CLEAN HARBORS INC
Form 10-K
February 27, 2019
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

ý ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018
OR
o TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to .
COMMISSION FILE NO. 001-34223

CLEAN HARBORS, INC.
(Exact name of registrant as specified in its charter)

Massachusetts (State or other jurisdiction of incorporation or organization)	04-2997780 (IRS Employer Identification No.)
42 Longwater Drive, Norwell, MA (Address of principal executive offices)	02061-9149 (Zip Code)

Registrant's telephone number: (781) 792-5000
Securities registered pursuant to Section 12(b) of the Securities Exchange Act of 1934:

Title of each class:	Name of each exchange on which registered:
Common Stock, $.01 par value	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Securities Exchange Act of 1934: None
Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ý No o
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes o No ý
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding twelve months (or for such shorter period that the registrant was required to file such reports) and (2) has been subject to such filing requirements for the past 90 days. Yes ý No o
Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ý No o
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. o
Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer,” “smaller reporting company,” and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer x	Accelerated filer o
Non-accelerated filer o	Smaller reporting company o
	Emerging growth company o

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes o No ý

On June 29, 2018 (the last business day of the registrant's most recently completed second fiscal quarter), the aggregate market value of the voting and non-voting common stock of the registrant held by non-affiliates of the registrant was approximately $2.9 billion, based on the closing price of such common stock as of that date on the New York Stock Exchange. Reference is made to Part III of this report for the assumptions on which this calculation is based.

On February 15, 2019, there were outstanding 55,855,142 shares of Common Stock, $.01 par value.

DOCUMENTS INCORPORATED BY REFERENCE

Certain portions of the registrant's definitive proxy statement for its 2019 annual meeting of stockholders (which will be filed with the Commission not later than April 30, 2019) are incorporated by reference into Part III of this report.

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Disclosure Regarding Forward-Looking Statements

In addition to historical information, this annual report contains forward-looking statements, which are generally identifiable by use of the words "believes," "expects," "intends," "anticipates," "plans to," "estimates," "projects," or similar expressions. These forward-looking statements are subject to certain risks and uncertainties that could cause actual results to differ materially from those reflected in these forward-looking statements. Factors that might cause such a difference include, but are not limited to, those discussed in this report under Item 1A, "Risk Factors," and Item 7, "Management's Discussion and Analysis on Financial Condition and Results of Operations." Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect management's opinions only as of the date hereof. We undertake no obligation to revise or publicly release the results of any revision to these forward-looking statements. Readers should also carefully review the risk factors described in other documents which we file from time to time with the Securities and Exchange Commission (the "SEC"), including the quarterly reports on Form 10-Q to be filed by us during 2019.

PART I

ITEM 1. BUSINESS

General

Clean Harbors, Inc. and its subsidiaries (collectively, "we," "Clean Harbors" or the "Company") is a leading provider of environmental, energy and industrial services throughout North America. We are also the largest re-refiner and recycler of used oil in the world and the largest provider of parts cleaning and related environmental services to commercial, industrial and automotive customers in North America.

During the first quarter of fiscal year 2018, certain of our businesses undertook a reorganization which included changes to the underlying business and management structures. The reorganization resulted in combining the Environmental Services businesses from an operational and management perspective, deepening customer relationships and allowing for efficiencies across our operations through the sharing of resources, namely labor and equipment, which will reduce third party spending and promote cross selling of our business offerings. In connection with this reorganization, our chief operating decision maker requested changes in the information that he regularly reviews for purposes of allocating resources and assessing performance. These changes required a reconsideration of our operating segments in the first quarter of 2018 and resulted in a change in our assessment of our operating segments. We concluded that we now have two operating segments for disclosure purposes; (i) the Environmental Services segment which consists of our historical Technical Services, Industrial Services, Field Services and Oil, Gas and Lodging businesses, and (ii) the Safety-Kleen segment.

- Environmental Services - Environmental Services segment results are predicated upon the demand by our customers for waste services directly attributable to waste volumes generated by them and project work for which waste handling and/or disposal is required. In managing the business and evaluating performance, management tracks the volumes and mix of waste handled and disposed of through our owned incinerators and landfills, as well as utilization of such incinerators, labor and billable hours and equipment among other key metrics. Levels of activity and ultimate performance associated with this segment can be impacted by several factors including overall U.S. GDP and U.S. industrial production, weather conditions, efficiency of our operations, competition and market pricing of our services and the management of our related operating costs. Environmental Services results are also impacted by the demand for planned and unplanned industrial related cleaning and maintenance services at customer sites and for environmental cleanup services on a scheduled or emergency basis, including response to national events such as major oil spills, natural disasters or other events where immediate and specialized services are required.

- Safety-Kleen - Safety-Kleen segment results are impacted by an array of core service offerings that serve to attract small quantity waste producers as customers and integrate them into the Clean Harbors waste network. Core service offerings include parts washer services, containerized waste services, vac services, used motor oil collection and sale of base and blended oil products as well as complementary products including automotive related fluids and shop supplies. Key performance indicators tracked by the Company relative to these services include the number of parts washer services performed and used motor oil and waste volumes collected. Results from these services are primarily driven by the overall number of parts washers placed at customer sites and volumes of waste collected. These factors can be impacted by overall economic conditions in the marketplace especially in the automotive related area. Safety-Kleen offers high quality base and blended oil products to end users including fleet customers, distributors, and manufacturers of oil products. Relative to these oil related products, management tracks the Company's volumes and relative percentages of base and blended oil sales along with various pricing metrics associated with the commodity driven marketplace. The segment’s results are

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significantly impacted by overall market pricing and product mix associated with base and blended oil products and, more specifically, the market prices of Group II base oils, which historically have correlated with overall crude oil prices. Costs incurred in connection with the collection of used oils and other raw materials associated with the segment's oil related products can also be volatile. The implementation of our OilPlus® closed loop initiative resulting in the sale of our renewable oil products directly to our end customers will also impact future operating results.

Clean Harbors, Inc. was incorporated in Massachusetts in 1980 and our principal office is located in Norwell, Massachusetts. We maintain a website at the following Internet address: http://www.cleanharbors.com. Through a link on this website, we provide free access to our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 as soon as reasonably practicable after electronic filing with the SEC. Our guidelines on corporate governance, the charters for our board committees, and our code of ethics for members of the board of directors, our chief executive officer and our other senior officers are also available on our website, and we will post on our website any waivers of, or amendments to, such code of ethics. Our website and the information contained therein or connected thereto are not incorporated by reference into this annual report.

Health and Safety

Health and Safety is our #1 priority. Employees at all levels of our Company share this philosophy and are committed to ensuring our safety goals are met. Our commitment to health and safety benefits everyone—our employees, our customers, the community, and the environment. In 2018, our successful Safety Starts With Me: Live It 3-6-5 program, which is a key component in our overall safety approach along with our many other programs, enabled us to achieve a low Total Recordable Incident Rate, or "TRIR;" Days Away, Restricted Activity and Transfer Rate, or "DART;" and Experience Modification Rate, or "EMR." For the year ended December 31, 2018, our Company wide TRIR, DART and EMR were 1.08, 0.63 and 0.58, respectively. For the year ended December 31, 2017, our Company wide TRIR, DART and EMR were 1.34, 0.80 and 0.58, respectively.

In order to protect our employees, continue to lower our incident rates, and satisfy our customers' demands to retain the best service providers with the lowest TRIR, DART and EMR rates, we are fully committed to continuously improving our health and safety performance. All employees recognize the importance of protecting themselves, their fellow employees, their customers, and all those around them from harm. This commitment is supported by the philosophies and Golden Rules of Safety that is the cornerstone of the Safety Starts with Me: Live It 3-6-5 program. Live It 3-6-5 is our dedication to the safety of our workers through each and every employee's commitment to our three Safety philosophies, our six Golden Rules of Safety and each employee's five personal reasons why they choose to be safe at work, on the road and at home.

Compliance

We regard compliance with applicable environmental regulations as a critical component of our overall operations. We strive to maintain the highest professional standards in our compliance activities. Our compliance program has been developed for each of our waste management facilities and service centers under the direction of our compliance staff. The compliance staff is responsible for facilities permitting and regulatory compliance, compliance training, transportation compliance, and related record keeping. To ensure the effectiveness of our regulatory compliance program, our compliance staff monitors daily operational activities. We also have an Environmental Health and Safety Compliance Internal Audit Program designed to identify any weaknesses or opportunities for improvement in our ongoing compliance programs. We also perform periodic audits and inspections of the disposal facilities owned by other companies which we utilize.

Our facilities are frequently inspected and audited by regulatory agencies, as well as by customers. Although our facilities have been cited on occasion for regulatory violations, we believe that each of our facilities is currently in substantial compliance with applicable permit requirements.

Strategy

Our strategy is to develop and maintain ongoing relationships with a diversified group of customers that have recurring needs for environmental, energy or industrial services. We strive to be recognized as the premier supplier of a broad range of value-added services based upon quality, responsiveness, customer service, information technologies, breadth of service offerings and cost effectiveness.

The principal elements of our business strategy in no particular order are:

- Cross-Sell Across Businesses—We believe the breadth of our service offerings allows us to provide additional services to existing customers and as such, the reorganization that took place during the first quarter of 2018 resulted

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in deepening of our customer relationships and promoting the cross selling of such service offerings. We believe we can provide industrial and field services to customers that traditionally have only used our technical services and technical services to customers that use our industrial services or oil and gas field services. At the same time, we see a variety of cross-selling opportunities between our Environmental Services and Safety-Kleen segments. Reflecting this strategy, we have been successfully cross-selling the services of Safety-Kleen, such as parts washers, various cleaning products, recycling services and our OilPlus® closed loop initiative, to legacy Clean Harbors customers. We believe leveraging our ability to cross-sell across our segments will drive additional revenue for our Company.

- Capture Large-Scale Projects—We provide turnkey offsite transportation and landfill or incineration disposal services for soil and other contaminated media generated from remediation activities. We also assist remediation contractors and project managers with support services including groundwater disposal, waste disposal, roll-off container management, and many other related services. We believe this will drive incremental waste volume to our existing facilities, thereby increasing utilization and enhancing overall profitability.
- Expand Throughput Capacity of Existing Facilities—We operate an extensive network of hazardous waste management facilities and oil re-refineries and have made substantial investments in these facilities, which provide us with significant operating leverage as volumes increase. In addition, there are opportunities to expand waste handling capacity or waste oil processing at these facilities by modifying the terms of the existing permits and by adding equipment and new technology. Through selected permit modifications, we can expand the range of treatment services offered to our customers without the large capital investment necessary to acquire or build new waste management facilities.
- Pursue Strategic Acquisitions—We actively pursue selective acquisitions in certain services or market sectors where we believe the acquisitions can enhance and expand our business. We believe that we can expand existing services through strategic acquisitions in order to generate incremental revenues from existing and new customers and to obtain greater market share. In order to maximize synergies, we rapidly integrate our acquisitions into our existing processes. For additional information on our acquisitions, see "Acquisitions and Divestitures" below.
- Execute Strategic Divestitures—To complement our acquisition strategy and focus on internal growth, we regularly review and evaluate our existing operations to determine whether our business model should change through the divestiture of certain businesses. Accordingly, from time to time, we divest certain non-core businesses and reallocate our resources to businesses that we believe better align with our long-term strategic direction.
- Focus on Cost, Pricing and Productivity Initiatives—We continually seek to increase efficiency and to reduce costs through enhanced technology, process efficiencies and stringent expense management. For instance, in 2018, we successfully undertook, in response to current and expected business conditions, branch consolidations, greater internalization of maintenance costs, procurement and supply chain improvements. Additionally, we seek areas in our business where strategic investment in processes, tools and employees can serve to increase productivity, efficiency and safety compliance.
- Expand Service Offerings and Geographic Coverage—We believe our Environmental Services and Safety-Kleen segments have a competitive advantage due to their vast network of locations across North America, particularly in areas where we maintain service locations at or near a treatment, storage and disposal facility, or "TSDF." By opening additional service locations we believe that we can increase our market share within these segments. We believe this will drive additional waste into our existing facilities, thereby increasing utilization and enhancing overall profitability. In addition, our management team continues to assess the competitive landscape in order to identify new business opportunities.

Acquisitions and Divestitures

Acquisitions are an element of our business strategy that involves expansion through the purchase of businesses that complement our existing company and create multiple opportunities for profitable growth.

In 2018, we acquired the U.S. Industrial Cleaning Business of Veolia Environmental Services North America LLC (the "Veolia Business") as well as a privately-owned company for a combined preliminary purchase price of $151.3 million. The acquisitions provide significant scale and industrial services capabilities, while increasing the size of our existing U.S. Industrial Services business. The acquisitions were financed with cash on hand. The Veolia Business is included in our Environmental Services segment while the privately-owned company has components included in

both the Environmental Services and Safety-Kleen segments.
In 2017, we acquired Lonestar West Inc. ("Lonestar"), a public company headquartered in Alberta, Canada, for approximately CAD $41.8 million ($33.1 million USD), net of cash acquired. The acquisition price included the assumption of approximately CAD $21.3 million ($16.8 million USD) in outstanding debt, which we subsequently repaid. The acquisition

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supports our growth in the daylighting and hydro excavation services markets. In addition to increasing the size of our hydro vac fleet, Lonestar's network of locations provides us with direct access to key geographic markets in both the United States and Canada. The acquired company is included in our Environmental Services segment.

In 2016, we acquired seven businesses for a combined purchase price of $204.8 million, paid in cash and subject to customary post-closing adjustments, which complement our strategy to create a closed loop model as it relates to the sale and distribution of our oil products. These acquisitions also provided us three additional oil re-refineries while also expanding our used motor oil collection network and providing greater blending and packaging capabilities. These acquisitions also provided us with greater access to customers in the West Coast region of the United States and additional locations with Part B permits. Operations of these acquisitions are primarily being integrated across our Safety-Kleen segment, with certain operations also being integrated into our Environmental Services segment.

For additional information relating to our acquisition activities during 2018, 2017 and 2016, see Note 4, "Business Combinations," to our consolidated financial statements included in Item 8 of this report.

Other business transactions also include divestitures based on our ongoing review of portfolio assets to determine the extent to which they are contributing to our objectives and growth strategy.

In 2017 we completed the sale of our Transformer Services business, which was a non-core business previously included within the legacy Technical Services segment, for $45.5 million ($43.4 million net of $2.1 million in transactional related costs) subject to customary post-closing adjustments. In 2016 we completed the sale of our Catalyst Services business, which was a non-core business previously included within the legacy Industrial Services operating segment, for approximately $50.6 million ($49.2 million net of cash retained by the catalyst services business) subject to customary post-closing adjustments. For additional information relating to these divestitures, see Note 5, "Disposition of Businesses," to our consolidated financial statements included in Item 8 of this report.

Protecting the Environment and Corporate Sustainability

Our core business is to provide industry, government and the public a wide range of environmental, energy and industrial services that protect and restore North America's natural environment.

As a leading provider of environmental, energy and industrial services throughout North America, our first goal is to help our customers prevent the release of chemicals and hazardous waste streams into the environment. We also are the leading service provider in the recovery and decontamination of pollutants that have been released. This includes the safe destruction or disposal of hazardous materials in a manner that ensures these materials are no longer a danger to the environment. When providing these services, we are committed to the recycling, reuse and reclamation of these wastes whenever possible using a variety of methods more fully explained below in the sections describing our general operations. Many of our branded services exemplify our commitment to sustainability and providing environmental solutions to the marketplace. Where possible, liquids such as solvents, chemicals and used oil are continuously recycled to our high-quality standards and made into useful products. Tolling programs provide a closed process in which the customer’s spent solvents are recycled to their precise specifications and returned directly to them.

In 2018 we gathered nearly 225 million gallons of used oil in North America through our Safety-Kleen business. Since their opening, our plants have re-refined more than 3.3 billion gallons of used oil, avoiding more than 27 million metric tons of greenhouse gases.

We have also become the leading North American provider of services to protect the ozone layer from the destructive effects of chlorofluorocarbons, or "CFCs," which are ozone layer depleting substances and global warming compounds that have global warming potentials up to 10,000 times more powerful than carbon dioxide. Global-warming potential is a relative measure of how much heat a greenhouse gas traps in the atmosphere.

Since 2013, more than 7.9 million metric tons of carbon dioxide emissions were avoided by destroying CFCs at our Arkansas incinerator. That is equivalent to removing approximately 1.6 million passenger vehicles from the road for one year.

Our fleet of transportation vehicles represents one of our largest opportunities to apply sustainable business practices. Our Asset Refurbishment Program is a comprehensive effort to rebuild assets to "like new" quality. With four facilities now operational, we are able to rebuild approximately two vehicles every week. Our goal is 100% reuse or recycling of all materials.

One of our most highly visible public programs for various governmental and community entities involves the removal of thousands of tons of hazardous wastes, from households throughout the United States and Canada, that might otherwise be improperly disposed of or become dangerous to the communities where they are stored.

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As we provide these wide-ranging services throughout North America, we are committed to ensuring that our own operations are environmentally responsible. Our sustainability efforts are guided by a formal policy, strategy and plan and we continue to build on our past efforts, such as implementing numerous energy efficiency improvements and various transportation initiatives within our fleet, including using our own recycled oil. We developed initiatives that focus on improving the Company's and our customers' impact on the environment. Our technologies and increased operational efficiencies have allowed us to deliver innovative customer solutions, like our Safety-Kleen Oil Plus® Program, that show our commitment to sustainable methodologies and transform the way we do business.

Competitive Strengths

- Leading Provider of Environmental, Energy and Industrial Services—We are a leading provider of environmental, energy and industrial services. We own nine of the 13 commercial hazardous waste incinerators, making us the largest operator of such facilities in North America. We are also one of the few industrial services companies with national footprints in both the U.S. and Canada. We provide multi-faceted, high-quality services to a broad mix of customers. We attract and better serve our customers because of our vast capabilities and breadth of services as well as our overall size, scale and geographic location of our large network along with valuable and unique assets used in providing our services.
- Integrated Network of Assets—We believe we operate, in the aggregate, the largest number of commercial hazardous waste incinerators, landfills, treatment facilities and TSDFs in North America. Our broad service network enables us to effectively handle a waste stream from its origin through disposal and to efficiently direct and internalize our waste streams to reduce costs. As our processing of wastes increases, our size allows us to leverage our network and increase our profit margins as we can internalize a greater volume of waste in our incinerators, landfills and other disposal facilities. Furthermore, these assets are very difficult to duplicate because significant permitting and regulatory approvals would need to take place in order for new waste disposal sites to come on line. High barriers of entry for such assets provide increased value to our network.
- Comprehensive Service Capabilities—Our comprehensive service offerings allow us to act as a full-service provider to our customers. Our breadth of service offerings creates incremental revenue growth as customers seek to minimize the number of outside vendors and demand "one-stop-shop" service providers.
- Largest Collector and Recycler of Used Motor Oil— As the largest re-refiner and recycler of used oil in the world, we returned during 2018 approximately 192 million gallons of new re-refined oil, lubricants and byproducts back into the marketplace. In 2018, our re-refining process eliminated more than two million metric tons of greenhouse gas ("GHG"), which is the equivalent of growing more than 54 million trees for 10 years in an urban environment or taking over 395,000 passenger cars off the road for one year.
- Large and Diversified Customer Base—Our customers range from Fortune 500 companies to midsize and small public and private entities that span multiple industries and business types, including governmental entities. This diversification limits our credit exposure to any one customer and potential cyclicality to any one industry. As a percentage of our 2018 revenues, the top ten industries we service totaled approximately 76% and included general manufacturing (17%), chemical (14%), refineries (8%), base and blended oils (8%), automotive (7%), government (6%), utilities (5%), transportation (4%), oil and gas (4%) and construction (3%).
- Stable and Recurring Revenue Base—We have long-standing relationships with our large customers, many of whom have worked with our Company for decades. Our diversified customer base provides stable and recurring revenues, as a significant portion of our revenues are derived from previously served customers with recurring needs for our services. In addition, switching costs for many of our hazardous waste customers are high. This is due to many customers' desire to audit disposal facilities prior to their qualification as approved sites and to limit the number of facilities to which their hazardous wastes are shipped in order to reduce their potential liability under United States and Canadian environmental laws and regulations. We have been selected as an approved vendor by large and small generators of waste because we possess comprehensive collection, recycling, treatment, transportation, disposal, and hazardous waste tracking capabilities and have the expertise necessary to comply with applicable environmental laws and regulations. Those customers that have selected us as an approved vendor typically continue to use our services on a recurring basis.
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Regulatory Compliance—We continue to make capital investments in our facilities to ensure that they are in compliance with current federal, state, provincial and local regulations. Companies that rely on in-house disposal may find the current regulatory requirements to be too capital intensive or complicated, and may choose to outsource many of their hazardous waste disposal needs.

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- Effective Cost Management—Our significant scale allows us to maintain low costs through standardized compliance procedures, significant purchasing power, leveraging our investment in technology and our ability to efficiently utilize logistics and transportation to economically direct waste streams to the most efficient facility. We also have the ability to transport and process with internal resources the substantial majority of all hazardous waste that we manage for our customers. In addition, our Safety-Kleen results are significantly impacted by the overall market pricing and product mix associated with base and blended oil products and, more specifically, the market prices of Group II base oils. We charge fees related to our used oil collection services which allow us to effectively manage the profit spreads inherent in our business.
- Proven and Experienced Management Team—Our executive management team provides depth and continuity. Our 12 executive officers collectively have over 200 years of experience and expertise in the environmental, energy and industrial services industries. Our chief executive officer founded our Company in 1980, and since its formation has served as both the Chief Executive Officer and Chairman of the Board.

Operations

General

Seasonality and Cyclical Nature of Business. Our operations may be affected by seasonal fluctuations due to weather and budgetary cycles influencing the timing of customers' spending for products and services. Typically during the first quarter of each year there is less demand for our products, oil collection, recycling and environmental services due to the lower levels of activities by our customers as a result of the cold weather, particularly in the Northern and Midwestern regions of the United States and Canada. As a result, reduced volumes of waste are received at our facilities, higher operating costs are realized due to sub-freezing weather and high levels of snowfall, factory closings for year-end holidays reduce waste volume, and lower volumes of used oil are generated for our collection.

Geographical Information. For the year ended December 31, 2018, we generated $2,721.8 million or 82.5% of our direct revenues in the United States and $578.5 million or 17.5% of revenues in Canada. For the year ended December 31, 2017, we generated $2,392.0 million or 81.2% of our direct revenues in the United States and $553.0 million or 18.8% of revenues in Canada. For additional information about the geographical areas from which our revenues are derived and in which our assets are located, see Note 19, "Segment Reporting," to our consolidated financial statements included in Item 8 of this report.

Environmental Services

We collect, transport, treat and dispose of hazardous and non-hazardous waste, including resource recovery, physical treatment, fuel blending, incineration, landfill disposal, wastewater treatment, lab chemical disposal, explosives management and CleanPack® services. Our CleanPack® services include the collection, identification and categorization, specialized packaging, transportation and disposal of laboratory chemicals and household hazardous waste. We also perform a wide range of industrial maintenance and specialty industrial services and utilize specialty equipment and resources to perform field services at any chosen location on a planned or emergency response basis. All of these services are designed to protect the environment and address environmental related challenges through the use of innovation and the latest technologies. We provide customers with sustainable solutions that seek to recycle waste materials whenever possible.

Technical Services. We provide technical services through a network of service centers from which a fleet of vehicles are dispatched to pick up customers' waste either on a predetermined schedule or on demand, and to deliver the waste to permitted facilities, which are usually Company-owned. Our service centers also can dispatch chemists to a customer location for collection of chemical and laboratory waste for disposal. InSite Service offerings is a branded on-site/in-plant service delivery program through which we offer a full range of environmental, industrial and waste management services. This signature program is built on safety, quality, efficiency and integrity, and has been offered by Clean Harbors for more than 25 years. By leveraging Clean Harbors' expertise and capabilities, our on-site staffs are dedicated to developing the safest, most cost-effective solutions to service customers' needs.

Collection, Transportation and Logistics Management. As an integral part of our services, we collect industrial waste from customers and transport such waste to and between our facilities for treatment or bulking for shipment to final disposal locations. Customers typically accumulate waste in containers, such as 55-gallon drums, bulk storage tanks or 20-cubic-yard roll-off containers. In providing this service, we utilize a variety of specially designed and constructed tank trucks and semi-trailers as well as third-party transporters, including railroads.

Treatment and Disposal. We recycle, treat and dispose of hazardous and non-hazardous industrial waste. The waste handled includes substances which are classified as "hazardous" because of their corrosive, ignitable, infectious, reactive or toxic properties, and other substances subject to federal, state and provincial environmental regulation. We provide final

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treatment and disposal services designed to manage waste which cannot be otherwise economically recycled or reused. The waste that we handle comes in solid, sludge, liquid and gas form.

We operate a network of TSDFs that collect, temporarily store and/or consolidate compatible waste streams for more efficient transportation to final recycling, treatment or disposal destinations. These facilities hold special permits, such as Part B permits under the Resource Conservation and Recovery Act, or "RCRA," in the United States, which allow them to process, transfer and dispose of waste through various technologies including recycling, incineration, and landfill and wastewater treatment depending on each location's permitted and constructed capabilities.

Resource Recovery and Fuel Blending. We operate recycling systems for the reclamation and reuse of certain waste, particularly solvent-based waste generated by industrial cleaning operations, metal finishing and other manufacturing processes. Resource recovery involves the treatment of wastes using various methods, which effectively remove contaminants from the original material to restore its fitness for its intended purpose and to reduce the volume of waste requiring disposal.

We also operate a recycling facility that recycles refinery waste and spent catalyst. The recycled oil and catalysts, depending on market conditions, are sold to third parties.

Incineration. Incineration is the preferred method for the treatment of organic hazardous waste because it effectively destroys the contaminants at high temperatures. High temperature incineration effectively eliminates organic waste such as herbicides, halogenated solvents, pesticides, pharmaceutical and refinery waste, regardless of whether gases, liquids, sludge or solids. Federal and state incineration regulations require a destruction and removal efficiency of 99.99% for most organic waste.

As of December 31, 2018, we had nine active incinerators operating in five incinerator facilities that offer a wide range of technological capabilities to customers. In the United States, we operate a fluidized bed thermal oxidation unit for maximum destruction efficiency of hazardous waste with an estimated annual practical capacity of 58,808 tons and three solids and liquids capable incinerator facilities with a combined estimated annual practical capacity of 377,387 tons. We also operate one hazardous waste liquid injection incinerator in Canada with total annual practical capacity of 125,526 tons.

Our incinerator facilities in Kimball, Nebraska; Deer Park, Texas; El Dorado, Arkansas; and Aragonite, Utah, are designed to process liquid organic waste, sludge, solids, soil and debris. Our Deer Park facility has two kilns and a rotary reactor. Our El Dorado facility specializes in the treatment of bulk and containerized hazardous liquids, solids and sludge. In 2017, we opened a new hazardous waste incinerator at our El Dorado, Arkansas facility, which specializes in high-temperature incineration of regulated waste such as industrial and laboratory chemicals, manufacturing byproducts, fertilizers and other solid and liquid materials that would otherwise be hazardous to the environment and public health if not properly managed. Our facilities in Kimball and Deer Park also have on-site landfills for the disposal of ash produced as a result of the incineration process.

Our incinerator facility in Lambton, Ontario, is a liquid injection incinerator, designed primarily for the destruction of liquid organic waste. Typical waste streams include wastewater with low levels of organics and other higher concentration organic liquid waste not amenable to conventional physical or chemical waste treatment.

Landfills. Landfills are primarily used for disposal of inorganic waste. In the United States and Canada, we operate nine commercial landfills. Seven of our commercial landfills are designed and permitted for disposal of hazardous waste and two of our landfills are operated for non-hazardous industrial waste disposal and, to a lesser extent, municipal solid waste. In addition to our commercial landfills, we also own and operate, as described above, two non-commercial landfills that only accept waste from our on-site incinerators.

Of our seven commercial landfills used for disposal of hazardous waste, five are located in the United States and two are located in Canada. As of December 31, 2018, the useful economic lives of these landfills included approximately 25.6 million cubic yards of remaining capacity. This estimate of the useful economic lives of these landfills includes permitted airspace and unpermitted airspace that our management believes to be probable of being permitted based on our analysis of various factors. In addition to the capacity included in the useful economic lives of these landfills, there are approximately 31.9 million cubic yards of additional unpermitted airspace capacity included in the footprints of these landfills that may ultimately be permitted, although there can be no assurance that this additional capacity will be permitted. In addition to the hazardous waste landfills, we operate two non-hazardous industrial landfills with

3.8 million cubic yards of remaining permitted capacity. These two facilities are located in the United States and have been issued operating permits under Subtitle D of RCRA. Our non-hazardous landfill facilities are permitted to accept commercial industrial waste, including waste from foundries, demolition and construction, machine shops, automobile manufacturing, printing, metal fabrications and recycling.

Wastewater Treatment. We operate nine wastewater treatment facilities that offer a range of wastewater treatment technologies. These wastewater treatment operations involve processing hazardous and non-hazardous waste through use of

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physical and chemical treatment methods. These facilities treat a broad range of industrial liquid and semi-liquid waste containing heavy metals, organics and suspended solids.

Total Project Management. We also provide total project management services in areas such as chemical packing, on-site waste management, remediation, compliance training and emergency spill response, while leveraging the Clean Harbors network of service centers and environmental capabilities.

Industrial Services. We perform industrial maintenance services and specialty industrial services at refineries, mines, upgraders, chemical plants, pulp and paper mills, manufacturing, and power generation facilities. We provide these services throughout North America.

Our crews handle as-needed in-plant services to support ongoing in-plant cleaning and maintenance services, including liquid/dry vacuum, hydro-blasting, dewatering and materials processing, water and chemical hauling and steam cleaning. We provide a variety of specialized industrial services including plant outage and turnaround services, decoking and pigging, chemical cleaning, high and ultra-high pressure water cleaning, pipeline inspection and coating services, and large tank and surface impoundment cleaning. We also provide daylighting services which, through the use of specialized hydro vac equipment, deliver safer, cleaner and more precise hydro excavation services to safely uncover highly sensitive underground targets. Our crews also handle oilfield transport and production services supporting drilling, completions and production programs.

Field and Emergency Response Services. Our crews and equipment are dispatched on a planned or emergency basis and perform services such as confined space entry for tank cleaning, site decontamination, large remediation projects, demolition, spill cleanup on land and water, railcar cleaning, product recovery and transfer, scarifying and media blasting and vacuum services. Additional services include filtration and water treatment services.

We are also a leader in providing response services for environmental emergencies of any scale from man-made disasters such as oil spills and natural disasters such as hurricanes.

Oil and Gas Field Services. We provide integrated seismic and right-of-way services for efficient resource discovery and site preparation. These services include: (i) seismic surveying that minimizes costs, environmental impact, and time in field; (ii) mulching/line clearing that expedites additional geophysical activities and minimizes environmental impact; and (iii) shot-hole drilling that provides safe and efficient operations in every terrain, including hostile and inaccessible regions. We also provide surface rentals services by supporting oil and gas companies' drilling and well completion programs. Key to our services is our ability to provide solids control to support the drilling process. Our technologies help manage liquids, solids and semi-solid material during the drilling operation, and include centrifuges, tanks, and drilling fluid recovery. We also can provide container rentals for safe collection of drill cuttings and other wastes, as well as manage disposal of drilling fluids and solids and can supply surface rental equipment to support drill sites by providing wellsite trailers, wastewater treatment systems and holding tanks, light towers, generators and handling tools.

Lodging Services. Our fixed lodges provide turnkey remote accommodations throughout Western Canada, primarily in the Fort McMurray area, and range in size up to approximately 600 beds. These are open lodges, with amenities that include catering and housekeeping services, fully equipped common areas, fitness rooms and computer rooms, wireless internet and public phones, powered parking stalls, laundry facilities, and daily towel service. We also offer mobile camp operations, which provide services for remote workforce accommodation facilities throughout Western Canada, currently in British Columbia, Saskatchewan and Alberta, with multiple accommodation types. These include client and open camps, operator camps, and drill camps. Furthermore, hospitality services are available as a standalone service to clients which have other accommodation arrangements.

Safety-Kleen

Our Safety-Kleen business offers an array of environmental services and complementary products to a diverse range of customers including automobile repair shops, car and truck dealers, metal fabricators, machine manufacturers, fleet maintenance shops and other automotive, industrial and retail customers.

As the largest provider of parts cleaning services in North America, Safety-Kleen offers a complete line of specially designed parts washers to customer locations and then delivers recurring service that includes machine cleaning and maintenance and disposal and replacement of clean solvent or aqueous fluids. We also sell automotive and industrial cleaning products which include degreasers, glass and floor cleaners, hand cleaners, absorbents, antifreeze, windshield washer fluid, mats and spill kits.

Utilizing our collection network, we provide pickup and transportation of hazardous and non-hazardous containerized waste for recycling or disposal, primarily through the Clean Harbors network of recycling and waste treatment and disposal

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facilities. We also collect used oil which serves as feedstock for our oil re-refineries discussed below, or process the oil into recycled fuel oil, or "RFO," which is then sold to customers such as asphalt plants, industrial plants, pulp and paper companies, and vacuum gas oil and marine diesel oil producers.

Our vacuum services remove solids, residual oily water and sludge and other fluids from customers' oil/water separators, sumps and collection tanks. We also remove and collect waste fluids found at large and small industrial locations, including metal fabricators, auto maintenance providers, and general manufacturers.

Utilizing used oil collected by Safety-Kleen branches, we manufacture, formulate, package, distribute and market high-quality lubricants. We offer these products and services direct to business end-users and customers that can in turn market to retailers and end-consumers. The used oil collected by Safety-Kleen's branch network is processed or re-refined to convert into a variety of products, mostly base lubricating oils, and much smaller quantities of asphalt-like material, glycols and fuels. As the largest re-refiner of used oil in North America, we can process the used oil collected through our six re-refineries located in East Chicago, Indiana; Newark, California; Wichita, Kansas; Tacoma, Washington; Fallon, Nevada; and Breslau, Ontario.

Our primary goal is to produce and sell high-quality blended oils, which are created by combining our re-refined base and other base oils with performance additives in accordance with our proprietary formulations and American Petroleum Institute licenses. Our Performance Plus® brand and "green" proprietary brand EcoPower® are sold to on- and off-road corporate fleets, government entities, automotive service shops and industrial plants, which are serviced through our internal distribution network, as well as an extensive United States and Canada-wide independent distributor network. We also sell unbranded blended oils to distributors that resell them under their private label brands. Our OilPlus® program consists of selling our renewable oil products directly to our end customers. We sell the base oil that we do not blend and sell ourselves to independent blenders/packagers that use it to blend their own branded or private label oils. With more than 200 million gallons of used oil processed annually, we were able to return in 2018 approximately 192 million gallons of new re-refined oil, lubricants and byproducts back into the marketplace. We believe our position as the largest collector and re-refiner of used motor oil, along with our vast service and distributions network, provide a distinct competitive advantage in our ability to provide our customers with collection and oil distribution services through our OilPlus® program.

Competition

The hazardous waste management industry is highly competitive. The sources of competition vary by locality and by type of service rendered, with competition coming from national and regional waste services companies and hundreds of privately-owned firms. Veolia North America, Waste Management, Inc., U.S. Ecology, and Stericycle, Inc. are the principal national firms with which we compete. Each of these competitors is able to provide one or more of the environmental services we offer.

Under federal and state environmental laws in the United States, generators of hazardous wastes remain liable for improper disposal of such wastes. Although generators may hire various companies that have the proper permits and licenses, because of the generators' potential liability, they are very interested in the reputation and financial strength of the companies they use for the management of their hazardous wastes. We believe that our technical proficiency, safety record, customer service oriented culture and overall reputation are important considerations to our customers in selecting and continuing to utilize our services. We also believe that the depth of our recycling, treatment and disposal capabilities, our ability to collect and transport waste products efficiently, and pricing are additional significant factors in the market for treatment and disposal services.

Competition within our Environmental Services segment varies by locality and type of service rendered.

- For our landfill and waste services, competitors include several major national and regional environmental services firms, as well as numerous smaller local firms. We believe the availability of skilled technical professional personnel, quality of performance, diversity of services, safety record, quality of assets and use of current and latest technologies, as well as price, are the key competitive factors in this service industry.
- For our industrial, field and emergency responses services, competitors vary by locality and by type of service rendered, with competition coming from national and regional service providers and hundreds of privately-owned firms that offer energy or industrial services. CEDA International Corporation and Newalta in Canada, and Envirosystems and Hydrochem PSC in the United States, are the principal national firms with which we compete.

Each of these competitors is able to provide one or more of the industrial and field services we offer. We believe the availability of specialized equipment and latest technologies, skilled technical professional personnel, quality of performance, diversity of services, safety record and price are the key competitive factors in this industry.

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•For our energy related services, competitors vary by locality and type of services provided, with competition coming from national, regional and local service providers. Competition is based on a number of factors, including safety, quality, performance, reliability, service, price, response time and, in some cases, breadth of service offering.

For our Safety-Kleen segment, competitors vary by locality and by type of service rendered, with competition coming from Heritage-Crystal Clean and Veolia North America, along with several regional and local firms. With our Safety-Kleen Oil Plus® closed loop offering, we are competing in certain markets with other North American lubricant distributors.

The principal methods of competition for all of our services are quality, price, reliability of service rendered and technical proficiency. We believe that we offer a more comprehensive range of environmental, energy and industrial services than our competitors in major portions of the United States and Canada.

Employees

As of December 31, 2018, we employed approximately 14,200 active full-time employees, of which 898 in the United States and 547 in Canada were represented by labor unions. We believe that our relationship with our employees is positive. As part of our commitment to employee safety and quality customer service, we have an extensive compliance program and trained environmental, health and safety staff. We adhere to a risk management program designed to reduce potential liabilities to us and to our customers. We also continually strive to invest in our employees through training programs as well as competitive compensation and benefit programs

Intellectual Property

We have invested significantly in the development of proprietary technology and also to establish and maintain an extensive knowledge of leading technologies and incorporate these technologies into the services we offer and provide to our customers. As of December 31, 2018, we held a total of 32 U.S. and nine foreign issued or granted patents (which will expire between 2019 and 2031), two U.S. and five foreign pending patent applications, 96 U.S. and 63 foreign trademark registrations, and one U.S. and six foreign trademark applications. We also license software and other intellectual property from various third parties. We enter into confidentiality agreements with certain of our employees, consultants and corporate partners, and control access to software documentation and other proprietary information. We believe that we hold adequate rights to all intellectual property used in our business and that we do not infringe upon any intellectual property rights held by other parties.

Management of Risks

We adhere to a program of risk management policies and practices designed to reduce potential liability, as well as to manage customers' ongoing environmental exposures. This program includes installation of risk management systems at our facilities, such as fire suppression, employee training, environmental, auditing and policy decisions restricting the types of wastes handled. We evaluate all revenue opportunities and decline those that we believe involve unacceptable risks.

We dispose of wastes at our incinerator, wastewater treatment and landfill facilities, or at facilities owned and operated by other firms that we have audited and approved. We apply established technologies to treatment, storage and recovery of hazardous wastes. We believe our operations are conducted in a safe and prudent manner and in substantial compliance with applicable laws and regulations.

Insurance and Financial Assurance

Our insurance programs cover the potential risks associated with our multifaceted operations from two primary exposures: direct physical damage and third-party liability. We maintain a casualty insurance program providing coverage for vehicles, employer's liability and commercial general liability in the aggregate amount of $105.0 million, $102.0 million and $102.0 million, respectively, per year, subject to retentions of $2.0 million per occurrence for auto and commercial general liability and $1.0 million for employers' liability in the United States and $2.0 million in Canada. We also have workers' compensation insurance whose limits are established by state statutes.

We have pollution liability insurance policies covering potential risks in three areas: as a contractor performing services at customer sites, as a transporter of waste, and as a processor of waste at our facilities. The contractor's pollution liability insurance has limits of $20.0 million per occurrence and $25.0 million in the aggregate, covering offsite remedial activities and associated liabilities.

For sudden and accidental in-transit pollution liability, our auto liability policy provides the primary $5.0 million per occurrence of transportation pollution insurance. Our pollution liability policies provide an additional $60.0 million per occurrence and $85.0 million in the aggregate for a total of $65.0 million per occurrence and $90.0 million, respectively. A $2.0 million deductible per occurrence applies to this coverage in the United States and Canada.

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Federal and state regulations require liability insurance coverage for all facilities that treat, store or dispose of hazardous waste. RCRA, the Toxic Substances Control Act, and comparable state hazardous waste regulations typically require hazardous waste handling facilities to maintain pollution liability insurance in the amount of $1.0 million per occurrence and $2.0 million in the aggregate for sudden occurrences, and $3.0 million per occurrence and $6.0 million in the aggregate for non-sudden occurrences. Our liability insurance coverage meets or exceeds all federal and state regulations.

Our international operations are insured under locally placed insurance policies that are compulsory in a specific country. In addition, we have a global foreign liability policy that will provide excess and difference in condition coverage in international countries.

Under our insurance programs, coverage is obtained for catastrophic exposures, cyber security as well as those risks required to be insured by law or contract. It is our policy to retain a significant portion of certain expected losses related primarily to employee benefit, workers' compensation, commercial general and vehicle liability. Provisions for losses expected under these programs are recorded based upon our estimates of the actuarial calculation of the aggregate liability for claims. We believe that policy cancellation terms are similar to those of companies in other industries.

Operators of hazardous waste handling facilities are also required by federal, state and provincial regulations to provide financial assurance for closure and post-closure care of those facilities should the facilities cease operation. Closure would include the cost of removing the waste stored at a facility which ceased operating and sending the material to another facility for disposal and the cost of performing certain procedures for decontamination of the facility. As of December 31, 2018, our total estimated closure and post-closure costs requiring financial assurance by regulators were $464.2 million for our U.S. facilities and $42.1 million for our Canadian facilities. We have obtained all of the required financial assurance for our facilities through a combination of surety bonds, funded trusts, letters of credit and insurance from a qualified insurance company. The financial assurance related to closure and post-closure obligations of our U.S. facilities will renew in 2019. Our Canadian facilities utilize surety bonds, which renew at various dates throughout 2019, as well as letters of credit.

Environmental Regulation

While our business has benefited substantially from increased governmental regulation of hazardous waste transportation, storage and disposal, the environmental services industry itself is the subject of extensive and evolving regulation by federal, state, provincial and local authorities. We are required to obtain federal, state, provincial and local permits or approvals for each of our hazardous waste facilities. Such permits are difficult to obtain and, in many instances, extensive studies, tests, and public hearings are required before the approvals can be issued. We have acquired all operating permits and approvals now required for the current operation of our business, and have applied for, or are in the process of applying for, all permits and approvals needed in connection with continued operation and planned expansion or modifications of our operations.

We make a continuing effort to anticipate regulatory, political and legal developments that might affect operations, but are not always able to do so. We cannot predict the extent to which any environmental legislation or regulation that may be enacted or enforced in the future may affect our operations.

A new regulation primarily impacting the shipping business but which we are monitoring closely as it could impact our business is known as “IMO 2020”. On January 1, 2020, the International Maritime Organization (the "IMO") will implement a new regulation for a 0.50% global sulphur cap for marine fuels. Under the new global cap, ships that traverse the oceans will be required to use marine fuels with a sulphur content of no more than 0.50%, versus the current limit of 3.50%, in an effort to reduce the amount of sulphur oxide and decrease pollution and greenhouse gas emissions from the global shipping fleet, which now uses an estimated 3.5 - 4 million barrels per day of fuel oil. The shipping industry is the last major transportation sector to utilize fuel with high levels of sulfur, which is the reason the IMO is pushing the industry to more closely align with other transport sectors for pollution reduction.

There are several variables around this regulatory change that are not yet clear, including anticipated levels of compliance and enforcement. However, it is expected that the implementation of IMO 2020 will result in a significant increase in near-term demand for a broad range of low sulfur distillates including diesel, marine gas oil, marine diesel oil and vacuum gas oil ("VGO") among others. There is uncertainty about the global refinery industry’s ability to meet that spike in demand, which could have substantial consequences for the pricing of those products, particularly VGO. The price of VGO typically has a direct impact on the pricing and/or levels of production of base oil. Changes in the marine fuel market as a result of IMO 2020 is also expected to affect the availability of used motor oil, which today is frequently used in the marine market and some of which may be displaced as a result of this new rule.

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United States Hazardous Waste Regulation

Federal Regulations. The most significant federal environmental laws affecting us are the RCRA, the Comprehensive Environmental Response, Compensation and Liability Act, or "CERCLA," also known as the "Superfund Act," the Clean Air Act, the Clean Water Act, and the Toxic Substances Control Act, or "TSCA."

RCRA. RCRA is the principal federal statute governing hazardous waste generation, treatment, transportation, storage and disposal. Pursuant to RCRA, the EPA has established a comprehensive "cradle-to-grave" system for the management of a wide range of materials identified as hazardous waste. States that have adopted hazardous waste management programs with standards at least as stringent as those promulgated by the EPA have been delegated authority by the EPA to administer their facility permitting programs in lieu of the EPA's program.

Every facility that treats, stores or disposes of hazardous waste must obtain a RCRA permit from the EPA or an authorized state agency unless a specific exemption exists, and must comply with certain operating requirements (the Part B permitting process). RCRA also requires that Part B permits contain provisions for required on-site study and cleanup activities, known as "corrective action," including detailed compliance schedules and provisions for assurance of financial responsibility. See Note 10, "Closure and Post-Closure Liabilities," and Note 11, "Remedial Liabilities," to our consolidated financial statements included in Item 8 of this report for a discussion of our environmental liabilities. See "Insurance and Financial Assurance" above for a discussion of our financial assurance requirements.

The Superfund Act. The Superfund Act is the primary federal statute regulating the cleanup of inactive hazardous substance sites and imposing liability for cleanup on the responsible parties. It also provides for immediate response and removal actions coordinated by the EPA to releases of hazardous substances into the environment, and authorizes the government to respond to the release or threatened release of hazardous substances or to order responsible persons to perform any necessary cleanup. The statute provides for strict and, in certain cases, joint and several liability for these responses and other related costs, and for liability for the cost of damages to natural resources, to the parties involved in the generation, transportation and disposal of hazardous substances. Under the statute, we may be deemed liable as a generator or transporter of a hazardous substance which is released into the environment, or as the owner or operator of a facility from which there is a release of a hazardous substance into the environment. See Note 18, "Commitments and Contingencies," to our consolidated financial statements included in Item 8 of this report for a description of the principal such proceedings in which we are now involved.

The Clean Air Act. The Clean Air Act was passed by Congress to control the emissions of pollutants into the air and requires permits to be obtained for certain sources of toxic air pollutants such as vinyl chloride, or criteria pollutants, such as carbon monoxide. In 1990, Congress amended the Clean Air Act to require further reductions of air pollutants with specific targets for non-attainment areas in order to meet certain ambient air quality standards. These amendments also require the EPA to promulgate regulations which (i) control emissions of 189 hazardous air pollutants; (ii) create uniform operating permits for major industrial facilities similar to RCRA operating permits; (iii) mandate the phase-out of ozone depleting chemicals; and (iv) provide for enhanced enforcement.

The Clean Water Act. This legislation prohibits discharge of pollutants into the waters of the United States without governmental authorization and regulates the discharge of pollutants into surface waters and sewers from a variety of sources, including disposal sites and treatment facilities. The EPA has promulgated "pretreatment" regulations under the Clean Water Act, which establish pretreatment standards for introduction of pollutants into publicly owned treatment works. In the course of the treatment process, our wastewater treatment facilities generate wastewater, which we discharge to publicly owned treatment works pursuant to permits issued by the appropriate governmental authorities. We are required to obtain discharge permits and conduct sampling and monitoring programs.

TSCA. We also operate a network of collection, treatment and field services (remediation) activities throughout North America that are regulated under provisions of TSCA. TSCA established a national program for the management of substances classified as polychlorinated biphenyls, or "PCBs," which include waste PCBs as well as RCRA wastes contaminated with PCBs. The rules set minimum design and operating requirements for storage, treatment and disposal of PCB wastes. Since their initial publication, the rules have been modified to enhance the management standards for TSCA-regulated operations including the decommissioning of PCB transformers and articles, detoxification of transformer oils, incineration of PCB liquids and solids, landfill disposal of PCB solids, and remediation of PCB contamination at customer sites.

Other Federal Laws. In addition to regulations specifically directed at our transportation, storage, and disposal facilities, there are a number of regulations that may "pass-through" to the facilities based on the acceptance of regulated waste from affected client facilities. Each facility that accepts affected waste must comply with the regulations for that waste, facility or industry. Examples of this type of regulation are National Emission Standards for Benzene Waste Operations and National

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Emissions Standards for Pharmaceuticals Production. Each of our facilities addresses these regulations on a case-by-case basis determined by its ability to comply with the pass-through regulations.

In our transportation operations, we are regulated by the U.S. Department of Transportation, the Federal Railroad Administration, the Federal Aviation Administration and the U.S. Coast Guard, as well as by the regulatory agencies of each state in which we operate or through which our vehicles pass.

Health and safety standards under the Occupational Safety and Health Act, or "OSHA," are also applicable to all of our operations.

State and Local Regulations. Pursuant to the EPA's authorization of their RCRA equivalent programs, a number of U.S. states have regulatory programs governing the operations and permitting of hazardous waste facilities. Accordingly, the hazardous waste treatment, storage and disposal activities of a number of our facilities are regulated by the relevant state agencies in addition to federal EPA regulation.

Some states classify as hazardous some wastes that are not regulated under RCRA. For example, Massachusetts considers used oil as "hazardous waste" while RCRA does not. Accordingly, we must comply with state requirements for handling state regulated wastes, and, when necessary, obtain state licenses for treating, storing, and disposing of such wastes at our facilities.

Our facilities are regulated pursuant to state statutes, including those addressing clean water and clean air. Local sewer discharge and flammable storage requirements are applicable to certain of our facilities. Our facilities are also subject to local siting, zoning and land use restrictions. We believe that each of our facilities is in substantial compliance with the applicable requirements of federal and state licenses which we have obtained. Once issued, such licenses have maximum fixed terms of a given number of years, which differ from state to state, ranging from three to ten years. The issuing state agency may review or modify a license at any time during its term. We anticipate that once a license is issued with respect to a facility, the license will be renewed at the end of its term if the facility's operations are in compliance with applicable requirements. However, there can be no assurance that regulations governing future licensing will remain static, or that we will be able to comply with such requirements.

Canadian Hazardous Waste Regulation

In Canada, the provinces retain control over environmental issues within their boundaries and thus have the primary responsibility for regulating management of hazardous wastes. The federal government regulates issues of national scope or where activities cross provincial boundaries.

Provincial Regulations. Most of Canada's industrial development and the major part of its population are located in four provinces: Ontario, Quebec, Alberta and British Columbia. These provinces have the most detailed environmental regulations. We operate major waste management facilities in each of these provinces, as well as waste transfer facilities in Nova Scotia and Manitoba.

The main provincial acts dealing with hazardous waste management are:

- Ontario—Environmental Protection Act;
- Quebec—Environmental Quality Act;
- Alberta—Environmental Protection and Enhancement Act; and
- British Columbia—Waste Management Act.

These pieces of legislation were developed by the provinces independently and, among other things, generally control the generation, characterization, transport, treatment and disposal of hazardous wastes. Regulations developed by the provinces under the relevant legislation are also developed independently, but are often quite similar in effect and sometimes in application. For example, there is some uniformity in manifest design and utilization.

Provincial legislation also provides for the establishment of waste management facilities. In this case, the facilities are also controlled by provincial statutes and regulations governing emissions to air, groundwater and surface water and prescribing design criteria and operational guidelines.

Waste transporters require a permit to operate under provincial waste management regulations and are subject to the requirements of the Federal Transportation of Dangerous Goods legislation. They are required to report the quantities and disposition of materials shipped.

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Canadian Federal Regulations. The Canadian federal government has authority for those matters which are national in scope and in impact and for Canada's relations with other nations. The main federal laws governing hazardous waste management are:

- Canadian Environmental Protection Act (1999) ("CEPA 99"), and
- Transportation of Dangerous Goods Act.

Environment Canada is the federal agency with responsibility for environmental matters and the main legislative instrument is the Canadian Environmental Protection Act. This act charges Environment Canada and Health Canada with protection of human health and the environment and seeks to control the production, importation and use of substances in Canada and to control their impact on the environment.

The Export and Import of Hazardous Wastes Regulations under CEPA 99 control the export and import of hazardous wastes and hazardous recyclable materials. By reference, these regulations incorporate the Transportation of Dangerous Goods Act and Regulations, which address identification, packaging, marking and documentation of hazardous materials during transport. CEPA 99 requires that anyone proposing to export or import hazardous wastes or hazardous recyclable materials or to transport them through Canada notify the Minister of the Environment and obtain a permit to do so. Section 9 of CEPA 99 allows the federal government to enter into administrative agreements with the provinces and territories for the development and improvement of environmental standards. These agreements represent cooperation towards a common goal rather than a delegation of authority under CEPA 99. To facilitate the development of provincial and territorial agreements, the federal, provincial and territorial governments participate in the Canadian Council of Ministers of the Environment ("CCME"). The CCME comprises the 14 environment ministers from the federal, provincial and territorial governments, who normally meet twice a year to discuss national environmental priorities and to determine work to be carried out under the auspices of the CCME.

Canadian Local and Municipal Regulations. Local and municipal regulations seldom reference direct control of hazardous waste management activities. Municipal regulations and by-laws, however, control such issues as land use designation, access to municipal services and use of emergency services, all of which can have a significant impact on facility operation.

Compliance with Environmental Regulations

We incur costs and make capital investments in order to comply with the previously discussed environmental regulations. These regulations require that we remediate contaminated sites, operate our facilities in accordance with enacted regulations, obtain required financial assurance for closure and post-closure care of our facilities should such facilities cease operations, and make capital investments in order to keep our facilities in compliance with environmental regulations.

As further discussed in Note 10, "Closure and Post-Closure Liabilities," and Note 11, "Remedial Liabilities," to our consolidated financial statements included in Item 8 of this report, we have accrued environmental liabilities as of December 31, 2018, of $190.9 million. For the years ended December 31, 2018 and 2017, we spent $10.1 million and $13.0 million, respectively, to address environmental liabilities.

As discussed more fully above under the heading "Insurance and Financial Assurance," we are required to provide financial assurance with respect to certain statutorily required closure, post-closure and corrective action obligations at our facilities. We have placed the required financial assurance primarily through a qualified insurance company.

As described in Note 18, "Commitments and Contingencies," to our consolidated financial statements included in Item 8 of this report, we are involved in legal proceedings arising under environmental laws and regulations. Alleged failure to comply with laws and regulations may lead to the imposition of fines or the denial, revocation or delay of the renewal of permits and licenses by governmental entities. In addition, such governmental entities, as well as surrounding landowners, may claim that we are liable for environmental damages. Citizens groups have become increasingly active in challenging the grant or renewal of permits and licenses for hazardous waste facilities, and responding to such challenges has further increased the costs associated with establishing new facilities or expanding current facilities. A significant judgment against us, the loss of a significant permit or license, or the imposition of a significant fine could have a material effect on our business and future prospects.

ITEM 1A. RISK FACTORS

An investment in our securities involves certain risks, including those described below. You should consider carefully these risk factors together with all of the information included in this report before investing in our securities.

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Risks Affecting All of Our Businesses

Our businesses are subject to operational and safety risks.

Provision of environmental, energy and industrial services to our customers by both of our business segments involves risks such as equipment defects, malfunctions and failures, and natural disasters, which could potentially result in releases of hazardous materials, damage to or total loss of our property or assets, injury or death of our employees, or a need to shut down or reduce operation of our facilities while remedial actions are undertaken. Our employees often work under potentially hazardous conditions. These risks expose us to potential liability for pollution and other environmental damages, personal injury, loss of life, business interruption, and property damage or destruction. We must also maintain a solid safety record in order to remain a preferred supplier to our major customers.

While we seek to minimize our exposure to such risks through comprehensive training programs, our Environmental Health and Safety Compliance Internal Audit Program, vehicle and equipment maintenance programs, and insurance, such programs and insurance may not be adequate to cover all of our potential liabilities and such insurance may not in the future be available at commercially reasonable rates. If we were to incur substantial liabilities in excess of policy limits or at a time when we were not able to obtain adequate liability insurance on commercially reasonable terms, our business, results of operations and financial condition could be adversely affected to a material extent. Furthermore, should our safety record deteriorate, we could be subject to a potential reduction of revenues from our major customers.

Our businesses are subject to numerous statutory and regulatory requirements, which may increase in the future.

Our businesses are subject to numerous statutory and regulatory requirements, and our ability to continue to hold licenses and permits required for our businesses is subject to maintaining satisfactory compliance with such requirements. These requirements may increase in the future as a result of statutory and regulatory changes. Although we are very committed to compliance and safety, we may not, either now or in the future, be in full compliance at all times with such statutory and regulatory requirements. Consequently, we could be required to incur significant costs to maintain or improve our compliance with such requirements.

Failure to effectively manage acquisitions and divestitures could adversely impact our future results.

We continuously evaluate potential acquisition candidates and from time to time acquire companies that we believe will strategically fit into our business and growth objectives. If we are unable to successfully integrate and develop acquired businesses, we could fail to achieve anticipated synergies and cost savings, including any expected increases in revenues and operating results, which could have a material adverse effect on our financial results. We also continually review our portfolio of assets to determine the extent to which they are contributing to our objectives and growth strategy.

Natural disasters or other catastrophic events could negatively affect our business, financial condition and results of operations.

Natural disasters such as hurricanes, typhoons or earthquakes could negatively affect our operations and financial performance. Such events could result in physical damage to one or more of our facilities or equipment, the temporary lack of an adequate work force in a market, and the temporary disruption in rail or truck transportation services which we rely on to deliver waste to our facilities. These events could prevent or delay shipments and reduce both volumes and revenue. Weather conditions and other event driven special projects also cause interim variations in our results. We may be required to suspend operations in some or all of our locations, which could have a material adverse effect on our business, financial condition and results of operations.

Our acquisitions may expose us to unknown liabilities.

Because we have acquired, and expect generally to acquire, all the outstanding shares of most of our acquired companies, our investment in those companies are or will be subject to all of their liabilities other than their respective debts which we paid or will pay at the time of the acquisitions. If there are unknown liabilities or other obligations, our business could be materially affected. We may also experience issues relating to internal controls over financial reporting that could affect our ability to comply with the Sarbanes-Oxley Act, or that could affect our ability to comply with other applicable laws.

A cyber security incident could negatively impact our business and our relationships with customers.

We use computers in substantially all aspects of our business operations and also mobile devices and other online activities to connect with our employees and customers. Such uses give rise to cyber security risks, including security breach, espionage, system disruption, theft and inadvertent release of information. Our business involves the storage and transmission of numerous classes of sensitive and/or confidential information and intellectual property including, but not limited to, private information about employees, and financial and strategic information about our Company and our business partners.

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Furthermore, as we pursue our strategy to grow through acquisitions and new initiatives that improve our operations and cost structure, we are also expanding and improving our information technologies, resulting in a larger technological presence and corresponding exposure to cyber security risk. If we fail to assess and identify cyber security risks associated with acquisitions and new initiatives, we may become increasingly vulnerable to such risks. Additionally, while we have implemented measures to prevent security breaches and cyber incidents, our preventative measures and incident response efforts may not be entirely effective. The theft, destruction, loss, misappropriation, or release of sensitive and/or confidential information or intellectual property, or interference with our information technology systems or the technology systems of third parties on which we rely, could result in business disruption, negative publicity, brand damage, violation of privacy laws, loss of customers, potential liability and competitive disadvantage.

Tax interpretations and changes in tax regulations and legislation could adversely affect our results of operations.

We are subject to income taxes in the United States, Canada and various state and local jurisdictions. Tax interpretations, regulations and legislation in the various jurisdictions in which we operate are subject to change and uncertainty and can impact net income, income tax expense or recovery and deferred income tax assets or liabilities. Our interpretation of tax rules and regulations, including those relating to foreign jurisdictions, requires judgment that may be challenged by taxation authorities upon audit. Although we believe our assumptions, judgments and estimates are reasonable, changes in tax laws or our interpretation of tax laws and the resolution of any tax audits could significantly impact the amounts provided for income taxes in our consolidated financial statements.

Fluctuations in foreign currency exchange could affect our financial results.

We earn revenues, pay expenses, own assets and incur liabilities in countries using currencies other than the U.S. dollar. In fiscal 2018, we recorded approximately 17.5% of our direct revenues in Canada. Because our consolidated financial statements are presented in U.S. dollars, we must translate revenues, income and expenses as well as assets and liabilities into U.S. dollars at exchange rates in effect during or at the end of each reporting period. Therefore, increases or decreases in the value of the U.S. dollar against other currencies in countries where we operate affect our results of operations and the value of balance sheet items denominated in foreign currencies.

Certain adverse conditions have required, and future conditions might require, us to make substantial write-downs in our assets, which have adversely affected or would adversely affect our balance sheet and results of operations.

We review our long-lived tangible and intangible assets for impairment whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. We also test our goodwill and indefinite-lived intangible assets for impairment at least annually on December 31, or when events or changes in the business environment indicate that the carrying value of a reporting unit may exceed its fair value. Based on those results, during the third quarter of 2016, we determined that the then carrying amount of one of our then reporting units exceeded the estimated fair value of that unit and we therefore then recognized a goodwill impairment charge of $34.0 million with respect to that unit. During and as of the end of each of 2018, 2017 and 2016, we determined that no additional asset write-downs were required. However, if conditions in any of the businesses in which we compete were to deteriorate, we could determine that certain of our assets are impaired and we would then be required to write-off all or a portion of our costs for such assets. Any significant write-offs would adversely affect our balance sheet and results of operations.

Additional Risks of Our Environmental Services Business

The hazardous waste management business which our Environmental Services segment conducts is subject to significant environmental liabilities.

We have accrued environmental liabilities valued as of December 31, 2018, at $190.9 million, substantially all of which we assumed in connection with certain acquisitions. We calculate our environmental liabilities on a present value basis in accordance with generally accepted accounting principles, which take into consideration both the amount of such liabilities and the timing when we project that we will be required to pay such liabilities. We anticipate our environmental liabilities will be payable over many years and that cash flows generated from our operations will generally be sufficient to fund the payment of such liabilities when required. However, events not now anticipated (such as future changes in environmental laws and regulations or their enforcement) could require that such payments be made earlier or in greater amounts than we now estimate, which could adversely affect our financial condition and results of operations.

We may also assume additional environmental liabilities as part of future acquisitions. Although we will endeavor to accurately estimate and limit environmental liabilities presented by the businesses or facilities to be acquired, some liabilities, including ones that may exist only because of the past operations of an acquired business or facility, may prove to be more difficult or costly to address than we then estimate. It is also possible that government officials responsible for enforcing

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environmental laws may believe an environmental liability is more significant than we then estimate, or that we will fail to identify or fully appreciate an existing liability before we become legally responsible to address it.

If we become unable to obtain at reasonable cost the insurance, surety bonds, letters of credit and other forms of financial assurance required for our facilities and operations, our business and results of operations would be adversely affected.

We are required to provide substantial amounts of financial assurance to governmental agencies for closure and post-closure care of our licensed hazardous waste treatment facilities should those facilities cease operation, and we are also occasionally required to post surety, bid and performance bonds in connection with certain projects. As of December 31, 2018, our total estimated closure and post-closure costs requiring financial assurance by regulators were $464.2 million for our U.S. facilities and $42.1 million for our Canadian facilities. We have obtained all of the required financial assurance for our facilities through a combination of surety bonds, funded trusts, letters of credit and insurance from a qualified insurance company. The financial assurance related to closure and post-closure obligations of our U.S. facilities will renew in 2019. Our Canadian facilities utilize surety bonds, which renew at various dates throughout 2019, as well as letters of credit.

Our ability to continue operating our facilities and conducting our other operations would be adversely affected if we became unable to obtain sufficient insurance, surety bonds, letters of credit and other forms of financial assurance at reasonable cost to meet our regulatory and other business requirements. The availability of insurance, surety bonds, letters of credit and other forms of financial assurance is affected by our insurers', sureties' and lenders' assessment of our risk and by other factors outside of our control such as general conditions in the insurance and credit markets.

The hazardous waste management industry in which we participate is subject to significant economic and business risks.

The future operating results of our Environmental Services segment may be affected by such factors as our ability to utilize our facilities and workforce profitably in the face of intense price competition, maintain or increase market share in an industry which has in the past experienced significant downsizing and consolidation, realize benefits from cost reduction programs, invest in new technologies for treatment of hazardous waste, generate incremental volumes of waste to be handled through our facilities from existing and acquired sales offices and service centers, obtain sufficient volumes of waste at prices which produce revenue sufficient to offset the operating costs of our facilities, minimize downtime and disruptions of operations, and develop our field services business. In particular, economic downturns or recessionary conditions in North America, and increased outsourcing by North American manufacturers to plants located in countries with lower wage costs and less stringent environmental regulations, have adversely affected and may in the future adversely affect the demand for our services. Our Environmental Services business is also cyclical to the extent that it is dependent upon a stream of waste from cyclical industries such as chemical and petrochemical. If those cyclical industries slow significantly, the business that we receive from them would likely decrease.

The extensive environmental regulations to which we are subject may increase our costs and potential liabilities and limit our ability to expand our facilities.

Our operations and those of others in the environmental services industry are subject to extensive federal, state, provincial and local environmental requirements in both the United States and Canada, including those relating to emissions to air, discharged wastewater, storage, treatment, transport and disposal of regulated materials, and cleanup of soil and groundwater contamination. In particular, if we fail to comply with governmental regulations governing the transport of hazardous materials, such failure could negatively impact our ability to collect, process and ultimately dispose of hazardous wastes generated by our customers. While increasing environmental regulation often presents new business opportunities for us, it often also results in increased operating and compliance costs. Efforts to conduct our operations in compliance with all applicable laws and regulations, including environmental rules and regulations, require programs to promote compliance, such as training employees and customers, purchasing health and safety equipment, and in some cases hiring outside consultants and lawyers. Even with these programs, we and other companies in the environmental services industry are routinely faced with governmental enforcement proceedings, which can result in fines or other sanctions and require expenditures for remedial work on waste management facilities and contaminated sites. Certain of these laws impose strict and, under certain circumstances, joint and several liability on current and former owners and operators of facilities that release regulated materials or that generate those materials and arrange for their disposal or treatment at contaminated sites. Such liabilities can relate to required cleanup of releases of regulated materials and related natural resource damages.

From time to time, we have paid fines or penalties in governmental environmental enforcement proceedings, usually involving our waste treatment, storage and disposal facilities. Although none of these fines or penalties that we have paid in the past has had a material adverse effect upon us, we might in the future be required to make substantial expenditures as a result of governmental proceedings which would have a negative impact on our earnings. Furthermore, regulators have the power to

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suspend or revoke permits or licenses needed for operation of our plants, equipment, and vehicles based on, among other factors, our compliance record, and customers may decide not to use a particular disposal facility or do business with us because of concerns about our compliance record. Suspension or revocation of permits or licenses would impact our operations and could have a material impact on our financial results. Although we have never had any of our facilities' operating permits revoked, suspended or non-renewed involuntarily, it is possible that such an event could occur in the future.

Some environmental laws and regulations impose liability and responsibility on present and former owners, operators or users of facilities and sites for contamination at such facilities and sites without regard to causation or knowledge of contamination. In the past, practices have resulted in releases of regulated materials at and from certain of our facilities, or the disposal of regulated materials at third-party sites, which may require investigation and remediation, and potentially result in claims of personal injury, property damage and damages to natural resources. In addition, we occasionally evaluate various alternatives with respect to our facilities, including possible dispositions or closures. Investigations undertaken in connection with these activities may lead to discoveries of contamination that must be remediated, and closures of facilities might trigger compliance requirements that are not applicable to operating facilities. We are currently conducting remedial activities at certain of our facilities and paying a portion of the remediation costs at certain sites owned by third parties. While, based on available information, we believe these remedial activities will not result in a material effect upon our operations or financial condition, these activities or the discovery of previously unknown conditions could result in material costs.

In addition to the costs of complying with environmental laws and regulations, we incur costs defending against environmental litigation brought by governmental agencies and private parties. We are now, and may in the future be, a defendant in lawsuits brought by parties alleging environmental damage, personal injury, and/or property damage, which may result in our payment of significant amounts.

Environmental and land use laws also impact our ability to expand our facilities. In addition, we are required to obtain governmental permits to operate our facilities, including all of our landfills. Even if we comply with all applicable environmental laws, we might not be able to obtain requisite permits from applicable governmental authorities to extend or modify such permits to fit our business needs.

If our assumptions relating to expansion of our landfills should prove inaccurate, our results of operations and cash flow could be adversely affected.

When we include expansion airspace in our calculation of available airspace, we adjust our landfill liabilities to the present value of projected costs for cell closure and landfill closure and post-closure. It is possible that our estimates or assumptions could ultimately turn out to be significantly different from actual results. In some cases we may be unsuccessful in obtaining an expansion permit or we may determine that an expansion permit that we previously thought was probable has become unlikely. To the extent that such estimates, or the assumptions used to make those estimates, prove to be significantly different than actual results, or our belief that we will receive an expansion permit changes adversely in a significant manner, our landfill assets, including the assets incurred in the pursuit of the expansion, may be subject to impairment testing. Furthermore, lower prospective profitability may result due to increased interest accretion and depreciation or asset impairments related to the removal of previously included expansion airspace. In addition, if our assumptions concerning expansion airspace should prove inaccurate, certain of our cash expenditures for closure of landfills could be accelerated and adversely affect our results of operations and cash flow.

A significant portion of our Environmental Services business depends upon the demand for cleanup of major spills and other remedial projects and regulatory developments over which we have no control.

Our operations can be affected by the commencement and completion of cleanup of major spills and other events, customers' decisions to undertake remedial projects, seasonal fluctuations due to weather and budgetary cycles influencing the timing of customers' spending for remedial activities, the timing of regulatory decisions relating to hazardous waste management projects, changes in regulations governing the management of hazardous waste, secular changes in the waste processing industry towards waste minimization and the propensity for delays in the demand for remedial services, and changes in the myriad of governmental regulations governing our diverse operations. We do not control such factors and, as a result, our revenue and income can vary from quarter to quarter, and past financial performance for certain quarters may not be a reliable indicator of future performance for comparable quarters in subsequent years.

Additional Risks of Our Safety-Kleen Business

Fluctuations in oil prices may negatively affect our Safety-Kleen business.

A significant portion of our Safety-Kleen business involves collecting used oil from certain of our customers, re-refining a portion of such used oil into base and blended lubricating oils, and then selling both such re-refined oil and the recycled oil, or ‘‘RFO,’’ collectively "oil products", to other customers. Changes in the reported spot market prices of oil affect the prices at

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which we can sell our re-refined oil and RFO. If applicable rates increase or decrease, we typically will charge a higher or lower corresponding price for our oil products. The prices at which we sell our oil products can also be affected by changes in certain indices measuring changes in the price of heavy fuel oil, with increases and decreases in the indices typically translating into a higher or lower price for our oil products. The cost to collect used oil, including the amounts we pay to obtain a portion of our used oil and therefore ability to collect necessary volumes and the fuel costs of our oil collection fleet, typically also increases or decreases when the relevant indices increase or decrease. However, even though the prices we can charge for our oil products and the costs to collect and re-refine used oil and process RFO typically increase and decrease together, there is no assurance that when our costs to collect and re-refine used oil and process RFO increase we will be able to increase the prices we charge for our oil products to cover such increased costs, or that our costs to collect and re-refine used oil and process RFO will decline when the prices we can charge for such oil products decline. These risks are exacerbated when there are rapid fluctuations in these oil indices.

Environmental laws and regulations have adversely affected and may adversely affect Safety-Kleen's parts cleaning and other solvent related services.

In connection with its parts cleaning and other solvent related services, Safety-Kleen has been subject to fines and certain orders requiring it to take environmental remedial action. Safety-Kleen may also be subject to monetary fines, civil or criminal penalties, remediation, cleanup or stop orders, injunctions, orders to cease or suspend certain practices or denial of permits required for the operation of its facilities. The outcome of any proceeding and associated costs and expenses could have a material adverse impact on Safety-Kleen’s financial condition and results of operations.

Recent and potential changes in environmental laws and regulations may also adversely affect future Safety-Kleen parts cleaning and other solvent related services. Interpretation or enforcement of existing laws and regulations, or the adoption of new laws and regulations, may require Safety-Kleen to modify or curtail its operations or replace or upgrade its facilities or equipment at substantial cost, which we may not be able to pass on to our customers, and we may choose to indemnify our customers from any fines or penalties they may incur as a result of these new laws and regulations. On the other hand, in some cases if new laws and regulations are less stringent, Safety-Kleen’s customers or competitors may be able to manage waste more effectively themselves, which could decrease the need for Safety-Kleen’s services or increase competition, which could adversely affect Safety-Kleen’s results of operations.

Safety-Kleen is subject to existing and potential product liability lawsuits.

Safety-Kleen has been named from time to time as a defendant in product liability lawsuits in various courts and jurisdictions throughout the United States. As of December 31, 2018, Safety-Kleen was involved in approximately 67 such proceedings (including cases which have been settled but not formally dismissed) wherein persons claim personal injury resulting from the use of its parts cleaning equipment or cleaning products. These proceedings typically involve allegations that the solvents used in Safety-Kleen’s parts cleaning equipment contain contaminants or that Safety-Kleen’s recycling process does not effectively remove the contaminants that become entrained in the solvents during their use. In addition, certain claimants assert that Safety-Kleen failed to adequately warn the product user of potential risks, including a historic failure to warn that such solvents contain trace amounts of toxic or hazardous substances such as benzene. Although Safety-Kleen maintains insurance that we believe will provide coverage for these claims (over amounts accrued for self-insured retentions and deductibles in certain limited cases), this insurance may not provide coverage for potential awards of punitive damages against Safety-Kleen. Although Safety-Kleen has vigorously defended and will continue to vigorously defend itself and the safety of its products against all of these claims, these lawsuits are subject to many uncertainties and outcomes cannot be predicted with assurance. Safety-Kleen may also be named in similar additional lawsuits in the future, including claims for which insurance coverage may not be available. If any one or more of these lawsuits were decided unfavorably against Safety-Kleen and the plaintiffs were awarded punitive damages, or if insurance coverage were not available for any such claim, our financial condition and results of operations could be materially and adversely affected. Additionally, if any one or more of these lawsuits were decided unfavorably against Safety-Kleen, such outcome may encourage more lawsuits against us.

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Safety-Kleen is dependent on third parties for manufacturing the majority of its equipment.

Safety-Kleen does not manufacture the majority of the equipment, including parts washers, that Safety-Kleen places at customer sites. Accordingly, Safety-Kleen relies on a limited number of third-party suppliers for manufacturing this equipment. The supply of third-party equipment could be interrupted or halted by a termination of Safety-Kleen's relationships, a failure of quality control or other operational problems at such suppliers or a significant decline in their financial condition. If Safety-Kleen were not able to retain these providers or obtain its requests from them, Safety-Kleen may not be able to obtain alternate providers in a timely manner or on economically attractive terms and, as a result, Safety-Kleen may not be able to compete successfully for new business, complete existing engagements profitably or retain its existing customers. Additionally, if Safety-Kleen's third-party suppliers provide defective equipment, Safety-Kleen may be subject to reputational damage or product liability claims which may negatively impact its reputation, financial condition and results of operations. Further, Safety-Kleen generally does not have long-term contracts with its third-party suppliers, and as a result those suppliers may increase the price of the equipment they provide, which may hurt Safety-Kleen's results of operations.

Risks Relating to Our Levels of Debt and Letters of Credit

Our substantial levels of outstanding debt and letters of credit could adversely affect our financial condition and ability to fulfill our obligations.

As of December 31, 2018, we had outstanding $845.0 million of senior unsecured notes, $742.2 million of senior secured term loans, and $130.1 million of letters of credit. Our substantial levels of outstanding debt and letters of credit may:

- adversely impact our ability to obtain additional financing in the future for working capital, capital expenditures, acquisitions or other general corporate purposes or to repurchase our senior unsecured notes from holders upon any change of control;
- require us to dedicate a substantial portion of our cash flow to payment of interest on our debt and fees on our letters of credit, which reduces the availability of our cash flow to fund working capital, capital expenditures, acquisitions and other general corporate purposes;
- subject us to the risk of increased sensitivity to interest rate increases based upon variable interest rates, including $392.2 million of our $742.2 million senior secured term loans for which we do not currently have interest rate hedges and borrowings (if any) under our revolving credit facility;
- increase the possibility of an event of default under the financial and operating covenants contained in our debt instruments; and
- limit our ability to adjust to rapidly changing market conditions, reduce our ability to withstand competitive pressures and make us more vulnerable to a downturn in general economic conditions of our business than our competitors with less debt.

Our ability to make scheduled payments of principal or interest with respect to our debt, including our outstanding senior unsecured notes, our secured term loans, any revolving loans and our capital leases, and to pay fee obligations with respect to our letters of credit, will depend on our ability to generate cash and our future financial results. If we were unable to generate sufficient cash flow from operations in the future to service our debt and letter of credit fee obligations, we might be required to refinance all or a portion of our existing debt and letter of credit facilities or to obtain new or additional such facilities. However, we might not be able to obtain any such new or additional facilities on favorable terms or at all.

Despite our substantial levels of outstanding debt and letters of credit, we could incur substantially more debt and letter of credit obligations in the future.

Although our revolving credit agreement and the indentures and loan agreement governing our other outstanding debt contain restrictions on the incurrence of additional debt (including, for this purpose, reimbursement obligations under outstanding letters of credit), these restrictions are subject to a number of qualifications and exceptions and the additional debt which we might incur in the future in compliance with these restrictions could be substantial. In particular, we had available at December 31, 2018, up to approximately $235.4 million for additional borrowings and letters of credit under our revolving credit facility. Our revolving credit agreement and the indentures and loan agreement governing our other outstanding debt also allow us to borrow significant amounts of money from other sources. These restrictions also do not prevent us from incurring obligations (such as operating leases) that do not constitute “debt” or “indebtedness” as defined in the relevant agreements. To the extent we incur in the future additional debt and letter of credit or other obligations, the related risks would increase.

The covenants in our debt agreements restrict our ability to operate our business and might lead to a default under our debt agreements.

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Our revolving credit agreement and the indentures and loan agreement governing our other outstanding debt limit, among other things, our ability and the ability of our restricted subsidiaries to:

- incur or guarantee additional indebtedness (including, for this purpose, reimbursement obligations under letters of credit) or issue preferred stock;
- pay dividends or make other distributions to our stockholders;
- purchase or redeem capital stock or subordinated indebtedness;
- make investments;
- create liens;
- incur restrictions on the ability of our restricted subsidiaries to pay dividends or make other payments to us;
- sell assets, including capital stock of our subsidiaries;
- consolidate or merge with or into other companies or transfer all or substantially all of our assets; and
- engage in transactions with affiliates.

As a result of these covenants, we may not be able to respond to changes in business and economic conditions and to obtain additional financing, if needed, and we may be prevented from engaging in transactions that might otherwise be beneficial to us. Our revolving credit facility requires, and our future credit facilities may require, us to maintain under certain circumstances certain financial ratios and satisfy certain other financial condition tests. Our ability to meet these financial ratios and tests can be affected by events beyond our control, and we may not be able to meet those tests. The breach of any of these covenants could result in a default under our outstanding or future debt. Upon the occurrence of an event of default, the lenders could elect to declare all amounts outstanding under such debts, including accrued interest or other obligations, to be immediately due and payable. If amounts outstanding under such debt were accelerated, our assets might not be sufficient to repay in full that debt and our other debt.

Our revolving credit agreement and the indentures and loan agreement governing our other outstanding debt also contain cross-default and cross-acceleration provisions. Under these provisions, a default or acceleration under one instrument governing our debt may constitute a default under our other debt instruments that contain cross-default and cross-acceleration provisions, which could result in the related debt and the debt under such other instruments becoming immediately due and payable. In such event, we would need to raise funds from alternative sources, which funds might not be available to us on favorable terms, on a timely basis or at all. Alternatively, such a default could require us to sell assets and otherwise curtail operations to pay our creditors. The proceeds of such a sale of assets, or curtailment of operations, might not enable us to pay all of our liabilities.

Other Risks Relating to Our Common Stock

The Massachusetts Business Corporation Act and our By-Laws contain certain anti-takeover provisions.

Sections 8.06 and 7.02 of the Massachusetts Business Corporation Act provide that Massachusetts corporations which are publicly-held must have a staggered board of directors and that written demand by holders of at least 40% of the outstanding shares of each relevant voting group of stockholders is required for stockholders to call a special meeting unless such corporations take certain actions to affirmatively "opt-out" of such requirements. In accordance with these provisions, our By-Laws provide for a staggered board of directors which consists of three classes of directors of which one class is elected each year for a three-year term, and require that written application by holders of at least 25% (which is less than the 40% which would otherwise be applicable without such a specific provision in our By-Laws) of our outstanding shares of common stock is required for stockholders to call a special meeting. In addition, our By-Laws prohibit the removal by the stockholders of a director except for cause. These provisions could inhibit a takeover of our Company by restricting stockholders' action to replace the existing directors or approve other actions which a party seeking to acquire us might propose. A takeover transaction would frequently afford stockholders an opportunity to sell their shares at a premium over then market prices.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

Our principal executive offices are in Norwell, Massachusetts, where we lease approximately 151,000 square feet under arrangements which may not expire until 2042. We also have regional administrative offices in Texas, South Carolina, and Alberta, Canada. Our properties are sufficient and suitable for our current needs.

We have a network of more than 480 service locations across 49 states, nine Canadian provinces, Puerto Rico, and Mexico. Those service locations include service centers, satellite locations, branches, active hazardous waste management properties, lodging facilities and oil processing facilities. The service centers and branches are the principal sales and service

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centers from which we provide our environmental, energy and industrial services. The active hazardous waste management properties include incinerator facilities, commercial and non-commercial landfills, wastewater treatment facilities, treatment, storage and disposal facilities ("TSDFs"), solvent recovery management and recycling facilities, oil accumulation centers, oil terminals and oil re-refineries. Some of our properties offer multiple capabilities. The following sets forth certain information as of December 31, 2018 regarding our properties.

Service Centers, Satellite Locations and Branches

We have approximately 365 service centers, satellite locations and branches throughout the United States and Canada which serve as principal sales and service centers from which we provide parts cleaning services, containerized waste services, oil collection services and other environmental services.

Active Hazardous Waste Management Properties

Incinerator Facilities. We own five operating incinerator facilities that have a total of nine incinerators with 561,721 tons of total practical capacity and an overall average utilization rate for 2018 of 86.7%. Our practical capacity is not based on a theoretical 24-hour, seven-day operation, but rather is determined as the production level at which our incinerators can operate with an acceptable degree of efficiency, taking into consideration factors such as longer term customer demand, permanent staffing levels, operating shifts, holidays, scheduled maintenance and mix of product. Capacity utilization is calculated by dividing actual production pounds by practical capacity at each incinerator.

	# of Incinerators	Practical Capacity (Tons)	Utilization Rate Year Ended December 31, 2018
Arkansas	3	145,072	94.8 %
Nebraska	1	58,808	73.8 %
Utah	1	66,815	88.7 %
Texas	3	165,500	82.7 %
Ontario, Canada	1	125,526	87.4 %
	9	561,721	86.7 %

Our incinerators offer a wide range of technological capabilities to customers through this network. We provide incineration in the United States through one fluidized bed thermal oxidation unit and three solids and liquids-capable incinerator facilities and we operate in Canada one active hazardous waste liquid injection incinerator.

Commercial and Non-Commercial Landfills. In the United States and Canada, we operate nine commercial landfills with approximately 29.4 million cubic yards of remaining highly probable airspace. Seven of our commercial landfills are designed and permitted for the disposal of hazardous wastes and two landfills are operated for nonhazardous industrial waste disposal and, to a lesser extent, municipal solid waste. In addition to our commercial landfills, we also own and operate two non-commercial landfills that only accept waste from our on-site incinerators. See "Landfill Accounting" within Note 2, "Significant Accounting Policies," to our consolidated financial statements included in Item 8 of this report for additional information on our commercial and non-commercial landfills.

Wastewater Treatment Facilities. We operate a total of nine facilities, of which six are owned and three are leased, that offer a range of wastewater treatment technologies and customer services. Wastewater treatment consists primarily of three types of services: hazardous wastewater treatment, sludge de-watering or drying, and non-hazardous wastewater treatment.

Treatment, Storage and Disposal Facilities. We operate 18 TSDFs, of which 16 are owned and two are leased, in the United States and Canada. Our TSDFs facilitate the movement of materials among our network of service centers and treatment and disposal facilities. Transportation may be accomplished by truck, rail, barge or a combination of modes, with our own assets or in conjunction with third-party transporters. Specially designed containment systems, vehicles and other equipment permitted for hazardous and industrial waste transport, together with drivers trained in transportation and waste handling procedures, provide for the movement of customer waste streams.

Solvent Recovery Management and Recycling Operations. We own two facilities specializing in solvent recovery management.

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Oil Processing, Blending and Packaging Facilities

Oil Accumulation Centers. We operate a total of nine accumulation centers, of which eight are owned and one is leased, used for accumulating waste oil from our branches.

Oil Terminals. We operate a total of 54 oil terminals, of which 31 are owned and 23 are leased, which collect or process used oil prior to delivery to re-refineries or distribution as RFO.

Oil Recycling and Re-refining Facilities. We own six oil re-refineries, five in the United States and one in Canada. With more than 200 million gallons of used oil processed annually, we were able to return in 2018 192 million gallons of new re-refined oil, lubricants and byproducts back into the marketplace.

Oil Packaging and Blending Facilities. We operate a total of five oil packaging and blending facilities, of which three are owned and two are leased and used for blending and packaging oil from our branches.

Lodging Facilities

Lodge Operations. We operate five fixed lodges, all of which are owned and located on sites in Alberta, Canada that are leased under long-term operating agreements.

Camps. We operate various camp facilities that can grow and shrink in size and location. Generally, we have ongoing operations at 1-2 larger facilities that we expect to operate on a multi-year basis. Additionally, we have in our fleet that can operate at any time, five office complexes, eight mini-camps, and approximately 35 single and double occupancy drill camps. All of our camp facilities are owned and located on various sites throughout Western Canada. Sites for the larger facilities are generally leased, whereas sites for our smaller facilities are generally provided by our customers.

ITEM 3. LEGAL PROCEEDINGS

See Note 18, "Commitments and Contingencies," to our consolidated financial statements included in Item 8 of this report for a description of legal proceedings.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

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PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Common Stock

Our common stock trades on the New York Stock Exchange (the "NYSE") under the symbol CLH. On February 15, 2019, there were 258 stockholders of record of our common stock, excluding stockholders whose shares were held in nominee, or "street," name. On our last record date, approximately 22,975 additional stockholders beneficially held shares in street name.

We have never declared nor paid any cash dividends on our common stock, and we do not intend to pay any dividends on our common stock in the foreseeable future. We intend to retain our future earnings, if any, for use in the operation and expansion of our business and payment of our outstanding debt, and for our stock repurchase program. In addition, our current credit agreement and indentures limit the amount we could pay as cash dividends on, or for repurchase of, our common stock. For additional information surrounding our stock repurchase program, see Note 15, "Stockholder's Equity," to our consolidated financial statements included in Item 8 of this report.

Securities Authorized For Issuance Under Equity Compensation Plans

See Item 12, "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters," for a description of the securities which are authorized for issuance under our equity compensation plans.

Issuer Purchases of Equity Securities

Period	Total Number of Shares Purchased (1)	Average Price Paid Per Share (2)	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (3)
October 1, 2018 through October 31, 2018	3,000	$ 70.89	—	$ 317,571,511
November 1, 2018 through November 30, 2018	164,559	$ 65.07	162,000	$ 307,027,656
December 1, 2018 through December 31, 2018	21,520	$ 59.38	16,000	$ 306,072,512
Total	189,079	$ 64.52	178,000	$ 306,072,512

(1) Includes 11,079 shares withheld by us from employees to satisfy employee tax obligations upon vesting of restricted shares granted under our long-term equity incentive programs.

(2) The average price paid per share of common stock repurchased under our stock repurchase program includes commissions paid to the brokers.

(3) Our board of directors has authorized the repurchase of up to $600 million of our common stock. We have funded and intend to fund the repurchases through available cash resources. The stock repurchase program authorizes us to purchase our common stock on the open market or in privately negotiated transactions periodically in a manner that complies with applicable U.S. securities laws. The number of shares purchased and the timing of the purchases has depended and will depend on a number of factors, including share price, cash required for business plans, trading volume and other conditions. During April 2018, we implemented a repurchase plan in accordance with Rule 10b5-1 promulgated under the Securities Exchange Act of 1934, as amended. Future repurchases will be made under the Rule 10b5-1 plan as well as open market or privately negotiated transactions as described above. We have no obligation to repurchase stock under this program and may suspend or terminate the repurchase program at any time.

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COMPARISON OF 5-YEAR CUMULATIVE TOTAL RETURN
AMONG CLEAN HARBORS, INC.,
NYSE COMPOSITE INDEX, S&P MIDCAP 400 INDEX, REFUSE SYSTEMS AND CUSTOM PEER GROUP
Performance Graph

The following graph compares the five-year return from investing $100 in each of our common stock, the NYSE Composite Index, the S&P Midcap 400 Index, and indices of comparable companies compiled by CoreData, consisting of companies whose listed line-of-business is SIC Code 4953 (refuse systems) and a custom peer group. We selected a peer group comprised of American Water Works Company, Inc., Casella Waste Systems, Inc., Civeo Corporation, Covanta Holding Corporation, Heritage-Crystal Clean, Inc., Iron Mountain Incorporated, Newpark Resources, Inc., Oil States International, Inc., Republic Services, Inc., Stericycle, Inc., Superior Energy Services, Inc., US Ecology, Inc., and Waste Management, Inc. The values illustrated assume reinvestment of dividends on the ex-dividend date and compares relative performance since a particular starting date. In this instance, the starting date was December 31, 2013, when our common stock closed at $59.96 per share. The graph is presented pursuant to SEC rules and is not meant to be an indication of our future performance.

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ITEM 6. SELECTED FINANCIAL DATA

The following summary of consolidated financial information has been derived from the audited consolidated financial statements included in Item 8, "Financial Statements and Supplementary Data," of this report and in the annual reports we previously filed with the SEC. This information should be reviewed in conjunction with Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," and the financial statements and notes thereto included in Item 8, "Financial Statements and Supplementary Data," of this report.

	For the Year Ended December 31,				
(in thousands except per share amounts)	2018	2017	2016	2015	2014
Statement of Operations Data:					
Total revenues	$3,300,303	$2,944,978	$2,755,226	$3,275,137	$3,401,636
Net income (loss) (1)	$65,636	$100,739	$(39,873)	$44,102	$(28,328)
Earnings (loss) per share: (1)					
Basic	$1.17	$1.77	$(0.69)	$0.76	$(0.47)
Diluted	$1.16	$1.76	$(0.69)	$0.76	$(0.47)
Other Financial Data:					
Adjusted EBITDA (2)	$491,005	$425,657	$400,354	$504,167	$521,919

	At December 31,				
(in thousands)	2018	2017	2016	2015	2014
Balance Sheet Data:					
Total assets	$3,738,321	$3,706,570	$3,681,920	$3,431,428	$3,689,423
Long-term obligations (including current portion)	1,572,556	1,629,537	1,633,272	1,382,543	1,380,681
Stockholders' equity	1,169,756	1,188,202	1,084,241	1,096,282	1,262,871

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(1) The 2018 results include a $2.5 million pre-tax loss on early extinguishment of debt. The 2017 results include a net benefit of $93.0 million resulting from impacts of the tax law changes enacted in December of 2017, a $7.9 million pre-tax loss on early extinguishment of debt and a $30.7 million pre-tax gain on the sale of a non-core line of business within our Environmental Services segment. The 2016 results include a $34.0 million goodwill impairment charge and a $16.9 million pre-tax gain on the sale of a non-core line of business within our Environmental Services segment. The 2015 results include a $32.0 million goodwill impairment charge in our Environmental Services segment, and the 2014 results include a $123.4 million goodwill impairment charge in our Kleen Performance Products reporting unit. In 2016, we did not record any income tax benefit as a result of the goodwill impairment charge. In 2015 and 2014, we recorded income tax benefits of $2.0 million and $2.7 million, respectively, as a result of the goodwill impairment charges.

(2) The following is a reconciliation of net income (loss) to Adjusted EBITDA for the following periods (in thousands). See additional information regarding this non-GAAP measure under the heading "Adjusted EBITDA" in Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," of this report.

	For the Year Ended December 31,				
	2018	2017	2016	2015	2014
Net income (loss)	$65,636	$100,739	$(39,873)	$44,102	$(28,328)
Accretion of environmental liabilities	9,806	9,460	10,177	10,402	10,612
Depreciation and amortization	298,625	288,422	287,002	274,194	276,083
Goodwill impairment charges	—	—	34,013	31,992	123,414
Other expense (income), net	4,510	6,119	(6,195)	1,380	(4,380)
Loss on early extinguishment of debt	2,488	7,891	—	—	—
Gain on sale of businesses	—	(30,732)	(16,884)	—	—
Interest expense, net	81,094	85,808	83,525	76,553	77,668
Provision (benefit) for income taxes	28,846	(42,050)	48,589	65,544	66,850
Adjusted EBITDA	$491,005	$425,657	$400,354	$504,167	$521,919

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ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Overview

We are North America’s leading provider of environmental, energy and industrial services. We believe we operate, in the aggregate, the largest number of hazardous waste incinerators, landfills and treatment, storage and disposal facilities ("TSDFs") in North America. We serve a diverse customer base, including Fortune 500 companies, across the chemical, energy, manufacturing and additional markets, as well as numerous government agencies. These customers rely on us to deliver a broad range of services including but not limited to end-to-end hazardous waste management, emergency response, industrial cleaning and maintenance, and recycling services. We are also the largest re-refiner and recycler of used oil in the world and the largest provider of parts cleaning and related environmental services to commercial, industrial and automotive customers in North America.

During the first quarter of fiscal year 2018, certain of our businesses undertook a reorganization which included changes to the underlying business and management structures. The reorganization resulted in combining the Environmental Services businesses from an operational and management perspective, deepening customer relationships and allowing for efficiencies across our operations through the sharing of resources, namely labor and equipment, which will reduce third party spending and promote cross selling of our business offerings. In connection with this reorganization, our chief operating decision maker requested changes in the information that he regularly reviews for purposes of allocating resources and assessing performance. These changes required a reconsideration of our operating segments in the first quarter of 2018 and resulted in a change in our assessment of our operating segments. We concluded that there are now two operating segments for disclosure purposes; (i) the Environmental Services segment which consists of our historical Technical Services, Industrial Services, Field Services and Oil, Gas and Lodging businesses, and (ii) the Safety-Kleen segment.

Performance of our segments is evaluated on several factors of which the primary financial measure is Adjusted EBITDA as described more fully below. The following is a discussion of how management evaluates its segments in regards to other factors including key performance indicators that management uses to assess the segments’ results, as well as certain macroeconomic trends and influences that impact each reportable segment:

- Environmental Services - Environmental Services segment results are predicated upon the demand by our customers for waste services directly attributable to waste volumes generated by them and project work for which waste handling and/or disposal is required. In managing the business and evaluating performance, management tracks the volumes and average price of waste handled and disposed of through our owned incinerators and landfills, as well as utilization of such incinerators, labor and billable hours and equipment among other key metrics. Levels of activity and ultimate performance associated with this segment can be impacted by several factors including overall U.S. GDP and U.S. industrial production, weather conditions, efficiency of our operations, competition and market pricing of our services and the management of our related operating costs. Environmental Services results are also impacted by the demand for planned and unplanned industrial related cleaning and maintenance services at customer sites and for environmental cleanup services on a scheduled or emergency basis, including response to national events such as major oil spills, natural disasters or other events where immediate and specialized services are required.

- Safety-Kleen - Safety-Kleen segment results are impacted by an array of core service offerings that serve to attract small quantity waste producers as customers and integrate them into the Clean Harbors waste network. Core service offerings include parts washer services, containerized waste services, vac services, used motor oil collection and sale of base and blended oil products as well as complementary products including automotive related fluids and shop supplies. Key performance indicators tracked by management relative to these services include the number of parts washer services performed and used motor oil and waste volumes collected. Results from these services are primarily driven by the overall number of parts washers placed at customer sites and volumes of waste collected. These factors can be impacted by overall economic conditions in the marketplace, especially in the automotive related area. Safety-Kleen offers high quality base and blended oil products to end users including fleet customers, distributors and manufacturers of oil products. Relative to these oil related products, management tracks the Company's volumes and relative percentages of base and blended oil sales along with various pricing metrics associated with the commodity driven marketplace. The segment's results are significantly impacted by the overall market pricing and product mix associated with base and blended oil products and, more specifically, the market prices of Group II base oils, which historically have correlated with overall crude oil prices. Costs incurred in connection with the collection of used oils and other raw materials associated with the segment’s oil related products can also be volatile. The implementation of our OilPlus® closed

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loop initiative resulting in the sale of our renewable oil products directly to our end customers will also impact future operating results.

Highlights

Total revenues for 2018 increased 12.1% to $3.3 billion, compared with $2.9 billion in 2017. Our Environmental Services segment increased direct revenues $283.7 million in 2018 compared with 2017 due to incremental revenues resulting from our recent acquisitions, primarily the Veolia Business in the first quarter of 2018, as well as improved average pricing driven by a more profitable mix of waste streams handled by the business. Direct revenues recorded by Safety-Kleen increased $73.4 million in 2018 as compared to 2017 as a result of improved pricing conditions related to our renewable oil products and continued growth across Safety-Kleen’s core service offerings and our direct lubricant sales. The fluctuation of the Canadian dollar minimally impacted our consolidated revenues in 2018 as compared to 2017.

Income from operations in 2018 was $182.6 million, compared with $127.8 million in 2017. We reported net income in 2018 and 2017 of $65.6 million and $100.7 million, respectively. Net income in 2017 included a $93.0 million net benefit recorded as a component of income tax expense which resulted from impacts of tax reform law changes which were signed into law in December 2017. Adjusted EBITDA, which is the primary financial measure by which our segments are evaluated, increased 15.4% to $491.0 million in 2018 from $425.7 million in 2017. The increased level of Adjusted EBITDA in 2018 was primarily attributable to higher revenue amounts as described above, which provided improved operating margins from leveraging our existing infrastructure network and additional benefits from the reorganization undertaken in the Environmental Services segment which occurred in the first quarter of 2018. Additional information regarding Adjusted EBITDA, which is a non-GAAP measure, including a reconciliation of Adjusted EBITDA to net income (loss), appears below under "Adjusted EBITDA."

Net cash from operating activities for 2018 was $373.2 million, an increase of $87.5 million from 2017. Adjusted free cash flow, which management uses to measure our financial strength and ability to generate cash, was $195.3 million in 2018, which represented a $55.1 million increase over 2017 primarily due to greater levels of operating income, lower interest payments and a reduction in environmental expenditures, offset by higher working capital levels and capital spending. Additional information regarding adjusted free cash flow, which is a non-GAAP measure, including a reconciliation of adjusted free cash flow to net cash from operating activities, appears below under "Adjusted Free Cash Flow."

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Segment Performance

The primary financial measure by which we evaluate the performance of our segments is Adjusted EBITDA. The following table sets forth certain financial information associated with our results of operations for the years ended December 31, 2018, 2017 and 2016.

	Summary of Operations (in thousands)						
	Year Ended December 31,			2018 over 2017		2017 over 2016	
	2018	2017	2016	$ Change	% Change	$ Change	% Change
Direct Revenues(1):							
Environmental Services	$2,141,194	$1,857,474	$1,758,833	$283,720	15.3 %	$98,641	5.6 %
Safety-Kleen	1,161,282	1,087,886	996,083	73,396	6.7	91,803	9.2
Corporate Items	(2,173)	(382)	310	(1,791)	N/M	(692)	N/M
Total	3,300,303	2,944,978	2,755,226	355,325	12.1	189,752	6.9
Cost of Revenues(2):							
Environmental Services	1,576,705	1,373,789	1,287,629	202,916	14.8	86,160	6.7
Safety-Kleen	725,734	690,344	645,275	35,390	5.1	45,069	7.0
Corporate Items	3,112	(1,460)	(47)	4,572	N/M	(1,413)	N/M
Total	2,305,551	2,062,673	1,932,857	242,878	11.8	129,816	6.7
Selling, General and Administrative Expenses:							
Environmental Services	183,633	162,375	152,129	21,258	13.1	10,246	6.7
Safety-Kleen	153,519	147,731	131,262	5,788	3.9	16,469	12.5
Corporate Items	166,595	146,542	138,624	20,053	13.7	7,918	5.7
Total	503,747	456,648	422,015	47,099	10.3	34,633	8.2
Adjusted EBITDA							
Environmental Services	380,856	321,310	319,075	59,546	18.5	2,235	0.7
Safety-Kleen	282,029	249,811	219,546	32,218	12.9	30,265	13.8
Corporate Items	(171,880)	(145,464)	(138,267)	(26,416)	(18.2)	(7,197)	(5.2)
Total	$491,005	$425,657	$400,354	$65,348	15.4 %	$25,303	6.3 %

N/M = not meaningful

(1) Direct revenue is revenue allocated to the segment performing the provided service.

(2) Cost of revenue is shown exclusive of items presented separately on the statements of operations, which consist of (i) accretion of environmental liabilities and (ii) depreciation and amortization.

Direct Revenues

There are many factors which have impacted and continue to impact our revenues. These factors include, but are not limited to: overall industrial activity and growth in North America, existence or non-existence of large scale environmental waste and remediation projects, competitive industry pricing, impacts of acquisitions and divestitures, the level of emergency response projects, general conditions of the energy related industries, base and blended oil pricing, market changes relative to the collection of used oil, the number of parts washers placed at customer sites and foreign currency translation. In addition, customer efforts to minimalize hazardous waste and changes in regulation can also impact our revenues.

Environmental Services

	For the years ended December 31,			2018 over 2017		2017 over 2016	
	2018	2017	2016	$ Change	% Change	$ Change	% Change
Direct revenues	$2,141,194	$1,857,474	$1,758,833	$283,720	15.3 %	$98,641	5.6 %

Environmental Services direct revenues for the year ended December 31, 2018 increased $283.7 million from the comparable period in 2017. Included in the current year revenues was $154.0 million of direct revenues from the Veolia

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Business, which we acquired on February 23, 2018. Excluding the impacts from the Veolia Business, Environmental Services direct revenue increased $129.5 million primarily due to greater levels of activity at our sales and service branches and increased levels of disposal related revenues from improved pricing conditions and mix associated with waste streams at our incinerators in 2018. For the year ended December 31, 2018, landfill volumes increased slightly as compared to 2017. The utilization rate at our incinerator facilities was 86.7% for the year ended December 31, 2018, as compared to 87.6% for the year ended December 31, 2017. The decrease in utilization rates in 2018 was impacted by a slightly higher number of down days at our facilities during 2018; however, impacts on the profitability of the business from an increase in down days was more than offset by improved pricing conditions and an increase in volumes of higher margin waste streams received in 2018. The impact of foreign currency translation on our Canadian operations within the Environmental Services segment was minimal in the year ended December 31, 2018 as compared to 2017.

Environmental Services direct revenues for the year ended December 31, 2017 increased $98.6 million from the comparable period in 2016. Excluding the impacts from divestiture and acquisition activity having occurred in 2016 and 2017, Environmental Services revenues increased $142.1 million from the comparable period in 2016 primarily due to greater levels of activity at our sales and service branches, increased revenues associated with waste projects and higher waste volumes disposed of in our incinerators and landfills from improving economic conditions and business initiatives focused on waste volumes. For the year ended December 31, 2017, landfill volumes increased 12.1% from the comparable period in 2016. The utilization rate at our incinerators was 87.6% on a practical capacity of 561,721 tons for the year ended December 31, 2017, compared with 88.8% on a practical capacity of 491,721 tons in 2016. The increase in practical capacity was the result of the start-up of our waste incinerator at our El Dorado, Arkansas facility, which came online in the first quarter of 2017 and added 70,000 tons of capacity to our network. Inclusive in the year-over-year changes within this segment was also the positive impact of foreign currency translation on our Canadian operations of approximately $8.3 million for the year ended December 31, 2017 from the comparable period in 2016.

Safety-Kleen

	For the years ended December 31,			2018 over 2017		2017 over 2016	
	2018	2017	2016	$ Change	% Change	$ Change	% Change
Direct revenues	$1,161,282	$1,087,886	$996,083	$73,396	6.7 %	$91,803	9.2 %

Safety-Kleen direct revenues for the year ended December 31, 2018 increased $73.4 million from the comparable period in 2017 primarily due to more favorable pricing on oil products and growth in the business' core service offerings. Revenues generated through our core service offerings such as handling of containerized waste and vac services, parts washer services as well as sales of automotive and industrial cleaning products accounted for $21.3 million of incremental revenues. Increased base and blended volumes and oil pricing accounted for $34.7 million of incremental direct revenue from the comparable period in 2017. Sales of contract packaging and blending services, specialty refinery products and recycled fuel oil also increased by $38.9 million from the comparable period in 2017. These increases were partially offset by a decrease in used motor oil collection revenues of $19.5 million as market pricing for these services was negatively impacted as crude oil prices generally rose throughout the earlier parts of 2018. The impact of foreign currency translation on our Canadian operations within the Safety-Kleen segment was minimal in the year ended December 31, 2018 as compared to 2017.

Safety-Kleen direct revenues for the year ended December 31, 2017 increased $91.8 million from the comparable period in 2016. This increase was derived from more favorable pricing on oil products, incremental revenues from acquisitions and growth in the business. Increased base and blended oil pricing and volumes accounted for $87.2 million of incremental direct revenue from the comparable period in 2016. This increase was partially offset by lower revenue of $15.6 million from a decrease in prices charged for used motor oil collection in 2017. Inclusive in the year-over-year changes within the Safety-Kleen segment was also the positive impact of foreign currency translation on our Canadian operations of approximately $2.8 million in the year ended December 31, 2017 from the comparable period in 2016.

Cost of Revenues

We believe that our ability to manage operating costs is important to our ability to remain price competitive. We continue to upgrade the quality and efficiency of our services through the development of new technology and continued modifications at our facilities, invest in new business opportunities and aggressively implement strategic sourcing and logistics solutions as well as other cost reduction initiatives while also continuing to optimize our management and operating structure in an effort to maintain and increase operating margins.

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Environmental Services

	For the years ended December 31,			2018 over 2017		2017 over 2016	
	2018	2017	2016	$ Change	% Change	$ Change	% Change
Cost of revenues	$1,576,705	$1,373,789	$1,287,629	$202,916	14.8 %	$86,160	6.7 %
As a % of Direct Revenue	73.6 %	74.0 %	73.2 %		(0.4)%		0.8 %

Environmental Services cost of revenues for the year ended December 31, 2018 increased $202.9 million from the comparable period in 2017. The acquired Veolia Business had cost of revenues of $131.2 million in the year ended December 31, 2018. Excluding these costs, Environmental Services cost of revenues for the year ended December 31, 2018 increased $71.7 million primarily due to increases in labor related costs of $45.4 million, transportation, disposal and fuel costs of $16.2 million and equipment, supply and various other expenses of $10.0 million. The incremental operating costs were commensurate with greater activity levels in 2018 and overall inflationary pressure across several cost categories including certain commodity supplies such as fuel and other supplies. Costs as a percentage of direct revenues decreased slightly over the comparable period of 2017, which can be attributed to a more favorable mix of waste streams in our incineration network which increased profitability.

Environmental Services cost of revenues for the year ended December 31, 2017 increased $86.2 million from the comparable period in 2016. Excluding the impacts from divestitures, Environmental Services cost of revenues for the year ended December 31, 2017 increased $133.0 million from the comparable period in 2016 primarily due to increases in labor and subcontractor related costs of $59.9 million, equipment and supply costs of $46.6 million, and transportation, disposal and fuel costs of $28.4 million, partially offset by $1.9 million of reductions across various expense categories. The incremental operating costs were primarily driven by the El Dorado incinerator which came online in early 2017 and its relevant start-up activities, higher down days across our network associated with the hurricanes that impacted the gulf region of the U.S. in 2017 and overall increased economic activity. The higher concentration of lower margin waste in our incineration network decreased profitability as we focused on driving network utilization in response to the increased capacity. Continued pricing pressures felt in 2017 in the industries in which we operate and integration costs also contributed to the increase in cost of revenues as a percentage of direct revenue from the comparable period in 2016.

Safety-Kleen

	For the years ended December 31,			2018 over 2017		2017 over 2016	
	2018	2017	2016	$ Change	% Change	$ Change	% Change
Cost of revenues	$725,734	$690,344	$645,275	$35,390	5.1 %	$45,069	7.0 %
As a % of Direct Revenue	62.5 %	63.5 %	64.8 %		(1.0)%		(1.3)%

Safety-Kleen cost of revenues for the year ended December 31, 2018 increased $35.4 million from the comparable period in 2017 primarily due to increased costs of raw materials associated with oil products of $15.8 million, increased transportation, disposal and fuel costs of $12.3 million and labor related costs of $6.3 million. These increases were in line with the overall growth of the business and increased costs of commodities. Our costs as a percentage of direct revenues decreased over the comparable period of 2017 due to our effective management of the spread between used oil input costs and base oil pricing, as well as the implementation of new pricing strategies, which generated greater levels of direct revenue.

Safety-Kleen cost of revenues for the year ended December 31, 2017 increased $45.1 million from the comparable period in 2016 primarily due to increased equipment and supply costs of $19.0 million, increased labor related costs of $13.8 million and increased transportation, disposal and fuel costs of $8.3 million. As a percentage of direct revenue, these costs decreased 1.3% in the year ended December 31, 2017 from the comparable period in 2016 primarily as a result of greater direct revenue levels driven by pricing partially offset by higher maintenance costs in the re-refinery network.

Selling, General and Administrative Expenses

We strive to manage our selling, general and administrative expenses commensurate with the overall performance of our segments and corresponding revenue levels. We believe that our ability to properly align these costs with business performance is reflective of our strong management of the businesses and further promotes our ability to remain competitive in the marketplace.

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Environmental Services

	For the years ended December 31,			2018 over 2017		2017 over 2016	
	2018	2017	2016	$ Change	% Change	$ Change	% Change
SG&A	$183,633	$162,375	$152,129	$21,258	13.1 %	$10,246	6.7 %
As a % of Direct Revenue	8.6 %	8.7 %	8.6 %		(0.1)%		0.1 %

Environmental Services selling, general and administrative expenses for the year ended December 31, 2018 increased $21.3 million from the comparable period in 2017 due to increases in salary, benefits and variable compensation related costs of $14.7 million and bad debt expense of $7.0 million, partially offset by cost reductions across various expense categories. The increases in salary, benefits and variable compensation are in line with the growth of the business in 2018 as compared to 2017. As a percentage of direct revenue, our costs remained consistent for the year ended December 31, 2018 as compared to 2017.

Environmental Services selling, general and administrative expenses for the year ended December 31, 2017 increased $10.2 million from the comparable period in 2016. Excluding costs associated with divestitures impacting the comparability of these fiscal years, Environmental Services selling, general and administrative expenses for the year ended December 31, 2017 increased $13.4 million primarily due to increased labor related costs including increased variable compensation and commissions. These increases were consistent with the growth of the business during 2017 as compared to 2016. As a percentage of direct revenue, these costs remained consistent for the year ended December 31, 2017 as compared to 2016.

Safety-Kleen

	For the years ended December 31,			2018 over 2017		2017 over 2016	
	2018	2017	2016	$ Change	% Change	$ Change	% Change
SG&A	$153,519	$147,731	$131,262	$5,788	3.9 %	$16,469	12.5 %
As a % of Direct Revenue	13.2 %	13.6 %	13.2 %		(0.4)%		0.4 %

Safety-Kleen selling, general and administrative expenses for the year ended December 31, 2018 increased $5.8 million from the comparable period in 2017 primarily due to increased salaries, benefits and variable compensation of $5.7 million as we continue to grow the business. As a percentage of direct revenue, Safety-Kleen SG&A costs decreased for the year ended December 31, 2018 as compared to 2017 as the additional direct revenues outpaced incremental SG&A costs.

Safety-Kleen selling, general and administrative expenses for the year ended December 31, 2017 increased $16.5 million from the comparable period in 2016 primarily due to increased labor related costs of $11.6 million, and an additional $4.9 million related to costs generated from strategic initiatives in the areas of the OilPlus® closed loop initiative and centralization activities associated with this segment. As a percentage of direct revenue, our costs remained consistent for the year ended December 31, 2017 as compared to 2016.

Corporate Items

	For the years ended December 31,			2018 over 2017		2017 over 2016	
	2018	2017	2016	$ Change	% Change	$ Change	% Change
SG&A	$166,595	$146,542	$138,624	$20,053	13.7 %	$7,918	5.7 %

Corporate Items selling, general and administrative expenses for the year ended December 31, 2018 increased $20.1 million from the comparable period in 2017 primarily due to increased salaries and benefits resulting from continued commitments to investing in our employees and variable compensation totaling $14.8 million as well as increased stock-based compensation of $4.3 million primarily attributable to the achievement of performance metrics associated with performance based awards in 2018. Incremental costs associated with the acquired Veolia Business also contributed to the increased costs.

Corporate Items selling, general and administrative expenses for the year ended December 31, 2017 increased $7.9 million from the comparable period in 2016 primarily due to an increase in variable compensation of $7.4 million and stock-based compensation of $3.4 million attributable to greater revenue and earnings results in 2017, partially offset by a reduction in severance costs of $3.5 million.

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Adjusted EBITDA

Management considers Adjusted EBITDA to be a measurement of performance which provides useful information to both management and investors. Adjusted EBITDA should not be considered an alternative to net income (loss) or other measurements under generally accepted accounting principles ("GAAP"). Adjusted EBITDA is not calculated identically by all companies and, therefore our measurements of Adjusted EBITDA, while defined consistently and in accordance with our existing credit agreement, may not be comparable to similarly titled measures reported by other companies.

We use Adjusted EBITDA to enhance our understanding of our operating performance, which represents our views concerning our performance in the ordinary, ongoing and customary course of our operations. We historically have found it helpful, and believe that investors have found it helpful, to consider an operating measure that excludes certain expenses relating to transactions not reflective of our core operations.

The information about our operating performance provided by this financial measure is used by our management for a variety of purposes. We regularly communicate Adjusted EBITDA results to our lenders since our loan covenants are based upon levels of Adjusted EBITDA achieved and to our board of directors and we discuss with the board our interpretation of such results. We also compare our Adjusted EBITDA performance against internal targets as a key factor in determining cash and equity bonus compensation for executives and other employees, largely because we believe that this measure is indicative of how the fundamental business is performing and is being managed.

We also provide information relating to our Adjusted EBITDA so that analysts, investors and other interested persons have the same data that we use to assess our core operating performance. We believe that Adjusted EBITDA should be viewed only as a supplement to the GAAP financial information. We also believe, however, that providing this information in addition to, and together with, GAAP financial information permits the foregoing persons to obtain a better understanding of our core operating performance and to evaluate the efficacy of the methodology and information used by management to evaluate and measure such performance on a standalone and a comparative basis.

The following is a reconciliation of net income (loss) to Adjusted EBITDA for the following periods (in thousands):

	Year Ended December 31,		
	2018	2017	2016
Net income (loss)	$65,636	$100,739	$(39,873)
Accretion of environmental liabilities	9,806	9,460	10,177
Depreciation and amortization	298,625	288,422	287,002
Goodwill impairment charge	—	—	34,013
Other expense (income), net	4,510	6,119	(6,195)
Loss on early extinguishment of debt	2,488	7,891	—
Gain on sale of businesses	—	(30,732)	(16,884)
Interest expense, net	81,094	85,808	83,525
Provision (benefit) for income taxes	28,846	(42,050)	48,589
Adjusted EBITDA	$491,005	$425,657	$400,354

Depreciation and Amortization

	Year Ended December 31,			2018 over 2017		2017 over 2016	
(in thousands)	2018	2017	2016	$ Change	% Change	$ Change	% Change
Depreciation of fixed assets and landfill amortization	$264,254	$251,403	$246,960	$12,851	5.1 %	$4,443	1.8 %
Permits and other intangibles amortization	34,371	37,019	40,042	(2,648)	(7.2)%	(3,023)	(7.5)%
Total depreciation and amortization	$298,625	$288,422	$287,002	$10,203	3.5 %	$1,420	0.5 %

Depreciation and amortization for the year ended December 31, 2018 increased $10.2 million from the comparable period in 2017, primarily due to incremental depreciation from acquisitions and a slight increase in volumes at our landfills that drove higher landfill amortization. Depreciation and amortization for the year ended December 31, 2017 remained consistent with the comparable period in 2016.

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Goodwill impairment charge

	Year Ended December 31,			2018 over 2017		2017 over 2016	
(in thousands)	2018	2017	2016	$ Change	% Change	$ Change	% Change
Goodwill impairment charge	$ —	$ —	$ 34,013	$ —	—%	$ (34,013)	(100.0)%

During the year ended December 31, 2016, we recorded a $34.0 million goodwill impairment charge in our Lodging Services line of business. Information regarding our 2016 goodwill impairment charge was disclosed in prior years' annual reports on Form 10-K.

Other (Expense) Income, net

	Year Ended December 31,			2018 over 2017		2017 over 2016	
(in thousands)	2018	2017	2016	$ Change	% Change	$ Change	% Change
Other (expense) income, net	$ (4,510)	$ (6,119)	$ 6,195	$ 1,609	(26.3)%	$ (12,314)	(198.8)%

For the year ended December 31, 2018, other (expense) income, net decreased $1.6 million from the comparable period in 2017 primarily due to smaller losses recognized on sales or disposals of fixed assets in 2018. Other (expense) income, net decreased $12.3 million from 2016 to 2017 primarily due to losses recognized on sales or disposals of fixed assets in 2017 compared to gains recognized on sales or disposals of fixed assets in 2016.

Loss on early extinguishment of debt

	Year Ended December 31,			2018 over 2017		2017 over 2016	
(in thousands)	2018	2017	2016	$ Change	% Change	$ Change	% Change
Loss on early extinguishment of debt	$ (2,488)	$ (7,891)	$ —	$ 5,403	(68.5)%	$ (7,891)	100.0 %

During the year ended December 31, 2018, we recorded a $2.5 million loss in connection with the extinguishment of the remaining $400.0 million previously outstanding senior unsecured notes which were refinanced in connection with the Incremental Facility Amendment to our Term Loan Agreement completed during the third quarter of 2018. During the year ended December 31, 2017, we recorded a $7.9 million loss on early extinguishment of debt in connection with the extinguishment of the $400.0 million previously outstanding senior unsecured notes which were refinanced in connection with the issuance of $400.0 million Term Loan Agreement which was completed in the second quarter of 2017. The losses consisted of amounts paid in excess of par in order to extinguish the debt prior to maturity and non-cash expenses related to the write-off of unamortized financing costs. For additional information regarding our financing arrangements, see Note 12, "Financing Arrangements," under Item 8, "Financial Statements and Supplementary Data," of this report.

Gain on sale of businesses

	Year Ended December 31,			2018 over 2017		2017 over 2016	
	2018	2017	2016	$ Change	% Change	$ Change	% Change
Gain on sale of businesses	$ —	$ 30,732	$ 16,884	$ (30,732)	(100)%	$ 13,848	82 %

During the year ended December 31, 2017, we recorded a $30.7 million gain on the sale of our Transformer Services business. During the year ended December 31, 2016, we recorded a $16.9 million gain on the sale of our Catalyst Services business. For additional information regarding these gains on sale of businesses, see Note 5, "Disposition of Businesses," under Item 8, "Financial Statements and Supplementary Data," of this report.

Provision (benefit) for Income Taxes

	Year Ended December 31,			2018 over 2017		2017 over 2016	
(in thousands)	2018	2017	2016	$ Change	% Change	$ Change	% Change
Provision (benefit) for income taxes	$ 28,846	$ (42,050)	$ 48,589	$ 70,896	(168.6)%	$ (90,639)	(186.5)%

Provision (benefit) for income taxes for fiscal years 2018, 2017 and 2016 was $28.8 million, $(42.1) million, and $48.6 million, respectively. The effective tax rate for 2018 was 30.5% and was impacted by the overall reduced federal tax rates

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enacted in 2018 under the Tax Cuts and Jobs Act (the "Tax Act") signed into law in December 2017, the recognition of valuation allowances on certain Canadian operations and offset in the current year by tax benefits resulting from amended prior year tax return filings. The income tax benefit in 2017 was primarily driven by impacts from the enactment of the Tax Act in 2017. Impacts of the Tax Act resulted in a net benefit of $93.0 million being recorded in 2017. See Note 13, "Income Taxes," under Item 8, "Financial Statements and Supplementary Data," of this report for more information related to the Tax Act and its impacts. Excluding the impacts of the Tax Act, a provision of $51.0 million would have been recognized, yielding an effective tax rate of 86.8% in 2017.

The mix of U.S. and Canadian taxable income and losses in recent years, combined largely with the impacts of valuation allowances being recorded relative to taxable losses generated in certain Canadian jurisdictions has had significant impacts on the recorded income tax expense amounts and has caused such amounts and resulting effective tax rates to represent significant variations from more customary relationships between pre-tax income and the provision for income taxes. In 2018, the Company recognized a $10.7 million valuation allowance from Canadian losses. Aside from the impact of the Tax Act, the variation from a more customary effective tax rate in 2017 was primarily related to a $14.5 million valuation allowance recorded relative to net operating loss carryforwards generated by certain Canadian subsidiaries in 2017 and the impacts of recording $3.7 million of unrecognized tax benefits associated with current and prior years' tax positions taken. Variations from a more customary effective tax rate in 2016 was primarily due to the recognition of a $12.9 million valuation allowance related to net operating loss carryforwards generated by certain Canadian subsidiaries in 2016, as well as an additional $9.7 million valuation allowance recorded as a result of a change in the likelihood of realizing a benefit from foreign tax credits and other net deferred tax assets. Additionally, the $34.0 million goodwill impairment charge in our Lodging Services line of business recorded in 2016 was a non-deductible tax item, and therefore no tax benefit was recorded on that loss and further caused the 2016 effective tax rate to vary from a more typical relationship between income before taxes and the recorded provision for income taxes.

Liquidity and Capital Resources

	For the years ended December 31,		
(in thousands)	2018	2017	2016
Net cash from operating activities	$373,210	$285,698	$259,624
Net cash used in investing activities	(349,659)	(203,267)	(361,777)
Net cash (used in) from financing activities	(110,997)	(72,760)	220,235

Net cash from operating activities

Net cash from operating activities for the year ended December 31, 2018 was $373.2 million, an increase of $87.5 million compared to net cash from operating activities for the year ended December 31, 2017. The increase in operating cash flows as compared to the comparable period of 2017 was most directly attributable to greater levels of operating income, lower interest payments and a reduction in environmental expenditures, which was offset by higher working capital levels due to overall growth in our business.

Net cash from operating activities for the year ended December 31, 2017 was $285.7 million, an increase of $26.1 million compared to net cash from operating activities for the year ended December 31, 2016. The change primarily resulted from higher income levels generated during the year ended December 31, 2017 and the impacts of changes in net working capital related to increases in cash flows from other current assets, partially offset by an increase in accounts receivable and unbilled accounts receivable as a result of increased incremental revenues during the year ended December 31, 2017.

Net cash used in investing activities

Net cash used in investing activities for the year ended December 31, 2018 was $349.7 million, an increase of $146.4 million compared to cash used in investing activities for the year ended December 31, 2017. The change was primarily driven by the 2018 use of cash to fund acquisitions, increased capital expenditure levels net of proceeds primarily related to sales of manufacturing assets in Western Canada, a reduction in net purchases of marketable securities and the lack in 2018 of proceeds from sale of a business, which occurred in 2017 with the Transformer Services divestiture.

Net cash used in investing activities for the year ended December 31, 2017 was $203.3 million, a decrease of $158.5 million compared to cash used in investing activities for the year ended December 31, 2016. The change was primarily driven
by a decrease in cash paid for acquisitions in 2017, proceeds from the sale of the Transformer Services business and a decrease in capital expenditures, which were greater during 2016 due to the construction of our hazardous waste incinerator at our El Dorado, Arkansas facility, which came online in the first quarter of 2017. The decrease in cash used in investing activities was partially offset by cash used to purchase highly liquid marketable securities during the year ended December 31, 2017.

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Net cash (used in) from financing activities

Net cash used in financing activities for the year ended December 31, 2018 was $111.0 million, an increase of $38.2 million compared to cash used in financing activities for the year ended December 31, 2017. The primary reason for the increase in financing cash outflows in 2018 was the net pay down of debt obligations totaling $55.8 million which occurred during the year. Offsetting this increase was decreased outflows related to stock repurchases of $3.9 million, premiums paid on the extinguishment of debt of $4.8 million, and changes in uncashed checks of $5.8 million.

Net cash used in financing activities for the year ended December 31, 2017 was $72.8 million, a decrease of $293.0 million compared to cash from financing activities for the year ended December 31, 2016. The change was primarily due to the issuance in March 2016 of $250.0 million in additional aggregate principal amount of 5.125% senior unsecured notes due 2021.

During the year ended December 31, 2017, there were no net proceeds from issuance of debt as we entered into a $400.0 million senior secured term loan agreement and used the proceeds to purchase approximately $400.0 million aggregate principal amount of our previously outstanding 5.25% senior unsecured notes due 2020. In addition, during the year ended December 31, 2017, we increased repurchases of our common stock from $22.2 million in 2016 to $49.0 million in 2017.

Adjusted Free Cash Flow

Management considers adjusted free cash flow to be a measurement of liquidity which provides useful information to both management, creditors and investors about our financial strength and our ability to generate cash. Additionally, adjusted free cash flow is a metric on which a portion of management incentive compensation is based. We define adjusted free cash flow as net cash from operating activities excluding cash impacts of items derived from non-operating activities, such as taxes paid in connection with divestitures, less additions to property, plant and equipment plus proceeds from sales or disposals of fixed assets. Adjusted free cash flow should not be considered an alternative to net cash from operating activities or other measurements under GAAP. Adjusted free cash flow is not calculated identically by all companies, and therefore our measurements of adjusted free cash flow may not be comparable to similarly titled measures reported by other companies.

The following is a reconciliation from net cash from operating activities to adjusted free cash flow for the following periods (in thousands):

	For the years ended December 31,	
	2018	2017
Net cash from operating activities	$373,210	$285,698
Additions to property, plant and equipment	(193,344)	(167,007)
Proceeds from sale and disposal of fixed assets	15,445	7,124
Tax liability on sale of business	—	14,423
Adjusted free cash flow	$195,311	$140,238

Working Capital

At December 31, 2018, cash and cash equivalents and marketable securities totaled $279.4 million, compared to $357.6 million at December 31, 2017. At December 31, 2018, cash and cash equivalents held by foreign subsidiaries totaled $84.7 million and were readily convertible into other currencies including U.S. dollars. At December 31, 2018, the cash and cash equivalents and marketable securities balance for our U.S. operations was $194.7 million, and our U.S. operations had net operating cash flows of $309.4 million for the year ended December 31, 2018. Additionally, we have a $400.0 million revolving credit facility, of which approximately $235.4 million was available to borrow at December 31, 2018. Based on the above and our current plans, we believe that our operations have adequate financial resources to satisfy their current liquidity needs.

We assess our liquidity in terms of our ability to generate cash to fund our operating, investing, and financing activities. Our primary ongoing cash requirements will be to fund operations, capital expenditures, interest payments and investments in line with our business strategy. We believe our future operating cash flows will be sufficient to meet our future operating and internal investing cash needs as well as any cash needs relating to our stock repurchase program. Furthermore, our existing cash balance and the availability of additional borrowings under our revolving credit facility provide additional potential sources of liquidity should they be required.

Financing Arrangements

The financing arrangements and principal terms of our $845.0 million principal amount of 5.125% senior unsecured notes due 2021 and $742.2 million senior secured notes due 2024 which were outstanding at December 31, 2018, and our

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$400.0 million revolving credit facility, are discussed further in Note 12, “Financing Arrangements,” to our consolidated financial statements included in Item 8 of this report.

As of December 31, 2018, we were in compliance with the covenants of all of our debt agreements, and we believe we will continue to meet such covenants.

As discussed in Note 12, “Financing Arrangements,” to our consolidated financial statements, we refinanced during 2018 our debt portfolio whereby the $400.0 million of previously outstanding 5.25% senior unsecured notes due 2020 was replaced by $350.0 million of incremental term loans under our variable rate Term Loan Agreement. In connection with the addition of this variable rate debt, we entered into interest rate swap agreements in order to hedge the future risk of rising interest rates and effectively fix the interest rate on $350.0 million of our variable rate debt at an annual rate of approximately 4.67%.

Environmental Liabilities

(in thousands)	As of December 31, 2018	2017	2018 over 2017 $ Change	% Change
Closure and post-closure liabilities	$69,931	$61,037	$8,894	14.6 %
Remedial liabilities	121,017	124,468	(3,451)	(2.8)%
Total environmental liabilities	$190,948	$185,505	$5,443	2.9 %

Total environmental liabilities as of December 31, 2018 were $190.9 million, an increase of $5.4 million compared to the liabilities as of December 31, 2017. This increase was primarily due to accretion of $9.8 million, new asset retirement obligations and liabilities assumed in acquisitions of $3.2 million, and changes in estimates recorded to our statement of operations of $2.1 million, partially offset by expenditures of $10.1 million.

We anticipate our environmental liabilities, substantially all of which we assumed in connection with our acquisitions, will be payable over many years and that cash flow from operations will generally be sufficient to fund the payment of such liabilities when required. However, events not anticipated (such as future changes in environmental laws and regulations) could require that such payments be made earlier or in greater amounts than currently anticipated, which could adversely affect our results of operations, cash flow and financial condition.

During 2018, we recognized a net charge for changes in estimates of recorded environmental liabilities, whereas in each of 2017 and 2016 we benefited from reductions in our environmental liabilities due to changes in estimates recorded to our statement of operations. The benefits over these years were primarily due to the successful introduction of new technology for remedial activities, favorable results from environmental studies of the on-going remediation, including favorable regulatory approvals, and lower project costs realized by utilizing internal labor and equipment. The principal changes in estimates were from the following items:

In 2018, the net increase in our environmental liabilities from changes in estimates recorded to the statement of operations was $2.1 million and primarily related to an increase in projected cleanup costs at third party Superfund sites where we are a potentially responsible party.

In 2017, the net reduction in our environmental liabilities from changes in estimates recorded to the statement of operations was $0.2 million and primarily related to reduced remedial spending at one of our locations resulting from new technologies and cost savings realized during the completed cell closure at one of our landfills.

In 2016, the net reduction in our environmental liabilities from changes in estimates recorded to the statement of operations was $4.3 million and primarily related to reduced remedial spending at one of our locations resulting from new technologies and cost savings realized during the completed cell closure at one of our landfills.

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Contractual Obligations

The following table has been included to assist understanding our debt and similar obligations as of December 31, 2018 and our ability to meet such obligations (in thousands):

		Payments Due by Period			
Contractual Obligations	Total	Less than 1 year	1-3 years	4-5 years	After 5 years
Closure, post-closure and remedial liabilities	$462,879	$24,549	$50,425	$35,138	$352,767
Current and long-term obligations, at par	1,587,232	7,535	860,071	15,071	704,555
Interest on current and long-term obligations (1)	273,559	76,192	126,114	63,420	7,833
Operating leases	211,051	56,480	79,031	39,762	35,778
Total contractual obligations	$2,534,721	$164,756	$1,115,641	$153,391	$1,100,933

(1) Interest on our variable-rate $742.2 million senior secured term loan agreement was calculated based on the effective interest rate as of December 31, 2018 of 4.27%. Our interest rate swap agreements effectively fix the interest rate on $350.0 million of our variable rate debt at an annual rate of approximately 4.67% and therefore the assumed rate on this variable debt after considering the swap agreements is 4.45%.

The undiscounted value of closure, post-closure and remedial liabilities of $462.9 million is equivalent to the present value of $190.9 million based on discounting of $178.7 million and the undiscounted remainder of $93.2 million to be accrued for closure and post-closure liabilities over the remaining site lives.

The following table has been included to assist in understanding our other contractual obligations as of December 31, 2018 and our ability to meet such obligations (in thousands):

		Payments Due by Period			
Other Commercial Commitments	Total	Less than 1 year	1-3 years	4-5 years	After 5 years
Standby letters of credit	$130,100	$130,100	$ —	$ —	$ —

We obtained the standby letters of credit described in the above table primarily as security for financial assurances we have been required to provide to regulatory bodies for our hazardous waste facilities and which would be called only in the event that we fail to satisfy closure, post-closure and other obligations under the permits issued by those regulatory bodies for such licensed facilities. See Note 12, "Financing Arrangements," to our consolidated financial statements included in Item 8 of this report for further discussion of our standby letters of credit and other financing arrangements.

Off-Balance Sheet Arrangements

Except for our obligations under operating leases and letters of credit described above under "Contractual Obligations" and performance obligations incurred in the ordinary course of business, we are not party to any off-balance sheet arrangements involving guarantee, contingency or similar obligations to entities whose financial statements are not consolidated with our results, and that have or are reasonably likely to have a current or future effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that would be material to investors in our securities.

Capital Expenditures

In 2018, our capital expenditures, net of disposals, were $177.9 million. We anticipate that 2019 capital spending, net of disposals, will be in the range of $190.0 million to $210.0 million. However, unanticipated changes in environmental regulations could require us to make significant capital expenditures for our facilities and adversely affect our results of operations and cash flow.

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Critical Accounting Policies and Estimates

The preparation of our financial statements requires us to make estimates and judgments that affect the reported amounts of our assets, liabilities, revenues and expenses, and related disclosures of contingent liabilities. The following are the areas that we believe require the greatest amount of judgments or estimates in the preparation of the financial statements: accounting for landfills, non-landfill closure and post-closure liabilities, remedial liabilities, goodwill, permits and other intangible assets and legal matters. Our management reviews critical accounting estimates with the Audit Committee of our Board of Directors on an ongoing basis and as needed prior to the release of our annual financial statements. See also Note 2, "Significant Accounting Policies," to our consolidated financial statements included in Item 8 of this report, which discusses the significant assumptions used in applying our accounting policies.

Landfill Accounting. We amortize landfill improvements and certain landfill-related permits over their estimated useful lives. The units-of-consumption method is used to amortize land, landfill cell construction, asset retirement costs and remaining landfill cells and sites. We also utilize the units-of-consumption method to record closure and post-closure obligations for landfill cells and sites. Under the units-of-consumption method, we include future estimated construction and asset retirement costs, as well as costs incurred to date, in the amortization base of the landfill assets. Additionally, where appropriate, as discussed below, we include probable expansion airspace yet to be permitted in the calculation of the total remaining useful life of the landfill. If we determine that expansion capacity should no longer be considered in calculating the recoverability of a landfill asset, we may be required to recognize an asset impairment or incur significantly higher amortization expense. If at any time we decide to abandon the expansion effort, the capitalized costs related to the expansion effort are expensed immediately.

Landfill Assets. Landfill assets include the costs of landfill site acquisition, permits and cell construction incurred to date. These amounts are amortized under the units-of-consumption method such that the asset is completely amortized when the landfill ceases accepting waste.

Landfill Capacity. Landfill capacity, which is the basis for the amortization of landfill assets and for the accrual of final closure and post-closure obligations, represents total permitted airspace plus unpermitted airspace that management believes is probable of ultimately being permitted based on established criteria. Our management applies the following criteria for evaluating the probability of obtaining a permit for future expansion airspace at existing sites, which provides management a basis to evaluate the likelihood of success of unpermitted expansions:

- Personnel are actively working to obtain the permit or permit modifications (land use, state and federal) necessary for expansion of an existing landfill, and progress is being made on the project.
- Management expects to submit the application within the next year and to receive all necessary approvals to accept waste within the next five years.
- At the time the expansion is included in management's estimate of the landfill's useful economic life, it is probable that the required approvals will be received within the normal application and processing time periods for approvals in the jurisdiction in which the landfill is located.
- We or the other owner of the landfill has a legal right to use or obtain the right to use the land associated with the expansion plan.
- There are no significant known political, technical, legal or business restrictions or other issues that could impair the success of such expansion.
- A financial feasibility analysis has been completed and the results demonstrate that the expansion will have a positive financial and operational impact such that management is committed to pursuing the expansion.
- Additional airspace and related additional costs, including permitting, final closure and post-closure costs, have been estimated based on the conceptual design of the proposed expansion.

As of December 31, 2018, there was one unpermitted expansion at one location included in management's landfill calculation, which represented 16.2% of our remaining airspace at that date. If actual expansion airspace is significantly different from management's estimate of expansion airspace, the amortization rates used for the units-of-consumption method would change, therefore impacting our profitability. If we determine that there is less actual expansion airspace at a landfill, this would increase amortization expense recorded and decrease profitability, while if we determine a landfill has more actual expansion airspace, amortization expense would decrease and profitability would increase.

Landfill Final Closure and Post-Closure Liabilities. The balance of landfill final closure and post-closure liabilities at December 31, 2018 and 2017 was $37.8 million and $32.4 million, respectively. We have material financial commitments for the costs associated with requirements of the EPA and the comparable regulatory agency in Canada for landfill final closure and post-closure activities. In the United States, the landfill final closure and post-closure requirements are established under the standards of the EPA, and are implemented and applied on a state-by-state basis. We develop estimates for the cost of these activities based on our evaluation of site-specific facts and circumstances, such as the existence of structures and other landfill improvements that would need to be dismantled, the amount of groundwater monitoring and leachate management expected to be performed, and the length of the post-closure period as determined by the applicable regulatory agency. Included in our cost estimates are our interpretation of current regulatory requirements and proposed regulatory changes. Such estimates may change in the future due to various circumstances including, but not limited to, permit modifications, changes in legislation or regulations, technological changes and results of environmental studies. We perform zero-based reviews of these estimated liabilities based upon a planned schedule, typically every five years or sooner if the occurrence of a significant event is likely to change the timing or amount of the currently estimated expenditures. We consider a significant event to be a new regulation or an amendment to an existing regulation, a new permit or modification to an existing permit, or a change in the market price of a significant cost item. Our cost estimates are calculated using internal sources as well as input from third-party experts. These costs are measured at estimated fair value using present value techniques, and therefore changes in the estimated timing of closure and post-closure activities would affect the liability, the value of the related asset, and our results of operations.

Final closure costs are the costs incurred after the site ceases to accept waste, but before the landfill is certified as closed by the applicable state or provincial regulatory agency. These costs generally include the costs required to cap the final cell of the landfill (if not included in cell closure), to dismantle certain structures for landfills and other landfill improvements and regulation-mandated groundwater monitoring, and for leachate management. Post-closure costs involve the maintenance and monitoring of a landfill site that has been certified closed by the applicable regulatory agency. These costs generally include groundwater monitoring and leachate management. Regulatory post-closure periods are generally 30 years after landfill closure. Final closure and post-closure obligations are accrued on a units-of-consumption basis, such that the present value of the final closure and post-closure obligations are fully accrued at the date the landfill discontinues accepting waste.

Non-Landfill Closure and Post-Closure Liabilities. The balance of our non-landfill closure and post-closure liabilities at December 31, 2018 and 2017 was $32.1 million and $28.6 million, respectively. We base estimates for non-landfill closure and post-closure liabilities on our interpretations of existing permit and regulatory requirements for closure and post-closure maintenance and monitoring. Our cost estimates are calculated using internal sources as well as input from third-party experts. We use probability scenarios to estimate when future operations will cease and inflate the current cost of closing the non-landfill facility on a probability weighted basis using the appropriate inflation rate and then discounting the future value to arrive at an estimated present value of closure and post-closure costs. The estimates for non-landfill closure and post-closure liabilities are inherently uncertain due to the possibility that permit and regulatory requirements will change in the future, impacting the estimation of total costs and the timing of the expenditures. We review non-landfill closure and post-closure liabilities for changes to key assumptions that would impact the amount of the recorded liabilities. Changes that would prompt us to revise a liability estimate include changes in legal requirements that impact our expected closure plan or scope of work, in the market price of a significant cost item, in the probability scenarios as to when future operations at a location might cease, or in the expected timing of the cost expenditures. Changes in estimates for non-landfill closure and post-closure events immediately impact the required liability and the value of the corresponding asset. If a change is made to a fully-consumed asset, the adjustment is charged immediately to expense. When a change in estimate relates to an asset that has not been fully consumed, the adjustment to the asset is recognized in income prospectively as a component of amortization. Historically, material changes to non-landfill closure and post-closure estimates have been infrequent.

See Note 10, "Closure and Post-Closure Liabilities," to our consolidated financial statements included in Item 8 of this report for the changes to these Landfill and Non-Landfill Closure and Post-Closure liabilities during the years ended December 31, 2018 and 2017.

Remedial Liabilities. The balance of our remedial liabilities at December 31, 2018 and 2017 was $121.0 million and $124.5 million, respectively. See Note 11, "Remedial Liabilities," to our consolidated financial statements included in Item 8 of this report for the changes to the remedial liabilities during the years ended December 31, 2018 and 2017.

Remedial liabilities are obligations to investigate, alleviate and/or eliminate the effects of a release (or threat of a release) of hazardous substances into the environment and may also include corrective action under RCRA. Our remediation obligations can be further characterized as Long-term Maintenance, One-Time Projects, Legal and Superfund. Legal liabilities are typically comprised of litigation matters that involve potential liability for certain aspects of environmental cleanup and can include third-party claims for property damage or bodily injury allegedly arising from or caused by exposure to hazardous substances originating from our activities or operations or, in certain cases, from the actions or inactions of other persons or companies. Superfund liabilities are typically claims alleging that we are a potentially responsible party ("PRP") and/or are potentially liable for environmental response, removal, remediation and cleanup costs at/or from either a facility we own or a site owned by a third-party. As described in Note 18, "Commitments and Contingencies," to our consolidated financial statements included in Item 8 of this report, Superfund liabilities also include certain liabilities payable to governmental entities for which we are potentially liable to reimburse the sellers in connection with our 2002 acquisition of substantially all of the assets of the Chemical Services Division (the "CSD assets") of Safety-Kleen Corp. Long-term maintenance liabilities include the costs of groundwater monitoring, treatment system operations, permit fees and facility maintenance for inactive operations. One-Time Projects liabilities include the costs necessary to comply with regulatory requirements for the removal or treatment of contaminated materials.

Amounts recorded related to the costs required to remediate a location are determined by internal engineers and operational personnel and incorporate input from external third parties. The estimates consider such factors as the nature and extent of environmental contamination (if any); the terms of applicable permits and agreements with regulatory authorities as to cleanup procedures and whether modifications to such permits and agreements will likely need to be negotiated; the cost of performing anticipated cleanup activities based upon current technology; and in the case of Superfund and other sites where other parties will also be responsible for a portion of the cleanup costs, the likely allocation of such costs and the ability of such other parties to pay their share. Each quarter, our management discusses if any events have occurred or milestones have been met that would warrant the creation of a new remedial liability or the revision of an existing remedial liability. Such events or milestones include identification and verification as a PRP, receipt of a unilateral administrative order under Superfund or requirement for RCRA interim corrective measures, completion of the feasibility study under Superfund or the corrective measures study under RCRA, new or modifications to existing permits, changes in property use, or a change in the market price of a significant cost item. Remedial liabilities are inherently difficult to estimate and there is a risk that the actual quantities of contaminants could differ from the results of the site investigation, which could materially impact the amount of our liability. It is also possible that chosen methods of remedial solutions will not be successful and funds will be required for alternative solutions.

Remedial liabilities are discounted only when the timing of the payments is estimable and the amounts are determinable, with the exception of remedial liabilities assumed as part of an acquisition that are measured at fair value.

We establish reserves for estimated environmental liabilities based on acceptable technologies when we determine the liability is appropriate. Introductions of new technologies are subject to successful demonstration of the effectiveness of the alternative technology and regulatory approval. We routinely review and evaluate the sites for which we have established estimated environmental liabilities reserves to determine if there should be changes in the established reserves. The changes in estimates are reflected as adjustments in the ordinary course of business in the period when we determine that an adjustment is appropriate as new information becomes available. Upon demonstration of the effectiveness of the alternative technology and applicable regulatory approval, we update our estimated cost of remediating the affected sites.

Goodwill and Other Long-Lived Assets. Goodwill is not amortized but is reviewed for impairment annually as of December 31 or when events or changes in the business environment indicate the carrying value of a reporting unit may exceed its fair value. This review is performed by comparing the fair value of each reporting unit to its carrying value, including goodwill. If the fair value is less than the carrying amount, a loss is recorded for the excess of the carrying value over the fair value up to the carrying amount of goodwill.

We determine our reporting units by identifying the components of each operating segment, and then in some circumstances aggregate components having similar economic characteristics based on quantitative and/or qualitative factors. During the first quarter of fiscal year 2018, we reassigned certain components among our operating segments to be in line with management reporting changes and as a result concluded there was a change in our operating segments resulting in two such segments in 2018, namely (i) the Environmental Services segment and (ii) the Safety-Kleen segment. As a result of our identification of operating segments, we also concluded that, for purposes of reviewing for potential goodwill impairment, we now have four reporting units, consisting of Environmental Sales and Service, Environmental Facilities, Kleen Performance Products and Safety-Kleen Environmental Services. We allocated goodwill to the newly identified reporting units using a relative fair value approach. In addition, we completed an assessment of any potential goodwill impairment for all reporting units immediately prior and subsequent to the reallocation and determined that no impairment existed.

We conducted our annual impairment test of goodwill for all of our reporting units to which goodwill was allocated as of December 31, 2018 and determined that no adjustment to the carrying value of goodwill for any reporting unit was then necessary. In all cases the estimated fair value of each reporting unit significantly exceeded its carrying value.

We measure fair value for all of our reporting units using an income approach (a discounted cash flow analysis) which incorporates several estimates and assumptions with varying degrees of uncertainty. The discounted cash flow analyses include estimated cash flows for a discrete period and for a terminal period thereafter. We corroborate our estimates of fair values by also considering other factors such as the fair value of comparable companies to businesses contained in our reporting units, as well as performing a reconciliation of the total estimated fair value of all reporting units to our market capitalization.

Indefinite-lived intangible assets are not amortized but are reviewed for impairment annually as of December 31, or when events or changes in the business environment indicate that the carrying value may be impaired. If the fair value of the asset is less than the carrying amount, we perform a quantitative test to determine the fair value. The impairment loss, if any, is measured as the excess of the carrying value of the asset over its fair value. The estimated fair values of the indefinite-lived

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intangibles exceeded their carrying values at December 31, 2018. However, we will continue to monitor the performance of our indefinite-lived intangible assets, and future events might result in an impairment of indefinite-lived intangible assets.

Our long-lived assets are carried on our financial statements based on their cost less accumulated depreciation or amortization. Long-lived assets with finite lives are reviewed for impairment whenever events or changes in circumstances indicate that their carrying value may not be entirely recoverable. When such factors and circumstances exist, our management compares the projected undiscounted future cash flows associated with the related asset or group of assets to the respective carrying amounts. The impairment loss, if any, would be measured as the excess of the carrying amount over the fair value of the asset and is recorded in the period in which the determination is made. Any resulting impairment losses recorded by us would have an adverse impact on our results of operations.

In consideration of historical goodwill impairments for our Oil and Gas Field Services and Lodging Services operations and continued lower than historical results in the oil and gas related industries, specifically in Western Canada, we continue to monitor the carrying value of those business' long-lived assets and assess the risk of asset impairment. As of December 31, 2018, our Oil and Gas Field Services and Lodging Services operations had property, plant and equipment, net of $55.2 million and $65.9 million, respectively, and intangible assets of $0.6 million and $1.4 million, respectively. We concluded that no events or circumstances have arisen during 2018 which would indicate that the carrying values of those asset groups are not recoverable.

We will continue to evaluate all of our goodwill and other long-lived assets impacted by economic downturns most predominantly in the oil and energy related markets in which we operate. If further economic difficulties resulting from depressed oil and gas related pricing and lower overall activity levels, particularly in our Canadian operations, continue for a significant foreseeable period of time and thus future operating results are significantly less than current expectations, additional impairment charges may be recognized. The market conditions which could lead to such future impairments are currently most prevalent in our Oil and Gas Field Services and Lodging Services operations.

Legal Matters. As described in Note 18, "Commitments and Contingencies," to our consolidated financial statements included in Item 8 of this report, we are subject to legal proceedings which relate to our past acquisitions or which have arisen in the ordinary course of business. Accruals are established for legal matters when, in our opinion, it is probable that a liability exists and the liability can be reasonably estimated. As of December 31, 2018, we had reserves of $25.4 million consisting of (i) $17.9 million related to pending legal or administrative proceedings, including Superfund liabilities, which were included in remedial liabilities on the consolidated balance sheets and (ii) $7.5 million primarily related to legal claims as well as federal, state and provincial enforcement actions, which were included in accrued expenses on the consolidated balance sheets. We also estimate that it is "reasonably possible," as that term is defined ("more than remote but less than likely"), that the amount of such total liabilities could be as much as $1.8 million more. Actual expenses incurred in future periods could differ materially from accruals established.

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ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

In the normal course of business, we are exposed to market risks, including changes in interest rates and certain foreign currency rates, primarily relating to the Canadian dollar. Our philosophy in managing interest rate risk is to maintain a debt portfolio inclusive of both variable and fixed-rate debt so as to limit our interest expense and exposure to interest rate volatility. During the third quarter of 2018, we entered into interest rate swap agreements with the intention of hedging interest rate exposure on a portion of our outstanding LIBOR-based variable rate senior secured term loans. Under the terms of the swaps, we receive interest based on the 1-month LIBOR index and pay interest at a weighted average rate of approximately 2.92% on an initial notional amount of $350.0 million. When combined with the 1.75% interest rate margin for Eurocurrency borrowings, the effective annual interest rate on such $350.0 million aggregate principal amount of term loans is therefore approximately 4.67%.

We have designated our interest rate swap agreements as effective cash flow hedges at inception, and therefore the change in fair value is recorded in stockholders' equity as a component of accumulated other comprehensive loss and included in interest expense at the same time as interest expense is affected by the hedged transactions. Differences paid or received over the life of the agreements are recorded as additions to or reductions of interest expense on the underlying debt.

The following table provides information regarding our fixed and variable rate borrowings at December 31, 2018 (in thousands):

Scheduled Maturity Dates	2019	2020	2021	2022	2023	Thereafter	Total
Senior secured term loans due 2024	$7,535	$7,535	$7,535	$7,535	$7,535	$704,557	$742,232
Senior unsecured notes due 2021	—	—	845,000	—	—	—	845,000
Long term obligations, at par	$7,535	$7,535	$852,535	$7,535	$7,535	$704,557	$1,587,232

The interest rate on the $845 million senior unsecured notes due June 1, 2021 is fixed at 5.125%. Interest payments are due in the amount of $21.7 million each related to the $845.0 million senior unsecured notes payable semi-annually on June 1 and December 1 of each year.

We continue to have interest rate risk relative to our term loan borrowing exceeding $350 million or $392.2 million as of December 31, 2018. The effective interest rate of the term loans as of December 31, 2018 was 4.27%. Should the average interest rate on the variable rate portion of our long-term obligations change by 100 basis points, we estimate that our annual interest expense would change by up to approximately $4.0 million.

In addition to the fixed and variable rate borrowings described in the above table, we have a revolving credit facility with maximum borrowings of up to $400.0 million (with a $325.0 million sub-limit for letters of credit), under which no borrowings were outstanding at December 31, 2018.

We view our investment in our foreign subsidiaries as long-term; thus, we have not entered into any hedging transactions between any two foreign currencies or between any of the foreign currencies and the U.S. dollar. Given this significant investment in Canada and the fluctuations that have and can occur between the U.S. Dollar and Canadian Dollar exchange rates, significant movements in cumulative translation adjustment amounts recorded as a component of other comprehensive income (loss) can occur in any given period.

During 2018, our Canadian subsidiaries transacted business in U.S. dollars and at any period end had cash on deposit in U.S. dollars and outstanding U.S. dollar accounts receivable related to those transactions. Those cash and receivable accounts are vulnerable to foreign currency transaction gains or losses. Exchange rate movements also affect the translation of Canadian generated profits and losses into U.S. dollars. Had the Canadian dollar been 10.0% stronger or weaker against the U.S. dollar, we would have reported increased or decreased net income of $4.8 million and $5.6 million for the years ended December 31, 2018 and 2017, respectively.

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ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Clean Harbors, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Clean Harbors, Inc. and subsidiaries (the "Company") as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income, cash flows, and stockholders' equity for each of the three years in the period ended December 31, 2018, and the related notes and the schedule listed in the Index at Item 15 (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 27, 2019, expressed an unqualified opinion on the Company's internal control over financial reporting.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB. We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Deloitte & Touche LLP
Boston, Massachusetts
February 27, 2019

We have served as the Company's auditor since 2005.

CLEAN HARBORS, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS
(dollars in thousands)

	As of December 31,	
	2018	2017
ASSETS		
Current assets:		
Cash and cash equivalents	$226,507	$319,399
Short-term marketable securities	52,856	38,179
Accounts receivable, net of allowances aggregating $44,315 and $27,799, respectively	606,952	528,924
Unbilled accounts receivable	54,794	35,922
Deferred costs	18,770	20,445
Inventories and supplies	199,479	176,012
Prepaid expenses and other current assets	42,800	35,175
Total current assets	1,202,158	1,154,056
Property, plant and equipment, net	1,561,978	1,587,365
Other assets:		
Goodwill	514,189	478,523
Permits and other intangibles, net	441,875	469,128
Other	18,121	17,498
Total other assets	974,185	965,149
Total assets	$3,738,321	$3,706,570
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Current portion of long-term obligations	$7,535	$4,000
Accounts payable	276,461	224,231
Deferred revenue	61,843	67,822
Accrued expenses	233,405	187,982
Current portion of closure, post-closure and remedial liabilities	23,034	19,782
Total current liabilities	602,278	503,817
Other liabilities:		
Closure and post-closure liabilities, less current portion of $9,592 and $6,444, respectively	60,339	54,593
Remedial liabilities, less current portion of $13,442 and $13,338, respectively	107,575	111,130
Long-term obligations, less current portion	1,565,021	1,625,537
Deferred taxes, unrecognized tax benefits and other long-term liabilities	233,352	223,291
Total other liabilities	1,966,287	2,014,551
Commitments and contingent liabilities (See Note 18)		
Stockholders' equity:		
Common stock, $.01 par value:		
Authorized 80,000,000 shares; issued and outstanding 55,847,261 and 56,501,190 shares, respectively	558	565
Additional paid-in capital	655,415	686,962
Accumulated other comprehensive loss	(223,371)	(172,407)
Accumulated earnings	737,154	673,082
Total stockholders' equity	1,169,756	1,188,202
Total liabilities and stockholders' equity	$3,738,321	$3,706,570

The accompanying notes are an integral part of these consolidated financial statements.

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CLEAN HARBORS, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands except per share amounts)

	For the years ended December 31,		
	2018	2017	2016
Revenues:			
Service revenues	$2,709,239	$2,398,650	$2,280,809
Product revenues	591,064	546,328	474,417
Total revenues	3,300,303	2,944,978	2,755,226
Cost of revenues: (exclusive of items shown separately below)			
Service revenues	1,861,975	1,641,798	1,543,210
Product revenues	443,576	420,875	389,647
Total cost of revenues	2,305,551	2,062,673	1,932,857
Selling, general and administrative expenses	503,747	456,648	422,015
Accretion of environmental liabilities	9,806	9,460	10,177
Depreciation and amortization	298,625	288,422	287,002
Goodwill impairment charge	—	—	34,013
Income from operations	182,574	127,775	69,162
Other (expense) income, net	(4,510)	(6,119)	6,195
Loss on early extinguishment of debt	(2,488)	(7,891)	—
Gain on sale of businesses	—	30,732	16,884
Interest expense, net of interest income of $2,958, $1,897, and $784, respectively	(81,094)	(85,808)	(83,525)
Income before provision (benefit) for income taxes	94,482	58,689	8,716
Provision (benefit) for income taxes	28,846	(42,050)	48,589
Net income (loss)	$65,636	$100,739	$(39,873)
Earnings (loss) per share:			
Basic	$1.17	$1.77	$(0.69)
Diluted	$1.16	$1.76	$(0.69)
Shares used to compute earnings (loss) per share — Basic	56,148	57,072	57,532
Shares used to compute earnings (loss) per share — Diluted	56,340	57,200	57,532

The accompanying notes are an integral part of these consolidated financial statements.

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CLEAN HARBORS, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in thousands)

	For the years ended December 31,		
	2018	2017	2016
Net income (loss)	$65,636	$100,739	$(39,873)
Other comprehensive (loss) income:			
Unrealized gains (losses) on available-for-sale securities (net of taxes (benefits) of $105, $152, and ($214), respectively)	77	32	(321)
Unrealized loss on interest rate hedge	(9,579)	—	—
Reclassification adjustment for losses on available-for-sale securities and interest rate hedge included in net income (loss) (net of taxes of $0, $79, and $0, respectively)	806	143	—
Foreign currency translation adjustments (including tax benefits of $5.0 million and $16.8 million in 2018 and 2016, respectively)	(42,350)	41,636	40,728
Unfunded pension liability (net of taxes of $42, $38, and $57, respectively)	82	108	159
Other comprehensive (loss) income	(50,964)	41,919	40,566
Comprehensive income	$14,672	$142,658	$693

The accompanying notes are an integral part of these consolidated financial statements.

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CLEAN HARBORS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	For the years ended December 31,		
	2018	2017	2016
Cash flows from operating activities:			
Net income (loss)	$65,636	$100,739	$(39,873)
Adjustments to reconcile net income (loss) to net cash from operating activities:			
Depreciation and amortization	298,625	288,422	287,002
Goodwill impairment charge	—	—	34,013
Allowance for doubtful accounts	15,817	7,901	6,907
Amortization of deferred financing costs and debt discount	3,846	3,482	3,537
Accretion of environmental liabilities	9,806	9,460	10,177
Changes in environmental liability estimates	2,147	(195)	(4,254)
Deferred income taxes	19,089	(83,335)	15,184
Other expense (income), net	4,510	6,119	(5,685)
Stock-based compensation	16,792	13,146	10,481
Excess tax benefit of stock-based compensation	—	—	(1,198)
Net tax benefit on stock-based awards	—	—	1,165
Gain on sale of businesses	—	(30,732)	(16,884)
Loss on early extinguishment of debt	2,488	7,891	—
Environmental expenditures	(10,115)	(12,965)	(12,170)
Changes in assets and liabilities, net of acquisitions:			
Accounts receivable and unbilled accounts receivable	(79,563)	(33,764)	(15,009)
Inventories and supplies	(26,958)	(5,002)	(16,080)
Other current assets	(7,946)	16,720	(8,036)
Accounts payable	46,915	(10,684)	(3,503)
Other current and long-term liabilities	12,121	8,495	13,850
Net cash from operating activities	373,210	285,698	259,624
Cash flows used in investing activities:			
Additions to property, plant and equipment	(193,344)	(167,007)	(219,384)
Proceeds from sale and disposal of fixed assets	15,445	7,124	20,817
Acquisitions, net of cash acquired	(151,023)	(49,227)	(206,915)
Additions to intangible assets including costs to obtain or renew permits	(4,688)	(1,617)	(2,831)
Purchases of available-for-sale securities	(44,772)	(38,342)	(598)
Proceeds from sale of available-for-sale securities	28,723	376	—
Proceeds from sale of businesses, net of transactional costs	—	45,426	47,134
Net cash used in investing activities	(349,659)	(203,267)	(361,777)
Cash flows (used in) from financing activities:			
Change in uncashed checks	132	(5,940)	(3,177)
Proceeds from exercise of stock options	—	46	627
Tax payments related to withholdings on vested restricted stock	(3,266)	(3,149)	(2,819)
Repurchases of common stock	(45,080)	(48,971)	(22,188)
Excess tax benefit of stock-based compensation	—	—	1,198
Deferred financing costs paid	(4,027)	(5,718)	(4,031)
Premiums paid on early extinguishment of debt	(1,238)	(6,028)	—
Principal payments on debt	(405,768)	(402,000)	—
Issuance of senior secured notes, net of discount	348,250	399,000	—

Issuance of senior unsecured notes, including premium	—	—