



Florida Department of Environmental Protection

Waste Reduction/Recycling

Trends In Construction and Demolition Debris Recycling

February 16, 2017





Housekeeping

- All attendees are in “listen-only” mode
- Please use the “Questions” tab to submit a question
- Questions will be answered at the end of the presentation
- The presentation and other material are available in the “Handouts” tab
- This session is being recorded and will be available upon request from the Florida DEP Waste Reduction/Recycling Section
- Please complete the survey after the webinar



Florida Department of Environmental Protection

Waste Reduction/Recycling

Keyna Cory

**Executive Director
Florida Recycling Partnership**





Agenda

- **Bryce Hill**
 - Marpan Recycling
- **John Shoucair**
 - Florida DOT
- **Carissa Agnese**
 - Skanska USA Civil
- **Craig Ash**
 - Waste Management



Florida Department of Environmental Protection

Waste Reduction/Recycling

Bryce Hill
General Manager
Marpan Recycling





Welcome to Marpan Recycling

**HAVING THE RIGHT EQUIPMENT TO ACHIEVE
MAXIMUM SEPARATION AND RECOVERY**

Misters over tipping floor and one of Marpan's Roll-offs – 40% of our inbound is hauled by us

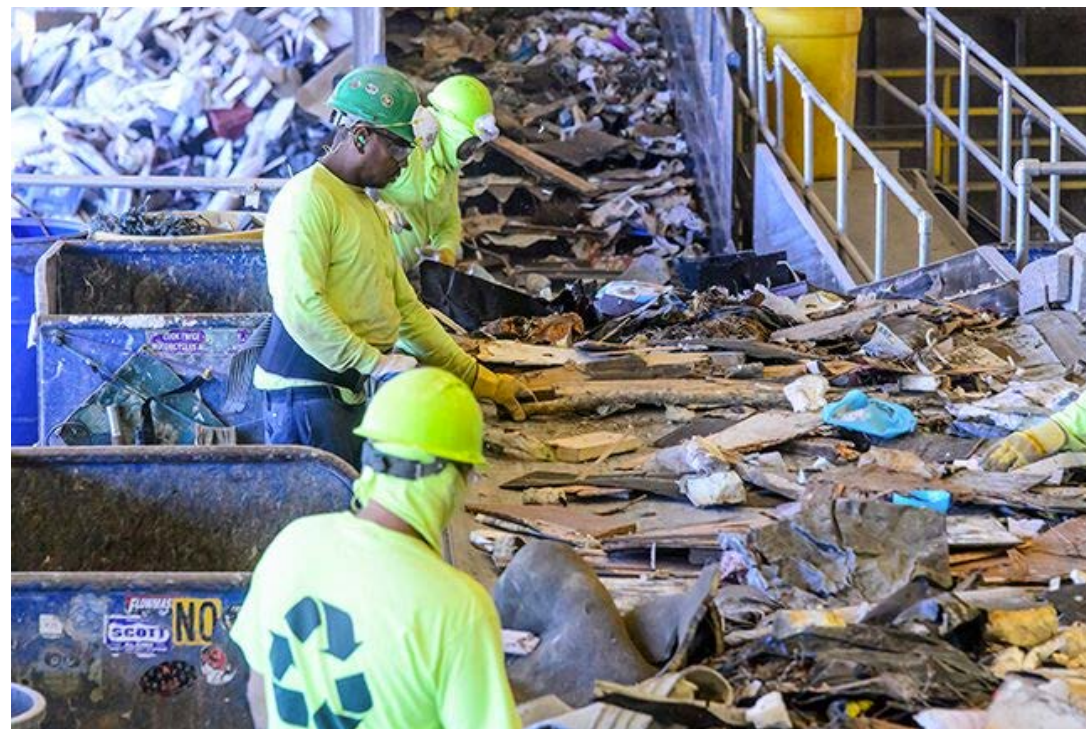
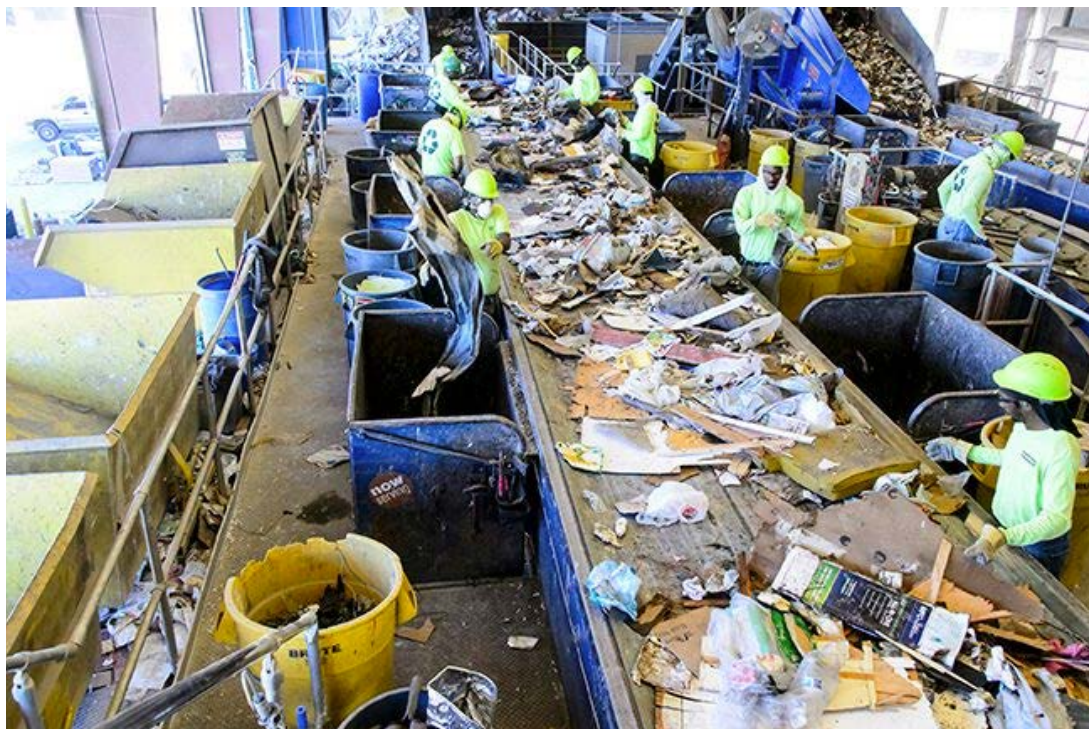


Primary Screen

GK Finger Screen – 6 inch cut



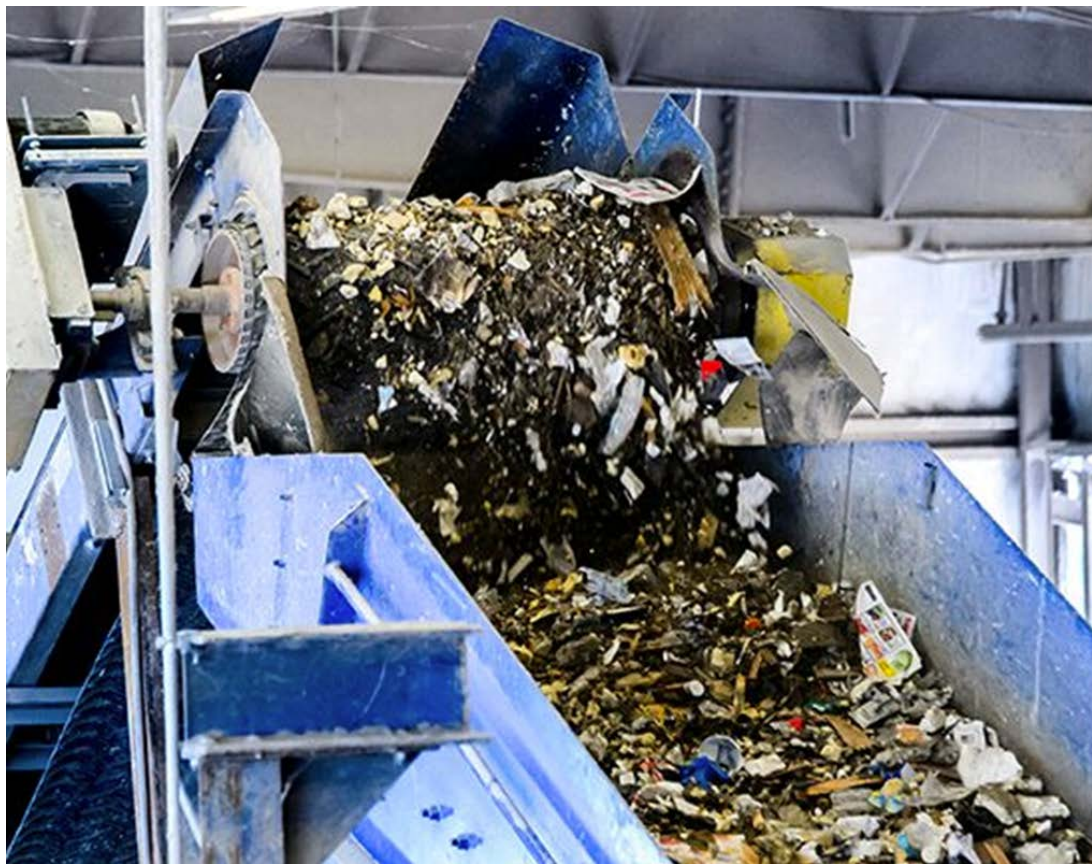
Manual Sorting Required



We send our OCC direct to the baler and we recycle materials in the same building



Our “B” line screening includes two magnets, a GK Finger Screen 2” minus, over a Bivitec 1” minus and again Manual Sorting



Final B line screen
is GK Destoner



GK Destoner



WOOD GRINDING TO MAKE MULCH



We use Kiln Dried lumber & pallets to make colored mulch – our process includes a Mobark slow speed high torque shredder/trommel/apron conveyor and a Morbark vertical electric mill



Fines & 2" minus
wood chips



Concrete crushing equipment and road base pile



Capacitors, ballasts and non-ferrous metal



Christmas tree lights



Insulated copper wire



Mattresses to be destroyed and recycled



Did you ever think
about antique bricks?

VALUE \$1.50 EACH



Aluminum Cans



Structured Aluminum



Good batteries & bad batteries can all have some value



Liquids



Sheetrock

**The hardest material
to find a use for**



Your residual

**Some things come
in separated and
should be used to
max out loads to
the landfill**





Thank you for choosing

MARPAN
RECYCLING

We appreciate your business!



Florida Department of Environmental Protection

Waste Reduction/Recycling

John Shoucair, P.E.

**State Materials Office
Florida DOT**



Materials Used in Recycling

- **Cementing Supplements for Concrete**
- **Components for Hot Mix Asphalt**
- **Recycled Concrete Aggregate**

Availability of Fly Ash for FDOT Concrete

Current Situation in Florida

- **Fly ash is required** in all DOT concrete mix designs and is a standard component of Ternary mixes.
- **Increasing demand** for fly ash.
- **Decreasing supply** of concrete-grade fly ash.
- **Local shortages** - SMO has issued seven Material Bulletins in the last three years concerning lack of fly ash availability in regions of Florida.

Forecasts by Balmoral, Inc. and AASHTO Fly Ash Task Force indicate that trend will continue.



Potential Fly Ash Replacements in FDOT Concrete

The following natural and recycled materials are available in Florida and development of these resources would help solve local supply shortages of Supplementary cementing materials (SCMs).

- Clays containing kaolin
- Recycled waste glass
- Sugarcane bagasse ash
- Glass sand (high purity silica sand)
- Commercial silica sand



Recycled Materials in Asphalt

- Reclaimed Asphalt Pavement (RAP)
- Ground Tire Rubber (GTR)
- Others:
 - Recycled Crushed Glass
 - Recycled Asphalt Shingles (RAS)



Recycled Concrete Aggregate

- **Optional Base Course in Roadway**
- New pavements from existing FDOT pavements or structures
- Pipe backfill in wet conditions
- Non-structural concrete
- Underdrains
- French Drains – current research



Thank you

Cement: Dale DeFord

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Asphalt: Greg Sholar

Gregory.Sholar@dot.state.fl.us



Florida Department of Environmental Protection

Waste Reduction/Recycling

Carissa Agnese

Southeast Regional Environmental Manager Skanska USA Civil



Recycle and Reuse of Construction Waste

By: Carissa Agnese, SE Regional Environmental Manager

Sustainability

All projects
recycle or reuse
more than 95%
of all its
construction
waste.



SKANSKA USA Civil SE - Sustainability / Waste / Carbon Emission Quarterly Report		PROJECT SITE INNOVATIVE/GREEN PRACTICES:		Material Placement / Incoming Material			Recycled / Re-used / Waste Material			Resulting Carbon Emission (Based on Material Placement / Incoming Material Figures) Emission Factor provided by Skanska NE			
PROJECT NAME & NUMBER	Midtown Tunnel			INCOMING MATERIAL WEIGHT (TONS)	% RECYCLED CONTENT MANUF/VENDOR	SITE WASTE (RE-USED OR SENT FOR RECYCLING) (TONS)	SITE WASTE (SENT TO LANDFILL) (TONS)	TOTAL WASTE	General Default Emission Factor	Unit	Emission		
REPORT PREPARED BY:	Brian Kelly	MATERIAL DESCRIPTION (Example: Piles, Structural Steel, Safety Handrails, Formwork, Masonry, Erosion Control, Marine Excavation)											
REPORT DATE:	1/1/15 - 3/31/15	MATERIAL											
1	Concrete	PLACEMENT				192.5	0.0	192.5	0.107	CONC - TON of CO2 / TON of mat.	0.000		
		WASTE-RECYCLE-REUSE											
2	Crushed Aggregates	PLACEMENT				28.2	0.0	28.2	0.0052	AGGR - TON of CO2 / TON of mat.	0.000		
		WASTE-RECYCLE-REUSE											
3	Structural & Miscellaneous Metals	PLACEMENT				75.0	0.0	75.0	1.48	METAL - Tons of CO2 / Tons of mat.	0.000		
		WASTE-RECYCLE-REUSE											
4	Asphalt	PLACEMENT				29.9	0.0	29.9	0.088	ASPHALT - Tons of CO2 / Tons of mat.	0.000		
		WASTE-RECYCLE-REUSE											
5	Soil/Dirt	PLACEMENT				31.3	0.0	31.3	0.024	SOIL - Tons of CO2 / Tons of mat.	0.000		
		WASTE-RECYCLE-REUSE											
6	Marine Excavation / Site Excavation	PLACEMENT				12,349.0	0.0	12,349.0					
		WASTE-RECYCLE-REUSE											
7	Wood	PLACEMENT				518.8	0.0	518.8	0.72	WOOD - Tons of CO2 / Tons of mat.	0.000		
		WASTE-RECYCLE-REUSE											
8	Fabrics	PLACEMENT				6.5	0.0	6.5					
		WASTE-RECYCLE-REUSE											
9	Plastics	PLACEMENT				32.5	0.0	32.5	0.31	PLASTIC - Tons of CO2 / Tons of mat.	0.000		
		WASTE-RECYCLE-REUSE											
10	Gypsum / Plaster	PLACEMENT				10.3	0.0	10.3	0.13	PLASTER - Tons of CO2 / Tons of mat.	0.000		
		WASTE-RECYCLE-REUSE											
11	Tile	PLACEMENT				4.6	0.0	4.6	0.78	TILE - Tons of CO2 / Tons of mat.	0.000		
		WASTE-RECYCLE-REUSE											
12	Paper / Cardboard	PLACEMENT				37.7	0.0	37.7					
		WASTE-RECYCLE-REUSE											
13	Oily Water / Used Oil Filters / Solids	PLACEMENT				5.4	REPORT PROPERLY DISPOSED WASTE HERE	5.4					
		WASTE-RECYCLE-REUSE											
14	Hazardous Materials Waste: (Refer to Sec 57 of the HASP manual)	PLACEMENT				0.0	REPORT PROPERLY DISPOSED WASTE HERE	0.0					
		WASTE-RECYCLE-REUSE											
15	Common Universal Waste: Batteries, Pesticides, Un broken Mercury-containing Eqpt., Bulbs. (Refer to Sec 57 of the HASP manual)	PLACEMENT				0.0	REPORT PROPERLY DISPOSED WASTE HERE	0.0					
		WASTE-RECYCLE-REUSE											
16	Electronic Equipment Waste: Computers, small electric devices, cathode ray tube, TV, Copier, Scanner. (Refer to Sec 57 of the HASP manual)	PLACEMENT				0.0	REPORT PROPERLY DISPOSED WASTE HERE	0.0					
		WASTE-RECYCLE-REUSE											
17	General Site Trash or Other Waste not reported above (Going to Landfill)	PLACEMENT					106.87	106.9					
		WASTE-RECYCLE-REUSE											
ENERGY CONSUMPTION (ELECTRICITY) - Directly procured by Skanska				Energy Use / Activity Description - (Office, Field, Start Up, Other):				13,321.82	106.9	13,428.7			
Electricity Consumption (KW hr):	631,648							TOTAL WASTE FIGURES			0.588 Electricity (KW / hr)	kgCO2 / Lwr	371,409.024
Notes:													
ENERGY CONSUMPTION (FUELS) - Fuel purchased / Paid for by Skanska				Fuel Use / Activity Description - (Equipment, Pumps, Vehicles, Start Up, Heating, Other):				Skanska Electronic Manuals and Forms, (preventing paper towel consumption)			X		
Diesel (Gallons):	51,256							Electronic Jobable Filing (preventing carton and paper consumption)			X		
Unleaded (Gallons):	14,558							Consumption of Recycled Paper & (Green)-Eco Friendly Office Supplies			X		
Natural Gas (CCF):	0							Use of Solar Energy Lights & Reflectors					
POTABLE WATER CONSUMPTION BASELINE				Pot Water Use / Activity Description - (Office, Field, Start Up, Concrete Curing, Testing, Other)				Use of Non Potable / Recycled water (Dust Control / Irrigation)			X		
Potable Water (Gal):	1,049,391							Concrete Recycling / Onsite Re-use			X		
Notes:													
RECYCLED (REUSE) WATER CONSUMPTION BASELINE				Recycle Water Use / Activity Description: - (Dust Control, Grassing / Seeding / Irrigation, Construction Use, Testing/Start Up/Owner)				Refractory Soil Re-use			X		
Recycled Water (Gal):	10,000							Steel Pile Re-use (Shield Pile, H-Pile etc.)					
Notes: MTT reused around 10,000 gallons of dewatering water for dust suppression in Q4													
ADDITIONAL NOTES:													
Notes: 131 aerosol cans punctured													
								Electronic Fuel Collection Systems (Reduces Vehicle Fuel Burn, Tire/Track Wear)					
								Infrastructure Improvement and/or LEED certified structure					

Concrete





Soils





The project chose to perform insitu treatment of lead contaminated soil.

Using this method reduced hazardous waste.

Treatment was a lower cost then shipping off as hazardous waste.

Wood





The project used an aerosol can puncturing system to manage its can waste.

The system reduced hazardous waste

Saves \$33,000 per 4,400 cans

- Procurement
- Equipment Maintenance
 - Used Oil, filters, etc...
- Job Sharing
- Close out of Projects



Crew Involvement

Carissa Agnese
Skanska
SE Regional Environmental Manager

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Florida Department of Environmental Protection

Waste Reduction/Recycling

Craig Ash

Environmental Protection Manager Waste Management Inc. of Florida



WM C&D Recycling Facilities South Florida



Palm Beach County

- WM Recycling Sun 4
- WM Recycling Sun 5

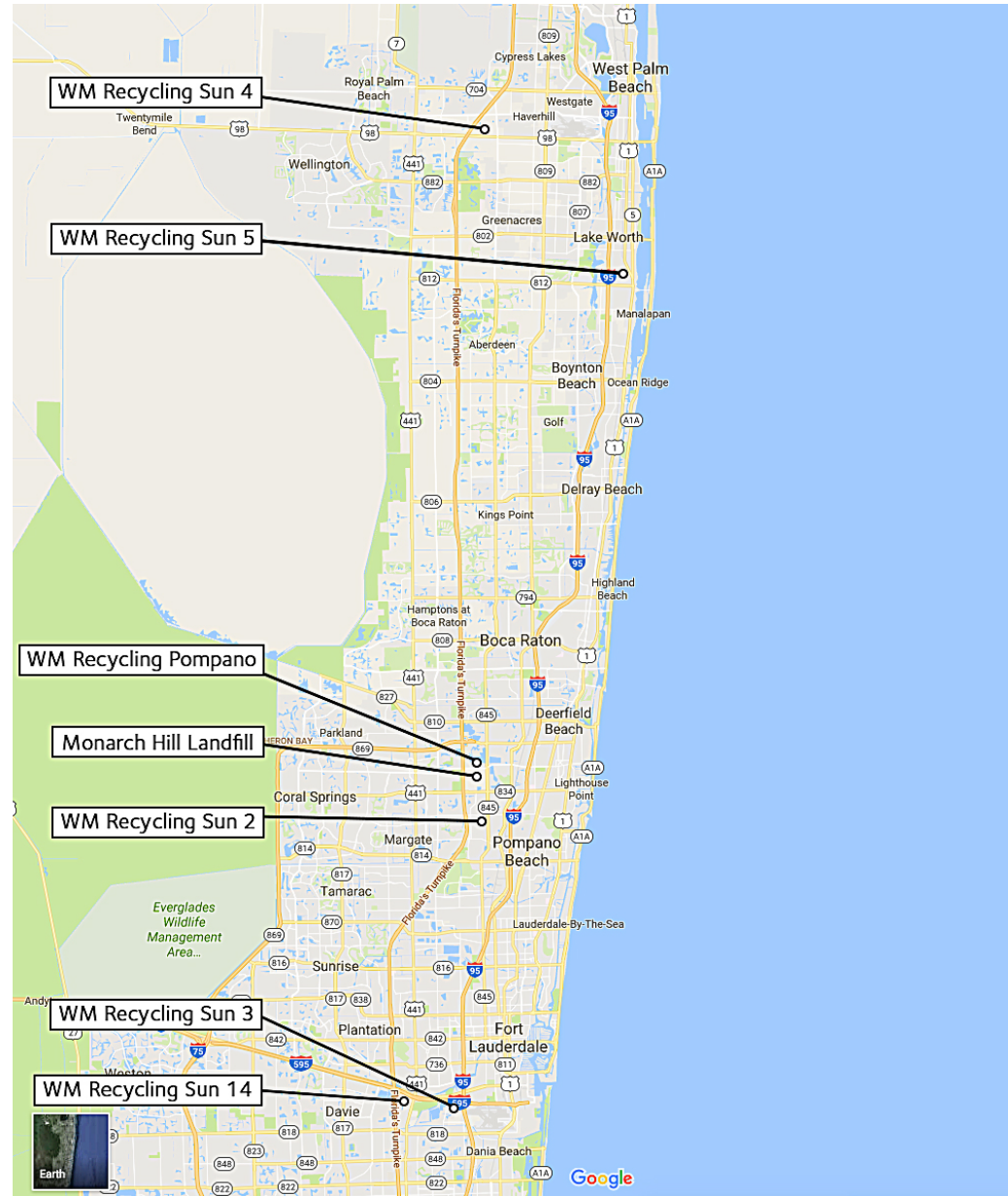


South Florida Facilities (con't)

- Broward County
 - WM Recycling Sun 2
 - WM Recycling Sun 3
 - WM Recycling Sun 14



C&D Recycling Facility Locations



THINK GREEN.®

Recycled Materials

- Asphalt
 - landfill roads
- Concrete
 - commercial road base
 - lakefill
- Paper
 - OCC
- Metals
- RSM
 - final cover at landfill
 - soil amendment



Recycled Materials (con't)

- Wood
 - Ground for fuel at WTE plant
- Yard Trash
 - Ground for landfill cover
 - Ground for mulch
- Materials Not Recycled
 - Drywall
 - Asphalt shingles
 - Textiles



C&D Recycling Numbers

Recycled Mats	Sun 2	Sun 3	Sun 4	Sun 5	Sun 14	Pompano	
Asphalt	-	-	-	-	-	-	
Concrete							
roads or lake fill	56,523	72,780	103,126	42,074	-	5	
RSM	29,257	69,527	80,149	30,920	-	6	
Wood							
LF Cover	9,210			-	26	-	
mulch/compost	-	11,028	26,045	-	-	-	
waste to energy				8,626	-	-	
Landclearing Debris	-	-	-	-	-		
Drywall	-	-	-	-	-		
Shingles/Roofing	-	-	-	-	-		
Paper							
OCC	1,151	1,390	3,022	-	34		
Plastic	374	131	255	-	51		
Metals	4,103	7,802	11,424	-	444	1	

Total Recycled (tons)	100,618	162,658	224,021	81,620	555	12
Total Disposed (tons)	108,525	11,990	95,878	30,284	78,308	156,940

Recycled (%)	48%	93%	70%	73%	1%	0%
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Average = 71%



RSM Beneficial Reuse



Recycling Challenges

- **RSM Disposal - Beneficial Re-use**
 - soil amendment
 - commercial/industrial setting
 - landfills (final cover)
- **Contamination in materials**
- **Environmental**
 - dust, odors, noise



Financial Challenges

- Tipping fees
 - MRF vs landfill
- Commodities pricing
 - plastic
 - metals
 - paper
- Equipment maintenance
- Picking line personnel and equipment operators
- Economy



Waste Management Inc. of Florida

Craig Ash

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Waste Management Inc. of Florida

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Thank You !





Questions

- Please use the “Questions” tab in in the attendee panel to submit a question
- Use the “Raise Hand” option to be identified for follow up



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