IV. Reference Year Population, Waste Generation and Waste Reduction [ORC Section 3734.53(A)(5)-(6)]

The District recognizes there are several instances where there are differences between the Annual District Report and information presented in this *Plan Update*. This Plan has been updated to reflect the most current data for community participation and recycling programs for the reference year.

A. Reference Year Population and Residential/Commercial Waste Generation

Table IV-1, "Reference Year Population and Residential/Commercial Generation," presents an estimate of the District's population and projected residential/commercial waste generation for 2010. The population estimate of 28,215 for the District is a projection using the 2010 *U.S. Census*.

Population Adjustments

Adjustments to the District population are made for political subdivisions that are located partially within Henry County and partially within surrounding solid waste districts. In accordance with Ohio law, the entire population of political subdivisions located in more than one solid waste district is credited to the district containing the largest portion of the jurisdiction's population.

There were no political subdivisions in Henry County that fell partially within an adjacent solid waste district; no population adjustments were made. The total population for the District in 2010 was 28,215.

The District projected the 2010 residential/commercial waste generation using historical data. The following table summarizes the District's waste generation from 2007 – 2009:

Year	Waste + Recycling	Population	Per Capita Generation Rate	Average Rate of Change for Per Capita Generation Rate
2007	28,797	29,520	5.35	
2008	28,888	29,210	5.42	1.36%
2009	29,139	29,210	5.47	0.86%
2007 – 2009 Average Rate of Change for Per Capita Generation Rate:				**1.11%**

In 2009, the per capita residential/commercial waste generation rate was 5.47 pounds per person per day. The average rate of increase in

residential/commercial waste generation in Henry County 2007 – 2009 was 1.11 percent. The 2010 residential/commercial waste generation rate was calculated by increasing the 2009 rate by 1.11 percent, which resulted in a projected rate of 5.53 pounds per person per day, or approximately 28,475 tons in 2010. The following formula was used to calculate the 2010 residential/commercial generation rate:

(2009 Per Capita Generation Rate) x (2007–2009 Average Rate of Change) = 2010 Projected Per Capita Generation Rate

5.47 x 1.0111 = 5.53

This estimate is approximately 1,925 more less than the residential/commercial waste generation of 26,550 tons recorded by landfills and transfer stations for 2010 (15,909 tons) plus reported recycling and source reduction activities for 2009 (10,641 tons). For further discussion on reconciling the waste generation values see Section IV.H of this *Plan Update*.

B. Industrial Waste Generation

The District conducted an Industrial Survey in 2010 to collect recycling and solid waste data to support this *Plan Update*. Copies of the residential/commercial and industrial survey forms are included in Appendix G, and a summary of industrial survey results are included in Appendix F. Table IV-2, "Industrial Waste Generation Survey Respondents vs. Unreported", presents the results of the District's 2010 Industrial Survey. The District used information from industries responding to the survey as well as Appendix JJ of the Ohio EPA Plan format to estimate Total Industrial Waste Generated.

The District had 72 industries in SIC codes 20 and 22 through 39. Approximately 18% of the industries (11) responded to the survey. The surveys represented 75% (2,400) of the industrial sector employees in the District. Approximately 32,000 tons were reported in the surveys.

The District calculated the generation rate and tons of waste generated per employee, for each SIC code from the survey respondents. Then the District calculated the amount of industrial waste generated based on the number of industries and employees that did not submit a survey. For those industries that did not respond, the District used the generation rate from Appendix JJ of the Ohio EPA Plan Format to estimate total waste generated. Using this projection methodology, nearly 8,000 tons of industrial waste was generated by the District from non-responding industries. The resulting total is approximately 40,000 tons generated by both responding and non-responding industries.

C. Exempt Waste

Table IV-3, "Exempt Waste Generated in the District and Disposed in Publicly Available Landfills", shows the District's estimate of exempt waste generated in 2010. Exempt waste is material such as construction and demolition debris which is not defined as a solid waste. Exempt wastes may be managed in landfills that have different and often less stringent environmental control requirements. Table IV-3 shows the total exempt waste generated by the District was approximately 3,500 tons. This includes the exempt waste reported by the landfills and transfer stations receiving the District's waste in Tables III-1 and III-3.

D. Total Waste Generation (based on national statistics and projections)

Table IV-4, "Reference Year Total Waste Generation for the District," presents the total waste generated using national and industrial projections. Using the national averages adjusted by Ohio EPA, the District projected approximately 71,500 tons of waste was generated in 2010 from all sectors. The per capita generation rate is estimated at 13.88 pounds per person per day (PPD). This included 28,475 tons of residential/commercial waste generation (Table IV-1), 39,445 tons (Table IV-2) of projected industrial waste and 3,567 tons of exempt waste (Table IV-3). The total waste generation listed in Table IV-4 was 4,724 tons less than the total in Table IV-8 as calculated using landfill data and reported recycling and waste reduction, including exempt waste. For further discussion on reconciling the waste generation values see Section IV.H.

E. Reference Year Waste Reduction

The District surveyed recycling facilities, brokers, industrial and composting facilities to obtain recycling, waste reduction, and composting tonnage for 2010. The residential/commercial waste reduction reported on Table IV-5, "Reference Year Residential/Commercial Waste Reduction in the District", and industrial waste reduction reported on Table IV-6, "Reference Year Industrial Waste Reduction in the District", was obtained from these surveys. Recycling tonnage for each sector was calculated using data from broker/processor survey responses.

Figures in this *Plan Update* may differ slightly from figures reported in the 2010 Annual District Report (ADR) due to revisions in the data. The District contacted brokers and processors who responded to the survey to verify tonnage. The District took steps to determine whether auto bodies, construction and demolition debris, or out-of-district material was included in the tonnage reported on surveys. The District removed any non-creditable recycling tonnage.

Quantities reported on the ADR were calculated by blending broker/processor data with tonnage reported by industrial generators. Figures reported in this *Plan Update* are not blended to avoid any possibility of double counting. Figures in this *Plan Update* are to be considered the best available data and will supersede any previously reported figures. The following table presents the details regarding the 2010 ADR figures that were revised:

Material	Reported R/C Tons in 2010 ADR	Revised 2010 R/C Tons for Plan Update	Reason
Batteries	64	0	Removed suspected or known lead acid battery tons.
Ferrous Metals	7,711	4,663	Follow-up with processors indicated original tons included auto-bodies and other non-creditable tonnage, which was removed.
Non-Ferrous Metals	881	491	Follow-up with processors indicated original tons included non-creditable tonnage, which was removed.
Cardboard	413	795	Added Wal-Mart and Werlor Recycling's tons reported in Ohio EPA's MRF Report.
Paper	641	608	Approximately 33 tons were originally double-counted due to one reporting entity submitting tonnage that was sent to an in-district processor.
Plastic	213	193	Added Wal-Mart's tonnage reported in Ohio EPA's MRF Report.
Wood	5	13	Added Werlor's "other" tonnage (wood) reported in Ohio EPA's MRF Report.
Yard Waste	2,302	2,309	Added 7 tons of yard waste collected at Malinta's yard waste facility. Facility is not a registered compost facility and product is land applied; data was obtained after ADR was submitted.

Residential/Commercial Analysis

The District collects residential/commercial recycling data from recycling facilities, composting facilities, and brokers. The following section summarizes the waste reduction analysis conducted to demonstrate the tonnages being credited to the industrial sector for 2010.

The District surveyed recycling/composting facilities and brokers to obtain residential and commercial recycling data. Survey respondents were asked to only report tonnage collected from within the District from residential and commercial sources. The results of those surveys were used to compile reference year recycling and composting figures. The District did not use generator or hauler recycling data to avoid the possibility of double counting.

Brokers and processors that reported significant quantities of metals were contacted multiple times to confirm data. Two of the largest brokers and processors of the District's metals submitted revised tonnage reports as well as a letter explaining the methodology used to calculate reported tonnage. The letters stated that metal recycling tonnage reported to the District was reviewed for the county of origin and that construction and demolition debris was eliminated from the calculation. Verbal confirmation was given that auto-bodies and other non-creditable data were eliminated from the reported figures. As a point of reference, these companies provided their overall 2010 metal tonnage to demonstrate that not all tonnage accepted by each facility was reported to the District as creditable recycling.

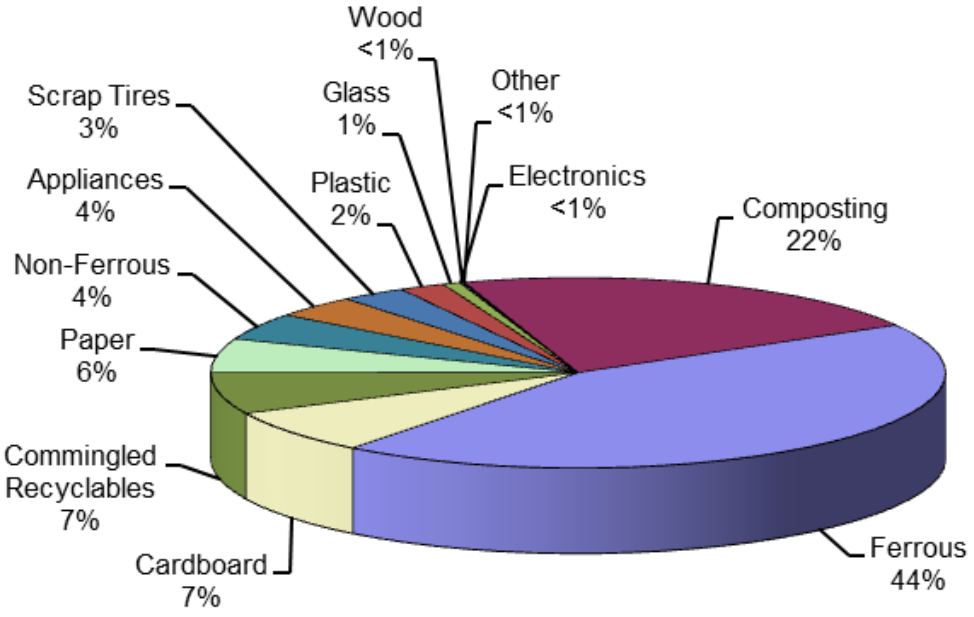
<u>Residential/Commercial Waste Reduction Data</u>

Table IV-5, "Reference Year Residential/Commercial Sector Waste Reduction in the District," shows the District recycled and composted nearly 11,000 tons of waste in 2010. More than 8,000 tons was recycled and approximately 2,000 tons of organic material was composted. The largest commodity recycled in 2010 was approximately 4,600 tons of ferrous metals. Ferrous metals accounted for 44% of the material recycled by the residential/commercial sector. Other large components of residential/commercial sector recyclables include composting material (2,309), non-ferrous metals (491 tons), cardboard (795 tons), commingled recyclables (753 tons), and paper (608 tons). High recovery of ferrous metals is mainly attributed to market pricing. The District will continue to monitor the ferrous metals reports from brokers and processors to determine reporting accuracy. The following figure presents the residential/commercial sector recycling and waste reduction tonnage by commodity.

Commodity	Tons
Ferrous	4,663
Compost	2,309
Cardboard	795
Commingled Recyclables	753
Paper	608
Non-Ferrous	491
Appliances	400
Scrap Tires	306
Plastic	213
Glass	82
Wood	13
Electronics	7
Other	1
Total	**10,641**

The following figure depicts the waste reduction percentages for the residential/commercial sector.

2010 District Residential/Commercial Waste Reduction



The District's programs have resulted in the following environmental benefits (using EPA's WARM Model):

EPA Material	Tons	Energy Saved (Million BTUs)
Mixed Recyclables	8,332	138,061
Composting	2,309	N/A
Total	**12,654**	**138,061**

Industrial Waste Reduction Analysis

The District used data collected from brokers and processors to calculate industrial recycling during the reference year. Survey respondents were asked to only report tonnage collected from within the District from industrial sources. Tonnage from auto-bodies and construction and demolition debris were asked to be excluded from tonnage reported. The District followed up with respondents to verify the results. The District did not use generator or hauler recycling data to avoid the possibility of double counting.

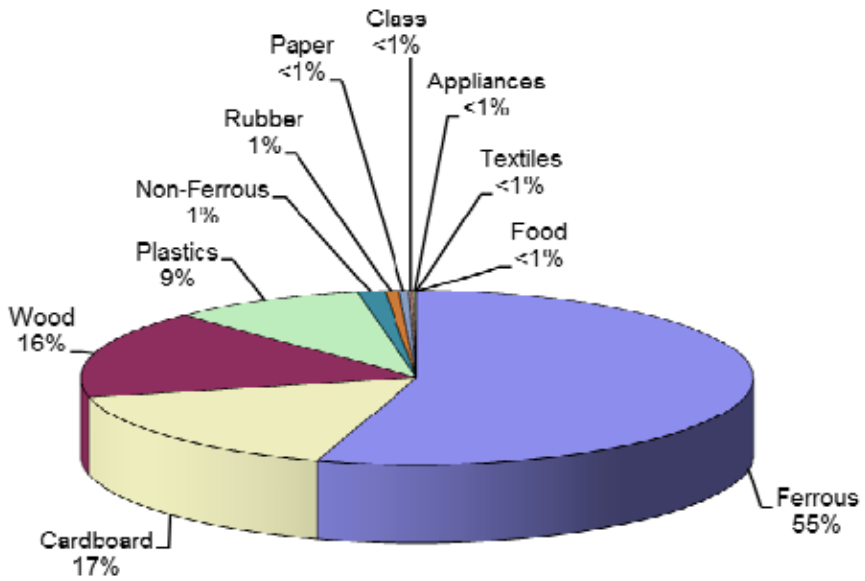
Commodity	Tons
Ferrous	16,925
Cardboard	5,149
Wood	5,091
Plastics	2,877
Non-Ferrous	407
Rubber	212
Paper	147
Glass	60
Appliances	50
Textiles	1
Food	0.1
Total	**30,917**

Industrial Recycling Summary

The District recycled more than 30,000 tons of industrial waste in 2010. To calculate the industrial recycling tonnage, the District surveyed industrial businesses and secondary materials brokers and processors. Approximately 18% of the District's industrial businesses responded to the survey, reporting 18,065 tons of recycling. A copy of the Industrial Survey results is included in Appendix F. Data supplied by secondary material brokers and processors provided a more complete report of the industrial sector's recycling efforts than the survey responses from businesses. To avoid double-counting data, the District solely used broker/processor data to complete Table IV-6.

The primary components recycled by the industrial sector in 2010 were ferrous metals (16,925 tons), cardboard (5,149 tons), wood (5,091 tons) and plastics (2,877 tons). The remaining 3% of industrial recycling tonnage was comprised of rubber, paper, non-ferrous metals, glass, textiles, and food. The following figure depicts the waste reduction percentages for the industrial sector.

2010 Industrial Waste Reduction



Based on this data, the District's programs have resulted in the following environmental benefits (using EPA's WARM Model):

EPA Material	Tons	Energy Saved (Million BTUs)
Mixed Recyclables	30,917	512,295
Total	**30,917**	**512,295**

F. Existing Waste Reduction/Recycling Activities for the Residential, Commercial and Industrial Sectors

The following section summarizes the reference year residential/commercial programs and initiatives for the District. This section is quite extensive and reflects the District's commitment to reducing solid waste from being disposed at landfills.

The District evaluated each of the programs in this section by using a Strengths and Challenges process. The results of this process will guide the District in the new planning period for the programs listed below as well as any new programs.

RESIDENTIAL/COMMERCIAL RECYCLING PROGRAMS

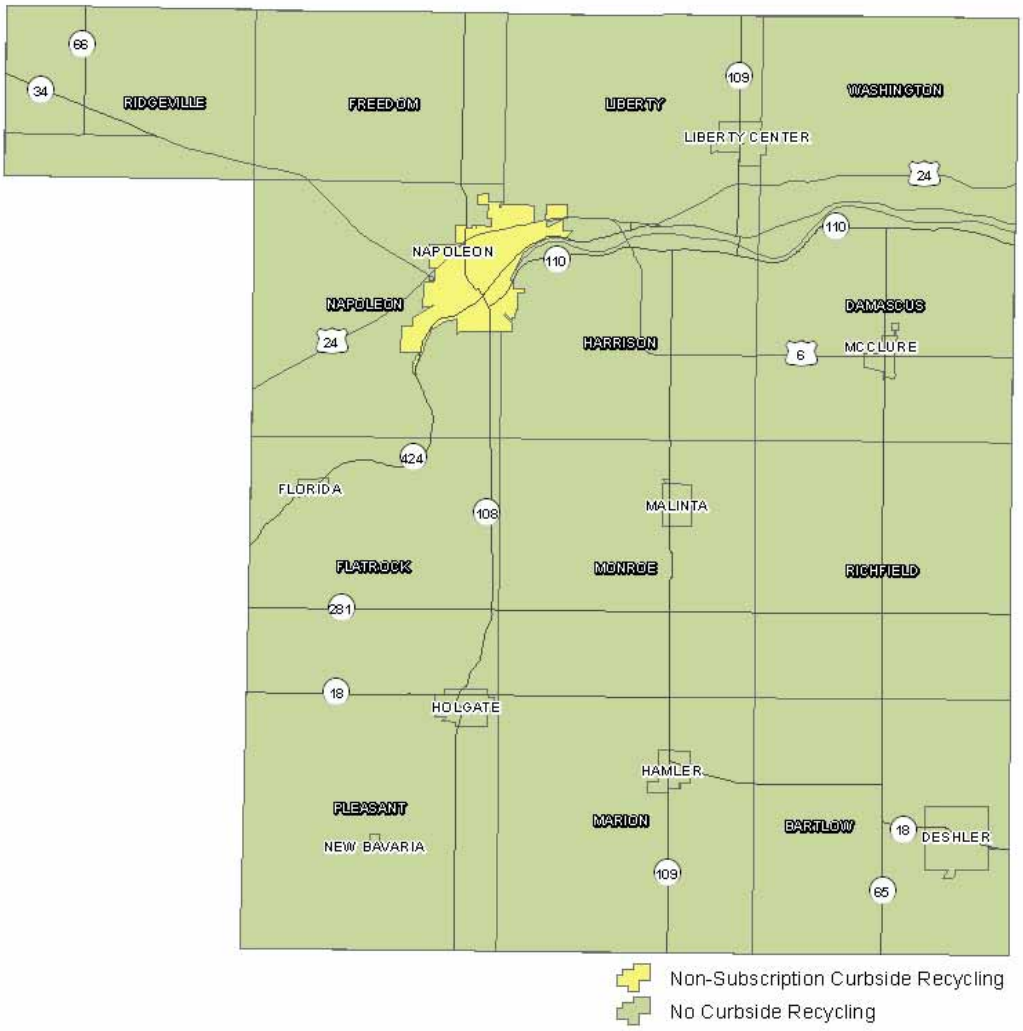
1. Curbside Recycling Program

One community provided curbside recycling in 2010. The program was non-subscription based and available in the most populous municipality in the District, the City of Napoleon. Approximately 745 tons of materials were recycled. The following table summarizes non-subscription curbside recycling for 2010:

Location	Population	Operator	Tons Recycled
City of Napoleon	8,749	City of Napoleon	745

The following figure depicts the location of the subscription curbside recycling program:

District Curbside Recycling Activities



The City of Napoleon operates its curbside recycling program a pay-as-you-throw (PAYT) system of solid waste collection where residents are allowed one 30-gallon trash bag per week and must purchase additional trash "tags" at the City Utilities Office or other locations in the City. Recycling is provided at no additional cost, thus encouraging residents to recycle versus dispose of their solid waste materials. The curbside recycling program collected the following materials:

- #1 and #2 plastics (PET and HDPE plastics)
- Clear, green, and brown glass
- Aluminum cans
- Tin cans
- Corrugated cardboard
- Paste board
- Newspaper
- Magazines
- Catalogues
- Gift wrap
- Junk mail

The following table summarizes the program details:

Program Summary – Curbside Recycling (HC-1)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	6608
Entity Responsible for Maintaining Program	City of Napoleon
Service Area for Program	City of Napoleon
Materials Reduced/Recycled	#1 and #2 plastics, glass, aluminum cans, tin cans, corrugated cardboard, paste board, newspaper, magazines, catalogues, gift wrap, and junk mail
2010 Recycled Tonnage	745
2010 Annual Program Costs	N/A
Program Operator/Contractor	City of Napoleon, Zack's Recycling

Strengths of the program include:

- The most populous municipality in the District has non-subscription curbside recycling available.

- Residents in Napoleon have an economic incentive to recycle as trash tags are $2.00 per tag and recycling is offered at no additional cost.

Challenges of the program include:

- Most residents in the District do not have curbside recycling.
- Most haulers do not have the infrastructure to offer curbside recycling.
- There are no communities that contract for trash or recycling in the District.

2. Drop-Off Recycling Program

The District, municipalities, and privately owned recycling entities provide 8 full-time drop-off centers and 4 part-time drop-off locations. Each drop-off collects at least 4 target materials that are recognized by Ohio EPA as highly amenable materials for recovery. The District has identified aluminum/bimetal cans, glass, plastic, and newspaper as highly amenable materials to recover for the residential/commercial sector. Two of the full-time drop-offs are also buy-back centers that provide residents with economic incentives to recycle. Nine of the thirteen townships in the District have at least one drop-off recycling center.

The following table summarizes the drop-off recycling and buy-back locations that accept at least 4 highly amenable materials for recovery:

Location	Hours
Full-Time	
Village of Deshler Behind Historical Society and Downtown	24 Hours 7 Days/Wk
Canal Basin and Napoleon Lion's Club Corner of Scott and 424	24 Hours 7 Days/Wk
Malinta Henry County Landfill	8-3:30 M-F 8-11 Sat.
Village of Liberty Center 110 East St.	24 Hours 7 Days/Wk
Village of Malinta Henry St. & Center St.	24 Hours 7 Days/Wk
Village of McClure South of Old School House	24 Hours 7 Days/Wk
Napoleon N&R&G Recycling	8-4:45 M-F 8-11:45 Sat.
Napoleon Zack's Recycling LLC	8-4:45 M-F 8-11:45 Sat.

Part-Time	
Hamler - Hope Lutheran Church and Summerfest Shelter	3 Annual Events
Napoleon Heartland Disposal Service	8-4:30 M-F
Holgate 103 Frazier St.	1 Annual Event
Ridgeville Township – Northwest Community College	Operating Hours
Buy-Back Center (Metal Only)	
Okolona Iron & Metal	8-5 M-F 8-11:45 Sat.

All drop-off stations collected at a minimum the following materials:

- Aluminum and bimetal cans
- Glass containers
- Plastic #1 and #2
- Newspaper

Drop-Off Recycling Center at the Henry County Landfill

The District-operated drop-off recycling center at the Henry County Landfill accepts glass, steel cans, aluminum, newspapers, magazines, cardboard, #1 and #2 plastics, computers, and household batteries.

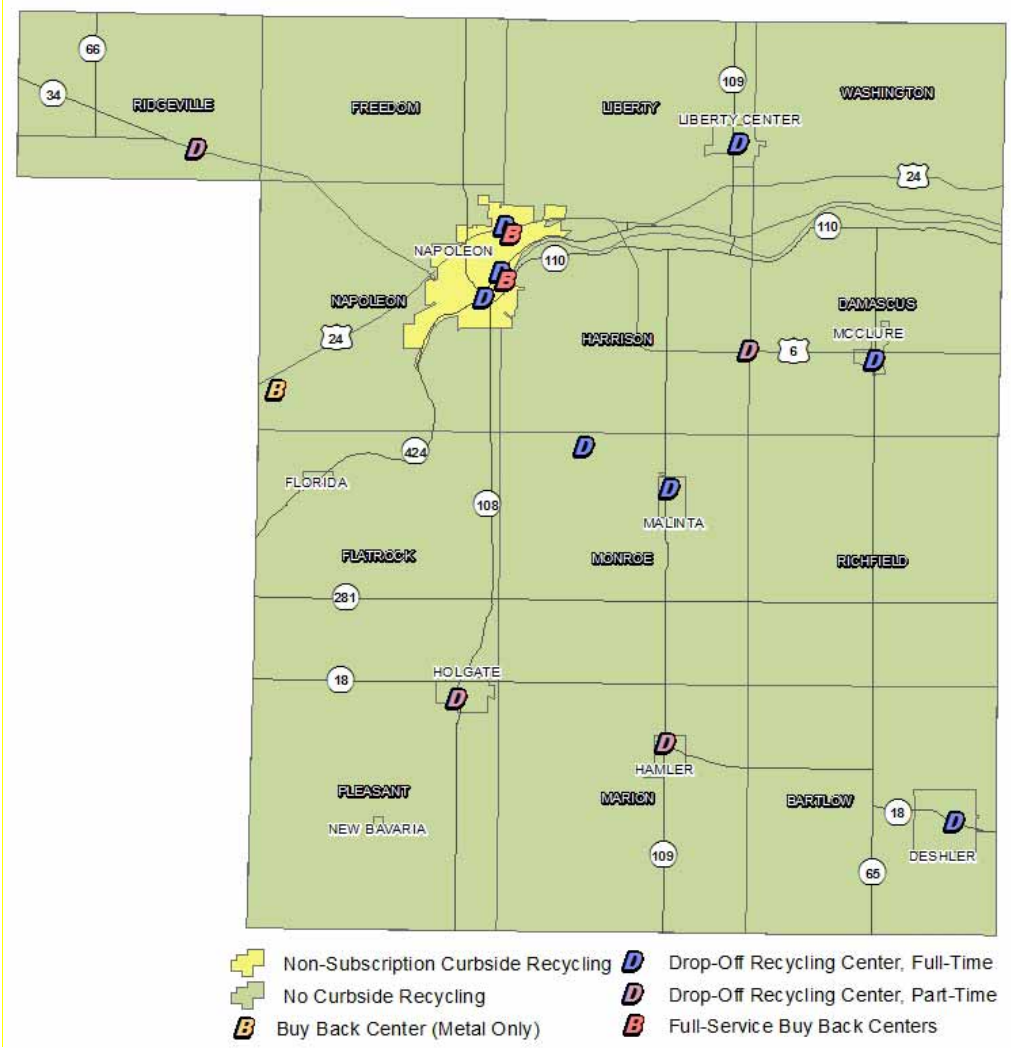
Bulky metal items can be recycled at the District's scrap metal roll-off, located near the drop-off recycling center at the Henry County Landfill.

Recycling Drives and Limited Material Drop-Off Recycling Centers

The District has additional drop-off recycling opportunities located throughout the District that collect less than the 4 targeted materials. Churches and other entities also hold annual and quarterly recycling drives. Over 10 tons of recyclables were collected at recycling drives during the reference year. Okolona Iron & Metal is a full-time buy-back center in the District that accepts only metal and helped residents recycle approximately 500 tons during the reference year. Locations of recycling drives and limited material drop-off recycling centers are listed in Table III-5.

The following map depicts the approximate location of each drop-off location that accepts the 4 minimum designated materials and all buy-back centers:

2010 District Drop-Off Recycling and Buy-Back Locations



The following table summarizes the program details.

Program Summary – Drop-Off Recycling (HC-2)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	6609 - 6616, 6620 - 6625, 6627
Entity Responsible for Maintaining Program	District, municipalities, private sector, and not-for-profit organizations (See Table III-5)
Service Area for Program	District
Materials Reduced/Recycled	Aluminum and bimetal cans, glass containers, plastics #1 and #2, and newspaper
2010 Recycled Tonnage	1,485+

Program Summary – Drop-Off Recycling (HC-2)	
Description	**Details**
2010 Annual Program Costs	$9,705
Program Operator/Contractor	District, municipalities, private sector, and non-profit operators

Strengths of the program include:

- The program has been well utilized by the public and continues to grow.
- The program is working reasonably well without an abundance of misuse and contamination.
- The program provides recycling opportunities to residents in rural settings, multi-family dwellings, and small businesses.

Challenges of the program include:

- Some areas of the District are under served.
- Some drop-off sites could be expanded from part time to full time

3. Yard Waste Management Program

In 2010, there were 7 non-registered facilities, activities, and programs and 2 registered yard waste composting facilities in the District that recycled 2,309 tons of materials. Composting represents approximately 22% of residential/commercial waste reduction in the District.

Private and public sector compost operations were responsible for their own program or facility. The private sector operations provide service to the entire District. The public sector facilities were typically limited in service area to their respective communities.

Non-Registered Facilities

The District and political subdivisions (Napoleon, Liberty Center, Holgate, and Malinta) managed five yard waste drop-off locations. Yard waste drop-off locations at the Henry County Landfill and in the City of Napoleon are funded by the District; therefore, all District residents have permitted access to at least two yard waste drop-offs. Seasonal curbside yard waste collection was provided by four political subdivisions in the District (Napoleon, Liberty Center, Hamler, and Holgate). The Village of Deshler provided monthly curbside collection of yard waste. The City of Napoleon offered a comprehensive yard waste management program, in addition to

providing a drop-off location and seasonal curbside yard waste collection. These services include leaf vacuuming for elderly and disabled residents in the fall and access to unlimited free mulch. Residents may load mulch into their own vehicle/trailer with no limit and no charge. The City will load a privately owned truck or trailer for $5.00, or deliver loads of mulch for about $10-15.

Each non-registered facility managed the collected yard waste via land application or used a registered compost facility to process the organic materials. In 2010, the City of Napoleon completed construction on a new, expanded compost facility. The Henry County Landfill began accepting yard waste during this transition to assist residents. The landfill continues to accept yard waste. Most facilities that accepted or collected tree trimmings chipped the material and made it available to the residents.

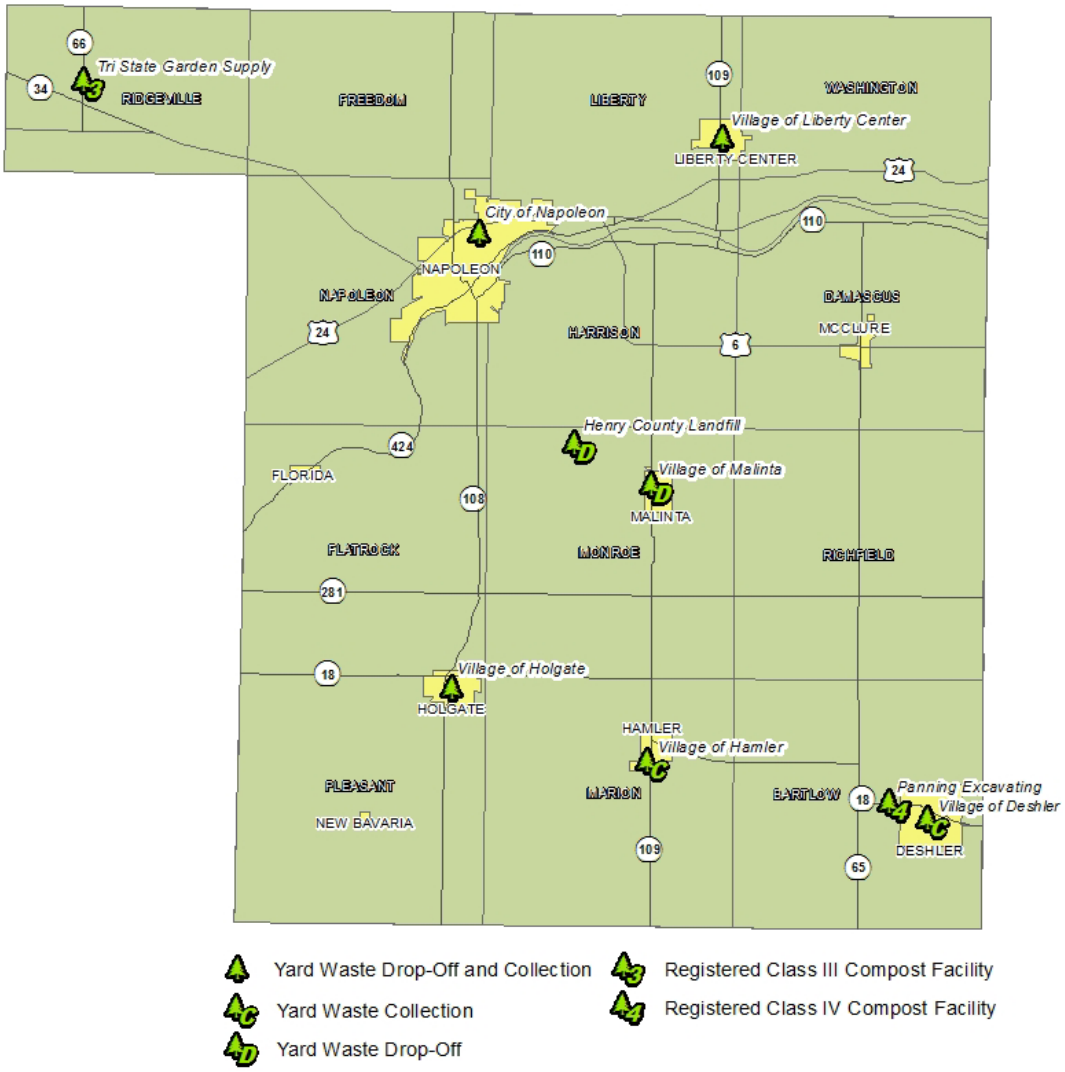
Registered Compost Facilities

One registered Class III compost facility and one registered Class IV compost facility were operating in the District during 2010. The Class III compost facility exclusively processed manure. The Class IV compost facility accepted grass, leaves, and tree trimmings. This facility also processes composting material from two municipalities in the District. Over 75% of composted material in the District was processed by the registered Class IV facility.

Yard Waste Facility Capacity Management

The District will monitor the availability of yard waste recycling and processing facilities. Capacity shortages will be documented to aid the District in managing yard waste volumes. The following map presents yard waste management activities in the District during 2010.

2010 District Yard Waste Activities



The following table summarizes the program details:

Program Summary – Yard Waste Management (HC-3)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	6644 – 6651, 6657
Entity Responsible for Maintaining Program	District, political subdivisions, and private sector compost facilities
Service Area for Program	District
Materials Reduced/Recycled	Yard waste, brush, leaves, grass, and wood
2010 Recycled Tonnage	2,309

Program Summary – Yard Waste Management (HC-3)	
Description	**Details**
2010 Annual Program Costs	$0 Historical expense: $4,000/year to support Napoleon Yard Waste Facility
Program Operator/Contractor	District, various political subdivisions, and private sector compost facilities

Strengths of the program include:

- The District diverted a significant amount of yard waste from landfills in 2010.
- This program is conducted at very little cost to the District.

Challenges of the program include:

- None.

4. Household Hazardous Waste Management

The District accepted Freon-containing appliances and dried latex paint at the Henry County Landfill. Freon-containing appliances cost $12 per item to recycle and can be dropped off at the Henry County Landfill Monday through Friday 8:00AM-3:30PM and Saturday 8:00AM-11AM. The District advertises additional facilities that are licensed to remove Freon (N&R&G Recycling) and accept Freon-containing devices (Zack's Recycling and Okolona Recycling).

Dried latex paint is not considered hazardous waste and could be disposed with regular household refuse or at the Henry County Landfill during normal operating hours. Used motor oil was not accepted at the landfill, but the District maintains a list of approximately 10 businesses that accept used motor oil for residents who inquire. Household hazardous waste (HHW) brochures were available to residents at the landfill and during the Henry County Fair.

The following table summarizes the program details:

Program Summary – Household Hazardous Waste Management (HC-4)	
Description	**Details**
Program Implementation	2008
EPA Program Number from ADR	6633, 6636, 6659
Entity Responsible for Maintaining Program	District, private sector businesses
Service Area for Program	District
Materials Reduced/Recycled	Freon-containing appliances, used motor oil, dried latex paint
2010 Recycled Tonnage	16 Freon-containing appliances
2010 Annual Program Costs	$0
Program Operator/Contractor	District, private sector businesses

Strengths of the program include:

- Provides an opportunity for the District to educate residents on HHW management issues and other District initiatives.

- The costs of managing used oil are deferred by a network of local retailers that accept used oil for recycling.

Challenges of the program include:

- Some hard to manage HHW was not accepted locally so residents did not have a recycling outlet.

- Convenient all inclusive HHW collection was not available to residents on an ongoing basis.

5. Compact and Fluorescent Light Bulb Take-Back

The District promotes 5 compact-fluorescent light bulb (CFL) and fluorescent light bulb take-back programs. The City of Napoleon operates a fluorescent bulb take back program for anyone (resident or business) that is a Napoleon Power and Light Customer. They do not accept bulbs from government agencies. In 2010, this program collected and recycled the following:

- 928 – 4’ fluorescent bulbs
- 65 – 8’ fluorescent bulbs
- 18 u-shaped fluorescent bulbs

Other CFL and fluorescent light bulb take-back programs that the District promotes are operated by the following businesses:

- Wal-Mart
- Home Depot
- Lowe's
- Environmental Recycling

The following table summarizes the program details:

Program Summary – Compact and Fluorescent Light Bulb Take-Back (HC-5)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	N/A
Entity Responsible for Maintaining Program	City of Napoleon and private sector businesses
Service Area for Program	District
Materials Reduced/Recycled	Compact and fluorescent light bulbs
2010 Recycled Tonnage	1,000+ fluorescent bulbs/CFLs
2010 Annual Program Costs	$0
Program Operator/Contractor	City of Napoleon and private sector businesses

Strengths of the program include:

- The costs of managing compact and fluorescent light bulbs are deferred by a Napoleon Power and Light and a network of local retailers that take back or accept fluorescent light bulbs and CFLs.

Challenges of the program include:

- Although the City of Napoleon provides a fluorescent bulb recycling drop-off program for Napoleon Power and Light customers, most residents in the District do not have access to this program.

6. Lead-Acid Battery Collection

The disposal of lead-acid batteries (LAB) in solid waste landfills was prohibited by law on April 25, 2008. The Henry County Landfill will continue to accept LABs for no cost to residents. Residents can dispose LABs at the landfill Monday through Friday 8:00 AM-3:30 PM and Saturday 8:00 AM-11 AM. Wholesalers and retailers of lead acid batteries are required by law to accept spent LABs from their customers at the time of purchase. LABs are also accepted at each of the recycling buy-back facilities in the District. The District maintains a list of in-district businesses that accept LAB for residents who inquire. Locating an outlet to properly dispose of LABs has become significantly easier for residents since the 2008 legislation went into effect.

The following table summarizes the program details:

Program Summary – Lead Acid Battery Collection (HC-6)	
Description	**Details**
Program Implementation	2008
EPA Program Number from ADR	6636, 6653, 6652
Entity Responsible for Maintaining Program	District, private sector businesses
Service Area for Program	District
Materials Reduced/Recycled	LAB
2010 Recycled Tonnage	58 LAB
2010 Annual Program Costs	$0
Program Operator/Contractor	District, private sector businesses

Strengths of the program include:

- Provides a free outlet for residents to recycle LABs.
- The costs of managing LABs are reduced by a network of local retailers that accept spent LABs for recycling.

Challenges of the program include:

- None.

7. Electronics Recycling

Many electronics contain heavy metals and toxic constituents. The availability of proper recycling outlets is important for maintaining drinking water safety and environmental health. The District accepted computers at the recycling facility located at the Henry County Landfill. N&R&G Recycling and the City of Napoleon partner with Zack's Recycling to collect computers for recycling during biannual clean-up events.

Goodwill and Dell's Reconnect program continued to be promoted to residents via the District's website and landfill brochure. The Reconnect program provides a free computer/electronics recycling outlet available Monday through Saturday 9:00AM – 8:00AM and Sunday 12:00PM – 5:00PM. Proceeds from re-marketing the electronic components support Goodwill's non-profit training and employment programs.

Goodwill has facilities at the following locations:

Lagrange Street Store
230 Lagrange Street
Napoleon, OH, 43545
(419) 592-0201

North Clinton Street Store
1005 N Clinton St, Ste 2
Defiance, OH, 43512
419-782-2577

North Shoop Avenue Store
822 N Shoop Ave
Wauseon, OH, 43567
419-335-1080

The following table summarizes the program details:

Program Summary – Electronics Recycling (HC-7)	
Description	**Details**
Program Implementation	N/A
EPA Program Number from ADR	N/A
Entity Responsible for Maintaining Program	District, private sector businesses
Service Area for Program	District
Materials Reduced/Recycled	Computers, electronics
2010 Recycled Tonnage	7
2010 Annual Program Costs	$0
Program Operator/Contractor	District, private sector businesses

Strengths of the program include:

- Provides a free outlet for residents to recycle electronics.
- The costs of managing electronics are deferred by Goodwill/Dell's program.

Challenges of the program include:

- Locations of Goodwill stores may not be central or convenient for all residents.

8. Scrap Tire Management

Effective management of scrap tires is important to public health and can minimize costs for scrap tire abatement programs at local and state levels.

Illegally dumped tires are not only unsightlly, they hold stagnant water and provide a breeding ground for mosquitos, carriers of the West Nile Virus.

Scrap tires in Ohio can only be disposed at permitted and licensed scrap tire monofills or scrap tire monocells (OAC 3745-27-69 and 3745-27-70). There are 32 registered scrap tire facilities in Ohio. The District operates a Class II Registered Scrap Tire Facility at the Henry County Landfill. Class II registered scrap tire facilities are limited to a maximum of 10,000 square feet of effective scrap tire storage area (equal to approximately 50,000 passenger tires).

The District accepts passenger tires, tractor tires, and semi-truck tires are accepted for a reasonable fee. Earthmoving tires will not be accepted. The following table summarizes the fees charged in 2010 for the acceptance of scrap tires:

Henry County Landfill Scrap Tire Prices	
Type	**Price/LB**
Passenger tires (no rims) up to 16"	0.03/LB
Passenger tires (with rims), tractor tires, or mixed loads	0.05/LB
Semi tires	0.075/LB

The operation includes a tire cutter, de-rimming device, debeader, shredder, and screen. Shredded tire chips are used for the drainage layer in the landfill cell construction. Ohio EPA encourages the re-use of all waste materials, including scrap tires. The use of processed tire derived chip (TDC) as a substitute for aggregate in the drainage collection system at the Henry County Landfill is pre-approved-by rule and listed in OAC 3745-27-78(E).

In 2010, nearly 600 tons of tires were collected and recycled.

The following table summarizes the program details:

Program Summary – Scrap Tire Management (HC-8)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	6619
Entity Responsible for Maintaining Program	District
Service Area for Program	District

Program Summary – Scrap Tire Management (HC-8)	
Description	**Details**
Materials Reduced/Recycled	Scrap tires
2010 Recycled Tonnage	306
2010 Annual Program Costs	$0
Program Operator/Contractor	N/A

Strengths of the program include:

- Provides opportunities to recycle various types of tires.
- Shredding system creates a beneficial use for scrap tires.

Challenges of the program include:

- Fees may detour some residents of properly disposing scrap tires.

MARKET DEVELOPMENT PROGRAMS

9. Market Development Support

The District seeks ways to develop markets for recyclables and recycled commodities. In 2010, the District obtained an Ohio Department of Natural Resources, Division of Recycling and Litter Prevention (ODNR-DRLP) Market Development Grant for N&R&G Recycling. The grant allowed N&R&G Recycling to purchase a recycling truck to increase the collection of cardboard, glass and plastic in the District.

The following table summarizes the program details:

Program Summary – Market Development Support (HC-9)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	6661
Entity Responsible for Maintaining Program	District
Service Area for Program	District
Materials Reduced/Recycled	Cardboard, glass, plastic
2010 Recycled Tonnage	Approx. 1,930
2010 Annual Program Costs	$72,568 (Grant Funding)
Program Operator/Contractor	District

Strengths of the program include:

- Promotes recycled content materials and supports local and regional markets.

Challenges of the program include:

- None.

RESIDENTIAL/COMMERCIAL/INDUSTRIAL SECTOR EDUCATION AND AWARENESS PROGRAMS

10. Education and Awareness Program

The District utilizes a variety of efforts to provide education and awareness to all sectors in Henry County for youth and adult audiences, small and large businesses, and institutions.

The following section summarizes the District's education and awareness initiatives for 2010.

Youth Presentations

In 2010, the District made four presentations to approximately 250 elementary school students. The presentations explained the importance of recycling, how to recycle, and why youth are important to the recycling program. The District works with schools to arrange as many presentations as possible throughout the school year.

Educational Videos

The District provided educational videos to local schools, libraries, and District offices. Topics include recycling, composting, and tire shredding.

Brochures

The District maintains a variety of waste reduction and recycling brochures on various topics including recycling, composting, how to properly dispose of paint, and managing junk mail. Brochures were distributed at the Henry County Fair, schools, and landfill.

Commercial/Industrial Sector Presentations

The District provides educational materials and conducts presentations to businesses and groups.

District Web Site

The District maintained a web site in 2010 located at the following address: http://www.henrycountyohio.com/litter.htm.

The web page contains the following:

- Where to Recycle (drop-off locations, buy-back centers, computer recycling)
- Recycling facts
- Waste reduction and recycling links

The following table summarizes the program details.

Program Summary – Education and Awareness (HC-10)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	6656, 6632, 6630, 6628, 6635, 6634
Entity Responsible for Maintaining Program	District
Service Area for Program	District
Materials Reduced/Recycled	N/A
2010 Recycled Tonnage	N/A
2010 Annual Program Costs	$0
Program Operator/Contractor	District

Strengths of the program include:

- The District accomplished many initiatives with minimal staffing and funding.

Challenges of the program include:

- Limited staffing and funding prevent the District from conducting more education and awareness activities.

INDUSTRIAL RECYCLING

11. Industrial Sector Data Collection

The District annually surveys industrial sector businesses (SIC code 20 and 22 – 39) to obtain data on recycling, source reduction, and waste generation. The District continually seeks ways to improve data collection methodology and the quality of data recorded.

Program Summary – Industrial Sector Data Collection (HC-11)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	6658, 6660
Entity Responsible for Maintaining Program	District
Service Area for Program	District
Materials Reduced/Recycled	N/A
2010 Recycled Tonnage	N/A
2010 Annual Program Costs	$0
Program Operator/Contractor	District

Strengths of the program include:

- The District's surveying data has produced recycling tonnage that has exceeded the State Solid Waste Plan goals.

Challenges of the program include:

- The commercial sector is not surveyed.

LITTER PREVENTION AND CLEAN-UP

12. Annual Litter Round-Up

Litter is unsightly, misplaced solid waste that devalues communities and invites others to litter. Each year, the District conducts an annual litter round-up. Organizations and families may register to volunteer. Organizations can earn up to $4.00 per bag of litter collected, up to $100.00. There are also cash bonuses to the top two groups that separate their recyclables. The District provides bags and gloves; area businesses, townships, and local organizations sponsor the event and provide financial incentives for volunteers.

In 2010, the District received a grant to fund the litter round-up from the Ohio Department of Natural Resources, Division of Recycling and Litter Prevention. Over 200 miles were cleaned up by more than 600 volunteers. Following the Annual Litter Round-Up, an additional 132 miles were cleaned up by the Juvenile Probation Office. Over one and a quarter tons of litter was removed from 332 miles of District roadways in 2010.

Program Summary – Annual Litter Round-Up (HC-12)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	6637
Entity Responsible for Maintaining Program	District
Service Area for Program	District

Program Summary – Annual Litter Round-Up (HC-12)	
Description	**Details**
Materials Reduced/Recycled	Various
2010 Program Tonnage	1.28
2010 Annual Program Costs	$1,822
Program Operator/Contractor	District

Strengths of the program include:

- The communities in the District appreciate all the activities that are conducted for this program.
- Over 330 miles of District roadways were cleaned in 2010, making Henry County a better place to live.
- The District created a great collaboration between hundreds of volunteers, multiple organizations including working with the Juvenile Probation Office.

Challenges of the program include:

- None noted.

ECONOMIC INCENTIVES

13. Volume-Based Rate Support

The District currently has one political subdivision operating a non-subscription curbside recycling program as a pay-as-you-throw (PAYT) collection system. There is strong evidence that PAYT programs out-perform non-PAYT programs in terms of recyclables collected.

An analysis was conducted on the District's only PAYT community in 2010. The results of the analysis on the City of Napoleon's per capita waste reduction are summarized below:

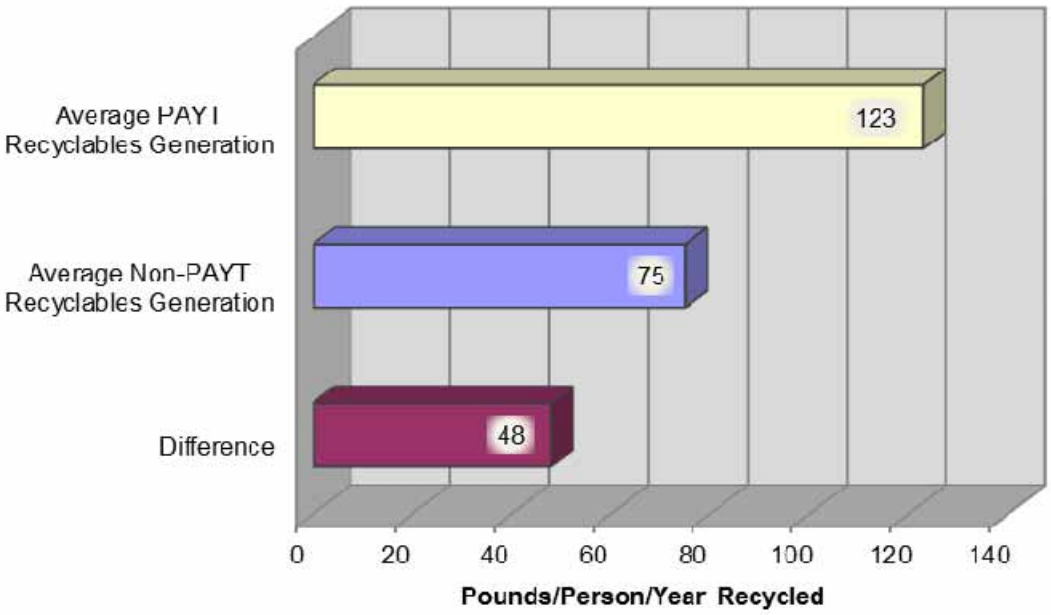
Community	Population	Tons Recycled	Pounds Per Person Per Year
City of Napoleon	8,749	745	170

The City of Napoleon operates its curbside recycling program a pay-as-you-throw (PAYT) system of solid waste collection where residents are allowed one 30-gallon trash bag per week and must purchase additional trash "tags" at the City Utilities Office or other locations in the City. Recycling is provided at no additional cost, thus encouraging

residents to recycle versus dispose of their solid waste materials. The curbside recycling program collected the following materials:

- #1 and #2 plastics (PET and HDPE plastics)
- Clear, green, and brown glass
- Aluminum cans
- Tin cans
- Corrugated cardboard
- Paste board
- Newspaper
- Magazines
- Catalogues
- Gift wrap
- Junk mail

The District looked at the NCO Solid Waste District to determine how the District's PAYT program compared with non-PAYT programs. The NCO District was chosen to compare the City of Napoleon's program because NCO is considered one of the premier PAYT District's in the State. In addition, the communities that comprise the data from NCO are rural in nature which compares favorably with the District. The following table shows the average pounds per person per year for PAYT and non-PAYT programs from the NCO District:



As can be seen, the average NCO Solid Waste District PAYT per capita recyclables generation is 123 pounds per year and the non-PAYT average is 75 pounds per year. Based on this data, the City of Napoleon's program is out performing other PAYT programs by 47 pounds per year.

Volume-based collection systems (PAYT programs) can dramatically increase residential waste reduction. For this reason, the District will provide technical and educational support to any communities or haulers who express an interest to switch to volume-based billing

Program Summary – Volume-Based Rate Support (HC-13)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	6654
Entity Responsible for Maintaining Program	District
Service Area for Program	District
Materials Reduced/Recycled	N/A
2010 Recycled Tonnage	N/A
2010 Annual Program Costs	$0
Program Operator/Contractor	District

Strengths of the program include:

- The City of Napoleon's curbside program rates as one of the best overall programs in the State of Ohio. This program performs at or above other similar programs regarding recycling performance and offers a great deal of service and value to its residents.

Challenges of the program include:

- No other community in the District offers an economic incentive curbside program.

OTHER PROGRAMS

14. District Facilities

Henry County Landfill

The Henry County Landfill is one of the smallest landfills in Ohio. The landfill was designed to be filled in 11 phases. The landfill accepted waste in 2010, but the eighth phase is estimated to reach capacity before 2012. County officials considered expanding the landfill; however, the estimated $1.5 million cost to increase capacity would make disposal rates too high to remain competitive. When the landfill reaches capacity, the District plans to close the landfill and operate the property as a transfer station.

Henry County Transfer Station

This facility began operation in 2000 on a limited basis with collected materials transferred to the Henry County Landfill. The facility is not classified as a regulated transfer station by Ohio EPA. It will begin shipping collected solid waste to out-of-district landfills when the Henry County Landfill reaches capacity. This facility is anticipated to operate as an exempt facility in the future once it begins shipping solid waste off-site versus to the Henry County Landfill.

The following table summarizes the program details.

Program Summary – District Facilities (HC-14)	
Description	**Details**
Program Implementation	Ongoing
EPA Program Number from ADR	6618, 6617
Entity Responsible for Maintaining Program	District
Service Area for Program	District
Materials Reduced/Recycled	N/A
2010 Recycled Tonnage	N/A
2010 Annual Program Costs	$0
Program Operator/Contractor	District

Strengths of the program include:

- The Henry County Landfill has provided a valuable service to the generators in the region for many years.
- The landfill site will continue to provide solid waste management options including special waste and scrap tire management.

Challenges of the program include:

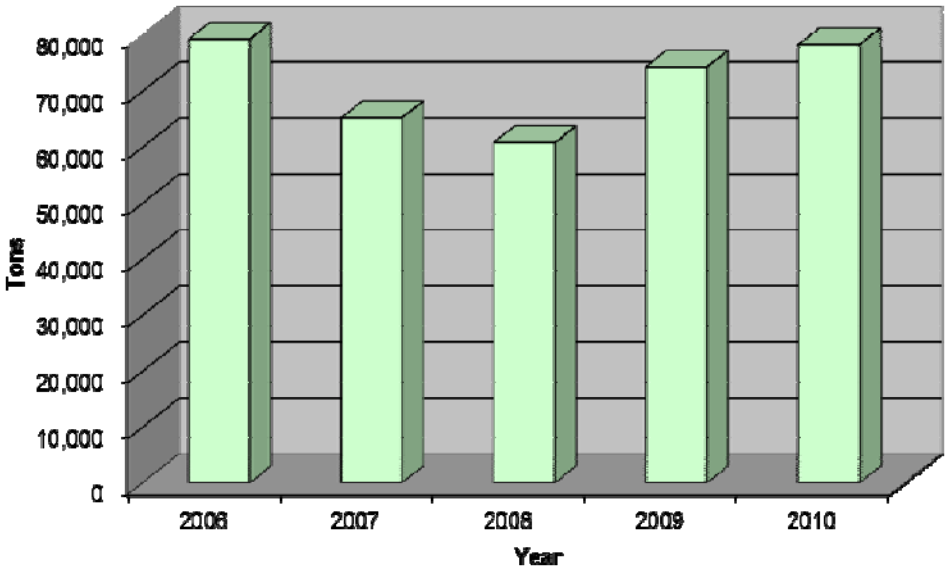
- Transitioning from a landfill operation to transfer station operation may be challenging for District staff.
- The District may lose revenue from certain high-volume generators once the landfill closes.

G. Total Waste Generation: Historical Trends Plus Waste Reduction

Table IV-7, “Total Waste Generation Based Upon Disposal Plus Waste Reduction”, presents total waste generation based upon disposal plus waste reduction. In 2010, the District generated 78,224 tons of solid waste based on landfill disposal, yard waste composting and recycling. Historically, the District generated a high of 79,236 tons in 2006 and a low

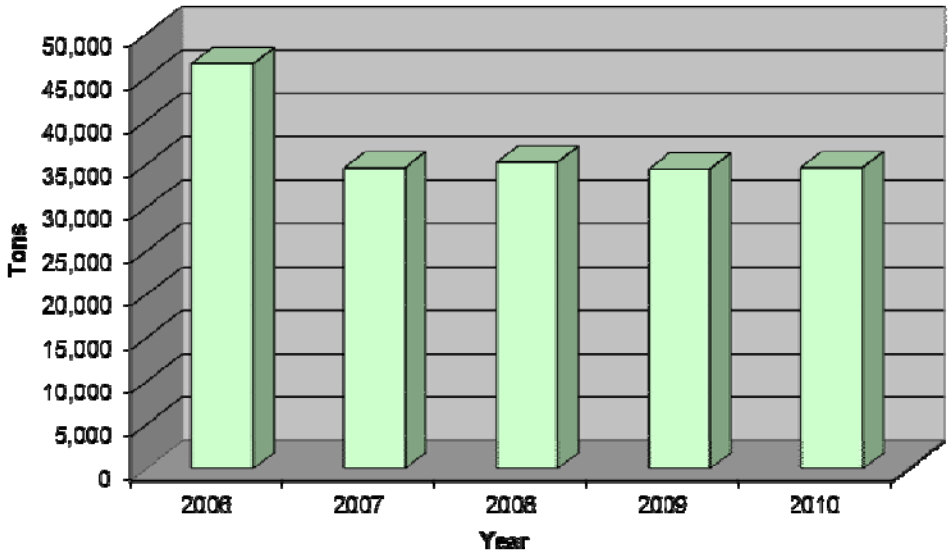
of 60,757 in 2008. The following graph presents the fluctuations in District waste generation over the past five years. The initial downward trend is likely a result of economic decline. Tonnage has been increasing since 2008, indicative of modest economic recovery.

District Historical Total Generation



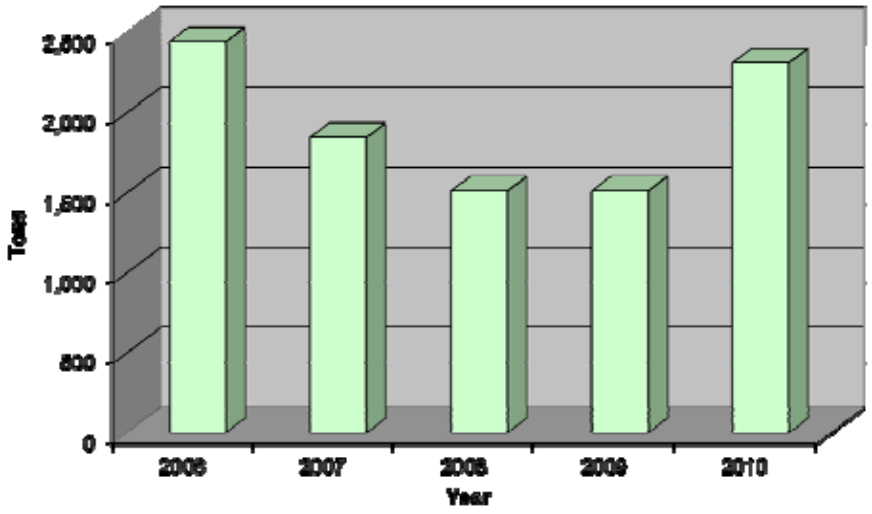
Landfilled waste declined nearly 12,000 tons, or 25%, between 2006 and 2007. The significant decline between 2006 and 2007 is the result of several factors. Increased education and awareness activities have produced higher participation rates in alternative waste management programs over the past five years. Economic changes have also influenced residential, commercial, and industrial waste generation trends. Landfilled waste has remained fairly steady (around 35,000 tons) from 2007 – 2010, while overall waste generation has risen from 2008 – 2010, indicating that recycling and composting rates are increasing. The following graph depicts the historical landfill totals from 2006 – 2010.

District Historical Landfill Disposal



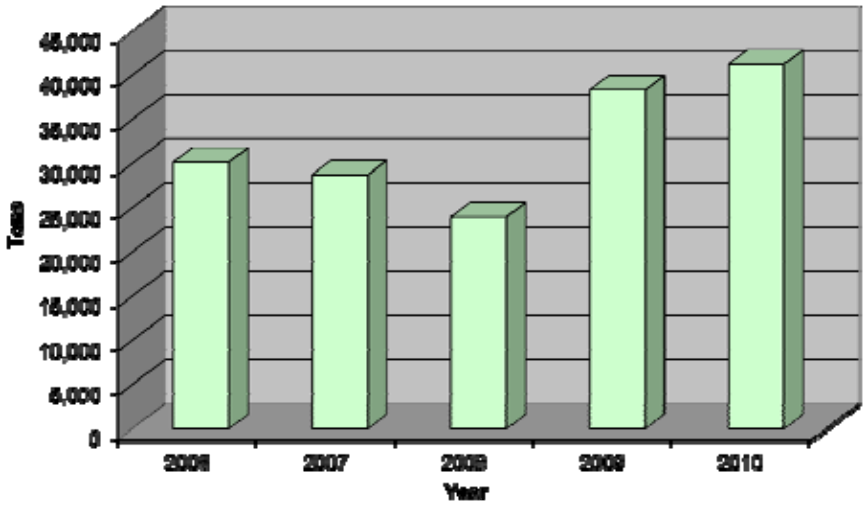
Yard waste tonnage varies annually due to yard waste management programming and weather conditions that can cause an increase in organic debris. In addition, reporting of yard waste can vary from year to year. The District now relies on yard waste data from Ohio EPA which should provide dependable data year over year. Yard waste has ranged from a low of approximately 1,500 tons in 2008 and 2009 to a high of more than 2,400 tons in 2006. Yard waste increased 800 tons (53%) from 2009 to the reference year. The following graph depicts the historical yard waste totals from 2006 – 2010.

District Historical Yard Waste Management



Waste reduction declined from 2006 – 2008; tonnage has improved from 2008 – 2010. Waste reduction has ranged from a low of approximately 24,000 tons in 2008 to a high of 41,262 tons in 2010. Increases in recycling are mainly due to increased awareness of drop-off recycling centers. The following graph depicts the historical waste reduction totals from 2006 – 2010.

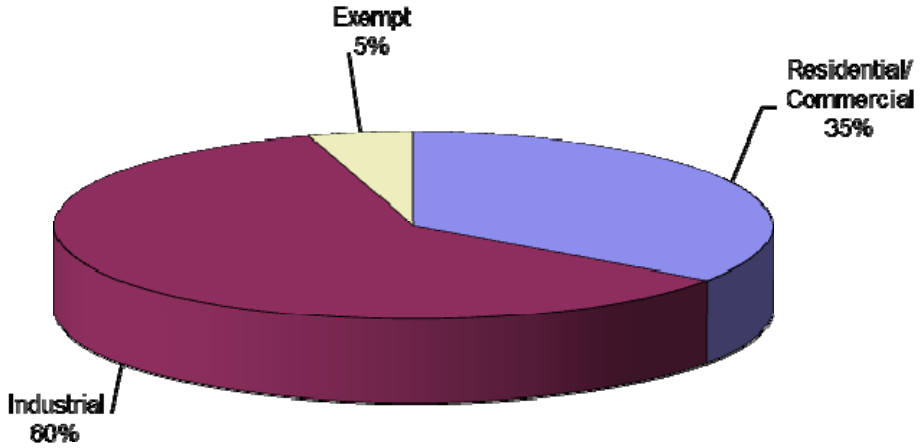
District Historical Waste Reduction



H. Reconciliation of Waste Generation (based on reported recycling and disposal)

Table IV-8, "Adjusted Reference Year Total Waste Generation for the District", presents adjusted reference year total waste generation for the District. Actual disposal and recycling figures were used to calculate waste generation. The District generated 76,211 tons in 2010. This includes recycling, composting, and waste disposal from all sectors. The residential/commercial sector generated 26,550 tons or 5.16 pounds per person per day. The industrial sector generated 46,094 tons or approximately 8.95 pounds per person per day. Exempt waste for 2010 was 3,567 tons or 0.69 pounds per person per day. The following figure depicts the reference year waste generation by sector.

2010 Adjusted Waste Generation by Sector



The District believes utilizing actual disposal and recycling tonnage to calculate waste generation provides the most accurate method of projecting waste generation throughout the planning period. The national average projections are approximately 4,700 tons less than the calculated waste generation.

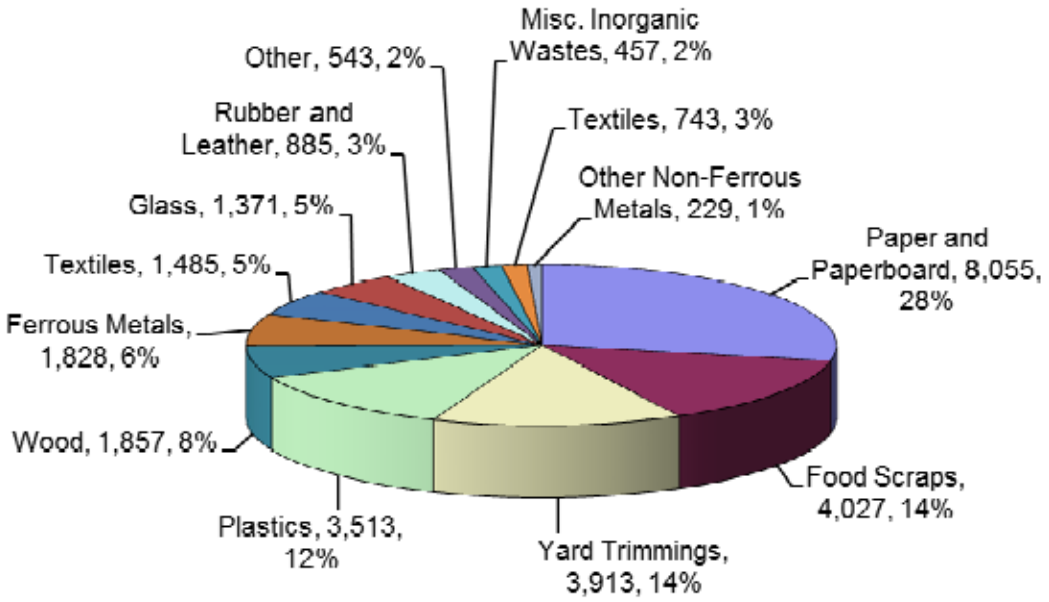
The actual generation rate for residential/commercial waste in 2010 was approximately 0.37 pounds per person less than the projected per capita generation rate of 5.53, which was based on the District's historical trends. The actual generation rate for the industrial sector in 2010 was 1.29 pounds per person higher than the generation rate calculated using national data.

Finally, waste reported at the landfill/transfer station could be labeled incorrectly when it goes across the scales. However, the total results are likely to be more accurate using the reported disposal and recycling data than national averages. For theses reasons, the District will not use the national averages for future projections in this *Plan Update*.

I. Waste Composition

The District estimated the residential/commercial waste stream composition in Table IV-9, "Estimated Residential/Commercial Waste Stream Composition for the District for the Reference Year", using the national averages from US EPA for 2009. The largest component of the residential/commercial waste stream is projected to be paper and paperboard at 28.2% (8,055 tons), followed by food scraps at 14.1% (4,027 tons), and yard trimmings at 13.7% (3,913 tons). The following figure depicts the residential/commercial waste composition for the reference year.

2010 Residential/Commercial Waste Stream Composition (in TPY and Percent of Waste Stream)



The industrial waste composition included in Table IV-10, "Estimated Industrial Waste Composition for the Reference Year in the District", was estimated based on the amount of industrial waste disposed and recycled. Non-hazardous waste, concrete, ash and sludge were eliminated from the acceptable waste materials for recycling calculations only. All recycled materials are provided as actual totals. The remainder of material disposed in the landfill is categorized as general solid waste.

The largest component of the industrial waste stream was mixed solid waste, comprising 43% of the total waste composition. Ferrous metals (19%) followed by wood (17%) and cardboard (12%) were the next three largest components of the industrial waste stream. The following figure depicts the industrial waste composition for the reference year.

2010 Industrial Waste Composition by Percent and Tonnage

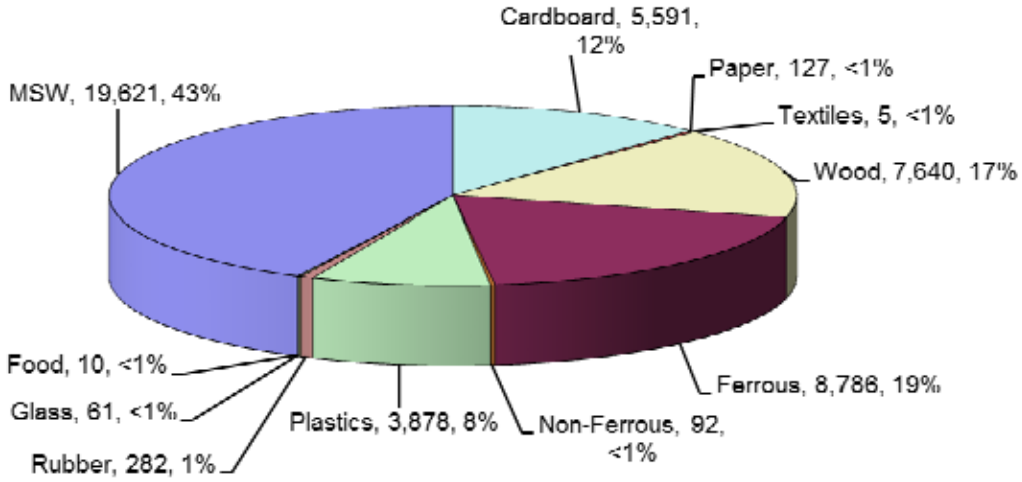


Table IV-1
Reference Year Population and Residential/Commercial Generation

County	2010 Population		2010 Generation Rate (lbs/person/day)	2010 District Residential/Commercial Generation (Tons)
	Before Adjustment	After Adjustment		
Henry County	28,215	28,215	5.53	**28,475**
Total	**28,215**	**28,215**		

Source(s) of information:

Population- Ohio Department of Development Office of Strategic Research (2010 Census)

2010 Population Estimates for Cities, Villages, and Townships

2010 Generation Rate - 2009 Generation Rate elevated by average percent increase in R/C Generation Rate from 2007 - 2009.

Example calculation:

$$\text{Waste Generation (tons)} = \frac{\text{Population x National Generation Rate x 365 days/year}}{\text{2,000 pounds/ton}}$$

$$28{,}475 = \frac{28{,}215 \times 5.53 \times 365}{2{,}000}$$

Table IV-2
Industrial Waste Generation Survey Respondents vs. Unreported

Standard Industrial Classification Category (SIC)	Survey Respondents				Amounts Based Upon Secondary Data (Unreported)				Total Industrial Waste Generated
	# of Industries	# of Employees	Tons of Waste Generated	Generation Rate (T/employee)	# of Industries	# of Employees	Generation Rate (T/employee)	Tons of Waste Generated	
20	1	1,300	25,696	19.77	5	54	13.92	752	26,447
22	0	0	0	0.00	1	20	9.99	200	200
23	0	0	0	0.00	4	12	2.80	34	34
24	1	7	54	7.70	7	31	51.62	1,600	1,654
25	0	0	0	0.00	2	3	1.79	5	5
26	0	0	0	0.00	1	2	17.50	35	35
27	0	0	0	0.00	4	57	6.70	382	382
28	0	0	0	0.00	5	49	12.43	609	609
29	0	0	0	0.00	0	0	7.33	0	0
30	2	134	57	0.43	4	50	7.29	365	422
31	0	0	0	0.00	0	0	3.41	0	0
32	0	0	0	0.00	2	7	10.55	74	74
33	0	0	0	0.00	1	33	36.93	1,219	1,219
34	3	647	1,086	1.68	5	52	11.16	580	1,667
35	3	97	255	2.63	14	151	5.72	864	1,119
36	0	0	0	0.00	0	0	2.98	0	0
37	1	207	4,741	22.90	3	232	3.21	745	5,486
38	0	0	0	0.00	1	46	1.74	80	80
39	0	0	0	0.00	2	3	4.62	14	14
Total	**11**	**2,392**	**31,889**	**13.33**	**61**	**802**	**13.15**	**7,556**	**39,445**

Source(s) of information:
Survey respondents are from the Industrial Waste Survey
Unreported number of industries and number of employees are from the Selectory Business Database from D&B
Unreported Generation Rate is from the District Solid Waste Management Plan Format (1994) Table JJ-2

Generation Rate (Survey Respondents) = tons of waste generated / number of employees
Waste Generated (unreported) = number of employees x generation rate
Total Waste Generated = waste generated (survey respondents) + waste generated (unreported)

Example calculations:

Survey Respondents: $13.33 = \frac{31{,}889}{2{,}392}$ Generation Rate = $\frac{\text{Waste Generated}}{\text{\# of Employees}}$

Non-Respondents: 7,556 = 802 x 13.15 Tons of Waste Generated = # of Employees x Generation Rate (T/employee)

39,445 = 31,889 + 7,556 Total Industrial Waste Generated = Total Reported + Total Unreported

Table IV-3
Exempt Waste Generated in the District and Disposed in Publicly Available Landfills

Type of Waste Stream	Generation Rate (lb/person/day)	Total Exempt Waste Generation (TPY)
C&D Waste	0.69	3,567
Total	0.69	**3,567**

Source(s) of information:
2010 Landfill and Transfer Station Operation Reports- Table III-1

$$\text{Generation Rate (lbs/person/day)} = \frac{\text{Total Exempt Waste (tons/yr) x 2,000 (lb/ton)}}{\text{Population x 365 days/yr}}$$

Example calculation:

$$0.69 = \frac{3{,}567 \times 2{,}000}{28{,}215 \times 365}$$

Table IV-4
Reference Year Total Waste Generation for the District

Type of Waste	Generation Rate (lbs/person/day	Tons/Year
Residential/Commercial	5.53	28,475
Industrial	7.66	39,445
Exempt	0.69	3,567
Total Waste Generation	**13.88**	**71,488**

Source(s) of information:
Residential/Commercial- Table IV-1
Exempt- Table IV-3
Industrial- Table IV-2
Industrial- Generation rate calculated using equation below:

$$\text{Generation Rate (lbs/person/day)} = \frac{\text{Total Waste (tons/yr) x 2,000 (lb/ton)}}{\text{Population x 365 days/yr}}$$

Example calculation:

$$13.88 = \frac{71{,}488 \times 2{,}000}{28{,}215 \times 365}$$

Table IV-5
Reference Year Residential/Commercial Waste Reduction in the District

Type of Waste Source Reduced	TPY	Type of Waste Recycled	TPY	Incineration, Composting, Resource Recovery		
				2009 Total Waste Received	2009 Residual Landfilled	2009 Net Waste Reduced
None.	0	Ferrous	4,663	Incineration	Ash	Net Incineration
		Cardboard	795	0	0	0
		Commingled	753	Composting	Residuals	Net Compost
		Paper	608	2,309	0	2,309
		Non-Ferrous	491	Resource Recovery	Ash	Net Resource
		Appliances	400	0	0	0
		Scrap Tires	306			
		Plastic	213			
		Glass	82			
		Wood	13			
		Electronics	7			
		Other	1			
Subtotal	**0**		**8,332**	**2,309**	**0**	**2,309**
Total						**10,641**

Source(s) of information:
2010 District Annual Report and Residential/Commercial Surveys
2010 Ohio EPA Scrap Tire and Compost Data (double counting eliminated)

Notes: Electronics are from residential sector.

Table IV-6
Reference Year Industrial Waste Reduction in the District

Type of Waste Source Reduced	TPY	Type of Waste Recycled	TPY	Incineration, Composting, Resource Recovery		
				Total Waste Received	Residual Landfilled	Net Waste Processed
None	0	Ferrous	16,925	Incineration*	Ash	Net Incineration
		Cardboard	5,149	0	0	0
		Wood	5,091	Resource	Ash	Net Resource
		Plastics	2,877	0	0	0
		Non-Ferrous	407	Composting	Residuals	Net Composted
		Rubber	212	0	0	0
		Paper	147			
		Glass	60			
		Appliances	50			
		Textiles	1			
		Food	0.1			
Subtotal	**0**	**Subtotal**	**30,917**	**0**	**0**	**0**
Grand Total						**30,917**

Source(s) of information:
2010 District Annual Report, Industrial Surveys, and Broker/Processor Surveys

Table IV-7
Total Waste Generation Based Upon Disposal Plus Waste Reduction

Year	Management Method Used (TPY)						Total Waste
	Source Reduction & Recycling	Yard Waste Composting	Yard Waste Land Application	Incineration Waste Reduction	MSW Composting	Landfill Disposal	
2006	30,199	2,440	0	0	0	46,597	79,236
2007	28,743	1,844		0	0	34,625	65,212
2008	23,994	1,509	0	0	0	35,254	60,757
2009	38,329	1,509	0	0	0	34,471	74,309
2010	39,249	2,309	0	0	0	34,653	76,211

Note: Waste reduction was not included in Source Reduction & Recycling figure from 2006 - 2009.

Source(s) of information:
District Annual Reports and Ohio EPA Facility Data Reports.

Example calculation:

2010 Total Waste = Source Reduction & Recycling + Yard Waste Composting + Yard Waste Application+ Incineration Waste Reduction + MSW Composting + Landfill Disposal

76,211 = 39,249 + 2,309 + 0 + 0 + 0 + 34,653

Table IV-8
Adjusted Reference Year Total Waste Generation for the District

Type of Waste	Generation Rate (lbs/person/day)	Tons/Year
Residential/ Commercial	5.16	26,550
Industrial	8.95	46,094
Exempt	0.69	3,567
Total Waste Generation	**14.80**	**76,211**

Source(s) of information:
Exempt - Table IV-3
Residential/Commercial and Industrial waste generation is calculated as waste reported by the landfills and transfer stations (Table III-1, Table III-3) + Recycling (Table IV-5 or Table IV-6)

Example calculation:

$$\text{Generation Rate (lbs/person/day)} = \frac{\text{Total Waste (tons/yr) x 2,000 (lb/ton)}}{\text{Population x 365 days/yr}}$$

$$14.80 = \frac{76{,}211 \times 2{,}000}{28{,}215 \times 365}$$

Table IV-9
Estimated Residential/Commercial Waste Stream Composition for the District for the Reference Year

Waste Stream Type	Percentage of the Waste Stream	Tons
Paper and Paperboard	28.2%	8,055
Food Scraps	14.1%	4,027
Yard Trimmings	13.7%	3,913
Plastics	12.3%	3,513
Wood	6.5%	1,857
Ferrous Metals	6.4%	1,828
Textiles	5.2%	1,485
Glass	4.8%	1,371
Rubber and Leather	3.1%	885
Other	1.9%	543
Misc. Inorganic Wastes	1.6%	457
Aluminum	1.4%	400
Other Non-Ferrous Metals	0.8%	229
Total	**100.0%**	**26,550**

Source(s) of information:
Percentage of the waste stream from national averages as reported by the US EPA for 2009.

Table IV-10
Estimated Industrial Waste Composition for the Reference Year in the District

Waste Stream Type	TPY	Waste Stream Type	TPY	Waste Stream Type	TPY
Cardboard	5,591	Ferrous	8,786	Glass	61
Paper	127	Non-Ferrous	92	Food	10
Textiles	5	Plastics	3,878	MSW	19,621
Wood	7,640	Rubber	282		
Subtotal	13,364	**Subtotal**	13,038	**Subtotal**	19,692
Grand Total					**46,094**

Source(s) of information:
District Industrial Waste Survey for calendar year 2010 solid waste generation by type of waste and SIC number.
Each industrial waste component was projected using the adjustment factor to account for nonrespondent industries.

Example Calculation:

$$\text{Adjustment Factor} = \frac{\text{Total Industrial Waste Generated (Table IV-8)}}{\text{Total Industrial Waste Generated (Table IV-2 - Survey)}}$$

Adjustment Factor = 1.45 = 46,094 / 31,889

Type of Industrial Waste Generated (tons) = Type of Industrial Waste Generated (Table IV-6 -Survey) x Adjustment Factor

5,591 (tons of cardboard) = 3,520 (tons of cardboard from Appendix F) x 1.45