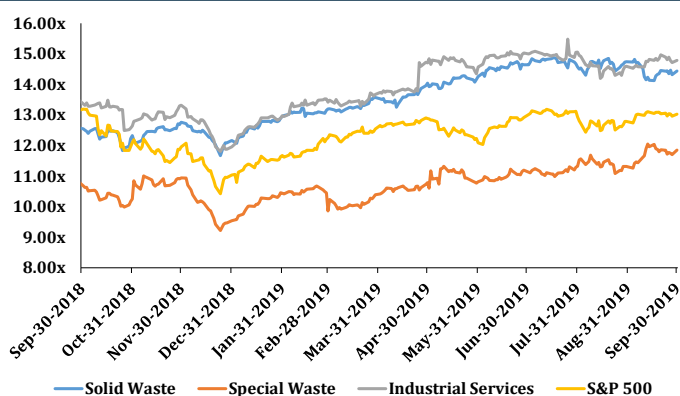




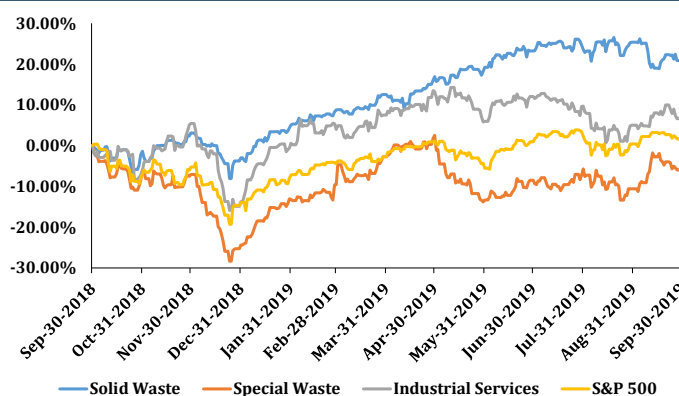
Trash Talk

An Environmental Services
Newsletter

Environmental Services LTM TEV/EBITDA



Environmental Services LTM Share Price (Shown as % change)



Indices Performance (% change)

	September 2019	LTM		September 2019	LTM
S&P 500	1.7%	2.2%	Solid Waste	(2.6%)	22.2%
Dow Jones	1.9%	1.7%	Special Waste	7.3%	(4.2%)
NASDAQ	0.5%	(0.6%)	Industrial Services	2.4%	7.5%

(Source: CapitalIQ)

Largest Environmental Services Movers and Losers (largest % changes in the month of September)

Cypress Energy Partners, L.P.	21.5%	Quest Resource Holding Corporation	(5.7%)
Perma-Fix Environmental Services, Inc.	13.8%	Casella Waste Systems, Inc.	(5.6%)
Stericycle, Inc.	13.5%	Waste Management, Inc.	(3.6%)
Fuel Tech, Inc.	12.0%	Republic Services, Inc.	(3.0%)
Heritage-Crystal Clean, Inc.	8.2%	Industrial Services of America, Inc.	(2.6%)

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Trash Talk

An Environmental Services
Newsletter

Select Public Trading Statistics (as of 9/30/2019)

Solid Waste:

(\$ in millions, except per share data)

Company	Share Price 09/30/2019	% of 52 Wk High	Market Capitalization	Enterprise Value	Valuation Multiples			PE Multiples			LTM Operating Margins			Net Debt/EBITDA	
					TEV/Total Revenue	TEV/EBITDA	TEV/EBIT	LTM P/E	CY18 P/E	CY19 P/E	Gross	EBIT	EBITDA		
Waste Management, Inc.	WM	\$115.00	94.4%	\$48,787	\$59,666	3.9x	14.0x	21.7x	28.1x	23.5x	28.5x	38.1%	18.2%	28.2%	2.5x
Republic Services, Inc.	BSG	\$86.55	95.5%	\$27,761	\$36,421	3.6x	13.2x	22.0x	26.8x	24.5x	28.0x	38.9%	16.9%	27.7%	3.1x
Waste Connections, Inc.	WCN	\$92.00	93.9%	\$24,252	\$28,386	5.5x	17.6x	31.9x	43.6x	33.8x	37.9x	41.2%	17.3%	31.2%	2.6x
Advanced Disposal Services, Inc.	ADSW	\$32.57	98.7%	\$2,897	\$4,798	3.0x	12.9x	60.0x	NM	49.1x	90.8x	34.7%	4.9%	23.1%	5.1x
Casella Waste Systems, Inc.	CWST	\$42.94	90.0%	\$2,043	\$2,607	3.7x	20.3x	48.0x	104.4x	52.6x	56.0x	31.0%	7.8%	18.4%	4.4x
Mean				\$21,148	\$26,375	3.9x	15.6x	36.7x	50.7x	36.7x	48.3x	36.8%	13.0%	25.7%	3.5x
Median				\$24,252	\$28,386	3.7x	14.0x	31.9x	35.8x	33.8x	37.9x	38.1%	16.9%	27.7%	3.1x
High				\$48,787	\$59,666	5.5x	20.3x	60.0x	104.4x	52.6x	90.8x	41.2%	18.2%	31.2%	5.1x
Low				\$2,043	\$2,607	3.0x	12.9x	21.7x	26.8x	23.5x	28.0x	31.0%	4.9%	18.4%	2.5x

Source: Capital IQ

Total Enterprise Value (TEV) = Market Capitalization + Preferred Equity + Debt + Minority Interest - Cash

LTM = Last Twelve Months

Special Waste:

(\$ in millions, except per share data)

Company	Share Price 09/30/2019	% of 52 Wk High	Market Capitalization	Enterprise Value	Valuation Multiples			PE Multiples			LTM Operating Margins			Net Debt/EBITDA	
					TEV/Total Revenue	TEV/EBITDA	TEV/EBIT	LTM P/E	CY18 P/E	CY19 P/E	Gross	EBIT	EBITDA		
Stericycle, Inc.	SRCL	\$50.93	86.0%	\$4,641	\$7,834	2.3x	13.3x	24.4x	NM	14.3x	21.1x	38.1%	9.5%	17.4%	5.4x
Clean Harbors, Inc.	CLH	\$77.20	96.4%	\$4,313	\$5,821	1.7x	11.6x	29.1x	51.4x	NM	NM	30.3%	6.0%	14.9%	3.0x
Darling Ingredients Inc.	DAR	\$19.13	84.6%	\$3,152	\$4,924	1.5x	9.6x	26.0x	41.4x	62.6x	31.8x	21.5%	2.4%	12.1%	4.2x
US Ecology, Inc.	ECOL	\$63.94	84.6%	\$1,407	\$1,746	2.9x	14.2x	23.2x	27.9x	30.5x	30.0x	29.8%	12.6%	20.6%	2.8x
Sharps Compliance Corp.	SMED	\$4.15	92.6%	\$67	\$64	1.4x	NM	143.0x	NM	NM	NM	29.9%	1.0%	4.8%	NM
Perma-Fix Environmental Services, Inc.	PESI	\$4.54	95.2%	\$55	\$60	1.1x	138.4x	NM	NM	NM	NM	21.5%	(1.9%)	0.8%	16.0x
Mean				\$2,272	\$3,408	1.8x	37.4x	49.1x	40.3x	35.8x	27.7x	28.5%	4.9%	11.8%	6.3x
Median				\$2,280	\$3,335	1.6x	13.3x	26.0x	41.4x	30.5x	30.0x	29.9%	4.2%	13.5%	4.2x
High				\$4,641	\$7,834	2.9x	138.4x	143.0x	51.4x	62.6x	31.8x	38.1%	12.6%	20.6%	16.0x
Low				\$55	\$60	1.1x	9.6x	23.2x	27.9x	14.3x	21.1x	21.5%	-1.9%	0.8%	2.8x

Source: Capital IQ

Total Enterprise Value (TEV) = Market Capitalization + Preferred Equity + Debt + Minority Interest - Cash

LTM = Last Twelve Months

Industrial Services:

(\$ in millions, except per share data)

Company	Share Price 09/30/2019	% of 52 Wk High	Market Capitalization	Enterprise Value	Valuation Multiples			PE Multiples			LTM Operating Margins			Net Debt/EBITDA	
					TEV/Total Revenue	TEV/EBITDA	TEV/EBIT	LTM P/E	CY18 P/E	CY19 P/E	Gross	EBIT	EBITDA		
Covanta Holding Corporation	CVA	\$17.29	94.1%	\$2,260	\$4,816	2.6x	15.2x	49.1x	NM	NM	NM	29.0%	4.9%	16.5%	8.2x
Heritage-Crystal Clean, Inc.	HCCI	\$26.50	91.3%	\$614	\$662	1.5x	17.1x	30.6x	46.5x	38.9x	28.5x	20.5%	5.1%	9.1%	1.2x
CECO Environmental Corp.	CECE	\$6.99	71.0%	\$246	\$313	0.9x	10.0x	16.2x	NM	31.1x	19.7x	32.6%	5.5%	8.9%	2.2x
Cypress Energy Partners, L.P.	CELP	\$9.00	98.2%	\$109	\$213	0.6x	8.1x	10.3x	11.5x	NM	NM	13.3%	5.5%	6.9%	3.1x
Ecology & Environment, Inc.	EEI	\$15.18	97.4%	\$66	\$56	0.6x	NM	NM	NM	NM	NM	43.2%	(2.4%)	(1.2%)	10.1x
Fuel Tech, Inc.	FTEX	\$0.99	32.2%	\$24	\$13	0.3x	9.8x	30.6x	NM	NM	NM	37.7%	0.9%	2.7%	(7.6)
Quest Resource Holding Corporation	QRHC	\$2.50	80.6%	\$38	\$43	0.4x	32.0x	NM	NM	NM	NM	17.6%	(0.2%)	1.3%	3.6x
Industrial Services of America, Inc.	ISDA	\$1.12	48.0%	\$9	\$23	0.4x	NM	NM	NM	NM	NM	3.0%	(3.5%)	(0.0%)	(508.6)
Mean				\$421	\$767	0.9x	15.4x	27.3x	29.0x	35.0x	24.1x	24.6%	2.0%	5.5%	-61.0x
Median				\$87	\$134	0.6x	12.6x	30.6x	29.0x	35.0x	24.1x	24.8%	2.9%	4.8%	2.7x
High				\$2,260	\$4,816	2.6x	32.0x	49.1x	46.5x	38.9x	28.5x	43.2%	5.5%	16.5%	10.1x
Low				\$9	\$13	0.3x	8.1x	10.3x	11.5x	31.1x	19.7x	-3.0%	-3.5%	-1.2%	(508.6)

Source: Capital IQ

Total Enterprise Value (TEV) = Market Capitalization + Preferred Equity + Debt + Minority Interest - Cash

LTM = Last Twelve Months





Trash Talk

An Environmental Services
Newsletter

Select Mergers and Acquisitions & Capital Raising News

❖ Meridian Waste Acquires West Transfer Station in Missouri

September 3, 2019 – Meridian Waste, an integrated, non-hazardous solid waste services company, has completed the acquisition of the West Transfer Station outside of St. Louis and the related hauling business, effective September 1. The purchase also includes commercial, industrial and residential subscription contracts in St. Charles, Franklin, Lincoln and Warren counties. Under the previous ownership, the West Transfer Station had not been operational for the last 10 years. However, the permit is active under the Missouri Department of Natural Resources, and the site is permitted to accept MSW waste from commercial and residential customers. The accepted waste will be disposed of at Meridian Waste's Eagle Ridge Landfill.

❖ Casella Completes Acquisition of Select Assets of Republic Services

September 4, 2019 – Rutland, Vermont-based Casella Waste Systems, Inc., a regional vertically integrated solid waste, recycling and resource management services company, has completed the acquisition of solid waste hauling and transfer assets in Albany, New York and Cheshire, Massachusetts, from select subsidiaries of Republic Services, Inc. The acquired assets are expected to generate approximately \$30 million of annualized revenue.

❖ GFL Acquires Windsor Disposal Services

September 5, 2019 – GFL Environmental Inc. has acquired the Windsor Disposal Services (WDS) group of companies. Founded in 1986, WDS is a provider of solid waste management solutions in the city of Windsor, Ontario, Canada, and surrounding communities, serving residential, commercial, industrial and municipal customers. For over 30 years, WDS has been a trusted family-run provider of solid waste management services. The acquisition of WDS extends GFL's footprint in the Windsor region and complements its existing capabilities in Southwestern Ontario.

❖ Frontier Waste Solutions Makes Moves in Texas Market

September 18, 2019 – Frontier Waste Solutions, a solid waste and recycling collection company based in Texas, completed five acquisitions during the third quarter—Midwest Waste Services, Panther City Disposal, Riata Disposal, H&L Rural Trash and Triple H Dumpster Service. Additionally, earlier in 2019, Frontier acquired certain strategic assets from Waste Connections in the Hearne – College Station market. These included new exclusive municipal agreements with the cities of Hearne and Brenham, Texas. During the third quarter, Frontier also was awarded new exclusive contracts with Newport Municipal Utility District and the city of Marlin, Texas, both contiguous to Frontier's current service areas. The Waste Connections transaction was completed in March 2019 and includes a combination of open market and exclusive municipal contracts. Based in Dripping Springs, Texas, Riata is a new market for Frontier and will serve as a base for further expansion into Austin and northern San Antonio. Frontier also announced it is moving into a new facility in Corpus Christi to accommodate further growth in the market. In addition, Scott Hunter and Lance Butler have been added as members of the management team. Hunter has 40 years of experience in the industry, including more than 30 years in Texas. Butler has worked in the industry for more than 20 years, both in Louisiana and Texas.

Select Industry News

❖ California Legislature Passes Commercial Composting, Recycling Bill

September 6, 2019 – The California State Legislature passed a bill requiring businesses to make composting and recycling bins accessible to customers at restaurants, malls and other businesses. Earlier this week, AB 827 received bi-partisan support in a 30-9 vote on the Senate Floor prior to returning to the Assembly for "concurrence," according to a press release issued by Californians Against Waste, a nonprofit environmental research and advocacy organization that identifies, develops, promotes and monitors policy solutions to pollution and conservation problems posing a threat to public health and the environment. Assembly Bill 827, authored by Assembly member Kevin McCarty (D-Sacramento), will mandate that businesses that are already required to subscribe to recycling services under AB 341 (Chesbro, 2011) or composting services under AB 1826 (Chesbro, 2014) offer access to recycling and composting bins to their customers by July 2020. Under this law, the recycling and composting bins provided to the public will be clearly marked with educational signage indicating what is accepted in the local solid waste programs.



Trash Talk

An Environmental Services
Newsletter

❖ PepsiCo Accelerates Plastic Waste Reduction Efforts

September 13, 2019 – PepsiCo, Inc. announced a new target to reduce 35 percent of virgin plastic content across its beverage portfolio by 2025, which equates to the elimination of 2.5 million metric tons of cumulative virgin plastic. Progress will be driven by the Company’s increased use of recycled content and alternative packaging materials for its beverage brands, including LIFEWTR, bubly and Aquafina, which recently announced sustainable packaging efforts. Additionally, through the expansion of PepsiCo’s SodaStream business, an estimated 67 billion plastic bottles will be avoided through 2025. These targets advance PepsiCo’s sustainable packaging vision and reinforce its “Beyond the Bottle” strategy which, in addition to SodaStream, includes the mobile-enabled Hydration Platform and other offerings that deliver beverages without single-use plastic bottles.

❖ Recology Introduces Artificial Intelligence to Recycle Central

September 13, 2019 – Global recycling facilities now demand improved sorting practices and reject bales of materials containing greater than one percent impurities. In the face of these realities, some U.S. cities have pulled back from recycling. San Francisco, however, is meeting the challenge head on and continues to lead North America in the recovery of recyclable materials. Recycle Central, the 200,000-square-foot materials recovery facility operated by Recology, is the backbone of San Francisco’s recycling system. Over the past four years, Recology has invested more than \$20 million into the facility, installing state-of-the-art recycling equipment, including new machines that have wider conveyor belts, run at higher speeds and help keep material like single-use plastic out of finished bales of mixed paper. To produce even cleaner bales, Recology recently introduced artificial intelligence to Recycle Central. Four robotic sorting machines are learning to identify different types of plastics, remove them from conveyor belts of mixed materials at rapid speed and deposit them into appropriate categories for further sorting.

❖ Sonoco Introduces Sustainable Packaging Development Initiative

September 17, 2019 – Sonoco, one of the largest sustainable, diversified global packaging companies, recently announced the creation of its new EnviroSense sustainable packaging initiative. Crossing a range of packaging materials, including cans made from 100 percent recycled paperboard, rigid plastic packaging containing post-consumer recycled content, mono-material flexible pouches that are recyclable and innovative packaging made from agricultural fibers, EnviroSense products are designed to incorporate a number of elements associated with more sustainable packaging. These attributes include: reduced environmental impact, optimized package-to-product ratio and shipping optimization, increased use of recycled content, recyclability, fiber sourcing, compostability and the use of bio-based materials. Sonoco collects nearly 3 million tons of materials, much of which it uses as raw materials to make new sustainable packaging. The Company uses recovered fiber to produce more than 2 million tons annually of uncoated recycled paperboard, much of which is converted into industrial and consumer packaging.

❖ Waste Container Systems Brings Durable, Modular Dumpsters to Market

September 24, 2019 – The waste industry experts behind GarbageMan and TrashBolt Software are working to revolutionize the commercial dumpster market by developing a new dumpster that solves many of the problems inherent in existing models, such as weight, repairs, shipping and storage. Waste Container Systems (WCS), based in Minnesota, is the brainchild of G. Wayne Molck, Andy Sorensen and Jon Huber, and its first product offering is a durable and modular dumpster that’s lightweight, collapsible and easy to repair and ship.

❖ New Oregon Law Allows Using Waste as Renewable Energy

September 24, 2019 – Oregon Governor Kate Brown recently signed a new law that would allow natural gas distributors to use renewable natural gas from solid waste in existing systems. The law, which takes effect on September 29, allows utilities to now capture and treat methane from wastewater and use it as an energy source despite it being a higher-cost resource. Oregon public utilities are required to deliver service as cheaply as possible, which has been a longtime barrier for using renewable natural gas. The law sets voluntary renewable natural gas goals for Oregon’s utilities of 15 percent by 2030, 20 percent by 2035 and 30 percent by 2050.

❖ Leanpath Launches Initiative to Expand Food Waste Prevention Tools

September 27, 2019 – Leanpath, a global leader in food waste prevention technology, announced the launch of the Leanpath 12.3 Initiative, an effort to expand the reach of food waste prevention to nonprofits and educational organizations. Since 2004, Leanpath has helped foodservice organizations cut their food waste by an average of 50 percent. With the Leanpath 12.3 Initiative, Leanpath is expanding its reach to help a select group of resource-constrained educational and nonprofit organizations accelerate their food waste prevention efforts. The Leanpath 12.3 Initiative offers Leanpath’s food waste data and expertise, as well as free or reduced-cost hardware and software, to qualified applicants who share Leanpath’s vision of ensuring a sustainable future by eliminating global food waste. Leanpath’s partnership with the James Beard Foundation to share food waste prevention software with culinary schools is now part of the initiative. The initiative’s first recipient is DC Central Kitchen, a Washington, D.C.-based nonprofit that combats hunger and poverty. The Leanpath 12.3 Initiative donated food waste prevention hardware and software to the organization.



Trash Talk

An Environmental Services
Newsletter

❖ **NWRA Promotes Three in Reorganization**

September 27, 2019 – Darrell Smith, president and CEO of the National Waste & Recycling Association (NWRA), has announced the promotion of three individuals to chiefs within the organization. Anne Germain has been promoted to COO, Jim Riley has been promoted to chief counsel and Kirk Sander has been promoted to chief of staff. Germain will serve as COO and senior vice president of regulatory affairs. She arrived at NWRA in 2013 and is currently serving as the vice president of technical and regulatory affairs. She will be given additional responsibilities in operations and financial administration. Riley assumes the position of chief counsel and senior vice president of government affairs. He has been vice president of federal affairs and deputy general counsel for NWRA since January 2018. In his new role, he will be the top in-house attorney for the association and oversee both federal and state government affairs. Sander has been elevated to the role of chief of staff and vice president of safety and standards. Since August 2018, he has served as the vice president of safety and standards. As chief of staff, he will work closely with Smith to improve efficiency and expand the reach and engagement of the association

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Sources include Waste360, Waste Dive and various publicly available news publications. Additional information is available upon request.

