Chapter 7

Construction/ Demolition/Debris

Construction/Demolition/Debris - Current Fairfax County Management System, Anticipated Gaps in Waste Management, and SWMP Actions

This chapter presents the process used by the county to evaluate the current SWM system, project the future waste stream, identify anticipated gaps in waste management, and select SWMP actions for CDD.

This chapter presents the evaluation of Fairfax County's current and projected solid waste management (SWM) activities for construction/demolition/debris (CDD), organized by the SWM hierarchy. It uses the hierarchy as the framework for determining how to bridge the gaps between the current SWM activities and the strategies needed to manage the county's CDD in the future. The chapter then presents Fairfax County's SWMP actions for CDD over the next 20 years to address those gaps.

Using the SWM hierarchy, Fairfax County staff first evaluated current SWM practices, including source reduction and reuse initiatives, recycling activities and programs, future markets for recyclables, collection operations, transfer facilities, and characteristics of solid waste disposal facilities. Next, the county reviewed the current and future projections of its solid waste stream quantities over the SWMP planning period. Using these projections, the county assessed the changes in the solid waste stream over the planning period and identified the critical areas requiring modification. Finally, the county selected SWMP actions that will close the gaps between its current SWM system and that required in the future.

Overview of the 20-Year Plan for Fairfax County's CDD Management System

Fairfax County's current SWM programs and activities for CDD, the gaps in waste management, and SWMP actions over the SWMP planning period are summarized in Table 7-1. This table is organized by level of the waste hierarchy, from source reduction and reuse, to recycling,

collection, transfer, and disposal. (Note that private companies are responsible for many of the activities in the current and future system.)

Table 7-1. CDD: Current Waste Management Activities, Anticipated Gaps in Waste Management, and SWMP Actions

	Current Programs in the County	Anticipated Gaps	SWMP Actions
Source reduction and reuse	– No existing source reduction and reuse initiatives targeted specifically for CDD	– Up to additional 133,000 tons per year of CDD generated in the county by 2025	– Improve public outreach and education to promote source reduction and reuse – Promote public/private source reduction and reuse programs – Develop a regional approach to CDD source reduction and reuse with the Metropolitan Washington Council of Governments (MWCOG) and others – Implement county internal source reduction and reuse programs
Recycling	– No existing recycling initiatives targeted specifically for CDD	– CDD recycling practices are currently not well established	– Promote public/private recycling programs – Improve public outreach and education to promote recycling – Encourage increased CDD recycling by promoting CDD recycling at a county location – Revise regulations to enhance recycling, such as revising county code to require CDD recycling and/or recycling plans – Encourage VDOT to use recycled materials in road construction
Collection	– CDD collection services provided by privately-owned firms	– Up to additional 133,000 tons per year of CDD collection by 2025 – Require additional CDD collection vehicles and labor	– Improve public outreach and education, specifically education for CDD collection options – Consider program to promote best management practices for CDD haulers – Promote use of special fuels, filters, and special vehicles for collection – Implement a collection and disposal strategy for emergencies
Transfer	– I-66 Transfer Station handles only 1.1 percent of county CDD; most is transported directly to private disposal facilities	– Under current waste management system, up to an additional 1,400 tons of CDD per year at I-66 Transfer Station by 2025	– Continue using the current transfer system – Reconfigure or construct waste handling areas at the I-66 Transfer Station, including: • Areas to handle increased CDD • Recycling center for CDD, if needed, at a county location – Improve public outreach and education to promote SWMP transfer actions
Disposal	– Three private CDD landfills in the county: Hilltop Sand & Gravel Co. Debris Landfill, Lorton CDD Landfill, and Rainwater Concrete Co. Landfill – Out-of-county CDD landfills	– Annual disposal tonnage increases from current 730,000 tons to up to 924,000 tons by 2025 – Need between 18 and 21 million tons cumulative CDD landfill capacity until 2025 – May exceed CDD landfill capacity around 2011	– Continue using CDD landfills both in- and out-of-county; contract with CDD landfills for dedicated disposal capacity – Foster a regional approach for CDD disposal – Improve public outreach and education, specifically for CDD disposal issues

Source Reduction and Reuse

Fairfax County has no existing source reduction or reuse initiatives targeted specifically for CDD.

Current Programs

Fairfax County has no existing source reduction or reuse initiatives targeted specifically for CDD.

Assessment of Current and Future Source Reduction and Reuse Needs

Calculating the quantities of solid waste that are reduced prior to entering the waste stream is problematic. Therefore, the county does not develop source reduction and reuse projections for solid waste.

Fairfax County follows the solid waste hierarchy in designing its SWM system. The county prefers source reduction followed by reuse and recycling to disposal of solid waste. The SWM Program goal is to implement new programs that will maximize the volume of solid waste handled by source reduction and reuse over the SWMP planning period.

SWMP Actions

Table 7-2 shows Fairfax County's SWMP actions for the source reduction and reuse of CDD. The county selected SWMP actions based on their alignment with the SWMP objectives (in Chapter 4) and their ability to close the gaps between the county's current SWM system and that required in the future. These SWMP actions are discussed in more detail in Chapter 11.

Table 7-2. Fairfax County CDD Source Reduction and Reuse SWMP Actions

CDD Source Reduction and Reuse SWMP Actions
Improve public outreach and education to promote source reduction and reuse
Promote public/private source reduction and reuse programs
Develop a regional approach to CDD source reduction and reuse with the Metropolitan Washington Council of Governments (MWCOG) and others
Implement internal county source reduction and reuse programs

Recycling

Fairfax County currently has no recycling initiatives targeted specifically for CDD.

Current Programs

Fairfax County has no existing recycling programs or activities specifically targeted for CDD. Some Fairfax County CDD may be recycled at the Potomac CDD Landfill in Dumfries.

No data are available on the quantities of CDD recycled in Fairfax County, but statewide data are available. CDD recycling data reported to the VDEQ suggest that CDD recycling in Virginia is low, ranging from less than 1 percent to 3.25 percent of CDD materials between 1998 and 2002. CDD recycling rates in Virginia have been decreasing: between 1998 and

2002, the recycling of CDD materials decreased by more than 64 percent.[1]

Recycling Markets

Economics is at the core of all recycling collection decisions. Recycling plans must focus on the costs and benefits of current, new, and future programs. Although recycling specific material may benefit the environment, the economic cost is sometimes an obstacle for a municipality, which has little chance of affecting the markets for these materials. Therefore, focusing on materials for which strong markets already exist is critical.

The economic viability of recycling is based on four factors: (1) the cost savings from eliminating disposal, (2) the revenue from selling recyclable materials, (3) the cost of transporting recyclable materials, and (4) the cost of processing recyclables. The economic viability of recycling may increase with higher alternative disposal costs, stronger local markets for recyclable materials, shorter transportation distances to markets, and more efficient processing of recyclables.

Low CDD recycling rates are likely the result of inexpensive disposal and relatively high processing costs.

VDEQ data suggest that, currently, CDD recycling in Virginia is low and rates are declining. The low recycling rates are likely the result of inexpensive disposal and relatively high processing costs.

Table 7-3 presents the values of recyclables from the National Association of Home Builders in 2000. The cost to recycle the most common CDD material, wood, is often more expensive than the cost of its disposal. The economics for recycling of other CDD materials make it more viable to recycle these materials.

Table 7-3. Value of CDD Recyclables, 2000 ($/ton)

Recyclable	Cost	Revenue
Wood	20	—
Drywall	13	—
Ferrous metals	—	40
Vinyl	—	100
Aluminum	—	600

Assessment of Current and Future Recycling Needs

Chapter 2 of this SWMP presents the projected quantities of CDD generated in Fairfax County over the SWMP planning period. The county developed two alternative CDD projections to address the probable range of variance in the future generation rates.

[1] Northern Virginia Solid Waste Management Board, *Summary of Construction and Demolition Debris Landfills in Northern Virginia*, September 12, 2003.

Fairfax County projects annual CDD recycling quantities will remain low, *assuming the continuation of the county's current management practices and conditions.*

The county projects annual CDD recycling quantities will mirror the projected changes in CDD generation (i.e., from a decrease of 7 percent to an increase of 15 percent). CDD recycling practices are not yet well established in the county; therefore, ***assuming the continuation of the county's current management practices and conditions***, future CDD recycling quantities are projected to be a small percentage of the total generation volume.

SWMP Actions

Table 7-4 shows Fairfax County's SWMP actions for CDD recycling. The county selected SWMP actions based on their alignment with the SWMP objectives (in Chapter 4) and their ability to close the gaps between the county's current SWM system and that required in the future. These SWMP actions are discussed in more detail in Chapter 11.

Table 7-4. Fairfax County CDD Recycling SWMP Actions

CDD Recycling SWMP Actions
Promote public/private recycling programs
Improve public outreach and education to promote recycling
Encourage increased CDD recycling by promoting CDD recycling at a county location
Revise regulations to enhance recycling, such as revising county code to require CDD recycling and/or recycling plans
Encourage VDOT to use recycled materials in road construction

Collection

Current Programs

Privately owned collection firms operating in the county provide CDD collection services in Fairfax County. Construction firms are responsible for procuring CDD collection containers (e.g., dumpsters) and services at their building sites. Most companies collect CDD from the construction sites for transport directly to a CDD disposal facility.

Assessment of Current and Future Collection Needs

Chapter 2 of this SWMP presents the projected quantities of CDD generated in Fairfax County over the SWMP planning period. The county developed two alternative CDD projections to address the probable range of variance in the future generation rates.

Fairfax County projects annual CDD collection quantities to range from a decrease of 7 percent to an increase of 15 percent from 2004 to 2025, *assuming continuation of current waste management practices.*

Collection of CDD includes both recyclable materials and waste destined for disposal. Table 7-5 shows the projected quantities of CDD collected in the county over the SWMP planning period for the two projection alternatives. ***(Note that these projections assume the continuation of the county's current management practices and conditions.)*** The county projects annual CDD collection to range from a decrease of 7 percent to an increase of 15 percent from 2004 to 2025.

Table 7-5. CDD Collection Projections for Fairfax County 2004-2025 (in thousands of tons)

Year	Alternative 1	Alternative 2
2004	803	787
2005	815	791
2010	868	801
2015	895	785
2020	914	763
2025	924	733

Fairfax County's SWM collection system may handle up to an additional 121,000 tons per year of CDD by 2025.

The county projects that the current CDD collection system may handle up to an additional 121,000 tons per year by 2025. Therefore, the existing collection system may have to expand to meet the increased quantities.

SWMP Actions

Table 7-6 shows Fairfax County's SWMP actions for the collection of CDD. The county selected SWMP actions based on their alignment with the SWMP objectives (in Chapter 4) and their ability to close the gaps between the county's current SWM system and that required in the future. These SWMP actions are discussed in more detail in Chapter 11.

Table 7-6. Fairfax County CDD Collection SWMP Actions

CDD Collection SWMP Actions
Improve public outreach and education, specifically education for CDD collection options
Consider program to promote best management practices for CDD haulers
Promote use of special fuels, filters, and special vehicles for collection
Implement a collection and disposal strategy for emergencies

Transfer

Current Programs

Fairfax County uses a single transfer station for handling waste materials, including CDD, known as the I-66 Transfer Station. Chapter 6 provides a more detailed discussion of the I-66 Transfer Station operations.

Fairfax County manages some CDD at the I-66 Transfer Station, but most county-generated CDD is directly hauled to privately-owned landfills and transfer stations inside and outside of Fairfax County.

CDD is a small percentage of inbound waste to the I-66 Transfer Station; most is directly hauled to privately-owned landfills inside and outside of Fairfax County or private transfer facilities outside the county. Operators at the Transfer Station attempt to direct incoming loads that may contain CDD to specific bays for disposal. CDD waste processing is typically completed in designated bays at the facility; the waste is hauled in county trailers to one of the CDD landfills. Table 7-7 shows the quantities of CDD received at the I-66 Transfer Station and transferred to CDD landfills for disposal from 2000 to 2002.

A noticeable drop in CDD from 2000 to 2001 occurred when the facility stopped accepting open-top- roll-off boxes, which typically only carry CDD material.

Table 7-7. I-66 Transfer Station, Tons of CDD Transferred, 2000–02

Category	2000	2001	2002
Tons of CDD transferred	13,680	5,568	4,683

Assessment of Current and Future Transfer Needs

Fairfax County projects annual CDD quantities managed at the I-66 Transfer Station to range from a decrease of 7 percent to an increase of 15 percent from 2004 to 2025, *assuming continuation of current waste management practices.*

Chapter 2 of this SWMP presents the projected quantities of CDD generated in Fairfax County over the SWMP planning period. The county developed two alternative CDD projections to address the probable range of variance in the future generation rates.

Currently, most CDD generated in Fairfax County is sent directly to CDD landfills, both in and outside the county. Only a small percentage (1.1 percent between 2000 and 2002) of total county CDD is managed at the I-66 Transfer Station. Table 7-8 shows the projected quantities of CDD managed at the I-66 Transfer Station over the SWMP planning period for the two projection alternatives. ***(Note that these projections assume the continuation of the county's current management practices and conditions.)*** The county projects that annual quantities of CDD managed at the I-66 Transfer Station will range from a decrease of 7 percent to an increase of 15 percent from 2004 to 2025.

Table 7-8. Projections of CDD Handled at I-66 Transfer Station, 2004–2025 (in thousands of tons)

Year	Alternative 1	Alternative 2
2004	8.3	8.2
2005	8.6	8.3
2010	9.1	8.4
2015	9.4	8.2
2020	9.6	8.0
2025	9.7	7.7

The I-66 Transfer Station has sufficient capacity to handle the projected increased quantities of CDD.

The I-66 Transfer Station has sufficient capacity to handle the projected increased quantities of CDD generated over the SWMP planning period.

SWMP Actions

Table 7-9 shows Fairfax County's SWMP actions for the transfer of CDD. The county selected SWMP actions based on their alignment with the SWMP objectives (in Chapter 4) and their ability to close the gaps between the county's current SWM system and that required in the future. These SWMP actions are discussed in more detail in Chapter 11.

Table 7-9. Fairfax County CDD Transfer SWMP Actions

CDD Transfer SWMP Actions
Continue using the current transfer system
Reconfigure or construct waste handling areas at the I-66 Transfer Station, including: • Areas to handle increased CDD • Recycling center for CDD, if needed, at a county location
Improve public outreach and education to promote SWMP transfer actions

Disposal

Current Programs

CDD Landfills

County-generated CDD is primarily disposed of at three CDD landfill facilities located within the county and two CDD landfill facilities in neighboring counties.

County-generated CDD is primarily disposed of at three CDD landfill facilities located within the county: Hilltop Sand and Gravel Company Debris Landfill (Newington), Lorton CDD Landfill (Lorton), and Rainwater Concrete Company Landfill (Lorton). In addition, two CDD landfill facilities in neighboring counties receive CDD generated in Fairfax County: Potomac Landfill (Dumfries) and the Fauquier County Corral Farm MSW Landfill (Warrenton). These CDD landfills are owned

and operated by private vendors, with the exception of the Corral Farm Landfill. The private CDD landfills accept material from a wide area, including out-of-state sources.

Most CDD is transported directly from the generation site to the landfill.

State and Federal Regulation for CDD Landfills

CDD landfills in the County are regulated by the VDEQ, along with county land use regulations. Each CDD landfill holds permits with the VDEQ and separate permits with the county. County staff from its Department of Public Works and Environmental Services (DPWES) inspect the CDD landfills several times each year.

None of the CDD landfills in Fairfax County use landfill liners, nor are they constructed to Subtitle D standards. They are historically grandfathered from these requirements; however, any new CDD landfills constructed must meet these requirements.

Past and Present Rate of Use

The county contacted CDD landfills that accept Fairfax County CDD waste to obtain annual quantities of waste received. Table 7-10 shows the use of these facilities. It should be noted than none of the CDD landfills use scale facilities, and the tonnages provided are based upon conversions from cubic yards to tons.

Table 7-10. CDD Facility Estimated Fairfax County Waste Receipts (tons), 1998–2002

Facility	1998	1999	2000	2001	2002	Average
Hilltop Debris Landfill	297,500	255,000	212,500	170,000	170,000	221,000
Lorton CDD Landfill	325,000	358,000	394,000	433,000	390,000	380,000
Rainwater Concrete Co. Landfill	24,000	25,000	41,000	33,000	30,000	30,600
Potomac Landfill	10,000	19,000	28,000	38,000	47,000	28,400
Fauquier Co. Corral Farm Landfill	83,000	83,000	83,000	83,000	83,000	83,000
Total	**740,000**	**740,000**	**759,000**	**757,000**	**720,000**	**743,000**

Capacity and Availability

VDEQ estimates that the average remaining capacity of the five CDD landfills that receive Fairfax County waste is roughly 6 years and of all CDD landfills in Virginia is roughly 7.7 years.

At current disposal rates, VDEQ data suggest that the three in-county CDD landfills have less than 7 years of remaining capacity combined. These CDD landfills have operated in Fairfax County for at least 20 years and are nearing the end of their operating capacity.

VDEQ estimates that for the five CDD landfills that receive Fairfax County waste, the average remaining capacity is roughly 6 years. VDEQ also estimates that in 2002, the remaining permitted CDD landfill capacity

for all of Virginia was 7.7 years.[2] It should be noted that sanitary landfills can accept CDD material; however, the additional regulatory requirements of sanitary landfills typically require a much higher disposal fee.

Because of CDD disposal capacity concerns, CDD disposal fees have been increasing. In 2004, county contract disposal fees at the in-county CDD landfills doubled compared to the previous year.

Table 7-11 shows the available capacity (tons) and remaining life (years) for each of the five CDD landfills that receive Fairfax County waste.

Table 7-11. CDD Facility Estimated Capacity and Availability, 2002

Facility	County/city	Available capacity (tons)	Annual disposal rate (tons)	Remaining capacity (years)
Hilltop Debris Landfill	Fairfax	1,242,200	138,000	9
Lorton CDD Landfill	Fairfax	5,100,000	927,209	5.5
Rainwater Concrete Co. Landfill	Fairfax	1,121,739	66,260	17
Total Fairfax County		**7,463,939**	**1,131,469**	**6.6**
Potomac Landfill	Prince William	662,016	472,257	1.4
Fauquier Co. Corral Farm Landfill	Fauquier	2,044,183	76,030	27
Total		**10,170,000**	**1,680,000**	**6.1**

Source: VDEQ, June 2002.

Assessment of Current and Future Disposal Needs

Chapter 2 of this SWMP presents the projected quantities of CDD generated (and disposed) in Fairfax County over the SWMP planning period. The county developed two alternative CDD projections to address the probable range of variance in the future generation rates.

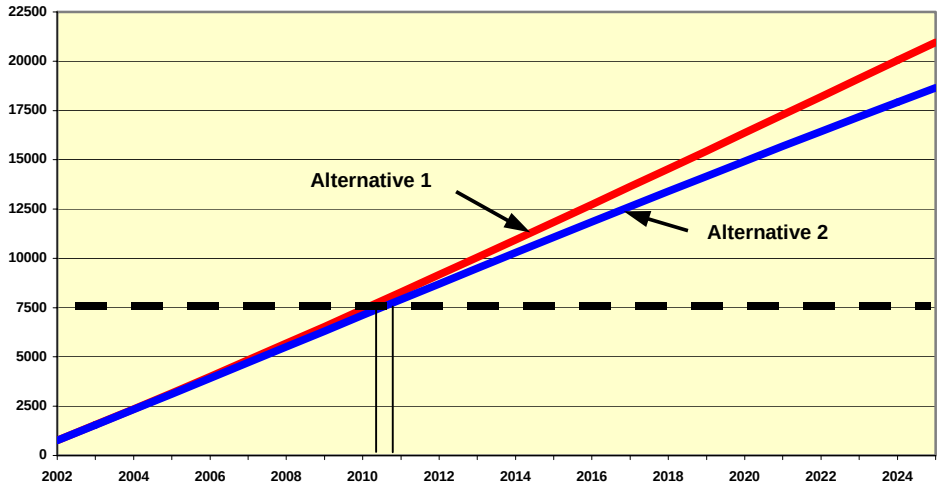
Tables 2-12 and 2-13 of Chapter 2 show the CDD disposal projections for Fairfax County over the SWMP planning period for the two projection alternatives. The county projects annual CDD disposal to range from a decrease of 7 percent to an increase of 15 percent from 2004 to 2025.

The county projects a need of between 18 and 21 million tons of CDD disposal capacity until 2025, *assuming continuation of current waste management practices.*

Figure 7-1 shows the cumulative CDD disposal requirements over the SWMP planning period. The county projects a need of between 18 and 21 million tons of disposal capacity to handle Fairfax County CDD until 2025. ***(Note that these projections assume the continuation of the county's current management practices and conditions.)***

[2] VDEQ, *Solid Waste Managed in Virginia During Calendar Year 2002*, June 2003.

Figure 7-1. Cumulative CDD Disposal Requirements and Fairfax County Capacity, 2002–2025 (in thousands of tons)



SWMP Actions

Table 7-12 shows Fairfax County's SWMP actions for the disposal of CDD. The county selected SWMP actions based on their alignment with the SWMP objectives (in Chapter 4) and their ability to close the gaps between the county's current SWM system and that required in the future. These SWMP actions are discussed in more detail in Chapter 11.

Table 7-12. Fairfax County CDD Disposal SWMP Actions

CDD Disposal SWMP Actions
Continue using CDD landfills both in- and out-of-county; contract with CDD landfills for dedicated disposal capacity
Foster a regional approach for CDD disposal
Improve public outreach and education, specifically for CDD disposal issues