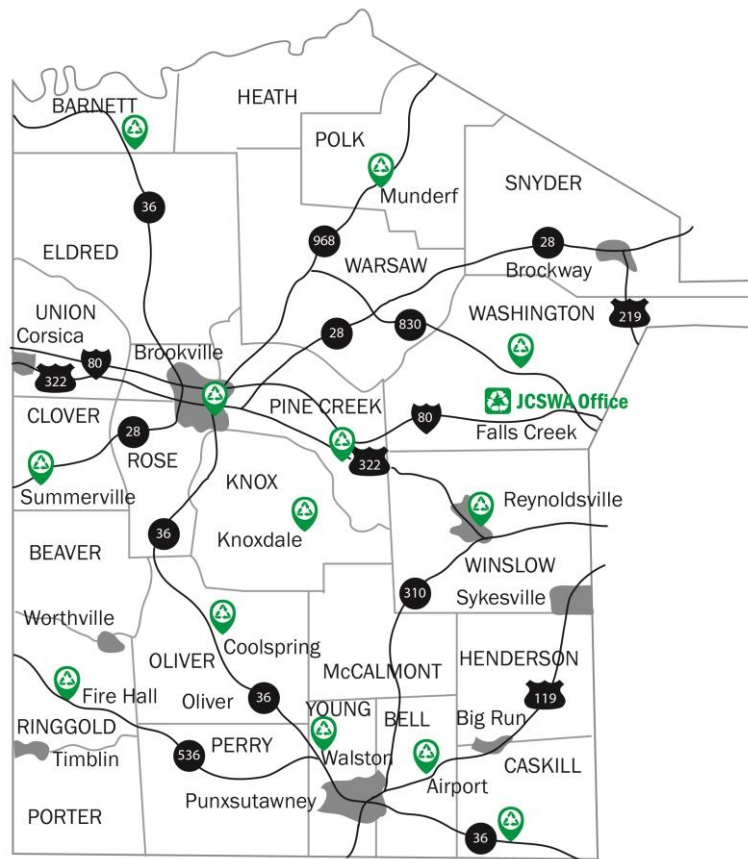


# Recycling Technical Assistance Project #596

## Jefferson County Solid Waste Authority

### Drop-off Recycling Program Options



*Sponsored by the Pennsylvania Department of Environmental Protection through the Pennsylvania State Association of Township Supervisors*

**FINAL REPORT**

June 2016



Mechanicsburg, PA  
Philadelphia, PA  
(800) 679-9220

[www.mswconsultants.com](http://www.mswconsultants.com)



*This report was delivered electronically. If it is necessary to print hard copies, please do so on post-consumer recycled paper and recycle.*

# TABLE OF CONTENTS

---

1. STATEMENT OF THE PROBLEM .....	1
2. SUMMARY OF WORK COMPLETED.....	2
3. POSSIBLE SOLUTIONS .....	3
4. RECOMMENDATION .....	6

## List of Tables

Table 1-1 JCSWA Material Weights and Volumes 2014-2015.....	3
Table 1-2 JCSWA Aluminum and Steel Can Quotes .....	4
Table 1-3 JCSWA Source Separated Single Route Scenarios .....	5
Table 1-4 JCSWA Collection Cost Comparison Summary.....	7
Table 1-5 JCSWA Collection System Selection Considerations .....	8

## List of Figures

Figure 1-1 JCSWA Compartmentalized Roll-off .....	1
Figure 1-2 Top 10 2017 Mack 40 cubic yard Front Loading Recycling Truck.....	2
Figure 1-3 Cambria County SWMA 8 cubic yard Front Load Containers.....	2

## List of Appendices

Appendix A – JCSWA Drop-Off Site Map	
Appendix B - EPA Volume-to-Weight Conversion Factors Memorandum 4-27-2016	
Appendix C - JCSWA 2014-2015 Avg Tons and Volumes - 13 sites	
Appendix D - JCSWA 2014-2015 Avg Tons and Volumes - 12 sites	
Appendix E - JCSWA Collection Scenarios Cost Summary - Single Stream	
Appendix F - Cambria County SWMA recycling processing at JCSWA	
Appendix G - JCSWA Potential Materials Revenue	
Appendix H - JCSWA Collection Route Maps	

# TABLE OF CONTENTS

---

Appendix I - JCSWA Front load containers and lids - revised 6-22-2016

Appendix J - JCSWA Drop-off Recycling Routing - Source Separated 13 Drop-offs

Appendix K - JCSWA Drop-off Recycling Routing - Source Separated 12 drop-offs

Appendix L - JCSWA Drop-off Recycling Routing - Source Separated 11 drop-offs

Appendix M - JCSWA Drop-off Recycling Routing - Source Separated 10 drop-offs

Appendix N - JCSWA 2014-2015 Avg Tons and Volumes Realignment - 12 sites revised 6-23-16

Appendix O - JCSWA 2014-2015 Avg Tons and Volumes Realignment - 13 sites revised 6-23-16

Appendix P - Cambria County SWMA & Indiana County SWA Cooperative Materials Processing Agreement

Appendix Q - JCSWA Collection Scenarios Cost Summary - Source Separated - 12 stops

Appendix R - Jefferson County SWA Collection Cost Analysis

# RECYCLING TECHNICAL ASSISTANCE PROJECT #596

## JEFFERSON COUNTY SOLID WASTE AUTHORITY

### *DROP-OFF RECYCLING PROGRAM OPTIONS*

---

#### 1. STATEMENT OF THE PROBLEM

Jefferson County is a rural Western Pennsylvania county with an estimated 2015 population of 44,430 and a population density of 68 persons per square mile. The county seat is Brookville Borough. Punxsutawney Borough, famous for its weather prognosticating groundhog Punxsutawney Phil, is the only municipality in the County required to have a mandatory residential curbside recycling program by Act 101, the Pennsylvania Planning, Recycling and Waste Reduction Act of 1988. Brockway and Sykesville Boroughs provide curbside recycling for their residents and contract with Advanced Disposal for collection and processing. Advanced Disposal performs a truck-side sort collection and processes the materials at its recycling facility in Brockway, PA.

Recycling is available in the remainder of the County at geographically distributed drop-off facilities. The Jefferson County Solid Waste Authority (Authority) operated 14 recycling drop-off facilities within the county in 2015. The Authority also relies upon Advanced Disposal for collection and processing of the materials recovered at the drop-offs. Due to mounting costs of service, the Authority closed one drop-off facility in the spring of 2016 and plans to close another effective July 1, 2016. A map depicting the location of the drop-off sites appears on the cover of this report and as Appendix A.

Each of the Authority's drop-off recycling facilities collects source separated recyclables using at least two (2) compartmentalized roll-off containers (Figure 1-1). Five of the larger drop-offs collect clear, brown and green glass, separated by color; aluminum cans; steel cans; mixed HDPE and PET plastic bottles and jugs; corrugated cardboard; newspapers; magazines; and mixed paper comprised of junk mail, office paper and pressed cardboard such as cereal boxes.

**Figure 1-1 JCSWA Compartmentalized Roll-off**



The Authority received a \$99,000 Act 101 Recycling Development and Implementation Grant from PA DEP in 2014 to convert drop-off facility collection from compartmentalized roll-offs to front load containers. The grant was intended to cover the cost of 63 front load containers and appropriate signage. A second Act 101 grant in the amount of \$237,813 was awarded to the

Authority in June 2016 for a front loading recycling truck to service the front load containers at the recycling drop-off sites (see Figure 1- and Figure 1-).

**Figure 1-2 Top 10 2017 Mack 40 cubic yard Front Loading Recycling Truck**



**Figure 1-3 Cambria County SWMA 8 cubic yard Front Load Containers**



Recycling Technical Assistance was approved by PA DEP for MSW Consultants to assist the Authority with recycling system design, collection routing and to determine costs to collect and deliver recyclables to available recycling processing centers. The Authority is prepared to further reduce the number of drop-offs sites or adjust the types of materials collected in order to contain the costs of operating the recycling system.

## **2. SUMMARY OF WORK COMPLETED**

**Task 1: Recycling Volumes** – MSW Consultants reviewed the weight of materials collected at each drop-off location as determined by the Authority’s collection data for 2014 and 2015. Weights were converted to cubic yards using the most recent EPA methodology (Appendix B) to project the volume of materials to be collected in 2016.

**Task 2: Materials Processors** – MSW Consultants identified recycling processing options in proximity to the County, determined how recyclables must be prepared for processing, and projected costs for each option.

**Task 3: Collection Method** – MSW Consultants recommended several menus of recyclable materials to be collected and how collection containers should be configured at each drop-off facility based on the availability of front load containers and materials processors.

**Task 4: Collection Routing** - MSW Consultants considered single stream and source separated collection methods for servicing the Authority’s drop-off facilities. MSW projected costs and a cost per mile for each option. MSW developed collection routes featuring 13 and 12 drop-off sites in anticipation of the Authority closing the Walston drop-off site in July 2016. Although 12 facilities are expected to be on the collection route after July 1, the volume and weight information from the 13 facility route could reflect patron use of adjacent drop-off facilities after the Walston site closure.

**Task 5: Report** – This report compiles the work products from previous tasks into a final report.

### 3. POSSIBLE SOLUTIONS

MSW Consultants determined the weight and volumes of materials collected at each recycling drop-off site and developed averages by material, facility and the total collection system during 2014 and 2015 from data provided by the Authority. Appendix C shows the materials collected from 13 drop-off sites and Appendix D shows collections from 12 sites. Table 1-1 summarizes collections by material. A total of 5,738 cubic yards weighing 444 tons was collected in 2014 and 2015.

**Table 1-1 JCSWA Material Weights and Volumes 2014-2015**

<b>Jefferson County Solid Waste Authority Average Annual Collections by Material 2014 - 2015</b>			
<b>Material</b>	<b>Pounds</b>	<b>Tons</b>	<b>Cubic Yards</b>
Steel/Tin	74,635	37.3	663.4
Aluminum	15,280	7.6	332.2
Clear Glass	119,990	60.0	315.8
Green Glass	30,800	15.4	81.1
Brown Glass	60,010	30.0	157.9
Plastics	75,880	37.9	2,371.3
Newspaper	289,221	144.6	498.7
Mixed Paper	145,290	72.6	593.0
Corrugated Cardboard	76,870	38.4	725.2
<b>TOTAL</b>	<b>887,976</b>	<b>444.0</b>	<b>5,738.4</b>

#### **Single Stream Collection**

MSW Consultants developed four collection routes for servicing up to 72 8-cu.yd. front load containers at 13 and 12 recycling drop-off facilities (Appendix E and F). Under single stream collection scenarios, drop-off site patrons will no longer be required to separate recyclables into individual recycling containers or compartments and instead will deposit mixed recyclables into the new 8 cubic yard front load containers. Recycling of corrugated cardboard, glass bottles and jars, and mixed paper would be available at all drop-offs under the single stream approach. The Authority would develop appropriate signage for the front load containers and conduct a recycling education program to announce and reinforce the conversion of the present recycling system to single stream collection.

The four collection routes were designed with the intent of completing collection, delivery of recyclables for processing and return to the Authority office (HQ) within one working day per route. The Authority expects to hire a part-time driver to operate the front loading recycling truck at a rate of \$13.00/hour to conduct the collections. It was estimated that each single stream route will be serviced approximately 8-10 times per year. It is expected that volumes of materials deposited at the drop-off sites will vary seasonally as well as by drop-off site. Collection from the Rose Township drop-off, adjacent to Brookville Borough and one of the Authority's busier drop-off sites, may require more frequent servicing. The Authority will have the flexibility to add or reduce the number of front load containers at each facility to accommodate recycling volumes as it gains collection experience.

### **Single Stream Processing**

The facility proposed for single stream materials processing is Tri-County Industries Recycling Transfer Station in Grove City, PA, approximately 65 miles and 66 minutes from Brookville. Tri-County’s \$40/ton tipping fee required for a projected 346 tons/year of mixed recyclables collected from 12 drop-off sites would amount to \$13,828 annually. When added to the operational costs of collection service, the total annual cost of the single stream recycling system is estimated to be, at the low end, \$20,208. The Authority would receive no income from the market value of the materials. A summary of single stream collection costs appears in Appendix E.

### **Source Separated Collection**

The Authority paid Advanced Disposal \$42,000 in 2015 for collection and processing of source separated recyclables from its 14 drop-off sites. The Authority does not receive any revenue from Advanced Disposal for the market value of processed recyclables under an agreement in which Advanced leases Authority-owned collection and processing equipment. By implementing a new collection system deploying 6 front load containers to 12 drop-off sites and transporting collected materials to more distant recycling processors, the Authority could realize some of the market value of its recyclables. For example, revenue received by the Cambria County SWMA for recyclables collected by its drop-off recycling system and processed under an agreement with the Indiana County SWMA Recycling Center averaged \$28.58/ton over a four-year period. (Appendix F).

The projected present value of the Authority’s recyclables from the 12 and 13 drop-off routes ranges from \$27,628 to \$37,108 based on June 20, 2016 materials price quotes, less processing costs, from the Indiana County SWA Recycling Center (Appendix G).

MSW Consultants surveyed local scrap dealers on prices paid for source separated aluminum and steel/tin cans (Table 1-2). MSW Consultants developed a dedicated route for collection of aluminum and steel cans that would deliver cans, in separate trips, to P.J. Greco & Sons in Corsica, located in the western part of Jefferson County. The route can be viewed among other collection routes in Appendix H (Route Maps). Potential revenue for aluminum cans is greater from the Indiana County SWA than from local scrap dealers.

**Table 1-2 JCSWA Aluminum and Steel Can Quotes**

<b>Jefferson Co. SWA - Aluminum and Steel Can Price quotes, May 2016</b>			
<b>Scrap Dealer</b>	<b>Location</b>	<b>Aluminum Cans</b>	<b>Steel/Tin Cans</b>
Allegheny Mtn Recycling	Hazen	\$0.38/lb.	\$0.01/lb.
Krentzman	Dubois	\$0.38/lb.	\$0.01/lb.
P.J. Greco & Sons	Corsica	\$0.47/lb.	\$0.01/lb.

MSW Consultants calculated that \$71,850 of the Authority’s Act 101 grant funds would support the purchase of 72 8-cubic yard front load containers with lids, including custom lids for collection of flattened corrugated cardboard (Appendix I). This approach would allow placement of 6 front load containers at each of the Authority’s 12 drop-off sites. Four containers would be designated at each site to collect mixed aluminum and steel/tin cans, mixed HDPE and PET plastic bottles and jugs, newspapers, and magazines. A mixed paper container and a corrugated cardboard container would be placed at each site, enabling a new level of service for seven of the drop-off facilities.

There is insufficient funding available, however, for the purchase of 36 front load containers needed to permit the collection of color-sorted glass at each site. The additional 36 and lids to accommodate glass collection would cost \$35,645 in today’s dollars. Hence, the Authority would need to discontinue the collection of glass bottles and jars in favor of corrugated cardboard collection and mixed paper at all 12 drop-offs.

The Authority could arrange for contracted collection of glass using its existing or upgraded compartmentalized roll-off containers from each drop-off facility. The glass, if taken color separated to the Indiana County SWA recycling center, has a present day value of \$30/ton for clear glass, \$20/ton for brown glass and \$2/ton for green glass. A portion of these glass proceeds plus revenue from other Jefferson County materials delivered and processed by the Indiana County SWA would help offset the cost of third party glass collection and/or fund a future purchase of additional front load containers for color separated glass collection.

Source separated collection from the front load containers will require the collection of one material at a time along a given route. Collection frequency will depend upon the capacity of the container at the busiest drop-off site for a specific material. For example, it can be expected that containers designated for mixed HDPE and PET plastic bottles and jugs will fill quickly, signaling the need to run a collection route for plastics. As the front loading recycling truck completes a route or as the truck is filled to capacity, it would be driven to the recycling processing center, unloaded and returned for the next collection route. An average of 7 to 8 collections per year for all six categories of materials is predicted at the low end. Collection route data appear in Appendix J for the source separated 13 drop-off route and Appendix K for the 12 drop-off route. Scenarios for an 11 drop-off source separated route and a 10 drop-off route appear as Appendix L and Appendix M, respectively. Maps of the source separated collection routes can be viewed in Appendix H (Route Maps). Table 1-3 shows the route miles and times for the four collection scenarios.

**Table 1-3 JCSWA Source Separated Single Route Scenarios**

<b>Jefferson County SWA - Source Separated Single Route Collection Drop-off Site Reduction Scenarios</b>							
<b>Number of Drop-offs</b>	<b>Route Miles</b>	<b>Route Time</b>	<b>Miles to ICSWA</b>	<b>Accumulated Time to ICSWA</b>	<b>Round Trip Miles</b>	<b>Round Trip Time</b>	<b>Comment</b>
13	124	3 Hrs/13 Min	164	4 Hrs/1 Min	219	5 Hrs/13 Min	
12	121	3 Hrs	160	3 Hrs/45 Min	216	5 Hrs/1 Min	Less Walston
11	116	2 Hrs/53 Min	154	3 Hrs/39 Min	211	4 Hrs/52 Min	Less Walston, Gaskill
10	112	2 Hrs/48 Min	150	3 Hrs/35 Min	207	4 Hrs/48 Min	Less Walston, Gaskill, Reynoldsville

**Source Separated Processing**

Two source separated recycling processing centers, in addition to the Advanced Disposal Recycling Center, are available to the Authority. Both recycling centers have materials preparation requirements that would influence the requirements of the Authority’s present collection program.

Elk County opened a new Community Recycling Center in May 2016. The recycling center is located in St. Marys, Pennsylvania, approximately 32 miles and 50 minutes from the Washington

Township recycling drop-off. The Center handles all materials presently collected by the Authority with the exception of glass bottles and jars. Mixed aluminum and steel cans are hand sorted, however, a grant for a can densifier that would magnetically separate steel from aluminum cans is expected in the summer of 2016. Elk County personnel also hand sort plastic bottles, jugs and jars into three types of resins to realize greater market value. The sorts include colored HPDE, natural HDPE and PET. The sorted plastics are baled separately and sold through a broker, CL Trading.

The Indiana County SWA Recycling Center is located approximately 40 miles from Gaskill Township, the location of the Authority's southern-most drop-off recycling facility. The Recycling Center separates aluminum and steel/tin cans magnetically, accepts color separated glass, and bales mixed plastics for sale to a Pennsylvania manufacturer through a broker. The center processes newspapers, magazines, corrugated cardboard and office paper but cannot accept paperboard items such as cereal boxes, which are presently collected in Jefferson County. Paperboard can be processed with mixed paper, however, at the Elk County Community Recycling Center.

MSW Consultants adjusted the Authority's average material weights and volumes to align with categories of materials collected at the Indiana County SWA Recycling center and to match collection regime designated by the Authority for the six containers at each of 12 drop-off sites. The volume and weight of aluminum and steel/tin cans were combined into one category. The volume and weight of magazines and newspapers, collected together in the present system, were divided into separate categories, based on a formula provided by the Authority. The adjustments can be seen in Appendix N for the source separated 12 drop-offs route. Figures for the 13 drop-off sites were also adjusted as above to show potential weights and volumes that could migrate from the closed Walston site to adjacent drop-offs (Appendix O).

A source separated collection route was plotted in which the 12 drop-off sites could be serviced for each source separated material with delivery of the material for processing and return within one day. The average frequency of collections varies by material, ranging from twice a year for newspapers to 21 times a year for mixed plastics, for an average of seven collections annually for all materials. The annual cost for servicing 12 drop-offs was estimated to be \$18,406. But the operating cost may be off-set by proceeds from the market value of the materials collected and processed as agreed to by Elk County and/or the Indiana County SWA. A copy of the Cambria County SWMA and Indiana County cooperative materials processing agreement can be viewed in Appendix P. A summary of source separated collection costs appears in Appendix Q.

#### **4. RECOMMENDATION**

The Authority desires to maintain a level of recycling service within the means of its annual budget. Owning and operating a new front loading recycling truck presents an opportunity to continue drop-off recycling throughout the County, albeit at the expense of consolidating collection points. If the Authority is focused on providing the greatest level of service, a single stream collection system can expand the breadth of recycled materials collected at each drop-off site while maintaining collection of glass bottles and jars at an annual cost range estimate of \$20,208 - \$27, 209. Educating residents to properly use the single stream system should not be difficult and could increase diversion from disposal as the "rules" for recycling at the drop-offs are relaxed as compared to the requirements of source separated collection.

If the Authority’s focus is to operate the recycling system under the least cost option, maintaining a source separated system at an estimated annual cost range of \$18,406 - \$22,050 presents the most favorable economics, especially with the prospect of receiving potential revenue from the market value of the recyclables processed at more distant recycling centers. But materials revenues are historically cyclical and there may come a time when a tipping fee is required at the recycling centers.

While the source separated collection system provides mixed paper and corrugated cardboard collection throughout the Authority’s drop-off recycling system, it does so by discontinuing glass bottle and jar collection. Any decrease in annual tons recycled will affect the amount the Authority is awarded annually through Act 101 Recycling Performance Grants.

To continue glass collection, an alternative third party collection system may be procured through a competitive bid for services. Or the Authority may accumulate revenues from source separated processing over time to be able to afford the expense of adding three glass recycling front load containers for color-separated glass collection at each of the remaining 12 drop-off sites.

Operating the source separated collection system with the front loading recycling truck requires more than three times the route miles and route time to perform collections as compared to the single stream collection system. This is an important consideration for the maintenance of the front loading recycling truck. A comparison of the two collection systems is presented in Table 1-4. The summary data are derived from the more extensive Jefferson County SWA Collection Cost Analysis as presented in Appendix R.

**Table 1-4 JCSWA Collection Cost Comparison Summary**

<b>Jefferson County Solid Waste Authority Cost Comparison Summary 12 Drop-off Sites Volumes and Costs Expressed as Ranges*</b>		
	Single Stream Collection	Source Separated Collection
Total Stops/Route	12	72
Avg Pick-ups/Month	0.66 - 0.83	0.59 - 0.69
Avg Pick-ups/Year	8 - 10	7 - 8
Weekly Avg cu.yds.	87 - 111	78 - 100
Monthly Avg cu.yds	378 - 478	339 - 432
Annual Avg cu.yds	4,537 - 5,738	4,066 - 5,184
Annual Avg Tons	346 - 444	256 - 339
Total Route Hours/Wk	10.4	363
Total Route Miles/Wk	412	1,296
Cost/Mile	\$2.01	\$2.01
Annual Tip Fee	\$13,828 - \$17,760	\$0
Operational Cost	\$6,380 - \$9,449	\$18,406 - \$22,050
<b>Total Annual Cost</b>	<b>\$20,208 - \$27,209</b>	<b>\$18,406 - \$22,050</b>
*July 2016 drop-off routes including Walston site volumes		

*Project #596  
 Jefferson County Solid Waste Authority  
 Drop-off Recycling Program Options*

Throughout this study a clear direction for the future of the Authority’s drop-off recycling program was elusive. MSW Consultants recommends the Authority consider, at a minimum, the criteria outlined in Table 1-5 in determining whether to implement a single stream or source separated collection program. Both systems should be able to be implemented within the Authority’s annual budget.

**Table 1-5 JCSWA Collection System Selection Considerations**

<b>Considerations for Selecting a Drop-off Recycling System Collection Method</b>								
<b>Collection Method</b>	<b>Route Miles</b>	<b>Route Hours</b>	<b>Annual Collections</b>	<b>Glass Collection</b>	<b>Annual Diversion</b>	<b>Annual Tip Fee</b>	<b>Potential Revenue</b>	<b>Annual Cost</b>
Single Stream	412	10.4	8 -10	Yes	346 Tons	\$13,828 - \$17,760	None	\$20,208 - \$27,209
Source Separated	1,296	36.3	7-8 for 6 material categories during each collection cycle	No	256 Tons	None	\$27,628 - \$37,108 annually	\$18,406 - \$22,050

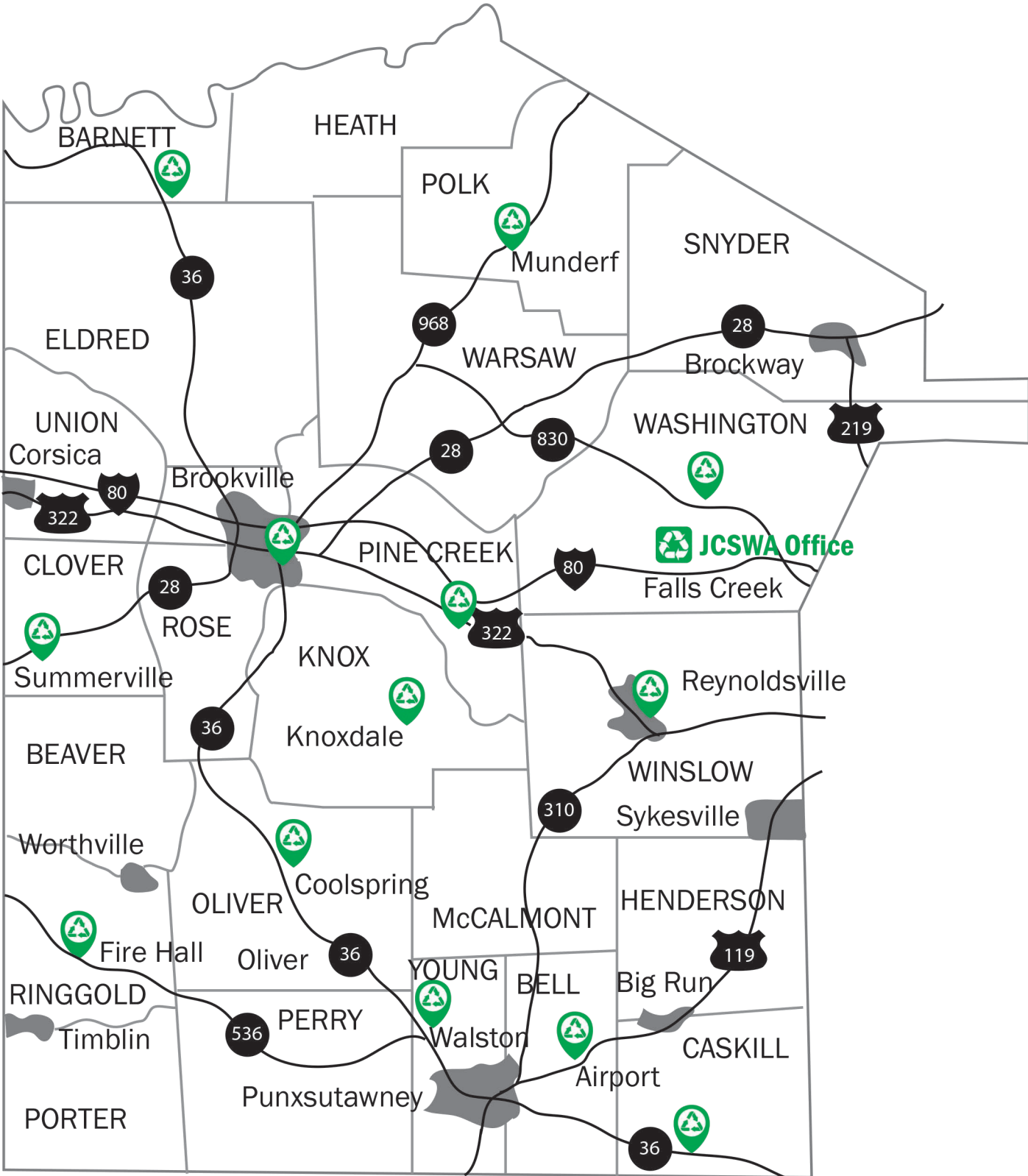
---

# APPENDIX A

## JCSWA DROP-OFF SITE MAP

---

This page intentionally left blank.



This page intentionally left blank.

---

**APPENDIX B**

**EPA VOLUME-TO-WEIGHT CONVERSION  
FACTORS MEMORANDUM 4-27-2016**

---

This page intentionally left blank.

# Volume-to-Weight Conversion Factors

## U.S. Environmental Protection Agency

### Office of Resource Conservation and Recovery

April 2016

---

EPA’s 1997 report, “Measuring Recycling: A Guide for State and Local Governments”, was a guide to facilitate standardization of MSW data collection at the local level, which included volume-to-weight conversion factors for comparing recovery efforts between municipalities, regions and states. The factors are also valuable when planners work with the national recovery data presented in EPA’s sustainable materials management report series.

This document provides updates to the volume-to-weight conversion factors found in the 1997 report Appendix B.

The goal of this update is to identify more current secondary data measurements of the various products. Of particular interest are products known to have been source reduced through light weighting since the early nineties such as plastic, glass and metal packaging. Some factors included on the original table are excluded from the revised table due to lack of updated data. Primary data collection was not performed.

The original Appendix B table included 12 materials categories; the updated table provides factors for 15 material categories, including the following.

- Appliances
- Automotive
- Carpeting
- Commingled Recyclables
- Electronics
- Food
- Glass
- Metals
- Municipal Solid Waste
- Paper
- Plastic
- Textiles
- Wood
- Yard Trimmings
- Construction & Demolition Debris (C&D)

All of the categories include multiple products and/or density measurements. Four product categories—carpeting, commingled recyclable material, electronics and construction and demolition debris—are new. Previously lead-acid batteries and scrap tires were separate categories but are combined into the single category “Automotive” in the updated table.

Other differences include the removal/addition of products within some of the categories to better reflect the current recycling industry. For example, eliminating “Tab Card” and adding “Mixed Paper” to the paper category reflects the move toward commingled recyclables collection. The addition of “Electronics” reflects the growth in these products since the original table was published.

The updated factors are shown in the table below.

### Standard Volume-to-Weight Conversion Factors

Category	Recyclable Materials	Volume	Estimated Weight (lbs)	Source
<b>Appliances</b>	Major Appliances			
	<i>Dishwasher</i>	1 unit	125	1
	<i>Clothes Dryer</i>	1 unit	125	1
	<i>Stove</i>	1 unit	150	1
	<i>Refrigerator</i>	1 unit	250	1
	<i>Clothes Washer</i>	1 unit	150	1
<b>Automotive</b>	Lead-Acid Battery			
	<i>Auto</i>	one	36	3
	<i>Truck</i>	one	47	3
	Scrap Tire			
	<i>Light Duty Tires (passenger, light truck)</i>	one	22.5	5
	<i>Commercial Tires</i>	one	120	5
	Fluids			
	<i>Used Motor Oil</i>	gallon	7.4	2
	<i>Antifreeze</i>	gallon	8.42	2
	Other Automotive			
	<i>Oil Filters not crushed</i>	drum	175	1
	<i>Oil Filters crushed</i>	drum	700	1
	<i>Oil Filters</i>	gallon	5	1
<b>Carpeting</b>	Carpet			
	<i>Carpet</i>	cubic yard	147	6
	<i>Carpet Padding</i>	cubic yard	62	6
<b>Commingled Recyclable Material</b>	Containers (Plastic bottles, Aluminum cans, Steel cans, Glass bottles) and Paper			
	<i>Commingled Recyclables</i>	cubic yard	262	4
	Containers (Plastic bottles, Aluminum cans, Steel cans, Glass bottles), Corrugated Containers and Paper			
	<i>Campus Recyclables</i>	cubic yard	92	7
	<i>Commingled Recyclables</i>	cubic yard	111	4
	Containers (Plastic bottles, Aluminum cans, Steel cans, Glass bottles) – No paper			
	<i>Campus Recyclables</i>	cubic yard	70	7
	<i>Commingled Recyclables</i>	cubic yard	67	4
	<i>Commercial Recyclables</i>	cubic yard	113	8
	Containers (Cans, Plastic) - No glass			
	<i>Campus Recyclables</i>	cubic yard	32	7
	Containers (Cans, Plastic) and Paper - No glass			
	<i>Residential Recyclables</i>	cubic yard	260	2
	Containers (Food/beverage, Glass) Corrugated Containers and Paper			
	<i>Commercial Recyclables</i>	cubic yard	88	2
<i>Commercial Recyclables</i>	cubic yard	58	21	
<i>Multifamily Recyclables</i>	cubic yard	96	2	
<i>Multifamily Recyclables</i>	cubic yard	51	21	

Category	Recyclable Materials	Volume	Estimated Weight (lbs)	Source
<b>Commingled Recyclable Material</b>	<i>Single family Recyclables</i>	cubic yard	126	2
	Containers (Food/beverage, Glass) Corrugated Containers and Paper- No glass			
	<i>Campus Recyclables</i>	cubic yard	139	2
	<i>Commercial Recyclables</i>	cubic yard	155	2
<b>Electronics</b>	Computer Equipment			
	<i>Desktop</i>	one	27	24
	<i>Laptop</i>	one	9.8	24
	Monitor			
	<i>CRT</i>	one	40	1
	<i>15"</i>	one	30	2
	<i>17"</i>	one	45	2
	<i>21"</i>	one	60	2
	<i>Flat Panel</i>	one	24	1
	<i>Mixed Monitors</i>	one	29.4	24
	Televisions			
	<i>CRT &lt; 19 inch</i>	one	41	1
	<i>CRT ≥ 19 inch</i>	one	73	1
	<i>Flat Panel</i>	one	29	1
	<i>Mixed TVs</i>	one	67.3	24
	Peripheral Devices			
	<i>Printers</i>	one	16.1	24
	<i>Mice</i>	one	0.2	9
	<i>Keyboards</i>	one	2.9	9
	Mobile Devices			
	<i>Cellular Phone</i>	one	0.22	9
	Mixed Electronics			
	<i>Brown Goods</i>	cubic yard	343	6
<i>Computer-related Electronics</i>	cubic yard	354	6	
<i>Other Small Consumer Electronics</i>	cubic yard	438	6	
<b>Food</b>	Fats, Oils, Grease	55-gallon	412	2
	Organics - commercial	cubic yard	135	21
	Source Separated Organics - commercial	cubic yard	1,000	15
	Food Waste - restaurants	cubic yard	396	21
	Food Waste	cubic yard	463	4
	Food Waste	cubic foot	22-45	4
	Food waste - university	gallon	3.8	22
	Food Waste	64 gallon toter	150	4
	Food waste	2 cubic yard full towable	2,736	4
	<b>Glass</b>	Bottles		
<i>Loose</i>		cubic yard	380	4

Category	Recyclable Materials	Volume	Estimated Weight (lbs)	Source
<b>Metals</b>	Aluminum Cans			
	<i>Uncompacted</i>	cubic yard	46	4
	<i>Uncompacted</i>	case = 24 cans	0.7	11
	<i>Baled</i>	cubic yard	250-500	10
	Steel Cans			
	<i>Whole</i>	cubic yard	50-175	10
	<i>Baled</i>	cubic yard	700-1,000	10
	Steel Cans - Institution			
	<i>Whole</i>	can	0.09	7
<i>Whole</i>	cubic yard	136	7	
<b>Paper</b>	Newsprint			
	<i>Loose</i>	cubic yard	360-800	1
	<i>Baled</i>	cubic yard	750-1,000	10
	Books - paperback, loose	cubic yard	428	23
	Old Corrugated Containers			
	<i>Flattened</i>	cubic yard	106	4
	<i>Baled</i>	cubic yard	700-1,100	10
	Old Corrugated Containers and Chip Board			
	<i>Uncompacted</i>	cubic yard	74.54	4
	Office Paper			
	<i>Computer Paper</i>			
	<i>Loose</i>	cubic yard	375-465	1
	<i>Compacted/Baled</i>	cubic yard	755-925	1
	<i>Mixed</i>			
	<i>Loose</i>	cubic yard	110-380	1
	<i>Loose</i>	cubic yard	323	4
	<i>Compacted</i>	cubic yard	610-755	1
	<i>Shredded</i>	cubic yard	128	4
	<i>Mixed Baled</i>	cubic yard	1,000-1,200	10
Miscellaneous				
<i>Cartons (milk and juice) uncrushed</i>	cubic yard	50	7	
<b>Plastic</b>	PET			
	<i>PET Bottles - baled</i>	30"x42"x 48"	525-630	12
	<i>PET Thermoform - baled</i>	30"x42"x 48"	525-595	12
	HDPE			
	<i>HDPE Dairy - baled</i>	30"x42"x 48"	525-700	12
	<i>HDPE Mixed - baled</i>	30"x42"x 48"	525-700	12
	Mixed PET and HDPE			
	<i>Loose</i>	cubic yard	32	7
	Mixed Bottles/Containers #1 - #7			
	<i>Loose</i>	cubic yard	40.4	4
Mixed Bottles/Containers #3 - #7				

Category	Recyclable Materials	Volume	Estimated Weight (lbs)	Source
Plastic	<i>Loose</i>	cubic yard	25.7	4
	Film			
	<i>LDPE, loose</i>	cubic yard	35	13
	<i>LDPE, compacted</i>	cubic yard	150	13
	<i>LDPE, baled</i>	30" x 42" x 48"	1,100	13
	Miscellaneous			
	<i>Trash Bags</i>	cubic yard	35	6
	<i>Grocery/Merchandise Bags</i>	cubic yard	35	6
	<i>Expanded Polystyrene Packaging/Insulation</i>	cubic yard	32	6
Textiles	Mixed Textiles			
	<i>Loose</i>	cubic yard	125-175	10
	<i>Baled</i>	cubic yard	600-750	10
Wood	Wood			
	<i>Wood Chips, green</i>	cubic yard	473	1
	<i>Wood Chips, dry</i>	cubic yard	243	1
	<i>Saw Dust, wet</i>	cubic yard	530	1
	<i>Saw Dust, dry</i>	cubic yard	275	1
	<i>Pallets</i>	one	25	1
	<i>Pallets and Crates</i>	cubic yard	169	18
	<i>Christmas Trees, loose</i>	cubic yard	30	1
Yard Trimmings	Yard Trimmings			
	<i>Leaves</i>	cubic yard	250-500	1
	<i>Leaves (Minnesota)</i>	cubic yard	300 - 383	15
	Mixed Yard Waste			
	<i>Uncompacted</i>	cubic yard	250	1
	<i>Compacted</i>	cubic yard	640	1
	Prunings & Trimmings	cubic yard	127	6
	Branches & Stumps	cubic yard	127	6
Municipal Solid Waste	MSW - Commercial			
	Commercial - dry waste	cubic yard	56-73	16, 8
	Commercial - all waste, uncompacted	cubic yard	138	21
	Mixed MSW - Residential, Institutional, Commercial			
	<i>Uncompacted</i>	cubic yard	250-300	14
	<i>Compacted</i>	cubic yard	400-700	14
	Mixed MSW - Multifamily uncompacted	cubic yard	95	21
	MSW - Landfill			
	<i>Compacted - MSW Small Landfill with Best Management Practices</i>	cubic yard	1,200-1,700	17
	<i>Compacted - MSW Large Landfill with Best Management Practices</i>	cubic yard	1,700-2,000	17

Category	Recyclable Materials	Volume	Estimated Weight (lbs)	Source
<b>Municipal Solid Waste</b>	<i>Compacted - MSW Very Large Landfill with Best Management and Cover Practices, Combined MMSW/Industrial/and other solid waste, or/and Leachate Recirculation</i>	cubic yard	>2,000	17
<b>C &amp; D</b>	Concrete			
	<i>Large Concrete with Re-bar</i>	cubic yard	860	18
	<i>Large Concrete without Re-bar</i>	cubic yard	860	18
	<i>Small Concrete with Re-bar</i>	cubic yard	860	18
	<i>Small Concrete without Re-bar</i>	cubic yard	860	18
	Asphalt Paving			
	<i>Large Asphalt Paving with Re-bar</i>	cubic yard	773	19
	<i>Large Asphalt Paving without Re-bar</i>	cubic yard	773	19
	<i>Small Asphalt Paving with Re-bar</i>	cubic yard	773	19
	<i>Small Asphalt Paving without Re-Bar</i>	cubic yard	773	19
	Roofing			
	<i>Composition Roofing</i>	cubic yard	731	18
	<i>Other Asphalt Roofing</i>	cubic yard	731	18
	Other Aggregates	cubic yard	860	18
	Wood			
	<i>Clean Dimensional Lumber</i>	cubic yard	169	18
	<i>Clean Engineered Wood</i>	cubic yard	268	18
	<i>Other Recyclable Wood</i>	cubic yard	169	18
	<i>Painted/Stained Wood</i>	cubic yard	169	18
	<i>Treated Wood</i>	cubic yard	169	18
	Gypsum Board			
	<i>Clean Gypsum Board</i>	cubic yard	467	18
	<i>Painted/Demolition Gypsum</i>	cubic yard	467	18
	Aggregate			
	<i>Large Rock</i>	cubic yard	999	18
	<i>Small Rock/Gravel</i>	cubic yard	999	18
	Dirt and Sand	cubic yard	929	18
	Remainder/Composite Construction and Demolition	cubic yard	417	18
	Construction & Demolition Bulk	cubic yard	484	20
	Metal			
	<i>Major Appliances</i>	cubic yard	145	18
	<i>Other Ferrous</i>	cubic yard	225	18
<i>Other Non-Ferrous</i>	cubic yard	225	18	
<i>Remainder/Composite Metal (avg of metals, without used oil filters)</i>	cubic yard	143	18	
<i>HVAC Ducting</i>	cubic yard	47	18	

- 1 Oregon Department of Environmental Quality. 2007 Oregon Material Recovery and Waste Generation Rates Report September 2008 08-LQ-092. Attachment B: Measurement Standards and Reporting Guidelines 07-LQ-134.  
<http://www.deq.state.or.us/lq/pubs/docs/sw/MRAttachmentB.pdf>
- 2 Department of Ecology, State of Washington. Coordinated Prevention Grant Conversion Sheet. March, 2014.  
[www.ecy.wa.gov/pubs/1107016.pdf](http://www.ecy.wa.gov/pubs/1107016.pdf)
- 3 Factor developed using lead per battery data from Battery Council International. Recycling Rates 2009 to 2013. April 2014.  
[http://c.ymcdn.com/sites/batterycouncil.org/resource/resmgr/BCI\\_Recycling\\_Rate\\_Study\\_200.pdf](http://c.ymcdn.com/sites/batterycouncil.org/resource/resmgr/BCI_Recycling_Rate_Study_200.pdf) applied to battery composition data from Sullivan, JL and Gaines, L. 2010. A Review of Battery Life Cycle Analysis: State of Knowledge and Critical Needs. October 2010. Center for Transportation Research, Energy Systems Division, Argonne National Laboratory ANL/ESD/10-7.
- 4 Keep America Beautiful. Volume-to-Weight Recycling and Trash Conversion Factors Report. December 2013.
- 5 Rubber Manufacturers Association (RMA). 2013 U.S. Scrap Tire Management Summary. November 2014.  
[http://www.rma.org/download/scrap-tires/market-reports/US\\_STMarket2013.pdf](http://www.rma.org/download/scrap-tires/market-reports/US_STMarket2013.pdf)
- 6 California Integrated Waste Management Board. Targeted Statewide Waste Characterization Study: Detailed Characterization of Construction and Demolition Waste. June 2006. <http://www.calrecycle.ca.gov/publications/Documents/Disposal%5C34106007.pdf>  
Brown Goods: larger, non-portable electronic goods that have some circuitry. Examples include microwaves, stereos, VCRs, DVD players, radios, audio/visual equipment, and non-CRT televisions (such as LCD televisions).  
Computer-related Electronics: electronics with large circuitry that is computer-related. Examples include processors, mice, keyboards, laptops, disk drives, printers, modems, and fax machines.  
Other Small Consumer Electronics: portable non-computer-related electronics with large circuitry. Examples include personal digital assistants (PDAs), cell phones, phone systems, phone answering machines, computer games and other electronic toys, portable CD players, camcorders, and digital cameras.
- 7 Keep America Beautiful, Recycle-Bowl Competition. Accessed February 2015. <http://recycle-bowl.org/wp-content/uploads/Recycle-Bowl-Estimating-Data-Fact-Sheet.pdf>
- 8 Great Forest. Volume to Weight Conversion Ratios for Commercial Office Waste in New York City. January 2013. Primary data; Commingled; large commercial properties (500,000 sq. ft – 1m sq. ft) in the New York metropolitan area.  
<http://www.greatforest.com/files/FileUpload/files/Great%20Forest%20-%20Waste%20Conversion%20Paper%20->
- 9 US EPA Electronics Waste Management in the United States Through 2009 . May 2011.
- 10 WasteCare Corporation. Some Typical Loose and Baled Weights of Various Materials. Accessed April 2015.  
<http://www.wastecare.com/Products-Services/Balers/aboutbalers.htm>.
- 11 The Aluminum Association. U.S. Aluminum Beverage Can Recycling.  
[http://www.aluminum.org/sites/default/files/section\\_images/UBCRecyclingRate2013.pdf](http://www.aluminum.org/sites/default/files/section_images/UBCRecyclingRate2013.pdf)
- 12 The Association of Postconsumer Plastic Recyclers (APR). Model Bale Specifications. <http://www.plasticsrecycling.org>
- 13 Caldwell, Maggie. Recycling Plastic Film and Shrink Wrap. May 16, 2014. <http://www.federalinternational.com/blog/recy>
- 14 Caterpillar Performance Handbook. 40th Edition. January 2010.
- 15 Minnesota Pollution Control Agency. Data provided by professional composter. 2015. Source separated organics - food scraps, non-recyclable paper (paper plates/towels/etc) and compostable plastics.
- 16 Minnesota Department of Administration 2015 hauler records (excludes organics).
- 17 Minnesota Pollution Control Agency. 2013 MPCA MSW Landfill Annual Report Data.
- 18 California Integrated Waste Management Board. Targeted Statewide Waste Characterization Study: Detailed Characterization of Construction and Demolition Waste. June 2006
- 19 Tellus scaled down by factor from Florida C&D study -- Converting C&D Debris from Volume to Weight: A Fact Sheet for C&D Debris Facility Operators, University of Florida, 2000.
- 20 Florida Dept of Environmental Protection <http://www.dep.state.fl.us/waste/categories/recycling/cd/canddmain.htm>
- 21 CalRecycle. 2014 Generator-Based Characterization of Commercial Sector Disposal and Diversion in California. September 10, 2015. <http://www.calrecycle.ca.gov/Publications/Documents/1543/20151543.pdf>  
Organics - putrescible material hauled by a contracted third party to a permitted facility mainly engaged in producing compost or mulch, or in anaerobic digestion of organics. Minor mechanical separation of contaminants or recyclable materials may occur at the facility prior to composting or digestion.
- 22 Goldstein, Nora. "Food Scraps Composting Laboratory". *BioCycle*. January 2013, Vol. 54, No. 1, p. 33.  
<https://www.biocycle.net/2013/01/22/food-scraps-composting-laboratory/>
- 23 U.S. EPA. Standard Volume-to-Weight Conversion Factors. Last updated: February 28, 2006. <https://www.epa.gov/smm/metrics-waste-reduction>
- 24 National Center for Electronics Recycling (NCER). <http://www.electronicrecycling.org/>  
Mixed monitors and TVs: total pounds collected divided by total units collected.

This page intentionally left blank.

---

**APPENDIX C**  
**JCSWA 2014-2015 AVG TONS AND VOLUMES -**  
**13 SITES**

---

This page intentionally left blank.

**JEFFERSON COUNTY SWA DROP-OFF SERVICING SUMMARY**  
**2014 & 2015 Average Tons & Volumes per Year for 13 Drop-off Sites**

Location		Steel/Tin	Aluminum	Clr Glass	Gr Glass	Br Glass	Plastic	Newspaper	Mixed Paper	Corrugated Cardboard	TOTAL	TOTAL TONS
Barnett Township	Pounds	6,240	1,240	10,090	2,510	4,960	5,330	12,391	0	0	42,761.0	21.4
	Cubic Yards	55	27	27	7	13	167	21	0	0	316.6	
Bell Township	Pounds	2,090	420	3,310	820	1,670	2,790	11,230	6,090	4,080	32,500.0	16.3
	Cubic Yards	19	9	9	2	4	87	19	25	38	212.9	
Gaskill Township	Pounds	5,050	1,020	7,570	2,030	4,040	4,170	16,660	8,430	5,640	54,610.0	27.3
	Cubic Yards	45	22	20	5	11	130	29	34	53	349.6	
Knox Township	Pounds	3,350	670	5,340	1,340	2,680	1,510	6,040	0	0	20,930.0	10.5
	Cubic Yards	30	15	14	4	7	47	10	0	0	126.6	
Oliver Township	Pounds	1,800	370	2,930	740	1,460	2,660	10,590	0	0	20,550.0	10.3
	Cubic Yards	16	8	8	2	4	83	18	0	0	138.9	
Pinecreek Twp	Pounds	1,370	270	2,200	550	1,100	2,240	8,940	0	0	16,670.0	8.3
	Cubic Yards	12	6	6	1	3	70	15	0	0	113.6	
Polk Township	Pounds	3,600	700	5,740	1,450	2,880	2,730	10,910	0	0	28,010.0	14.0
	Cubic Yards	32	15	15	4	8	85	19	0	0	177.8	
Reynoldsville Twp	Pounds	6,540	1,300	10,460	2,640	5,220	5,850	23,370	12,825	9,080	77,285.0	38.6
	Cubic Yards	58	28	28	7	14	183	40	52	86	495.7	
Ringgold Township	Pounds	3,910	770	6,130	1,530	3,040	4,370	17,480	0	0	37,230.0	18.6
	Cubic Yards	35	17	16	4	8	137	30	0	0	246.4	
Rose Township	Pounds	18,465	3,780	30,330	7,630	15,070	20,070	76,840	37,275	27,070	236,530.0	118.3
	Cubic Yards	164	82	80	20	40	627	132	152	255	1,553.1	
Summerville Boro	Pounds	5,260	1,040	8,380	2,100	4,210	6,140	24,630	0	0	51,760.0	25.9
	Cubic Yards	47	23	22	6	11	192	42	0	0	342.4	
Walston	Pounds	11,000	2,530	17,960	5,050	8,910	12,220	47,690	68,600	23,380	197,340.0	98.7
	Cubic Yards	98	55	47	13	23	382	82	280	221	1,201.4	
Washington Twp	Pounds	5,960	1,170	9,550	2,410	4,770	5,800	22,450	12,070	7,620	71,800.0	35.9
	Cubic Yards	53	25	25	6	13	181	39	49	72	463.5	
<b>Total Pounds</b>		74,635	15,280	119,990	30,800	60,010	75,880	289,221	145,290	76,870	887,976.0	444.0
<b>Total Tons</b>		37.3	7.6	60.0	15.4	30.0	37.9	144.6	72.6	38.4	444.0	
<b>Cubic Yards (est.)*</b>		663.4	332.2	315.8	81.1	157.9	2371.3	498.7	593.0	725.2	5738.4	
<b>Cubic Yards/Mo.</b>		55.3	27.7	26.3	6.8	13.2	197.6	41.6	49.4	60.4	478.2	
<b>Cubic Yards/Week</b>		12.8	6.4	6.1	1.6	3.0	45.6	9.6	11.4	13.9	110.4	

\* Volume-to-Weight Conversion Factors

This page intentionally left blank.

---

**APPENDIX D**  
**JCSWA 2014-2015 AVG TONS AND VOLUMES -**  
**12 SITES**

---

This page intentionally left blank.

**JEFFERSON COUNTY SWA DROP-OFF SERVICING SUMMARY  
2014 & 2015 Average Tons & Volumes per Year for 12 Drop-off Sites**

Location		Steel/Tin	Aluminum	Clr Glass	Gr Glass	Br Glass	Plastics	Newsp	Mixed Paper	OCC	TOTAL	TOTAL TONS
1 Barnett Township	Pounds	6,240	1,240	10,090	2,510	4,960	5,330	12,391	0	0	42,761.0	21.4
	Cubic Yards	55	27	27	7	13	167	21	0	0	316.6	
2 Bell Township	Pounds	2,090	420	3,310	820	1,670	2,790	11,230	6,090	4,080	32,500.0	16.3
	Cubic Yards	19	9	9	2	4	87	19	25	38	212.9	
3 Gaskill Township	Pounds	5,050	1,020	7,570	2,030	4,040	4,170	16,660	8,430	5,640	54,610.0	27.3
	Cubic Yards	45	22	20	5	11	130	29	34	53	349.6	
4 Knox Township	Pounds	3,350	670	5,340	1,340	2,680	1,510	6,040	0	0	20,930.0	10.5
	Cubic Yards	30	15	14	4	7	47	10	0	0	126.6	
5 Oliver Township	Pounds	1,800	370	2,930	740	1,460	2,660	10,590	0	0	20,550.0	10.3
	Cubic Yards	16	8	8	2	4	83	18	0	0	138.9	
6 Pinecreek Twp	Pounds	1,370	270	2,200	550	1,100	2,240	8,940	0	0	16,670.0	8.3
	Cubic Yards	12	6	6	1	3	70	15	0	0	113.6	
7 Polk Township	Pounds	3,600	700	5,740	1,450	2,880	2,730	10,910	0	0	28,010.0	14.0
	Cubic Yards	32	15	15	4	8	85	19	0	0	177.8	
8 Reynoldsville Twp	Pounds	6,540	1,300	10,460	2,640	5,220	5,850	23,370	12,825	9,080	77,285.0	38.6
	Cubic Yards	58	28	28	7	14	183	40	52	86	495.7	
9 Ringgold Township	Pounds	3,910	770	6,130	1,530	3,040	4,370	17,480	0	0	37,230.0	18.6
	Cubic Yards	35	17	16	4	8	137	30	0	0	246.4	
10 Rose Township	Pounds	18,465	3,780	30,330	7,630	15,070	20,070	76,840	37,275	27,070	236,530.0	118.3
	Cubic Yards	164	82	80	20	40	627	132	152	255	1,553.1	
11 Summerville Boro	Pounds	5,260	1,040	8,380	2,100	4,210	6,140	24,630	0	0	51,760.0	25.9
	Cubic Yards	47	23	22	6	11	192	42	0	0	342.4	
12 Washington Twp	Pounds	5,960	1,170	9,550	2,410	4,770	5,800	22,450	12,070	7,620	71,800.0	35.9
	Cubic Yards	53	25	25	6	13	181	39	49	72	463.5	
<b>Total Pounds</b>		63,635	12,750	102,030	25,750	51,100	63,660	241,531	76,690	53,490	690,636	345.3
<b>Total Tons</b>		31.8	6.4	51.0	12.9	25.6	31.8	120.8	38.3	26.7	345.3	
<b>Cubic Yards (est.)</b>		565.6	277.2	268.5	67.8	134.5	1989.4	416.4	313.0	504.6	4537.0	
<b>formula check</b>		565.6	277.2	268.5	67.8	134.5	1989.4	416.4	313.0	504.6	4537.0	
Cubic Yards/Mo.		47.1	23.1	22.4	5.6	11.2	165.8	34.7	26.1	42.1	378.1	
Cubic Yards/Week		10.9	5.3	5.2	1.3	2.6	38.3	8.0	6.0	9.7	87.3	

This page intentionally left blank.

---

**APPENDIX E**

**JCSWA COLLECTION SCENARIOS COST  
SUMMARY - SINGLE SREAM**

---

This page intentionally left blank.

## Jefferson Co SWA Collection Scenarios - Single Stream Collection Data Summary

Single Stream Collection	Route 3	Route 4	Total
Total Stops	3	9	12
Number of 8 cu.yd containers	36	36	72
Loose Container Yds Gen/Wk	48	39	87
Average weeks to fill containers	6	7.4	6.6
Collection Schedule Pick-ups/Month	0.73	0.59	0.66
Weekly Average Volumes (cu.yds)	48	39	87
Monthly Average Volumes (cu.yds)	209	169	378
Annual Average Volume			
Weekly Average Tons	3.7	2.9	6.6
Monthly Average Tons	16.1	12.7	28.8
Annual Average Tons	193.2	152.4	345.6
Pre-trip/Launch (Minutes)	20	20	40
Route Collection Time (Minutes)	68	163	231
Total time to processor and return (Minutes)	159	159	318
Post-Trip/Paperwork (Minutes)	15	15	30
Total Route Time (Minutes)	262	357	619
Total Route Time (Hours)	4.4	6.0	10.4
Route Collection Miles	22	113	135
Miles to Procesor	63	63	127
Return Miles to HQ	75	75	151
Total Route Miles	160	252	412
Cost/Mile Calculation	\$ 2.01	\$ 2.01	\$ 2.01
Tip Fee @\$40/Ton	\$ 7,724	\$ 6,104	\$ 13,828
Operational Cost	\$ 2,816	\$ 3,565	\$ 6,380
<b>Total Annual Cost</b>	<b>\$ 10,540</b>	<b>\$ 9,669</b>	<b>\$ 20,208</b>

This page intentionally left blank.

---

**APPENDIX F**  
**CAMBRIA COUNTY SWMA RECYCLING**  
**PROCESSING AT JCSWA**

---

This page intentionally left blank.

**Cambria Co. Recycling Processing at Indiana Co. SWA**

Year	Quarter	Total Tons		
		Processed	Revenue	Rev./Ton
2014	3rd	318	\$ 3,218	\$ 10.13
2014	2nd	414	\$ 9,244	\$ 22.30
2014	1st	318	\$ 1,638	\$ 5.15
<b>Total</b>		<b>1,050</b>	<b>\$ 14,100</b>	<b>\$ 13.43</b>
2013	4th	400	\$ 4,070	\$ 10.17
2013	3rd	387	\$ 3,497	\$ 9.04
2013	2nd	418	\$ 7,832	\$ 18.74
2013	1st	355	\$ 1,387	\$ 3.91
<b>Total</b>		<b>1,560</b>	<b>\$ 16,786</b>	<b>\$ 10.76</b>
2012	4th	442	\$ 8,833	\$ 19.97
2012	3rd	407	\$ 7,559	\$ 18.57
2012	2nd	420	\$ 17,445	\$ 41.49
2012	1st	418	\$ 6,921	\$ 16.56
<b>Total</b>		<b>1,688</b>	<b>\$ 40,758</b>	<b>\$ 24.15</b>
2011	4th	494	\$ 19,563	\$ 39.61
2011	3rd	488	\$ 33,263	\$ 68.10
2011	2nd	494	\$ 31,329	\$ 63.46
2011	1st	453	\$ 22,166	\$ 48.88
<b>Total</b>		<b>1,930</b>	<b>\$ 106,321</b>	<b>\$ 55.10</b>
<b>TOTAL</b>		<b>12,455</b>	<b>\$ 355,929</b>	<b>\$ 28.58</b>

This page intentionally left blank.

---

# APPENDIX G

## JCSWA POTENTIAL MATERIALS REVENUE

---

This page intentionally left blank.

**Jefferson Co SWA - Source Separated Collection - Potential Annual Materials Revenue**

Prices quoted by Indiana Co. SWA 6-20-2016

<b>12 Drop-offs</b>	<b>Steel/Tin</b>	<b>Aluminum</b>	<b>Clr Glass</b>	<b>Gr Glass</b>	<b>Br Glass</b>	<b>Plastics</b>	<b>News only</b>	<b>Magazines</b>	<b>Mx Paper</b>	<b>Corrugated</b>	<b>TOTAL</b>
Avg Annual Pounds/Yr	63,635	12,750	102,030	25,750	51,100	63,600	96,612	144,919	76,690	53,490	
Revenue/lb.	\$ 0.076	\$ 0.50	\$ 0.02	\$ 0.001	\$ 0.01	\$ 0.06	\$ 0.050	\$ 0.044	\$ 0.073	\$ 0.053	
Potential Revenue	\$ 4,804	\$ 6,375	\$ 1,530	\$ 26	\$ 511	\$ 3,816	\$ 4,831	\$ 6,340	\$ 5,560	\$ 2,808	\$ 36,602
Revenue less Glass											\$ 34,534
@ 80% *											\$ 27,628
<b>13 Drop-offs</b>											
Avg Annual Pounds/Yr	74,635	15,280	119,990	30,800	60,010	75,880	115,688	173,533	145,290	76,870	
Revenue/lb.	\$ 0.08	\$ 0.54	\$ 0.02	\$ 0.001	\$ 0.01	\$ 0.06	\$ 0.05	\$ 0.04	\$ 0.07	\$ 0.05	
Potential Revenue	\$ 5,635	\$ 8,251	\$ 1,800	\$ 31	\$ 600	\$ 4,553	\$ 5,784	\$ 7,592	\$ 10,534	\$ 4,036	\$ 48,815
Revenue less Glass											\$ 46,385
@ 80% *											\$ 37,108

\* 20% of materials market value typically held back to cover ICSWA processing costs

This page intentionally left blank.

---

# APPENDIX H

## JCSWA COLLECTION ROUTE MAPS

---

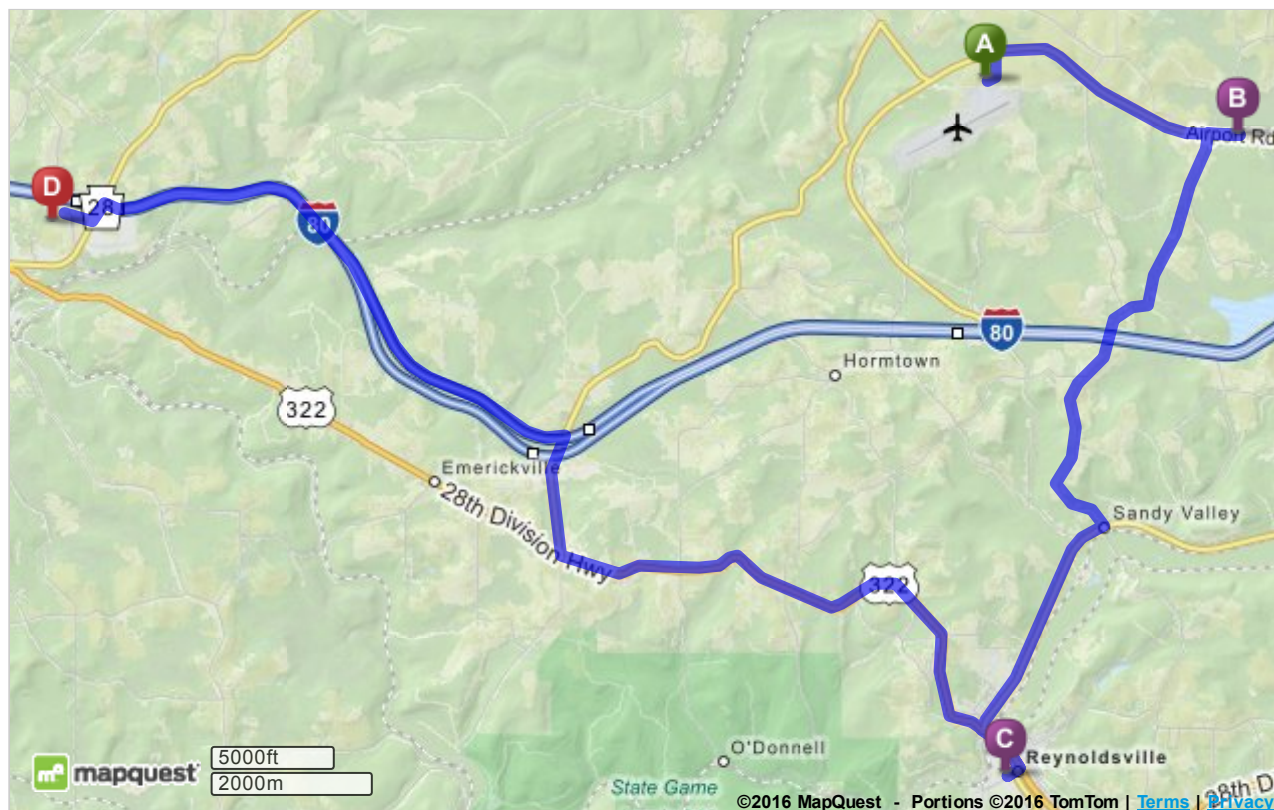
This page intentionally left blank.



Trip to:  
**Brookville, PA 15825**  
22.40 miles / 33 minutes

Notes

Single Stream Collection  
Route 3



©2016 MapQuest, Inc. Use of directions and maps is subject to the MapQuest Terms of Use. We make no guarantee of the accuracy of their content, road conditions or route usability. You assume all risk of use. [View Terms of Use](#)

Jefferson Co. SWA Drop-off Site Routing - Single Stream - 12 Drop-off sites  
Routes 3 & 4

6/22/2016

	Route to HQ	Miles to HQ	Time to HQ	Street Addresses	Alt Address	Annual Vol.	Weekly Vol.	Annual Tons	Weekly Tons	
HQ	Jefferson Co SWA Office			351 Aviation Way, Reynoldsville PA						
1	Barnett Township	19.65	42 minutes	8864 Route 36, Seigel PA 15860		316.6	6.1	21.4	0.4	<a href="#">Route 3 Map Points</a>
2	Bell Township	20.48	43 minutes	103 Runway Drive, Punxsutawney PA 15767		212.9	4.1	16.3	0.3	A HQ
3	Gaskill Township	22.73	40 minutes	74 Municipal Lane, Punxsutawney PA 15767		349.6	6.7	27.3	0.5	B Washington Township
4	Knox Township	12.28	18 minutes	7525 Knoxdale Road, Knoxdale PA 15847		126.6	2.4	10.5	0.2	C Reynoldsville Borough
5	Oliver Township	17.49	29 minutes	767 Coolspring Road, Worthville PA 15784		138.9	2.7	10.3	0.2	D Rose Townshiip
6	Pinecreek Township	8.35	12 minutes	1581 Kerner Road, Brookville PA 15825		113.6	2.2	8.3	0.2	
7	Polk Township	9.85	17 minutes	11282 Richardsville Road, Brookville PA 15825		177.8	3.4	14.0	0.3	<a href="#">Route 4 Map Points</a>
8	Reynoldsville Borough	9.05	15 minutes	32 South 5th Street, Reynoldsville PA 15851		495.7	9.5	38.6	0.7	A HQ
9	Ringgold	24.65	44 minutes	2253 Ringgold Timblin Road, Ringgold 15770		246.4	4.7	18.6	0.4	B Polk Township
10	Rose Township	10.94	17 minutes	1000 Miller Drive, Brookville PA 15825	Brookville PA, 15825	1553.1	29.9	118.6	2.3	C Barnett Township
11	Summerville Borough	20.2	31 minutes	12768 Harrison St, Summerville PA 15864	Borough Office	342.4	6.6	25.9	0.5	D Summerville Borough
12	Washington Township	2.73	3 minutes	2933 Airport Road, Falls Creek PA 15840		463.5	8.9	35.9	0.7	E Ringgold
MP	Tri-County Industries			159 Tci Park Drive, Grove City PA 16127						F Gaskill Township
					Annual Volume	4537.1		Annual Tons	345.7	G Bell Township
					Monthly Volume	378.1		Monthly Tons	28.8	H Oliver Township
					Weekly Volume	87.3		Weekly Tons	6.6	I Knox Township
	Route 3	22.4	32	Does not account for loading and off-loading time	Route 3 Volume	2512.3	48.3	Route 3 Tons	193.1	3.7
	Route 4	113.4	167	Does not account for loading and off-loading time	Route 4 Volume	2024.8	38.9	Route 4 Tons	152.6	2.9
	Brookville to Tri-County	64.4	66							
	Tri-County to HQ	75.3	45	Does not account for loading and off-loading time						
	Round Trip Route 3	162.1	259	Does not account for loading and off-loading time						
	Round Trip Route 4	253.1	239	Does not account for loading and off-loading time						



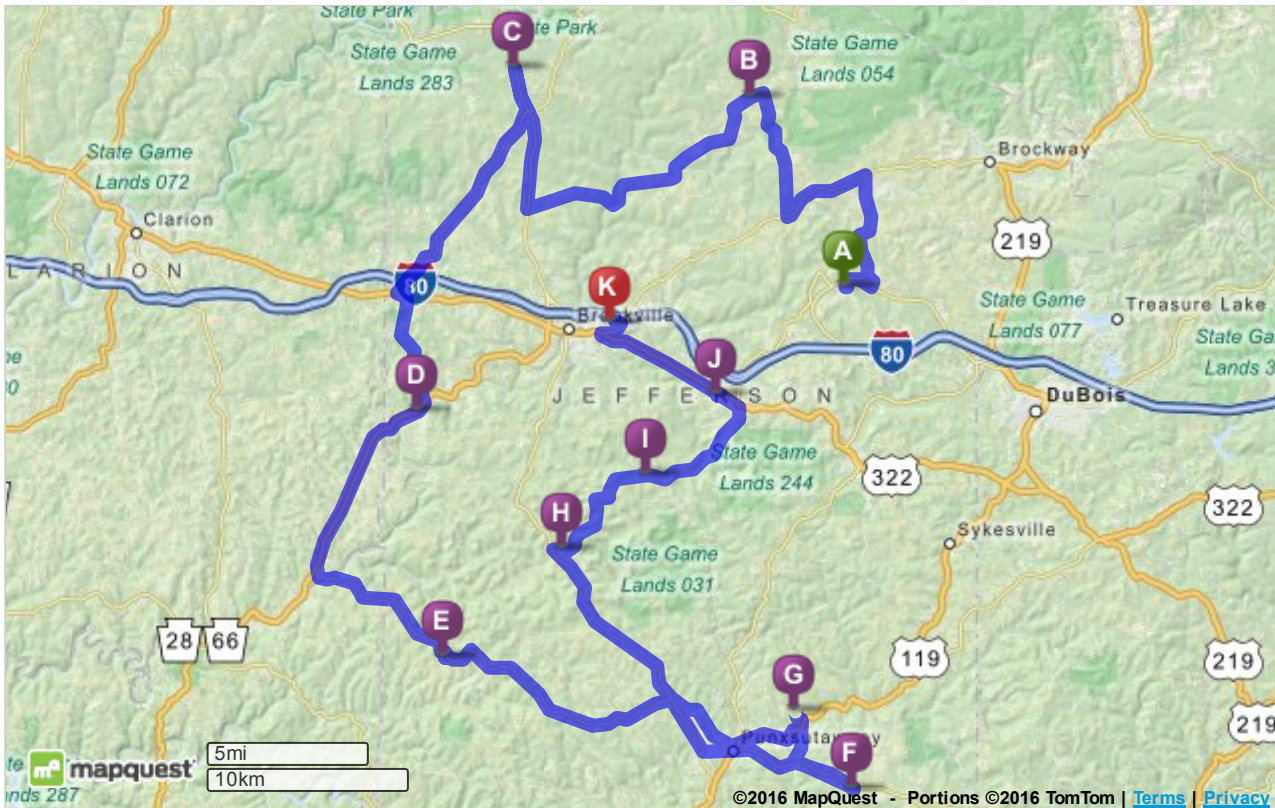
Trip to:

**Brookville, PA 15825**

113.40 miles / 2 hours 47 minutes

Notes

Single Stream Collection  
Route 4



©2016 MapQuest, Inc. Use of directions and maps is subject to the MapQuest Terms of Use. We make no guarantee of the accuracy of their content, road conditions or route usability. You assume all risk of use. [View Terms of Use](#)

Jefferson Co. SWA Drop-off Site Routing - Single Stream - 12 Drop-off sites  
Routes 3 & 4

6/22/2016

	Route to HQ	Miles to HQ	Time to HQ	Street Addresses	Alt Address	Annual Vol.	Weekly Vol.	Annual Tons	Weekly Tons	
HQ	Jefferson Co SWA Office			351 Aviation Way, Reynoldsville PA						
1	Barnett Township	19.65	42 minutes	8864 Route 36, Seigel PA 15860		316.6	6.1	21.4	0.4	<u>Route 3 Map Points</u>
2	Bell Township	20.48	43 minutes	103 Runway Drive, Punxsutawney PA 15767		212.9	4.1	16.3	0.3	A HQ
3	Gaskill Township	22.73	40 minutes	74 Municipal Lane, Punxsutawney PA 15767		349.6	6.7	27.3	0.5	B Washington Township
4	Knox Township	12.28	18 minutes	7525 Knoxdale Road, Knoxdale PA 15847		126.6	2.4	10.5	0.2	C Reynoldsville Borough
5	Oliver Township	17.49	29 minutes	767 Coolspring Road, Worthville PA 15784		138.9	2.7	10.3	0.2	D Rose Townshiip
6	Pinecreek Township	8.35	12 minutes	1581 Kerner Road, Brookville PA 15825		113.6	2.2	8.3	0.2	
7	Polk Township	9.85	17 minutes	11282 Richardsville Road, Brookville PA 15825		177.8	3.4	14.0	0.3	<u>Route 4 Map Points</u>
8	Reynoldsville Borough	9.05	15 minutes	32 South 5th Street, Reynoldsville PA 15851		495.7	9.5	38.6	0.7	A HQ
9	Ringgold	24.65	44 minutes	2253 Ringgold Timblin Road, Ringgold 15770		246.4	4.7	18.6	0.4	B Polk Township
10	Rose Township	10.94	17 minutes	1000 Miller Drive, Brookville PA 15825	Brookville PA, 15825	1553.1	29.9	118.6	2.3	C Barnett Township
11	Summerville Borough	20.2	31 minutes	12768 Harrison St, Summerville PA 15864	Borough Office	342.4	6.6	25.9	0.5	D Summerville Borough
12	Washington Township	2.73	3 minutes	2933 Airport Road, Falls Creek PA 15840		463.5	8.9	35.9	0.7	E Ringgold
MP	Tri-County Industries			159 Tci Park Drive, Grove City PA 16127						F Gaskill Township
					Annual Volume	4537.1		Annual Tons	345.7	G Bell Township
					Monthly Volume	378.1		Monthly Tons	28.8	H Oliver Township
					Weekly Volume	87.3		Weekly Tons	6.6	I Knox Township
	Route 3	22.4	32	Does not account for loading and off-loading time	Route 3 Volume	2512.3	48.3	Route 3 Tons	193.1	3.7
	Route 4	113.4	167	Does not account for loading and off-loading time	Route 4 Volume	2024.8	38.9	Route 4 Tons	152.6	2.9
	Brookville to Tri-County	64.4	66							
	Tri-County to HQ	75.3	45	Does not account for loading and off-loading time						
	Round Trip Route 3	162.1	259	Does not account for loading and off-loading time						
	Round Trip Route 4	253.1	239	Does not account for loading and off-loading time						



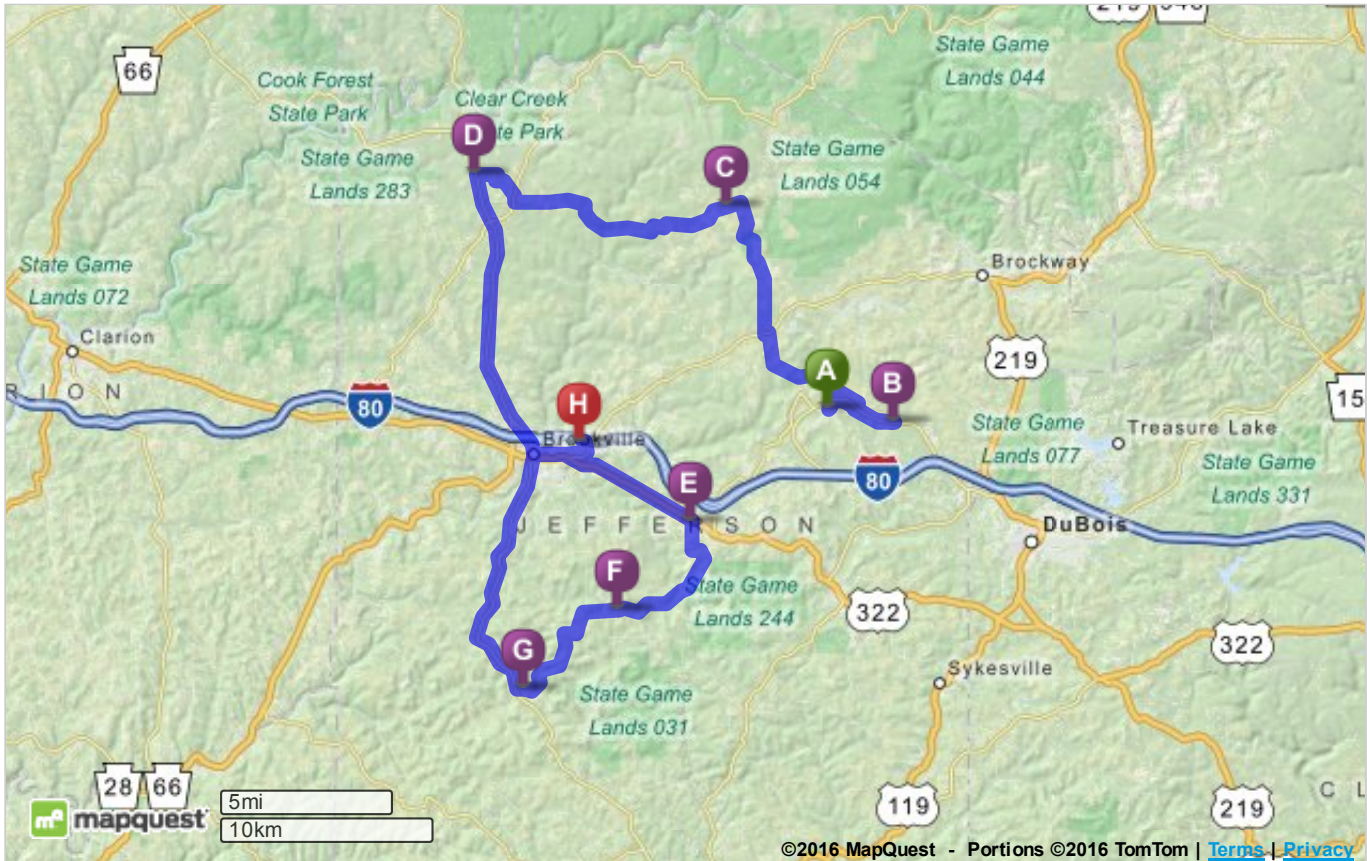
Trip to:

**Brookville, PA 15825**

63.02 miles / 1 hour 49 minutes

Notes

Route 6



©2016 MapQuest - Portions ©2016 TomTom | [Terms](#) | [Privacy](#)

©2016 MapQuest, Inc. Use of directions and maps is subject to the MapQuest Terms of Use. We make no guarantee of the accuracy of their content, road conditions or route usability. You assume all risk of use. [View Terms of Use](#)

Jefferson Co. SWA Drop-off site routing - Single Stream - 13 Drop-off Sites  
Routes 6 & 7

6/22/2016

	Route to HQ	Miles to HQ	Time to HQ	Street Address	Alt Address	Annual Vol.	Weekly Vol.	Annual Tons	Weekly Tons	
HQ	Jefferson Co SWA Office			351 Aviation Way, Reynoldsville PA						
1 A	Barnett Township	19.65	42 minutes	8864 Route 36, Seigel PA 15860		316.6	6.1	21.4	0.4	<a href="#">Route 6 Map Points</a>
2 B	Bell Township	20.48	43 minutes	103 Runway Drive, Punxsutawney PA 15767		212.9	4.1	16.3	0.3	A HQ
3 C	Gaskill Township	22.73	40 minutes	74 Municipal Lane, Punxsutawney PA 15767		349.6	6.7	27.3	0.5	B Washington Township
4 D	Knox Township	12.28	18 minutes	7525 Knoxdale Road, Knoxdale PA 15847		126.6	2.4	10.5	0.2	C Polk Township
5 E	Oliver Township	17.49	29 minutes	767 Coolspring Road, Worthville PA 15784		138.9	2.7	10.3	0.2	D Barnett Township
6 F	Pinecreek Township	8.35	12 minutes	1581 Kerner Road, Brookville PA 15825		113.6	2.2	8.3	0.2	E Pinecreek Township
7 G	Polk Township	9.85	17 minutes	11282 Richardsville Road, Brookville PA 15825		177.8	3.4	14.0	0.3	F Knox Township
8 H	Reynoldsville Borough	9.05	15 minutes	32 South 5th Street, Reynoldsville PA 15851		495.7	9.5	38.6	0.7	G Oliver Township
9 I	Ringgold	24.65	44 minutes	2253 Ringgold Timblin Road, Ringgold 15770		246.4	4.7	18.6	0.4	H Rose Township
10 J	Rose Townshipp	10.94	17 minutes	1000 Miller Drive, Brookville PA 15825	Brookville PA, 15825	1553.1	29.9	118.6	2.3	
11 K	Summerville Borough	20.2	31 minutes	12768 Harrison St, Summerville PA 15864	Borough Office	342.4	6.6	25.9	0.5	
12 L	Walston	21.03	39 minutes	1517 Walston Road, Walston PA 15781		1201.4	23.1	98.7	1.9	
13 M	Washington Township	2.73	3 minutes	2933 Airport Road, Falls Creek PA 15840		463.5	8.9	35.9	0.7	<a href="#">Route 7 Map Points</a>
MP	Tri-County Industries			159 Tci Park Drive, Grove City PA 16127						A HQ
						Annual Volume	5738.5	Annual Tons	444.4	B Reynoldsville Borough
						Monthly Volume	478.2	Monthly Tons	37.0	C Bell Township
						Weekly Volume	110.4	Weekly Tons	8.5	D Gaskill Township
										E Walston
Route 6	M+G+A+F+D+E+J	63.02	1 Hour 50 min	Route ends in Brookville	Route 6	2890.1	55.6	219	4.2	F Ringgold
Route 7	H+B+C+L+I+K	53.41	1 hour 35 min	Route ends in Corsica	Route 7	2848.4	54.8	225.4	4.3	G Summerville Borough
										H Corsica
	Brookville to Tri-County	62.96	1 Hour 7 min							
	Corsica to Tri-County	54.01	1 Hour 2 min							
	Tri-County to HQ	73.14	1 Hour 22 min							
	Round Trip Route 6	199.12	4 Hours 19 min	Does not account for loading and off-loading time						
	Round Trip Route 7	180.56	3 Hours 59 min	Does not account for loading and off-loading time						



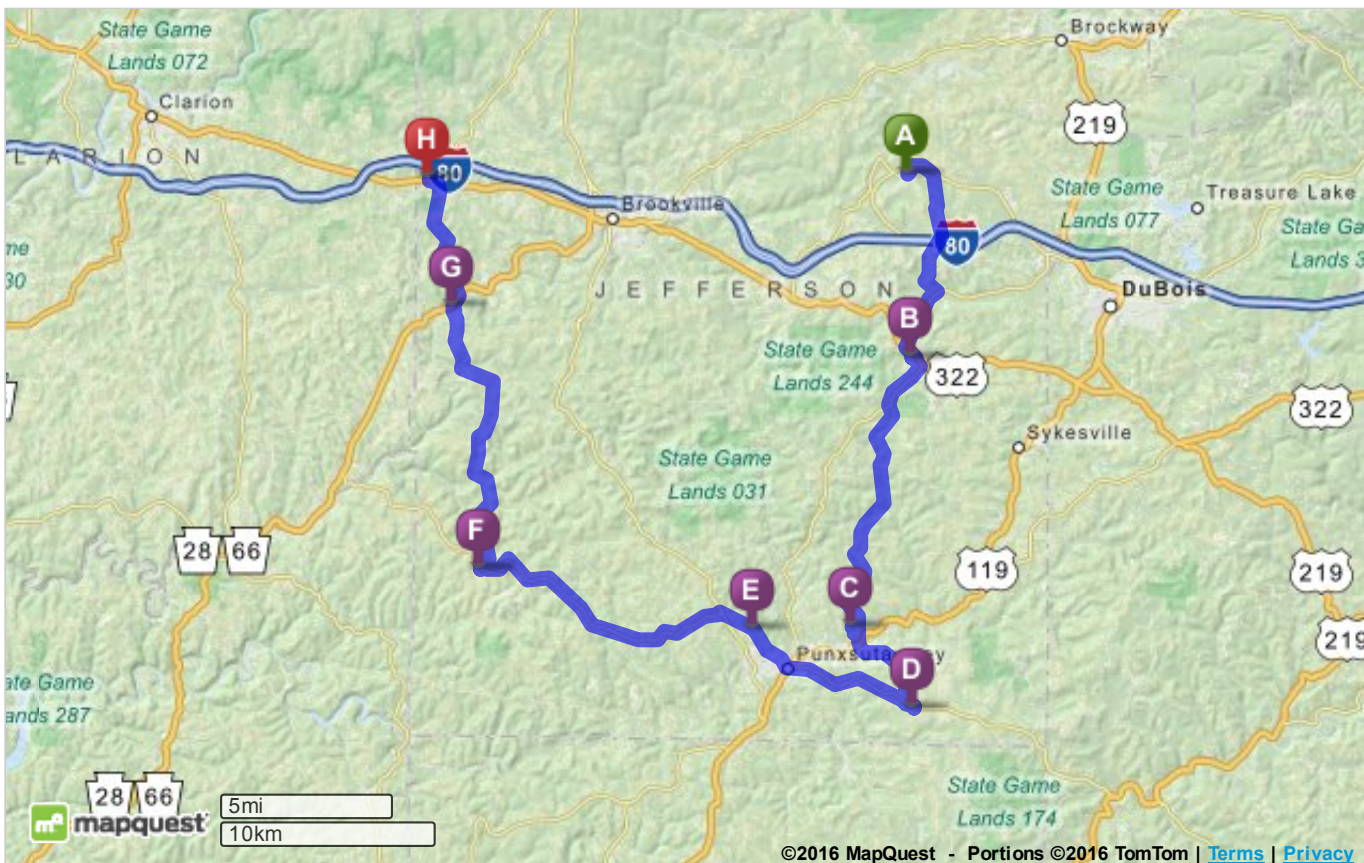
Trip to:

**Corsica, PA**

58.91 miles / 1 hour 46 minutes

Notes

Route 7



©2016 MapQuest, Inc. Use of directions and maps is subject to the MapQuest Terms of Use. We make no guarantee of the accuracy of their content, road conditions or route usability. You assume all risk of use. [View Terms of Use](#)

Jefferson Co. SWA Drop-off site routing - Single Stream - 13 Drop-off Sites  
Routes 6 & 7

6/22/2016

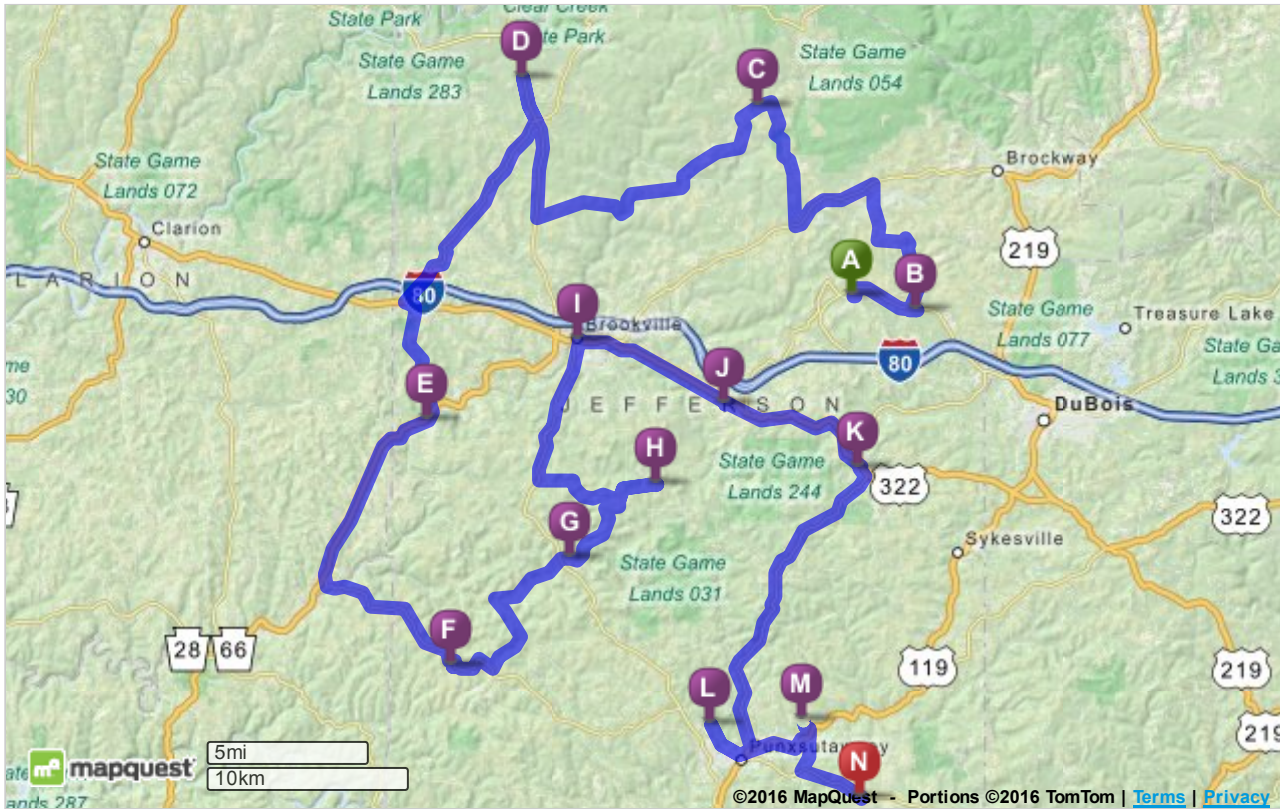
	Route to HQ	Miles to HQ	Time to HQ	Street Address	Alt Address	Annual Vol.	Weekly Vol.	Annual Tons	Weekly Tons	
HQ	Jefferson Co SWA Office			351 Aviation Way, Reynoldsville PA						
1 A	Barnett Township	19.65	42 minutes	8864 Route 36, Seigel PA 15860		316.6	6.1	21.4	0.4	<a href="#">Route 6 Map Points</a>
2 B	Bell Township	20.48	43 minutes	103 Runway Drive, Punxsutawney PA 15767		212.9	4.1	16.3	0.3	A HQ
3 C	Gaskill Township	22.73	40 minutes	74 Municipal Lane, Punxsutawney PA 15767		349.6	6.7	27.3	0.5	B Washington Township
4 D	Knox Township	12.28	18 minutes	7525 Knoxdale Road, Knoxdale PA 15847		126.6	2.4	10.5	0.2	C Polk Township
5 E	Oliver Township	17.49	29 minutes	767 Coolspring Road, Worthville PA 15784		138.9	2.7	10.3	0.2	D Barnett Township
6 F	Pinecreek Township	8.35	12 minutes	1581 Kerner Road, Brookville PA 15825		113.6	2.2	8.3	0.2	E Pinecreek Township
7 G	Polk Township	9.85	17 minutes	11282 Richardsville Road, Brookville PA 15825		177.8	3.4	14.0	0.3	F Knox Township
8 H	Reynoldsville Borough	9.05	15 minutes	32 South 5th Street, Reynoldsville PA 15851		495.7	9.5	38.6	0.7	G Oliver Township
9 I	Ringgold	24.65	44 minutes	2253 Ringgold Timblin Road, Ringgold 15770		246.4	4.7	18.6	0.4	H Rose Township
10 J	Rose Townshipp	10.94	17 minutes	1000 Miller Drive, Brookville PA 15825	Brookville PA, 15825	1553.1	29.9	118.6	2.3	
11 K	Summerville Borough	20.2	31 minutes	12768 Harrison St, Summerville PA 15864	Borough Office	342.4	6.6	25.9	0.5	
12 L	Walston	21.03	39 minutes	1517 Walston Road, Walston PA 15781		1201.4	23.1	98.7	1.9	
13 M	Washington Township	2.73	3 minutes	2933 Airport Road, Falls Creek PA 15840		463.5	8.9	35.9	0.7	<a href="#">Route 7 Map Points</a>
MP	Tri-County Industries			159 Tci Park Drive, Grove City PA 16127						A HQ
						Annual Volume	5738.5	Annual Tons	444.4	B Reynoldsville Borough
						Monthly Volume	478.2	Monthly Tons	37.0	C Bell Township
						Weekly Volume	110.4	Weekly Tons	8.5	D Gaskill Township
										E Walston
Route 6	M+G+A+F+D+E+J	63.02	1 Hour 50 min	Route ends in Brookville	Route 6	2890.1	55.6	219	4.2	F Ringgold
Route 7	H+B+C+L+I+K	53.41	1 hour 35 min	Route ends in Corsica	Route 7	2848.4	54.8	225.4	4.3	G Summerville Borough
										H Corsica
	Brookville to Tri-County	62.96	1 Hour 7 min							
	Corsica to Tri-County	54.01	1 Hour 2 min							
	Tri-County to HQ	73.14	1 Hour 22 min							
	Round Trip Route 6	199.12	4 Hours 19 min	Does not account for loading and off-loading time						
	Round Trip Route 7	180.56	3 Hours 59 min	Does not account for loading and off-loading time						



Trip to:  
**74 Municipal Ln**  
Punxsutawney, PA 15767-4405  
124.12 miles / 3 hours 13 minutes

Notes

Source Separated Collection  
One Route  
13 Drop-offs



©2016 MapQuest, Inc. Use of directions and maps is subject to the MapQuest Terms of Use. We make no guarantee of the accuracy of their content, road conditions or route usability. You assume all risk of use. [View Terms of Use](#)

**Jefferson Co. SWA Drop-off Site Routing - Source Separated - 13 Drop-offs**

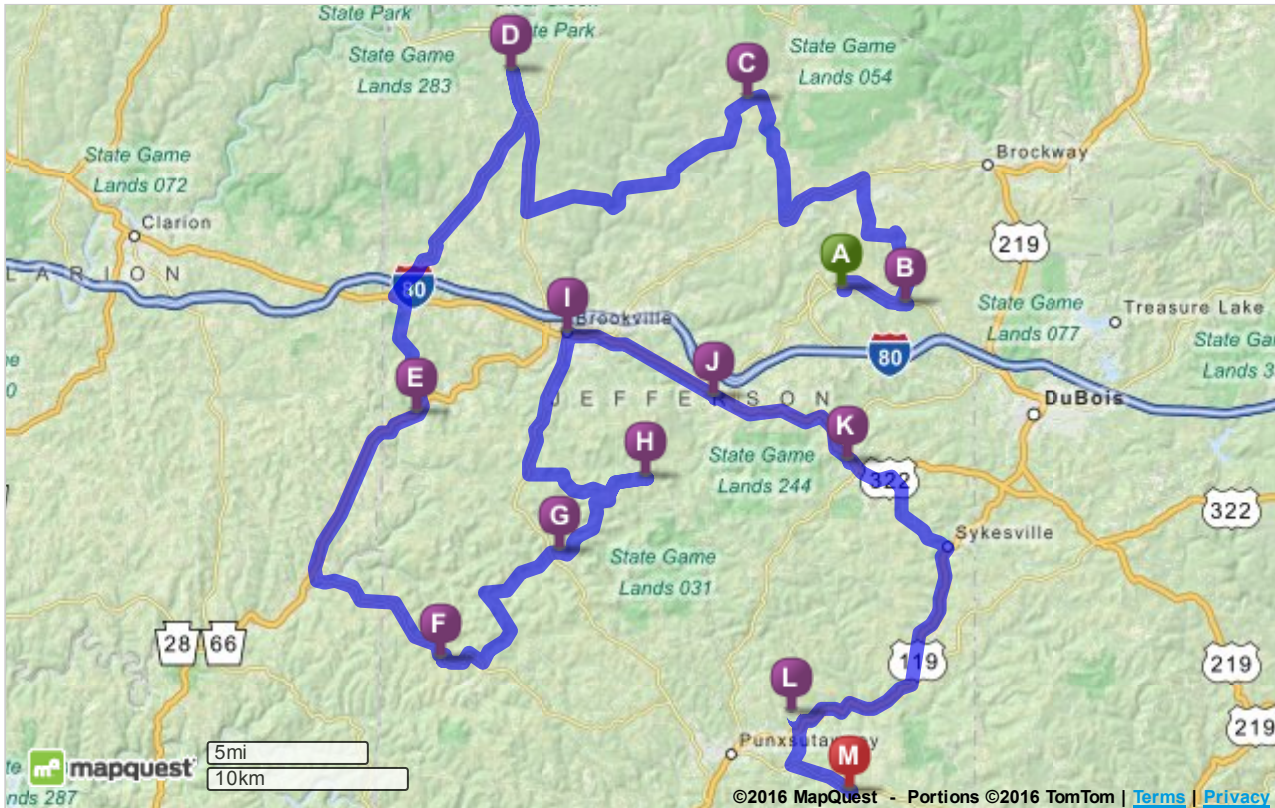
A	HQ	351 Aviation Way, Reynoldsville PA
B	Washington Township	2933 Airport Road, Falls Creek PA 15840
C	Polk Township	11282 Richardsville Road, Brookville PA 15825
D	Barnett Township	8864 Route 36, Seigel PA 15860
E	Summerville Borough	12768 Harrison St, Summerville PA 15864
F	Ringgold	2253 Ringgold Timblin Road, Ringgold 15770
G	Oliver Township	767 Coolspring Road, Worthville PA 15784
H	Knox Township	7525 Knoxdale Road, Knoxdale PA 15847
I	Rose Township	1000 Miller Drive, Brookville PA 15825
J	Pinecreek Township	1581 Kerner Road, Brookville PA 15825
K	Reynoldsville	32 South 5th Street, Reynoldsville PA 15851
L	Walston	767 Coolspring Road, Worthville PA 15784
M	Bell Township	103 Runway Drive, Punxsutawney PA 15767
N	Gaskill Township	74 Municipal Lane, Punxsutawney PA 15767
	Indiana Co SWA	1715 Route 119 South, Homer City PA 15748
	Route Miles	124.12
	Route Time	3 Hours/13 Min
	Route + ICSWA Miles	163.9
	Route + ICSWA Time	4 Hours/1 Min
	Round Trip Miles to HQ	219.26
	Round Trip Time to HQ	5 Hours/13 Min



Trip to:  
**74 Municipal Ln**  
Punxsutawney, PA 15767-4405  
120.91 miles / 3 hours

Notes

Source Separated Collection  
One Route  
12 Drop-offs  
(Less Walston)



©2016 MapQuest, Inc. Use of directions and maps is subject to the MapQuest Terms of Use. We make no guarantee of the accuracy of their content, road conditions or route usability. You assume all risk of use. [View Terms of Use](#)

**Jefferson Co. SWA Drop-off Site Routing - Source Separated - 12 Drop-offs**

A	HQ	351 Aviation Way, Reynoldsville PA
B	Washington Township	2933 Airport Road, Falls Creek PA 15840
C	Polk Township	11282 Richardsville Road, Brookville PA 15825
D	Barnett Township	8864 Route 36, Seigel PA 15860
E	Summerville Borough	12768 Harrison St, Summerville PA 15864
F	Ringgold	2253 Ringgold Timblin Road, Ringgold 15770
G	Oliver Township	767 Coolspring Road, Worthville PA 15784
H	Knox Township	7525 Knoxdale Road, Knoxdale PA 15847
I	Rose Township	1000 Miller Drive, Brookville PA 15825
J	Pinecreek Township	1581 Kerner Road, Brookville PA 15825
K	Reynoldsville	32 South 5th Street, Reynoldsville PA 15851
L	Bell Township	103 Runway Drive, Punxsutawney PA 15767
M	Gaskill Township	74 Municipal Lane, Punxsutawney PA 15767
	Indiana Co SWA	1715 Route 119 South, Homer City PA 15748

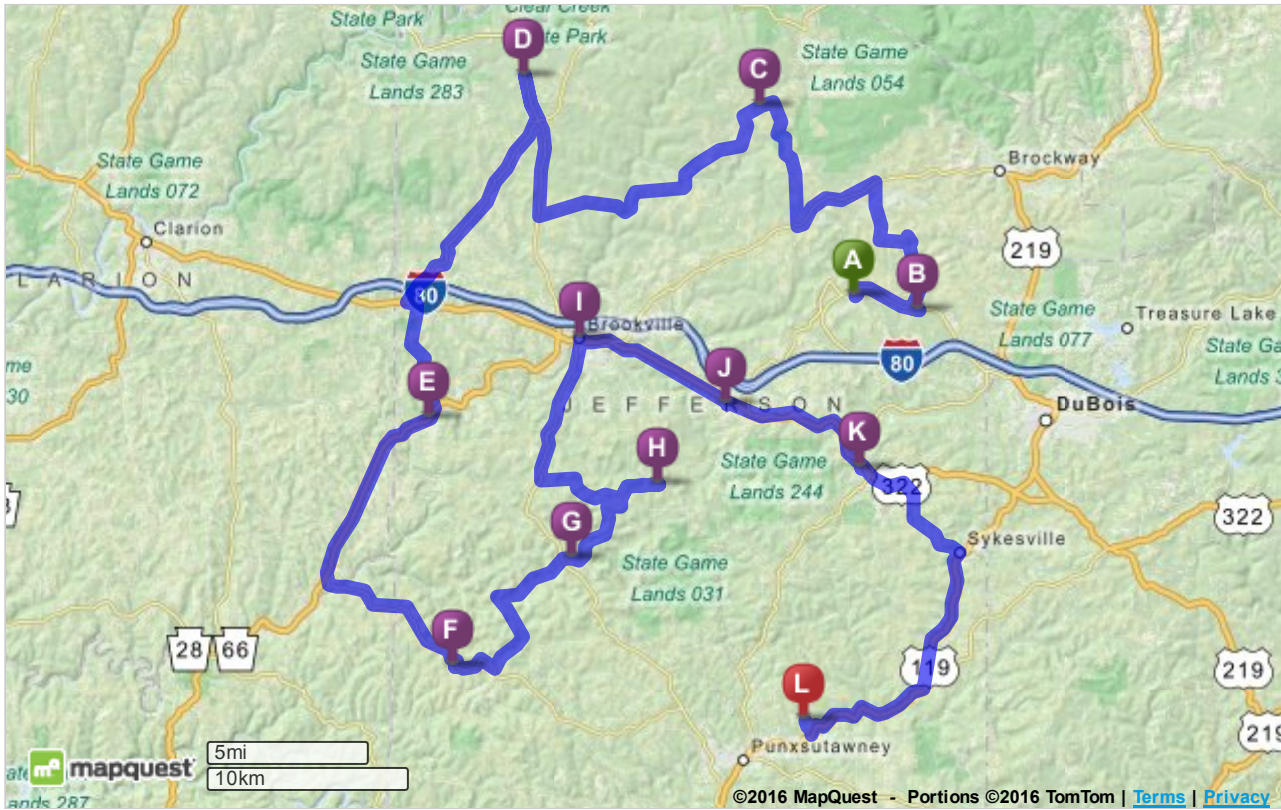
Route Miles	120.91
Route Time	3 Hours
Route + ICSWA Miles	159.98
Route + ICSWA Time	3 Hours/48 Min
Round Trip Miles to HQ	216.45
Round Trip Time to HQ	5 Hours/1 Min



Trip to:  
**103 Runway Dr**  
Punxsutawney, PA 15767-3645  
116.45 miles / 2 hours 52 minutes

Notes

Source Separated Collection  
One Route  
11 Drop-offs  
(Less Walston, Gaskill)



©2016 MapQuest, Inc. Use of directions and maps is subject to the MapQuest Terms of Use. We make no guarantee of the accuracy of their content, road conditions or route usability. You assume all risk of use. [View Terms of Use](#)

### Jefferson Co. SWA Drop-off Site Routing - Source Separated - 11 Drop-offs

A	HQ	351 Aviation Way, Reynoldsville PA
B	Washington Township	2933 Airport Road, Falls Creek PA 15840
C	Polk Township	11282 Richardsville Road, Brookville PA 15825
D	Barnett Township	8864 Route 36, Seigel PA 15860
E	Summerville Borough	12768 Harrison St, Summerville PA 15864
F	Ringgold	2253 Ringgold Timblin Road, Ringgold 15770
G	Oliver Township	767 Coolspring Road, Worthville PA 15784
H	Knox Township	7525 Knoxdale Road, Knoxdale PA 15847
I	Rose Township	1000 Miller Drive, Brookville PA 15825
J	Pinecreek Township	1581 Kerner Road, Brookville PA 15825
K	Reynoldsville	32 South 5th Street, Reynoldsville PA 15851
L	Bell Township	103 Runway Drive, Punxsutawney PA 15767
	Indiana Co SWA	1715 Route 119 South, Homer City PA 15748
	Route Miles	116.45
	Route Time	2 Hours/53 Min
	Route + ICSWA Miles	154.29
	Route + ICSWA Time	3 Hours/39 Min
	Round Trip Miles to HQ	210.56
	Round Trip Time to HQ	4 Hours/52 Min



Trip to:

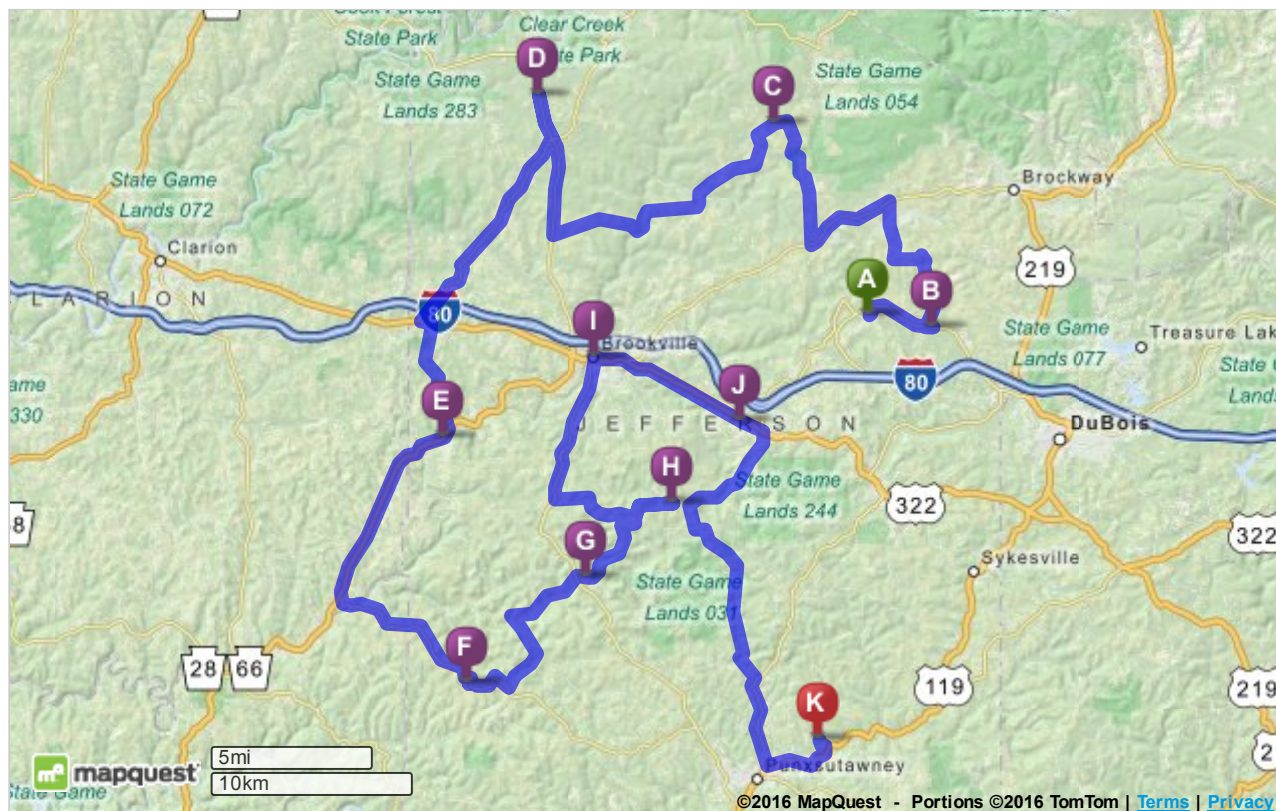
**103 Runway Dr**

Punxsutawney, PA 15767-3645

112.41 miles / 2 hours 48 minutes

Notes

Source Separated Collection  
One Route  
10 Drop-offs  
(less Reynoldsville, Walston, Gaskill)



©2016 MapQuest, Inc. Use of directions and maps is subject to the MapQuest Terms of Use. We make no guarantee of the accuracy of their content, road conditions or route usability. You assume all risk of use. [View Terms of Use](#)

**Jefferson Co. SWA Drop-off Site Routing - Source Separated - 10 Drop-offs**

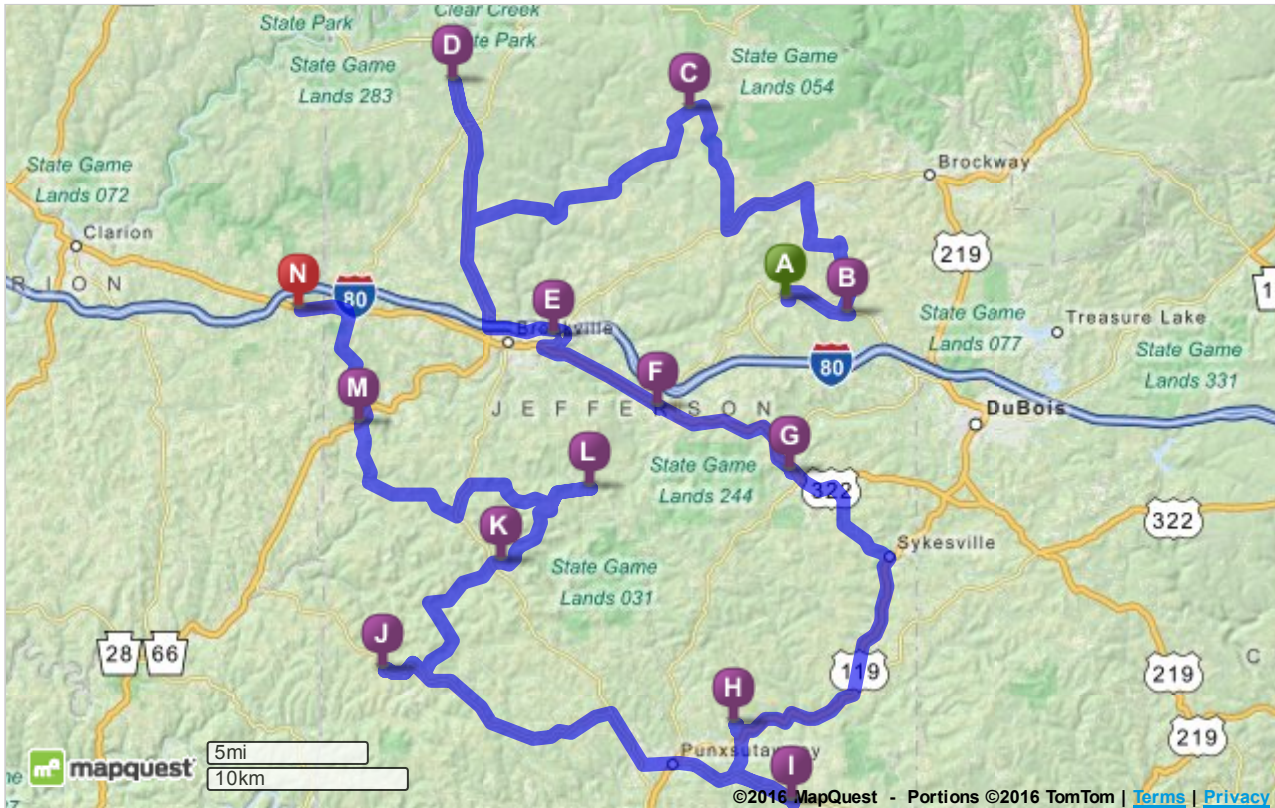
A	HQ	351 Aviation Way, Reynoldsville PA
B	Washington Township	2933 Airport Road, Falls Creek PA 15840
C	Polk Township	11282 Richardsville Road, Brookville PA 15825
D	Barnett Township	8864 Route 36, Seigel PA 15860
E	Summerville Borough	12768 Harrison St, Summerville PA 15864
F	Ringgold	2253 Ringgold Timblin Road, Ringgold 15770
G	Oliver Township	767 Coolspring Road, Worthville PA 15784
H	Knox Township	7525 Knoxdale Road, Knoxdale PA 15847
I	Rose Township	1000 Miller Drive, Brookville PA 15825
J	Pinecreek Township	1581 Kerner Road, Brookville PA 15825
K	Bell Township	103 Runway Drive, Punxsutawney PA 15767
	Indiana Co SWA	1715 Route 119 South, Homer City PA 15748
	Route Miles	112.41
	Route Time	2 Hours/48 Min
	Route + ICSWA Miles	150.25
	Route + ICSWA Time	3 Hours/35 Min
	Round Trip Miles to HQ	206.52
	Round Trip Time to HQ	4 Hours/48 Min



Trip to:  
**22220 Route 322**  
Corsica, PA 15829-1430  
130.50 miles / 3 hours 18 minutes

Notes

Source Separated  
Aluminum and Steel Can Route  
to PJ Greco & Sons, Corsica



©2016 MapQuest, Inc. Use of directions and maps is subject to the MapQuest Terms of Use. We make no guarantee of the accuracy of their content, road conditions or route usability. You assume all risk of use. [View Terms of Use](#)

**Jefferson Co. SWA Drop-off Site Routing - Source Separated Aluminum Cans, Steel Cans**

A	HQ	351 Aviation Way, Reynoldsville PA
B	Washington Township	2933 Airport Road, Falls Creek PA 15840
C	Polk Township	11282 Richardsville Road, Brookville PA 15825
D	Barnett Township	8864 Route 36, Seigel PA 15860
E	Rose Townshiip	1000 Miller Drive, Brookville PA 15825
F	Pinecreek Township	1581 Kerner Road, Brookville PA 15825
G	Reynoldsville Borough	32 South 5th Street, Reynoldsville PA 15851
H	Bell Township	103 Runway Drive, Punxsutawney PA 15767
I	Gaskill Township	74 Municipal Lane, Punxsutawney PA 15767
J	Ringgold	2253 Ringgold Timblin Road, Ringgold 15770
K	Oliver Township	767 Coolspring Road, Worthville PA 15784
L	Knox Township	7525 Knoxdale Road, Knoxdale PA 15847
M	Summerville Borough	12768 Harrison St, Summerville PA 15864
N	Corsica	22220 Route 322 RD Corsica PA 15829
	Route Miles	130.5
	Route Time	3 Hrs/18 Min
	Round Trip Miles to HQ	154.1
	Round Trip Time to HQ	3 Hrs/43 Min

---

**APPENDIX I**  
**JCSWA FRONT LOAD CONTAINERS AND LIDS -**  
**REVISED 6-22-2016**

---

This page intentionally left blank.

**Jefferson Co SWA Front Load Containers - 4 Scenarios**

Drop-offs = 12

Act 101 Grant Funds \$71,850

Scenarios	Sites	Containers
<u>July 1, 2016</u>		
7 containers each =	7	49
9 containers each =	5	45
Total after July 1		<b>94</b>

<u>If no glass collection</u>		
4 containers each =	7	28
6 containers each =	5	30
Total no glass		<b>58</b>

<u>If no glass, all collect OCC</u>		
5 containers each	7	35
6 containers each	5	30
		<b>65</b>

<u>All OCC and Mixed Paper</u>		
6 containers each	7	42
6 containers each	5	30
		<b>72</b>

<u>July 1, 2016 Present Program Materials - 12 Drop-offs</u>			
Front load containers	94	\$860.00	\$80,840.00
OCC lids	5	\$82.68	\$413.40
Other lids @ 2/container	183	\$38.51	\$7,047.33
Shipping loads	12	\$425.00	\$4,993.75
Total			\$93,294
Less grant			\$71,850
Balance			<b>(\$21,444)</b>

<u>12- Drop-offs, Same materials as July 1, Glass Excluded</u>			
Front load containers	28	\$860.00	\$24,080.00
OCC lids	5	\$82.68	\$413.40
Other lids @ 2/container	51	\$38.51	\$1,964.01
Shipping loads	4	\$425.00	\$1,487.50
Total			\$27,945
Less grant			\$71,850
Balance			\$43,905

<u>No Glass, All Sites w/OCC</u>			
Front load containers	65	\$860.00	\$55,900.00
OCC lids	12	\$82.68	\$992.16
Other lids @ 2/container	118	\$38.51	\$4,544.18
Shipping loads	8	\$425.00	\$3,453.13
Total			\$64,889
Less grant			\$71,850
Balance			\$6,961

<u>No glass, All Sites w/OCC and Mixed Paper</u>			
Front load containers	72	\$860.00	\$61,920.00
OCC lids	12	\$82.68	\$992.16
Other lids @ 2/container	132	\$38.51	\$5,083.32
Shipping loads	9	\$425.00	\$3,825.00
Total			\$71,820
Less grant			\$71,850
Balance			<b>\$30</b>

<u>Color-separated Glass Containers, 3 ea. at 12 Drop-offs</u>			
Front load containers	36	\$860.00	\$30,960.00
Lids @ 2/container	72	\$38.51	\$2,772.72
Shipping loads	5	\$425.00	\$1,912.50
Total			\$35,645

This page intentionally left blank.

---

**APPENDIX J**

**JCSWA DROP-OFF RECYCLING ROUTING -  
SOURCE SEPARATED 13 DROP-OFFS**

---

This page intentionally left blank.

**Jefferson Co. SWA Drop-off site routing - Source Separated**

From 351 Aviation Way, Reynoldsville PA to:

	Route(s)	Miles to HQ	Time to HQ		Annual Vol.	Route 1 Map points	
A	Barnett Township via Gilbert Rd	19.65	42 minutes	8864 Route 36, Seigel PA 15860	316.6	A HQ	
B	Bell Township via Trout Rd	20.48	43 minutes	103 Runway Drive, Punxsutawney PA 15767	212.9	B Washington Township	
C	Gaskill Township via Big Run Rd	22.73	40 minutes	74 Municipal Lane, Punxsutawney PA 15767	349.6	C Polk Township	
D	Knox Township via Fuller Rd	12.28	18 minutes	7525 Knoxdale Road, Knoxdale PA 15847	126.6	D Barnett Township	
E	Oliver Township via Fuller Rd	17.49	29 minutes	767 Coolspring Road, Worthville PA 15784	138.9	E Summerville Borough	
F	Pinecreek Township via Rt 1830	8.35	12 minutes	1581 Kerner Road, Brookville PA 15825	113.6	F Ringgold	
G	Polk Township via Egypt Rd	9.85	17 minutes	11282 Richardsville Road, Brookville PA 15825	177.8	G Walston	
H	Reynoldsville Borough via PA 830	9.05	15 minutes	32 South 5th Street, Reynoldsville PA 15851	495.7		
I	Ringgold via Fuller Rd	24.65	44 minutes	2253 Ringgold Timblin Road, Ringgold 15770	246.4	Route 2	
J	Rose Township via Rt 28	10.94	17 minutes	1000 Miller Drive, Brookville PA 15825	1553.1	Map points	
K	Summerville Borough via Rt 28	20.2	31 minutes	12768 Harrison St, Summerville PA 15864	342.4	A HQ	
L	Walston via Knox Dale Rd	21.03	39 minutes	1517 Walston Road, Walston PA 15781	1201.4	B Rose Township	
M	Washington Township via PA 830	2.73	3 minutes	2933 Airport Road, Falls Creek PA 15840	463.5	C Pinecreek Township	
	Indiana Co SWA			1715 Route 119 South, Homer City PA 15748		D Reynoldsville Borough	
	Route 1	M+G+A+K+I+L	74.16	1 Hour 42 min	Collection route ends in Walston	2748.1	E Knox Township
	Route 2	A+J+F+H+D+E+B+C	48.84	1 Hour 25 min	Collection route ends in Gaskill Twp.	2990.4	F Oliver Township
	Walston to	Indiana Co SWA	35.81	43 minutes			G Bell Township
	Gaskill Twp to	Indiana Co SWA	38.83	49 minutes			H Gaskill Township
	Indiana Co SWA to	HQ	54.82	1 Hour 18 min			
	Route 1 Round Trip		167.81	3 Hours 43 min	Does not account for loading and off loading time		
	Route 2 Round Trip		142.49	3 Hours 26 min	Does not account for loading and off loading time		

This page intentionally left blank.

---

**APPENDIX K**

**JCSWA DROP-OFF RECYCLING ROUTING -  
SOURCE SEPARATED 12 DROP-OFFS**

---

This page intentionally left blank.

## Jefferson Co. SWA Drop-off Site Routing - Source Separated - 12 Drop-offs

A	HQ	351 Aviation Way, Reynoldsville PA
B	Washington Township	2933 Airport Road, Falls Creek PA 15840
C	Polk Township	11282 Richardsville Road, Brookville PA 15825
D	Barnett Township	8864 Route 36, Seigel PA 15860
E	Summerville Borough	12768 Harrison St, Summerville PA 15864
F	Ringgold	2253 Ringgold Timblin Road, Ringgold 15770
G	Oliver Township	767 Coolspring Road, Worthville PA 15784
H	Knox Township	7525 Knoxdale Road, Knoxdale PA 15847
I	Rose Township	1000 Miller Drive, Brookville PA 15825
J	Pinecreek Township	1581 Kerner Road, Brookville PA 15825
K	Reynoldsville	32 South 5th Street, Reynoldsville PA 15851
L	Bell Township	103 Runway Drive, Punxsutawney PA 15767
M	Gaskill Township	74 Municipal Lane, Punxsutawney PA 15767
	Indiana Co SWA	1715 Route 119 South, Homer City PA 15748
	Route Miles	120.91
	Route Time	3 Hours
	Route + ICSWA Miles	159.98
	Route + ICSWA Time	3 Hours/48 Min
	Round Trip Miles to HQ	216.45
	Round Trip Time to HQ	5 Hours/1 Min

This page intentionally left blank.

---

**APPENDIX L**

**JCSWA DROP-OFF RECYCLING ROUTING -  
SOURCE SEPARATED 11 DROP-OFFS**

---

This page intentionally left blank.

**Jefferson Co. SWA Drop-off Site Routing - Source Separated - 11 Drop-offs**

A	HQ	351 Aviation Way, Reynoldsville PA
B	Washington Township	2933 Airport Road, Falls Creek PA 15840
C	Polk Township	11282 Richardsville Road, Brookville PA 15825
D	Barnett Township	8864 Route 36, Seigel PA 15860
E	Summerville Borough	12768 Harrison St, Summerville PA 15864
F	Ringgold	2253 Ringgold Timblin Road, Ringgold 15770
G	Oliver Township	767 Coolspring Road, Worthville PA 15784
H	Knox Township	7525 Knoxdale Road, Knoxdale PA 15847
I	Rose Townshiip	1000 Miller Drive, Brookville PA 15825
J	Pinecreek Township	1581 Kerner Road, Brookville PA 15825
K	Reynoldsville	32 South 5th Street, Reynoldsville PA 15851
L	Bell Township	103 Runway Drive, Punxsutawney PA 15767
	Indiana Co SWA	1715 Route 119 South, Homer City PA 15748
	Route Miles	116.45
	Route Time	2 Hours/53 Min
	Route + ICSWA Miles	154.29
	Route + ICSWA Time	3 Hours/39 Min
	Round Trip Miles to HQ	210.56
	Round Trip Time to HQ	4 Hours/52 Min

This page intentionally left blank.

---

## **APPENDIX M**

### **JCSWA DROP-OFF RECYCLING ROUTING - SOURCE SEPARATED 10 DROP-OFFS**

---

This page intentionally left blank.

## Jefferson Co. SWA Drop-off Site Routing - Source Separated - 10 Drop-offs

A	HQ	351 Aviation Way, Reynoldsville PA
B	Washington Township	2933 Airport Road, Falls Creek PA 15840
C	Polk Township	11282 Richardsville Road, Brookville PA 15825
D	Barnett Township	8864 Route 36, Seigel PA 15860
E	Summerville Borough	12768 Harrison St, Summerville PA 15864
F	Ringgold	2253 Ringgold Timblin Road, Ringgold 15770
G	Oliver Township	767 Coolspring Road, Worthville PA 15784
H	Knox Township	7525 Knoxdale Road, Knoxdale PA 15847
I	Rose Townshiip	1000 Miller Drive, Brookville PA 15825
J	Pinecreek Township	1581 Kerner Road, Brookville PA 15825
K	Bell Township	103 Runway Drive, Punxsutawney PA 15767
	Indiana Co SWA	1715 Route 119 South, Homer City PA 15748
	Route Miles	112.41
	Route Time	2 Hours/48 Min
	Route + ICSWA Miles	150.25
	Route + ICSWA Time	3 Hours/35 Min
	Round Trip Miles to HQ	206.52
	Round Trip Time to HQ	4 Hours/48 Min

This page intentionally left blank.

---

**APPENDIX N**  
**JCSWA 2014-2015 AVG TONS AND VOLUMES**  
**REALIGNMENT - 12 SITES REVISED 6-23-16**

---

This page intentionally left blank.

**JEFFERSON COUNTY SWA DROP-OFF SERVICING SUMMARY**  
**2014 & 2015 Average Tons & Volumes per Year for 12 Drop-off Sites**  
**Aluminum and Steel combined, Magazines broken out from Newspapers**

Location		Steel/Tin	Aluminum	Alum/Steel	Cir Glass	Gr Glass	Br Glass	Plastics	Newsp	News only	Magazines	Mixed Paper	OCC	TOTAL	TOTAL TONS
1 Barnett Township	Pounds	6,240	1,240	7,480	10,090	2,510	4,960	5,330	12,391	4,956	7,435	0	0	42,761.0	21.4
	Cubic Yards	55	27	82	27	7	13	167	21	9	13	0	0	316.6	
2 Bell Township	Pounds	2,090	420	2,510	3,310	820	1,670	2,790	11,230	4,492	6,738	6,090	4,080	32,500.0	16.3
	Cubic Yards	19	9	28	9	2	4	87	19	8	12	25	38	212.9	
3 Gaskill Township	Pounds	5,050	1,020	6,070	7,570	2,030	4,040	4,170	16,660	6,664	9,996	8,430	5,640	54,610.0	27.3
	Cubic Yards	45	22	67	20	5	11	130	29	11	17	34	53	349.6	
4 Knox Township	Pounds	3,350	670	4,020	5,340	1,340	2,680	1,510	6,040	2,416	3,624	0	0	20,930.0	10.5
	Cubic Yards	30	15	44	14	4	7	47	10	4	6	0	0	126.6	
5 Oliver Township	Pounds	1,800	370	2,170	2,930	740	1,460	2,660	10,590	4,236	6,354	0	0	20,550.0	10.3
	Cubic Yards	16	8	24	8	2	4	83	18	7	11	0	0	138.9	
6 Pinecreek Twp	Pounds	1,370	270	1,640	2,200	550	1,100	2,240	8,940	3,576	5,364	0	0	16,670.0	8.3
	Cubic Yards	12	6	18	6	1	3	70	15	6	9	0	0	113.6	
7 Polk Township	Pounds	3,600	700	4,300	5,740	1,450	2,880	2,730	10,910	4,364	6,546	0	0	28,010.0	14.0
	Cubic Yards	32	15	47	15	4	8	85	19	8	11	0	0	177.8	
8 Reynoldsville Twp	Pounds	6,540	1,300	7,840	10,460	2,640	5,220	5,850	23,370	9,348	14,022	12,825	9,080	77,285.0	38.6
	Cubic Yards	58	28	86	28	7	14	183	40	16	24	52	86	495.7	
9 Ringgold Township	Pounds	3,910	770	4,680	6,130	1,530	3,040	4,370	17,480	6,992	10,488	0	0	37,230.0	18.6
	Cubic Yards	35	17	51	16	4	8	137	30	12	18	0	0	246.4	
10 Rose Township	Pounds	18,465	3,780	22,245	30,330	7,630	15,070	20,070	76,840	30,736	46,104	37,275	27,070	236,530.0	118.3
	Cubic Yards	164	82	246	80	20	40	627	132	53	79	152	255	1,553.1	
11 Summerville Boro	Pounds	5,260	1,040	6,300	8,380	2,100	4,210	6,140	24,630	9,852	14,778	0	0	51,760.0	25.9
	Cubic Yards	47	23	69	22	6	11	192	42	17	25	0	0	342.4	
12 Washington Twp	Pounds	5,960	1,170	7,130	9,550	2,410	4,770	5,800	22,450	8,980	13,470	12,070	7,620	71,800.0	35.9
	Cubic Yards	53	25	78	25	6	13	181	39	15	23	49	72	463.5	
<b>Total Pounds</b>		63,635	12,750	76,385	102,030	25,750	51,100	63,660	241,531	96,612	144,919	76,690	53,490	690,636	345.3
<b>Total Tons</b>		31.8	6.4	38.2	51.0	12.9	25.6	31.8	120.8	48.3	72.5	38.3	26.7	345.3	
<b>Cubic Yards (est.)</b>		565.6	277.2	842.8	268.5	67.8	134.5	1989.4	416.4	166.6	249.9	313.0	504.6	4537.0	
<b>formula check</b>		565.6	277.2		268.5	67.8	134.5	1989.4	416.4			313.0	504.6	4537.0	
Cubic Yards/Mo.		47.1	23.1	70.2	22.4	5.6	11.2	165.8	34.7	13.9	20.8	26.1	42.1	378.1	
Cubic Yards/Week		10.9	5.3	16.2	5.2	1.3	2.6	38.3	8.0	3.2	4.8	6.0	9.7	87.3	

Data highlighted in gray is not factored into totals in Columns P and Q.

This page intentionally left blank.

---

## **APPENDIX O**

### **JCSWA 2014-2015 AVG TONS AND VOLUMES REALIGNMENT - 13 SITES REVISED 6-23-16**

---

This page intentionally left blank.

**JEFFERSON COUNTY SWA DROP-OFF SERVICING SUMMARY**  
**2014 & 2015 Average Tons & Volumes per Year for 13 Drop-off Sites**  
**Aluminum and Steel combined, Magazines broken out from Newspapers**

Location		Steel/Tin	Aluminum	Alum/Steel	Clr Glass	Gr Glass	Br Glass	Plastics	Newsp	News only	Magazines	Mixed Paper	OCC	TOTAL	TOTAL TONS
1 Barnett Township	Pounds	6,240	1,240	7,480	10,090	2,510	4,960	5,330	12,391	4,956	7,435	0	0	42,761.0	21.4
	Cubic Yards	55	27	82	27	7	13	167	21	9	13	0	0	316.6	
2 Bell Township	Pounds	2,090	420	2,510	3,310	820	1,670	2,790	11,230	4,492	6,738	6,090	4,080	32,500.0	16.3
	Cubic Yards	19	9	28	9	2	4	87	19	8	12	25	38	212.9	
3 Gaskill Township	Pounds	5,050	1,020	6,070	7,570	2,030	4,040	4,170	16,660	6,664	9,996	8,430	5,640	54,610.0	27.3
	Cubic Yards	45	22	67	20	5	11	130	29	11	17	34	53	349.6	
4 Knox Township	Pounds	3,350	670	4,020	5,340	1,340	2,680	1,510	6,040	2,416	3,624	0	0	20,930.0	10.5
	Cubic Yards	30	15	44	14	4	7	47	10	4	6	0	0	126.6	
5 Oliver Township	Pounds	1,800	370	2,170	2,930	740	1,460	2,660	10,590	4,236	6,354	0	0	20,550.0	10.3
	Cubic Yards	16	8	24	8	2	4	83	18	7	11	0	0	138.9	
6 Pinecreek Twp	Pounds	1,370	270	1,640	2,200	550	1,100	2,240	8,940	3,576	5,364	0	0	16,670.0	8.3
	Cubic Yards	12	6	18	6	1	3	70	15	6	9	0	0	113.6	
7 Polk Township	Pounds	3,600	700	4,300	5,740	1,450	2,880	2,730	10,910	4,364	6,546	0	0	28,010.0	14.0
	Cubic Yards	32	15	47	15	4	8	85	19	8	11	0	0	177.8	
8 Reynoldsville Twp	Pounds	6,540	1,300	7,840	10,460	2,640	5,220	5,850	23,370	9,348	14,022	12,825	9,080	77,285.0	38.6
	Cubic Yards	58	28	86	28	7	14	183	40	16	24	52	86	495.7	
9 Ringgold Township	Pounds	3,910	770	4,680	6,130	1,530	3,040	4,370	17,480	6,992	10,488	0	0	37,230.0	18.6
	Cubic Yards	35	17	51	16	4	8	137	30	12	18	0	0	246.4	
10 Rose Township	Pounds	18,465	3,780	22,245	30,330	7,630	15,070	20,070	76,840	30,736	46,104	37,275	27,070	236,530.0	118.3
	Cubic Yards	164	82	246	80	20	40	627	132	53	79	152	255	1,553.1	
11 Summerville Boro	Pounds	5,260	1,040	6,300	8,380	2,100	4,210	6,140	24,630	9,852	14,778	0	0	51,760.0	25.9
	Cubic Yards	47	23	69	22	6	11	192	42	17	25	0	0	342.4	
12 Walston	Pounds	11,000	2,530	13,530	17,960	5,050	8,910	12,220	47,690	19,076	28,614	68,600	23,380	197,340.0	98.7
	Cubic Yards	98	55	153	47	13	23	382	82	33	49	280	221	1,201.4	
13 Washington Twp	Pounds	5,960	1,170	7,130	9,550	2,410	4,770	5,800	22,450	8,980	13,470	12,070	7,620	71,800.0	35.9
	Cubic Yards	53	25	78	25	6	13	181	39	15	23	49	72	463.5	
<b>Total Pounds</b>		74,635	15,280	89,915	119,990	30,800	60,010	75,880	289,221	115,688	173,533	145,290	76,870	887,976	444.0
<b>Total Tons</b>		37.3	7.6	45.0	60.0	15.4	30.0	37.9	144.6	57.8	86.8	72.6	38.4	444.0	
<b>Cubic Yards (est.)</b>		663.4	332.2	995.6	315.8	81.1	157.9	2371.3	498.7	199.5	299.2	593.0	725.2	5738.4	
<b>formula check</b>		663.4	332.2		315.8	81.1	157.9	2371.3	498.7			593.0	725.2	5738.4	
Cubic Yards/Mo.		55.3	27.7	83.0	26.3	6.8	13.2	197.6	41.6	16.6	24.9	49.4	60.4	478.2	
Cubic Yards/Week		12.8	6.4	19.1	6.1	1.6	3.0	45.6	9.6	3.8	5.8	11.4	13.9	110.4	

Data highlighted in gray is not factored into totals in Columns P and Q.

This page intentionally left blank.

---

**APPENDIX P**

**CAMBRIA COUNTY SWMA & INDIANA COUNTY  
SWA COOPERATIVE MATERIALS PROCESSING  
AGREEMENT**

---

This page intentionally left blank.

**Cooperative Agreement**  
**between**  
**the Cambria County Solid Waste Management Authority**  
**and**  
**the Indiana County Solid Waste Authority**  
**for Recycling Processing and Marketing Services**

This Agreement, entered into this 10<sup>th</sup> day of August 2000, by and between the Cambria County Solid Waste Management Authority (CCSWMA) and the Indiana County Solid Waste Authority (ICSWA), both municipal authorities organized and existing under the laws of the Commonwealth of Pennsylvania, sets forth the terms and conditions under which the ICSWA shall provide recycling processing and marketing services to the CCSWMA for recyclable materials collected from the CCSWMA Recycling Depot System.

**SECTION 1**  
**DEFINITIONS**

(a) "Act 101" – The Pennsylvania Municipal Waste Planning, Recycling and Waste Reduction Act of 1988 (Act 101, July 28, 1988).

(b) "Clear Glass Containers" – A source-separated recyclable material that includes used food and beverage containers manufactured from flint glass.

(c) "Department" – shall mean the Pennsylvania Department of Environmental Protection, formerly the Pennsylvania Department of Environmental Resources.

(d) "Marketing" – Selling or providing for the reuse of recyclable materials as a substitute for or a supplement to virgin raw materials by a manufacturer or intermediate processing facility.

(e) "Plastics" – A source separated recyclable synthetic material consisting of large molecules called polymers derived from petrochemicals (compared to natural polymers such as cellulose, starch, and natural rubbers), HDPE (#2) and PET (#1), bottle varieties only.

(f) "Mixed Metal Containers" – A source-separated recyclable material that includes used beverage and food cans manufactured from either aluminum or steel.

(g) "Recycling" – The collection, separation, recovery and sale or reuse of metals, glass, paper, leaf waste, plastics and other materials which would otherwise be disposed or processed as municipal waste or the mechanized separation and treatment of municipal waste (other than through combustion) and creation and recovery of reusable materials other than a fuel for the generation of energy.

(h) "Recycling Depot System" – A collection program for source-separated recyclable materials that provides for designated collection centers for source-separated recyclable materials, that is operated by or on behalf of a municipality.

(i) "Recycling Facility" – A facility employing a technology that is a process that separates or classifies municipal waste and creates or recovers reusable materials that can be sold or reused by a manufacturer as a substitute for or a supplement to virgin raw materials.

(j) "Recycling Processing" – Any technology used for the purpose to separate or classify municipal waste and create or recover reusable materials that can be sold or reused by a manufacturer as a substitute for or a supplement to virgin raw materials.

(k) "Source-separated recyclable materials." – Materials that are separated from municipal waste at the point of origin for the purpose of recycling.

(l) "Waste Newsprint" – A source-separated recyclable material that includes used or outdated newspapers.

## **SECTION 2 OBLIGATIONS OF THE CAMBRIA COUNTY SOLID WASTE MANAGEMENT AUTHORITY**

### **2.1 Cambria County Recycling Depot System**

The CCSWMA shall provide for the collection of residential recyclable materials in Cambria County by means of the Cambria County Recycling Depot System. The recyclable materials collected shall include clear glass containers, mixed metal containers, waste newsprint, and plastics. The recyclable materials collected from the Cambria County Recycling Depot System shall be the property of the CCSWMA.

### **2.2 Transportation of CCSWMA Recyclable Materials**

The CCSWMA shall provide for the transportation of source-separated loads of recyclable materials collected from the Cambria County Recycling Depot System to the ICSWA Recycling Facility. The source-separated loads shall contain: clear glass containers; mixed metal containers; waste newsprint, and plastics. Once accepted at the ICSWA, material becomes the sole marketing responsibility of the ICSWA.

### **2.3 Marketing of Recyclables.**

The CCSWMA shall provide for the marketing of recyclables using local Cambria County markets as the first alternative. Recyclables from the Cambria County Recycling Depot System that are not marketed in Cambria County shall be transported to the ICSWA to be marketed on behalf of the CCSWMA.

### **2.4 Quarterly Compensation**

The CCSWMA shall provide quarterly compensation to the ICSWA for processing and marketing services as determined in Section 4 of this Agreement.

### **2.5 Administration of the Agreement**

The CCSWMA shall designate a staff person responsible for the administration of this Agreement. This staff person shall be responsible for communicating with the designated ICSWA staff person regarding the implementation of the terms and conditions of this Agreement.

**SECTION 3**  
**OBLIGATIONS OF THE INDIANA COUNTY SOLID WASTE AUTHORITY**

**3.1 Recycling Facility**

The ICSWA shall provide for the operation of the ICSWA Recycling Facility and maintain the capacity to process and market clear glass containers, waste newsprint, mixed metal containers, and plastics.

**3.2 Recycling Processing of CCSWMA Recyclable Materials**

The ICSWA shall provide for the recycling processing of clear glass containers, waste newsprint, mixed metal containers, and plastics transported to the ICSWA Recycling Facility from the CCSWMA Cambria County Recycling Depot System. Processing shall include baling waste newsprint and plastics and densifying aluminum and bimetal cans.

**3.3 Marketing of Recyclable Materials**

The ICSWA shall provide for the marketing of CCSWMA recyclable materials that have been processed by the ICSWA as soon as reasonably possible after delivery to the ICSWA.

**3.4 Quarterly Reports**

The ICSWA shall provide quarterly reports to the CCSWMA of all CCSWMA recyclable material received and processed at the ICSWA Recycling Facility for that quarter. Reports shall satisfy the reporting requirements of Pennsylvania Act 101 Annual Reports and Section 904 Municipal Recycling Program Performance Grants and shall contain the information as determined in Section 5 of this Agreement.

**3.5 Weigh Tickets**

The ICSWA shall provide weigh tickets for all loads of CCSWMA recyclable materials received at the ICSWA Recycling Facility to the CCSWMA truck driver on a delivery basis. The weigh tickets shall contain the information as determined in Section 5 of this Agreement.

**3.6 Quarterly Billing**

The ICSWA shall bill the CCSWMA on a quarterly basis for processing and marketing services as determined in Section 4 of this Agreement.

**3.7 Credit for CCSWMA Recyclable Materials**

The ICSWA shall credit the CCSWMA for the tons of CCSWMA recyclable material marketed in each quarter as determined in Section 4 of this Agreement.

**3.8 Administration of the Agreement**

The ICSWA shall designate a staff person responsible for the administration of this Agreement. This staff person shall be responsible for communicating with the designated CCSWMA staff person regarding the implementation of the terms and conditions of this Agreement.

## **SECTION 4 COMPENSATION AND CREDIT**

### **4.1 Compensation for Services**

The CCSWMA shall provide compensation to the ICSWA at a rate equal to the expenses incurred in said quarter less credit for CCSWMA portion of material revenues received during same quarter. The ICSWA shall bill the CCSWMA by the 15<sup>th</sup> of the month after each quarter (January 15, April 15, July 15 and October 15). The CCSWMA shall make payment to the ICSWA within 30 days of receiving the quarterly bill. In the event that the credit for CCSWMA recyclable materials exceeds the quarterly compensation, the ICSWA shall make payment to the CCSWMA for the credit less the quarterly compensation.

### **4.2 Credit for CCSWMA Recyclable Materials**

CCSWMA shall receive a credit each quarter for the sale of the materials delivered to ICSWA.

(a) CCSWMA materials shall be processed and marketed along with other ICSWA recyclable materials.

(b) CCSWMA share of revenues shall be determined based on the CCSWMA portion of the total amount of each material processed during the quarter by ICSWA.

(c) Revenues for processed materials will be credited to CCSWMA after ICSWA receives payment from the market. Revenues not yet received for the materials shipped during the current quarter will be deducted from the Credit for CCSWMA Material Sales at a ratio equal to the CCSWMA portion of the materials processed during the quarter. The CCSWMA portion of both the amount of revenues expected for materials shipped and the amount of revenues unpaid to ICSWA by markets shall be reflected in the Credit portion of each quarterly bill.

(d) If ICSWA experiences a delay greater than 120 days in obtaining revenue from its markets, CCSWMA shall be notified on a monthly basis until revenue is received by ICSWA.

(e) ICSWA shall retain 20% of the CCSWMA Credit for Material Sales each quarter as compensation for providing processing and marketing services to CCSWMA.

### **4.3 Contamination of Glass**

(a) The ICSWA reserves the right to market glass containers as colored glass if contamination levels are such that it cannot be marketed as clear glass. The Credit to CCSWMA for this material would reflect the lower market value for colored glass instead of clear glass.

(b) The ICSWA reserves the right to reject a load of glass containers if it contains any amount of glass other than food and beverage containers, such as window pane glass, Pyrex, light bulb glass or other glass that is clearly not acceptable to the market. Arrangements will be made immediately to return such loads to the CCSWMA, the expense of which shall be paid for by CCSWMA.

## **SECTION 5 REPORTING REQUIREMENTS**

### **5.1 Quarterly Reports**

Quarterly reports shall document the tonnage of each type of CCSWMA recyclable material processed at the ICSWA Recycling Facility and shall be due by the 15<sup>th</sup> of the month after each quarter (January 15, April 15, July 15 and October 15). Reports shall include:

(a) Quarterly summary of the date and weight in tons of CCSWMA loads received at the ICSWA Recycling Facility for clear glass containers, mixed metal containers, waste newsprint, and plastics. This summary shall be based on actual weigh tickets for each load of CCSWMA recyclable materials.

(b) Quarterly break down of the percentage of aluminum containers and of steel containers processed as CCSWMA mixed metal containers at the ICSWA Recycling Facility. This percentage shall be determined by periodic weighing of the aluminum containers separated from mixed metal containers.

(c) Quarterly summary of the total tons of residue separated from recyclable materials processed at the ICSWA and the average percentage of CCSWMA residue separated from CCSWMA recyclable materials processed at the ICSWA. The average percentage of CCSWMA residue shall be determined by periodic weighing of the residue separated from CCSWMA recyclable materials.

### **5.2 Weigh Tickets**

A weigh ticket shall be generated for every load of CCSWMA recyclable material received at the ICSWA Recycling Facility. Each weigh ticket shall contain the following information:

- (a) the date of delivery of the recyclable materials to the Recycling Facility;
- (b) the identification number of the CCSWMA recycling vehicle;
- (c) the gross vehicle weight at the time of delivery;
- (d) the tare weight at the time of delivery;
- (e) the net weight of the load; and
- (f) the identify of the individual receiving the load.

Scales used by the ICSWA shall be certified and inspected on a periodic basis as required by all applicable local, state and federal laws and regulations.

## **SECTION 6 INSURANCE REQUIREMENTS**

### **6.1 Insurance**

The CCSWMA and the ICSWA and their agents shall maintain the following insurance coverage.

(a) **Workers' Compensation** – The CCSWMA and the ICSWA shall maintain standard workers' compensation coverage for all of their employees and agents as required by law.

(b) **Comprehensive General Liability Insurance** - The CCSWMA and the ICSWA shall maintain insurance coverage for comprehensive general liability providing continuous coverage against third party claims for property damage and personal injury, with policy limits of bodily injury coverage no less than One Hundred Thousand and No/100 Dollars (\$100,000) for each person and no less than Three Hundred Thousand Dollars and No/100 (\$300,000) for each accident and with policy limits of property damage coverage no less than One Hundred Thousand Dollars and No/100 Dollars (\$100,000).

(c) **Vehicle Liability Insurance** – The CCSWMA shall maintain insurance coverage for automobile liability, with policy limits of bodily injury coverage no less than One Hundred Thousand and No/100 Dollars (\$100,000) for each person and no less than Three Hundred Thousand Dollars and No/100 (\$300,000) for each accident and with policy limits of property damage coverage no less than One Hundred Thousand Dollars and No/100 Dollars (\$100,000).

## **SECTION 7 SCOPE OF THE AGREEMENT**

### **7.1 Term**

Accept as provided in 7.2 below, the CCSWMA and the ICSWA are obligated to honor the terms of this Agreement for not less than two years from the effective date of this Agreement. Ninety days prior to the completion of the Agreement, the CCSWMA and ICSWA shall determine whether the Agreement shall be renewed, re-negotiated or terminated.

### **7.2 Termination**

The CCSWMA and the ICSWA may terminate the Agreement at any time by giving 120 days written notice to the other party and specifying the reason for such termination.

### **7.3 Evaluation**

The CCSWMA and the ICSWA shall evaluate the implementation of this Agreement on a quarterly basis during the first year and on a bi-annual basis during the second year. The quality and quantity of CCSWMA recyclable materials processed by the ICSWA

shall be reviewed to determine its impact on the conditions of this Agreement. Adjustments to the rate of compensation and credit for CCSWMA recyclable material as well as other amendments to this Agreement may be negotiated between the CCSWMA and the ICSWA after each evaluation as deemed necessary.

## **8. GENERAL PROVISIONS**

### **8.1 Default**

**8.1(a) If the CCSWMA shall fail or refuse to perform the CCSWMA's obligations under this Agreement and such failure or refusal is not corrected within thirty days after written notice thereof, then the ICSWA, in addition to all other remedies which the ICSWA may have against the CCSWMA, may, by written notice to the CCSWMA, terminate all the CCSWMA's rights under this agreement.**

**8.1 (b) If the ICSWA shall fail or refuse to perform the ICSWA's obligations under this Agreement and such failure or refusal is not corrected within thirty days after written notice thereof, then the CCSWMA, in addition to all other remedies which the CCSWMA may have against the ICSWA, may, by written notice to the ICSWA, terminate all the ICSWA's rights under this agreement.**

### **8.2 Indemnification**

**8.2(a) The CCSWMA shall indemnify and hold harmless the ICSWA from all cost, claims, and expenses (including reasonable attorney's fee) arising by reasons of, or with respect to, any violation of this Agreement by the CCSWMA or negligent, reckless or intentional act or omission of the CCSWMA, or its employee or agents, with respect to the transactions contemplated by this Agreement.**

**8.2(b) The ICSWA shall indemnify and hold harmless the CCSWMA from all costs, claims, and expenses (including reasonable attorney's fees) arising by reasons of, or with respect to, any violation of this Agreement by the ICSWA or negligent, reckless or intentional act or omission of the ICSWA, or its employee or agents, with respect to the transactions contemplated by this Agreement.**

### **8.3 Force Majeure**

**Neither the CCSWMA nor the ICSWA shall be liable for the failure to perform its duties and obligations under this Agreement if such failure is the result of an Act of God, riot, insurrection, war, natural disaster, strikes, labor disputes, extraordinary weather conditions, legal action enjoining or threatening the carrying out of the activities hereunder, the adoption or change after the date hereof of any federal, state, county, or local law, rule permit, regulation or ordinance adversely affecting the obligations of the CCSWMA or the ICSWA hereunder, or any other cause beyond the reasonable control of the CCSWMA or the ICSWA and which the CCSWMA or the ICSWA is unable to avoid by the exercise of reasonable diligence. Provided, however, that this Clause shall not apply to the obligation of the CCSWMA to pay for services already provided hereunder by the ICSWA.**

#### **8.4 Authorization**

The CCSWMA and the ICSWA represent and warrant that they are bodies politic and corporate organized pursuant to the laws of the Commonwealth of Pennsylvania and, as such, they have the power and authority to enter into this Agreement and to consummate the transactions contemplated thereby. Both the CCSWMA and the ICSWA have taken all required official action at duly advertised and constituted public meetings to authorize the execution of this Agreement and all approvals, consents and orders of any governmental authority, board, agency or commission having jurisdiction which would constitute a condition precedent to the performance by the CCSWMA or the ICSWA of their obligation under this Agreement have been obtained.

#### **8.5 Binding Effect**

This Agreement shall be binding on the parties hereto and their respective successors and assigns.

#### **8.6 Applicable Law**

This Agreement shall be governed by the laws of the Commonwealth of Pennsylvania.

#### **8.7 Savings Clause**

In the event any one or more of the provisions contained in this Agreement shall, for any reason, be held to be invalid, illegal or unenforceable in any respect, this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

#### **8.8 Amendment**

This Agreement shall not be amended or modified except by a written instrument signed by the CCSWMA and the ICSWA.

#### **8.9 Assignment**

The obligations of the parties under this Agreement may not be assigned except upon the prior written consent of all parties.

#### **8.10 Waiver**

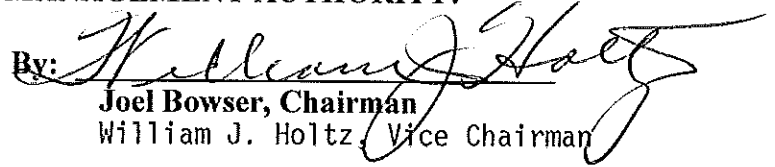
Unless otherwise specifically provided by the terms of this Agreement, no delay or failure to exercise a right resulting from any breach of this Agreement shall impair such right or shall be construed to be a waiver thereof, but such right may be exercised from time to time and as often as may be deemed expedient. Any waiver shall be in writing and signed by the party granting such waiver. If any representation, warranty or covenant contained in this Agreement is breached by either party and thereafter waived by the other party, such waiver shall be limited to the particular breach so waived and shall not be deemed to waive, either expressly or impliedly, any other breach under this Agreement.

**IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed and have hereunto set their hands and seals the day and year first above written.**

**ATTEST:**



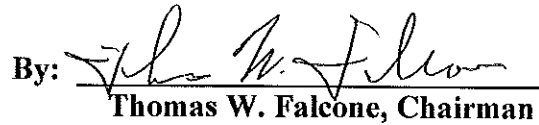
**CAMBRIA COUNTY SOLID WASTE  
MANAGEMENT AUTHORITY:**

By:   
Joel Bowser, Chairman  
William J. Holtz, Vice Chairman

**ATTEST:**



**INDIANA COUNTY SOLID WASTE  
AUTHORITY:**

By:   
Thomas W. Falcone, Chairman

This page intentionally left blank.

---

**APPENDIX Q**

**JCSWA COLLECTION SCENARIOS COST  
SUMMARY - SOURCE SEPARATED - 12 STOPS**

---

This page intentionally left blank.

**Jefferson Co SWA Collection Scenarios - Source Separated Collection Data Summary - 12 Drop-off Sites, 6 Containers**

<b>Source Separated Collection</b>	<b>Aluminum /Steel</b>	<b>Corrugated</b>	<b>Magazines</b>	<b>Mixed Paper</b>	<b>Newspapers</b>	<b>Plastics</b>	<b>Total System</b>
Total Stops	12	12	12	12	12	12	72
Number of 8 cu.yd containers	12	12	12	12	12	12	72
Loose Container Yds Gen/Wk	16	10	5	6	3	38	576
Average weeks to fill containers	5.9	9.9	22	15.9	30	2.4	7.4
Collection Schedule Pick-ups/Month	0.73	0.44	0.33	0.27	0.14	1.73	0.59
Weekly Average Volumes (cu.yds)	16	10	5	6	3	38	78
Monthly Average Volumes (cu.yds)	70	42	21	26	14	166	339
Annual Average Volume	840	504	252	312	168	1,992	4,068
Weekly Average Tons	0.7	0.5	1.4	0.7	0.9	0.6	4.9
Monthly Average Tons	3.2	2.2	6	3.2	4	2.7	21.3
Annual Average Tons	38.4	26.4	72	38.4	48	32.4	255.6
Pre-trip/Launch (Minutes)	20	20	20	20	20	20	120
Route Collection Time (Minutes)	192	192	192	192	192	192	1152
Total time to processor and return (Minutes)	45	45	45	45	45	45	270
Post-Trip/Paperwork (Minutes)	15	15	15	15	15	15	90
Total Route Time (Minutes)	363	363	363	363	363	363	2178
Total Route Time (Hours)	6.05	6.05	6.05	6.05	6.05	6.05	36.3
Route Collection Miles	121	121	121	121	121	121	726
Miles to Procesor	39	39	39	39	39	39	234
Return Miles to HQ	56	56	56	56	56	56	336
Total Route Miles	216	216	216	216	216	216	1296
Cost/Mile Calculation	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01
Tip Fee @\$0.0/Ton	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operational Cost	\$ 3,815	\$ 2,284	\$ 1,131	\$ 1,417	\$ 754	\$ 9,005	\$ 18,406
<b>Total Annual Cost</b>	<b>\$ 3,815</b>	<b>\$ 2,284</b>	<b>\$ 1,131</b>	<b>\$ 1,417</b>	<b>\$ 754</b>	<b>\$ 9,005</b>	<b>\$ 18,406</b>

This page intentionally left blank.

---

**APPENDIX R**  
**JEFFERSON COUNTY SWA COLLECTION COST**  
**ANALYSIS**

---

This page intentionally left blank.

**Jefferson County Drop-off  
Recycling Collection Program**

6/22/2016

**Scenario #1 Single Stream - Two Routes**

**12 Drop-off Sites**

	Route 3	Route 4	Total System
--	---------	---------	--------------

Stops	3	9	12
Container size	8	8	8
Containers	36	36	72
Loose Capacity (Cu Yds)	288	288	576
Loose Cont Yds Gen/Wk	48	39	87
Avg Wks to Fill Cont	6.0	7.4	6.6
Collection Schedule Pu/Mo	0.73	0.59	0.66

Weekly avg. vol.	48	39	87
Monthly avg. vol.	209	169	378
Annual avg. volume	2512	2025	4537
Weekly avg. tons	3.7	2.9	6.6
Monthly avg. tons	16.1	12.7	28.8
Annual avg. tons	193.1	152.6	345.7

Pre-Trip/Launch (Min)	20	20	40
-----------------------	----	----	----

Container Service Time	1	1	1
Total Cont Service Time	36	36	72
Route miles	22	113	135.2
Route drive time (Min)	32	127	159
Total Rt Collection Time	68	163	231

Miles to processor	63	63	127
Time to processor (min)	66	66	132
Off-loading time	15	15	30

Return miles to HQ	75	75	151
Return time to HQ (min)	78	78	156
Total Disp Trip time (min)	159	159	318

Post-Trip/Paperwork	15	15	30
---------------------	----	----	----

Total Route miles	160	252	412
Total Route Time (Min)	262	357	619
Total Route Time (Hrs)	4.37	5.95	10.32

Avg Miles/Hr	36.74	42.36	39.55
--------------	-------	-------	-------

<b>Cost per Mile Calculation</b>	\$ 2.01	\$ 2.01	\$ 2.01
Tip fee @\$40/ton Single Stream	\$ 7,724	\$ 6,104	\$ 13,828
Operational Cost (per mile)	\$ 2,816	\$ 3,565	\$ 6,380
Total Annual Cost	\$ 10,540	\$ 9,669	\$ 20,208

<b>Cost per Hour Calculation</b>	\$ 79.34	\$ 79.34	\$ 79.34
Tip fee @\$40/ton Single Stream	\$ 7,724	\$ 6,104	\$ 13,828
Operational Cost (per hour)	\$ 3,020	\$ 3,317	\$ 6,337
Total Annual Cost	\$ 10,744	\$ 9,421	\$ 20,165

**13 Drop-off Sites**

	Route 6	Route 7	Total System
--	---------	---------	--------------

Stops	7	6	13
Container size	8	8	8
Containers	36	36	72
Loose Capacity (Cu Yds)	288	288	576
Loose Cont Yds Gen/Wk	56	55	111
Avg Wks to Fill Cont	5.1	5.2	5.2
Collection Schedule Pu/Mo	0.84	0.83	0.83

Weekly avg. vol.	56	55	111
Monthly avg. vol.	241	237	478
Annual avg. volume	2,890	2,848	5,738
Weekly avg. tons	4.2	4.3	8.5
Monthly avg. tons	18.3	18.8	37.0
Annual avg. tons	219	225	444

Pre-Trip/Launch (Min)	20	20
-----------------------	----	----

Container Service Time	1	1	1
Total Cont Service Time	36	36	72
Route miles	63	54	117
Route drive time (Min)	110	95	205
Total Rt Collection Time	146	131	277

Miles to processor	63	55	118
Time to processor (min)	110	62	172
Off-loading time	15	15	30

Return miles to HQ	74	74	148
Return time to HQ (min)	82	82	164
Total Disp Trip time (min)	207	159	366

Post-Trip/Paperwork	15	15	30
---------------------	----	----	----

Total Route miles	200	183	383
Total Route Time (Min)	388	325	713
Total Route Time (Hrs)	6.47	5.42	11.9

Avg Miles/Hr	30.93	33.78	32.36
--------------	-------	-------	-------

<b>Cost per Mile Calculation</b>	\$ 2.01	\$ 2.01	\$ 2.01
Tip fee @\$40/ton Single Stream	\$ 8,760	\$ 9,000	\$ 17,760
Operational Cost (per mile)	\$ 4,068	\$ 3,656	\$ 7,724
Total Annual Cost	\$ 12,828	\$ 12,656	\$ 25,484

<b>Cost per Hour Calculation</b>	\$ 79.34	\$ 79.34	\$ 79.34
Tip fee @\$40/ton Single Stream	\$ 8,760	\$ 9,000	\$ 17,760
Operational Cost (per hour)	\$ 5,184	\$ 4,265	\$ 9,449
Total Annual Cost	\$ 13,944	\$ 13,265	\$ 27,209

**Jefferson County Drop-off  
Recycling Collection Program**

**Scenario # 2 Source Separated - One Route**

**12 Drop-off Sites**

	Aluminum /Steel	Corrugated	Magazines	Mixed Paper	Newspapers	Plastics	Total System
Stops	12	12	12	12	12	12	72
Container size	8	8	8	8	8	8	8
Containers	12	12	12	12	12	12	72
Loose Capacity (Cu Yds)	96	96	96	96	96	96	576
Loose Cont Yds Gen/Wk	16	10	5	6	3	38	78
Avg Wks to Fill Cont	5.9	9.9	20.0	15.9	30.0	2.5	7.4
Collection Schedule Pu/Mo	0.73	0.44	0.22	0.27	0.14	1.73	0.59
Weekly avg. vol.	16	10	5	6	3	38	78
Monthly avg. vol.	70	42	21	26	14	166	339
Annual avg. volume	843	505	250	313	167	1989	4066
Weekly avg. tons	0.7	0.5	1.4	0.7	0.9	0.6	4.9
Monthly avg. tons	3.2	2.2	6.0	3.2	4.0	2.7	21.3
Annual avg. tons	38.2	26.7	72.5	38.3	48.3	31.8	256
<b>Pre-Trip/Launch (Min)</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>120</b>
Container Service Time	1	1	1	1	1	1	6
Total Cont Service Time	12	12	12	12	12	12	72
<b>Route miles</b>	<b>121</b>	<b>121</b>	<b>121</b>	<b>121</b>	<b>121</b>	<b>121</b>	<b>726</b>
Route drive time (Min)	180	180	180	180	180	180	1080
<b>Total Rt Collection Time</b>	<b>192</b>	<b>192</b>	<b>192</b>	<b>192</b>	<b>192</b>	<b>192</b>	<b>1152</b>
<b>Miles to processor</b>	<b>39</b>	<b>39</b>	<b>39</b>	<b>39</b>	<b>39</b>	<b>39</b>	<b>234</b>
Time to processor (min)	45	45	45	45	45	45	270
Off-loading time	15	15	15	15	15	15	90
<b>Return miles to HQ</b>	<b>56</b>	<b>56</b>	<b>56</b>	<b>56</b>	<b>56</b>	<b>56</b>	<b>336</b>
Return time to HQ (min)	76	76	76	76	76	76	456
<b>Total Disp Trip time (min)</b>	<b>136</b>	<b>136</b>	<b>136</b>	<b>136</b>	<b>136</b>	<b>136</b>	<b>816</b>
<b>Post-Trip/Paperwork</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>90</b>
<b>Total Route miles</b>	<b>216</b>	<b>216</b>	<b>216</b>	<b>216</b>	<b>216</b>	<b>216</b>	<b>1296</b>
<b>Total Route Time (Min)</b>	<b>363</b>	<b>363</b>	<b>363</b>	<b>363</b>	<b>363</b>	<b>363</b>	<b>2178</b>
<b>Total Route Time (Hrs)</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>6.05</b>	<b>36.30</b>
Avg Miles/Hr	35.70	35.70	35.70	35.70	35.70	35.70	36

<b>Cost per Mile Calculation</b>	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01
Tip fee @\$40/ton Single Stream	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operational Cost (per mile)	\$ 3,815	\$ 2,284	\$ 1,131	\$ 1,417	\$ 754	\$ 9,005	\$ 18,406
<b>Total Annual Cost</b>	<b>\$ 3,815</b>	<b>\$ 2,284</b>	<b>\$ 1,131</b>	<b>\$ 1,417</b>	<b>\$ 754</b>	<b>\$ 9,005</b>	<b>\$ 18,406</b>

<b>Cost per Hour Calculation</b>	\$ 79.34	\$ 79.34	\$ 79.34	\$ 79.34	\$ 79.34	\$ 79.34	\$ 79.34
Tip fee @\$40/ton Single Stream	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operational Cost (per hour)	\$ 4,211	\$ 2,521	\$ 1,249	\$ 1,564	\$ 832	\$ 9,940	\$ 20,317
<b>Total Annual Cost</b>	<b>\$ 4,211</b>	<b>\$ 2,521</b>	<b>\$ 1,249</b>	<b>\$ 1,564</b>	<b>\$ 832</b>	<b>\$ 9,940</b>	<b>\$ 20,317</b>

**Jefferson County Drop-off  
Recycling Collection Program**

**Scenario # 2 Source Separated - One Route**

**13 Drop-off Sites**

	Aluminum /Steel	Corrugated	Magazines	Mixed Paper	Newspapers	Plastics	Total System
Stops	13	13	13	13	13	13	78
Container size	8	8	8	8	8	8	8
Containers	13	13	13	13	13	13	78
Loose Capacity (Cu Yds)	104	104	104	104	104	104	624
Loose Cont Yds Gen/Wk	19	14	6	11	4	46	100
Avg Wks to Fill Cont	5.4	7.5	18.1	9.1	27.1	2.3	6.3
Collection Schedule Pu/Mo	0.80	0.58	0.24	0.47	0.16	1.90	0.69
Weekly avg. vol.	19	14	6	11	4	46	100
Monthly avg. vol.	83	60	25	49	17	198	432
Annual avg. volume	996	725	299	593	200	2371	5184
Weekly avg. tons	0.9	0.7	1.7	1.4	1.1	0.7	6.5
Monthly avg. tons	3.8	3.2	7.2	6.1	4.8	3.2	28.2
Annual avg. tons	45.0	38.4	86.8	72.6	57.8	37.9	339
Pre-Trip/Launch (Min)	20	20	20	20	20	20	120
Container Service Time	1	1	1	1	1	1	6
Total Cont Service Time	13	13	13	13	13	13	78
Route miles	124	124	124	124	124	124	744.72
Route drive time (Min)	193	193	193	193	193	193	1158
Total Rt Collection Time	206	206	206	206	206	206	1236
Miles to processor	40	40	40	40	40	40	239
Time to processor (min)	48	48	48	48	48	48	288
Off-loading time	15	15	15	15	15	15	90
Return miles to HQ	56	56	56	56	56	56	336
Return time to HQ (min)	76	76	76	76	76	76	456
Total Disp Trip time (min)	139	139	139	139	139	139	834
Post-Trip/Paperwork	15	15	15	15	15	15	90
Total Route miles	220	220	220	220	220	220	1319
Total Route Time (Min)	380	380	380	380	380	380	2280
Total Route Time (Hrs)	6.33	6.33	6.33	6.33	6.33	6.33	38.00
Avg Miles/Hr	34.72	34.72	34.72	34.72	34.72	34.72	35

<b>Cost per Mile Calculation</b>	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01	\$ 2.01
Tip fee @\$40/ton Single Stream	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operational Cost (per mile)	\$ 4,235	\$ 3,085	\$ 1,273	\$ 2,522	\$ 849	\$ 10,087	\$ 22,050
Total Annual Cost	\$ 4,235	\$ 3,085	\$ 1,273	\$ 2,522	\$ 849	\$ 10,087	\$ 22,050

<b>Cost per Hour Calculation</b>	\$ 79.34	\$ 79.34	\$ 79.34	\$ 79.34	\$ 79.34	\$ 79.34	\$ 79.34
Tip fee @\$40/ton Single Stream	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Operational Cost (per hour)	\$ 4,807	\$ 3,501	\$ 1,445	\$ 2,863	\$ 963	\$ 11,449	\$ 25,028
Total Annual Cost	\$ 4,807	\$ 3,501	\$ 1,445	\$ 2,863	\$ 963	\$ 11,449	\$ 25,028

This page intentionally left blank.