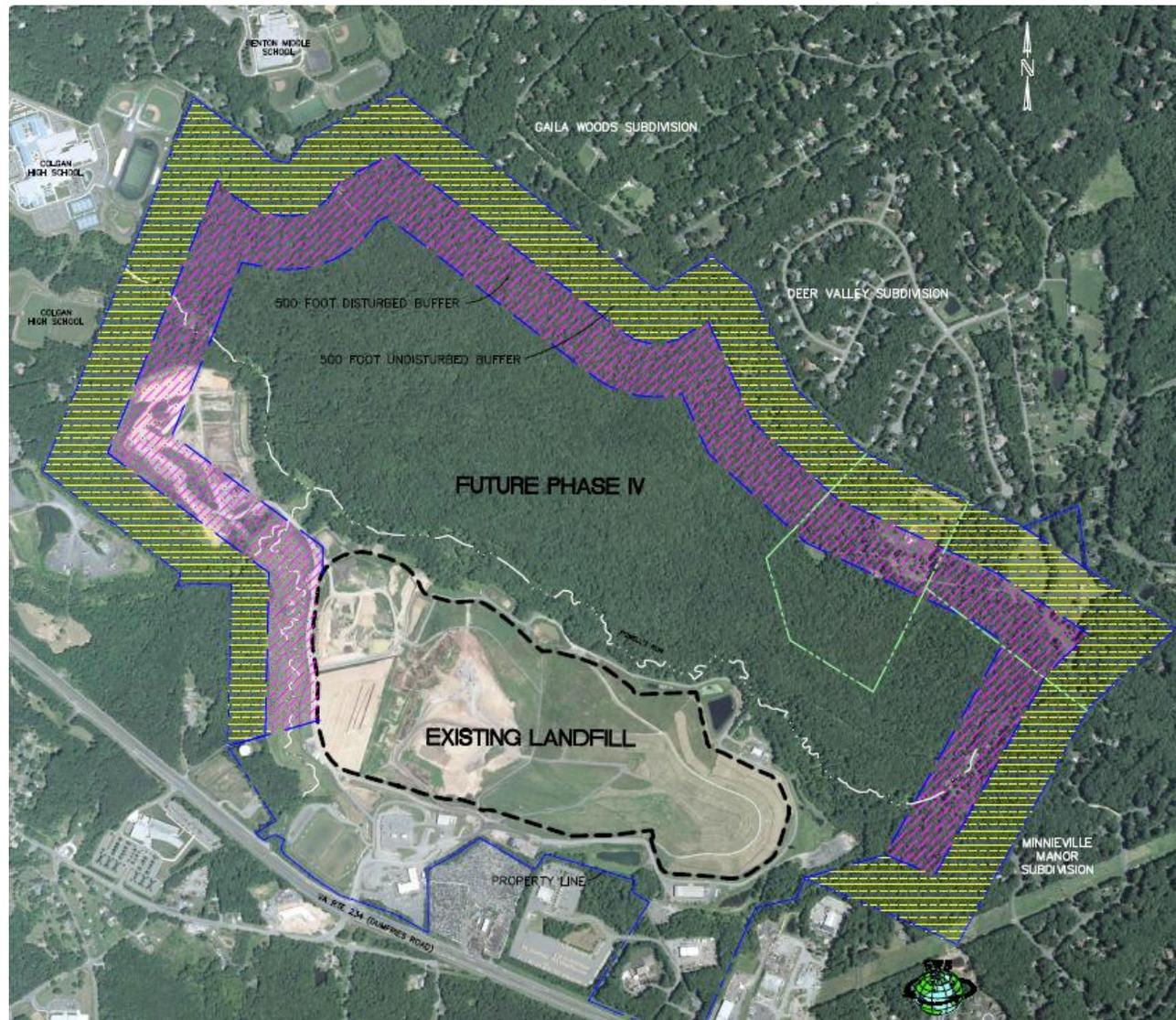
The first area of landfilling, now closed, is referred to as the "Old Fill/Ballfield" since the Park Authority currently manages athletic fields on this site. Since 1971, landfilling has included four contiguous areas: the Existing Landfill, Phase I, Phase II, and Phase III totaling about 165 acres. The Phase IV Expansion area is comprised of about 190 acres on north side of Powell's Run and has not yet been permitted for landfilling operations. **Figure 18** presents a map depicting an overview of the landfill's current and future disposal areas.

The landfill accepts MSW generated in the County (including the Towns of Dumfries, Haymarket, Occoquan, and Quantico). The landfill also accepts MSW from Fairfax County during periods of scheduled or emergency maintenance on the I-95 Energy Resource Recovery Facility. A small portion of accepted MSW (assumed to be two percent of waste delivered to the landfill) is generated by the Cities of Manassas and Manassas Park and delivered in mixed loads which contain County waste.

Large quantities of construction and demolition debris are not accepted at the County landfill. However, residents and businesses may deliver small quantities (up to 2 1/2 cubic yards) of construction and demolition debris to the landfill.

An active gas collection system is installed at the County landfill and a portion of the gas is converted to energy in a 6.8 MW power plant. The gas collection system and energy recovery plant are operated by a private contractor under a 25-year gas use agreement with the County which runs through November 17, 2038. The facility is operated under a Title V air permit, NVR072340 from VDEQ. On September 7, 2021, the County approved an amendment to the agreement with the landfill gas contractor to change from landfill gas from energy generation to conversion of landfill gas to renewable natural gas.

Figure 18. Landfill Overview



Presented in **Table 10**, the County landfill had a permitted remaining disposal capacity of approximately 9.7 million cubic yards as of December 2020, which is roughly 6.1 million tons. Based on projections of County MSW generation presented in Section 4, this will be sufficient disposal capacity for County waste through the year 2033. While Phase IV of the landfill has not yet been permitted, it can provide an additional 110 million cubic yards of disposal capacity (maximum elevation of 655 above mean sea level) or up to 80 years of disposal capacity, depending on the final design approved by the regulatory agencies that oversee landfill design and construction.

Table 10. Landfill Capacity and Estimated Depletion Date

Phase/Cell	Area (acres)	Permitted Capacity (CY)	Remaining Capacity				Estimated Depletion Date
			CY	Tons <sup>1</sup>	Years	Tons/Year	
Old Fill/Ballfield	12.3	NA <sup>2</sup>	0	0	0	0	Filled
Existing Landfill	39.7	NA <sup>2</sup>	0	0	0	0	Filled
Phase I	39.5	7,380,000	0	0	0	0	Filled
Phase II, Cell A	19.5	1,200,000	0	0	0	0	Filled
Phase II, Cell B	12.0	1,000,000	0	0	0	0	Filled
Phase II, Cell C	12.1	1,630,000	0	0	0	0	Filled
Phase II, Cell D	10.7	3,193,000	1,182,107	743,500	1.8	413,100	October-22
Phase III, Cell A	11.7	2,687,000	2,687,000	1,690,100	3.8	444,800	August-26
Phase III, Cell B1	10.0	2,920,000	2,920,000	1,836,700	3.7	496,400	April-30
Phase III, Cell B2	9.8	2,920,000	2,920,000	1,836,700	3.5	524,800	October-33
<b>Total</b>	<b>177.3</b>	<b>22,930,000</b>	<b>9,709,107</b>	<b>6,107,000</b>	<b>12.8</b>	<b>477,100</b>	<b>October-33</b>
Phase IV	190.0	TBD	TBD	TBD	TBD	TBD	TBD

<sup>1</sup> Projected landfill density of 1,258 pounds/cy was used to estimate tons

<sup>2</sup> These unlined units were constructed before capacity was being regulated by the Commonwealth of Virginia

### 5.5.1.2 Fairfax County I-95 Energy Resource Recovery Facility (E/RRF)

On February 6, 2017, the County signed an Interjurisdictional Refuse Exchange Agreement with Fairfax County to allow private haulers who provide services in Prince William County to deliver up to 60,000 tons per year of MSW to Fairfax County's E/RRF in Lorton. The Agreement also allows Fairfax to deliver between 20,000 to 30,000 tons per year of yard waste to the Balls Ford Road Compost Facility. The Agreement runs concurrently with the Waste Disposal Agreement (WDA) between Covanta Fairfax, Inc., and Fairfax County through February 1, 2026. The Agreement will automatically extend if the WDA is extended further, unless at least 90 days notice is given by one party. According to Virginia DEQ, the I-95 Landfill accepted about 356,000 tons of MSW in 2020 and has 33 years of remaining permitted capacity (ash from the Covanta E/RRF).

### 5.5.1.3 Rappahannock Regional Solid Waste Management Board (R-Board)

Between 4,700 and 5,700 tons per year of MSW generated on Quantico Marine Corps Base are transported to the R-Board landfill in Stafford, VA for disposal. According to Virginia DEQ, R-Board accepted about 218,000 tons of MSW in 2020 and has a remaining permitted capacity of 39 years.

#### 5.5.1.4 Manassas Transfer Station

About 10,000 tons per year of MSW generated in the County are brought by private haulers to the Manassas Transfer Station in Manassas, VA. The Manassas Transfer Station is owned and operated by Waste Management.

#### 5.5.2 Construction, Demolition and Landfill Clearing Debris (CDD)

Currently, construction, demolition and debris waste generated within the County is recycled or disposed primarily at the following privately-operated facilities:

- **Potomac Landfill** - 600 Greentree Lane, Dumfries, Virginia. Located southeast of the intersection of I-95 and Route 234. According to Virginia DEQ, there were just over 114,000 tons landfilled in 2020 and there are 11 years of remaining permitted capacity. On September 21, 2021, the Dumfries Town Council approved plans for “The Rose” gaming facility and hotel which will be located on the site of the existing Potomac Landfill. The \$389 million development features a hotel with up to 305 rooms, eight restaurants, a 1,500-seat theatre, 175,000 square feet of gaming space and an 80-acre public park.
- **C & D Recovery, LLC** – 12301 Randolph Ridge Lane, Manassas, Virginia. Operated by Pleasant Construction, 24024 Frederick Rd., Clarksburg, Maryland.
- **Broad Run Recycling** – 9220 Developers Dr., Manassas, Virginia. The 26,000 square foot facility processes approximately 600 tons of construction and demolition waste a day. Materials include wood, metals, aggregate, rigid plastics and cardboard.
- **Balls Ford Recycle Center** – 12008 Balls Ford Rd., Manassas, Virginia.
- **Rainwater Landfill** – 9917 Richmond Highway, Lorton, Virginia. According to Virginia DEQ, there were about 13,300 tons of CDD landfilled in 2020 and there are 10 years of remaining permitted capacity.
- **Manassas Transfer Station** – Operated by Waste Management, 8305 Quarry Road, Manassas, Virginia

The County landfill currently accepts small loads (up to 2.5 cubic yards) of construction materials brought by County residents at no charge and the same volume from small contractors (for a fee) at the landfill location.

The Potomac Landfill is the only other landfill located within the County, I. The landfill is located within the Town of Dumfries and is under the jurisdictional control of the Town.

### 5.6 PUBLIC EDUCATION

The County is committed to having public involvement and participation in developing and implementing its solid waste programs. Every means possible is used to communicate and educate the public on solid waste issues, and to promote and encourage waste reduction and recycling in the community.

Various traditional media, social media and events are used to educate residents and encourage participation in the County’s recycling programs and proper practices in storing, collection and disposing of solid waste. Outreach and education are accomplished in coordination with and assistance from the County’s Communications Office and Keep Prince William Beautiful (formerly,

Prince William County Clean Community Council). The primary means of communication are summarized below:

- **Website** – [www.pwcva.gov/department/solid-waste-management](http://www.pwcva.gov/department/solid-waste-management) offers comprehensive descriptions of programs and services on the County’s solid waste services.
- **County Connections Newsletter** – SWD provides information for the County’s electronic newsletter, published by Communications Office, promoting recycling and solid waste programs and events.
- **Public Service Announcements** – Free advertisements on the local cable TV stations.
- **Media Releases** – SWD provides information to local area media promoting recycling, other disposal programs and events.
- **PWC Alert** – SWD promotes events and special programs on the County’s alert notification system.
- **Print and Online Advertisements** – in local County newspapers, such as InsideNoVA, Prince William Times, Observer, and Potomac Local.
- **Cable and TV Advertisements** – on the local cable TV stations and digital media.
- **Events** – SWD plans and participates in special events, including Prince William Recycling Day activities in October, Earth Day activities in April and Compost Day in April/May, Shred Events, and Fix-It Fair (or reuse event).
- **Schools** – SWD provide information to the County schools, educational materials compatible with the State of Virginia SOL requirements, and various presentations and skits in the classrooms.

## 5.7 WASTE MANAGEMENT FACILITIES

Refuse, recyclable materials, organics, and specialty wastes are managed by County programs as described above and by private facilities in the regions. **Table 11** summarizes the facilities that accept waste materials that are generated in the County.

Table 11. Area Public and Private Waste Management Facilities

Facility Type	County Owned	Privately Owned
<b>Material Recovery Facility – Single Stream Recyclables</b>	*	Republic Manassas Recycling Center
		The American Recycling Center, Manassas
<b>Scrap Metal Recovery</b>	*	Prince William Metals, Manassas
<b>Electronics Recovery</b>	Prince William County HHW and Electronics Facility	Potomac Ecycle, Manassas
<b>Battery Recovery</b>	Prince William County HHW and Electronics Facility	Interstate Battery of Northern Virginia, Woodbridge
<b>Compost/Mulching Facility</b>	Balls Ford Road Compost Facility Prince William County Landfill (Mulching Facility)	
<b>HHW Acceptance/Storage</b>	Prince William County HHW and Electronics Facility	*
<b>Convenience Centers</b>	Prince William County Landfill	*
	Balls Ford Road Compost Facility	
<b>MSW Transfer Station</b>	*	Manassas Transfer Station
<b>MSW Disposal – Landfill</b>	Prince William County Landfill	*
<b>CDD Recovery</b>	*	Broad Run Recycling, Manassas
		C&D Recovery, LLC, Manassas
		Daniel H. Barrett, Inc. Manassas
		Potomac Landfill MRF, Dumfries
<b>CDD Landfill</b>	*	Potomac Landfill, Dumfries

\* Indicates no facility

## 5.8 ENFORCEMENT

The Prince William Health District and the Department of Public Works are responsible for enforcement of Chapter 22 (Refuse) of the Prince William County Code. In addition, the County also issued Solid Waste Regulations for Prince William County (which include prohibited practices and penalties for violations) and facility rules for the Prince William County Landfill and Balls Ford Road Compost facilities.

## 6.0 SYSTEM FUNDING

The County's solid waste system operates using an Enterprise Fund, the revenues generated by the solid waste services are utilized to fund the related expenses.

### 6.1 REVENUE

The County's solid waste system operates under a separate enterprise fund within the County government and is funded primarily from user fees. Prior to 1999, the County charged tipping (gate) fees at its solid waste facilities to fund the solid waste system, including disposal and recycling. A 1994 ruling by the U.S. Supreme Court (*C & A Carbone, Inc. vs. the Town of Clarkstown, New York* or the "Carbone Decision"), effectively overturned a local flow control ordinances throughout the United States.

After the Carbone Decision, the County began to see waste flow levels decline beginning in 1995 as waste began flowing to privately-operated transfer stations and landfills. After consideration of potential options and input from the public, the Prince William Board of County Supervisors implemented a County-wide solid waste user fee in 1998. This fee, which is included as a separated line item on the real estate property tax bill, was established to fund the County's solid waste system without the need to import additional waste from outside the County. The main reason this fee was adopted was to preserve the life of the County landfill, and to adequately fund waste reduction and recycling programs. A flat fee is set for residential properties. Businesses and institutions are charged based upon the amount of waste generated. All properties that generate waste are charged this fee, including residents, businesses, organizations, and local, state and county governments.

Major revenue sources that fund solid waste management services in the County include:

- **Solid Waste User Fees** – This is the primary revenue source that includes all residential and non-residential fees. The fee structure for the solid waste user fees has not increased since 1999; hence, increases in user fees is due to growth in housing and commercial activity.

The solid waste fee replaced the tipping (gate) fees at County solid waste facilities. Residents, businesses and private refuse haulers who pick up waste generated in the County are not charged to use County facilities. The importing of solid waste from outside the County ceased in 1999. **The Towns of Dumfries, Haymarket, Quantico, and Occoquan do not participate in the Countywide solid waste fee. Instead, they pay a tipping fee upon delivering waste to the landfill.**

- **Commercial Refuse Disposal Fees** – This is the second largest revenue source, which includes all city and town trash, construction waste, and revenue from an exchange agreement with Fairfax County.
- **Sale of Recyclable Materials and Compost** – These are the third and fourth largest revenue sources and vary by year based on quantities. The fee structure for these revenues have fluctuated over the years based on market value.

**Figure 19** presents typical sources of revenue that are expected in in FY2022. Actual revenue could vary based on the solid waste fee levied on residents and businesses, the number of households, the number and size of commercial establishments, and the market value of recyclable materials,

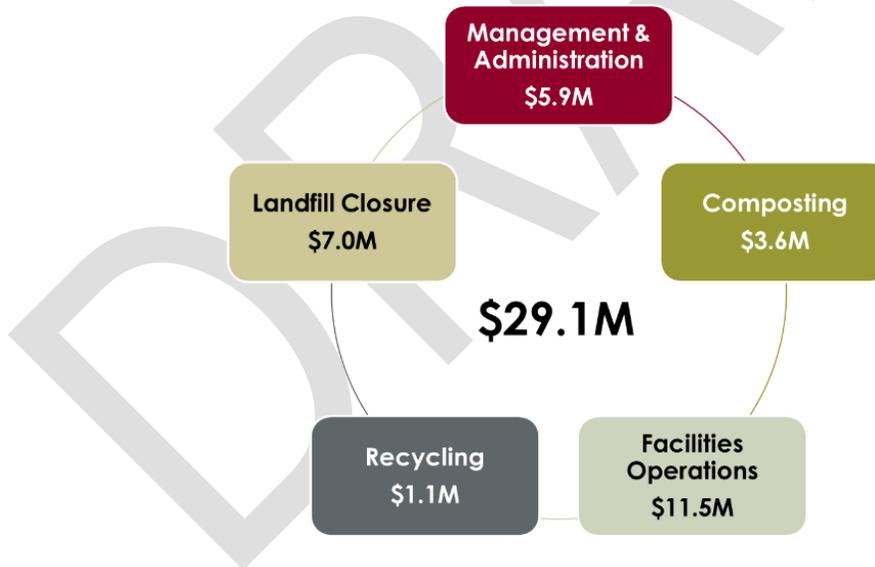
Figure 19. FY2022 Revenue Sources<sup>2,3</sup>



## 6.2 SOLID WASTE PROGRAM BUDGET

The Solid Waste Program Budget fluctuates year to year mainly due to the periodic requirement for landfill closure expenses. The FY2022 Budget of \$29.1M is presented by cost center in **Figure 20**.

Figure 20. FY2022 Solid Waste Division Budget<sup>4</sup>



<sup>2</sup> Prince William County, Virginia, Public Works – Landfill Analysis, June 11, 2020, RSM US LLP, <https://www.pwcva.gov/assets/documents/audit/PWC%20Landfill%20Analysis%20ACCEPTED%2007.21.20.pdf>, p. 19.

<sup>3</sup> Personal communication, Christine Hobbs, Business Service Analyst, Solid Waste Division, Public Works; April 14, 2021.

<sup>4</sup> FY2022 Adopted Budget, [https://www.pwcva.gov/assets/2021-07/aFY22-08-CD06-Public\\_Works.pdf](https://www.pwcva.gov/assets/2021-07/aFY22-08-CD06-Public_Works.pdf), pp. 108 and 118.

The Solid Waste Enterprise Fund and budget consists of the following major activities and cost centers.

- **Solid Waste Management and Administration**
  - Management and oversight of the operation and financial aspects of the solid waste programs.
  - Capital improvement program and construction of major projects including cell construction.
  - Public education and recycling promotion.
  - Maintenance of solid waste fee program.
- **Yard Waste Composting**
  - Management of the yard waste composting facilities.
  - Implementation and monitoring of the refuse exchange program with Fairfax County.
- **Solid Waste Facilities Operations**
  - Operation of the County landfill.
  - Operation of the Convenience Center, including the Household Hazardous Waste facility.
- **Recyclable Materials Collected, Processed and Marketed**
  - Implementation of the County’s recycling program to meet all state requirements.
  - Operation of the County’s recycling drop-off program.
  - Operation of the County’s recycling processing facility.
- **Landfill Closure**
  - Capital expenses related to closure of full/finished sections of the landfill

Annual budgets are prepared in the fall of each year and submitted to the Board of County Supervisors for review and approval. The solid waste budget is approved along with the general County budget in April of each year.

## 7.0 PUBLIC PARTICIPATION

### 7.1 SOLID WASTE ADVISORY GROUP (SWAG)

The SWD included a series of presentations and discussions on solid waste management planning needs during several monthly meetings with the Solid Waste Advisory Group (SWAG). Engagement with the SWAG for the SWMP update was virtual through a web conferencing program due to the ongoing COVID-19 pandemic. **Table 12** summarizes the meeting schedule and the issues that were discussed as pertinent to the SWMP.

Table 12. SWMP Topics Presented to the SWAG

Meeting Date	Topic/Focus Area
November 19, 2020	Part 1: Goals
December 17, 2020	Part 2: Goals
January 21, 2021	Issues: Service Plan, Collection Administration
February 18, 2021	Issues: Recycling, Organics, Construction/Demolition Debris
March 18, 2021	Issues: Landfill Planning, Conversion Technologies
April 15, 2021	Issues: Funding, Consideration of a Solid Waste District
October 21, 2021	Waste Management Initiatives
December 16, 2021	Presentation of Draft SWMP
February 10, 2022	Adoption of Draft SWMP

### 7.2 INCORPORATED TOWNS

The Solid Waste Division and SCS Engineers reached out to waste management staff of each of the County's incorporated towns to inquire about their solid waste programs and to solicit input for the SWMP. Information gathered about the Town's programs is included in **Appendix A**.

## 8.0 NEEDS ASSESSMENT

As discussed in Sections 5 and 6, the County's solid waste management system is operating effectively, but there are opportunities for improvement. The SWD recognizes that increasing population, new single- and multi-family home developments, and growth in commercial establishments will require additional services, resources, and infrastructure to continue the same level of service.

Since the development of the 2004 Plan, there have been considerable changes in the solid waste management landscape and the County. This updated Plan covers the next 20 years (2020 to 2040) and aligns with the County's current Comprehensive Plan.

### 8.1 DISPOSAL

#### 8.1.1 County Landfill

Operation of the County's landfill is the SWD's core business and serves a critical role in the County. As of December 2020, the County's landfill has approximately 9.7 million cubic yards (roughly 6.1 million tons) of permitted disposal capacity, which should accommodate the County's disposal needs until October 2033. Planning for the permitting and construction for the Phase IV landfill area, scheduled to open in FY30, is in progress, and should provide disposal capacity through 2060. Additional land purchased in FY2021 adds approximately 5.5 years of increased landfill capacity.<sup>5</sup>

#### 8.1.2 Alternative Technologies

Development and implementation of new alternative waste conversion technologies continues to be evaluated as an opportunity to preserve landfill capacity. The long-term cost/benefit of these alternatives have been analyzed and future discussions are ongoing. About 20 acres of the landfill property are being reserved to house future alternative waste processing operations to help preserve landfill capacity.

Multiple types of alternative technologies are used throughout the world and include thermal waste-to-energy (WTE), anaerobic digestion (AD), mechanical biological treatment (MBT), gasification/pyrolysis, plasma arc, and plastics-to-fuel. However, thermal WTE and AD are the two that are currently used to process MSW at multiple facilities in the United States. MBT is widely used in Europe but only a handful of facilities are operational in the US. Thermal WTE, AD, and MBT are the alternative technologies considered to be viable options for the County.

The County has an estimated 10 years of permitted disposal capacity remaining with enough acreage in the landfill property to permit up to about 80 additional years of disposal capacity. The County will continue to provide disposal capacity to allow sufficient time for new treatment technologies to develop that are reliable and scalable.

##### 8.1.2.1 Thermal Combustion

Thermal combustion, also known as controlled combustion or thermal WTE, is one of the most widely adopted WTE technologies, with hundreds of active installations worldwide and dozens in North

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<sup>5</sup> Board of County Supervisors Meeting Briefs, August 4, 2020, <https://eservice.pwcgov.org/documents/bocs/agendas/2020/0804/6-N.pdf>

America. Thermal WTE usually involves the combustion of MSW and converts the combustible fraction of the solid waste stream into fuel for energy production, cleaning any flue gases that are produced through the process. In order for combustion to take place, a sufficient quantity of oxygen is required to fully oxidize the fuel. Typically, thermal WTE combustion (flame) temperatures are in excess of 850 degrees Celsius, and the waste is converted into carbon dioxide, water, and heat. Thermal WTE produces steam that can be used to generate thermal energy or electricity.

Bottom ash and fly ash are additional byproducts of the thermal WTE process and may require landfill disposal. There are two key types of thermal combustion technologies: controlled mass-burn and refuse derived fuel (RDF). In mass-burn systems, MSW is combusted with little or no pre-processing other than the removal of bulky or hazardous items. In RDF systems, the MSW is shredded into “fluff”, or produced into a densified form, such as pellets.

### **8.1.2.2 Anaerobic Digestion (AD)**

AD is a biochemical process, which breaks down organic waste in the absence of oxygen and produces biogas and digestate. Biogas produced is approximately 50 to 60 percent methane, and can be used to generate energy, either as a direct replacement for natural gas, in a combined heat and power system, in internal combustion engines, or converted to compressed natural gas (CNG) or liquefied natural gas (LNG).

Digestate is defined as the remaining undigested solid and liquid fractions of the input feedstock material after the AD process. Digestate can be land applied or composted to produce a high-quality soil amendment. AD is typically undertaken using one of two distinct technologies: wet or dry digestion. Determining which technology is best depends on the quality, composition, and/or pre-treatment of the feedstock. Dry AD technologies typically process feedstocks with total solids content greater than or equal to 15 percent. Wet AD systems process feedstock with total solids content of less than 15 percent.

In 2015, the County’s awarded a 20-year contract to Freestate Farms, LLC to finance, build, and operate the Balls Ford Road Compost facility. Phase II of project development was to include expanded processing capacity for managing food waste and may utilize AD (or similar) technology. Any agreement to develop an AD system for expanded food waste capacity at the Balls Ford Road Composting facility would include responsibility for any biogas produced.

### **8.1.2.3 Mechanical Biological Treatment (MBT)**

MBT covers a wide range of activities and technologies to deal with waste that has not been separated for recycling or composting. There are two main components: mechanical in which waste is mechanically separated to recover recyclables, and biological in which organic waste is composted or digested (such as AD). MBT facilities are popular in Europe but only a handful of facilities are operational in the U.S.

The County had been watching the development of a large MBT facility in Maine operated by Fiberright in which mechanically separated typical recyclables (paper, bottles, and cans) from MSW for recycling and transformed post-recycled MSW and other organic feedstocks into next generation renewable biofuels, with cellulosic ethanol and renewable compressed natural gas as core products. While this technology appeared promising, difficulties during construction forced construction to abruptly stop in 2020.

### 8.1.3 Landfill Expansion

Prince William County is obligated to provide its residents with reliable, long-term, municipal solid waste disposal options that are safe, efficient, cost effective, and environmentally responsible. The landfill is currently the best available technology for disposal of municipal solid wastes generated in the county which cannot be recycled, diverted, or otherwise treated.

Over the last 30 years, the County has actively pursued best available and proven alternative technologies for waste recycling, diversion, treatment, and disposal to minimize the volume of municipal solid waste that requires landfilling. Several proposed alternatives were identified and further investigated but were determined to not be viable or reliable to handle the daily waste stream in Prince William County. A modern, sanitary landfill will always be needed even when alternative treatment and disposal technologies become viable and are implemented.

In-County, viable alternatives to landfilling waste do not currently exist. The proposed Phase IV expansion is the best and most suitable location waste disposal in the County. With current population growth and land development trends, a more suitable and viable landfill site within County limits does not exist

Out-of-County alternatives to the PWCLF are not viable for the following reasons:

- Out-of-County waste disposal requires significant transfer and hauling operations, which means increased truck traffic and associated increases in emissions and potential accidents, as well as significant increases in disposal costs to County residents.
- Out-of-County, “local” disposal options will not be available when the County’s landfill reaches its currently permitted capacity in 10 to 13 years. King George County Landfill is the only private landfill within 75 miles that can accept waste from the County; however, it expected to reach its currently permitted capacity within seven years based on analysis of information from DEQ’s Annual Solid Waste Report for CY2019.
- Out-of-County, “in-state” disposal options will not be available when the County’s landfill reaches its currently permitted capacity in 10 to 12 years.
- MSW tonnage deliveries to in-state, private landfills have increased in recent years and disposal capacity in Virginia private landfills will likely be exhausted by mid-2033.
- The Northeast US has been experiencing a well-documented decline in waste disposal capacity in recent years. Regional landfill Capacity in the Northeast US is estimated at only 10.5 years in 2020.
- There are no available disposal options in Maryland or DC for waste generated in Prince William County.

Annual waste deliveries to the Prince William County Landfill have more than doubled in 30 years primarily due to fast population growth and significant improvements in regional economic and employment conditions. Current permitted disposal capacity will be exhausted in 10 to 12 years. Obtaining the required wetlands and landfill permits for the Phase IV landfill expansion, implementing wetlands mitigation, site infrastructure construction, and liner system construction is expected to take 8-10 years.

## 8.1.4 Existing and Future Use of Landfill Property

The County relies on its landfill for disposal of most of the waste generated by its residents and businesses. To preserve this resource, the County should consider long-term plans for development of the landfill and use of the landfill as a resource in the future. The SWD has proposed transforming the landfill into an Eco-Park. Some of the concepts discussed for the Eco-Park include:

- Energy production through solar or wind
- Energy or products from waste materials
- Landfill Outdoor Discovery Trail
- Landfill Education Center
- Greenhouses
- Buzz & Flutter Pollinator Meadow

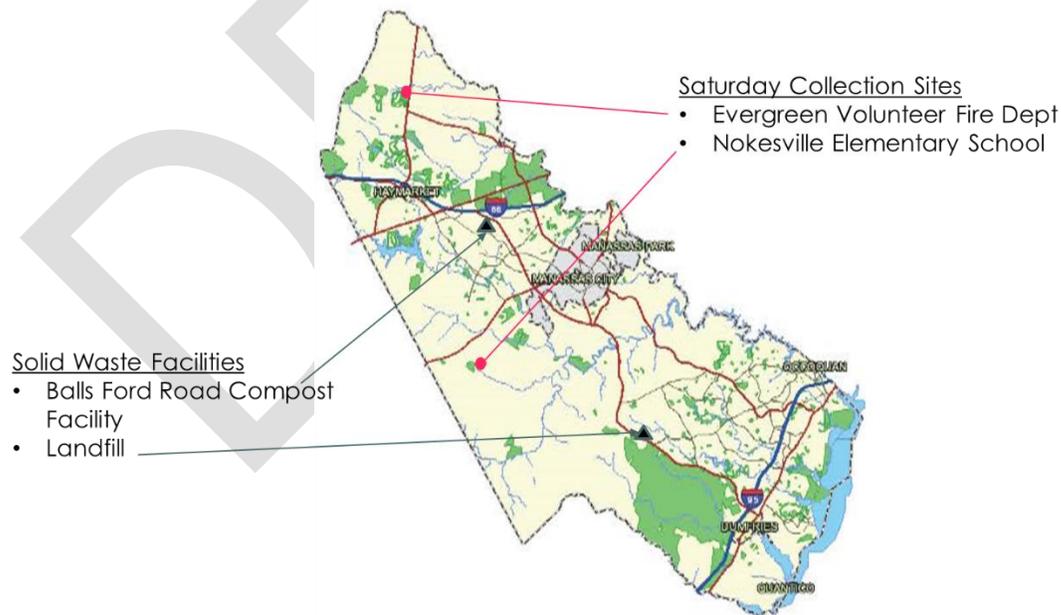
The County is in the process of incorporating some of these concepts into the landfill but needs additional funding for the Landfill Education Center.

## 8.2 MSW COLLECTION SERVICES

### 8.2.1 Service Plan

Trash disposal and recycling services for County residents are provided through two convenience centers, two Saturday drop-off programs, and 16 recycling trailers which are placed around the county. Locations of the Saturday Drop-Off Program is shown in **Figure 21**.

Figure 21. Location of Saturday Collection Sites



**Table 13** presents the average number of patrons, budget, recycling tons, and cost per patron.

Table 13. County-Operated MSW and Recycling Collection Sites

Residential Collection Sites		Estimated Patrons/Year	Annual Budget	Annual Recycling Tons	Annual Cost/Patron
<b>Convenience Center</b>	PWC Landfill	418,000	\$2.4M	975	\$4
	Balls Ford Road	163,000		350	
<b>Saturday Drop-Off Program</b>	Nokesville Elementary School	28,000	\$175,500	**	\$6
	Evergreen Fire Department				
<b>Recycling Drop-Off Trailers</b>	Woodbridge (1 site)	147,000	\$130,000	400	\$1
	Dale City (4 sites)				
	Dumfries (2 sites)				
	Lake Ridge/Occoquan (2 sites)				
	Manassas (1 site)				
	Mid-County (2 sites)				
	Western County (4 sites)				

\*\* Annual recycling tons for Saturday Drop-Off Program included with Recycling Drop-Off Trailers

The Saturday drop-off program was initiated to help rural customers that were not well served by private refuse haulers. Population growth and development since then have broadened the service areas of private refuse haulers; hence, today most households in the County have multiple private haulers that offer curbside collection services. The Saturday Drop-Off Program has the highest cost per patron. Additionally, recycling at the Saturday collection sites has been flat the previous four years, averaging about 17 percent of waste managed.

Funds for the Saturday drop-off program may have more impact on recycling and convenience if used to enhance programs at the convenience centers and/or add additional glass recycling trailers.

## 8.2.2 Organized Collection

Trash and recycling collection services are currently provided through an “open” market system, which means that incorporated towns, homeowners associations, residents, and businesses contract directly with a private waste hauler for services. There are currently about 21 County-permitted private solid wastes collectors serving the County. Over the years, concerns have been raised regarding the efficiency of multiple companies servicing some neighborhoods, lack of County oversight, and customer service concerns.

A more “organized” collection system whereby the County controls waste collection through contracting or assigning private haulers particular areas of the county (e.g. franchising) could improve waste collection services to residents and businesses. Organized collection systems require significantly more oversight from the local government than open collection systems but have several benefits:

Benefits of Organized Waste Collection Systems	
1	<b>Lower overall costs to consumers</b> <i>(economy of scale for haulers serving an entire neighborhood)</i>
2	<b>Neighborhood aesthetics</b> <i>(single hauler means collection containers at curb same day of the week throughout)</i>

Benefits of Organized Waste Collection Systems		
3	<b>Increased recycling</b> <i>(economy of scale for haulers serving an entire neighborhood)</i>	
4	<b>Environmental benefits</b> <i>(collection trucks travel less between customers)</i>	
	Less noise	Less air emissions
	Less fuel consumption	Less wear and tear on roads

In Virginia, a local government is required to give a five-year notice of intent to implement a solid waste franchise system. While the County does receive complaints about missed collections and mixing recyclables with trash, there are not sufficient concerns at this time to warrant taking steps toward a more organized collection system. Even so, the County should have a plan that outlines the conditions for pursuing an organized collection system.

Currently, the Prince William County Service Authority provides refuse and recycling collection services, under contract with a private refuse hauler, to approximately 1,700 residential units in the Yorkshire Sanitary District (Coles District). In the past, SWD has considered taking over management of the waste collection contract due to familiarity with solid waste issues and best management practices. The SWAG did not believe there were sufficient collection issues in the County to warrant implementation of organized collection. However, if conditions change and SWD believes organized collection is warranted, the first step to implementation should be to assume management of the collection contract for the Yorkshire District.

## 8.3 RECYCLING PLAN

### 8.3.1 Organic Waste Management

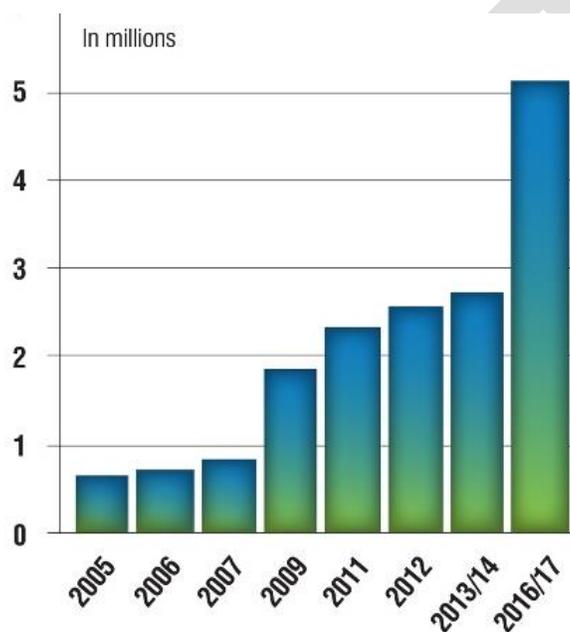
The County's recycling programs divert paper and bottles and cans away from landfill disposal; however, the continued improvements in recycling alone are not enough for the County to reach a high landfill diversion rate of over 60 percent. High landfill diversion requires recycling and organic diversion programs. Changes over the past 20 years in packaging, increased recycling, and consumer behavior have changed the composition of materials in the waste stream. The proportion of food scraps in waste has been increasing and is now over 20 percent of disposed waste in most U.S. communities. As a result, the number of U.S. composting programs is growing.

Through a public private partnership between the County and Freestate Farms, the Phase 1 improvements at the Balls Ford Road Compost Facility are complete and have expanded capacity to 100,000 tons of organic waste a year. The new facility accepts food waste largely from schools, grocery stores, restaurants, and other institutions located in the County but also the greater region. In conjunction with changes in Chapter 22 of the Prince William County (PWC) Code that require separation of yard waste (approved by the Board of County Supervisors on December 15, 2020, via Ordinance 20-55), the expanded composting capacity is expected to extend the life of the landfill by 10 to 15 years.

Currently, most food waste generated by residents and businesses is disposed as MSW in the County landfill. According to the most recent waste characterization study, about one third of landfilled MSW is compostable. The expanded capacity at Balls Ford Road Compost Facility provides an opportunity for the SWD to create programs to divert commercial and residential food scraps and compostable paper from landfill disposal. These programs could include:

- **Mandatory Diversion of Food Scraps from Commercial Generators** - Jurisdictions have implemented disposal bans for commercially generated food waste. Some target larger food generators that dispose of one or more tons of organics per week.
- **Residential Food Scraps Collection Programs** – There are a growing number of local governments that are providing curbside collection of food scraps, including Arlington County in Northern Virginia. BioCycle and the Institute for Local Self-Reliance (ILSR) undertook a survey of residential food waste collection programs across the U.S. in 2017 and found that about 5.1 million households had access to curbside collection in 2017, a growth of 2.4 million since 2014.

Figure 22. Number of US Households with Access to Curbside Food Scraps Collection



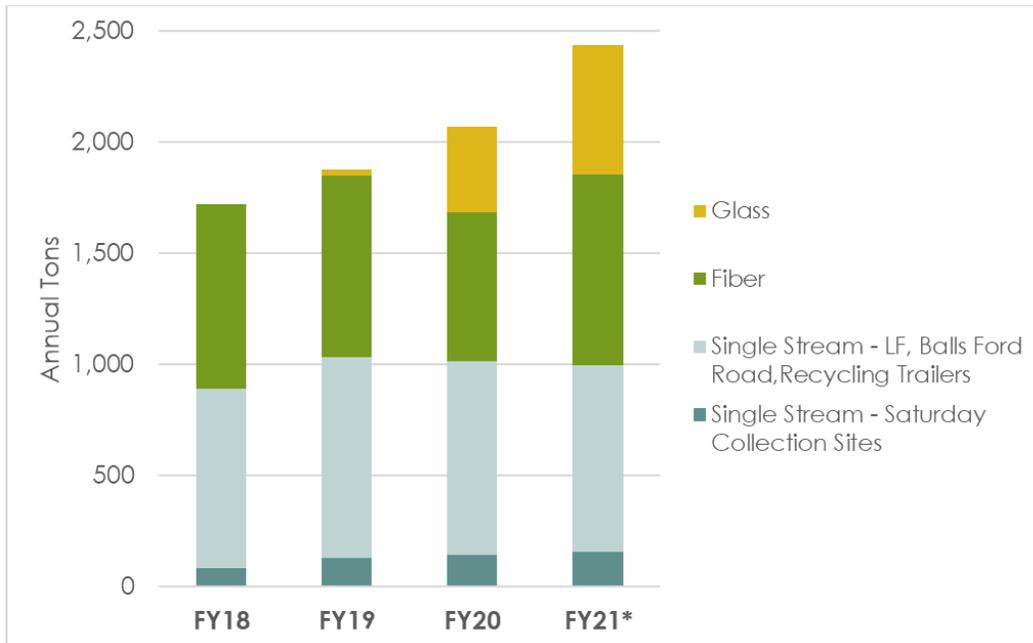
Source: BioCycle, December 2017

### 8.3.2 Glass Recycling

In response to global changes in the recycling market, the County removed glass from its curbside recycling program in 2019, removing it from the list of materials required to be recycled in the county by ordinance. In an effort to keep glass recycling alive, SWD launched a pilot program to collect glass in separate containers at the landfill, Balls Ford Road Compost Facility, and two recycling trailer locations. The County is using purple bins like other jurisdictions in the region to collect segregated glass containers

As shown in **Figure 23**, the quantity of paper (fiber) and single stream recycling has remained flat over the past four years; however, the quantity of glass recycled through the purple bin program is growing.

Figure 23. Growth in Glass Recycling



The SWD could increase glass recycling collection even more by providing purple bins at more locations, especially the already established recycling trailer locations. Expanding the glass recycling program will require additional funds to support purchase of additional bins and provide collection services.

## 8.4 SOURCE REDUCTION AND REUSE

Supporting and encouraging reuse programs is one way that the County can bring together residents that would like to discard unwanted items and residents who are looking for used items in good condition. Reuse aims to extend the life of products by using them over and over again. According to the Institute of Local Self-Reliance, for every 10,000 tons of materials that are managed through reuse programs, 75 to 250 jobs are created. These programs have multiple benefits, including:

- Providing residents with low-cost materials in good condition;
- Creating jobs through the collection and redistribution of materials; and
- Keeping these materials from ending up in landfills or incinerators.

There are numerous privately-managed donation organizations in the County and region, including Goodwill stores and Habitat for Humanity’s ReStore. The County is currently seeking a non-profit organization to operate the Donation Center at the landfill.

## 8.5 CONSTRUCTION AND DEMOLITION DEBRIS (CDD)

Construction and demolition debris (CDD) represents a sizable share of the County’s waste stream, estimated to be just under 200,000 tons annually based on population. The majority of CDD is disposed of at multiple private facilities in and outside the County: the landfill only accepts small loads of C&D. Recently, there have been indications that some private CDD disposal facilities in the region may close or relocate outside the region, thus limiting CDD disposal options.

Diversion of CDD materials through recycling and reuse programs represents a significant opportunity for the County to reduce disposal of these materials. Policies and programs that encourage these materials to be recovered could be implemented once markets for materials are identified. The County could promote landfill diversion by supporting CDD recycling programs through the following:

- Promoting local CDD reclamation facilities to construction companies.
- Encouraging deconstruction, salvage, and recovery prior to demolition.
- Providing an aggregation area for segregated and recyclable CDD materials such as concrete, asphalt, or wood which can be accepted at the landfill for a fee and then transported to a CDD reclamation facility.
- Accepting segregated loads of clean wood for composting at the Balls Ford Road Compost Facility.

Finding a home for dirt and soil from excavation projects is also a challenge in the region as there continues to be substantial growth and development.

## 8.6 SPECIAL WASTE

Special waste is generally well managed within the County. Medical waste generated from the County's three major hospitals is managed through contracts with regulated medical waste haulers. The SWD provides for the collection of used motor oil and filters, antifreeze, and car batteries, and tires at the landfill and Balls Ford Road facilities. Lastly, the County established a permanent Household Hazardous Waste (HHW) and Electronic Recycling Facility at the landfill and contracts with a private company for operation. The County accepts sharps (needles) for disposal at the County landfill location.

## 8.7 FUNDING

Currently, the solid waste system operates as an Enterprise Fund within the County and is not supported with general tax revenues. Since the SWD utilizes an enterprise fund, positive changes in net positions are invested back into the Division. This allows for the investment of capital projects and other initiatives that further support and progress the landfill.

The solid waste user fee is the primary revenue source for the County's solid waste system has been relatively stable with minimal overall fluctuations. Expenses can vary considerably each year due to landfill closure activities and capital expenses. The solid waste user fee has not been increased since 1999.

A recent financial audit revealed that by 2024, the Enterprise Fund has a projected negative cash balance which will continue to grow each year thereafter. The reason for the cash deficit is due to an increase in expenses with minor revenue growth. Increased expenses are largely due to contract costs, vehicle and equipment replacement costs, and capital projects associated with disposal cell construction and capping.

Development of Phase IV of the landfill is scheduled to start around 2030. The SWD will continue to engage in multi-year planning efforts to ensure that revenues are sufficient to cover future operating capital, and other costs for solid waste facilities and programs. Any recommendations for changes to the solid waste user fee would be presented to BOCS for consideration.

Additionally, the County should consider a hybrid solid waste fee that includes both a solid waste fee on the tax bill and a user fee at the County landfill. This may improve equity in paying for the solid waste system.

## 8.8 COOPERATION WITH ADJACENT JURISDICTIONS

The current solid waste management planning district includes Prince William County and the incorporated towns of Dumfries, Haymarket, Occoquan and Quantico. The independent cities of Manassas and Manassas Park—which are both entirely located within (but not part of) Prince William County—each have their own separate SWMP despite sharing the same haulers and most of the same disposal and processing facilities. The County may consider working with the cities of Manassas and Manassas Park in a single SWMP.

The planning period for the upcoming SWMP is anticipated to cover 2020 to 2040. Many of the issues affecting waste management in the County also affect the broader region. The County should consider a regional SWMP with neighboring jurisdictions.

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## 9.0 WASTE MANAGEMENT INITIATIVES

The County's solid waste management system is operating effectively, but there are opportunities for improvement. Recent implementation of regulations requiring separation of yard waste and expanded capacity of the Balls Ford Road Compost Facility present opportunities for increased waste diversion and extension of landfill life. As part of this planning process, numerous options to address various needs in the current waste management system were identified and then evaluated based on the following criteria:

- Infrastructure and staffing requirements;
- Landfill diversion potential;
- Cost;
- Role in sustaining reliable public services; and
- Ability to monitor impact.

**Table 14** identifies the action items that are recommended for implementation in the short term (1-5 years), medium term (6-10 years), and long term (10-20) years. During 2019, the base diversion rate in the County was 33.2 percent, exceeding the State's goal of at least 25 percent. These action items are projected to increase the County's diversion rate by 2030 and ensure adequate infrastructure to provide County residents and businesses with safe, reliable, municipal solid waste disposal options for the long term.

Table 14. Waste Management Initiatives

Initiative	Implementation Schedule (Short, Medium, Long-Term)
<b>Disposal</b>	
Assess feasibility of alternative technologies to conserve landfill capacity	Long
Develop Eco-Park including education center and solar/wind energy	Long
<b>Continue to:</b> <ul style="list-style-type: none"> <li>• Monitor remaining capacity and expansion requirements of the landfill</li> <li>• Design and construct new landfill cells, including Phase IV, to ensure adequate capacity</li> <li>• Operate the Landfill in compliance with applicable regulations</li> <li>• Maximize the utilization of landfill gas/methane for beneficial energy uses</li> </ul>	
<b>MSW Collection Services</b>	
Consider Eliminating the Saturday Drop-off Program	Short
Consider development of additional convenience centers	Medium
Consider options for management of collection contract for Yorkshire District	Short
<b>Continue to:</b> <ul style="list-style-type: none"> <li>• Evaluate the efficiency and cost-effectiveness of MSW collection services</li> <li>• Administer licensing program for solid waste haulers</li> <li>• Enforce MSW collection requirements of Prince William County Code of Ordinances, Chapter 2 – Refuse License</li> </ul>	

Initiative	Implementation Schedule (Short, Medium, Long-Term)
<b>Recycling Plan</b>	
Promote food scrap recovery program with commercial sector	Medium
Expand curbside collection services to include collection of food scraps	Medium
Expand glass recycling collection at other recycling trailer locations	Short
Identify Areas of the County with low participation and/or high contamination rates for targeted outreach and education	Short
<b>Continue to:</b> <ul style="list-style-type: none"> <li>• Evaluate opportunities for increasing recycling in businesses, institutions, and multifamily dwelling units</li> <li>• Expand the types of recyclables collected in the County, as feasible</li> <li>• Evaluate additional locations for recycling trailers</li> </ul>	
<b>Source Reduction and Reuse</b>	
Promote backyard composting	Short
Promote reuse/donation opportunities at thrift stores and other re-use stores	Short
Consider contracting with non-profit organization for operation of the Donation Center at the landfill	Short
Increase resident and business awareness about wasted food and food recovery	Short
<b>Continue to:</b> <ul style="list-style-type: none"> <li>• Identify and promote source reduction and reuse alternatives through public education</li> <li>• Offer textile donation bins at convenience centers</li> </ul>	
<b>Construction and Demolition Debris (CDD)</b>	
Promote local CDD reclamation facilities to construction companies	Short
Encourage deconstruction, salvage, and recovery prior to demolition	Short
Evaluate the feasibility of segregating recyclable CDD materials such as concrete, asphalt, or wood that can be accepted at the landfill for a fee and then transported to a CDD reclamation facility	Medium
Consider accepting segregated loads of clean wood for composting at the Balls Ford Road Compost Facility	Short
Identify soil/dirt disposal locations	Short
<b>Continue to:</b> <ul style="list-style-type: none"> <li>• Support private CDD recycling initiatives in the County and regionally</li> </ul>	
<b>Special Waste</b>	
<b>Continue to:</b> <ul style="list-style-type: none"> <li>• Evaluate and expand, as necessary, collection services for household hazardous waste, and other wastes that require special handling, transport, and disposal</li> <li>• Collect used motor oil, oil filters, antifreeze, and car batteries at convenience centers</li> <li>• Support local hospital and medical community efforts to ensure regulated medical waste is properly handled and disposed</li> </ul>	

Initiative	Implementation Schedule (Short, Medium, Long-Term)
<b>Funding</b>	
Increase solid waste fees to cover all operational and capital expenses	Short
Consider phased increase in solid waste fees to cover Phase IV landfill expansion	Short
Consider hybrid fee (combination of solid waste user fee and landfill tipping fee)	Short
<b>Continue to:</b> <ul style="list-style-type: none"> <li>• Evaluate the adequacy of the solid waste user fee to fund programs</li> </ul>	
<b>Cooperation with Adjacent Jurisdictions</b>	
Encourage regional utilization of Balls Ford Road Compost Facility for residential and commercial organics	Short
Consider developing a regional Solid Waste Management Plan	Long
<b>Continue to:</b> <ul style="list-style-type: none"> <li>• Participate in Northern Virginia Regional Commission Solid Waste Board and Metropolitan Council of Governments to identify regional opportunities for solid waste management</li> <li>• Continue “trash trade” agreement with Fairfax County</li> </ul>	

## Appendix A

### Incorporated Towns Waste Management Programs

#### Town of Dumfries

The Town of Dumfries contracts with a private hauler for the weekly curbside collection of residential solid waste, single-stream recyclable materials, yard waste, and bulky waste. The Town executed a one-year contract in 2016 with nine one-year renewal periods with Bates Trucking for curbside services. The Town's service area includes about 1,700 households.

Residents may request containers for trash and recyclable materials from the Town, which are then delivered by the contracted hauler. There are no limits to the amount of solid waste, recyclable materials, and yard waste that can be placed at the curb for collection each week. In an effort to control litter, most days the Town operates a truck that follows the contractor hauler to collect excessive amounts of waste or trash that was dropped on the Town's streets. Solid waste and recyclable materials are transported by the Town's hauler to Fairfax County's I-95 Landfill Complex in Lorton. Yard waste must be properly prepared and contained in paper bags for collection. This material is transported to Balls Ford Road Composting Facility in Manassas.

Although the Town's hauler collects bulky waste each week, residents are required to call and schedule a pick-up before placing any bulky waste at the curb. There is a three-item limit on bulky waste collections; however, it is rarely enforced. Bulky waste does not include construction debris, tires, hazardous waste, and trees. These items must be transported to the Prince William County Landfill for disposal or recycling at the expense of the homeowner or generator. Residents are encouraged to participate in the County's household hazardous waste and special drop-off collection programs for electronics, appliances, and hazardous materials. The Town also works with Stafford County to allow residents to participate in their hazardous waste collection program.

There is no separate solid waste fee for assessed to Town residents for solid waste services. Residents requiring additional solid waste containers do pay for that service with the hauler. The Town does not provide solid waste services to commercial properties. Town staff indicate they plan to expand their education and outreach program to increase the frequency with which they communicate with residents about recycling. The Town also interested in participating in the County's "purple bin" program for the separate collection of glass.

#### Town of Haymarket

The Town of Haymarket is located at the foothills of the Bull Run Mountain in the northwest part of Prince William County. The population of Haymarket has decreased by about five percent over the last 10 years, from 1,782 in 2010 to 1,700 in 2020 (U.S. Census Bureau). The Town provides curbside trash, recycling, and yard waste collection services to about 500 households under contract with a private hauler, currently Republic Services. Residents may call the Town to obtain a trash cart and recycling bin for their property.

The Town's contract with Republic Services provides for the twice-weekly collection of trash (Mondays and Thursdays) and weekly collection of recyclable materials (Thursdays). Upon request from residents, Republic Services provides a 96-gallon trash cart and 20-gallon recycling bin to

each household. Residents may also use their own trash and recycling containers for pick-up by Republic Services. Collection of waste and recyclable materials is limited to what can fit in each trash cart and recycling bin. The Town and their contracted private hauler do not collect special items such as chemicals, tires, dirt, stones/rocks, animal carcasses, acid/wet cell batteries, or bio-hazardous waste. Households generating construction materials or bulky items (i.e. appliances, furniture, carpet, etc.) must arrange a special pick-up with the Town for those materials. Special collections do not incur a charge to the resident, with the exception of white goods (i.e. refrigerators, stoves, washers and dryers, hot water heater, etc.). These items require a separate fee for collection by the Town.

Recyclable materials are collected via a single stream collection program and materials are delivered to Republic Services Materials Recovery Facility located in Manassas. Glass is no longer accepted as part of the Town's curbside recycling program. The Town encourages residents to take their glass containers to a purple bin located outside of town. The Town has also stationed one of the County's recycling trailers behind their Masonic Lodge on Jefferson Street. Yard waste is collected weekly year-around on the same day as trash. Branches and limbs must be cut into four-foot lengths (or smaller), bundled with rope or twine, and not exceed 50 pounds. All yard waste must be contained in paper bags for delivery at the Balls Ford Road Yard Waste Compost Facility in Manassas.

## Town of Occoquan

The Town of Occoquan has a contract with a private hauler for the weekly collection of trash, recyclable materials, yard waste, and bulky waste from about 375 households and some smaller businesses. Households have the option of requesting a 64-gallon cart for trash and either an 18-gallon container or roll-cart for recyclable materials from the contacted hauler if desired. Residents may use any type of container for the placement and collection of trash and recyclable materials. Glass is not accepted as part of the Town's curbside recycling program. The Town encourages residents to use the County's purple bin recycling program for glass and the County's recycling trailer located under the Route 123 Bridge for excess recyclable materials. The Town also maintains a public space recycling program in the downtown area that is serviced by both the Town and private hauler.

The Town's bulky waste collection program is also part of the collection contract executed with the private hauler. Households must contact the Town's private service provider to schedule a bulky waste collection in conjunction with their regularly scheduled garbage collection. Each bulky waste collection event is limited to three items, including furniture, appliances, or waste generated by a contractor working on a property.

## Town of Quantico

The Town of Quantico is near the southern edge of Prince William County on the banks of the Potomac River to the east and Quantico Creek on the north. The Town is surrounded on the west and south by one of the U.S. Marines Corp's largest base, Marine Corps Base Quantico. The U.S. Census Bureau's 2020 census estimates the population of the Town of Quantico to be 578 people, an increase of 98 people from the 2010 census (480).

There are about 110 single family homes, 20 multi-family/multi unit homes, and 120 apartment units. Due to the fact that the town is completely surrounded by the Marine Base it is very unlikely

there will be any major changes to the town population or housing through 2045. The town does not have a current comprehensive plan due to budget constraints.

The Town has about 36 business/commercial locations (six barbers, 10 restaurants, four dry cleaner/tailor establishments, two gift shops, one church, one masonic lodge, one dentist, one convenience store, two office spaces, and 10 vacant properties).

Each household or business is responsible for handling their own solid waste. Most residents and businesses contract collection services with American Disposal Services (Waste Connections) who handles trash, yard waste and recycling. The County also provides a recycling trailer for Town residents. The Town also conducts one or two clean-up days in coordination with the County. The Town also occasionally provides bulk trash removal when residents request assistance or if the owner of the bulk items cannot be determined.

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