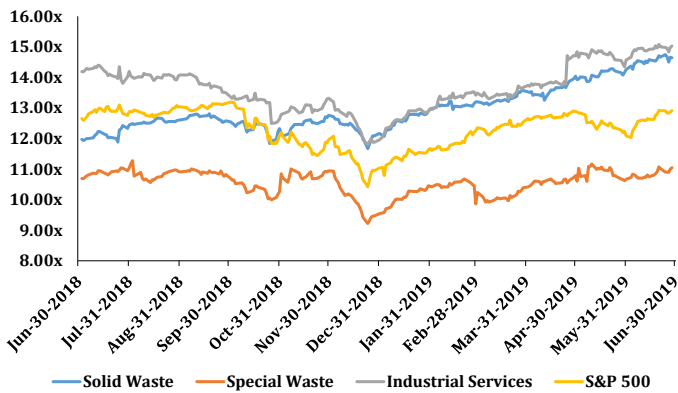


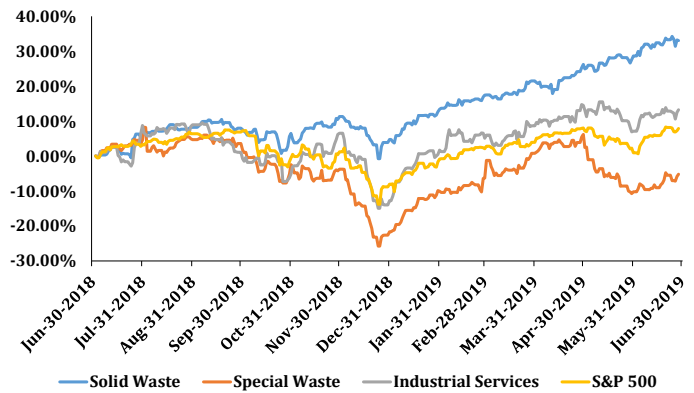
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Environmental Services LTM TEV/EBITDA



Environmental Services LTM Share Price (Shown as % change)



Indices Performance (% change)

	June 2019	LTM		June 2019	LTM
S&P 500	7.2%	7.9%	Solid Waste	3.4%	33.1%
Dow Jones	7.3%	9.4%	Special Waste	5.5%	(5.2%)
NASDAQ	8.9%	5.8%	Industrial Services	5.8%	13.3%

(Source: CapitalIQ)

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

Clean Harbors, Inc.	10.9%	Industrial Services of America, Inc.	(19.0%)
Sharps Compliance Corp.	10.2%	Fuel Tech, Inc.	(7.3%)
CECO Environmental Corp.	8.4%	Perma-Fix Environmental Services, Inc.	(5.8%)
Quest Resource Holding Corporation	7.8%	Ecology & Environment, Inc.	(1.7%)
Covanta Holding Corporation	6.2%	Advanced Disposal Services, Inc.	(0.7%)

Environmental Services Industry Contacts

Tom Denison
(312) 283-0819
thomas.denison@thechicagocorp.com

Phil Clarke
(312) 283-0803
philip.clarke@thechicagocorp.com



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Select Public Trading Statistics (as of 6/30/2019)

Solid Waste:

(\$ in millions, except per share data)

Company	Share Price 06/30/2019	% 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	\$115.37	98.3%	\$48,996	\$59,695	4.0x	14.2x	22.0x	26.5x	23.5x	26.7x	38.0%	18.2%	28.1%	2.5x
Republic Services, Inc.	BSG	\$86.64	98.7%	\$27,862	\$36,455	3.6x	13.3x	22.2x	27.4x	24.5x	26.4x	38.5%	16.8%	27.7%	3.1x
Waste Connections, Inc.	WCN	\$95.58	99.4%	\$25,195	\$29,091	5.8x	18.4x	33.1x	46.0x	33.8x	35.5x	41.5%	17.5%	31.4%	2.5x
Advanced Disposal Services, Inc.	ADSW	\$31.91	96.7%	\$2,836	\$4,748	3.0x	12.2x	47.1x	NM	49.1x	60.5x	35.3%	6.3%	24.6%	4.9x
Casella Waste Systems, Inc.	CWST	\$39.63	95.0%	\$1,872	\$2,410	3.6x	19.3x	45.5x	202.4x	52.6x	49.3x	31.2%	7.8%	18.5%	4.3x
Mean				\$21,352	\$26,480	4.0x	15.5x	34.0x	75.6x	36.7x	39.7x	36.9%	13.3%	26.1%	3.5x
Median				\$25,195	\$29,091	3.6x	14.2x	33.1x	36.7x	33.8x	35.5x	38.0%	16.8%	27.7%	3.1x
High				\$48,996	\$59,695	5.8x	19.3x	47.1x	202.4x	52.6x	60.5x	41.5%	18.2%	31.4%	4.9x
Low				\$1,872	\$2,410	3.0x	12.2x	22.0x	26.5x	23.5x	26.4x	31.2%	6.3%	18.5%	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 06/30/2019	% 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	\$47.75	66.8%	\$4,347	\$7,505	2.2x	11.1x	18.1x	NM	14.3x	17.5x	39.1%	12.1%	19.8%	4.7x
Clean Harbors, Inc.	CHH	\$71.10	92.1%	\$3,972	\$5,492	1.6x	11.2x	28.7x	50.7x	NM	NM	30.3%	5.7%	14.7%	3.1x
Darling Ingredients Inc.	DAR	\$19.89	87.9%	\$3,277	\$5,064	1.5x	10.0x	27.1x	152.0x	62.6x	31.8x	21.9%	3.0%	12.6%	4.1x
US Ecology, Inc.	ECOL	\$59.54	77.2%	\$1,315	\$1,657	2.9x	13.9x	22.2x	27.2x	30.5x	30.6x	29.4%	12.9%	20.7%	2.9x
Sharps Compliance Corp.	SMED	\$3.56	84.5%	\$57	\$54	1.3x	NM	NM	NM	NM	NM	29.3%	(0.5%)	3.4%	(2.5x)
Perma-Fix Environmental Services, Inc.	PESI	\$3.91	78.2%	\$47	\$52	1.1x	141.3x	NM	NM	NM	NM	22.9%	(2.3%)	0.8%	16.7x
Mean				\$2,169	\$3,304	1.8x	37.5x	24.0x	76.6x	35.8x	26.6x	28.8%	5.2%	12.0%	4.8x
Median				\$2,296	\$3,360	1.6x	11.2x	24.7x	50.7x	30.5x	30.6x	29.4%	4.4%	13.7%	3.6x
High				\$4,347	\$7,505	2.9x	141.3x	28.7x	152.0x	62.6x	31.8x	39.1%	12.9%	20.7%	16.7x
Low				\$47	\$52	1.1x	10.0x	18.1x	27.2x	14.3x	17.5x	21.9%	-2.3%	0.8%	(2.5x)

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 06/30/2019	% 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	\$17.91	97.4%	\$2,341	\$4,862	2.6x	15.1x	46.7x	NM	NM	NM	29.6%	5.3%	17.0%	8.0x
Heritage-Crystal Clean, Inc.	HCCI	\$26.31	90.7%	\$608	\$658	1.6x	18.3x	34.0x	49.6x	38.9x	28.7x	20.2%	4.6%	8.5%	1.4x
CECO Environmental Corp.	CECE	\$9.59	97.9%	\$336	\$404	1.2x	13.2x	22.5x	NM	31.1x	17.3x	32.8%	5.2%	8.7%	2.2x
Cypress Energy Partners, L.P.	CELP	\$7.28	86.7%	\$88	\$190	0.6x	8.4x	11.0x	10.2x	NM	NM	13.5%	5.0%	6.6%	3.6x
Ecology & Environment, Inc.	EEI	\$10.90	78.1%	\$47	\$37	0.4x	NM	NM	NM	NM	NM	43.2%	(2.4%)	(1.2%)	10.1x
Fuel Tech, Inc.	FTKX	\$1.40	45.8%	\$34	\$28	0.5x	36.2x	NM	NM	NM	NM	35.3%	(0.2%)	1.4%	(7.4x)
Quest Resource Holding Corporation	QRHC	\$2.77	89.4%	\$43	\$48	0.5x	34.0x	NM	NM	NM	NM	16.9%	(0.8%)	1.3%	3.8x
Industrial Services of America, Inc.	ISDA	\$0.98	36.4%	\$8	\$22	0.4x	11.7x	NM	NM	NM	NM	5.7%	(0.3%)	3.2%	7.6x
Mean				\$438	\$781	1.0x	19.6x	28.6x	29.9x	35.0x	23.0x	24.7%	2.0%	5.7%	3.6x
Median				\$67	\$119	0.5x	15.1x	28.2x	29.9x	35.0x	23.0x	24.9%	2.2%	4.9%	3.7x
High				\$2,341	\$4,862	2.6x	36.2x	46.7x	49.6x	38.9x	28.7x	43.2%	5.3%	17.0%	10.1x
Low				\$8	\$22	0.4x	8.4x	11.0x	10.2x	31.1x	17.3x	5.7%	-2.4%	-1.2%	(7.4x)

Source: Capital IQ

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

LTM = Last Twelve Months





Trash Talk

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Select Mergers and Acquisitions & Capital Raising News

❖ Casella Acquires Three Solid Waste Businesses

June 6, 2019 – Casella Waste Systems, a regional vertically integrated solid waste, recycling and resource management services company, has acquired three solid waste businesses with hauling, transfer and recycling operations in Maine, Massachusetts and Vermont. All transactions closed in May. The Company acquired the assets of D & E Rubbish Removal Inc., the assets of Bin Dump'n Trash and the stock of TAM Inc. and its wholly owned and related subsidiaries. In total, Casella expects to generate approximately \$11.5 million of annualized revenue from these acquisitions.

❖ Waste Pro Finalizes Sale of Solid Waste Disposal Revenue Bonds

June 7, 2019 – Waste Pro USA, Inc., a regional privately held provider of non-hazardous waste collection, transfer, recycling and disposal services, has completed the sale of the \$46,515,000 Florida Development Finance Corporation (FDIC) Solid Waste Disposal Revenue Bonds, Series 2019. The bonds, which bear a 5 percent coupon for 10 years, were priced at 107.492, with aggregate proceeds of \$50 million, to yield 3.875 percent. The bonds will mature on May 1, 2029, and are guaranteed by certain subsidiaries of Waste Pro, pursuant to the terms of the indenture relating to the bonds.

❖ Taiwan Recycler Acquires Ohio-based PET Processor

June 12, 2019 – Far Eastern New Century Corp., a Taiwan-based recycling producer, has acquired polyethylene terephthalate (PET) recycler Phoenix Technologies International, which has a processing site in Ohio. This marks the third acquisition of a U.S.-based production site in the last 18 months for Taiwan's Far Eastern New Century Corp. Far Eastern previously acquired a PET plant in West Virginia and a research and development center in Ohio, both from M&G after that Company ran into financial problems.

❖ Toronto-based GFL Environmental Plans for IPO

June 24, 2019 – Toronto-based GFL Environmental plans to raise up to \$1.98 billion Canadian (\$1.5 billion USD) for an initial public offering (IPO) this fall. The deal would alter GFL's ownership for the second time in 18 months. A few months after BC Partners and the Ontario Teachers Pension Plan bought large stocks in the Company, GFL purchased Waste Industries for \$3.65 billion, including debt. The combined Company, dubbed the largest privately-owned environmental services company in North America with operations in all Canadian provinces except Prince Edward Island and in 10 states in the U.S., operates 98 collection operations, 59 transfer stations, 29 materials recovery facilities, 10 organics facilities and 47 landfills and has more than 8,850 employees.

❖ Casella to Acquire Select Assets of Republic Services Subsidiaries

June 24, 2019 – Casella Waste Systems, a regional vertically integrated solid waste, recycling and resource management services company, has signed an Asset Purchase Agreement to purchase select solid waste assets in Albany, New York, and Cheshire, Massachusetts, from certain subsidiaries of Republic Services. The target assets to be acquired generate approximately \$30 million of annualized revenues. The transaction is expected to close by the end of the third quarter and remains subject to customary conditions precedent to closing.

❖ ESI Acquires Patriot Environmental

June 26, 2019 – Environmental Specialties International (ESI), an installer and provider of geosynthetic lining materials in the U.S., has acquired Patriot Environmental of Meeker, Oklahoma. Founded in 2012, Patriot has grown to become a leading specialty contractor serving Texas and Oklahoma. Operating from offices in Odessa, Texas, and Meeker, Oklahoma, Patriot is a provider and installer of geosynthetic lining materials for the oil and gas exploration and production industry.

❖ US Ecology and NRCG to Merge to Expand Specialty Waste Services

June 26, 2019 – US Ecology Inc. has entered into a definitive merger agreement with NRC Group Holdings Corp. (NRCG), a national leader in environmental, compliance and waste management services to the marine and rail transportation, general industrial and energy industries, in an all-stock transaction with an enterprise value of \$966 million. The transaction, which is expected to close in the fourth quarter of 2019, aims to create one nationwide leader in industrial and hazardous waste management services.



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Select Industry News

❖ Otsego County Hires American Waste for Recycling Services

June 3, 2019 – Officials in Otsego County, Michigan, have awarded American Waste a four-year contract for countywide recycling collection services. American Waste was unanimously awarded the contract over Emmet County Recycling, which provided services since 2012. American Waste came in as the lower bidder, and the costs will include hauling, processing and bin rental. The contract runs from June 1, 2019, through May 31, 2023. Residents will see a few changes in the process when the switch is made from Emmet County to American Waste.

❖ NRRA Names New Executive Director

June 10, 2019 – The Board of Trustees for the Northeast Resource Recovery Association (NRRA) has selected Reagan Bissonnette of Concord, New Hampshire, to serve as the NRRA's next executive director. Bissonnette is currently the senior director of Easement Stewardship & Counsel at the Society for the Protection of New Hampshire Forests, one of the country's largest land conservation organizations. Prior to joining the Forest Society, she was a corporate attorney at Ropes & Gray LLP, a global Boston-based law firm. The NRRA is a nonprofit in New England focused on waste reduction and recycling. Since its founding in 1981, NRRA's membership has grown to include more than 400 municipalities, individuals and businesses in New Hampshire, Vermont, Massachusetts, Connecticut and southern Maine. As part of its work, NRRA serves its members—and the public at large—by helping municipalities manage their waste and recyclable materials, while engaging in advocacy and education on waste reduction and recycling to help make New England more sustainable.

❖ Recycling Industry Veteran Brings Experience to AMP Robotics

June 11, 2019 – AMP Robotics Corp., a pioneer in artificial intelligence (AI) and robotics for the recycling industry, has hired industry veteran Brent Hildebrand as managing director of enterprise sales. In this role, Hildebrand is responsible for sales and business development into new geographies and expanded applications within the recycling industry. Hildebrand brings more than 20 years of recycling and waste management industry experience to AMP. Most recently he was vice president of recycling at Alpine Waste and Recycling, owned by GFL Environmental. At Alpine, he was responsible for developing the Company's vertically integrated recycling business and modernizing its operational infrastructure. He deployed the first AMP Cortex AI-powered robotics system for sorting and expanded recycling programs for new materials, including disposable coffee cups.

❖ Coretex Appoints Payne as New CEO

June 12, 2019 – Coretex, a global provider of fleet safety and management technology, has appointed a new CEO following an extensive global search. William Payne, currently CIO at building and construction giant Boral, will take over as CEO on August 1. Retiring CEO Selwyn Pellett will remain on the Coretex board as a non-executive director. Payne comes to Coretex with experience as both CIO and chief strategy officer for companies in Australia, Europe and the United States. He most recently led the creation and implementation of a digital strategy at Boral, reshaping the Company's IT function into Boral Digital Solutions and making it a pivotal element of the wider organization's future business strategy. Prior to that, he spent more than nine years at global environmental services company Veolia, with roles including executive general manager of strategy and performance ANZ and UK CIO.

❖ Florida Unveils State's First Recycling Robot

June 20, 2019 – Sarasota, Florida-based Single Stream Recyclers (SSR), a materials recovery facility (MRF) that serves residential and commercial recycling programs, has introduced Florida's first artificial intelligence (AI)-powered recycling robotic system. The robot is guided by AI to identify, grab and sort aseptic and gable top food and beverage cartons from the recycling stream. SSR opened its Sarasota facility in March 2018. Developed by AMP Robotics, the system uses advanced computer vision and machine learning to recognize different colors, textures, shapes, sizes and patterns that identify food and beverage cartons in the recycling stream. Then, it directs a high-speed robot to pick, sort and place the cartons for recycling. The robot learns as it goes, improving over time and picking up to 80 items per minute, about double the average pick rate of a human.



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❖ **LyondellBasell, Neste Unveil Commercial Production of Bio-based Plastic**

June 21, 2019 – LyondellBasell, a global plastics, chemicals and refining company, and Neste, a producer of renewable diesel from waste and residues, jointly introduced the first parallel production of bio-based polypropylene and bio-based low-density polyethylene at a commercial scale. The joint project used Neste's renewable hydrocarbons derived from sustainable bio-based raw materials, such as waste and residue oils. The project successfully produced several thousand tonnes of bio-based plastics, which are approved for the production of food packaging and being marketed under Circulen and Circulen Plus, the new family of LyondellBasell circular economy product brands. This achievement combines Neste's renewable feedstock and LyondellBasell's technical capabilities. LyondellBasell's cracker flexibility allowed it to introduce a new renewable feedstock at its Wesseling, Germany, site, which was converted directly into bio-based polyethylene and bio-based polypropylene.

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