

Making Dual-Stream Recycling Better Than Single-Stream

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- Solid Waste Management Consultant
- GBB helps plan and implement programs, facilities and services
- ***Celebrating our 25th anniversary in 2005***



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This Presentation

- General comments on single and dual stream residential curbside approaches
- Montgomery County, Maryland as a case study
- Warwick, Rhode Island example
- Some comparison comments on Montgomery County to single-stream programs



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The Controversy

- Single-Stream
 - Lower Collection Cost with similar vehicles
 - One cart
 - One-place unloading at MRF
 - Higher Tonnage Collected
 - Paper products contaminated
 - 'Clean' glass lost
- Dual-Stream
 - Two bins/carts
 - Two-place unloading at MRF
 - Lower Residue Rate
 - Cleaner products, hence more Sustainable with markets



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Montgomery County, Maryland

- 204,000 Residences in curbside recycling program
- Recycling Program Provides:
 - Residential Mixed Paper (RMP)
 - Commingled Containers
 - Yard Trim
 - Scrap Metal
- Residential Recycling Rate 51%



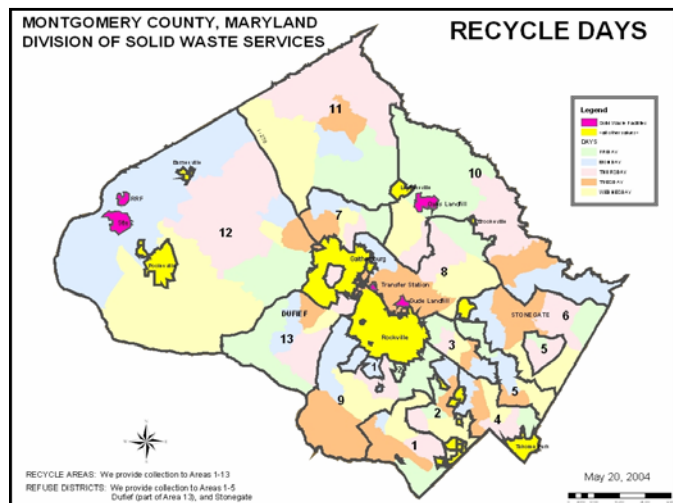
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GBB's Role

Analysis of County Solid Waste Collection System Conducted for Department of Environmental Protection	1994
Waste Characterization for RMP and Variable Rate Pilot Program Conducted for Department of Environmental Protection	1996
Develop Project Financing Information for Office Paper Systems OPS was selected by the County to build and operate the RMP processing facility	1996
Negotiate Contract On Behalf of OPS for RMP Processing Facility	1997 to 1999
Construction Project Management and Construction Monitoring	1999
Administer RMP Processing Facility Acceptance Test	2000
Conduct Project Annual Budget Review for Bond Trustee	2001 thru 2005



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Montgomery County Curbside

- Dual Stream recycling
- Collection services by contractors
- Set-outs
 - Single bin with bundled paper
 - Dual bins, one RMP and one commingled
- Pilot Program
 - Bins for commingled
 - 64 gallon carts for RMP



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Benefits Of Using Carts for RMP Recycling Collection

- Increases set-out size because of capacity and convenience
- Keeps paper dry and clean because cart is closed
- May be stored outside
- Semi-automated lifting reduces collector injuries
- Benefits program sustainability
- Promotes cleaner communities



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Single Bin Set-Out



Dual Bin Set-Out



RMP Cart Pilot Program

- Tildenwoods - August 25, 2000
 - Prior to carts - 13 lbs. per home
 - Using carts - 25.03
- Kensington - October 31, 2000
 - Prior to carts - 12.5 lbs. per home
 - Using carts - 24.15
- Potomac - September 19, 2001 (Entire Route - 810 Homes)
 - Prior to carts - 13.99 per home
 - Using carts - 20.13

****43.89 % increase****

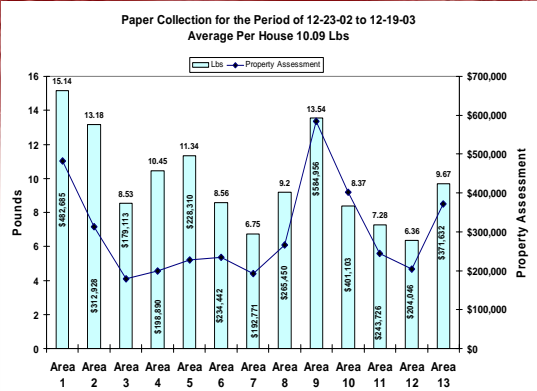


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Cart Pilot Set-Out



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Contractor Collection Equipment



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Contractor Collection Equipment



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Recovered Materials Processing Flow

- Commingled containers unloaded at County MRF on tipping floor
- RMP unloaded at Acceptance Facility, within MRF, operated by Office Paper Systems (OPS)
- OPS loads and transfers RMP to OPS processing facility, approx. 5 miles away
- OPS sorts into grades and bales
- Bales loaded and shipped to markets
- Residue returned to County Transfer Station

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Transloading RMP At Acceptance Facility in County MRF



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Unloading RMP At OPS Facility



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OPS RMP Sorting Lines



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OPS Processing Facility

- Constructed to process County RMP
- Capacity 460 tons per day single shift
- The building is 47,500 square feet
- Bollegraaf processing equipment, supplied through Van Dyk
 - 3 Sort lines
 - 2 Balers
 - 7 Automated bunkers
 - 6 Manual bunkers
- Capital Cost \$12 Million (1999)
- Private Limited Offering financing through Maryland agency sponsored revenue bonds; required GBB Feasibility Report

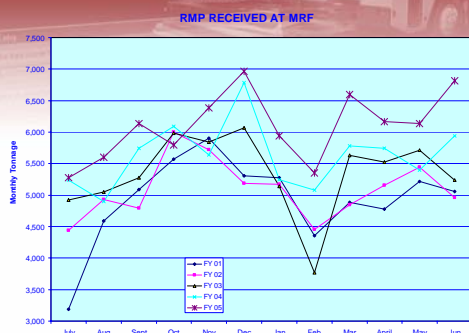


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Sort Line At Work



Montgomery County RMP Collection



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Montgomery County Cart Roll-Out Schedule

Month	Placed	Cumulative
Current	24,000	24,000
November 2004	16,000	40,000
December 2004	16,000	56,000
January 2005	16,000	72,000
February 2005	16,000	88,000
March 2005	16,000	104,000
April 2005	16,000	120,000
May 2005	16,000	136,000
June 2005	16,000	152,000
TOTAL	152,000	152,000



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Montgomery County RMP FY 2004

- County contractors delivered 67,000 tons of RMP to OPS
- Recovered products
 - ONP #8
 - OCC #11
 - Office paper
 - White ledger
 - Mixed paper
- Residue rate 1%



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OPS Facility Showing Load Out Bays



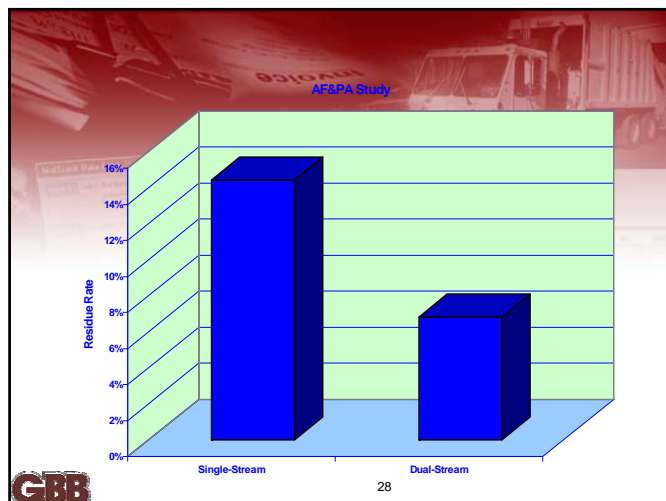
Dual Stream vs. Single Stream Contamination

Contamination is delivered as recycled paper then must be disposed at a cost

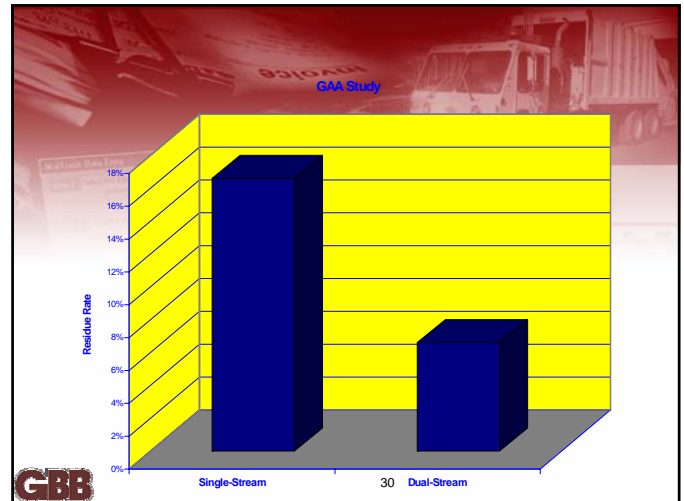
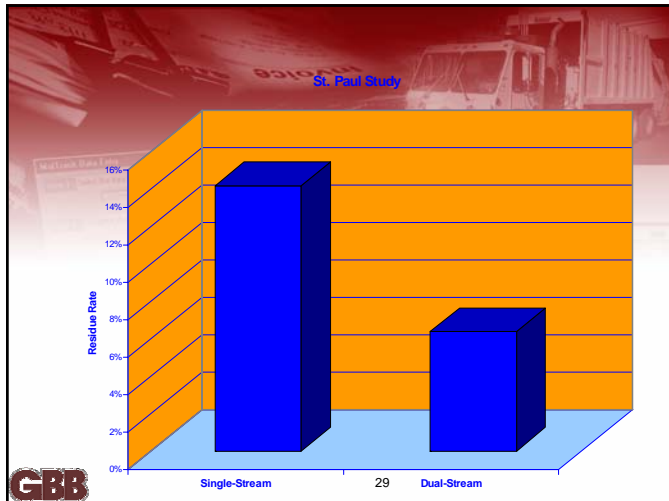
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|---|--|
| <ul style="list-style-type: none"> • Dual Stream - Residue rate <ul style="list-style-type: none"> – Montgomery 1% – Generally 1 to 5% • 1% = \$0.52 / ton of RMP at \$52 / ton disposal at Montgomery County Transfer Station | <ul style="list-style-type: none"> • Single Stream - Residue Rate <ul style="list-style-type: none"> – Tidewater Fiber 15 to 20% – Recycle America, 19 to 38% • 20% = \$10.40 / ton of RMP at \$52 / ton disposal |
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Warwick, RI's Need to Divert More



- Rising disposal costs
- Less than expected participation and diversion rates from existing program
- Political Pressure to improve diversion and participation numbers
- General Fund burden of refuse and recycling collections

Reliance Pacific Company

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A New Direction for Warwick, RI

- Implement automated collection for refuse and a dual stream recycling program.
- Use three carts
 - refuse
 - paper
 - bottles and cans
- Fund capital costs through a refuse collection charges and disposal savings

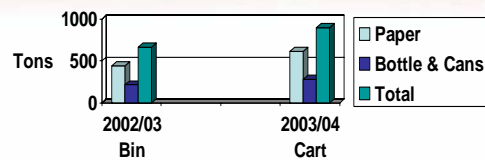


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Recycling Benefits for Warwick

- More than doubled weekly participation
- Increased paper volume 38.01% by implementing a cart collection program



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Conclusions

- Dual-Stream
 - Lower residue rates
 - Higher-quality materials collected
 - More Sustainable with markets
 - Paper markets happier
 - Glass product less impacted
 - Plastic products not lost in paper bales
 - Overall costs have potential to be lower
 - Opportunity for every other week collection services
- Single-stream
 - Educate and Enforce for quality and quantity

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THANK YOU!

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