

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549**

**FORM 10-K**

ANNUAL REPORT PURSUANT TO SECTION 13 OR 15 (d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2017

or

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. 1-11596

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**

*(Exact name of registrant as specified in its charter)*

Delaware

*State or other jurisdiction  
of incorporation or organization*

58-1954497

*(IRS Employer Identification Number)*

**8302 Dunwoody Place, #250, Atlanta, GA**

*(Address of principal executive offices)*

**30350**

*(Zip Code)*

**(770) 587-9898**

*(Registrant's telephone number)*

Securities registered pursuant to Section 12(b) of the Act:

Title of each class  
Common Stock, \$.001 Par Value

Name of each exchange on which registered  
NASDAQ Capital Markets

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes  No

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

Yes  No

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 12 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  No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit and post such files).

Yes  No

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.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See definition 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  Accelerated Filer  Non-accelerated Filer  Smaller reporting company  Emerging growth company

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 standards provided pursuant to Section 13(a) of the Exchange Act

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Act).

Yes  No

The aggregate market value of the Registrant's voting and non-voting common equity held by nonaffiliates of the Registrant computed by reference to the closing sale price of such stock as reported by NASDAQ as of the last business day of the most recently completed second fiscal quarter (June 30, 2017), was approximately \$40,026,912. For the purposes of this calculation, all directors and executive officers of the Registrant (as indicated in Item 12) have been deemed to be affiliates. Such determination should not be deemed an admission that such directors and executive officers, are, in fact, affiliates of the Registrant. The Company's Common Stock is listed on the NASDAQ Capital Markets.

As of February 20, 2018, there were 11,747,055 shares of the registrant's Common Stock, \$.001 par value, outstanding.

Documents incorporated by reference: None

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## PART I

### ITEM 1. BUSINESS

#### Company Overview and Principal Products and Services

Perma-Fix Environmental Services, Inc. (the Company, which may be referred to as we, us, or our), a Delaware corporation incorporated in December of 1990, is an environmental and environmental technology know-how company.

We have grown through acquisitions and internal growth. Our goal is to continue to focus on the safe and efficient operation of our three waste treatment facilities and on-site activities, identify and pursue strategic acquisitions to expand our market base, and conduct research and development (“R&D”) of innovative technologies to solve complex waste management challenges providing increased value to our clients. The Company continues to focus on expansion into both commercial and international markets to supplement government spending in the USA, from which a significant portion of the Company’s revenue is derived. This includes new services, new customers and increased market share in our current markets.

Additionally, our goal is for our majority-owned subsidiary, Perma-Fix Medical S.A. and its wholly-owned subsidiary, Perma-Fix Medical Corporation (“PFM Corporation” – a Delaware corporation) (together known as “PF Medical” or our “Medical Segment”), to raise the necessary capital to continue its R&D activities in order to pursue commercialization of its medical isotope production technology (see “Medical Segment” below for further information in connection with this segment).

#### Segment Information and Foreign and Domestic Operations and Sales

The Company has three reportable segments. In accordance with Financial Accounting Standards Board (“FASB”) ASC 280, “Segment Reporting”, we define an operating segment as:

- a business activity from which we may earn revenue and incur expenses;
- whose operating results are regularly reviewed by the chief operating decision maker (“CODM”) to make decisions about resources to be allocated and assess its performance; and
- for which discrete financial information is available.

TREATMENT SEGMENT reporting includes:

- nuclear, low-level radioactive, mixed (waste containing both hazardous and low-level radioactive waste), hazardous and non-hazardous waste treatment, processing and disposal services primarily through three uniquely licensed (Nuclear Regulatory Commission or state equivalent) and permitted (U.S. Environmental Protection Agency (“EPA”) or state equivalent) treatment and storage facilities held by the following subsidiaries: Perma-Fix of Florida, Inc. (“PFF”), Diversified Scientific Services, Inc., (“DSSI”), and Perma-Fix Northwest Richland, Inc. (“PFNWR”). The presence of nuclear and low-level radioactive constituents within the waste streams processed by this segment creates different and unique operational, processing and permitting/licensing requirements; and
- R&D activities to identify, develop and implement innovative waste processing techniques for problematic waste streams.

The Company continues with the closure of its East Tennessee Materials and Energy Corporation (“M&EC”) facility within the Treatment Segment. Operations at the M&EC facility are limited during the remaining term of the lease and the facility continues to transition waste shipments and operational capabilities to our other Treatment Segment facilities, subject to customer requirements and regulatory approvals. Simultaneously, the Company continues with closure and decommissioning activities in accordance with M&EC’s license and permit requirements. Current plans are to complete closure activities by the end of the facility’s lease term, which has been extended to June 30, 2018 from January 21, 2018.

For 2017, the Treatment Segment accounted for \$37,750,000 or 75.9% of total revenue, as compared to \$32,253,000 or 63.0% of total revenue for 2016. Treatment Segment revenues for 2017 and 2016 included revenues of \$6,312,000 and \$4,419,000 for the M&EC subsidiary, which is currently in closure status. See “– Dependence Upon a Single or Few Customers” for further details and a discussion as to our Segments’ contracts with the federal government or with others as a subcontractor to the federal government.

SERVICES SEGMENT reporting includes:

- Technical services, which include:
  - o professional radiological measurement and site survey of large government and commercial installations using advanced methods, technology and engineering;
  - o integrated Occupational Safety and Health services including industrial hygiene (“IH”) assessments; hazardous materials surveys, e.g., exposure monitoring; lead and asbestos management/abatement oversight; indoor air quality evaluations; health risk and exposure assessments; health & safety plan/program development, compliance auditing and training services; and Occupational Safety and Health Administration (“OSHA”) citation assistance;
  - o global technical services providing consulting, engineering, project management, waste management, environmental, decontamination and decommissioning (“D&D”) field, technical, and management personnel and services to commercial and government customers; and
  - o on-site waste management services to commercial and government customers.
- Nuclear services, which include:
  - o technology-based services including engineering, D&D, specialty services and construction, logistics, transportation, processing and disposal;
  - o remediation of nuclear licensed and federal facilities and the remediation cleanup of nuclear legacy sites. Such services capability includes: project investigation; radiological engineering; partial and total plant D&D; facility decontamination, dismantling, demolition, and planning; site restoration; logistics; transportation; and emergency response; and
- a company owned equipment calibration and maintenance laboratory that services, maintains, calibrates, and sources (i.e., rental) health physics, IH and customized nuclear, environmental, and occupational safety and health (“NEOSH”) instrumentation.

For 2017, the Services Segment accounted for \$12,019,000 or 24.1% of total revenue, as compared to \$18,966,000 or 37.0% of total revenue for 2016. See “ – Dependence Upon a Single or Few Customers” for further details and a discussion as to our Segments’ contracts with the federal government or with others as a subcontractor to the federal government

MEDICAL SEGMENT reporting includes: R&D costs for the new medical isotope production technology from our majority-owned Polish subsidiary (of which we own approximately 60.5% at December 31, 2017), PF Medical. The Medical Segment has not generated any revenue as it continues to be primarily in the R&D stage. R&D costs consist primarily of employee salaries and benefits, laboratory costs, third party fees, and other related costs associated with the development of new technology. As previously disclosed, during the latter part of 2016, our Medical Segment ceased a substantial portion of its R&D activities for the new medical isotope production technology due to the need for substantial capital to fund such activities. We anticipate that our Medical Segment will not restart its full scale R&D activities until it obtains the necessary funding.

Our Treatment and Services Segments provide services to research institutions, commercial companies, public utilities, and governmental agencies nationwide, including the U.S. Department of Energy (“DOE”) and U.S. Department of Defense (“DOD”). The distribution channels for our services are through direct sales to customers or via intermediaries.

Our corporate office is located at 8302 Dunwoody Place, Suite 250, Atlanta, Georgia 30350.

#### **Foreign Revenue**

Our consolidated revenue for 2017 and 2016 included approximately \$84,000 or 0.2% and \$139,000 or 0.3%, respectively, from our United Kingdom operation, Perma-Fix UK Limited (“PF UK Limited”).

Our consolidated revenue for 2017 and 2016 included approximately \$1,073,000 or 2.2% and \$262,000 or 0.5%, respectively, from Canadian customers (including revenues generated by our Perma-Fix of Canada, Inc. (“PF Canada”) subsidiary).

### **Importance of Patents, Trademarks and Proprietary Technology**

We do not believe we are dependent on any particular trademark in order to operate our business or any significant segment thereof. We have received registration to May 2022 and December 2020, for the service marks “Perma-Fix Environmental Services” and “Perma-Fix”, respectively. We also have registration to April 2023 for a service mark for PF Canada. In addition, we have received registration for two service marks for our Safety & Ecology Holdings Corporation and its subsidiaries (collectively known as “Safety and Ecology Corporation” or “SEC”) to periods ranging from 2018 to 2027.

We are active in the R&D of technologies that allow us to address certain of our customers’ environmental needs. To date, we have fifteen active patents and the filing of several applications for which patents are pending. These fifteen active patents have remaining lives ranging from approximately one to seventeen years. These active patents include an U.S and an international patent for new technology for the production of radiological isotopes for certain types of medical applications; and which have been licensed to PFM Corporation. These patents are effective through March 2032.

### **Permits and Licenses**

Waste management service companies are subject to extensive, evolving and increasingly stringent federal, state, and local environmental laws and regulations. Such federal, state and local environmental laws and regulations govern our activities regarding the treatment, storage, processing, disposal and transportation of hazardous, non-hazardous and radioactive wastes, and require us to obtain and maintain permits, licenses and/or approvals in order to conduct certain of our waste activities. We are dependent on our permits and licenses discussed below in order to operate our businesses. Failure to obtain and maintain our permits or approvals would have a material adverse effect on us, our operations, and financial condition. The permits and licenses have terms ranging from one to ten years, and provided that we maintain a reasonable level of compliance, renew with minimal effort, and cost. We believe that these permit and license requirements represent a potential barrier to entry for possible competitors.

PFF, located in Gainesville, Florida, operates its hazardous, mixed and low-level radioactive waste activities under a Resource Conservation and Recovery Act (“RCRA”) Part B permit, Toxic Substances Control Act (“TSCA”) authorization, Restricted RX Drug Distributor-Destruction license, and a radioactive materials license issued by the State of Florida.

DSSI, located in Kingston, Tennessee, conducts mixed and low-level radioactive waste storage and treatment activities under RCRA Part B permits and a radioactive materials license issued by the State of Tennessee Department of Environment and Conservation. Co-regulated TSCA Polychlorinated Biphenyl (“PCB”) wastes are also managed for PCB destruction under the EPA Approval effective June 2008.

PFNWR, located in Richland, Washington, operates a low-level radioactive waste processing facility as well as a mixed waste processing facility. Radioactive material processing is authorized under radioactive materials licenses issued by the State of Washington and mixed waste processing is additionally authorized under a RCRA Part B permit with TSCA authorization issued jointly by the State of Washington and the EPA.

M&EC, located in Oak Ridge, Tennessee, performs hazardous, low-level radioactive and mixed waste storage and treatment operations under a RCRA Part B permit and a radioactive materials license issued by the State of Tennessee Department of Environment and Conservation. Co-regulated TSCA PCB wastes are also managed under EPA Approvals applicable to site-specific treatment units. The M&EC facility is currently undergoing closure activity requirements. The Company fully impaired the permit value of approximately \$8,288,000 for our M&EC subsidiary in 2016. The permits at M&EC will be terminated upon completion of requirements pursuant to M&EC’s closure plan.

The combination of a RCRA Part B hazardous waste permit, TSCA authorization, and a radioactive materials license, as held by our Treatment Segment are very difficult to obtain for a single facility and make these facilities unique.

We believe that the permitting and licensing requirements, and the cost to obtain such permits, are barriers to the entry of hazardous waste and radioactive and mixed waste activities as presently operated by our waste treatment subsidiaries. If the permit requirements for hazardous waste treatment, storage, and disposal (“TSD”) activities and/or the licensing requirements for the handling of low level radioactive matters are eliminated or if such licenses or permits were made less rigorous to obtain, we believe such would allow companies to enter into these markets and provide greater competition.

### **Backlog**

The Treatment Segment of our Company maintains a backlog of stored waste, which represents waste that has not been processed. The backlog is principally a result of the timing and complexity of the waste being brought into the facilities and the selling price per container. At December 31, 2017, our Treatment Segment had a backlog of approximately \$7,666,000, as compared to approximately \$5,250,000 at December 31, 2016. Additionally, the time it takes to process waste from the time it arrives may increase due to the types and complexities of the waste we are currently receiving. We typically process our backlog during periods of low waste receipts, which historically has been in the first or fourth quarters.

### **Dependence Upon a Single or Few Customers**

Our Treatment and Services Segments have significant relationships with the federal government, and continue to enter into contracts, directly as the prime contractor or indirectly for others as a subcontractor, with the federal government. The contracts that we are a party to with the federal government or with others as a subcontractor to the federal government generally provide that the government may terminate or renegotiate the contracts on 30 days notice, at the government’s election. Our inability to continue under existing contracts that we have with the federal government (directly or indirectly as a subcontractor) could have a material adverse effect on our operations and financial condition.

We performed services relating to waste generated by the federal government representing approximately \$36,654,000 or 73.6% of our total revenue during 2017, as compared to \$27,354,000 or 53.4% of our total revenue during 2016.

Revenue generated by one of the customers (PSC Metal, Inc.) (non-government related and excluded from above) in the Services Segment accounted for approximately \$9,763,000 or 19.1% of the total revenues generated for the twelve months ended December 31, 2016. Project work for this customer commenced in March 2016 and was completed in December 2016.

As our revenues are project/event based where the completion of one contract with a specific customer may be replaced by another contract with a different customer from year to year, we do not believe the loss of one specific customer from one year to the next will generally have a material adverse effect on our operations and financial condition.

### **Competitive Conditions**

The Treatment Segment’s largest competitor is EnergySolutions (“ES”) which operates treatment facilities in Oak Ridge, TN and Erwin, TN and a disposal facility for low level radioactive waste in Clive, UT. Waste Control Specialists (“WCS”), which has licensed disposal capabilities for low level radioactive waste in Andrews, TX, is also a competitor in the treatment market with increasing market share. Perma-Fix now has two options for disposal of treated nuclear waste and thus mitigates prior risk of ES providing the only outlet for disposal. The Treatment Segment treats and disposes of DOE generated wastes largely at DOE owned sites. Smaller competitors are also present in the market place; however, we believe they do not present a significant challenge at this time. Our Treatment Segment currently solicits business primarily on a North American basis with both government and commercial clients; however, we continue to focus on emerging international markets for additional work.

Our Services Segment is engaged in highly competitive businesses in which a number of our government contracts and some of our commercial contracts are awarded through competitive bidding processes. The extent of such competition varies according to the industries and markets in which our customers operate as well as the geographic areas in which we operate. The degree and type of competition we face is also often influenced by the project specification being bid on and the different specialty skill sets of each bidder for which our Services Segment competes, especially projects subject to the governmental bid process. We also have the ability to prime federal government small business procurements (small business set asides). Based on past experience, we believe that large businesses are more willing to team with small businesses in order to be part of these often substantial procurements. There are a number of qualified small businesses in our market that will provide intense competition that may provide a challenge to our ability to maintain strong growth rates and acceptable profit margins. For international business there are additional competitors, many from within the country the work is to be performed, making winning work in foreign countries more challenging. If our Services Segment is unable to meet these competitive challenges, it could lose market share and experience an overall reduction in its profits.

### **Certain Environmental Expenditures and Potential Environmental Liabilities**

#### *Environmental Liabilities*

We have three remediation projects, which are currently in progress at our Perma-Fix of Dayton, Inc. (“PFD”), Perma-Fix of Memphis, Inc. (“PFM”), and Perma-Fix South Georgia, Inc. (“PFSG”) subsidiaries, which are all included within our discontinued operations. These remediation projects principally entail the removal/remediation of contaminated soil and, in most cases, the remediation of surrounding ground water. These remediation activities are closely reviewed and monitored by the applicable state regulators.

At December 31, 2017, we had total accrued environmental remediation liabilities of \$871,000, of which \$632,000 are recorded as a current liability, a decrease of \$54,000 from the December 31, 2016 balance of \$925,000. The net decrease of \$54,000 represents payments on remediation projects at PFSG and PFD totaling approximately of \$79,000 and an increase to the reserve of approximately \$25,000 at PFD due to reassessment of the remediation reserve.

No insurance or third party recovery was taken into account in determining our cost estimates or reserves.

The nature of our business exposes us to significant cost to comply with governmental environmental laws, rules and regulations and risk of liability for damages. Such potential liability could involve, for example, claims for cleanup costs, personal injury or damage to the environment in cases where we are held responsible for the release of hazardous materials; claims of employees, customers or third parties for personal injury or property damage occurring in the course of our operations; and claims alleging negligence or professional errors or omissions in the planning or performance of our services. In addition, we could be deemed a responsible party for the costs of required cleanup of properties, which may be contaminated by hazardous substances generated or transported by us to a site we selected, including properties owned or leased by us. We could also be subject to fines and civil penalties in connection with violations of regulatory requirements.

### **Research and Development (“R&D”)**

Innovation and technical know-how by our operations is very important to the success of our business. Our goal is to discover, develop and bring to market innovative ways to process waste that address unmet environmental needs. We conduct research internally, and also through collaborations with other third parties. The majority of our research activities are performed as we receive new and unique waste to treat. Our competitors also devote resources to R&D and many such competitors have greater resources at their disposal than we do. As previously discussed, our Medical Segment ceased a substantial portion of its R&D activities during the latter part of 2016 due to the need for substantial capital to fund such activities. We are continually exploring ways to raise this capital. We anticipate that our Medical Segment will not restart its full scale R&D activities until it obtains the necessary funding. We have estimated that during 2017 and 2016, we spent approximately \$1,595,000 and \$2,046,000, respectively, in R&D activities, of which approximately \$1,141,000 and \$1,489,000, respectively, were spent by our Medical Segment for the R&D of its medical isotope production technology.

## **Number of Employees**

In our service-driven business, our employees are vital to our success. We believe we have good relationships with our employees. At December 31, 2017, we employed approximately 246 employees, of whom 236 are full-time employees and 10 are part-time/temporary employees.

## **Governmental Regulation**

Environmental companies, such as us, and their customers are subject to extensive and evolving environmental laws and regulations by a number of national, state and local environmental, safety and health agencies, the principal of which being the EPA. These laws and regulations largely contribute to the demand for our services. Although our customers remain responsible by law for their environmental problems, we must also comply with the requirements of those laws applicable to our services. We cannot predict the extent to which our operations may be affected by future enforcement policies as applied to existing laws or by the enactment of new environmental laws and regulations. Moreover, any predictions regarding possible liability are further complicated by the fact that under current environmental laws we could be jointly and severally liable for certain activities of third parties over whom we have little or no control. Although we believe that we are currently in substantial compliance with applicable laws and regulations, we could be subject to fines, penalties or other liabilities or could be adversely affected by existing or subsequently enacted laws or regulations. The principal environmental laws affecting our customers and us are briefly discussed below.

### **The Resource Conservation and Recovery Act of 1976, as amended (“RCRA”)**

RCRA and its associated regulations establish a strict and comprehensive permitting and regulatory program applicable to companies, such as us, that treat, store or dispose of hazardous waste. The EPA has promulgated regulations under RCRA for new and existing treatment, storage and disposal facilities including incinerators, storage and treatment tanks, storage containers, storage and treatment surface impoundments, waste piles and landfills. Every facility that treats, stores or disposes of hazardous waste must obtain a RCRA permit or must obtain interim status from the EPA, or a state agency, which has been authorized by the EPA to administer its program, and must comply with certain operating, financial responsibility and closure requirements.

### **The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (“CERCLA,” also referred to as the “Superfund Act”)**

CERCLA governs the cleanup of sites at which hazardous substances are located or at which hazardous substances have been released or are threatened to be released into the environment. CERCLA authorizes the EPA to compel responsible parties to clean up sites and provides for punitive damages for noncompliance. CERCLA imposes joint and several liabilities for the costs of clean up and damages to natural resources.

## **Health and Safety Regulations**

The operation of our environmental activities is subject to the requirements of the OSHA and comparable state laws. Regulations promulgated under OSHA by the Department of Labor require employers of persons in the transportation and environmental industries, including independent contractors, to implement hazard communications, work practices and personnel protection programs in order to protect employees from equipment safety hazards and exposure to hazardous chemicals.

## **Atomic Energy Act**

The Atomic Energy Act of 1954 governs the safe handling and use of Source, Special Nuclear and Byproduct materials in the U.S. and its territories. This act authorized the Atomic Energy Commission (now the Nuclear Regulatory Commission “USNRC”) to enter into “Agreements with states to carry out those regulatory functions in those respective states except for Nuclear Power Plants and federal facilities like the VA hospitals and the DOE operations.” The State of Florida (with the USNRC oversight), Office of Radiation Control, regulates the permitting and radiological program of the PFF facility, and the State of Tennessee (with the USNRC oversight), Tennessee Department of Radiological Health, regulates permitting and the radiological program of the DSSI and M&EC facilities. The State of Washington (with the USNRC oversight) Department of Health, regulates permitting and the radiological operations of the PFNWR facility.

## Other Laws

Our activities are subject to other federal environmental protection and similar laws, including, without limitation, the Clean Water Act, the Clean Air Act, the Hazardous Materials Transportation Act and the TSCA. Many states have also adopted laws for the protection of the environment which may affect us, including laws governing the generation, handling, transportation and disposition of hazardous substances and laws governing the investigation and cleanup of, and liability for, contaminated sites. Some of these state provisions are broader and more stringent than existing federal law and regulations. Our failure to conform our services to the requirements of any of these other applicable federal or state laws could subject us to substantial liabilities which could have a material adverse effect on us, our operations and financial condition. In addition to various federal, state and local environmental regulations, our hazardous waste transportation activities are regulated by the U.S. Department of Transportation, the Interstate Commerce Commission and transportation regulatory bodies in the states in which we operate. We cannot predict the extent to which we may be affected by any law or rule that may be enacted or enforced in the future, or any new or different interpretations of existing laws or rules.

## ITEM 1A. RISK FACTORS

*The following are certain risk factors that could affect our business, financial performance, and results of operations. These risk factors should be considered in connection with evaluating the forward-looking statements contained in this Form 10-K, as the forward-looking statements are based on current expectations, and actual results and conditions could differ materially from the current expectations. Investing in our securities involves a high degree of risk, and before making an investment decision, you should carefully consider these risk factors as well as other information we include or incorporate by reference in the other reports we file with the Securities and Exchange Commission (the "Commission").*

### Risks Relating to our Operations

#### **Failure to maintain our financial assurance coverage that we are required to have in order to operate our permitted treatment, storage and disposal facilities could have a material adverse effect on us.**

We maintain finite risk insurance policies and bonding mechanisms which provide financial assurance to the applicable states for our permitted facilities in the event of unforeseen closure of those facilities. We are required to provide and to maintain financial assurance that guarantees to the state that in the event of closure, our permitted facilities will be closed in accordance with the regulations. In the event that we are unable to obtain or maintain our financial assurance coverage for any reason, this could materially impact our operations and our permits which we are required to have in order to operate our treatment, storage, and disposal facilities.

#### **If we cannot maintain adequate insurance coverage, we will be unable to continue certain operations.**

Our business exposes us to various risks, including claims for causing damage to property and injuries to persons that may involve allegations of negligence or professional errors or omissions in the performance of our services. Such claims could be substantial. We believe that our insurance coverage is presently adequate and similar to, or greater than, the coverage maintained by other companies in the industry of our size. If we are unable to obtain adequate or required insurance coverage in the future, or if our insurance is not available at affordable rates, we would violate our permit conditions and other requirements of the environmental laws, rules, and regulations under which we operate. Such violations would render us unable to continue certain of our operations. These events would have a material adverse effect on our financial condition.

#### **The inability to maintain existing government contracts or win new government contracts over an extended period could have a material adverse effect on our operations and adversely affect our future revenues.**

A material amount of our Treatment and Services Segments' revenues are generated through various U.S. government contracts or subcontracts involving the U.S. government. Our revenues from governmental contracts and subcontracts relating to governmental facilities within our segments were approximately \$36,654,000 or 73.6% and \$27,354,000 or 53.4%, of our consolidated operating revenues for 2017 and 2016, respectively. Most of our government contracts or our subcontracts granted under government contracts are awarded through a regulated competitive bidding process. Some government contracts are awarded to multiple competitors, which increase overall competition and pricing pressure and may require us to make sustained post-award efforts to realize revenues under these government contracts. All contracts with, or subcontracts involving, the federal government are terminable, or subject to renegotiation, by the applicable governmental agency on 30 days notice, at the option of the governmental agency. If we fail to maintain or replace these relationships, or if a material contract is terminated or renegotiated in a manner that is materially adverse to us, our revenues and future operations could be materially adversely affected.

**Our existing and future customers may reduce or halt their spending on hazardous waste and nuclear services with outside vendors, including us.**

A variety of factors may cause our existing or future customers (including the federal government) to reduce or halt their spending on hazardous waste and nuclear services from outside vendors, including us. These factors include, but are not limited to:

- accidents, terrorism, natural disasters or other incidents occurring at nuclear facilities or involving shipments of nuclear materials;
- failure of the federal government to approve necessary budgets, or to reduce the amount of the budget necessary, to fund remediation of DOE and DOD sites;
- civic opposition to or changes in government policies regarding nuclear operations;
- a reduction in demand for nuclear generating capacity; or
- failure to perform under existing contracts, directly or indirectly, with the federal government.

These events could result in or cause the federal government to terminate or cancel its existing contracts involving us to treat, store or dispose of contaminated waste and/or to perform remediation projects, at one or more of the federal sites since all contracts with, or subcontracts involving, the federal government are terminable upon or subject to renegotiation at the option of the government on 30 days notice. These events also could adversely affect us to the extent that they result in the reduction or elimination of contractual requirements, lower demand for nuclear services, burdensome regulation, disruptions of shipments or production, increased operational costs or difficulties or increased liability for actual or threatened property damage or personal injury.

**Economic downturns and/or reductions in government funding could have a material negative impact on our businesses.**

Demand for our services has been, and we expect that demand will continue to be, subject to significant fluctuations due to a variety of factors beyond our control, including economic conditions, reductions in the budget for spending to remediate federal sites due to numerous reasons, including, without limitation, the substantial deficits that the federal government has and is continuing to incur. During economic downturns and large budget deficits that the federal government and many states are experiencing, the ability of private and government entities to spend on waste services, including nuclear services, may decline significantly. Our operations depend, in large part, upon governmental funding, particularly funding levels at the DOE. Significant reductions in the level of governmental funding (for example, the annual budget of the DOE) or specifically mandated levels for different programs that are important to our business could have a material adverse impact on our business, financial position, results of operations and cash flows.

**The loss of one or a few customers could have an adverse effect on us.**

One or a few governmental customers or governmental related customers have in the past, and may in the future, account for a significant portion of our revenue in any one year or over a period of several consecutive years. Because customers generally contract with us for specific projects, we may lose these significant customers from year to year as their projects with us are completed. Our inability to replace the business with other similar significant projects could have an adverse effect on our business and results of operations.

**As a government contractor, we are subject to extensive government regulation, and our failure to comply with applicable regulations could subject us to penalties that may restrict our ability to conduct our business.**

Our governmental contracts, which are primarily with the DOE or subcontracts relating to DOE sites, are a significant part of our business. Allowable costs under U.S. government contracts are subject to audit by the U.S. government. If these audits result in determinations that costs claimed as reimbursable are not allowed costs or were not allocated in accordance with applicable regulations, we could be required to reimburse the U.S. government for amounts previously received.

Governmental contracts or subcontracts involving governmental facilities are often subject to specific procurement regulations, contract provisions and a variety of other requirements relating to the formation, administration, performance and accounting of these contracts. Many of these contracts include express or implied certifications of compliance with applicable regulations and contractual provisions. If we fail to comply with any regulations, requirements or statutes, our existing governmental contracts or subcontracts involving governmental facilities could be terminated or we could be suspended from government contracting or subcontracting. If one or more of our governmental contracts or subcontracts are terminated for any reason, or if we are suspended or debarred from government work, we could suffer a significant reduction in expected revenues and profits. Furthermore, as a result of our governmental contracts or subcontracts involving governmental facilities, claims for civil or criminal fraud may be brought by the government or violations of these regulations, requirements or statutes.

**We are a holding company and depend, in large part, on receiving funds from our subsidiaries to fund our indebtedness.**

Because we are a holding company and operations are conducted through our subsidiaries, our ability to meet our obligations depends, in large part, on the operating performance and cash flows of our subsidiaries.

**Loss of certain key personnel could have a material adverse effect on us.**

Our success depends on the contributions of our key management, environmental and engineering personnel. Our future success depends on our ability to retain and expand our staff of qualified personnel, including environmental specialists and technicians, sales personnel, and engineers. Without qualified personnel, we may incur delays in rendering our services or be unable to render certain services. We cannot be certain that we will be successful in our efforts to attract and retain qualified personnel as their availability is limited due to the demand for hazardous waste management services and the highly competitive nature of the hazardous waste management industry. We do not maintain key person insurance on any of our employees, officers, or directors.

**Changes in environmental regulations and enforcement policies could subject us to additional liability and adversely affect our ability to continue certain operations.**

We cannot predict the extent to which our operations may be affected by future governmental enforcement policies as applied to existing laws, by changes to current environmental laws and regulations, or by the enactment of new environmental laws and regulations. Any predictions regarding possible liability under such laws are complicated further by current environmental laws which provide that we could be liable, jointly and severally, for certain activities of third parties over whom we have limited or no control.

**Our Treatment Segment has limited end disposal sites to utilize to dispose of its waste which could significantly impact our results of operations.**

Our Treatment Segment has limited options available for disposal of its nuclear waste. Currently, there are only two disposal sites, each site having different owners, for our low level radioactive waste we receive from non-governmental sites, allowing us to take advantage of the pricing competition between the two sites. If either of these disposal sites ceases to accept waste or closes for any reason or refuses to accept the waste of our Treatment Segment, for any reason, we would be limited to only the one remaining site to dispose of our nuclear waste. With only one end disposal site to dispose of our waste, we could be subject to significantly increased costs which could negatively impact our results of operations.

**Our businesses subject us to substantial potential environmental liability.**

Our business of rendering services in connection with management of waste, including certain types of hazardous waste, low-level radioactive waste, and mixed waste (waste containing both hazardous and low-level radioactive waste), subjects us to risks of liability for damages. Such liability could involve, without limitation:

- claims for clean-up costs, personal injury or damage to the environment in cases in which we are held responsible for the release of hazardous or radioactive materials;
- claims of employees, customers, or third parties for personal injury or property damage occurring in the course of our operations; and
- claims alleging negligence or professional errors or omissions in the planning or performance of our services.

Our operations are subject to numerous environmental laws and regulations. We have in the past, and could in the future, be subject to substantial fines, penalties, and sanctions for violations of environmental laws and substantial expenditures as a responsible party for the cost of remediating any property which may be contaminated by hazardous substances generated by us and disposed at such property, or transported by us to a site selected by us, including properties we own or lease.

**As our operations expand, we may be subject to increased litigation, which could have a negative impact on our future financial results.**

Our operations are highly regulated and we are subject to numerous laws and regulations regarding procedures for waste treatment, storage, recycling, transportation, and disposal activities, all of which may provide the basis for litigation against us. In recent years, the waste treatment industry has experienced a significant increase in so-called “toxic-tort” litigation as those injured by contamination seek to recover for personal injuries or property damage. We believe that, as our operations and activities expand, there will be a similar increase in the potential for litigation alleging that we have violated environmental laws or regulations or are responsible for contamination or pollution caused by our normal operations, negligence or other misconduct, or for accidents, which occur in the course of our business activities. Such litigation, if significant and not adequately insured against, could adversely affect our financial condition and our ability to fund our operations. Protracted litigation would likely cause us to spend significant amounts of our time, effort, and money. This could prevent our management from focusing on our operations and expansion.

**Our operations are subject to seasonal factors, which cause our revenues to fluctuate.**

We have historically experienced reduced revenues and losses during the first and fourth quarters of our fiscal years due to a seasonal slowdown in operations from poor weather conditions, overall reduced activities during these periods resulting from holiday periods, and finalization of government budgets during the fourth quarter of each year. During our second and third fiscal quarters there has historically been an increase in revenues and operating profits. If we do not continue to have increased revenues and profitability during the second and third fiscal quarters, this could have a material adverse effect on our results of operations and liquidity.

**If environmental regulation or enforcement is relaxed, the demand for our services will decrease.**

The demand for our services is substantially dependent upon the public’s concern with, and the continuation and proliferation of, the laws and regulations governing the treatment, storage, recycling, and disposal of hazardous, non-hazardous, and low-level radioactive waste. A decrease in the level of public concern, the repeal or modification of these laws, or any significant relaxation of regulations relating to the treatment, storage, recycling, and disposal of hazardous waste and low-level radioactive waste would significantly reduce the demand for our services and could have a material adverse effect on our operations and financial condition. We are not aware of any current federal or state government or agency efforts in which a moratorium or limitation has been, or will be, placed upon the creation of new hazardous or radioactive waste regulations that would have a material adverse effect on us; however, no assurance can be made that such a moratorium or limitation will not be implemented in the future.

**We and our customers operate in a politically sensitive environment, and the public perception of nuclear power and radioactive materials can affect our customers and us.**

We and our customers operate in a politically sensitive environment. Opposition by third parties to particular projects can limit the handling and disposal of radioactive materials. Adverse public reaction to developments in the disposal of radioactive materials, including any high profile incident involving the discharge of radioactive materials, could directly affect our customers and indirectly affect our business. Adverse public reaction also could lead to increased regulation or outright prohibition, limitations on the activities of our customers, more onerous operating requirements or other conditions that could have a material adverse impact on our customers’ and our business.

**We may be exposed to certain regulatory and financial risks related to climate change.**

Climate change is receiving ever increasing attention from scientists and legislators alike. The debate is ongoing as to the extent to which our climate is changing, the potential causes of this change and its potential impacts. Some attribute global warming to increased levels of greenhouse gases, including carbon dioxide, which has led to significant legislative and regulatory efforts to limit greenhouse gas emissions.

Presently there are no federally mandated greenhouse gas reduction requirements in the United States. However, there are a number of legislative and regulatory proposals to address greenhouse gas emissions, which are in various phases of discussion or implementation. The outcome of federal and state actions to address global climate change could result in a variety of regulatory programs including potential new regulations. Any adoption by federal or state governments mandating a substantial reduction in greenhouse gas emissions could increase costs associated with our operations. Until the timing, scope and extent of any future regulation becomes known, we cannot predict the effect on our financial position, operating results and cash flows.

**We may not be successful in winning new business mandates from our government and commercial customers or international customers.**

We must be successful in winning mandates from our government, commercial customers and international customers to replace revenues from projects that we have completed or that are nearing completion and to increase our revenues. Our business and operating results can be adversely affected by the size and timing of a single material contract.

**The elimination or any modification of the Price-Anderson Acts indemnification authority could have adverse consequences for our business.**

The Atomic Energy Act of 1954, as amended, or the AEA, comprehensively regulates the manufacture, use, and storage of radioactive materials. The Price-Anderson Act ("PAA") supports the nuclear services industry by offering broad indemnification to DOE contractors for liabilities arising out of nuclear incidents at DOE nuclear facilities. That indemnification protects DOE prime contractor, but also similar companies that work under contract or subcontract for a DOE prime contract or transporting radioactive material to or from a site. The indemnification authority of the DOE under the PAA was extended through 2025 by the Energy Policy Act of 2005.

Under certain conditions, the PAA's indemnification provisions may not apply to our processing of radioactive waste at governmental facilities, and do not apply to liabilities that we might incur while performing services as a contractor for the DOE and the nuclear energy industry. If an incident or evacuation is not covered under PAA indemnification, we could be held liable for damages, regardless of fault, which could have an adverse effect on our results of operations and financial condition. If such indemnification authority is not applicable in the future, our business could be adversely affected if the owners and operators of new facilities fail to retain our services in the absence of commercial adequate insurance and indemnification.

**We are engaged in highly competitive businesses and typically must bid against other competitors to obtain major contracts.**

We are engaged in highly competitive business in which most of our government contracts and some of our commercial contracts are awarded through competitive bidding processes. We compete with national and regional firms with nuclear and/or hazardous waste services practices, as well as small or local contractors. Some of our competitors have greater financial and other resources than we do, which can give them a competitive advantage. In addition, even if we are qualified to work on a new government contract, we might not be awarded the contract because of existing government policies designed to protect certain types of businesses and under-represented minority contractors. Although the Company has the ability to certify and bid government contract as a small business, there are a number of qualified small businesses in our market that will provide intense competition. For international business, which we continue to focus on, there are additional competitors, many from within the country the work is to be performed, making winning work in foreign countries more challenging. Competition places downward pressure on our contract prices and profit margins. If we are unable to meet these competitive challenges, we could lose market share and experience on overall reduction in our profits.

**Our failure to maintain our safety record could have an adverse effect on our business.**

Our safety record is critical to our reputation. In addition, many of our government and commercial customers require that we maintain certain specified safety record guidelines to be eligible to bid for contracts with these customers. Furthermore, contract terms may provide for automatic termination in the event that our safety record fails to adhere to agreed-upon guidelines during performance of the contract. As a result, our failure to maintain our safety record could have a material adverse effect on our business, financial condition and results of operations.

**We may be unable to utilize loss carryforwards in the future.**

We have approximately \$10,099,000 and \$57,956,000 in net operating loss carryforwards for federal and state income tax purposes, respectively, which will expire in various amounts starting in 2021 if not used against future federal and state income tax liabilities, respectively. Our net loss carryforwards are subject to various limitations. Our ability to use the net loss carryforwards depends on whether we are able to generate sufficient income in the future years. Further, our net loss carryforwards have not been audited or approved by the Internal Revenue Service.

**If any of our permits, other intangible assets, and tangible assets becomes impaired, we may be required to record significant charges to earnings.**

Under accounting principles generally accepted in the United States (“U.S. GAAP”), we review our intangible and tangible assets for impairment when events or changes in circumstances indicate the carrying value may not be recoverable. Our permits are tested for impairment at least annually (the Company has no goodwill at December 31, 2017). Factors that may be considered a change in circumstances, indicating that the carrying value of our permit, other intangible assets, and tangible assets may not be recoverable, include a decline in stock price and market capitalization, reduced future cash flow estimates, and slower growth rates in our industry. During 2016, we recorded approximately \$8,288,000 and \$1,816,000 in impairment charges for intangible and tangible assets, respectively, in connection with the pending closure of our M&EC facility by June 2018. During 2017, we fully impaired the remaining tangible assets of our M&EC facility resulting in an additional impairment charge recorded in the amount of approximately \$672,000. We may be required, in the future, to record additional impairment charges in our financial statements, in which any impairment of our permit, other intangible assets, and tangible assets is determined. Such impairment charges could negatively impact our results of operations.

**We bear the risk of cost overruns in fixed-price contracts. We may experience reduced profits or, in some cases, losses under these contracts if costs increase above our estimates.**

Our revenues may be earned under contracts that are fixed-price in nature. Fixed-price contracts expose us to a number of risks not inherent in cost-reimbursable contracts. Under fixed price and guaranteed maximum-price contracts, contract prices are established in part on cost and scheduling estimates which are based on a number of assumptions, including assumptions about future economic conditions, prices and availability of labor, equipment and materials, and other exigencies. If these estimates prove inaccurate, or if circumstances change such as unanticipated technical problems, difficulties in obtaining permits or approvals, changes in laws or labor conditions, weather delays, cost of raw materials or our suppliers’ or subcontractors’ inability to perform, cost overruns may occur and we could experience reduced profits or, in some cases, a loss for that project. Errors or ambiguities as to contract specifications can also lead to cost-overruns.

**Adequate bonding is necessary for us to win certain types of new work and support facility closure requirements.**

We are often required to provide performance bonds to customers under fixed-price contracts, primarily within our Services Segment. These surety instruments indemnify the customer if we fail to perform our obligations under the contract. If a bond is required for a particular project and we are unable to obtain it due to insufficient liquidity or other reasons, we may not be able to pursue that project. In addition, we provide bonds to support financial assurance in the event of facility closure pursuant to state requirements. We currently have a bonding facility but, the issuance of bonds under that facility is at the surety’s sole discretion. Moreover, due to events that affect the insurance and bonding markets generally, bonding may be more difficult to obtain in the future or may only be available at significant additional cost. There can be no assurance that bonds will continue to be available to us on reasonable terms. Our inability to obtain adequate bonding and, as a result, to bid on new work could have a material adverse effect on our business, financial condition and results of operations.

**Closure of our M&EC facility located in Oak Ridge, Tennessee could negatively impact our financial results.**

Our M&EC facility is schedule to close by the end of the second quarter of 2018. Our strategic plan includes the process of transitioning waste shipments and operational capabilities to our other Treatment Segment facilities, subject to customer requirements and regulatory approvals. Simultaneously, we continue with closure and decommissioning activities in accordance with M&EC's license and permit requirements. We believe that the pending closure of our M&EC facility in Oak Ridge, Tennessee should reduce our fixed costs within our Treatment Segment with minimal loss in revenue, thereby improving our Treatment Segment gross margin. However, as certain waste shipments are dependent on our customers' requirements and the operational capabilities of our other Treatment facilities to accept and treat these wastes, there are no guarantees that our other Treatment facilities will be able to treat these wastes. In such event, our financial results could be materially impacted.

**Failure to maintain effective internal control over financial reporting or failure to remediate a material weakness in internal control over financial reporting could have a material adverse effect on our business, operating results, and stock price.**

Maintaining effective internal control over financial reporting is necessary for us to produce reliable financial reports and is important in helping to prevent financial fraud. If we are unable to maintain adequate internal controls, our business and operating results could be harmed. We are required to satisfy the requirements of Section 404 of Sarbanes Oxley and the related rules of the Commission, which require, among other things, management to assess annually the effectiveness of our internal control over financial reporting. If we are unable to maintain adequate internal control over financial reporting or effectively remediate any material weakness identified in internal control over financial reporting, there is a reasonable possibility that a misstatement of our annual or interim financial statements will not be prevented or detected in a timely manner. If we cannot produce reliable financial reports, investors could lose confidence in our reported financial information, the market price of our common stock could decline significantly, and our business, financial condition, and reputation could be harmed.

**Systems failures, interruptions or breaches of security and other cyber security risks could have an adverse effect on our financial condition and results of operations.**

We are subject to certain operational risks to our information systems. Because of efforts on the part of computer hackers and cyberterrorists to breach data security of companies, we face risk associated with potential failures to adequately protect critical corporate, customer and employee data. As part of our business, we develop and retain confidential data about our company and our customers, including the U.S. government. We also rely on the services of a variety of vendors to meet our data processing and communications needs.

Despite our implemented security measures and established policies, we cannot be certain that all of our systems are entirely free from vulnerability to attack or other technological difficulties or failures or failures on the part of our employees to follow our established security measures and policies. Information security risks have increased significantly. Our technologies, systems, and networks may become the target of cyber-attacks, computer viruses, malicious code, or information security breaches that could result in the unauthorized release, gathering, monitoring, misuse, loss or destruction of our or our customers' confidential, proprietary and other information and the disruption of our business operations. A security breach could adversely impact our customer relationships, reputation and operation and result in violations of applicable privacy and other laws, financial loss to us or to our customers or to our employees, and litigation exposure. Although we are aware that on at least one occasion during 2017 that there was a breach of our existing security procedures and policies as to employee information due to an employee's error in not following our existing security procedures and policies, we do not believe this breach had a material adverse effect on us. While we maintain a system of internal controls and procedures, any breach, attack, or failure as discussed above could have a material adverse impact on our business, financial condition, and results of operations or liquidity.

There is also an increasing attention on the importance of cybersecurity relating to infrastructure. This creates the potential for future developments in regulations relating to cybersecurity that may adversely impact us, our customers and how we offer our services to our customers.

### **Risks Relating to our Intellectual Property**

#### **If we cannot maintain our governmental permits or cannot obtain required permits, we may not be able to continue or expand our operations.**

We are a nuclear services and waste management company. Our business is subject to extensive, evolving, and increasingly stringent federal, state, and local environmental laws and regulations. Such federal, state, and local environmental laws and regulations govern our activities regarding the treatment, storage, recycling, disposal, and transportation of hazardous and non-hazardous waste and low-level radioactive waste. We must obtain and maintain permits or licenses to conduct these activities in compliance with such laws and regulations. Failure to obtain and maintain the required permits or licenses would have a material adverse effect on our operations and financial condition. If any of our facilities are unable to maintain currently held permits or licenses or obtain any additional permits or licenses which may be required to conduct its operations, we may not be able to continue those operations at these facilities, which could have a material adverse effect on us.

#### **We believe our proprietary technology is important to us.**

We believe that it is important that we maintain our proprietary technologies. There can be no assurance that the steps taken by us to protect our proprietary technologies will be adequate to prevent misappropriation of these technologies by third parties. Misappropriation of our proprietary technology could have an adverse effect on our operations and financial condition. Changes to current environmental laws and regulations also could limit the use of our proprietary technology.

### **Risks Relating to our Financial Position and Need for Financing**

#### **Breach of any of the covenants in our credit facility could result in a default, triggering repayment of outstanding debt under the credit facility.**

Our credit facility with our bank contains financial covenants. A breach of any of these covenants could result in a default under our credit facility triggering our lender to immediately require the repayment of all outstanding debt under our credit facility and terminate all commitments to extend further credit. In the past, we had instances in which we failed to meet our minimum quarterly fixed charge coverage ratio; however, these instances of non-compliance were waived by our lender. In the past, our lender also has amended the methodology in calculating the quarterly fixed charge coverage ratio and changed the minimum quarterly fixed charge coverage ratio requirement so we can meet our quarterly fixed charge coverage ratio. We met each of our minimum quarterly fixed charge coverage ratio requirements in 2017. If we fail to meet any of our financial covenants, including the minimum quarterly fixed charge coverage ratio requirement in the future and our lender does not waive the non-compliance or revise our covenant requirement so that we are in compliance, our lender could accelerate the payment of our borrowings under our credit facility. In such event, we may not have sufficient liquidity to repay our debt under our credit facility and other indebtedness.

#### **Our amount of debt could adversely affect our operations.**

At December 31, 2017, our aggregate consolidated debt was approximately \$3,962,000 (excluding debt issuance costs). Our Amended and Restated Revolving Credit, Term Loan and Security Agreement, dated October 31, 2011, as subsequently amended ("Revised Loan Agreement") provides for a total credit facility commitment of approximately \$18,100,000, consisting of a \$12,000,000 revolving line of credit and a term loan of \$6,100,000. The maximum we can borrow under the revolving part of the credit facility is based on a percentage of the amount of our eligible receivables outstanding at any one time reduced by outstanding standby letters of credit and any borrowing reduction that our lender may impose from time to time. At December 31, 2017, we had no borrowings under the revolving part of our credit facility and borrowing availability of up to an additional \$3,687,000. A lack of positive operating results could have material adverse consequences on our ability to operate our business. Our ability to make principal and interest payments, or to refinance indebtedness, will depend on both our and our subsidiaries' future operating performance and cash flow. Prevailing economic conditions, interest rate levels, and financial, competitive, business, and other factors affect us. Many of these factors are beyond our control.

**Our indebtedness could limit our financial and operating activities, and adversely affect our ability to incur additional debt to fund future needs.**

As a result of our indebtedness, we could, among other things, be:

- require to dedicate a substantial portion of our cash flow to the payment of principal and interest, thereby reducing the funds available for operations and future business opportunities;
- make it more difficult for us to satisfy our obligations;
- limit our ability to borrow additional money if needed for other purposes, including working capital, capital expenditures, debt service requirements, acquisitions and general corporate or other purposes, on satisfactory terms or at all;
- limit our ability to adjust to changing economic, business and competitive conditions;
- place us at a competitive disadvantage with competitors who may have less indebtedness or greater access to financing;
- make us more vulnerable to an increase in interest rates, a downturn in our operating performance or a decline in general economic conditions; and
- make us more susceptible to changes in credit ratings, which could impact our ability to obtain financing in the future and increase the cost of such financing.

Any of the foregoing could adversely impact our operating results, financial condition, and liquidity. Our ability to continue our operations depends on our ability to generate profitable operations or complete equity or debt financings to increase our capital.

**Risks Relating to our Common Stock**

**Issuance of substantial amounts of our Common Stock could depress our stock price.**

Any sales of substantial amounts of our Common Stock in the public market could cause an adverse effect on the market price of our Common Stock and could impair our ability to raise capital through the sale of additional equity securities. The issuance of our Common Stock will result in the dilution in the percentage membership interest of our stockholders and the dilution in ownership value. At December 31, 2017, we had 11,730,981 shares of Common Stock outstanding.

In addition, at December 31, 2017, we had outstanding options to purchase 624,800 shares of our Common Stock at exercise prices ranging from \$2.79 to \$13.35 per share. Further, our preferred share rights plan, if triggered, could result in the issuance of a substantial amount of our Common Stock. The existence of this quantity of rights to purchase our Common Stock under the preferred share rights plan could result in a significant dilution in the percentage ownership interest of our stockholders and the dilution in ownership value. Future sales of the shares issuable could also depress the market price of our Common Stock.

**We do not intend to pay dividends on our Common Stock in the foreseeable future.**

Since our inception, we have not paid cash dividends on our Common Stock, and we do not anticipate paying any cash dividends in the foreseeable future. Our credit facility prohibits us from paying cash dividends on our Common Stock without prior approval from our lender.

**The price of our Common Stock may fluctuate significantly, which may make it difficult for our stockholders to resell our Common Stock when a stockholder wants or at prices a stockholder finds attractive.**

The price of our Common Stock on the NASDAQ Capital Markets constantly changes. We expect that the market price of our Common Stock will continue to fluctuate. This may make it difficult for our stockholders to resell the Common Stock when a stockholder wants or at prices a stockholder finds attractive.

**Future issuance of our Common Stock could adversely affect the price of our Common Stock, our ability to raise funds in new stock offerings and could dilute the percentage ownership of our common stockholders.**

Future sales of substantial amounts of our Common Stock or equity-related securities in the public market, or the perception that such sales or conversions could occur, could adversely affect prevailing trading prices of our Common Stock and could dilute the value of Common Stock held by our existing stockholders. No prediction can be made as to the effect, if any, that future sales of shares of our Common Stock or the availability of shares of our Common Stock for future sale will have on the trading price of our Common Stock. Such future sales or conversions could also significantly reduce the percentage ownership of our common stockholders.

**Delaware law, certain of our charter provisions, our stock option plans, outstanding warrants and our Preferred Stock may inhibit a change of control under circumstances that could give you an opportunity to realize a premium over prevailing market prices.**

We are a Delaware corporation governed, in part, by the provisions of Section 203 of the General Corporation Law of Delaware, an anti-takeover law. In general, Section 203 prohibits a Delaware public corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. As a result of Section 203, potential acquirers may be discouraged from attempting to effect acquisition transactions with us, thereby possibly depriving our security holders of certain opportunities to sell, or otherwise dispose of, such securities at above-market prices pursuant to such transactions. Further, certain of our option plans provide for the immediate acceleration of, and removal of restrictions from, options and other awards under such plans upon a “change of control” (as defined in the respective plans). Such provisions may also have the result of discouraging acquisition of us.

We have authorized and unissued 17,636,577 (which include shares issuable under outstanding options to purchase 624,800 shares of our Common Stock) shares of our Common Stock and 2,000,000 shares of our Preferred Stock as of December 31, 2017 (which includes 600,000 shares of our Preferred Stock reserved for issuance under our preferred share rights plan). These unissued shares could be used by our management to make it more difficult, and thereby discourage an attempt to acquire control of us.

**Our Preferred Share Rights Plan (the “Rights Plan”) may adversely affect our stockholders.**

In May 2008, we adopted a Rights Plan, designed to ensure that all of our stockholders receive fair and equal treatment in the event of a proposed takeover or abusive tender offer. However, the Rights Plan may also have the effect of deterring, delaying, or preventing a change in control that might otherwise be in the best interests of our stockholders.

In general, under the terms of the Rights Plan, subject to certain limited exceptions, if a person or group acquires 20% or more of our Common Stock or a tender offer or exchange offer for 20% or more of our Common Stock is announced or commenced, our other stockholders may receive upon exercise of the rights (the “Rights”) issued under the Rights Plan the number of shares our Common Stock or of one-one hundredths of a share of our Series A Junior Participating Preferred Stock, par value \$.001 per share, having a value equal to two times the purchase price of the Right. In addition, if we are acquired in a merger or other business combination transaction in which we are not the survivor or more than 50% of our assets or earning power is sold or transferred, then each holder of a Right (other than the acquirer) will thereafter have the right to receive, upon exercise, common stock of the acquiring company having a value equal to two times the purchase price of the Right. The initial purchase price of each Right was \$13, subject to adjustment, including adjustment for reverse stock split.

The Rights will cause substantial dilution to a person or group that attempts to acquire us on terms not approved by our board of directors. The Rights may be redeemed by us at \$0.001 per Right at any time before any person or group acquires 20% or more of our outstanding common stock. The rights should not interfere with any merger or other business combination approved by our board of directors. The Rights Plan terminates on May 2, 2018.

## ITEM 1B. UNRESOLVED STAFF COMMENTS

Not Applicable.

## ITEM 2. PROPERTIES

Our principal executive office is in Atlanta, Georgia. Our Business Center is located in Knoxville, Tennessee. Our Treatment Segment facilities are located in Gainesville, Florida; Kingston, Tennessee; and Richland, Washington. Our M&EC facility located in Oak Ridge, Tennessee is currently undergoing closure requirement activities which we plan to complete by the second quarter of 2018. Our Services Segment maintains offices as noted below, which are all leased properties. We maintain properties in Valdosta, Georgia and Memphis, Tennessee, which are all non-operational and are included within our discontinued operations.

The properties where three of our facilities operate on (Kingston, Tennessee; Gainesville, Florida; and Richland, Washington) are held by our senior lender as collateral for our credit facility. The Company currently leases properties in the following locations:

Location	Square Footage	Expiration of Lease
Knoxville, TN (SEC)	20,850	May 31, 2018
Knoxville, TN (SEC)	5,000	September 30, 2018
Blaydon On Tyne, England (PF UK Limited)	1,000	Monthly
Pittsburgh, PA (SEC)	640	Monthly
Newport, KY (SEC)	1,566	Monthly
Oak Ridge, TN (M&EC)	150,000	June 30, 2018
Atlanta, GA (Corporate)	6,499	February 28, 2021

We believe that the above facilities currently provide adequate capacity for our operations and that additional facilities are readily available in the regions in which we operate, which could support and supplement our existing facilities.

## ITEM 3. LEGAL PROCEEDINGS

In the normal course of conducting our business, we may become involved in litigation or be subject to local, state and federal agency (government) proceedings. We are not a party to any litigation or governmental proceeding, which our management believes could result in any judgments or fines that would have a material adverse effect on our financial position, liquidity or results of future operations.

## ITEM 4. MINE SAFETY DISCLOSURE

Not Applicable.

## PART II

## ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS

Our Common Stock is traded on the NASDAQ Capital Markets ("NASDAQ") under the symbol "PESI." The following table sets forth the high and low market trade prices quoted for the Common Stock during the periods shown. The source of such quotations and information is the NASDAQ online trading history reports.

		2017		2016	
		Low	High	Low	High
Common Stock	1 <sup>st</sup> Quarter	\$ 2.85	\$ 4.00	\$ 3.42	\$ 3.95
	2 <sup>nd</sup> Quarter	2.95	3.85	3.62	5.64
	3 <sup>rd</sup> Quarter	3.25	4.30	4.29	5.62
	4 <sup>th</sup> Quarter	3.40	4.05	3.25	5.24

At February 20, 2018, there were approximately 187 stockholders of record of our Common Stock, including brokerage firms and/or clearing houses holding shares of our Common Stock for their clientele (with each brokerage house and/or clearing house being considered as one holder). However, the total number of beneficial stockholders at February 20, 2018 was approximately 2,210.

Since our inception, we have not paid any cash dividends on our Common Stock and have no dividend policy. Our Revised Loan Agreement prohibits us from paying any cash dividends on our Common Stock without prior approval from our lender. We do not anticipate paying cash dividends on our outstanding Common Stock in the foreseeable future.

No sales of unregistered securities occurred during 2017. There were no purchases made by us or on behalf of us or any of our affiliated members of shares of our Common Stock during 2017.

We have adopted a preferred share rights plan, which is designed to protect us against certain creeping acquisitions, open market purchases, and certain mergers and other combinations with acquiring companies. See Item 1A. - Risk Factors – “Our Preferred Share Rights Plan (the “Rights Plan”) may adversely affect our stockholders” as to further discussion relating to the terms of our Rights Plan. The Rights Plan terminates on May 2, 2018.

See Note 5 “Capital Stock, Stock Plans, Warrants, and Stock Based Compensation” in Part II, Item 8, “Financial Statements and Supplementary Data” and “Equity Compensation Plan” in Part III, Item 12, “Security Ownership of Certain Beneficial Owners and Management and Related Stockholders Matter” for securities authorized for issuance under equity compensation plans which are incorporated herein by reference.

#### **ITEM 6. SELECTED FINANCIAL DATA**

Not required under Regulation S-K for smaller reporting companies.

#### **ITEM 7. MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS**

Certain statements contained within this “Management’s Discussion and Analysis of Financial Condition and Results of Operations” (“MD&A”) may be deemed “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (collectively, the “Private Securities Litigation Reform Act of 1995”). See “Special Note regarding Forward-Looking Statements” contained in this report.

Management’s discussion and analysis is based, among other things, upon our audited consolidated financial statements and includes our accounts, the accounts of our wholly-owned subsidiaries and the accounts of our majority-owned Polish subsidiary, after elimination of all significant intercompany balances and transactions.

The following discussion and analysis should be read in conjunction with our consolidated financial statements and the notes thereto included in Item 8 of this report.

#### **Review**

Revenue decreased \$1,450,000 or 2.8% to \$49,769,000 for the twelve months ended December 31, 2017 from \$51,219,000 for the corresponding period of 2016. The decrease in revenue was primarily due to the decrease in revenue of approximately \$6,947,000 or 36.6% from \$18,966,000 to \$12,019,000 in the Services Segment. Treatment Segment revenue increased approximately \$5,497,000 or 17.0% from higher waste volume and higher averaged price waste resulting from revenue mix. Total gross profit increased \$1,536,000 or 21.7% for the twelve months ended December 31, 2017 as compared to the corresponding period of 2016 primarily due to higher revenue generated from our Treatment Segment. Total selling, general and administrative (“SG&A”) expenses increased \$377,000 or 3.5% for the twelve months ended December 31, 2017 as compared to the corresponding period of 2016.

We continue our plan to close our East Tennessee Materials and Energy Corporation (“M&EC”) facility by the end of the M&EC’s lease term which has been extended to June 30, 2018 from January 21, 2018. In accordance with Accounting Standards Codification (“ASC”) 360, “Property, Plant, and Equipment,” during the third quarter of 2017, we performed an updated financial valuation of M&EC’s remaining long-lived tangible assets (inclusive of the capitalized asset retirement costs) for further potential impairment. Based on our analysis using an undiscounted cash flow approach, we concluded that the carrying value of the remaining tangible assets for M&EC was not recoverable and exceeded its fair value. Consequently, we fully impaired the remaining tangible assets for M&EC resulting in \$672,000 in tangible asset impairment loss (non-cash). During 2017, we also recorded an additional \$1,400,000 in closure liabilities due to a change in estimated closure costs for our M&EC facility. M&EC revenues were approximately \$6,312,000 and \$4,419,000 for the years ended December 31, 2017 and 2016, respectively. Upon closure of M&EC, we estimate that we will eliminate annual fixed costs estimated to be approximately \$4,000,000 to \$5,000,000.

We had a working capital deficit of approximately \$2,268,000 at December 31, 2017, as compared to working capital deficit of \$2,131,000 at December 31, 2016

As previously reported, at the direction of Dr. Louis Centofanti, our former Chief Executive Officer (“CEO”) and President, and the Board of Directors (the “Board”), we instituted our succession plan effective during the third quarter of 2017, in which Dr. Louis Centofanti resigned his position as our CEO and President and the Board elected Mark Duff as the new CEO and President of the Company, effective September 8, 2017. Mark Duff previously held the position of Executive Vice President/Chief Operating Officer (“EVP/COO”). In order to have Dr. Louis Centofanti remain active in the operation of the Company, the Board then elected Dr. Louis Centofanti as EVP of Strategic Initiatives effective September 8, 2018. Dr. Louis Centofanti continues to serve as a member of the Board.

### **Business Environment and Outlook**

Our Treatment and Services Segments’ business continues to be heavily dependent on services that we provide to governmental clients directly as the contractor or indirectly as a subcontractor. We believe demand for our services will continue to be subject to fluctuations due to a variety of factors beyond our control, including the current economic conditions, the large budget deficit that the government is facing, and the manner in which the government will be required to spend funding to remediate federal sites. In addition, our governmental contracts and subcontracts relating to activities at governmental sites are generally subject to termination or renegotiation on 30 days notice at the government’s option. Significant reductions in the level of governmental funding or specifically mandated levels for different programs that are important to our business could have a material adverse impact on our business, financial position, results of operations and cash flows. As previously disclosed, during the latter part of 2016, our Medical Segment reduced its research and development (“R&D”) activities substantially due to the need for capital to fund such activities. Our Medical Segment continues to seek various sources in order to raise this capital. We anticipate that our Medical Segment R&D activities will be limited until the necessary capital is obtained through its own credit facility or additional equity raise. If the Medical Segment is unable to raise the necessary capital, the Medical Segment could be required to further reduce, delay or eliminate its R&D program.

We are continually reviewing operating costs and are committed to further reducing operating costs to bring them in line with revenue levels, when needed.

We continue to focus on expansion into both commercial and international markets to increase revenues in our Treatment and Services Segments to offset the uncertainties of government spending in the United States of America. See “Liquidity and Capital Resources” below for further discussion of our liquidity.

### **Results of Operations**

The reporting of financial results and pertinent discussions are tailored to our three reportable segments: The Treatment Segment (“Treatment”), the Services Segment (“Services”), and the Medical Segment (“Medical”). Our Medical Segment has not generated any revenue and all costs incurred are included within R&D:

## Summary - Years Ended December 31, 2017 and 2016

Below are the results of continuing operations for years ended December 31, 2017 and 2016 (amounts in thousands):

(Consolidated)	2017	%	2016	%
Net revenues	\$ 49,769	100.0	\$ 51,219	100.0
Cost of goods sold	41,149	82.7	44,135	86.2
Gross profit	8,620	17.3	7,084	13.8
Selling, general and administrative	11,101	22.3	10,724	20.9
Research and development	1,595	3.2	2,046	4.0
(Gain) loss on disposal of property and equipment	(12)	—	2	—
Impairment loss on tangible assets	672	1.3	1,816	3.5
Impairment loss on intangible assets	—	—	8,288	16.2
Loss from operations	(4,736)	(9.5)	(15,792)	(30.8)
Interest income	140	.3	110	.2
Interest expense	(315)	(.6)	(489)	(.9)
Interest expense – financing fees	(35)	(.1)	(108)	(.2)
Other	123	.2	22	—
Loss from continuing operations before taxes	(4,823)	(9.7)	(16,257)	(31.7)
Income tax benefit	(1,285)	(2.6)	(2,994)	(5.8)
Loss from continuing operations	\$ (3,538)	(7.1)	\$ (13,263)	(25.9)

### Net Revenue

Consolidated revenues decreased \$1,450,000 for the year ended December 31, 2017 compared to the year ended December 31, 2016, as follows:

(In thousands)	2017	% Revenue	2016	% Revenue	Change	% Change
<b>Treatment</b>						
Government waste	\$ 27,592	55.4	\$ 21,433	41.9	\$ 6,159	28.7
Hazardous/non-hazardous	4,855	9.8	4,511	8.8	344	7.6
Other nuclear waste	5,303	10.7	6,309	12.3	(1,006)	(15.9)
Total	37,750	75.9	32,253	63.0	5,497	17.0
<b>Services</b>						
Nuclear	9,186	18.4	17,035	33.2	(7,849)	(46.1)
Technical	2,833	5.7	1,931	3.8	902	46.7
Total	12,019	24.1	18,966	37.0	(6,947)	(36.6)
Total	\$ 49,769	100.0	\$ 51,219	100.0	\$ (1,450)	(2.8)

Treatment Segment revenue increased \$5,497,000 or 17.0% for the year ended December 31, 2017 over the same period in 2016. The revenue increase was primarily due to higher revenue generated from government clients of approximately \$6,159,000 or 28.7% primarily due to higher averaged price waste resulting from waste mix and higher waste volume. Other nuclear waste revenue decreased by approximately \$1,006,000 or 15.9% primarily due to both lower waste volume and lower averaged price waste. Services Segment revenue decrease by \$6,947,000 or 36.6% for the year ended December 31, 2017 over the same period in 2016 primarily due to the completion of a nuclear services project in December 2016 which had generated revenues of approximately \$9,763,000 in 2016. The decrease in revenue in the Services Segment was also partially due to delays in a large nuclear services project in May 2017 due to government funding uncertainties. This project commenced at the end of August 2017 and is expected to continue until approximately June 2018. Our Services Segment revenues are project based; as such, the scope, duration and completion of each project vary. As a result, our Services Segment revenues are subject to differences relating to timing and project value.

### Cost of Goods Sold

Cost of goods sold decreased \$2,986,000 for the year ended December 31, 2017, as compared to the year ended December 31, 2016, as follows:

(In thousands)	2017	% Revenue	2016	% Revenue	Change
Treatment	\$ 29,834	79.0	\$ 28,238	87.6	\$ 1,596
Services	11,315	94.1	15,897	83.8	(4,582)
Total	\$ 41,149	82.7	\$ 44,135	86.2	\$ (2,986)

Cost of goods sold for the Treatment Segment increased by \$1,596,000 or approximately 5.7%. Costs of goods sold for the Treatment Segment for 2017 included approximately \$550,000 and \$850,000 in additional closure costs recorded in the third and fourth quarters of 2017, respectively, in connection with the pending closure of our M&EC facility as discussed above. Also, cost of goods sold for the Treatment Segment for 2016 included a write-off of approximately \$587,000 in prepaid fees recorded in the second quarter of 2016 resulting from the impairment of certain equipment at our M&EC facility due to the pending closure of the M&EC facility. Such fees were incurred for emission performance testing certification requirements as mandated by the state. Excluding the additional closure costs of \$1,400,000 recorded in 2017 and the write-off of \$587,000 recorded in 2016, total Treatment Segment cost of goods sold increased \$783,000 or 2.8%. Treatment Segment variable costs increased by approximately \$750,000 primarily in disposal, transportation, material and supplies, and lab costs due to higher revenue. Treatment Segment overall fixed costs were slightly higher by approximately \$33,000 resulting from the following: maintenance expense was higher by \$257,000; general expense was higher by approximately \$222,000 in various categories; regulatory expense was higher by \$190,000; salaries and payroll related expenses were lower by approximately \$414,000 due to lower headcount from normal attrition and employees working on the pending closure of the M&EC facility (resulting in salaries and payroll related expenses charged to closure accrual); and depreciation expense was lower by approximately \$222,000 as we fully impaired the remaining tangible assets of our M&EC facility during the third quarter of 2017 resulting from an updated financial valuation of the remaining tangible assets at M&EC due to the pending closure of the facility by the end of June 2018. Services Segment cost of goods sold decreased \$4,582,000 or 28.8% primarily due to the decrease in revenue as discussed above. The decrease in Services Segment's cost of goods sold was primarily in salaries and payroll related expenses, travel, and outside services expenses totaling approximately \$3,142,000 with the remaining decrease primarily in material and supplies and disposal costs. Included within cost of goods sold is depreciation and amortization expense of \$3,720,000 and \$4,002,000 for the twelve months ended December 31, 2017, and 2016, respectively.

### Gross Profit

Gross profit for the year ended December 31, 2017 was \$1,536,000 higher than 2016 as follows:

(In thousands)	2017	% Revenue	2016	% Revenue	Change
Treatment	\$ 7,916	21.0	\$ 4,015	12.4	\$ 3,901
Services	704	5.9	3,069	16.2	(2,365)
Total	\$ 8,620	17.3	\$ 7,084	13.8	\$ 1,536

Treatment Segment gross profit increased \$3,901,000 or 97.2%. Excluding the \$1,400,000 in additional closure costs recorded in 2017 and the \$587,000 write off in prepaid fees recorded in the second quarter of 2016 in connection with the pending closure of our M&EC facility discussed above, Treatment Segment gross profit increased \$4,714,000 or 102.4% and gross margin increased to 24.7% from 14.3% primarily due to increased revenue. In the Services Segment, the decreases in gross profit of \$2,365,000 or 77.1% and gross margin from 16.2% to 5.9% was primarily due to the decrease in revenue as discussed above. Additionally, our overall Services Segment gross margin is impacted by our current projects which are competitively bid on and will therefore, have varying margin structures.

## SG&A

SG&A expenses increased \$377,000 for the year ended December 31, 2017 as compared to the corresponding period for 2016 as follows:

(In thousands)	2017	% Revenue	2016	% Revenue	Change
Administrative	\$ 4,788	—	\$ 4,919	—	\$ (131)
Treatment	3,316	8.8	3,506	10.9	(190)
Services	2,997	24.9	2,299	12.1	698
Total	<u>\$ 11,101</u>	<u>22.3</u>	<u>\$ 10,724</u>	<u>20.9</u>	<u>\$ 377</u>

The increase in total SG&A was primarily due to higher SG&A costs in the Services Segment. Services Segment SG&A increased by \$698,000 primarily due to higher bad debt expenses of approximately \$757,000. During the fourth quarter of 2017, we recorded an additional \$364,000 in bad debt expense in our Services Segment as certain accounts receivable were determined not to be collectible at December 31, 2017. The increase in bad debt expenses in 2017 as compared to 2016 was also impacted by a reduction in bad debt expense of approximately \$364,000 we recorded during the second quarter of 2016 resulting from a reduction in allowance for doubtful accounts as a previously uncertain account receivable was determined to be collectible at June 30, 2016. In addition, Services Segment salaries and payroll related expenses were higher by approximately \$49,000 and general expenses were higher by approximately \$15,000 in various categories. The overall higher costs in SG&A in the Services Segment were partially offset by lower outside services costs of approximately \$71,000 resulting from fewer consulting/subcontract matters, lower depreciation expenses of \$35,000 as certain fixed assets became fully depreciated at year end 2016, and lower travel expenses of \$17,000. The decrease in Administrative SG&A was primarily the result of lower salaries and payroll related expenses of approximately \$100,000 and lower amortization expense of approximately \$44,000 as we recorded a patent write-off during the second quarter of 2016. In addition, Administrative SG&A expenses were lower by approximately \$29,000 in outside service expenses resulting from fewer subcontract/consulting matters. The total decrease in Administrative SG&A costs was partially offset by higher travel expenses of approximately \$27,000 made by our executives and higher general expenses of \$15,000 in various categories. Treatment SG&A was lower primarily due to lower salaries and payroll related costs of approximately \$341,000. The lower costs in Treatment SG&A were partially offset by higher general expenses of \$101,000 mostly due to higher tradeshow/marketing expenses and higher outside services expenses of approximately \$50,000 due to more consulting matters. Included in SG&A expenses is depreciation and amortization expense of \$83,000 and \$163,000 for the twelve months ended December 31, 2017 and 2016, respectively.

## R&D

R&D expenses decreased \$451,000 for the year ended December 31, 2017 as compared to the corresponding period of 2016 as follows:

(In thousands)	2017	2016	Change
Administrative	\$ 15	\$ 15	\$ —
Treatment	439	504	(65)
Services	—	38	(38)
PF Medical	1,141	1,489	(348)
Total	<u>\$ 1,595</u>	<u>\$ 2,046</u>	<u>\$ (451)</u>

Research and development costs consist primarily of employee salaries and benefits, laboratory costs, third party fees, and other related costs associated with the development of new technologies and technological enhancement of new potential waste treatment processes. The decrease in R&D costs for 2017 as compared to 2016 was primarily due to reduced R&D performed by our PF Medical Segment.

## Interest Expense

Interest expense decreased approximately \$174,000 for the twelve months ended December 31, 2017 as compared to the corresponding period of 2016. Interest expense for 2016 included a \$68,000 loss on debt extinguishment that we recorded in the first quarter of 2016 resulting from an amendment dated March 24, 2016 that we entered into with our lender which extended the due date of our credit facility, among other things, to March 24, 2021. Excluding this \$68,000 loss on debt extinguishment, the decrease was primarily due to lower interest from our declining term loan balance and lower average revolver loan balance outstanding.

### *Interest Expense- Financing Fees*

Interest expense-financing fees decreased approximately \$73,000 for the twelve months ended December 31, 2017 as compared to the corresponding period of 2016. The decrease was primarily due to lower monthly amortized financing fees resulting from our amended credit facility pursuant to the amendment dated March 24, 2016 as discussed above. The decrease was also the result of final amortization of debt discount as financing fees which occurred in August 2016 in connection with the issuance of our common stock and two warrants to certain lenders as consideration for the Company receiving a \$3,000,000 loan which was paid off by the Company in August 2016.

### *Income Taxes*

We had income tax benefits of \$1,285,000 and \$2,994,000 for continuing operations for the years ended December 31, 2017 and 2016, respectively. The Company's effective tax rates were approximately 26.6% and 18.4% for the twelve months ended December 31, 2017 and 2016, respectively. Our tax benefit for 2017 included a tax benefit in the amount of approximately \$1,695,000 recorded in the fourth quarter of 2017 resulting primarily from the required re-measurement of our deferred assets and liabilities and the reversal of valuation allowance and refunding of alternative minimum tax ("AMT") credit carryforward. This tax benefit was recorded as a result of the Tax Cuts and Jobs Act of 2017 (the "Tax Act") enacted into law on December 22, 2017 (see "Critical Accounting Policies" in this section for a further discussion of the Tax Act and the tax benefit recorded). Our income tax benefit for the year ended 2016 was primarily the result of a tax benefit recorded in the amount of approximately \$3,203,000 resulting from the permit impairment loss recorded for the M&EC subsidiary during the second quarter of 2016.

### **Discontinued Operations**

Our discontinued operations consist of all our subsidiaries included in our Industrial Segment which were divested in 2011 and prior, previously closed locations, and our Perma-Fix of South Georgia, Inc. ("PFSG") facility which is currently undergoing closure, subject to regulatory approval of necessary plans and permits.

Our discontinued operations had no revenue for the twelve months ended December 31, 2017 and 2016. We incurred net losses of \$592,000 and \$730,000 for our discontinued operations for the twelve months ended December 31, 2017 and 2016, respectively (net of taxes of \$0 for each period). Losses for the periods discussed above were primarily due to costs incurred in the administration and continued monitoring of our discontinued operations.

### **Liquidity and Capital Resources**

Our cash flow requirements during 2017 were primarily financed by our operations, credit facility availability, and the restricted finite risk sinking funds that were released back to us in May 2017 from the cancellation of a previous financial assurance policy issued by American International Group ("AIG") for our Perma-Fix Northwest Richland, Inc. ("PFNWR") subsidiary (see "Investing Activities" below for further information of this finite sinking fund and the replacement closure mechanism acquired for the PFNWR subsidiary). We anticipate that our cash flow requirements for the next twelve months will consist primarily of general working capital needs, scheduled principal payments on our debt obligations, remediation projects, planned capital expenditures, and closure spending requirements in the amount of approximately \$2,791,000 in connection with the pending closure of our M&EC facility ("M&EC closure"). We plan to fund these requirements from our operations and our credit facility. Additionally, as a result of the M&EC closure, we expect to receive during 2018, a partial release of approximately \$5,000,000 of the \$15,676,000 restricted finite risk sinking funds held by AIG as collateral under the financial assurance policy dated June 2003 that we currently have with AIG. This partial release in finite risk sinking funds is subject to approval from AIG and the appropriate Tennessee state regulators and when released, will further enhance our liquidity. We continue to explore all sources of increasing revenue. We are continually reviewing operating costs and are committed to further reducing operating costs to bring them in line with revenue levels, when necessary. Although there are no assurances, we believe that our cash flows from operations and our available liquidity from our credit facility are sufficient to fund our operations for the next twelve months. Additionally, the partial release of the finite risk sinking funds that we expect to receive during 2018 as a result of the M&EC closure as discussed above will further provide additional funding for our operations as needed. As previously disclosed, during the latter part of 2016, our Medical Segment substantially reduced its R&D activities due to the need for capital to fund such activities. We anticipate that our Medical Segment will not resume full R&D activities until it obtains the necessary funding through obtaining its own credit facility or additional equity raise. Our Medical Segment continues to seek various sources in order to raise this funding. If the Medical Segment is unable to raise the necessary capital, the Medical Segment could be required to further reduce, delay or eliminate its R&D program.

The following table reflects the cash flow activity for the year ended December 31, 2017 and the corresponding period of 2016:

(In thousands)	2017	2016
Cash provided by operating activities of continuing operations	\$ 1,089	\$ 1,063
Cash used in operating activities of discontinued operations	(647)	(959)
Cash provided by (used in) investing activities of continuing operations	5,402	(499)
Cash provided by investing activities of discontinued operations	69	84
Cash used in financing activities of continuing operations	(5,022)	(956)
Effect of exchange rate changes on cash	9	(5)
Increase (decrease) in cash	<u>\$ 900</u>	<u>\$ (1,272)</u>

At December 31, 2017, we were in a positive cash position and no revolving credit balance. At December 31, 2017, we had cash on hand of approximately \$1,063,000 which includes account balances for our foreign subsidiaries totaling approximately \$305,000.

#### *Operating Activities*

Accounts receivable, net of allowances for doubtful accounts, totaled \$7,940,000 at December 31, 2017, a decrease of \$977,000 from the December 31, 2016 balance of \$8,917,000 (including accounts receivable – non-current). The decrease was primarily due to increased accounts receivable collections. We provide a variety of payment terms to our customers; therefore, our accounts receivable are impacted by these terms and the related timing of accounts receivable collections.

Accounts payable, totaled \$3,537,000 at December 31, 2017, a decrease of \$707,000 from the December 31, 2016 balance of \$4,244,000. The decrease was primarily due to the timing of the payment of our accounts payable. Also, we continue to manage payment terms with our vendors to maximize our cash position throughout all segments.

Disposal/transportation accrual at December 31, 2017, totaled \$2,071,000, an increase of \$681,000 over the December 31, 2016 balance of \$1,390,000. Our disposal accrual can vary based on revenue mix and the timing of waste shipments for final disposal. During 2017, we shipped less waste for disposal.

We had a working capital deficit of \$2,268,000 (which included working capital of our discontinued operations) at December 31, 2017, as compared to a working capital deficit of \$2,131,000 at December 31, 2016. Our working capital was negatively impacted by the reclassification of approximately \$881,000 in accrued closure costs from long-term to current in the first quarter of 2017 and the additional current closure costs accrual recorded in the amount of approximately \$1,400,000 during the second half of 2017 in connection with the pending M&EC closure. We used the finite risk sinking funds received from the cancellation of our PFNWR financial assurance policy to pay down our payables and to pay off our revolving credit which is included in long-term liabilities on the Consolidated Balance Sheets.

### *Investing Activities*

During 2017, our purchases of capital equipment totaled approximately \$439,000. These expenditures were primarily for improvements in our Treatment Segment. These capital expenditures were funded by cash from operations. We have budgeted approximately \$1,000,000 for 2018 capital expenditures for our Treatment and Services Segments to maintain operations and regulatory compliance requirements. On March 7, 2018, our Board approved an additional \$1,000,000 in capital spending for footprint expansion for one of our Treatment Segment facilities. Certain of these budgeted projects may either be delayed until later years or deferred altogether. We have traditionally incurred actual capital spending totals for a given year at less than the initial budgeted amount. We plan to fund our capital expenditures from cash from operations and/or financing. The initiation and timing of projects are also determined by financing alternatives or funds available for such capital projects.

We had a closure policy dated August 2007 for our PFNWR facility with AIG (“PFNWR policy”) which provided financial assurance to the State of Washington in the event of closure of the PFNWR facility. In April 2017, we received final releases from state and federal regulators for the PFNWR policy which enabled us to cancel the PFNWR policy resulting in the release of approximately \$5,951,000 on May 1, 2017 in finite sinking funds previously held by AIG as collateral for the PFNWR policy. We used the released finite sinking funds to pay off our revolving credit with the remaining funds used for general working capital needs. We have acquired new bonds in the required amount of approximately \$7,000,000 (“new bonds”) to replace the PFNWR policy in providing financial assurance for the PFNWR facility. Upon receipt of the \$5,951,000 in finite sinking funds from AIG, we and our lender executed a standby letter of credit in the amount of \$2,500,000 as collateral for the new bonds for the PFNWR facility.

### *Financing Activities*

We entered into an Amended and Restated Revolving Credit, Term Loan and Security Agreement, dated October 31, 2011 (“Amended Loan Agreement”), with PNC National Association (“PNC”), acting as agent and lender. The Amended Loan Agreement, as subsequently amended (“Revised Loan Agreement”), provides us with the following credit facility with a maturity date of March 24, 2021: (a) up to \$12,000,000 revolving credit (“revolving credit”) and (b) a term loan (“term loan”) of approximately \$6,100,000, which requires monthly installments of approximately \$101,600 (based on a seven-year amortization). The maximum that we can borrow under the revolving credit is based on a percentage of eligible receivables (as defined) at any one time reduced by outstanding standby letters of credit and borrowing reductions that our lender may impose from time to time.

Under the Revised Loan Agreement, we have the option of paying an annual rate of interest due on the revolving credit at prime plus 2% or London Inter Bank Offer Rate (“LIBOR”) plus 3% and the term loan at prime plus 2.5% or LIBOR plus 3.5%.

Pursuant to the Revised Loan Agreement, we may terminate the Revised Loan Agreement, upon 90 days’ prior written notice upon payment in full of our obligations under the Revised Loan Agreement. We agreed to pay PNC 1.0% of the total financing in the event we had paid off our obligations on or before March 23, 2017, .50% of the total financing if we pay off our obligations after March 23, 2017 but prior to or on March 23, 2018, and .25% of the total financing if we pay off our obligations after March 23, 2018 but prior to or on March 23, 2019. No early termination fee shall apply if we pay off our obligations after March 23, 2019.

At December 31, 2017, the borrowing availability under our revolving credit was \$3,687,000, based on our eligible receivables and includes an indefinite reduction of borrowing availability of \$2,000,000 that our lender has imposed, which includes \$750,000 that was imposed immediately upon the receipt of the \$5,951,000 in finite sinking funds by us in connection with cancellation of our PFNWR policy, pursuant to a “Condition Subsequent” clause in the November 17, 2016 amendment that we entered into with our lender (see “Investing Activities” above for further discussion of the receipt of the finite risk sinking funds in connection with our PFNWR facility). Our borrowing availability under our revolving credit was also reduced by outstanding standby letters of credit totaling approximately \$2,675,000.

We have had discussions with our lender as to the removal of the \$2,000,000 reduction in borrowing availability discussed above. Our lender has advised us that they will be reducing the \$2,000,000 reduction in borrowing availability to \$1,000,000 during the first half of 2018, subject to receipt of appropriate approvals by the lender and execution of documentation, and would consider removal of the remaining \$1,000,000 reduction in borrowing availability depending on our results during 2018.

Our credit facility with PNC contains certain financial covenants, along with customary representations and warranties. A breach of any of these financial covenants, unless waived by PNC, could result in a default under our credit facility allowing our lender to immediately require the repayment of all outstanding debt under our credit facility and terminate all commitments to extend further credit. The following table details the quarterly financial covenant requirements under our credit facility at December 31, 2017.

(Dollars in thousands)	Quarterly Requirement	1st Quarter Actual	2nd Quarter Actual	3rd Quarter Actual	4th Quarter Actual
<b>Senior Credit Facility</b>					
Fixed charge coverage ratio	1.15:1	3.13:1	2.57:1	2.40:1	1.45:1
Minimum tangible adjusted net worth	\$ 26,000	\$ 30,148	\$ 28,850	\$ 26,853	\$ 27,161

We met our quarterly financial covenants in each of the quarters of 2017 and we expect to meet these quarterly financial covenant requirements in the next twelve months. If we fail to meet any of these quarterly financial covenant requirements as noted above and our lender does not waive the non-compliance or revise our covenant so that we are in compliance, our lender could accelerate the repayment of borrowings under our credit facility. In the event that our lender accelerates the payment of our borrowings, we may not have sufficient liquidity to repay our debt under our credit facility and other indebtedness.

#### **Off Balance Sheet Arrangements**

We have a number of routine operating leases, primarily related to office space rental, office equipment rental and equipment rental for contract projects at December 31, 2017, which total approximately \$645,000, payable as follows: \$366,000 in 2018; \$141,000 in 2019; \$118,000 in 2020; with the remaining \$20,000 in 2021.

From time to time, we are required to post standby letters of credit and various bonds to support contractual obligations to customers and other obligations, including facility closures. At December 31, 2017, the total amount of outstanding standby letters of credit totaled approximately \$2,675,000 and the total amount of bonds outstanding totaled approximately \$8,305,000. The Company also provides closure and post-closure requirements through a financial assurance policy for certain of our Treatment Segment facilities through AIG. At December 31, 2017, the closure and post-closure requirements for these facilities were approximately \$29,473,000.

#### **Critical Accounting Policies**

In preparing the consolidated financial statements in conformity with accounting principles generally accepted in the United States of America ("US GAAP"), management makes estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements, as well as, the reported amounts of revenues and expenses during the reporting period. We believe the following critical accounting policies affect the more significant estimates used in preparation of the consolidated financial statements:

*Revenue Recognition Estimates.* We utilize a performance based methodology for purposes of revenue recognition in our Treatment Segment. As we accept more complex waste streams in this segment, the treatment of those waste streams becomes more complicated and time consuming. We have continued to enhance our waste tracking capabilities and systems, which has enabled us to better match the revenue earned to the processing phases achieved using a proportional performance method. The major processing phases are receipt, treatment/processing and shipment/final disposition. Upon receiving various wastes we recognize a certain percentage (generally ranging from 9.0% to 33%) of revenue as we incur costs for transportation, analyses and labor associated with the receipt of mixed waste. As the waste is processed, shipped and disposed of, we recognize the remaining revenue and the associated costs of transportation and burial where applicable. We review and evaluate our revenue recognition estimates and policies on an annual basis.

For our Services Segment, revenues on services are performed under fixed price, time and material, and cost-reimbursement contracts. Revenues and costs associated with fixed price contracts are recognized using the percentage of completion (efforts expended) method. We estimate our percentage of completion based on attainment of project milestones. Revenues and costs associated with time and material contracts are recognized as revenue when earned and costs are incurred.

Under cost-reimbursement contracts, we are reimbursed for costs incurred plus a certain percentage markup for indirect costs, in accordance with contract provisions. Costs incurred in excess of contract funding may be renegotiated for reimbursement. We also earn a fee based on the approved costs to complete the contract. We recognize this fee using the proportion of costs incurred to total estimated contract costs. Contract costs include all direct labor, material and other non-labor costs and those indirect costs related to contract support, such as depreciation, fringe benefits, overhead labor, supplies, tools, repairs and equipment rental. Provisions for estimated losses on uncompleted contracts are made in the period in which such losses are determined. Changes in job performance, job conditions and estimated profitability, including those arising from contract penalty provisions and final contract settlements, may result in revisions to costs and income and are recognized in the period in which the revisions are determined.

*Allowance for Doubtful Accounts.* The carrying amount of accounts receivable is reduced by an allowance for doubtful accounts, which is a valuation allowance that reflects management's best estimate of the amounts that are uncollectible. We regularly review all accounts receivable balances that exceed 60 days from the invoice date and, based on an assessment of current credit worthiness, estimate the portion, if any, of the balances that are uncollectible. Specific accounts that are deemed to be uncollectible are reserved at 100% of their outstanding balance. The remaining balances aged over 60 days have a percentage applied by aging category (5% for balances 61-90 days, 20% for balances 91-120 days and 40% for balances over 120 days aged), based on a historical collections patterns, that allows us to calculate the total allowance required. This analysis excludes government related receivables due to our past successful experience in their collectability. Our allowance was approximately 1.4% of revenue for 2017 and 8.3% of accounts receivable at December 31, 2017. Additionally, this allowance was approximately 0.5% of revenue for 2016 and 3.0% of accounts receivable at December 31, 2016.

*Intangible Assets.* Intangible assets consist primarily of the recognized value of the permits required to operate our business. We continually monitor the propriety of the carrying amount of our permits to determine whether current events and circumstances warrant adjustments to the carrying value.

Indefinite-lived intangible assets are not amortized but are reviewed for impairment annually as of October 1, 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. Significant judgments are inherent in these analyses and include assumptions for, among other factors, forecasted revenue, gross margin, growth rate, operating income, timing of expected future cash flows, and the determination of appropriate long term discount rates.

Impairment testing of our permits related to our Treatment reporting unit as of October 1, 2017 resulted in no impairment charges. In 2016, based on our analysis, we fully impaired the permit value of approximately \$8,288,000 for our M&EC subsidiary as a result of our decision to close the M&EC facility. We performed impairment testing of the remaining permits related to our Treatment reporting unit as of October 1, 2016 and determined there was no impairment.

Intangible assets that have definite useful lives are amortized using the straight-line method over the estimated useful lives (with the exception of customer relationships which are amortized using an accelerated method) and are excluded from our annual intangible asset valuation review as of October 1. We have one definite-lived permit which was excluded from our annual impairment review as noted above. The net carrying value of this one definite-lived permit at December 31, 2017 and 2016 was approximately \$62,000 and \$117,000, respectively. Intangible assets with definite useful lives are also tested for impairment whenever events or changes in circumstances indicate that the asset's carrying value may not be recoverable.

*Accrued Closure Costs and Asset Retirement Obligations (“ARO”).* Accrued closure costs represent our estimated environmental liability to clean up our facilities as required by our permits, in the event of closure. ASC 410, “Asset Retirement and Environmental Obligations” requires that the discounted fair value of a liability for an ARO be recognized in the period in which it is incurred with the associated ARO capitalized as part of the carrying cost of the asset. The recognition of an ARO requires that management make numerous estimates, assumptions and judgments regarding such factors as estimated probabilities, timing of settlements, material and service costs, current technology, laws and regulations, and credit adjusted risk-free rate to be used. This estimate is inflated, using an inflation rate, to the expected time at which the closure will occur, and then discounted back, using a credit adjusted risk free rate, to the present value. ARO’s are included within buildings as part of property and equipment and are depreciated over the estimated useful life of the property. In periods subsequent to initial measurement of the ARO, the Company must recognize period-to-period changes in the liability resulting from the passage of time and revisions to either the timing or the amount of the original estimate of undiscounted cash flow. Increases in the ARO liability due to passage of time impact net income as accretion expense and are included in cost of goods sold in the Consolidated Statements of Operations. Changes in the estimated future cash flows costs underlying the obligations (resulting from changes or expansion at the facilities) require adjustment to the ARO liability calculated and are capitalized and charged as depreciation expense, in accordance with our depreciation policy.

*Accrued Environmental Liabilities.* We have three remediation projects in progress (all within discontinued operations). The current and long-term accrual amounts for the projects are our best estimates based on proposed or approved processes for clean-up. The circumstances that could affect the outcome range from new technologies that are being developed every day to reduce our overall costs, to increased contamination levels that could arise as we complete remediation which could increase our costs, neither of which we anticipate at this time. In addition, significant changes in regulations could adversely or favorably affect our costs to remediate existing sites or potential future sites, which cannot be reasonably quantified (See “Environmental Contingencies” below for further information of these liabilities).

*Disposal/Transportation Costs.* We accrue for waste disposal based upon a physical count of the waste at each facility at the end of each accounting period. Current market prices for transportation and disposal costs are applied to the end of period waste inventories to calculate the disposal accrual. Costs are calculated using current costs for disposal, but economic trends could materially affect our actual costs for disposal. As there are limited disposal sites available to us, a change in the number of available sites or an increase or decrease in demand for the existing disposal areas could significantly affect the actual disposal costs either positively or negatively.

*Stock-Based Compensation.* We account for stock-based compensation in accordance with ASC 718, “Compensation – Stock Compensation.” ASC 718 requires all stock-based payments to employees, including grant of options, to be recognized in the income statement based on their fair values. We account for stock-based compensation issued to consultants in accordance with the provisions of ASC 505-50, “Equity-Based Payments to Non-Employees.” Measurement of stock-based payment transactions with consultants, including options, is based on the fair value of whichever is more reliably measurable: (a) the goods or services received; or (b) the equity instrument issued. The measurement date for the fair value of the stock-based payment transaction is determined at the earlier of performance commitment date or performance completion date. We use the Black-Scholes option-pricing model to determine the fair-value of stock-based awards which requires subjective assumptions. Assumptions used to estimate the fair value of stock-based awards include the exercise price of the award, the expected term, the expected volatility of our stock over the stock-based award’s expected term, the risk-free interest rate over the award’s expected term, and the expected annual dividend yield. We account for forfeitures when they occur.

*Income Taxes.* The provision for income tax is determined in accordance with ASC 740, “Income Taxes.” We are required to estimate our income taxes in each of the jurisdictions in which we operate. We record this amount as a provision or benefit for taxes. This process involves estimating our actual current tax exposure, including assessing the risks associated with tax audits, and assessing temporary differences resulting from different treatment of items for tax and accounting purposes. These differences result in deferred tax assets and liabilities. We assess the likelihood that our deferred tax assets will be recovered from future taxable income and, to the extent that we believe recovery is not likely, we establish a valuation allowance.

On December 22, 2017, the Tax Act was signed into law making significant changes to the Internal Revenue Code. Changes include, but are not limited to, a federal corporate tax rate decrease from 35% to 21% for tax years beginning after December 31, 2017, the transition of U.S international taxation from a worldwide tax system to a territorial system, the elimination of AMT for corporations and a one-time transition tax on the mandatory deemed repatriation of foreign earnings. As of December 31, 2017, the Company has estimated its provision for income taxes in accordance with the Tax Act and guidance available resulting in the recognition of approximately \$1,695,000 of income tax benefits in the fourth quarter of 2017, the period in which the legislation was enacted. The tax benefits of \$1,695,000 consist of \$916,000 related to the required re-measurement of deferred tax assets and liabilities, based on the rates at which they are expected to reverse in the future and \$779,000 related to the reversal of valuation allowance and refunding of AMT credit carryforwards.

As of December 31, 2017, we had net deferred tax assets of approximately \$10,259,000 (which excludes a deferred tax liability relating to goodwill and indefinite lived intangible assets) which were primarily related to federal and state net operating loss (“NOL”) carryforwards, impairment charges, and closure costs. As of December 31, 2017, we concluded that it was more likely than not that \$10,259,000 of our deferred income tax assets would not be realized, and as such, a full valuation allowance was applied against those deferred income tax assets. Our net operating losses are subject to audit by the Internal Revenue Services, and, as a result, the amounts could be reduced.

### **Known Trends and Uncertainties**

*Economic Conditions.* Our business continues to be heavily dependent on services that we provide to governmental clients (including the U.S. Department of Energy (“DOE”) and U.S. Department of Defense (“DOD”)) directly as the prime contractor or indirectly for others as a subcontractor. We believe demand for our services will continue to be subject to fluctuations due to a variety of factors beyond our control, including the current economic conditions, the large budget deficit that the government is facing, and the manner in which the government will be required to spend funding to remediate federal sites. In addition, our governmental contracts and subcontracts relating to activities at governmental sites are generally subject to termination or renegotiation on 30 days notice at the government’s option. Significant reductions in the level of governmental funding or specifically mandated levels for different programs that are important to our business could have a material adverse impact on our business, financial position, results of operations and cash flows.

*Significant Customers.* Our Treatment and Services Segments have significant relationships with the federal government, and continue to enter into contracts, directly as the prime contractor or indirectly for others as a subcontractor, with the federal government. The contracts that we are a party to with the federal government or with others as a subcontractor to the federal government generally provide that the government may terminate or renegotiate the contracts on 30 days notice, at the government’s election. Our inability to continue under existing contracts that we have with the federal government (directly or indirectly as a subcontractor) could have a material adverse effect on our operations and financial condition.

We performed services relating to waste generated by the federal government representing approximately \$36,654,000 or 73.6% of our total revenue during 2017, as compared to \$27,354,000 or 53.4% of our total revenue during 2016.

Revenue generated by one of the customers (PSC Metal, Inc.) (non-government related and excluded from above) in the Services Segment accounted for approximately \$9,763,000 or 19.1% of the total revenues generated for the twelve months ended December 31, 2016. Project work for this customer commenced in March 2016 and was completed in December 2016.

As our revenues are event/project based where the completion of one contract with a specific customer may be replaced by another contract with a different customer from year to year, we do not believe the loss of one specific customer from one year to the next will generally have a material adverse effect on our operations and financial condition.

### **Environmental Contingencies**

We are engaged in the waste management services segment of the pollution control industry. As a participant in the on-site treatment, storage and disposal market and the off-site treatment and services market, we are subject to rigorous federal, state and local regulations. These regulations mandate strict compliance and therefore are a cost and concern to us. Because of their integral role in providing quality environmental services, we make every reasonable attempt to maintain complete compliance with these regulations; however, even with a diligent commitment, we, along with many of our competitors, may be required to pay fines for violations or investigate and potentially remediate our waste management facilities.

We routinely use third party disposal companies, who ultimately destroy or secure landfill residual materials generated at our facilities or at a client's site. In the past, numerous third party disposal sites have improperly managed waste and consequently require remedial action; consequently, any party utilizing these sites may be liable for some or all of the remedial costs. Despite our aggressive compliance and auditing procedures for disposal of wastes, we could further be notified, in the future, that we are a potentially responsible party ("PRP") at a remedial action site, which could have a material adverse effect.

We have three remediation projects, which are currently in progress at our Perma-Fix of Dayton, Inc. ("PFD"), Perma-Fix of Memphis, Inc. ("PFM" – closed location), and PFSG (in closure status) subsidiaries. The Company divested PFD in 2008; however, the environmental liability of PFD was retained by the Company upon the divestiture of PFD. These remediation projects principally entail the removal/remediation of contaminated soil and, in most cases, the remediation of surrounding ground water. The remediation activities are closely reviewed and monitored by the applicable state regulators. While no assurances can be made that we will be able to do so, we expect to fund the expenses to remediate these sites from funds generated internally.

At December 31, 2017, we had total accrued environmental remediation liabilities of \$871,000, of which \$632,000 are recorded as a current liability, a decrease of \$54,000 from the December 31, 2016 balance of \$925,000. The net decrease of \$54,000 represents payments on remediation projects at PFSG and PFD totaling approximately of \$79,000 and an increase to the reserve of approximately \$25,000 at PFD due to reassessment of the remediation reserve.

### **Related Party Transactions**

#### *David Centofanti*

David Centofanti serves as our Vice President of Information Systems. For such position, he received annual compensation of \$168,000 for each of the years 2017 and 2016. David Centofanti is the son of Dr. Louis Centofanti, our EVP of Strategic Initiatives and a Board member. Dr. Louis Centofanti previously held the position of President and CEO until September 8, 2017. We believe the compensation received by David Centofanti for his technical expertise which he provides to us is competitive and comparable to compensation we would have to pay to an unaffiliated third party with the same technical expertise.

### *Robert L. Ferguson*

Robert L. Ferguson serves as an advisor to our Board and is also a member of the Supervisory Board of PF Medical, our majority-owned Polish subsidiary. Robert Ferguson previously served as our Board member from June 2007 to February 2010 and again from August 2011 to September 2012. We previously completed a lending transaction with Robert Ferguson and William Lampson in August 2013 (collectively, the “Lenders”) whereby we borrowed from the Lenders \$3,000,000 which was paid in full by us in August 2016. Robert Ferguson is also a consultant to us in connection with our Test Bed Initiative (“TBI”) at our PFNWR facility. As an advisor to our Board, Robert Ferguson is paid \$4,000 monthly plus reasonable expenses. For such services, Robert Ferguson received compensation of approximately \$51,000 and \$59,000 for the years ended December 31, 2017 and 2016, respectively. For Robert Ferguson’s consulting work in connection with the Company’s TBI, on July 27, 2017 (“grant date”), we granted Robert Ferguson a stock option from the Company’s 2017 Plan for the purchase of up to 100,000 shares of the Company’s Common Stock at an exercise price of \$3.65 a share, which was the fair market value of our Common Stock on the date of grant (“Ferguson Stock Option”). The vesting of the Ferguson Stock Option is subject to the achievement of the following milestones (“waste” as noted below is defined as liquid LAW (“low activity waste”) and/or liquid TRU (“transuranic waste”)):

- Upon treatment and disposal of three gallons of waste at the PFNWR facility by January 27, 2018, 10,000 shares of the Ferguson Stock Option shall become exercisable;
- Upon treatment and disposal of 2,000 gallons of waste at the PFNWR facility by January 27, 2019, 30,000 shares of the Ferguson Stock Option shall become exercisable; and
- Upon treatment and disposal of 50,000 gallons of waste at the PFNWR facility and assistance, on terms satisfactory to us, in preparing certain justifications of cost and pricing data for the waste and obtaining a long-term commercial contract relating to the treatment, storage and disposal of waste by January 27, 2021, 60,000 shares of the Ferguson Stock Option shall become exercisable.

The term of the Ferguson Stock Option is seven (7) years from the grant date. Each of the milestones is exclusive of each other; therefore, achievement of any of the milestones above by Robert Ferguson by the designated date will provide Robert Ferguson the right to exercise the number of options in accordance with the milestone attained. The 10,000 options as noted above become vested by Robert Ferguson on December 19, 2017. The fair value of the 10,000 options was determined to be approximately \$20,000.

### *John Climaco*

John Climaco, who had been a Board member since October 2013, did not stand for reelection at the Company’s 2017 Annual Meeting of Stockholders held on July 27, 2017. In addition to his previous service as a Board member, John Climaco also served as EVP of PF Medical, a majority-owned Polish subsidiary of the Company, from June 2, 2015 to June 30, 2017. As EVP of PF Medical, John Climaco received an annual salary of \$150,000 and was not eligible to receive compensation for serving on the Company’s Board. PF Medical had entered into a multi-year supplier agreement and stock subscription agreement in July 2015 with Digirad Corporation, where John Climaco serves as a board member.

### *Employment Agreements*

We entered into employment agreements with each of Mark Duff (President and CEO), Ben Naccarato (Chief Financial Officer (“CFO”)), and Dr. Louis Centofanti, (EVP of Strategic Initiatives), with each employment dated September 8, 2017. Each of the employment agreements is effective for three years from September 8, 2017 (the “Initial Term”) unless earlier terminated by us or by the executive officer. At the end of the Initial Term of each employment agreement, each employment agreement will automatically be extended for one additional year, unless at least six months prior to the expiration of the Initial Term, we or the executive officer provides written notice not to extend the terms of the employment agreement. Each employment agreement provides for annual base salaries, performance bonuses (as provided in the Management Incentive Plan (“MIP”) as approved by our Board, and other benefits commonly found in such agreements. In addition, each employment agreement provides that in the event the executive officer terminates his employment for “good reason” (as defined in the agreements) or is terminated by us without cause (including the executive officer terminating his employment for “good reason” or is terminated by us without cause within 24 months after a Change in Control (as defined in the agreement)), we will pay the executive officer the following: (a) a sum equal to any unpaid base salary; (b) accrued unused vacation time and any employee benefits accrued as of termination but not yet been paid (“Accrued Amounts”); (c) two years of full base salary; (d) performance compensation under the MIP earned with respect to the fiscal year immediately preceding the date of termination; and (e) an additional year of performance compensation as provided under the MIP earned, if not already paid, with respect to the fiscal year immediately preceding the date of termination. If the executive terminates his employment for a reason other than for good reason, we will pay to the executive the amount equal to the Accrued Amounts plus any performance compensation payable pursuant to the MIP.

If there is a Change in Control (as defined in the agreements), all outstanding stock options to purchase common stock held by the executive officer will immediately become exercisable in full commencing on the date of termination through the original term of the options. In the event of the death of an executive officer, all outstanding stock options to purchase common stock held by the executive officer will immediately become exercisable in full commencing on the date of death, with such options exercisable for the lesser of the original option term or twelve months from the date of the executive officer's death. In the event of an executive officer terminating his employment for "good reason" or is terminated by us without cause, all outstanding stock options to purchase common stock held by the executive officer will immediately become exercisable in full commencing on the date of termination, with such options exercisable for the lesser of the original option term or within 60 days from the date of the executive's date of termination.

We had previously entered into an employment agreement with each of Dr. Louis Centofanti and Ben Naccarato on July 10, 2014 which both employment agreements are due to expire on July 10, 2018, as amended (the "July 10, 2014 Employment Agreements"). We also had previously entered into an employment agreement dated January 19, 2017 (which was effective June 11, 2016) with Mark Duff which is due to expire on June 11, 2019 (the "January 19, 2017 Employment Agreement"). The July 10, 2014 Employment Agreements and the January 19, 2017 Employment Agreement were terminated effective September 8, 2017.

#### *MIPs*

On January 19, 2017, our Board and the Compensation and Stock Option Committee (the "Compensation Committee") approved individual MIP for each Mark Duff, Ben Naccarato, and Dr. Louis Centofanti. Each of the MIPs is effective January 1, 2017 and applicable for year the year ended December 31, 2017. Each MIP provides guidelines for the calculation of annual cash incentive based compensation, subject to Compensation Committee oversight and modification. Each MIP awards cash compensation based on achievement of performance thresholds, with the amount of such compensation established as a percentage of the executive's 2017 annual base salary on the approval date of the MIP. The potential target performance compensation ranges approved was from 5% to 100% (\$13,962 to \$279,248) of the base salary for Dr. Louis Centofanti, EVP of Strategic Initiatives effective September 8, 2017 and previously the CEO and President; 5% to 100% (\$13,350 to \$267,000) of the base salary for Mark Duff, CEO and President effective September 8, 2017 and previously the EVP/COO; and 5% to 100% (\$11,033 to \$220,667) of the base salary for Ben Naccarato, CFO. Pursuant to the MIPs, the Compensation Committee had the right to modify, change or terminate the MIPs at any time and for any reason. No performance compensation was earned or payable under each of the 2017 MIPs as discussed above.

On January 18, 2018, the Board and Compensation Committee approved individual MIP for each Mark Duff, CEO and President, Ben Naccarato, CFO, and Dr. Louis Centofanti, EVP of Strategic Initiatives. The MIPs are effective January 1, 2018 and applicable for year ended December 31, 2018. Each MIP provides guidelines for the calculation of annual cash incentive based compensation, subject to Compensation Committee oversight and modification. Each MIP awards cash compensation based on achievement of performance thresholds, with the amount of such compensation established as a percentage of the executive's 2018 annual base salary on the approval date of the MIP. The potential target performance compensation ranges from 5% to 100% (\$13,350 to \$267,000) of the base salary for the CEO and President; 5% to 100% (\$11,475 to \$229,494) of the base salary for the CFO; and 5% to 100% (\$11,170 to \$223,400) of the base salary for the EVP of Strategic Initiatives. Pursuant to the MIPs, the Compensation Committee has the right to modify, change or terminate the MIPs at any time and for any reason.

## ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Not required under Regulation S-K for smaller reporting companies.

### SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

#### Forward-looking Statements

Certain statements contained within this report may be deemed “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (collectively, the “Private Securities Litigation Reform Act of 1995”). All statements in this report other than a statement of historical fact are forward-looking statements that are subject to known and unknown risks, uncertainties and other factors, which could cause actual results and performance of the Company to differ materially from such statements. The words “believe,” “expect,” “anticipate,” “intend,” “will,” and similar expressions identify forward-looking statements. Forward-looking statements contained herein relate to, among other things,

- demand for our services;
- continue to focus on expansion into both commercial and international markets to increase revenues;
- reductions in the level of government funding in future years;
- R&D activity of our Medical Segment;
- reducing operating costs;
- expect to meet our quarterly financial covenant requirements in the next twelve months;
- cash flow requirements;
- government funding for our services;
- may not have liquidity to repay debt if our lender accelerates payment of our borrowings;
- our cash flows from operations and our available liquidity from our credit facility are sufficient to service our operations;
- manner in which the government will be required to spend funding to remediate federal sites;
- audit by the Internal Revenue Services of our net operating losses;
- funding operations;
- fund capital expenditures from cash from operations and/or financing;
- fund remediation expenditures for sites from funds generated internally;
- compliance with environmental regulations;
- future environmental policies affecting operations;
- potential effect of being a PRP;
- subject to fines and civil penalties in connection with violations of regulatory requirements;
- large business are more willing to team with small businesses;
- permit and license requirements represent a potential barrier to entry for possible competitors;
- process backlog during periods of low waste receipts, which historically has been in the first and fourth quarters;
- potential sites for violations of environmental laws and remediation of our facilities;
- partial release of finite risk sinking funds by AIG in 2018 as result of M&EC closure;
- closure of M&EC and elimination of certain fixed costs;
- effect of new Tax Act;
- continuation of contracts;
- loss of contracts;
- necessary capital for Medical Segment;
- continuation of a large nuclear services project until approximately June 2018;
- reduction in certain operating costs resulting from pending shut down of M&EC facility; and
- disposal of our waste.

While the Company believes the expectations reflected in such forward-looking statements are reasonable, it can give no assurance such expectations will prove to have been correct. There are a variety of factors, which could cause future outcomes to differ materially from those described in this report, including, but not limited to:

- general economic conditions;
- material reduction in revenues;
- inability to meet PNC covenant requirements;
- inability to collect in a timely manner a material amount of receivables;
- increased competitive pressures;
- inability to maintain and obtain required permits and approvals to conduct operations;
- public not accepting our new technology;
- inability to develop new and existing technologies in the conduct of operations;
- inability to maintain and obtain closure and operating insurance requirements;
- inability to retain or renew certain required permits;
- discovery of additional contamination or expanded contamination at any of the sites or facilities leased or owned by us or our subsidiaries which would result in a material increase in remediation expenditures;
- delays at our third party disposal site can extend collection of our receivables greater than twelve months;
- refusal of third party disposal sites to accept our waste;
- changes in federal, state and local laws and regulations, especially environmental laws and regulations, or in interpretation of such;
- requirements to obtain permits for TSD activities or licensing requirements to handle low level radioactive materials are limited or lessened;
- potential increases in equipment, maintenance, operating or labor costs;
- management retention and development;
- financial valuation of intangible assets is substantially more/less than expected;
- the requirement to use internally generated funds for purposes not presently anticipated;
- inability to continue to be profitable on an annualized basis;
- inability of the Company to maintain the listing of its Common Stock on the NASDAQ;
- terminations of contracts with federal agencies or subcontracts involving federal agencies, or reduction in amount of waste delivered to the Company under the contracts or subcontracts;
- renegotiation of contracts involving the federal government;
- federal government's inability or failure to provide necessary funding to remediate contaminated federal sites;
- disposal expense accrual could prove to be inadequate in the event the waste requires re-treatment;
- inability to raise capital on commercially reasonable terms;
- inability to increase profitable revenue;
- lender refuses to waive non-compliance or revises our covenant so that we are in compliance; and
- Risk factors contained in Item 1A of this report.

## ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

### Index to Consolidated Financial Statements

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### **Financial Statement Schedules**

In accordance with the rules of Regulation S-X, schedules are not submitted because they are not applicable to or required by the Company.

## REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Board of Directors and Stockholders  
Perma-Fix Environmental Services Inc.

### Opinion on the financial statements

We have audited the accompanying consolidated balance sheets of Perma-Fix Environmental Services, Inc. (a Delaware corporation) and subsidiaries (the “Company”) as of December 31, 2017 and 2016, the related consolidated statements of operations, comprehensive loss, stockholders’ equity, and cash flows for each of the two years in the period ended December 31, 2017, and the related notes (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, 2017 and 2016, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2017, in conformity with accounting principles generally accepted in the United States of America.

### 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 Public Company Accounting Oversight Board (United States) (“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. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company’s internal control over financial reporting. Accordingly, we express no such opinion.

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 supporting 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/ GRANT THORNTON LLP*

We have served as the Company’s auditor since 2014.

Atlanta, Georgia  
March 16, 2018

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**  
**CONSOLIDATED BALANCE SHEETS**

*As of December 31,*

(Amounts in Thousands, Except for Share and Per Share Amounts)	2017	2016
<b>ASSETS</b>		
Current assets:		
Cash	\$ 1,063	\$ 163
Accounts receivable, net of allowance for doubtful accounts of \$720 and \$272, respectively	7,940	8,705
Unbilled receivables - current	4,547	2,926
Inventories	393	370
Prepaid and other assets	3,281	2,358
Current assets related to discontinued operations	89	85
<b>Total current assets</b>	<b>17,313</b>	<b>14,607</b>
Property and equipment:		
Buildings and land	23,806	22,544
Equipment	33,182	33,454
Vehicles	393	409
Leasehold improvements	11,549	11,626
Office furniture and equipment	1,670	1,738
Construction-in-progress	653	667
	<u>71,253</u>	<u>70,438</u>
Less accumulated depreciation	<u>(56,383)</u>	<u>(53,323)</u>
<b>Net property and equipment</b>	<b>14,870</b>	<b>17,115</b>
Property and equipment related to discontinued operations	81	81
Intangibles and other long term assets:		
Permits	8,419	8,474
Other intangible assets - net	1,487	1,721
Accounts receivable - non-current	—	212
Unbilled receivables - non-current	184	216
Finite risk sinking fund	15,676	21,487
Other assets	1,313	1,154
Other assets related to discontinued operations	195	268
<b>Total assets</b>	<b>\$ 59,538</b>	<b>\$ 65,335</b>

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

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**  
**CONSOLIDATED BALANCE SHEETS, CONTINUED**

*As of December 31,*

(Amounts in Thousands, Except for Share and per Share Amounts)	2017	2016
<b>LIABILITIES AND STOCKHOLDERS' EQUITY</b>		
Current liabilities:		
Accounts payable	\$ 3,537	\$ 4,244
Accrued expenses	4,782	4,094
Disposal/transportation accrual	2,071	1,390
Deferred revenue	4,311	2,691
Accrued closure costs - current	2,791	2,177
Current portion of long-term debt	1,184	1,184
Current liabilities related to discontinued operations	905	958
Total current liabilities	<u>19,581</u>	<u>16,738</u>
Accrued closure costs	5,604	5,138
Other long-term liabilities	1,191	931
Deferred tax liabilities	1,694	2,362
Long-term debt, less current portion	2,663	7,649
Long-term liabilities related to discontinued operations	359	361
Total long-term liabilities	<u>11,511</u>	<u>16,441</u>
Total liabilities	31,092	33,179
Commitments and Contingencies (Note 13)		
Series B Preferred Stock of subsidiary, \$1.00 par value; 1,467,396 shares authorized, 1,284,730 shares issued and outstanding, liquidation value \$1.00 per share plus accrued and unpaid dividends of \$995 and \$931, respectively (Note 7)		
	1,285	1,285
Stockholders' Equity:		
Preferred Stock, \$.001 par value; 2,000,000 shares authorized, no shares issued and outstanding	—	—
Common Stock, \$.001 par value; 30,000,000 shares authorized; 11,738,623 and 11,677,025 shares issued, respectively; 11,730,981 and 11,669,383 shares outstanding, respectively	12	11
Additional paid-in capital	106,417	106,048
Accumulated deficit	(77,893)	(74,213)
Accumulated other comprehensive loss	(112)	(162)
Less Common Stock in treasury, at cost; 7,642 shares	(88)	(88)
Total Perma-Fix Environmental Services, Inc. stockholders' equity	<u>28,336</u>	<u>31,596</u>
Non-controlling interest	(1,175)	(725)
Total stockholders' equity	<u>27,161</u>	<u>30,871</u>
Total liabilities and stockholders' equity	<u>\$ 59,538</u>	<u>\$ 65,335</u>

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

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**  
**CONSOLIDATED STATEMENTS OF OPERATIONS**

*For the years ended December 31,*

(Amounts in Thousands, Except for Per Share Amounts)	2017	2016
Net revenues	\$ 49,769	\$ 51,219
Cost of goods sold	41,149	44,135
Gross profit	8,620	7,084
Selling, general and administrative expenses	11,101	10,724
Research and development	1,595	2,046
(Gain) loss on disposal of property and equipment	(12)	2
Impairment loss on tangible assets	672	1,816
Impairment loss on intangible assets	-	8,288
Loss from operations	(4,736)	(15,792)
Other income (expense):		
Interest income	140	110
Interest expense	(315)	(489)
Interest expense-financing fees	(35)	(108)
Other	123	22
Loss from continuing operations before taxes	(4,823)	(16,257)
Income tax benefit	(1,285)	(2,994)
Loss from continuing operations, net of taxes	(3,538)	(13,263)
Loss from discontinued operations, net of taxes of \$0	(592)	(730)
Net loss	(4,130)	(13,993)
Net loss attributable to non-controlling interest	(450)	(588)
Net loss attributable to Perma-Fix Environmental Services, Inc. common stockholders	\$ (3,680)	\$ (13,405)
Net loss per common share attributable to Perma-Fix Environmental Services, Inc. stockholders - basic and diluted:		
Continuing operations	\$ (.26)	\$ (1.09)
Discontinued operations	(.05)	(.06)
Net loss per common share	\$ (.31)	\$ (1.15)
Number of common shares used in computing net loss per share:		
Basic	11,706	11,608
Diluted	11,706	11,608

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

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**  
**CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS**  
*For the years ended December 31,*

(Amounts in Thousands)	2017	2016
Net loss	\$ (4,130)	\$ (13,993)
Other comprehensive income (loss):		
Foreign currency translation adjustments	50	(45)
Total other comprehensive income (loss)	50	(45)
Comprehensive loss	(4,080)	(14,038)
Comprehensive loss attributable to non-controlling interest	(450)	(588)
Comprehensive loss attributable to Perma-Fix Environmental Services, Inc. common stockholders	\$ (3,630)	\$ (13,450)

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

**PERMA-FIX ENVIRONMENTAL SERVICES, INC**  
**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY**

*For the years ended December 31,  
(Amounts in Thousands, Except for Share Amounts)*

	Common Stock		Additional Paid-In Capital	Common Stock Held In Treasury	Accumulated Other Comprehensive Loss	Non- controlling Interest in Subsidiary	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount						
<b>Balance at December 31, 2015</b>	<u>11,551,232</u>	<u>\$ 11</u>	<u>\$ 105,556</u>	<u>\$ (88)</u>	<u>\$ (117)</u>	<u>\$ (137)</u>	<u>\$ (60,808)</u>	<u>\$ 44,417</u>
Net loss	—	—	—	—	—	(588)	(13,405)	(13,993)
Foreign currency translation	—	—	—	—	(45)	—	—	(45)
Issuance of Common Stock upon exercise of Warrants	70,000	—	156	—	—	—	—	156
Issuance of Common Stock for services	55,793	—	238	—	—	—	—	238
Stock-Based Compensation	—	—	98	—	—	—	—	98
<b>Balance at December 31, 2016</b>	<u>11,677,025</u>	<u>\$ 11</u>	<u>\$ 106,048</u>	<u>\$ (88)</u>	<u>\$ (162)</u>	<u>\$ (725)</u>	<u>\$ (74,213)</u>	<u>\$ 30,871</u>
Net loss	—	\$ —	\$ —	\$ —	\$ —	\$ (450)	\$ (3,680)	\$ (4,130)
Foreign currency translation	—	—	—	—	50	—	—	50
Issuance of Common Stock for services	61,598	1	225	—	—	—	—	226
Stock-Based Compensation	—	—	144	—	—	—	—	144
<b>Balance at December 31, 2017</b>	<u>11,738,623</u>	<u>\$ 12</u>	<u>\$ 106,417</u>	<u>\$ (88)</u>	<u>\$ (112)</u>	<u>\$ (1,175)</u>	<u>\$ (77,893)</u>	<u>\$ 27,161</u>

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

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**

*For the years ended December 31,*

(Amounts in Thousands)	2017	2016
<b>Cash flows from operating activities:</b>		
Net loss	\$ (4,130)	\$ (13,993)
Less: loss on discontinued operations, net of taxes of \$0 (Note 8)	(592)	(730)
Loss from continuing operations	(3,538)	(13,263)
Adjustments to reconcile net loss from continuing operations to cash provided by operating activities:		
Depreciation and amortization	3,803	4,165
Amortization of debt issuance/discount costs	36	173
Deferred tax benefit	(668)	(3,062)
Provision for (recovery of) bad debt reserves	462	(314)
(Gain ) loss on disposal of property and equipment	(12)	2
Impairment loss on tangible assets	672	1,816
Impairment loss on intangible assets	—	8,288
Issuance of common stock for services	225	238
Stock-based compensation	144	98
Changes in operating assets and liabilities of continuing operations:		
Restricted cash	—	35
Accounts receivable	515	1,070
Unbilled receivables	(1,589)	2,134
Prepaid expenses, inventories and other assets	(54)	2,870
Accounts payable, accrued expenses and unearned revenue	1,093	(3,187)
Cash provided by continuing operations	1,089	1,063
Cash used in discontinued operations	(647)	(959)
Cash provided by operating activities	442	104
<b>Cash flows from investing activities:</b>		
Purchases of property and equipment	(439)	(436)
Proceeds from sale of property and equipment	30	44
Proceeds from /(payment to) finite risk sinking fund	5,811	(107)
Cash provided by (used in) investing activities of continuing operations	5,402	(499)
Cash provided by investing activities of discontinued operations	69	84
Cash provided by (used in) investing activities	5,471	(415)
<b>Cash flows from financing activities:</b>		
Borrowing on revolving credit	45,163	57,976
Repayments of revolving credit borrowings	(48,966)	(56,522)
Principal repayments of long term debt	(1,219)	(1,508)
Principal repayments of long term debt - related party	—	(1,000)
Payment of debt issuance costs	—	(122)
Proceeds from issuance of common stock upon exercise of warrants	—	156
Release of proceeds for stock subscription for Perma-Fix Medical S.A. previously held in escrow	—	64
Cash used in financing activities of continuing operations	(5,022)	(956)
Effect of exchange rate changes on cash	9	(5)
Increase (decrease) in cash	900	(1,272)
Cash at beginning of period	163	1,435
Cash at end of period	\$ 1,063	\$ 163
<b>Supplemental disclosure:</b>		
Interest paid	\$ 318	\$ 424
Income taxes paid	58	41
<b>Non-cash investing and financing activities:</b>		
Equipment purchase subject to capital lease	196	—

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

**PERMA-FIX ENVIRONMENTAL SERVICES, INC.**  
**Notes to Consolidated Financial Statements**  
**December 31, 2017 and 2016**

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**NOTE 1**

**DESCRIPTION OF BUSINESS AND BASIS OF PRESENTATION**

Perma-Fix Environmental Services, Inc. (the Company, which may be referred to as we, us, or our), an environmental and technology know-how company, is a Delaware corporation, engaged through its subsidiaries, in three reportable segments:

TREATMENT SEGMENT, which includes:

- nuclear, low-level radioactive, mixed waste (containing both hazardous and low-level radioactive constituents), hazardous and non-hazardous waste treatment, processing and disposal services primarily through three uniquely licensed and permitted treatment and storage facilities; and
- research and development (“R&D”) activities to identify, develop and implement innovative waste processing techniques for problematic waste streams.

SERVICES SEGMENT, which includes:

- Technical services, which include:
  - o professional radiological measurement and site survey of large government and commercial installations using advanced methods, technology and engineering;
  - o integrated Occupational Safety and Health services including industrial hygiene (“IH”) assessments; hazardous materials surveys, e.g., exposure monitoring; lead and asbestos management/abatement oversight; indoor air quality evaluations; health risk and exposure assessments; health & safety plan/program development, compliance auditing and training services; and Occupational Safety and Health Administration (“OSHA”) citation assistance;
  - o global technical services providing consulting, engineering, project management, waste management, environmental, and decontamination and decommissioning field, technical, and management personnel and services to commercial and government customers; and
  - o on-site waste management services to commercial and governmental customers.
- Nuclear services, which include:
  - o technology-based services including engineering, decontamination and decommissioning (“D&D”), specialty services and construction, logistics, transportation, processing and disposal;
  - o remediation of nuclear licensed and federal facilities and the remediation cleanup of nuclear legacy sites. Such services capability includes: project investigation; radiological engineering; partial and total plant D&D; facility decontamination, dismantling, demolition, and planning; site restoration; logistics; transportation; and emergency response; and
- A company owned equipment calibration and maintenance laboratory that services, maintains, calibrates, and sources (i.e., rental) health physics, IH and customized nuclear, environmental, and occupational safety and health (“NEOSH”) instrumentation.

MEDICAL SEGMENT, which includes: R&D of the Company’s medical isotope production technology by our majority-owned Polish subsidiary, Perma-Fix Medical S.A. and its wholly-owned subsidiary Perma-Fix Medical Corporation (“PFM Corporation”) (together known as “PF Medical” or the Medical Segment). The Company’s Medical Segment has not generated any revenue as it continues to be primarily in the R&D stage. All costs incurred by the Medical Segment are reflected within R&D in the accompanying consolidated financial statements (see “Financial Position and Liquidity” below for further discussion of Medical Segment’s significant curtailment of its R&D activities during the latter part of 2016).

The Company’s continuing operations consist of Diversified Scientific Services, Inc. (“DSSI”), Perma-Fix of Florida, Inc. (“PFF”), Perma-Fix of Northwest Richland, Inc. (“PFNWR”), East Tennessee Materials & Energy Corporation (“M&EC”) (see “Note 3 – M&EC Facility” regarding the pending closure of this facility by June 30, 2018), Safety & Ecology Corporation (“SEC”), Perma-Fix Environmental Services UK Limited (“PF UK Limited”), Perma-Fix of Canada, Inc. (“PF Canada”), and PF Medical (a majority-owned Polish subsidiary).

The Company's discontinued operations (see Note 8) consist of all our subsidiaries included in our Industrial Segment which were divested in 2011 and prior, previously closed locations, and our Perma-Fix of South Georgia, Inc. ("PFSG") facility which is non-operational and is in closure status.

### **Financial Position and Liquidity**

The Company's cash flow requirements during 2017 were primarily financed by our operations, credit facility availability, and the restricted finite risk sinking funds that were released back to us in May 2017 from the cancellation of a previous financial assurance policy issued by American International Group ("AIG") for our PFNWR subsidiary (see "Note 13 – Commitments and Contingencies - Insurance" for further information of the finite sinking funds and the replacement closure mechanism acquired for the PFNWR subsidiary).

The Company's cash flow requirements for 2018 and into the first quarter of 2019 will consist primarily of general working capital needs, scheduled principal payments on our debt obligations, remediation projects, planned capital expenditures and closure spending requirements in connection with the closure of our M&EC facility ("M&EC closure") (see "Note 3 – M&EC facility" for further discussion of the pending M&EC closure) which we plan to fund from operations and our credit facility availability. The Company continues to explore all sources of increasing revenue. The Company is continually reviewing operating costs and is committed to further reducing operating costs to bring them in line with revenue levels, when necessary.

As previously disclosed, during the latter part of 2016, the Company's Medical Segment reduced its R&D activities substantially due to the need for capital to fund such activities. The Company anticipates that the Medical Segment will not resume full R&D activities until the necessary capital is obtained through its own credit facility or additional equity raise. Our Medical Segment continues to seek various sources in order to raise this funding. If the Medical Segment is unable to raise the necessary capital, the Medical Segment could be required to further reduce, delay or eliminate its R&D program.

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## **NOTE 2**

### **SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES**

#### **Principles of Consolidation**

Our consolidated financial statements include our accounts, those of our wholly-owned subsidiaries, and our majority-owned Polish subsidiary, PF Medical, after elimination of all significant intercompany accounts and transactions.

#### **Use of Estimates**

When the Company prepares financial statements in conformity with accounting standards generally accepted in the United States of America ("US GAAP"), the Company makes estimates and assumptions that affect the reported amounts of assets and liabilities and disclosures of contingent assets and liabilities at the date of the financial statements, as well as, the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. See Notes 8, 11, 12 and 13 for estimates of discontinued operations and environmental liabilities, closure costs, income taxes and contingencies for details on significant estimates.

#### **Cash**

At December 31, 2017, the Company had cash on hand of approximately \$1,063,000, which included account balances for our foreign subsidiaries totaling approximately \$305,000. At December 31, 2016, the Company had cash on hand of approximately \$163,000, which included account balances for our foreign subsidiaries totaling approximately \$157,000.

## Accounts Receivable

Accounts receivable are customer obligations due under normal trade terms requiring payment within 30 or 60 days from the invoice date based on the customer type (government, broker, or commercial). The carrying amount of accounts receivable is reduced by an allowance for doubtful accounts, which is a valuation allowance that reflects management's best estimate of the amounts that will not be collected. The Company regularly reviews all accounts receivable balances that exceed 60 days from the invoice date and based on an assessment of current credit worthiness, estimates the portion, if any, of the balance that will not be collected. This analysis excludes government related receivables due to our past successful experience in their collectability. Specific accounts that are deemed to be uncollectible are reserved at 100% of their outstanding balance. The remaining balances aged over 60 days have a percentage applied by aging category, based on historical experience that allows us to calculate the total allowance required. Once the Company has exhausted all options in the collection of a delinquent accounts receivable balance, which includes collection letters, demands for payment, collection agencies and attorneys, the account is deemed uncollectible and subsequently written off. The write off process involves approvals from senior management based on required approval thresholds.

The following table set forth the activity in the allowance for doubtful accounts for the years ended December 31, 2017 and 2016 (in thousands):

	Year Ended December 31,	
	2017	2016
Allowance for doubtful accounts - beginning of year	\$ 272	\$ 1,474
Provision for (recovery of) bad debt reserve	462	(314)
Write-off	(14)	(888)
Allowance for doubtful accounts - end of year	<u>\$ 720</u>	<u>\$ 272</u>

## Unbilled Receivables

Unbilled receivables are generated by differences between invoicing timing and our proportional performance based methodology used for revenue recognition purposes. As major processing and contract completion phases are completed and the costs are incurred, the Company recognizes the corresponding percentage of revenue. Within our Treatment Segment, the facilities experience delays in processing invoices due to the complexity of the documentation that is required for invoicing, as well as the difference between completion of revenue recognition milestones and agreed upon invoicing terms, which results in unbilled receivables. The timing differences occur for several reasons: partially from delays in the final processing of all wastes associated with certain work orders and partially from delays for analytical testing that is required after the facilities have processed waste but prior to our release of waste for disposal. The tasks relating to these delays usually take several months to complete. As the Company now has historical data to review the timing of these delays, the Company realizes that certain issues, including, but not limited to, delays at our third party disposal site, can extend collection of some of these receivables greater than twelve months. However, our historical experience suggests that a significant portion of unbilled receivables are ultimately collectible with minimal concession on our part. The Company, therefore, segregates the unbilled receivables between current and long-term.

Unbilled receivables within our Services Segment can result from: (1) revenue recognized by our Earned Value Management program (a program which integrates project scope, schedule, and cost to provide an objective measure of project progress) but invoice milestones have not yet been met and/or (2) contract claims and pending change orders, including Requests for Equitable Adjustments ("REAs") when work has been performed and collection of revenue is reasonably assured.

## Inventories

Inventories consist of treatment chemicals, saleable used oils, and certain supplies. Additionally, the Company has replacement parts in inventory, which are deemed critical to the operating equipment and may also have extended lead times should the part fail and need to be replaced. Inventories are valued at the lower of cost or market with cost determined by the first-in, first-out method.

## Property and Equipment

Property and equipment expenditures are capitalized and depreciated using the straight-line method over the estimated useful lives of the assets for financial statement purposes, while accelerated depreciation methods are principally used for income tax purposes. Generally, asset lives range from ten to forty years for buildings (including improvements and asset retirement costs) and three to seven years for office furniture and equipment, vehicles, and decontamination and processing equipment. Leasehold improvements are capitalized and amortized over the lesser of the term of the lease or the life of the asset. Maintenance and repairs are charged directly to expense as incurred. The cost and accumulated depreciation of assets sold or retired are removed from the respective accounts, and any gain or loss from sale or retirement is recognized in the accompanying Consolidated Statements of Operations. Renewals and improvements, which extend the useful lives of the assets, are capitalized.

In accordance with Accounting Standards Codification (“ASC”) 360, “Property, Plant, and Equipment”, long-lived assets, such as property, plant and equipment, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to estimated undiscounted future cash flows expected to be generated by the asset. If the carrying amount of an asset exceeds its estimated future cash flows, an impairment charge is recognized in the amount by which the carrying amount of the asset exceeds the fair value of the asset. Assets to be disposed of are separately presented in the balance sheet and reported at the lower of the carrying amount or fair value less costs to sell, and are no longer depreciated. The assets and liabilities of a disposal group classified as held for sale are presented separately in the appropriate asset and liability sections of the balance sheet. See “Note 3 – M&EC Facility” for impairment charges incurred on tangible assets resulting from the pending closure of the M&EC facility.

Our depreciation expense totaled approximately \$3,429,000 and \$3,717,000 in 2017 and 2016, respectively.

## Intangible Assets

Intangible assets consist primarily of the recognized value of the permits required to operate our business. We continually monitor the propriety of the carrying amount of our permits to determine whether current events and circumstances warrant adjustments to the carrying value.

Indefinite-lived intangible assets are not amortized but are reviewed for impairment annually as of October 1, 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. Significant judgments are inherent in these analyses and include assumptions for, among other factors, forecasted revenue, gross margin, growth rate, operating income, timing of expected future cash flows, and the determination of appropriate long term discount rates.

Impairment testing of our permits related to our Treatment reporting unit as of October 1, 2017 resulted in no impairment charges for the year ended December 31, 2017. In 2016, the Company fully impaired the permit value of our M&EC subsidiary resulting from the pending closure of the facility (see “Note 3 – M&EC Facility” for further information of this impairment). The Company performed impairment testing of its remaining permits related to the Treatment reporting unit as of October 1, 2016 and determined there was no further impairment.

Intangible assets that have definite useful lives are amortized using the straight-line method over the estimated useful lives (with the exception of customer relationships which are amortized using an accelerated method) and are excluded from our annual intangible asset valuation review as of October 1. The Company has one definite-lived permit which was excluded from our annual impairment review as noted above. Definite-lived intangible assets are also tested for impairment whenever events or changes in circumstances suggest impairment might exist.

## **R&D**

Operational innovation and technical know-how is very important to the success of our business. Our goal is to discover, develop, and bring to market innovative ways to process waste that address unmet environmental needs and to develop new company service offerings. The Company conducts research internally and also through collaborations with other third parties. R&D costs consist primarily of employee salaries and benefits, laboratory costs, third party fees, and other related costs associated with the development and enhancement of new potential waste treatment processes and new technology and are charged to expense when incurred in accordance with ASC Topic 730, "Research and Development." The Company's R&D expenses included approximately \$1,141,000 and \$1,489,000 for the years ended December 31, 2017 and 2016, respectively, incurred by our Medical Segment in the R&D of its medical isotope production technology.

## **Accrued Closure Costs and Asset Retirement Obligations ("ARO")**

Accrued closure costs represent our estimated environmental liability to clean up our facilities, as required by our permits, in the event of closure. ASC 410, "Asset Retirement and Environmental Obligations" requires that the discounted fair value of a liability for an ARO be recognized in the period in which it is incurred with the associated ARO capitalized as part of the carrying cost of the asset. The recognition of an ARO requires that management make numerous estimates, assumptions and judgments regarding such factors as estimated probabilities, timing of settlements, material and service costs, current technology, laws and regulations, and credit adjusted risk-free rate to be used. This estimate is inflated, using an inflation rate, to the expected time at which the closure will occur, and then discounted back, using a credit adjusted risk free rate, to the present value. ARO's are included within buildings as part of property and equipment and are depreciated over the estimated useful life of the property. In periods subsequent to initial measurement of the ARO, the Company must recognize period-to-period changes in the liability resulting from the passage of time and revisions to either the timing or the amount of the original estimate of undiscounted cash flows. Increases in the ARO liability due to passage of time impact net income as accretion expense, which is included in cost of goods sold. Changes in costs resulting from changes or expansion at the facilities require adjustment to the ARO liability and are capitalized and charged as depreciation expense, in accordance with the Company's depreciation policy.

## **Income Taxes**

Income taxes are accounted for in accordance with ASC 740, "Income Taxes." Under ASC 740, the provision for income taxes is comprised of taxes that are currently payable and deferred taxes that relate to the temporary differences between financial reporting carrying values and tax bases of assets and liabilities. Deferred tax assets and liabilities are measured using enacted income tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. Any effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date.

ASC 740 requires that deferred income tax assets be reduced by a valuation allowance if it is more likely than not that some portion or all of the deferred income tax assets will not be realized. The Company regularly assesses the likelihood that the deferred tax asset will be recovered from future taxable income. The Company considers projected future taxable income and ongoing tax planning strategies, then records a valuation allowance to reduce the carrying value of the net deferred income taxes to an amount that is more likely than not to be realized.

ASC 740 sets out a consistent framework for preparers to use to determine the appropriate recognition and measurement of uncertain tax positions. ASC 740 uses a two-step approach wherein a tax benefit is recognized if a position is more-likely-than-not to be sustained. The amount of the benefit is then measured to be the highest tax benefit which is greater than 50% likely to be realized. ASC 740 also sets out disclosure requirements to enhance transparency of an entity's tax reserves. The Company recognizes accrued interest and income tax penalties related to unrecognized tax benefits as a component of income tax expense.

The Company reassesses the validity of our conclusions regarding uncertain income tax positions on a quarterly basis to determine if facts or circumstances have arisen that might cause us to change our judgment regarding the likelihood of a tax position's sustainability under audit.

## **Foreign Currency**

The Company's foreign subsidiaries include PF UK Limited, PF Canada and PF Medical. Assets and liabilities are translated to U.S. dollars at the exchange rate in effect at the balance sheet date and revenue and expenses at the average exchange rate for the period. Foreign currency translation adjustments for these subsidiaries are accumulated as a separate component of accumulated other comprehensive income (loss) in stockholders' equity. Gains and losses resulting from foreign currency transactions are recognized in the Consolidated Statements of Operations.

## **Concentration Risk**

The Company performed services relating to waste generated by the federal government, either directly as a prime contractor or indirectly for others as a subcontractor to the federal government, representing approximately \$36,654,400 or 73.6% of total revenue during 2017, as compared to \$27,354,000 or 53.4% of total revenue during 2016.

Revenue generated by one of the customers (PSC Metal, Inc.) (non-government related and excluded from above) in the Services Segment accounted for approximately \$9,763,000 or 19.1% of the total revenues generated for the twelve months ended December 31, 2016. Project work for this customer commenced in March 2016 and was completed in December 2016.

As our revenues are project/event based where the completion of one contract with a specific customer may be replaced by another contract with a different customer from year to year, we do not believe the loss of one specific customer from one year to the next will generally have a material adverse effect on our operations and financial condition.

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist principally of cash and accounts receivable. The Company maintains cash with high quality financial institutions, which may exceed Federal Deposit Insurance Corporation ("FDIC") insured amounts from time to time. Concentration of credit risk with respect to accounts receivable is limited due to the Company's large number of customers and their dispersion throughout the United States as well as with the significant amount of work that we perform for the federal government as discussed above.

The Company had two government related customers whose net outstanding receivable balance represented 17.9% and 16.8% of the Company's total consolidated net accounts receivable at December 31, 2017. The Company had two customers whose net outstanding receivable balance represented 10.1% (government related account) and 20.8% (non-government related account) of the Company's total consolidated net accounts receivable at December 31, 2016.

## **Gross Receipts Taxes and Other Charges**

ASC 605-45, "Revenue Recognition – Principal Agent Consideration" provides guidance regarding the accounting and financial statement presentation for certain taxes assessed by a governmental authority. These taxes and surcharges include, among others, universal service fund charges, sales, use, waste, and some excise taxes. In determining whether to include such taxes in its revenue and expenses, the Company assesses, among other things, whether it is the primary obligor or principal taxpayer for the taxes assessed in each jurisdiction where the Company does business. As the Company is merely a collection agent for the government authority in certain of our facilities, the Company records the taxes on a net basis and excludes them from revenue and cost of services.

## **Revenue Recognition**

*Treatment Segment revenues.* The processing of mixed waste is complex and may take several months or more to complete; as such, the Treatment Segment recognizes revenues using a proportional performance based methodology with its measure of progress towards completion determined based on output measures consisting of milestones achieved and completed. The Treatment Segment has waste tracking capabilities, which it continues to enhance, to allow for better matching of revenues earned to the processing phases achieved. The revenues are recognized as each of the following three processing phases are completed: receipt, treatment/processing and shipment/final disposal. However, based on the processing of certain waste streams, the treatment/processing and shipment/final disposal phases may be combined as sometimes they are completed concurrently. As major processing phases are completed and the costs are incurred, the Treatment Segment recognizes the corresponding percentage of revenue utilizing a proportional performance model. The Treatment Segment experiences delays in processing invoices due to the complexity of the documentation that is required for invoicing, as well as the difference between completion of revenue recognition milestones and agreed upon invoicing terms, which results in unbilled receivables. The timing differences occur for several reasons, partially from delays in the final processing of all wastes associated with certain work orders and partially from delays for analytical testing that is required after the waste is processed but prior to our release of the waste for disposal. As the waste moves through these processing phases and revenues are recognized, the correlating costs are expensed as incurred. Although the Treatment Segment uses its best estimates and all available information to accurately determine these disposal expenses, the risk does exist that these estimates could prove to be inadequate in the event the waste requires retreatment. Furthermore, should the waste be returned to the customer, the related receivables could be uncollectible; however, historical experience has not indicated this to be a material uncertainty.

*Services Segment revenues.* Revenue includes services performed under fixed price, time and material, and cost-reimbursement contracts. Revenues and costs associated with fixed price contracts are recognized using the percentage of completion (efforts expended) method. The Services Segment estimates its percentage of completion based on attainment of project milestones. Revenues and costs associated with time and material contracts are recognized as revenue when earned and costs are incurred.

Under cost reimbursement contracts, the Services Segment is reimbursed for costs incurred plus a certain percentage markup for indirect costs, in accordance with contract provisions. Costs incurred in excess of contract funding may be renegotiated for reimbursement. The Services Segment also earns a fee based on the approved costs to complete the contract. The Services Segment recognizes this fee using the proportion of costs incurred to total estimated contract costs.

Contract costs include all direct labor, material and other non-labor costs and those indirect costs related to contract support, such as depreciation, fringe benefits, overhead labor, supplies, tools, repairs and equipment rental. Provisions for estimated losses on uncompleted contracts are made in the period in which such losses are determined. Changes in job performance, job conditions and estimated profitability, including those arising from contract penalty provisions and final contract settlements, may result in revisions to costs and income and are recognized in the period in which the revisions are determined.

## **Stock-Based Compensation**

The Company accounts for stock-based compensation in accordance with ASC 718, "Compensation – Stock Compensation." ASC 718 requires all stock-based payments to employees, including grant of options, to be recognized in the Statement of Operations based on their fair values. The Company accounts for stock-based compensation issued to consultants in accordance with the provisions of ASC 505-50, "Equity-Based Payments to Non-Employees." Measurement of stock-based payment transactions with consultants, including options, is based on the fair value of whichever is more reliably measurable: (a) the goods or services received; or (b) the equity instrument issued. The measurement date for the fair value of the stock-based payment transaction is determined at the earlier of performance commitment date or performance completion date. The Company uses the Black-Scholes option-pricing model to determine the fair-value of stock-based awards which requires subjective assumptions. Assumptions used to estimate the fair value of stock-based awards include the exercise price of the award, the expected term, the expected volatility of our stock over the stock-based award's expected term, the risk-free interest rate over the award's expected term, and the expected annual dividend yield. The Company accounts for forfeitures when they occur.

## **Comprehensive Income (Loss)**

The components of comprehensive income (loss) are net income (loss) and the effects of foreign currency translation adjustments.

## **Income (Loss) Per Share**

Basic income (loss) per share is calculated based on the weighted-average number of outstanding common shares during the applicable period. Diluted income (loss) per share is based on the weighted-average number of outstanding common shares plus the weighted-average number of potential outstanding common shares. In periods where they are anti-dilutive, such amounts are excluded from the calculations of dilutive earnings per share. Income (loss) per share is computed separately for each period presented.

## **Fair Value of Financial Instruments**

Certain assets and liabilities are required to be recorded at fair value on a recurring basis, while other assets and liabilities are recorded at fair value on a nonrecurring basis. Fair value is determined based on the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants. The three-tier value hierarchy, which prioritizes the inputs used in the valuation methodologies, is:

**Level 1**—Valuations based on quoted prices for identical assets and liabilities in active markets.

**Level 2**—Valuations based on observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets and liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data.

**Level 3**—Valuations based on unobservable inputs reflecting the Company's own assumptions, consistent with reasonably available assumptions made by other market participants.

Financial instruments include cash (Level 1), accounts receivable, accounts payable, and debt obligations (Level 3). Credit is extended to customers based on an evaluation of a customer's financial condition and, generally, collateral is not required. At December 31, 2017 and December 31, 2016, the fair value of the Company's financial instruments approximated their carrying values. The fair value of the Company's revolving credit and term loan approximate its carrying value due to the variable interest rate.

## **Recently Adopted Accounting Standards**

In January 2017, the Financial Accounting Standards Board ("FASB") issued Accountings Standards Update ("ASU") No. 2017-03, "Accounting Changes and Error Corrections (Topic 250) and Investments – Equity Method and Joint Ventures (Topic 232) – Amendments to SEC Paragraphs Pursuant to staff Announcements at the September 22, 2016 and November 17, 2016 EITF Meetings." This amendment states that registrants should consider additional qualitative disclosures if the impact of an issued but not yet adopted ASU is unknown or cannot be reasonably estimated and to include a description of the effect of the accounting policies that the registrant expects to apply, if determined. Transition guidance included in certain issued but not yet adopted ASUs were also updated to reflect this update. This update is effective immediately. The adoption of ASU 2017-03 by the Company in the first quarter of 2017 did not have a material impact on the Company's financial position, results of operations and cash flows. The Company will revise its disclosures for the standards not yet adopted as required by ASU 2017-03 as the Company progresses through its impact assessments.

## **Recently Issued Accounting Standards – Not Yet Adopted**

In May 2014, the FASB issued ASU No. 2014-09, "Revenue from Contracts with Customers" followed by a series of related accounting standard updates (collectively referred to as "Topic 606"), which will supersede nearly all existing revenue recognition guidance. Topic 606 provides a single, comprehensive revenue recognition model for all contracts with customers. Under the new standard, a five-step process is utilized in order to determine revenue recognition, depicting the transfer of goods or services to a customer at an amount that reflects the consideration it expects to receive in exchange for those goods or services. Topic 606 also requires additional disclosure surrounding the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. Topic 606 is effective for annual reporting periods beginning after December 15, 2017 (including interim reporting periods within those periods). The new standard permits two implementation approaches: the full retrospective method, in which case the standard would be applied to each prior reporting period presented and the cumulative effect of applying the standard would be recognized at the earliest period shown, or the modified retrospective method, in which case the cumulative effect of applying the standard would be recognized at the date of initial application. The Company has completed the evaluation of customer contracts and continues to identify and implement appropriate changes to our business policies, processes, systems and controls to support the adoption, recognition and disclosures under the new standard. The Company will adopt the new revenue standard in the first quarter of 2018 applying the modified retrospective method. Based on our evaluation, we do not believe that the adoption of ASU 2014-09 will result in a significant change in accounting principles applied to the Company's financial position, results of operations or cash flows. We believe that revenue will continue to be generally recognized consistent with our current revenue recognition model. The potential future impacts would be limited to the capitalization of direct and incremental contract acquisition costs, which have not historically been material. The Company will continue to monitor the materiality of these contract acquisition costs on an ongoing basis to determine if these costs become material and should be capitalized. In accordance with the new standard, the Company will expand revenue recognition disclosures beginning in the first quarter of 2018 to address the new qualitative and quantitative requirements.

In February 2016, the FASB issued ASU No. 2016-02, “Leases (Topic 842).” Under ASU 2016-02, an entity will be required to recognize right-of-use assets and lease liabilities on its balance sheet and disclose key information about leasing arrangements. ASU 2016-02 offers specific accounting guidance for a lessee, a lessor and sale and leaseback transactions. Lessees and lessors are required to disclose qualitative and quantitative information about leasing arrangements to enable a user of the financial statements to assess the amount, timing and uncertainty of cash flows arising from leases. For public companies, ASU 2016-02 is effective for annual reporting periods beginning after December 15, 2018, including interim periods within that reporting period, and requires a modified retrospective adoption, with early adoption permitted. This ASU is effective January 1, 2019 for the Company. The Company is still evaluating the potential impact of adopting this guidance on our financial statements.

In August 2016, the FASB issued ASU 2016-15, “Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments (a consensus of the Emerging Issues Task Force),” which aims to eliminate diversity in practice in how certain cash receipts and cash payments are presented and classified in the statement of cash flows under Topic 230, Statement of Cash Flows, and other Topics. Subsequently, in November 2016, the FASB issued ASU 2016-18, “Statement of Cash Flows (Topic 230), Restricted Cash, a consensus of the FASB Emerging Issues Task Force,” which clarifies the guidance on the cash flow classification and presentation of changes in restricted cash or restricted cash equivalents. Therefore, amounts generally described as restricted cash or restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flow. ASU 2016-15 and ASU 2016-18 are effective for annual reporting periods, and interim periods therein, beginning after December 15, 2017 and are effective January 1, 2018 for the Company. The Company does not expect the adoption of these ASUs to have a material impact on the Company’s financial position, results of operations, or cash flows.

In October 2016, the FASB issued ASU 2016-16, “Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory,” which eliminates the existing exception in U.S. GAAP prohibiting the recognition of the income tax consequences for intra-entity asset transfers. Under ASU 2016-16, entities will be required to recognize the income tax consequences of intra-entity asset transfers other than inventory when the transfer occurs. ASU 2016-16 is effective on a modified retrospective basis for fiscal years, and for interim periods within those fiscal years, beginning after December 15, 2017, with early adoption permitted. This ASU is effective January 1, 2018 for the Company. The Company does not expect the adoption of this ASU to have a material impact on the Company’s financial position, results of operations, or cash flows

In January 2017, the FASB issued ASU No. 2017-01, “Business Combinations (Topic 805) – Clarifying the Definition of a Business.” ASU 2017-01 clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The definition of a business affects many areas of accounting including acquisition, disposals, goodwill and consolidation. This standard is effective for fiscal years beginning after December 15, 2017, including interim periods within that reporting period and is effective for the Company January 1, 2018. The Company does not expect the adoption of this ASU to have a material impact on the Company’s financial position, results of operations, or cash flows.

In May 2017, the FASB issued ASU 2017-09, “Compensation – Stock Compensation (Topic 718): Scope of Modification Accounting.” This ASU provides guidance about which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting in Topic 718. ASU 2017-09 is effective for fiscal years beginning after December 15, 2017 and interim periods within those fiscal years, and early adoption is permitted, including in an interim period. ASU 2017-09 is to be applied on a prospective basis to an award modified on or after the adoption date. This ASU is effective January 1, 2018 for the Company. The Company does not expect the adoption of this ASU to have a material impact on the Company’s financial position, results of operations, or cash flows.

In July 2017, the FASB issued ASU 2017-11, “Earnings Per Share (Topic 260); Distinguishing Liabilities from Equity (Topic 480); Derivatives and Hedging (Topic 815): (Part I) Accounting for Certain Financial Instruments with Down Round Features, (Part II) Replacement of the Indefinite Deferral for Mandatorily Redeemable Financial Instruments of Certain Nonpublic Entities and Certain Mandatorily Redeemable Noncontrolling Interests with a Scope Exception.” Part I of this update addresses the complexity of accounting for certain financial instruments with down round features. Down round features are features of certain equity-linked instruments (or embedded features) that result in the strike price being reduced on the basis of the pricing of future equity offerings. When determining whether certain financial instruments should be classified as liabilities or equity instruments, a down round feature no longer precludes equity classification when assessing whether the instrument is indexed to an entity’s own stock. Part II of this update addresses the difficulty of navigating Topic 480, Distinguishing Liabilities from Equity, because of the existence of extensive pending content in the FASB Accounting Standards Codification and does not have an accounting effect. This ASU is effective for fiscal years, and interim periods within those years, beginning after December 15, 2018. Early adoption is permitted. This ASU is effective for the Company January 1, 2019. The Company is currently assessing the impact that this standard will have on its financial statements.

In February 2018, FASB issued ASU 2018-02, “Income Statement—Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income”. This ASU allows for the reclassification of certain income tax effects related to the Tax Cuts and Jobs Act between “Accumulated other comprehensive income” and “Retained earnings.” This ASU relates to the requirement that adjustments to deferred tax liabilities and assets related to a change in tax laws or rates to be included in “Income from continuing operations”, even in situations where the related items were originally recognized in “Other comprehensive income” (rather than in “Income from continuing operations”). ASU 2018-02 is effective for all entities for fiscal years beginning after December 15, 2018, and interim periods within those fiscal years, with early adoption permitted. Adoption of this ASU is to be applied either in the period of adoption or retrospectively to each period in which the effect of the change in the tax laws or rates were recognized. The Company is currently assessing the impact that this standard will have on its financial statements.

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### **NOTE 3**

#### **M&EC FACILITY**

During the second quarter of 2016, the Company’s M&EC subsidiary was notified by the lessor that the lease agreement under which M&EC operates its Oak Ridge, Tennessee facility would not be renewed at the end of the lease term ending January 21, 2018. In light of this event and our strategic review of operations within our Treatment Segment, the Company instituted a plan to close its M&EC facility located in Oak Ridge, Tennessee at the end of the lease term which has been extended to June 30, 2018. Operations at the M&EC facility are limited during the remaining term of the lease and the facility continues to transition waste shipments and operational capabilities to our other Treatment Segment facilities, subject to customer requirements and regulatory approvals. Simultaneously, the Company continues with closure and decommissioning activities in accordance with M&EC’s license and permit requirements. As a result of the Company’s decision to close its M&EC facility, the Company’s financial results have been impacted by certain non-cash impairment losses, write-offs and accruals as described below for years ended December 31, 2017 and 2016.

The Company performed a discounted cash flow analysis prepared at June 30, 2016 for M&EC's intangible assets (permits), utilizing our best estimates of projected future cash flows. Based on this analysis, the Company concluded that impairment existed and subsequently determined that the permit for our M&EC subsidiary was fully impaired resulting in an intangible impairment loss of approximately \$8,288,000.

M&EC is required to complete certain clean-up/maintenance activities at its facility pursuant to its permit requirements. The extent and cost of these activities are determined by federal/state mandate requirements. The Company performed an analysis and related estimate of the cost to complete the closure activities in accordance with its permit requirements during the second quarter of 2016 and based on this analysis, the Company recorded an additional \$1,626,000 in closure liabilities with a corresponding increase to capitalized ARO costs, which were being depreciated over the remaining term of the lease. The capitalized ARO costs were reported as a component of "Net Property and equipment" in the Consolidated Balance Sheets.

In accordance with ASC 360, "Property, Plant, and Equipment," the Company performed an updated financial valuation of M&EC's long-lived tangible assets during the second quarter of 2016, inclusive of the capitalized ARO costs, for potential impairment. Based on our analysis using an undiscounted cash flows approach, the Company concluded that the carrying value of certain tangible assets (property and equipment) for M&EC was not recoverable and exceeded its fair value. Consequently, the Company recorded \$1,816,000 in tangible asset impairment loss in the second quarter of 2016. The Company also reevaluated the estimated useful lives of the remaining tangible assets and as a result of this analysis, reduced the current estimated useful lives of these assets ranging from 2 to 28 years at June 30, 2016 to 1.6 years, the remaining term of the lease. Accordingly, the Company was depreciating the carrying value of M&EC's remaining tangible assets of approximately \$4,728,000 at June 30, 2016 over a period of approximately 1.6 years, which was to the original lease expiration date of January 21, 2018.

In the second quarter of 2016, the Company also wrote-off approximately \$587,000 in fees previously incurred relating to emission performance testing certification requirement in order to meet state compliance mandate in connection with certain M&EC equipment which was impaired. Such amount had been previously included in "Prepaid and other assets" on the Consolidated Balance Sheets.

During the third quarter of 2017, the Company performed an updated financial valuation of M&EC's remaining long-lived tangible assets (inclusive of ARO costs) for further potential impairment. Based on our analysis using an undiscounted cash flow approach, the Company concluded that the carrying value of the remaining tangible assets for M&EC was not recoverable and exceeded its fair value. Consequently, the Company fully impaired the remaining tangible assets at M&EC resulting in a tangible asset impairment loss of \$672,000. Additionally, during the third and fourth quarters of 2017, the Company recorded an additional \$550,000 and \$850,000, respectively, in closure costs and current closure costs liabilities due to change in estimated closure costs.

During the years ended December 31, 2017 and 2016, M&EC's revenues were approximately \$6,312,000 and \$4,419,000, respectively.

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**NOTE 4****PERMIT AND OTHER INTANGIBLE ASSETS**

The following table summarizes changes in the carrying amount of permits. No permit exists at our Services and Medical Segments.

Permit (amount in thousands)	Treatment
Balance as of December 31, 2015	\$ 16,761
PCB permit amortized <sup>(1)</sup>	(55)
Permit in progress	56
Permit impairment for M&EC subsidiary	(8,288)
Balance as of December 31, 2016	8,474
PCB permit amortized <sup>(1)</sup>	(55)
Balance as of December 31, 2017	\$ 8,419

<sup>(1)</sup> Amortization for the one definite-lived permit capitalized in 2009. This permit is being amortized over a ten year period in accordance with its estimated useful life. Net carrying value of this permit was approximately \$62,000 and \$117,000 as of December 31, 2017 and 2016, respectively.

The following table summarizes information relating to the Company's definite-lived intangible assets:

Intangibles (amount in thousands)	Useful Lives (Years)	December 31, 2017			December 31, 2016		
		Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Patent	1-17	\$ 657	\$ (306)	\$ 351	\$ 577	\$ (274)	\$ 303
Software	3	410	(398)	12	405	(383)	22
Customer relationships	12	3,370	(2,246)	1,124	3,370	(1,974)	1,396
Permit	10	545	(483)	62	545	(428)	117
Total		\$ 4,982	\$ (3,433)	\$ 1,549	\$ 4,897	\$ (3,059)	\$ 1,838

The intangible assets are amortized on a straight-line basis over their useful lives with the exception of customer relationships which are being amortized using an accelerated method.

The following table summarizes the expected amortization over the next five years for our definite-lived intangible assets:

Year	Amount (In thousands)
2018	\$ 336
2019	254
2020	218
2021	198
2022	173
	\$ 1,179

Amortization expense recorded for definite-lived intangible assets was approximately \$374,000 and \$448,000, for the years ended December 31, 2017 and 2016, respectively.

**CAPITAL STOCK, STOCK PLANS, WARRANTS, AND STOCK BASED COMPENSATION****Stock Option Plans**

The Company adopted the 2003 Outside Directors Stock Plan (the “2003 Plan”), which was approved by our stockholders at the Annual Meeting of Stockholders on July 29, 2003. Options granted under the 2003 Plan generally have a vesting period of six months from the date of grant and a term of 10 years, with an exercise price equal to the closing trade price on the date prior to grant date. The 2003 Plan also provides for the issuance to each outside director a number of shares of the Company’s Common Stock in lieu of 65% or 100% (based on option elected by each director) of the fee payable to the eligible director for services rendered as a member of the Board of Directors (“Board”). The number of shares issued is determined at 75% of the market value as defined in the plan. The 2003 Plan, as amended, also provides for the grant of an option to purchase up to 6,000 shares of Common Stock for each outside director upon initial election to the Board, and the grant of an option to purchase 2,400 shares of Common Stock upon each re-election. At the Annual Meeting of Stockholders held on July 27, 2017 (“2017 Annual Meeting”), the Company’s stockholders approved an amendment to the 2003 Plan which authorized the issuance of an additional 300,000 shares of the Company’s Common Stock under the plan. After the approval of the amendment, the number of shares of the Company’s Common Stock authorized under the 2003 Plan was 1,100,000. At December 31, 2017, the 2003 Plan had available for issuance approximately 391,215 shares.

On April 28, 2010, the Company adopted the 2010 Stock Option Plan (“2010 Plan”), which was approved by our stockholders at the Company’s Annual Meeting of Stockholders on September 29, 2010. The 2010 Plan authorized an aggregate grant of 200,000 Non-Qualified Stock Options (“NQSOs”) and Incentive Stock Options (“ISOs”) to officers and employees of the Company for the purchase of up to 200,000 shares of the Company’s Common Stock. The term of each stock option granted is to be fixed by the Compensation and Stock Option Committee (the “Compensation Committee”), but no stock option is exercisable more than ten years after the grant date, or in the case of an incentive stock option granted to a 10% stockholder, five years after the grant date. The exercise price of any ISO granted under the 2010 Plan to an individual who is not a 10% stockholder at the time of the grant is not to be less than the fair market value of the shares at the time of the grant, and the exercise price of any incentive stock option granted to a 10% stockholder is not to be less than 110% of the fair market value at the time of grant. The exercise price of any NQSOs granted under the plan is not to be less than the fair market value of the shares at the time of grant. As discussed below, as the result of the approval of the 2017 Stock Option Plan (“2017 Plan”) at the Company’s 2017 Annual Meeting, no further options remain available for issuance under the 2010 Plan immediately upon the approval of the 2017 Plan; however, the 2010 Plan remains in full force and effect with respect to the outstanding options issued and unexercised at the date of the approval of the 2017 Plan which consisted of an option for the purchase of up to 10,000 shares of our common stock with expiration date of July 10, 2020 and an option for the purchase of up to 50,000 shares of the Company’s Common Stock with expiration date of May 15, 2022.

The Company adopted the 2017 Plan, which was approved by the Company’s stockholders at the Company’s 2017 Annual Meeting. The 2017 Plan authorizes the grant of options to officers and employees of the Company, including any employee who is also a member of the Board, as well as to consultants of the Company. The 2017 Plan authorizes an aggregate grant of 540,000 NQSOs and ISOs, which includes a rollover of 140,000 shares remaining available for issuance under the 2010 Plan as discussed above. Consultants of the Company can only be granted NQSOs. The term of each stock option granted under the 2017 Plan shall be fixed by the Compensation Committee, but no stock options will be exercisable more than ten years after the grant date, or in the case of an ISO granted to a 10% stockholder, five years after the grant date. The exercise price of any ISO granted under the 2017 Plan to an individual who is not a 10% stockholder at the time of the grant shall not be less than the fair market value of the shares at the time of the grant, and the exercise price of any incentive stock option granted to a 10% stockholder shall not be less than 110% of the fair market value at the time of grant. The exercise price of any NQSOs granted under the plan shall not be less than the fair market value of the shares at the time of grant.

**Stock Options to Employees and Outside Director**

On January 13, 2017, the Company granted 6,000 NQSOs from the Company’s 2003 Plan to a new director elected by the Company’s Board to fill the vacancy left by Jack Lahav who retired from the Board in October 2016. The options granted were for a contractual term of ten years with a vesting period of six months. The exercise price of the NQSO was \$3.79 per share, which was equal to our closing stock price the day preceding the grant date, pursuant to the 2003 Plan.

On July 27, 2017, the Company granted 12,000 NQSOs from the Company’s 2003 Plan to five of the six re-elected directors at the 2017 Annual Meeting. Dr. Louis F. Centofanti, who is a member of the Board, is not eligible to receive options under the 2003 Plan since he is also an employee of the Company, pursuant to the 2003 Plan. The NQSOs granted to the five directors were for a contractual term of ten years with a vesting period of six months. The exercise price of the NQSO was \$3.55 per share, which was equal to our closing stock price the day preceding the grant date, pursuant to the 2003 Plan.

On July 27, 2017, the Company granted ISOs from the 2017 Plan (following the approval of the 2017 Plan as discussed above) to the named executive officers as follows: ISOs to exercise 50,000 shares to the Chief Executive Officer (“CEO”) (Dr. Louis Centofanti); ISOs to exercise 100,000 shares to the Executive Vice President (“EVP”)/Chief Operating Officer (“COO”) (Mark Duff); and ISOs to exercise 50,000 shares to the Chief Financial Officer (“CFO”) (Ben Naccarato). Effective September 8, 2017, Mark Duff succeeded Dr. Louis Centofanti as the CEO with Dr. Louis Centofanti serving as EVP of Strategic Initiatives and continuing to serve as a member of the Board (see “Note 15 – Related Party Transaction for further detail of this transition”). The share covered by each ISO granted has a contractual term of six years with one-fifth yearly vesting over a five year period. The exercise price of each share covered by the ISO was \$3.65 per share, which was equal to the fair market value of the Company’s Common Stock on the date of grant. At December 31, 2017, the 2017 Plan had an additional 130,000 shares of the Company’s Common Stock available for the granting of additional options.

On October 19, 2017, the Company granted an aggregate of 110,000 ISOs from the 2017 Plan to certain employees. The ISOs granted were for a contractual term of six years with one-fifth yearly vesting over a five year period. The exercise price of the ISO was \$3.60 per share, which was equal to the fair market value of the Company’s common stock on the date of grant.

On May 15, 2016, the Company granted 50,000 ISOs from the Company’s 2010 Plan to Mark Duff. The ISOs granted were for a contractual term of six years with one-third yearly vesting over a three year period. The exercise price of the ISO was \$3.97 per share, which was equal to the fair market value of the Company’s Common Stock on the date of grant.

On July 28, 2016, the Company granted an aggregate of 12,000 NQSOs from the 2003 Plan to five of the seven re-elected directors at our Annual Meeting of Stockholders held on July 28, 2016. Two of the directors were not eligible to receive options under the 2003 Stock Plan as they were employees of the Company or its subsidiaries. The NQSOs granted were for a contractual term of ten years with a vesting period of six months. The exercise price of the NQSOs was \$4.60 per share, which was equal to the Company’s closing stock price the day preceding the grant date, pursuant to the 2003 Plan.

No employees or directors exercised options during 2017 and 2016.

The Company estimates the fair value of stock options using the Black-Scholes valuation model. Assumptions used to estimate the fair value of stock options granted include the exercise price of the award, the expected term, the expected volatility of the Company’s stock over the option’s expected term, the risk-free interest rate over the option’s expected term, and the expected annual dividend yield. The fair value of the options granted during 2017 and 2016 and the related assumptions used in the Black-Scholes option model used to value the options granted were as follows:

	Employee Stock Option Granted		
	October 19, 2017	July 27, 2017	May 15, 2016
Weighted-average fair value per share	\$ 1.75	1.88	\$ 2.00
Risk -free interest rate <sup>(1)</sup>	1.98%	1.98%	1.27%
Expected volatility of stock <sup>(2)</sup>	54.64%	53.15%	53.12%
Dividend yield	None	None	None
Expected option life <sup>(3)</sup>	5.0 years	6.0 years	6.0 years

  

	Outside Director Stock Options Granted		
	July 27, 2017	January 13, 2017	July 28, 2016
Weighted-average fair value per share	\$ 2.48	\$ 2.63	\$ 3.00
Risk -free interest rate <sup>(1)</sup>	2.32%	2.40%	1.52%
Expected volatility of stock <sup>(2)</sup>	57.21%	56.32%	55.99%
Dividend yield	None	None	None
Expected option life <sup>(3)</sup>	10.0 years	10.0 years	10.0 years

<sup>(1)</sup> The risk-free interest rate is based on the U.S. Treasury yield in effect at the grant date over the expected term of the option.

<sup>(2)</sup> The expected volatility is based on historical volatility from our traded Common Stock over the expected term of the option.

<sup>(3)</sup> The expected option life is based on historical exercises and post-vesting data.

The following table summarizes stock-based compensation recognized for fiscal years 2017 and 2016.

	Year Ended	
	2017	2016
Employee Stock Options	\$ 78,000	\$ 53,000
Director Stock Options	46,000	45,000
Total	\$ 124,000	\$ 98,000

At December 31, 2017, the Company has approximately \$578,000 of total unrecognized compensation cost related to unvested employee and director options, of which \$151,000 is expected to be recognized in 2018, \$126,000 in 2019, \$114,000 in 2020, \$114,000 in 2021, with the remaining \$73,000 in 2022.

### Stock Options to Consultant

Robert Ferguson is a consultant to the Board and a consultant to the Company in connection with the Company's Test Bed Initiative ("TBI") at its PFNWR facility (see "Note 15 – Related Party Transactions" for further discussion). For Robert Ferguson's consulting work with the Board, he has been receiving monthly compensation of \$4,000. For Robert Ferguson's consulting work in connection with the Company's TBI, on July 27, 2017 ("grant date"), the Company granted Robert Ferguson a stock option from the Company's 2017 Plan for the purchase of up to 100,000 shares of the Company's Common Stock at an exercise price of \$3.65 a share, which was the fair market value of the Company's Common Stock on the date of grant ("Ferguson Stock Option"). The vesting of the Ferguson Stock Option is subject to the achievement of the following milestones ("waste" as noted below is defined as liquid LAW ("low activity waste") and/or liquid TRU ("transuranic waste")):

- Upon treatment and disposal of three gallons of waste at the PFNWR facility by January 27, 2018, 10,000 shares of the Ferguson Stock Option shall become exercisable;
- Upon treatment and disposal of 2,000 gallons of waste at the PFNWR facility by January 27, 2019, 30,000 shares of the Ferguson Stock Option shall become exercisable; and
- Upon treatment and disposal of 50,000 gallons of waste at the PFNWR facility and assistance, on terms satisfactory to the Company, in preparing certain justifications of cost and pricing data for the waste and obtaining a long-term commercial contract relating to the treatment, storage and disposal of waste by January 27, 2021, 60,000 shares of the Ferguson Stock Option shall become exercisable.

The term of the Ferguson Stock Option is seven (7) years from the grant date. Each of the milestones is exclusive of each other; therefore, achievement of any of the milestones above by Robert Ferguson by the designated date will provide Robert Ferguson the right to exercise the number of options in accordance with the milestone attained.

The Company has recorded approximately \$20,000 in consulting expenses (included in selling, general and administrative expenses ("SG&A")) and additional paid-in capital in connection with this transaction which amount was estimated to be the fair value of the 10,000 options on the performance completion date of December 19, 2017 under the first milestone. The fair value of the 10,000 options was estimated using the Black-Scholes valuation model with the following assumptions: 52.65% volatility, risk free interest rate of 2.30%, and an expected life of approximately 6.6 years and no dividends.

## Summary of Stock Option Plans

The summary of the Company's total plans as of December 31, 2017 and 2016, and changes during the period then ended are presented as follows:

	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value <sup>(3)</sup>
Options outstanding January 1, 2017	247,200	\$ 6.69		
Granted	428,000	3.64		
Exercised	—	—		
Forfeited/expired	(50,400)	8.95		
Options outstanding end of period <sup>(1)</sup>	<u>624,800</u>	4.42	5.5	\$ 19,780
Options exercisable at December 31, 2017 <sup>(1)</sup>	<u>179,467</u>	6.30	4.6	\$ 13,080
Options vested and expected to be vested at December 31, 2017	<u>624,800</u>	\$ 4.42	5.5	\$ 19,780

	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value <sup>(3)</sup>
Options outstanding January 1, 2016	218,200	\$ 7.65		
Granted	62,000	4.09		
Exercised	—	—		
Forfeited/expired	(33,000)	8.14		
Options outstanding end of period <sup>(2)</sup>	<u>247,200</u>	6.69	4.3	\$ 20,940
Options exercisable at December 31, 2016 <sup>(2)</sup>	<u>181,867</u>	7.61	3.7	\$ 20,940
Options vested and expected to be vested at December 31, 2016	<u>239,750</u>	\$ 6.78	4.3	\$ 20,940

<sup>(1)</sup> Options with exercise prices ranging from \$2.79 to \$13.35

<sup>(2)</sup> Options with exercise prices ranging from \$2.79 to \$14.75

<sup>(3)</sup> The intrinsic value of a stock option is the amount by which the market value of the underlying stock exceeds the exercise price of the option.

The summary of the Company's nonvested options as of December 31, 2017 and changes during the period then ended are presented as follows:

	Shares	Weighted Average Grant-Date Fair Value
Non-vested options January 1, 2017	65,333	\$ 2.23
Granted	428,000	1.89
Vested	(48,000)	2.32
Forfeited	—	—
Non-vested options at December 31, 2017	<u>445,333</u>	\$ 1.89

## Common Stock Issued for Services

The Company issued a total of 61,598 and 55,793 shares of our Common Stock in 2017 and 2016, respectively, under our 2003 Plan to our outside directors as compensation for serving on our Board. As a member of the Board, each director elects to receive either 65% or 100% of the director's fee in shares of our Common Stock. The number of shares received is calculated based on 75% of the fair market value of our Common Stock determined on the business day immediately preceding the date that the quarterly fee is due. The balance of each director's fee, if any, is payable in cash. The Company recorded approximately \$234,000 and \$233,000 in compensation expense (included in SG&A) for the twelve months ended December 31, 2017 and 2016, respectively, for the portion of director fees earned in the Company's Common Stock.

### **Preferred Share Rights Plan**

In May 2008, the Company adopted a preferred share rights plan (the “Rights Plan”), designed to ensure that all of our stockholders receive fair and equal treatment in the event of a proposed takeover or abusive tender offer.

In general, under the terms of the Rights Plan, subject to certain limited exceptions, if a person or group acquires 20% or more of our Common Stock or a tender offer or exchange offer for 20% or more of our Common Stock is announced or commenced, our other stockholders may receive upon exercise of the rights (the “Rights”) issued under the Rights Plan the number of shares of our Common Stock or of one-one hundredths of a share of our Series A Junior Participating Preferred Stock, par value \$.001 per share, having a value equal to two times the purchase price of the Right. In addition, if the Company is acquired in a merger or other business combination transaction in which we are not the survivor or more than 50% of our assets or earning power is sold or transferred, then each holder of a Right (other than the acquirer) will thereafter have the right to receive, upon exercise, common stock of the acquiring company having a value equal to two times the purchase price of the Right. The initial purchase price of each Right was \$13.00, subject to adjustment as defined in the plan.

The Rights will cause substantial dilution to a person or group that attempts to acquire us on terms not approved by our board of directors. The Rights may be redeemed by us at \$0.001 per Right at any time before any person or group acquires 20% or more of our outstanding Common Stock. The Rights Plan terminates on May 2, 2018.

### **Warrants and Common Stock Issuance for Debt**

As December 31, 2017, the Company has no Warrant outstanding. On August 2, 2016, the Company issued an aggregate of 70,000 shares of the Company’s Common Stock resulting from the exercise of two Warrants, at an exercise price of \$2.23 per share, issued to two lenders in connection with a \$3,000,000 loan dated August 2, 2013 received by the Company (See Note 9 – “Long-Term Debt – Promissory Note” for further information on the exercise of the Warrants and the loan).

### **Shares Reserved**

At December 31, 2017, the Company has reserved approximately 624,800 shares of our Common Stock for future issuance under all of the option arrangements.

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**NOTE 6****INCOME (LOSS) PER SHARE**

The following table reconciles the income (loss) and average share amounts used to compute both basic and diluted income (loss) per share:

(Amounts in Thousands, Except for Per Share Amounts)	Years Ended December 31,	
	2017	2016
Net loss attributable to Perma-Fix Environmental Services, Inc., common stockholders:		
Loss from continuing operations attributable to Perma-Fix Environmental Services, Inc. common stockholders	\$ (3,088)	\$ (12,675)
Loss from discontinuing operations attributable to Perma-Fix Environmental Services, Inc. common stockholders	(592)	(730)
Net loss attributable to Perma-Fix Environmental Services, Inc. common stockholders	<u>\$ (3,680)</u>	<u>\$ (13,405)</u>
Basic loss per share attributable to Perma-Fix Environmental Services, Inc. common stockholders	<u>\$ (.31)</u>	<u>\$ (1.15)</u>
Diluted loss per share attributable to Perma-Fix Environmental Services, Inc. common stockholders	<u>\$ (.31)</u>	<u>\$ (1.15)</u>
Weighted average shares outstanding:		
Basic weighted average shares outstanding	11,706	11,608
Add: dilutive effect of stock options	—	—
Add: dilutive effect of warrants	—	—
Diluted weighted average shares outstanding	<u>11,706</u>	<u>11,608</u>
Potential shares excluded from above weighted average share calculations due to their anti-dilutive effect include:		
Stock options	595	150

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**NOTE 7****PREFERRED STOCK ISSUANCE AND CONVERSION****Series B Preferred Stock**

The Series B Preferred Stock of the Company's consolidated subsidiary, M&EC, is non-voting and non-convertible, has a \$1.00 liquidation preference per share and may be redeemed at the option of the former stockholders of M&EC at any time for the per share price of \$1.00. The holders of the Series B Preferred Stock will be entitled to receive when, as, and if declared by the Board of M&EC out of legally available funds, dividends at the rate of 5% per year per share applied to the amount of \$1.00 per share, which dividends are fully cumulative. M&EC has failed to pay dividends on its Series B Preferred Stock since the Series B Preferred Stock was issued. Since the dividends on M&EC's Series B Preferred Stock are cumulative, M&EC has been accruing dividends for the Series B Preferred Stock issued July 2002, and have accrued a total of approximately \$995,000 of unpaid cumulative dividends since July 2002, of which \$64,000 was accrued in each of the years ended December 31, 2003 to 2017 and is included in other long term liabilities in the accompanying Consolidated Balance Sheets.

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**NOTE 8****DISCONTINUED OPERATIONS**

The Company's discontinued operations consist of all our subsidiaries included in our Industrial Segment: (1) subsidiaries divested in 2011 and prior, (2) two previously closed locations, and (3) our PFSG facility, which is currently in the process of undergoing closure, subject to regulatory approval of necessary plans and permits.

The following table presents the major class of assets of discontinued operations at December 31, 2017 and 2016. The Company's discontinued operations include a note receivable in the amount of approximately \$375,000 recorded in May 2016 resulting from the sale of property at our Perma-Fix of Michigan, Inc. ("PFMI" – a closed location) subsidiary. This note requires 60 equal monthly installment payments by the buyer of approximately \$7,250 (which includes interest). At December 31, 2017, receivables related to this transaction totaled approximately \$268,000, of which approximately \$73,000 is included in "Current assets related to discontinued operations" and approximately \$195,000 is included in "Other assets related to discontinued operations" in the accompanying Consolidated Balance Sheets. No assets and liabilities were held for sale at December 31, 2017 and 2016.

(Amounts in Thousands)	December 31, 2017	December 31, 2016
<b>Current assets</b>		
Other assets	\$ 89	\$ 85
Total current assets	89	85
<b>Long-term assets</b>		
Property, plant and equipment, net <sup>(1)</sup>	81	81
Other assets	195	268
Total long-term assets	276	349
<b>Total assets</b>	<u>\$ 365</u>	<u>\$ 434</u>
<b>Current liabilities</b>		
Accounts payable	\$ 8	\$ 13
Accrued expenses and other liabilities	265	268
Environmental liabilities	632	677
Total current liabilities	905	958
<b>Long-term liabilities</b>		
Closure liabilities	120	113
Environmental liabilities	239	248
Total long-term liabilities	359	361
<b>Total liabilities</b>	<u>\$ 1,264</u>	<u>\$ 1,319</u>

(1) net of accumulated depreciation of \$10,000 for each period presented.

The Company incurred losses from discontinued operations of \$592,000 and \$730,000 for the years ended December 31, 2017 and 2016 (net of taxes of \$0 for each period), respectively. Losses for the periods discussed above were primarily due to costs incurred in the administration and continued monitoring of our discontinued operations.

#### Environmental Liabilities

The Company has three remediation projects, which are currently in progress at our Perma-Fix of Dayton, Inc. (“PFD”), Perma-Fix of Memphis, Inc. (“PFM” – closed location), and PFSG (in closure status) subsidiaries. The Company divested PFD in 2008; however, the environmental liability of PFD was retained by the Company upon the divestiture of PFD. These remediation projects principally entail the removal/remediation of contaminated soil and, in most cases, the remediation of surrounding ground water. The remediation activities are closely reviewed and monitored by the applicable state regulators.

At December 31, 2017, we had total accrued environmental remediation liabilities of \$871,000, of which \$632,000 are recorded as a current liability, a decrease of \$54,000 from the December 31, 2016 balance of \$925,000. The net decrease of \$54,000 represents payments on remediation projects at PFSG and PFD totaling approximately of \$79,000 and an increase to the reserve of approximately \$25,000 at PFD due to reassessment of the remediation reserve.

The current and long-term accrued environmental liability at December 31, 2017 is summarized as follows (in thousands).

	Current Accrual	Long-term Accrual	Total
PFD	\$ 25	\$ 60	\$ 85
PFM	—	15	15
PFSG	607	164	771
Total liability	<u>\$ 632</u>	<u>\$ 239</u>	<u>\$ 871</u>

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**NOTE 9****LONG-TERM DEBT**

Long-term debt consists of the following at December 31, 2017 and December 31, 2016:

(Amounts in Thousands)	December 31, 2017	December 31, 2016
<b>Revolving Credit</b> facility dated October 31, 2011, as amended, borrowings based upon eligible accounts receivable, subject to monthly borrowing base calculation, balance due March 24, 2021. Effective interest rate for 2017 and 2016 was 4.1% and 3.9%, respectively. <sup>(1) (2)</sup>	\$ —	\$ 3,803
<b>Term Loan</b> dated October 31, 2011, as amended, payable in equal monthly installments of principal of \$102, balance due on March 24, 2021. Effective interest rate for 2017 and 2016 was 4.6% and 3.8%, respectively. <sup>(1) (2)</sup>	3,847 <sup>(3)</sup>	5,030 <sup>(3)</sup>
Total debt	3,847	8,833
Less current portion of long-term debt	1,184	1,184
Long-term debt	<u>\$ 2,663</u>	<u>\$ 7,649</u>

(1) Our revolving credit facility is collateralized by our accounts receivable and our term loan is collateralized by our property, plant, and equipment.

(2) See below “Revolving Credit and Term Loan Agreement” for monthly payment interest options. Prior to April 1, 2016, the monthly installment payment under the term loan was approximately \$190,000.

(3) Net of debt issuance costs of (\$115,000) and (\$151,000) at December 31, 2017 and December 31, 2016, respectively.

**Revolving Credit and Term Loan Agreement**

The Company entered into an Amended and Restated Revolving Credit, Term Loan and Security Agreement, dated October 31, 2011 (“Amended Loan Agreement”), with PNC National Association (“PNC”), acting as agent and lender. The Amended Loan Agreement has been amended from time to time since the execution of the Amended Loan Agreement. The Amended Loan Agreement, as subsequently amended (“Revised Loan Agreement”), provides the Company with the following credit facility with a maturity date of March 24, 2021: (a) up to \$12,000,000 revolving credit (“revolving credit”) and (b) a term loan (“term loan”) of approximately \$6,100,000, which requires monthly installments of approximately \$101,600 (based on a seven-year amortization). The maximum that we can borrow under the revolving credit is based on a percentage of eligible receivables (as defined) at any one time reduced by outstanding standby letters of credit and borrowing reductions that our lender may impose from time to time.

Under the Revised Loan Agreement, we have the option of paying an annual rate of interest due on the revolving credit at prime plus 2% or London Inter Bank Offer Rate (“LIBOR”) plus 3% and the term loan at prime plus 2.5% or LIBOR plus 3.5%.

Pursuant to the Revised Loan Agreement, the Company may terminate the Revised Loan Agreement, upon 90 days’ prior written notice upon payment in full of its obligations under the Revised Loan Agreement. The Company agreed to pay PNC 1.0% of the total financing in the event the Company had paid off its obligations on or before March 23, 2017, .50% of the total financing if the Company pays off its obligations after March 23, 2017 but prior to or on March 23, 2018, and .25% of the total financing if the Company pays off its obligations after March 23, 2018 but prior to or on March 23, 2019. No early termination fee shall apply if the Company pays off its obligations after March 23, 2019.

At December 31, 2017, the borrowing availability under our revolving credit was approximately \$3,687,000, based on our eligible receivables and includes an indefinite reduction of borrowing availability of \$2,000,000 that the Company’s lender has imposed. The \$2,000,000 in borrowing availability reduction included a \$750,000 additional reduction imposed by the Company’s lender upon the receipt by the Company in May 2017 of \$5,941,000 in finite risk funds in connection with the cancellation the closure policy for the Company’s PFNWR subsidiary (see “Note 13 – Commitments and Contingencies – Insurance” for further discussion of the closure policy). Our borrowing availability under our revolving credit was also reduced by outstanding standby letters of credit totaling approximately \$2,675,000.

In connection with one of the amendments that the Company entered into with PNC during 2016 extending the maturity date of the credit facility, the Company recorded approximately \$68,000 in loss on extinguishment of debt in accordance with ASC 470-50, "Debt – Modifications and Extinguishments," which was included in interest expense in the accompanying Consolidated Statements of Operations for fiscal year 2016. Additionally, the Company paid its lenders closing fees totaling approximately \$122,000 in connection with the amendments executed in 2016 which is being amortized over the remaining term of the loan as interest expense-financing fees.

The Company's credit facility with PNC contains certain financial covenants, along with customary representations and warranties. A breach of any of these financial covenants, unless waived by PNC, could result in a default under our credit facility allowing our lender to immediately require the repayment of all outstanding debt under our credit facility and terminate all commitments to extend further credit. The Company met all of its quarterly financial covenant requirements in 2017 and expects to meet these financial covenant requirements in 2018 and into the first quarter of 2019.

#### Promissory Note

The Company entered into a \$3,000,000 loan dated August 2, 2013 with Robert Ferguson and William Lampson (each known as the "Lender"). As consideration for the Company receiving the loan, the Company issued to each Lender a Warrant to purchase up to 35,000 shares of the Company's Common Stock at an exercise price of \$2.23 per share. On August 2, 2016, each Lender exercised his Warrant for the purchase of 35,000 shares of our Common Stock, resulting in total proceeds paid to the Company of approximately \$156,000. As further consideration for the loan, the Company had also issued to each Lender 45,000 shares of the Company's Common Stock. The fair value of the Warrants and Common Stock and the related closing fees incurred from this transaction were recorded as debt discount, which has been fully amortized using the effective interest method over the term of the loan as interest expense – financing fees. The loan was repaid in full by the Company in August 2016.

The following table details the amount of the maturities of long-term debt maturing in future years at December 31, 2017 (net of debt issuance costs of \$115,000).

Year ending December 31:  
(In thousands)

	2018	\$	1,184
	2019		1,184
	2020		1,184
	2021		295
	Total	\$	<u>3,847</u>

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#### NOTE 10

##### ACCRUED EXPENSES

Accrued expenses include the following (in thousands) at December 31:

	2017	2016
Salaries and employee benefits	\$ 2,988	\$ 2,695
Accrued sales, property and other tax	402	265
Interest payable	3	6
Insurance payable	630	675
Other	759	453
Total accrued expenses	<u>\$ 4,782</u>	<u>\$ 4,094</u>

Each of our executives has an individual Management Incentive Plan ("MIP") for fiscal year 2017 and 2016 which provides for the potential payment of performance compensation (see "Note 15 – Related Party Transactions – MIPs for further discussion of the MIPs). No performance compensation payments were earned under any of the MIPs for years 2017 and 2016.

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**NOTE 11****ACCRUED CLOSURE COSTS AND ARO**

Accrued closure costs represent our estimated environmental liability to clean up our fixed-based regulated facilities as required by our permits, in the event of closure. Changes to reported closure liabilities for the years ended December 31, 2017 and 2016, were as follows:

Amounts in thousands	
Balance as of December 31, 2015	\$ 5,301
Accretion expense	374
Payments	(693)
Adjustment to closure liability	2,333
Balance as of December 31, 2016	<u>7,315</u>
Accretion expense	460
Payments	(2,037)
Adjustment to closure liability	2,657
Balance as of December 31, 2017	<u>\$ 8,395</u>

As a result of the Company's decision to close our M&EC subsidiary, the Company recorded an additional \$1,400,000 and \$1,626,000 in closure liabilities in 2017 and 2016, respectively, due to changes in estimated closure costs (see "Note 3 – M&EC Facility" for further information of these additional closure liabilities recorded). The Company also recorded an additional \$1,257,000 in closure liabilities in 2017 for its DSSI subsidiary due to changes in estimated closure costs. Additionally, the Company increased the closure liabilities for its PFNWR subsidiary in the amount of approximately \$707,000 during 2016 resulting from a change in estimated closure costs.

In 2017, the Company had spending of approximately \$1,872,000 and \$165,000 in closure related activities for the M&EC and PFNWR subsidiaries, respectively. In 2016, the Company had spending of approximately \$283,000 and \$410,000 in closure related activities for the M&EC and PFNWR subsidiaries, respectively. The spending at our PFNWR facility for years 2017 and 2016 was made in connection with the closure of certain processing unit/equipment.

At December 31, 2017, M&EC's closure liabilities totaled approximately \$2,791,000 with the entire amount classified as current. At December 31, 2016, total accrued closure liabilities for our M&EC subsidiary totaled approximately \$3,058,000 of which \$2,177,000 were recorded as current liabilities.

The reported closure asset or ARO, is reported as a component of "Net Property and equipment" in the Consolidated Balance Sheet at December 31, 2017 and 2016 with the following activity for the years ended December 31, 2017 and 2016:

Amounts in thousands	
Balance as of December 31, 2015	\$ 2,575
Amortization of closure and post-closure asset	(760)
Adjustment to closure and post-closure asset	2,333
Balance as of December 31, 2016	<u>4,148</u>
Amortization of closure and post-closure asset	(1,071)
Impairment of closure and post-closure asset	(413)
Adjustment to closure and post-closure asset	1,257
Balance as of December 31, 2017	<u>\$ 3,921</u>

The impairment of ARO for 2017 resulted from the impairment of M&EC's remaining tangible assets recorded in the third quarter of 2017 (See "Note 3 – M&EC Facility"). The adjustment made to ARO for 2017 was due to the increase in closure liabilities recorded for the DSSI subsidiary as discussed above. The adjustments made to ARO for 2016 were due to the increases in closure liabilities recorded for the PFNWR and M&EC subsidiaries as discussed above.

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## NOTE 12

### INCOME TAXES

The components of current and deferred federal and state income tax (benefit) expense for continuing operations for the years ended December 31, consisted of the following (in thousands):

	2017	2016
Federal income tax (benefit) expense - current	\$ (780)	\$ 9
Federal income tax benefit - deferred	(778)	(2,657)
State income tax expense - current	163	59
State income tax expense (benefit) - deferred	110	(405)
Total income tax (benefit) expense	<u>\$ (1,285)</u>	<u>\$ (2,994)</u>

An overall reconciliation between the expected tax benefit using the federal statutory rate of 34% and the benefit for income taxes from continuing operations as reported in the accompanying Consolidated Statement of Operations is provided below (in thousands).

	2017	2016
Tax benefit at statutory rate	\$ (1,640)	\$ (5,527)
State tax benefit, net of federal benefit	(295)	(785)
Change in deferred tax rates	1,711	(82)
Impact of Tax Act	(1,695)	—
Permanent items	104	119
Difference in foreign rate	170	98
Change in deferred tax liabilities	881	(260)
Other	(135)	(241)
(Decrease) increase in valuation allowance	(386)	3,684
Income tax (benefit) expense	<u>\$ (1,285)</u>	<u>\$ (2,994)</u>

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the "Tax Act") was signed into law making significant changes to the Internal Revenue Code. Changes include, but are not limited to, a federal corporate tax rate decrease from 35% to 21% for tax years beginning after December 31, 2017, the transition of U.S international taxation from a worldwide tax system to a territorial system, the elimination of alternative minimum tax ("AMT") for corporations and a one-time transition tax on the mandatory deemed repatriation of foreign earnings. As of December 31, 2017, the Company has estimated its provision for income taxes in accordance with the Tax Act and guidance available resulting in the recognition of approximately \$1,695,000 of income tax benefit in the fourth quarter of 2017, the period in which the legislation was enacted. The tax benefit of \$1,695,000 consists of \$916,000 related to the re-measurement of deferred tax assets and liabilities, based on the rates at which they are expected to reverse in the future and \$779,000 related to the reversal of valuation allowance and refunding of AMT credit carryforwards.

While the Tax Act provides for a territorial tax system, beginning in 2018, it includes two new U.S. tax base erosion provisions, the global intangible low-taxed income (“GILTI”) provisions and the base-erosion and anti-abuse tax (“BEAT”) provisions.

The GILTI provisions require the Company to include in its U.S. income tax return foreign subsidiary earnings in excess of an allowable return on the foreign subsidiary’s tangible assets. The Company has elected to account for GILTI tax in the period in which it is incurred, and therefore has not provided any deferred tax impacts of GILTI in its consolidated financial statements for the year ended December 31, 2017.

The BEAT provisions in the Tax Act eliminates the deduction of certain base-erosion payments made to related foreign corporations, and imposes a minimum tax if greater than regular tax. The Company does not expect it will be subject to this tax and therefore has not included any tax impacts of BEAT in its consolidated financial statements for the year ended December 31, 2017.

The Tax Act imposes a one-time transition tax on previously untaxed earnings and profits of foreign subsidiaries. As of December 31, 2017, the Company has current and accumulated deficits in earnings and profits for all of its foreign subsidiaries. As such, the Company does not expect any exposure to the one-time transition tax.

The changes to existing U.S. tax laws as a result of the Tax Act, which the Company believes have the most significant impact on the Company’s federal income taxes are as follows:

*Reduction of the U.S. Corporate Income Tax Rate*

The Company measures deferred tax assets and liabilities using enacted tax rates that will apply in the years in which the temporary differences are expected to be recovered or paid. Accordingly, the Company’s deferred tax assets and liabilities were re-measured to reflect the reduction in the U.S. corporate income tax rate from 34% to 21%, resulting in a deferred tax benefit of \$916,000 for the year ended December 31, 2017 and a corresponding \$916,000 decrease in net deferred tax liabilities as of December 31, 2017. This benefit is attributable to the Company being in a net deferred tax liability position at the time of re-measurement.

*Repeal of Alternative Minimum Tax and Refund of existing AMT Credits*

The Tax Act fully repeals the corporate alternative minimum tax beginning in 2018. Additionally, any AMT credits generated in prior years will be refundable between 2018 and 2021. The Company had AMT credits in the amount of \$779,000 that it was carrying with a full valuation allowance. As a result of the Tax Act, the valuation allowance against these credits is reversed and the credits are reclassified from a deferred tax asset to current and long-term tax receivables.

The Company had temporary differences and net operating loss carry forwards from both our continuing and discontinued operations, which gave rise to deferred tax assets and liabilities at December 31, 2017 and 2016 as follows (in thousands):

	2017	2016
<b>Deferred tax assets:</b>		
Net operating losses	\$ 5,992	\$ 7,288
Environmental and closure reserves	2,158	3,189
Depreciation and amortization	907	—
Other	1,252	2,285
<b>Deferred tax liabilities:</b>		
Depreciation and amortization	—	(162)
Goodwill and indefinite lived intangible assets	(1,694)	(2,362)
Prepaid expenses	(50)	(72)
	8,565	10,166
Valuation allowance	(10,259)	(12,528)
Net deferred income tax liabilities	(1,694)	(2,362)

In 2017 and 2016, the Company concluded that it was more likely than not that \$10,259,000 and \$12,528,000 of our deferred income tax assets would not be realized, and as such, a full valuation allowance was applied against those deferred income tax assets.

The Company has estimated net operating loss carryforwards (“NOLs”) for federal and state income tax purposes of approximately \$10,099,000 and \$57,956,000, respectively, as of December 31, 2017. The estimated consolidated federal and state NOLs include approximately \$2,618,000 and \$3,769,000, respectively, of our majority-owned subsidiary, PF Medical, which is not part of our consolidated group for tax purposes. These net operating losses can be carried forward and applied against future taxable income, if any, and expire in various amounts starting in 2021. However, as a result of various stock offerings and certain acquisitions, which in the aggregate constitute a change in control, the use of these NOLs will be limited under the provisions of Section 382 of the Internal Revenue Code of 1986, as amended. Additionally, NOLs may be further limited under the provisions of Treasury Regulation 1.1502-21 regarding Separate Return Limitation Years.

The tax years 2014 through 2016 remain open to examination by taxing authorities in the jurisdictions in which the Company operates.

No uncertain tax positions were identified by the Company for the years currently open under statute of limitations, including 2017 and 2016.

The Company had no federal income tax payable for the years ended December 31, 2017 and 2016.

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## NOTE 13

### COMMITMENTS AND CONTINGENCIES

#### Hazardous Waste

In connection with our waste management services, we process both hazardous and non-hazardous waste, which we transport to our own, or other, facilities for destruction or disposal. As a result of disposing of hazardous substances, in the event any cleanup is required at the disposal site, we could be a potentially responsible party for the costs of the cleanup notwithstanding any absence of fault on our part.

#### Legal Matters

In the normal course of conducting our business, we are involved in various litigation. We are not a party to any litigation or governmental proceeding which our management believes could result in any judgments or fines against us that would have a material adverse effect on our financial position, liquidity or results of future operations.

## Insurance

The Company has a 25-year finite risk insurance policy entered into in June 2003 (“Master Closure Policy”) with AIG, which provides financial assurance to the applicable states for our permitted facilities in the event of unforeseen closure. The Master Closure Policy, as amended, provides for a maximum allowable coverage of \$39,000,000 and has available capacity to allow for annual inflation and other performance and surety bond requirements. All of the required payments for this Master Closure Policy, as amended, were made by 2012. At December 31, 2017, our financial assurance coverage amount under this Master Closure Policy totaled approximately \$29,473,000, which included a reduction in financial assurance requirement of approximately \$9,711,000 for our DSSI subsidiary made during the fourth quarter of 2016 resulting from a recalculation the state mandated closure requirement. The Company has recorded \$15,676,000 and \$15,546,000 in sinking fund related to this policy in other long term assets on the accompanying Consolidated Balance Sheets at December 31, 2017 and 2016, respectively, which includes interest earned of \$1,205,000 and \$1,075,000 on the sinking fund as of December 31, 2017 and 2016, respectively. Interest income for the years ended 2017 and 2016 was approximately \$130,000 and \$86,000, respectively. If the Company so elects, AIG is obligated to pay the Company an amount equal to 100% of the sinking fund account balance in return for complete release of liability from both us and any applicable regulatory agency using this policy as an instrument to comply with financial assurance requirements.

The Company also had a finite risk insurance policy dated August 2007 for our PFNWR facility with AIG (“PFNWR policy”) which provided financial assurance to the State of Washington in the event of closure of the PFNWR facility. The Company had recorded \$5,941,000 in finite risk sinking funds at December 31, 2016 in other long term assets on the accompanying Consolidated Balance Sheets which included interest earned of \$241,000 on the sinking fund. In April 2017, the Company received final releases from state and federal regulators for the PFNWR policy which enabled the Company to cancel the PFNWR policy resulting in the release of approximately \$5,951,000 on May 1, 2017 in finite sinking funds previously held by AIG as collateral for the PFNWR policy. The Company used the released finite sinking funds to pay off our revolving credit with the remaining funds used for general working capital needs. The Company has acquired new bonds in the required amount of approximately \$7,000,000 (“new bonds”) to replace the PFNWR policy in providing financial assurance for the PFNWR facility. Upon receipt of the \$5,951,000 in finite sinking funds from AIG, the Company and its lender executed a standby letter of credit in the amount of \$2,500,000 as collateral for the new bonds for the PFNWR facility. In addition, the Company’s lender imposed an additional \$750,000 restriction on the Company’s borrowing availability pursuant to a “Condition Subsequent” clause in an amendment that the Company entered into with its lender in the latter part of 2016. Interest income earned under the PFNWR policy for the years ended December 2017 and 2016 was approximately \$10,000 and \$21,000, respectively.

## Letter of Credits and Bonding Requirements

From time to time, the Company is required to post standby letters of credit and various bonds to support contractual obligations to customers and other obligations, including facility closures. At December 31, 2017, the total amount of standby letters of credit outstanding totaled approximately \$2,675,000 and the total amount of bonds outstanding totaled approximately \$8,305,000.

## Operating Leases

The Company leases certain facilities and equipment under non-cancelable operating leases. The following table lists future minimum rental payments at December 31, 2017 under these (in thousands):

Year ending December 31:	
2018	366
2019	141
2020	118
2021	20
Total	<u>\$ 645</u>

Total rent expense under these leases was \$754,000 and \$735,000 for the years ended 2017 and 2016, respectively.

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**NOTE 14****PROFIT SHARING PLAN**

The Company adopted a 401(k) Plan in 1992, which is intended to comply with Section 401 of the Internal Revenue Code and the provisions of the Employee Retirement Income Security Act of 1974. All full-time employees who have attained the age of 18 are eligible to participate in the 401(k) Plan. Eligibility is immediate upon employment but enrollment is only allowed during four quarterly open periods of January 1, April 1, July 1, and October 1. Participating employees may make annual pretax contributions to their accounts up to 100% of their compensation, up to a maximum amount as limited by law. The Company, at its discretion, may make matching contributions of 25% based on the employee's elective contributions. Company contributions vest over a period of five years. In 2017 and 2016, the Company contributed approximately \$326,000 and \$307,000 in 401(k) matching funds, respectively.

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**NOTE 15****RELATED PARTY TRANSACTIONS***David Centofanti*

David Centofanti serves as our Vice President of Information Systems. For such position, he received annual compensation of \$168,000 for each of the years 2017 and 2016. David Centofanti is the son of our EVP of Strategic Initiatives and a Board member, Dr. Louis Centofanti. Dr. Louis Centofanti previously held the position of President and CEO until September 8, 2017.

*Robert L. Ferguson*

Robert L. Ferguson serves as an advisor to our Board and is also a member of the Supervisory Board of PF Medical, our majority-owned Polish subsidiary. Robert Ferguson previously served as our Board member from June 2007 to February 2010 and again from August 2011 to September 2012. The Company previously completed a lending transaction with Robert Ferguson and William Lampson in August 2013 (collectively, the "Lenders") whereby we borrowed from the Lenders \$3,000,000 which was paid in full by us in August 2016 (see "Note 9 – Long-Term Debt – Promissory Note" for further details). As an advisor to our Board, Robert Ferguson is paid \$4,000 monthly plus reasonable expenses. For such services, Robert Ferguson received compensation of approximately \$51,000 and \$59,000 for the years 2017 and 2016, respectively. Robert Ferguson is also a consultant to us in connection with our TBI at our PFNWR facility (see "Note 5 – Capital Stock, Stock Plan, Warrants, and Stock Based Compensation" for a discussion of the options granted to Robert Ferguson in connection with the TBI initiatives).

*John Climaco*

John Climaco, who had been a Board member since October 2013, did not stand for reelection at the Company's 2017 Annual Meeting of Stockholders held on July 27, 2017. In addition to his previous service as a Board member, John Climaco also served as EVP of PF Medical, a majority-owned Polish subsidiary of the Company, from June 2, 2015 to June 30, 2017. As EVP of PF Medical, John Climaco received an annual salary of \$150,000 and was not eligible to receive compensation for serving on the Company's Board. PF Medical had entered into a multi-year supplier agreement and stock subscription agreement in July 2015 with Digirad Corporation, where John Climaco serves as a board member.

## *Employment Agreements*

The Company entered into employment agreements with each of Mark Duff (President and CEO effective September 8, 2017, who previously held the position of EVP and COO), Ben Naccarato (CFO), and Dr. Louis Centofanti, (EVP of Strategic Initiatives, who retired from the position of President and CEO effective September 8, 2017) with each employment agreement dated September 8, 2017. Each of the employment agreements is effective for three years from September 8, 2017 (the “Initial Term”) unless earlier terminated by us or by the executive officer. At the end of the Initial Term of each employment agreement, each employment agreement will automatically be extended for one additional year, unless at least six months prior to the expiration of the Initial Term, we or the executive officer provides written notice not to extend the terms of the employment agreement. Each employment agreement provides for annual base salaries, performance bonuses as provided in the MIP as approved by our Board, and other benefits commonly found in such agreements. In addition, each employment agreement provides that in the event the executive officer terminates his employment for “good reason” (as defined in the agreements) or is terminated by the Company without cause (including the executive officer terminating his employment for “good reason” or is terminated by us without cause within 24 months after a Change in Control (as defined in the agreement)), the Company will pay the executive officer the following: (a) a sum equal to any unpaid base salary; (b) accrued unused vacation time and any employee benefits accrued as of termination but not yet been paid (“Accrued Amounts”); (c) two years of full base salary; (d) performance compensation under the MIP earned with respect to the fiscal year immediately preceding the date of termination; and (e) an additional year of performance compensation as provided under the MIP earned, if not already paid, with respect to the fiscal year immediately preceding the date of termination. If the executive terminates his employment for a reason other than for good reason, the Company will pay to the executive the amount equal to the Accrued Amounts plus any performance compensation payable pursuant to the MIP.

If there is a Change in Control (as defined in the agreements), all outstanding stock options to purchase common stock held by the executive officer will immediately become exercisable in full commencing on the date of termination through the original term of the options. In the event of the death of an executive officer, all outstanding stock options to purchase common stock held by the executive officer will immediately become exercisable in full commencing on the date of death, with such options exercisable for the lesser of the original option term or twelve months from the date of the executive officer’s death. In the event of an executive officer terminating his employment for “good reason” or is terminated by us without cause, all outstanding stock options to purchase common stock held by the executive officer will immediately become exercisable in full commencing on the date of termination, with such options exercisable for the lesser of the original option term or within 60 days from the date of the executive’s date of termination.

We had previously entered into an employment agreement with each of Dr. Louis Centofanti and Ben Naccarato on July 10, 2014 which both employment agreements are due to expire on July 10, 2018, as amended (the “July 10, 2014 Employment Agreements”). We also had previously entered into an employment agreement dated January 19, 2017 (which was effective June 11, 2016) with Mark Duff which is due to expire on June 11, 2019 (the “January 19, 2017 Employment Agreement”). The July 10, 2014 Employment Agreements and the January 19, 2017 Employment Agreement were terminated effective September 8, 2017.

## *MIPs*

On January 19, 2017, our Board and the Compensation Committee approved individual MIP for each Mark Duff, Ben Naccarato, and Dr. Louis Centofanti. Each MIP is effective January 1, 2017 and applicable for the year ended December 31, 2017. Each MIP provides guidelines for the calculation of annual cash incentive based compensation, subject to Compensation Committee oversight and modification. Each MIP awards cash compensation based on achievement of performance thresholds, with the amount of such compensation established as a percentage of the executive’s 2017 annual base salary on the approval date of the MIP. The potential target performance compensation ranges approved was from 5% to 100% (\$13,962 to \$279,248) of the base salary for Dr. Louis Centofanti, EVP of Strategic Initiatives effective September 8, 2017 and previously the CEO and President; 5% to 100% (\$13,350 to \$267,000) of the base salary for Mark Duff, CEO and President effective September 8, 2017 and previously the EVP/COO; and 5% to 100% (\$11,033 to \$220,667) of the base salary for Ben Naccarato, CFO. Pursuant to the MIPs, the Compensation Committee had the right to modify, change or terminate the MIPs at any time and for any reason. No performance compensation was earned or payable under each of the 2017 MIPs as discussed above.

**NOTE 16**  
**SEGMENT REPORTING**

In accordance with ASC 280, "Segment Reporting", we define an operating segment as a business activity:

- from which we may earn revenue and incur expenses;
- whose operating results are regularly reviewed by the chief operating decision maker ("CODM") to make decisions about resources to be allocated to the segment and assess its performance; and
- for which discrete financial information is available.

We currently have three reporting segments, which include Treatment and Services Segments, which are based on a service offering approach; and Medical, whose primary purpose at this time is the R&D of a new medical isotope production technology. The Medical Segment has not generated any revenues and all costs incurred are reflected within R&D in the accompanying Consolidated Statements of Operations. Our reporting segments exclude our corporate headquarter and our discontinued operations (see "Note 8 – Discontinued Operations") which do not generate revenues.

The table below shows certain financial information of our reporting segments as of and for the years then ended December 31, 2017 and 2016 (in thousands).

**Segment Reporting as of and for the year ended December 31, 2017**

	Treatment	Services	Medical	Segments Total	Corporate <sup>(2)</sup>	Consolidated Total
Revenue from external customers	\$ 37,750	\$ 12,019	—	\$ 49,769 <sup>(3)</sup>	\$ —	\$ 49,769
Intercompany revenues	362	31	—	393	—	—
Gross profit	7,916	704	—	8,620	—	8,620
Research and development	439	—	1,141	1,580	15	1,595
Interest income	—	—	—	—	140	140
Interest expense	(35)	(5)	—	(40)	(275)	(315)
Interest expense-financing fees	—	—	—	—	(35)	(35)
Depreciation and amortization	3,228	536	—	3,764	39	3,803
Segment income (loss) before income taxes	3,577 <sup>(6)</sup>	(2,286)	(1,141)	150	(4,973)	(4,823)
Income tax (benefit) expense	(1,290) <sup>(7)</sup>	—	—	(1,290)	5	(1,285)
Segment income (loss)	4,867	(2,286)	(1,141)	1,440	(4,978)	(3,538)
Segment assets <sup>(1)</sup>	32,724	6,324	548	39,596	19,942 <sup>(4)</sup>	59,538
Expenditures for segment assets	396	43	—	439	—	439
Total debt	—	—	—	—	3,847 <sup>(5)</sup>	3,847

**Segment Reporting as of and for the year ended December 31, 2016**

	Treatment	Services	Medical	Segments Total	Corporate <sup>(2)</sup>	Consolidated Total
Revenue from external customers	\$ 32,253	\$ 18,966	—	\$ 51,219 <sup>(3)</sup>	\$ —	\$ 51,219
Intercompany revenues	40	28	—	68	—	—
Gross profit	4,015	3,069	—	7,084	—	7,084
Research and development	504	38	1,489	2,031	15	2,046
Interest income	3	—	—	3	107	110
Interest expense	(29)	(2)	—	(31)	(458)	(489)
Interest expense-financing fees	—	—	—	—	(108)	(108)
Depreciation and amortization	3,451	632	—	4,083	82	4,165
Segment (loss) income before income taxes	(10,119) <sup>(6)</sup>	744	(1,489)	(10,864)	(5,393)	(16,257)
Income tax (benefit) expense	(3,013) <sup>(7)</sup>	—	—	(3,013)	19	(2,994)
Segment (loss) income	(7,106)	744	(1,489)	(7,851)	(5,412)	(13,263)
Segment assets <sup>(1)</sup>	32,482	8,105	382	40,969	24,366 <sup>(4)</sup>	65,335
Expenditures for segment assets	418	17	1	436	—	436
Total debt	—	—	—	—	8,833 <sup>(5)</sup>	8,833

(1) Segment assets have been adjusted for intercompany accounts to reflect actual assets for each segment.

(2) Amounts reflect the activity for corporate headquarters not included in the segment information.

(3) The Company performed services relating to waste generated by the federal government, either directly as a prime contractor or indirectly for others as a subcontractor to the federal government, representing approximately \$36,654,000 or 73.6% of total revenue for 2017 and \$27,354,000 or 53.4% of total revenue for 2016. The following reflects such revenue generated by our two segments:

	2017	2016
Treatment	\$ 27,591,000	\$ 21,434,000
Services	9,063,000	5,920,000
Total	<u>\$ 36,654,000</u>	<u>\$ 27,354,000</u>

- (4) Amount includes assets from our discontinued operations of \$365,000 and \$434,000 at December 31, 2017 and 2016, respectively.
- (5) net of debt issuance costs of (\$115,000) and (\$151,000) for 2017 and 2016, respectively (see “Note 9 – “Long-Term Debt” for additional information).
- (6) For the year ended December 31, 2016, amounts include tangible and intangible asset impairment losses of \$1,816,000 and \$8,288,000, respectively, recorded in connection with the pending closure of M&EC. For the year ended December 31, 2017, amount includes tangible asset impairment loss of \$672,000 recorded in connection with the pending closure of M&EC (see “Note 3 – M&EC Facility”).
- (7) For the year ended December 31, 2016, amount includes a tax benefit of approximately \$3,203,000 recorded resulting from the intangible impairment loss recorded for our M&EC subsidiary (see “Note 3 – M&EC Facility”). For the year ended December 31, 2017, amount includes a tax benefit recorded in the amount of approximately \$1,695,000 resulting from the Tax Cuts and Jobs Act enacted on December 22, 2017 (see “Note 12 – Income Taxes” for further information of this tax benefit).

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**NOTE 17**  
**SUBSEQUENT EVENTS**

*MIPs*

On January 18, 2018, the Board and Compensation Committee approved individual MIP for the CEO, CFO, and EVP of Strategic Initiatives. Each MIP is effective January 1, 2018 and applicable for the year ended December 31, 2018. Each MIP provides guidelines for the calculation of annual cash incentive based compensation, subject to Compensation Committee oversight and modification. Each MIP awards cash compensation based on achievement of performance thresholds, with the amount of such compensation established as a percentage of the executive’s annual 2018 base salary on the approval date of the MIP. The potential target performance compensation ranges from 5% to 100% of the 2018 base salary for the CEO (\$13,350 to \$267,000), 5% to 100% of the 2018 base salary for the CFO (\$11,475 to \$229,494), and 5% to 100% of the 2018 base salary for the EVP of Strategic Initiatives (\$11,170 to \$223,400).

**ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE**

None.

**ITEM 9A. CONTROLS AND PROCEDURES**

*Evaluation of disclosure controls and procedures.*

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in our periodic reports filed with the Securities and Exchange Commission (the “Commission”) is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the Commission and that such information is accumulated and communicated to our management, including the Chief Executive Officer (“CEO”) (Principal Executive Officer), and Chief Financial Officer (“CFO”) (Principal Financial Officer), as appropriate to allow timely decisions regarding the required disclosure. In designing and assessing our disclosure controls and procedures, our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their stated control objectives and are subject to certain limitations, including the exercise of judgment by individuals, the difficulty in identifying unlikely future events, and the difficulty in eliminating misconduct completely. Our management, with the participation of our CEO and CFO, evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934, as amended. Based upon this assessment, our CEO and CFO have concluded that our disclosure controls and procedures were effective as of December 31, 2017.

*Management’s Report on Internal Control over Financial Reporting*

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) of the Securities Exchange Act of 1934. Internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements or fraudulent acts. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. A control system, no matter how well designed, can provide only reasonable assurance with respect to financial statement preparation and presentation.

Internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit the preparation of the consolidated financial statements in accordance with generally accepted accounting principles in the United States of America, and that receipts and expenditures of the Company are being made only in accordance with appropriate authorizations of management and directors of the Company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company’s assets that could have a material effect on the consolidated financial statements.

Management, with the participation of our CEO and CFO, conducted an assessment of the effectiveness of internal control over financial reporting as of December 31, 2017 based on the framework in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”). Based on this assessment, management, with the participation of our CEO and CFO, concluded that the Company’s internal control over financial reporting was effective as of December 31, 2017.

This Form 10-K does not include an attestation report of the Company’s independent registered public accounting firm regarding internal control over financial reporting. Since the Company is not a large accelerated filer or an accelerated filer, management’s report was not subject to attestation by the Company’s independent registered public accounting firm pursuant to the rules of the Commission that permit the Company to provide only management’s report in this Form 10-K.

**Changes in Internal Control over Financial Reporting**

There have been no changes in our internal controls over financial reporting during the fiscal quarter ended December 31, 2017 that have materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting.

**ITEM 9B. OTHER INFORMATION**

None.

### PART III

#### ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

##### DIRECTORS

The following table sets forth, as of the date of this Report, information concerning our Board of Directors (“Board”):

NAME	AGE	POSITION
Dr. Louis F. Centofanti	74	Director; EVP of Strategic Initiatives; President of PF Medical
Mr. S. Robert Cochran	64	Director
Dr. Gary Kugler	77	Director
Honorable Joe R. Reeder	70	Director
Mr. Larry M. Shelton	64	Chairman of the Board
Mr. Zach P. Wamp <sup>(1)</sup>	60	Director
Mr. Mark A. Zwecker	67	Director

Each director is elected to serve until the next annual meeting of stockholders.

(1) Mr. Zach Wamp was unanimously elected by the Board as a director effective January 18, 2018 to fill a vacancy on the Board.

##### Director Information

Our directors and executive officers, their ages, the positions with us held by each of them, the periods during which they have served in such positions and a summary of their recent business experience is set forth below. Each of the biographies of the current directors listed below also contains information regarding such person’s service as a director, business experience, director positions with other public companies held currently or at any time during the past five years, and the experience, qualifications, attributes and skills that our Board considered in nominating or appointing each of them to serve as one of our directors.

##### Dr. Louis F. Centofanti

Dr. Centofanti currently holds the position of EVP of Strategic Initiatives. Effective January 26, 2018, Dr. Centofanti was appointed to the position of President of PF Medical and no longer a member of the Supervisory Board of PF Medical (a position he had held since June 2, 2015). From March 1996 to September 8, 2017 and from February 1991 to September 1995, Dr. Centofanti held the position of President and CEO of the Company. Dr. Centofanti served as Chairman of the Board from the Company’s inception in February 1991 until December 16, 2014. In January 2015, Dr. Centofanti was appointed by the U.S Secretary of Commerce Penny Prizker to serve on the U.S. Department of Commerce’s Civil Nuclear Trade Advisory Committee (CINTAC). The CINTAC is composed of industry representatives from the civil nuclear industry and meets periodically throughout the year to discuss the critical trade issues facing the U.S. civil nuclear sector. From 1985 until joining the Company, Dr. Centofanti served as Senior Vice President (“SVP”) of USPCI, Inc., a large publicly-held hazardous waste management company, where he was responsible for managing the treatment, reclamation and technical groups within USPCI. In 1981, he founded PPM, Inc. (later sold to USPCI), a hazardous waste management company specializing in treating PCB contaminated oil. From 1978 to 1981, Dr. Centofanti served as Regional Administrator of the U.S. Department of Energy for the southeastern region of the United States. Dr. Centofanti has a Ph.D. and a M.S. in Chemistry from the University of Michigan, and a B.S. in Chemistry from Youngstown State University.

As founder of Perma-Fix and PPM, Inc., and as a senior executive at USPCI, Dr. Centofanti combines extensive business experience in the waste management industry with a drive for innovative technology which is critical for a waste management company. In addition, his service in the government sector provides a solid foundation for the continuing growth of the Company, particularly within the Company’s Nuclear business. Dr. Centofanti’s comprehensive understanding of the Company’s operations and his extensive knowledge of its history, coupled with his drive for innovation and excellence, positions Dr. Centofanti to optimize our role in this competitive, evolving market, and led the Board to conclude that he should serve as a director.

### **Mr. S. Robert Cochran**

Mr. Cochran was appointed by the Board as a director effective January 13, 2017 and was reelected as a director on July 27, 2017 at the Company's Annual Meeting of Stockholders ("2017 Annual Meeting"). Since November 2015, Mr. Cochran has served as President and CEO of CTG, LLC, a company that provides strategic business development support, as well as acquisitions and business/management restructuring activity support. Since April 2012, Mr. Cochran has been a director of Longenecker & Associates, Inc., a privately held consulting firm that provides highly specialized, fast-response technical-management support to nuclear and environmental industries. From March 2012 to November 2015, Mr. Cochran served as President and Officer Director of CB&I Federal Services, LLC (a subsidiary of Chicago Bridge & Iron Company, NYSE: CBI), which provides mission-critical services primarily to the U.S. federal government. From 2006 to 2011, Mr. Cochran served as President of B&W Technical Service Group, Inc., an operating group of The Babcock & Wilcox Company (NYSE: BW), which provides support to government and commercial clients, including management and operation of complex high-consequence nuclear facilities, nuclear material processing and manufacturing, classified component manufacturing, engineering, procurement and construction of major capital projects, nuclear safeguards and security, environmental cleanup and remediation, and nuclear-facility deactivation. From 2007 to 2011, Mr. Cochran served as Chairman of the Board of Pantex LLC and B&W Y-12, where he had direct responsibility for the performance and operations associated with nuclear weapons production enterprise. Before joining The Babcock & Wilcox Company, Mr. Cochran worked for more than 20 years in operations and development within the engineering, construction, facilities management and operations, environmental technology, and remediation industries. This experience includes serving as President and CEO of MAGma LLC, a privately-held company that provided management and operational restructuring, strategic development, and acquisition/divestiture services to the public utility, engineering and construction, and Department of Energy business sectors. Additionally, as its SVP, Mr. Cochran led Tyco Infrastructure's development and delivery of services, opening new markets and service areas valued at more than \$1 billion. Mr. Cochran received an executive M.B.A. from the University of Richmond's Robins School of Business and a B.S. from James Madison University.

Mr. Cochran has had an extensive career in solving and overseeing solutions to complex issues involving both domestic and international concerns. In addition, his government related services provide solid experience for the continuing growth of the Company's Treatment and Services Segments. His extensive knowledge and problem-solving experience enhances the Board's ability to address significant challenges in the nuclear market, and led the Board to conclude that he should serve as a director.

### **Dr. Gary G. Kugler**

Dr. Gary Kugler, a director since September 2013, served as the Chairman of the Board of the Nuclear Waste Management Organization ("NWMO") from 2006 to June 2014, where he led its oversight through the work of four committees, including an Audit-Finance-Risk Committee. NWMO was established under the Canadian Nuclear Fuel Waste Act (2002) to investigate and implement approaches for managing Canada's used nuclear fuel. Dr. Kugler also served on the Board of Ontario Power Generation, Inc. ("OPG") from 2004 to March 2014 where he served as a member on four different committees, including the Audit, Finance, and Risk Committee from 2004 to 2008. OPG is one of Canada's largest electricity generation companies, owning 18 nuclear, 65 hydro, and two biomass power plants. Dr. Kugler served as a member of the Supervisory Board of PF Medical from June 2015 to December 2016. Dr. Kugler has had an extensive career in the nuclear industry, both nationally and internationally. He retired from Atomic Energy of Canada Limited ("AECL") as SVP, Nuclear Products & Services, in 2004, where he was responsible for all of AECL's commercial operations, including nuclear power plant sales and services world-wide. During his 34 years with AECL, he held various technical, project management, business development, and executive positions. Prior to joining AECL, Dr. Kugler served as a pilot in the Canadian air force. He holds a Ph.D. in nuclear physics from McMaster University and is a graduate of the Directors Education Program of the Institute of Corporate Directors.

Dr. Kugler's extensive career in the nuclear industry, both nationally and internationally, brings valuable insight and knowledge to the Company as it expands its business internationally, and led the Board to conclude that he should serve as a director.

#### **Honorable Joe R. Reeder**

Mr. Reeder, a director since 2003, served as Shareholder-in-Charge of the Mid-Atlantic Region (1999-2008) for Greenberg Traurig LLP, one of the nation's largest law firms, with 38 offices and approximately 2,000 attorneys worldwide. Currently, a principal shareholder in the law firm, Mr. Reeder's clientele includes sovereign nations, international corporations, and law firms. As the 14th Undersecretary of the U.S. Army (1993-97), Mr. Reeder also served for three years as Chairman of the Panama Canal Commission's Board where he oversaw a multibillion-dollar infrastructure program, and, for the past 14 years he has served on the International Advisory Board of the Panama Canal. He has served on the boards of the National Defense Industry Association ("NDIA") (Chairing NDIA's Ethics Committee), the Armed Services YMCA, and many other private companies and charitable organizations. Following successive appointments by Virginia Governors Mark Warner and Tim Kaine, Mr. Reeder served seven years as Chairman of two Commonwealth of Virginia military boards and served ten years on the National USO Board. Mr. Reeder was appointed by Governor Terry McCaulliffe to the Virginia Military Institute's Board of Visitors (2014). Mr. Reeder is also a television commentator on legal and national security issues. Among other corporate positions, he has been a director since September 2005 for ELBIT Systems of America, LLC, a subsidiary of Elbit Systems Ltd. (NASDAQ: ESLT), that provides product and system solutions focusing on defense, homeland security, and commercial aviation. Mr. Reeder also served as a Board member for Washington First Bank (since April 2004), and of its parent, Washington First Bankshares, Inc. (since 2009). As of December 13, 2017, Mr. Reeder serves as a Board member for Sandy Spring Bancorp, Inc. (NASDAQ: SASR), which purchased Washington First Bank in the last quarter of 2017. A graduate of West Point who served in the 82nd Airborne Division following Ranger School, Mr. Reeder earned his J.D. from the University of Texas and his L.L.M. from Georgetown University.

Mr. Reeder has a distinguished career in solving and overseeing solutions to complex issues involving both domestic and international concerns. His extensive knowledge and problem-solving experience has enhanced the Board's ability to address significant challenges in the nuclear market, and led the Board to conclude that he should serve as a director.

#### **Mr. Larry M. Shelton**

Mr. Shelton, a director since July 2006, has also held the position of Chairman of the Board of the Company since December 16, 2014. Mr. Shelton currently is the Chief Financial Officer ("CFO") (since 1999) of S K Hart Management, LLC, a private investment management company. Mr. Shelton served as President of Pony Express Land Development, Inc. (an affiliate of SK Hart Management, LLC), a privately-held land development company, from January 2013 to until August 2017 and has served on the Board since December 2005. In March 2012, he was appointed Director and CFO of S K Hart Ranches (PTY) Ltd, a private South African Company involved in agriculture. Mr. Shelton served as a member of the Supervisory Board of PF Medical from April 2014 to December 2016. Mr. Shelton has over 19 years of experience as an executive financial officer for several waste management companies, including as CFO of Envirocare of Utah, Inc. (now Energy Solutions (1995-1999)) and CFO of USPCI, Inc. (1982-1987), a NYSE-listed company. Since July 1989, Mr. Shelton has served on the Board of Subsurface Technologies, Inc., a privately-held company specializing in providing environmentally sound innovative solutions for water well rehabilitation and development. Mr. Shelton has a B.A. in accounting from the University of Oklahoma.

With his years of accounting experience as CFO for various companies, including a number of waste management companies, Mr. Shelton combines extensive knowledge and understanding of accounting principles, financial reporting requirements, evaluating and overseeing financial reporting processes and business matters. These factors led the Board to conclude that he should serve as a director.

### **Mr. Zach P. Wamp**

Mr. Zach Wamp was unanimously elected by the Board to fill a vacancy on the Board effective January 18, 2018. Mr. Wamp is currently the President of Zach Wamp Consulting, a position he has held since 2011. As the President and owner of Zach Wamp Consulting, he has served some of the most prominent companies from Silicon Valley to Wall Street as a business development consultant and advisor. From September 2013 to November 2017, Mr. Wamp chaired the Board of Directors for Chicago Bridge and Iron Federal Services, LLC (a subsidiary of Chicago Bridge & Iron Company, NYSE: CBI, which provides critical services primarily to the U.S. federal government). From January 1995 to January 2011, Mr. Wamp served as a member of the U.S. House of Representatives from Tennessee's 3<sup>rd</sup> district. His district included the Oak Ridge National Laboratory, with strong science and research missions from energy to homeland security. Among his many accomplishments which included various leadership roles in the advancement of education and science, Mr. Wamp was instrumental in the formation and success of the Tennessee Valley Technology Corridor, which created thousands of jobs for Tennesseans in the areas of high-tech research, development, and manufacturing. During his career in the political arena, Mr. Wamp served on several prominent subcommittees during his 14 years on the House Appropriations Committee, including serving as a "ranking member" of the Subcommittee on Military Construction and Veterans Affairs and Related Agencies. Mr. Wamp has been a regular panelist on numerous media outlet and has been featured in a number of national publications effectively articulating sound social and economic policy. Mr. Wamp's business career has also included work in the real estate sector for a number of years as a licensed industrial-commercial real estate broker where he was named Chattanooga's Small Business Person of the Year. He is a founding partner in Learning Blade, the nation's premiere STEM education platform which is now operating at some level in 28 states.

Mr. Wamp has extensive career in solving and overseeing solutions to complex issues involving domestic concerns. In addition, his wide-ranging career, particularly with respect to his government-related work, provides solid experience for the continuing growth of the Company's Treatment and Services Segments. His extensive knowledge and problem-solving experience enhances the Board's ability to address significant challenges in the nuclear market, and led the Board to conclude that he should serve as a director.

### **Mr. Mark A. Zwecker**

Mark Zwecker, a director since the Company's inception in January 1991, currently serves as the CFO and a Board member for JCI US Inc., a telecommunications company and wholly-owned subsidiary of Japan Communications, Inc. (Tokyo Stock Exchange (Securities Code: 9424)), which provides cellular service for M2M (machine to machine) applications. From 2006 to 2013, Mr. Zwecker served as Director of Finance for Communications Security and Compliance Technologies, Inc., a wholly-owned subsidiary of JCI US Inc. that develops security software products for the mobile workforce. From 1997 to 2006, Mr. Zwecker served as President of ACI Technology, LLC, an IT services provider, and from 1986 to 1998, he served as Vice President of Finance and Administration for American Combustion, Inc., a combustion technology solutions provider. In 1983, with Dr. Centofanti, Mr. Zwecker co-founded a start-up, PPM, Inc., a hazardous waste management company. He remained with PPM, Inc. until its acquisition in 1985 by USPCI. Mr. Zwecker has a B.S. in Industrial and Systems Engineering from the Georgia Institute of Technology and an M.B.A. from Harvard University.

As a director since our inception, Mr. Zwecker's understanding of our business provides valuable insight to the Board. With years of experience in operations and finance for various companies, including a number of waste management companies, Mr. Zwecker combines extensive knowledge of accounting principles, financial reporting rules and regulations, the ability to evaluate financial results, and understanding of financial reporting processes. He has an extensive background in operating complex organizations. Mr. Zwecker's experience and background position him well to serve as a member of our Board. These factors led the Board to conclude that he should serve as a director.

## **BOARD LEADERSHIP STRUCTURE**

We currently separate the roles of Chairman of the Board and CEO. The Board believes that this leadership structure promotes balance between the Board's independent authority to oversee our business, and the CEO and his management team, who manage the business on a day-to-day basis.

The Company does not have a written policy with respect to the separation of the positions of Chairman of the Board and CEO. The Company believes it is important to retain its flexibility to allocate the responsibilities of the offices of the Chairman and CEO in any way that is in the best interests of the Company at a given point in time; therefore, the Company's leadership structure may change in the future as circumstances may dictate.

Mr. Mark Zwecker, a current member of our Board, continues to serve as the Independent Lead Director, a position he has held since February 2010. The Lead Director's role includes:

- convening and chairing meetings of the non-employee directors as necessary from time to time and Board meetings in the absence of the Chairman of the Board;
- acting as liaison between directors, committee chairs and management;
- serving as information sources for directors and management; and
- carrying out responsibilities as the Board may delegate from time to time.

#### **AUDIT COMMITTEE**

We have a separately designated standing Audit Committee of our Board established in accordance with Section 3(a)(58)(A) of the Exchange Act. The members of the Audit Committee are Mark A. Zwecker (Chairperson), Dr. Gary G. Kugler, and S. Robert Cochran, who replaced Mr. Larry Shelton effective April 20, 2017.

Our Board has determined that each of our Audit Committee members is and was independent within the meaning of the rules of the NASDAQ and is an "audit committee financial expert" as defined by Item 407(d)(5)(ii) of Regulation S-K of the Securities Exchange Act of 1934, as amended (the "Exchange Act").

The Audit Committee has also discussed with Grant Thornton, LLP, the Company's independent registered accounting firm, the matters required to be discussed by Public Company Accounting Oversight Board ("PCAOB") Auditing Standard No. 16 (Communications with Audit Committee).

#### **BOARD OF DIRECTOR INDEPENDENCE**

The Board has determined that each director, other than Dr. Centofanti, is "independent" within the meaning of the applicable NASDAQ rules. Dr. Centofanti is not deemed to be an "independent director" because of his employment as a senior executive of the Company. Mr. John Climaco, who did not stand for re-election at the Company's 2017 Annual Meeting, did not qualify as an "independent director" because of his previous employment as EVP of PF Medical, a majority-owned Polish subsidiary of the Company, and because of his directorship at Digirad Corporation, a company with which PF Medical had previously entered into a multi-year supplier agreement and stock subscription agreement.

#### **COMPENSATION AND STOCK OPTION COMMITTEE**

The Compensation and Stock Option Committee ("Compensation Committee") reviews and recommends to the Board the compensation and benefits of all of the Company's officers and reviews general policy matters relating to compensation and benefits of the Company's employees. The Compensation Committee also administers the Company's stock option plans. The Compensation Committee has the sole authority to retain and terminate a compensation consultant, as well as to approve the consultant's fees and other terms of engagement. It also has the authority to obtain advice and assistance from internal or external legal, accounting or other advisors. No compensation consultant was employed during 2017. Members of the Compensation Committee are Dr. Gary G. Kugler (Chairperson), Larry M. Shelton, and Joe R. Reeder. None of the members of the Compensation Committee has been an officer or employee of the Company or has had any relationship with the Company requiring disclosure under applicable Securities and Exchange Commission regulations.

#### **CORPORATE GOVERNANCE AND NOMINATING COMMITTEE**

We have a separately-designated standing Corporate Governance and Nominating Committee ("Nominating Committee"). Members of the Nominating Committee are Joe R. Reeder (Chairperson), Dr. Gary G. Kugler, and S. Robert Cochran who replaced Mark A. Zwecker as a member effective April 20, 2017. All members of the Nominating Committee are and were "independent" as that term is defined by current NASDAQ listing standards.

The Nominating Committee recommends to the Board candidates to fill vacancies on the Board and the nominees for election as the directors at each annual meeting of stockholders. In making such recommendation, the Nominating Committee takes into account information provided to them from the candidate, as well as the Nominating Committee's own knowledge and information obtained through inquiries to third parties to the extent the Nominating Committee deems appropriate. The Company's Amended and Restated Bylaws, as amended (the "Bylaws"), sets forth certain minimum director qualifications to qualify for nomination for elections as a Director. To qualify for nomination or election as a director, an individual must:

- be an individual at least 21 years of age who is not under legal disability;
- have the ability to be present, in person, at all regular and special meetings of the Board;
- not serve on the boards of more than three other publicly held companies;
- satisfy the director qualification requirements of all environmental and nuclear commissions, boards or similar regulatory or law enforcement authorities to which the Corporation is subject so as not to cause the Corporation to fail to satisfy any of the licensing requirements imposed by any such authority;
- not be affiliated with, employed by or a representative of, or have or acquire a material personal involvement with, or material financial interest in, any "Business Competitor" (as defined);
- not have been convicted of a felony or of any misdemeanor involving moral turpitude; and
- have been nominated for election to the Board in accordance with the terms of the Bylaws.

In addition to the minimum director qualifications as mentioned above, each candidate's qualifications are also reviewed to include:

- standards of integrity, personal ethics and value, commitment, and independence of thought and judgment;
- ability to represent the interests of the Company's stockholders;
- ability to dedicate sufficient time, energy and attention to fulfill the requirements of the position; and
- diversity of skills and experience with respect to accounting and finance, management and leadership, business acumen, vision and strategy, charitable causes, business operations, and industry knowledge.

The Nominating Committee does not assign specific weight to any particular criteria and no particular criterion is necessarily applicable to all prospective nominees. The Nominating Committee does not have a formal policy for the consideration of diversity in identifying nominees for directors; however, the Company believes that the backgrounds and qualifications of the directors, considered as a group, should provide a significant composite mix of experience, knowledge, and abilities that will allow the Board to fulfill its responsibilities.

#### **Stockholder Nominees**

There have been no changes to the stockholder nomination process since the Company's last proxy statement. The procedure for stockholder nominees to the Board is set out below.

The Nominating Committee will consider properly submitted stockholder nominations for candidates for membership on the Board from stockholders who meet each of the requirements set forth in the Bylaws, including, but not limited to, the requirements that any such stockholder own at least 1% of the Company's shares of the Common Stock entitled to vote at the meeting on such election, has held such shares continuously for at least one full year, and continuously holds such shares through and including the time of the annual or special meeting. Nominations of persons for election to the Board may be made at any Annual Meeting of Stockholders, or at any Special Meeting of Stockholders called for the purpose of electing directors. Any stockholder nomination ("Proposed Nominee") must comply with the requirements of the Bylaws and the Proposed Nominee must meet the minimum qualification requirements as discussed above. For a nomination to be made by a stockholder, such stockholder must provide advance written notice to the Nominating Committee, delivered to the Company's principal executive office address (i) in the case of an Annual Meeting of Stockholders, no later than the 90th day nor earlier than the 120th day prior to the anniversary date of the immediately preceding Annual Meeting of Stockholders; and (ii) in the case of a Special Meeting of Stockholders called for the purpose of electing directors, not later than the 10th day following the day on which public disclosure of the date of the Special Meeting of Stockholders was made.

The Nominating Committee will evaluate the qualification of the Proposed Nominee and the Proposed Nominee's disclosure and compliance requirements in accordance with the Company's Bylaws. If the Board, upon the recommendation of the Nominating Committee, determines that a nomination was not made in accordance with the Bylaws, the Chairman of the Meeting shall declare the nomination defective and it will be disregarded.

#### **RESEARCH AND DEVELOPMENT COMMITTEE**

We have a separately-designated standing Research and Development Committee (the "R&D Committee"). Members of the R&D Committee include Dr. Gary G. Kugler and Dr. Louis Centofanti.

The R&D Committee outlines the structures and functions of the Company's research and development strategies, the acquisition and protection of the Company's intellectual property rights and assets, and provides its perspective on such matter to the Board. The R&D Committee does not have a charter.

#### **STRATEGIC ADVISORY COMMITTEE**

We have a separately-designated Strategic Advisory Committee (the "Strategic Committee"). The primary functions of the Strategic Committee are to investigate and evaluate strategic alternatives available to the Company and to work with management on long-range strategic planning and identifying potential new business opportunities. The members of the Strategic Advisory Committee are S. Robert Cochran (Chairperson, replacing John M. Climaco who did not stand for reelection at the Company's 2017 Annual Meeting), Joe R. Reeder, Mark A. Zwecker, and Larry M. Shelton. The Strategic Advisory Committee does not have a charter.

#### **EXECUTIVE OFFICERS OF THE REGISTRANT**

The following table sets forth, as of the date hereof, information concerning our executive officers:

<u>NAME</u>	<u>AGE</u>	<u>POSITION</u>
Mr. Mark Duff	55	President and CEO
Mr. Ben Naccarato	55	CFO, Vice President, and Secretary; CFO of PF Medical
Dr. Louis Centofanti	74	EVP of Strategic Initiatives; President of PF Medical

#### **Mr. Mark Duff**

Mr. Mark Duff was appointed President and CEO by the Company's Board on September 8, 2017, succeeding Dr. Louis Centofanti. Previously, Mr. Duff served as EVP of the Company, from June 11, 2016. In September 2016, upon Mr. John Lash's retirement as Chief Operating Officer ("COO") of the Company, Mr. Duff was named COO, in addition to his position as EVP. Mr. Duff has 30 years of management and technical experience in the U.S. Department of Energy ("DOE") and U.S. Department of Defense ("DOD") environmental and construction markets as a corporate officer, senior project manager, co-founder of a consulting firm, and federal employee. For the immediate five years prior to joining the Company in June 2016, Mr. Duff was responsible for the successful completion of over 70 performance-based projects at the Paducah Gaseous Diffusion Plant ("PGDP") in Paducah, KY. At the PGDP, he served as the Project Manager for the Paducah Remediation Contract, which was a five-year project with a total value of \$458 million. Prior to the PGDP project, Mr. Duff was a senior manager supporting Babcock and Wilcox ("B&W"), leading several programs that included building teams to solve complex technical problems. These programs included implementation of the American Recovery and Reinvestment Act ("ARRA") at the DOE Y-12 facility with a \$245 million budget for new cleanup projects completed over a two-year period. During this period, Mr. Duff served as project manager leading a team of senior experts in support of Toshiba Corporation in Tokyo, Japan to integrate United States technology in the recovery of the Fukushima Daiichi Nuclear Reactor disaster. Prior to joining B&W, Mr. Duff served as the president of Safety and Ecology Corporation ("SEC"). As President of SEC, he helped grow the company from \$50 million to \$80 million in annual revenues with significant growth in infrastructure, marketing, and client diversification. Mr. Duff has an MBA from the University of Phoenix and received his B.S. from the University of Alabama.

### **Mr. Ben Naccarato**

Mr. Naccarato has served as the CFO since February 26, 2009. Mr. Naccarato joined the Company in September 2004 and served as Vice President, Finance of the Company's Industrial Segment until May 2006, when he was named Vice President, Corporate Controller/Treasurer. In July 2015, Mr. Naccarato was named the CFO of PF Medical, the Company's majority-owned Polish subsidiary involved in the research and development of a new medical isotope production technology. Effective December 22, 2015, Mr. Naccarato was appointed to the Management Board of PF Medical. Mr. Naccarato has over 29 years of experience in senior financial positions in the waste management and used oil industries. From December 2002 to September 2004, Mr. Naccarato was the CFO of a privately held company in the fuel distribution and used waste oil industry. Mr. Naccarato is a graduate of University of Toronto with a Bachelor of Commerce and Finance Degree and is a Chartered Professional Accountant, Certified Management Accountant (CPA, CMA).

### **Dr. Louis Centofanti**

See "Director – Dr. Louis F. Centofanti" in this section for information on Dr. Centofanti.

### **Certain Relationships**

There are no family relationships between any of the directors or executive officers.

### **Section 16(a) Beneficial Ownership Reporting Compliance**

Section 16(a) of the Exchange Act, and the regulations promulgated thereunder require our executive officers and directors and beneficial owners of more than 10% of our Common Stock to file reports of ownership and changes of ownership of our Common Stock with the Securities and Exchange Commission, and to furnish us with copies of all such reports. Based solely on a review of the copies of such reports furnished to us and written information provided to us, we believe that during 2017 none of our executive officers, directors, or beneficial owners of more than 10% of our Common Stock failed to timely file reports under Section 16(a).

Capital Bank–Grawe Gruppe AG ("Capital Bank") has advised us that it is a banking institution regulated by the banking regulations of Austria, which holds shares of our Common Stock as agent on behalf of numerous investors. Capital Bank has represented that all of its investors are accredited investors under Rule 501 of Regulation D promulgated under the Act. In addition, Capital Bank has advised us that none of its investors, individually or as a group, beneficially own more than 4.9% of our Common Stock as calculated in accordance with Rule 13d-3 of the Exchange Act. Capital Bank has further informed us that its clients (and not Capital Bank) maintain full voting and dispositive power over such shares. Consequently, Capital Bank has advised us that it believes it is not the beneficial owner, as such term is defined in Rule 13d-3 of the Exchange Act, of the shares of our Common Stock registered in the name of Capital Bank because it has neither voting nor investment power, as such terms are defined in Rule 13d-3, over such shares. Capital Bank has informed us that it does not believe that it is required (a) to file, and has not filed, reports under Section 16(a) of the Exchange Act or (b) to file either Schedule 13D or Schedule 13G in connection with the shares of our Common Stock registered in the name of Capital Bank.

If the representations of, or information provided by Capital Bank are incorrect or Capital Bank was historically acting on behalf of its investors as a group, rather than on behalf of each investor independent of other investors, then Capital Bank and/or the investor group would have become a beneficial owner of more than 10% of our Common Stock on February 9, 1996, as a result of the acquisition of 1,100 shares of our Preferred Stock that were convertible into a maximum of 256,560 shares of our Common Stock. If either Capital Bank or a group of Capital Bank's investors became a beneficial owner of more than 10% of our Common Stock on February 9, 1996, or at any time thereafter, and thereby required to file reports under Section 16(a) of the Exchange Act, then Capital Bank has failed to file a Form 3 or any Forms 4 or 5 since February 9, 1996. (See "Item 12 - Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matter – Security Ownership of Certain Beneficial Owners" for a discussion of Capital Bank's current record ownership of our securities).

## Code of Ethics

Our Code of Ethics applies to all our executive officers and is available on our website at [www.perma-fix.com](http://www.perma-fix.com). If any amendments are made to the Code of Ethics or any grants of waivers are made to any provision of the Code of Ethics to any of our executive officers, we will promptly disclose the amendment or waiver and nature of such amendment or waiver on our website at the same web address.

## ITEM 11. EXECUTIVE COMPENSATION

### Summary Compensation

The following table summarizes the total compensation paid or earned by each of the named executive officers (“NEOs”) for the fiscal years ended December 31, 2017 and 2016.

<u>Name and Principal Position</u>	<u>Year</u>	<u>Salary</u>	<u>Bonus</u>	<u>Option Awards</u>	<u>Non-Equity Incentive Plan Compensation</u>	<u>All other Compensation</u>	<u>Total Compensation</u>
		(\$)	(\$)	(\$) <sup>(4)</sup>	(\$) <sup>(5)</sup>	(\$) <sup>(6)</sup>	(\$)
Mark Duff <sup>(1)</sup>	2017	267,000	—	188,118	—	32,362	487,480
President and CEO	2016	136,581	—	100,094	—	40,800	277,475
Ben Naccarato	2017	226,552 <sup>(2)</sup>	—	94,059	—	36,706	357,317
Vice President and CFO	2016	220,667	—	—	—	37,537	258,204
Dr. Louis Centofanti	2017	262,959 <sup>(3)</sup>	—	94,059	—	30,464	387,482
EVP of Strategic Initiatives	2016	279,248	—	—	—	31,763	311,011

- (1) On September 8, 2017, Mr. Duff was named by the Company as President and CEO, succeeding Dr. Louis Centofanti, who retired from the position of President and CEO and was named to the position of EVP of Strategic Initiatives. Previously, Mr. Duff was appointed as EVP by the Company on May 15, 2016 (effective June 11, 2016) and earns an annual salary of \$267,000. Effective September 30, 2016, Mr. Duff also assumed the additional position of COO upon Mr. John Lash’s retirement from the position of COO (Mr. Lash retired from the Company effective December 31, 2016). As President and CEO of the Company, Mr. Duff continues to earn an annual salary of \$267,000. Amount noted in chart above for 2016 reflects salary earned by Mr. Duff from the date of his employment in June 2016.
- (2) Effective April, 20, 2017, the Compensation Committee and the Board approved Mr. Naccarato’s annual salary to \$229,494 from \$220,667.
- (3) As EVP of Strategic Initiatives, Dr. Centofanti’s annual salary was amended to \$223,400 from \$279,248.
- (4) Reflects the aggregate grant date fair value of awards computed in accordance with ASC 718, “Compensation – Stock Compensation.” Assumptions used in the calculation of this amount are included in “Note 5 – Capital Stock, Stock Plans, Warrants and Stock Based Compensation” to “Notes to Consolidated Financial Statement.” No options were granted to any other NEOs in 2016 other than Mr. Duff.
- (5) Represents performance compensation earned under the Company’s Management Incentive Plan (“MIP”) with respect to each NEO. The MIP for each NEO is described under the heading “2017 Management Incentive Plans (“MIP”).” No compensation was earned by any NEO under his respective MIP for 2017 and 2016. Mr. Duff did not have a MIP for 2016.
- (6) The amount shown includes a monthly automobile allowance of \$750, insurance premiums (health, disability and life) paid by the Company on behalf of the executive, and 401(k) matching contributions.

Name	Insurance			Total
	Premium	Auto Allowance	401(k) match	
Mark Duff	\$ 18,073	\$ 9,000	\$ 5,289	\$ 32,362
Ben Naccarato	\$ 23,208	\$ 9,000	\$ 4,498	\$ 36,706
Dr. Louis Centofanti	\$ 16,223	\$ 9,000	\$ 5,241	\$ 30,464

### Outstanding Equity Awards at Fiscal Year-End

The following table sets forth unexercised options held by the NEOs as of the fiscal year-end.

#### Outstanding Equity Awards at December 31, 2017

Name	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) <sup>(1)</sup> Unexercisable	Equity Incentive Plan Awards:		
			Number of Securities Underlying Unexercised Options (#)	Option Exercise Price (\$)	Option Expiration Date
Dr. Louis Centofanti	—	50,000 <sup>(2)</sup>	—	3.65	7/27/2023
Ben Naccarato	—	50,000 <sup>(2)</sup>	—	3.65	7/27/2023
Mark Duff	— 16,667 <sup>(3)</sup>	100,000 <sup>(2)</sup> 33,333 <sup>(3)</sup>	— —	3.65 3.97	7/27/2023 5/15/2022

- (1) Pursuant to the NEO's employment agreements with the Company, each dated September 9, 2017, in the event of a change in control, death of the executive officer, the executive officer terminates his employment for "good reason" or the executive officer is terminated by the Company without cause, each outstanding option and award shall immediately become exercisable in full (see "Employment Agreements" below for further discussion of the exercisability terms of the option under these events) .
- (2) Incentive stock option granted on July 27, 2017 under the Company's 2017 Stock Option Plan. The option has a contractual term of six years with one-fifth yearly vesting over a five year period.
- (3) Incentive stock option granted on May 15, 2016 under the Company's 2010 Stock Option Plan. The option has a contractual term of six years with one-third yearly vesting over a three year period.

None of the Company's NEOs exercised options during 2017.

### Employment Agreements

On September 8, 2017, the Company's Board approved the appointment of Mr. Mark Duff as the Company's new President and CEO, succeeding Dr. Louis Centofanti, who was named to the position of EVP of Strategic Initiatives and continues to serve as a member of the Board.

Immediately after the appointment of Mark Duff as the Company's new President and CEO, the Company's Compensation Committee and the Board approved, and the Company entered into, employment agreements with each of Mark Duff, CEO, Dr. Louis Centofanti, EVP of Strategic Initiatives, and Ben Naccarato, CFO (collectively, the "New Employment Agreements"). The Company had previously entered into an employment agreement with each of Dr. Louis Centofanti and Ben Naccarato on July 10, 2014, both of which were due to expire on July 10, 2018 (together, the "July 10, 2014 Employment Agreements"). The Company also had previously entered into an employment agreement dated January 19, 2017 (which was effective June 11, 2016) with Mark Duff, which was due to expire on June 11, 2019 (the "January 19, 2017 Employment Agreement"). The July 10, 2014 Employment Agreements and the January 19, 2017 Employment Agreement were terminated effective September 8, 2017.

Pursuant to the New Employment Agreements, all of which were effective September 8, 2017, (a) Mark Duff will serve as the Company's President and CEO, with an annual salary of \$267,000; (b) Dr. Louis Centofanti will serve as the Company's EVP of Strategic Initiatives, with an annual salary of \$223,400; and (c) Ben Naccarato will continue to serve as the Company's CFO, with an annual salary of \$229,494. In addition, each of these executive officers is entitled to participate in the Company's broad-based benefits plans and to certain performance compensation payable under separate MIPs as approved by the Company's Compensation Committee and Board. The Company's Compensation Committee and the Board approved individual 2017 MIPs on January 19, 2017 (which were effective January 1, 2017 and applicable for year 2017) for each of Mark Duff, Dr. Louis Centofanti, and Ben Naccarato (see discussion of the 2017 MIPs below under "2017 Management Incentive Plans ("MIPs)").

Each of the New Employment Agreements is effective for three years from September 8, 2017 (the "Initial Term") unless earlier terminated by the Company or by the executive officer. At the end of the Initial Term of each New Employment Agreement, each New Employment Agreement will automatically be extended for one additional year, unless at least six months prior to the expiration of the Initial Term, the Company or the executive officer provides written notice not to extend the terms of the New Employment Agreement.

Pursuant to the New Employment Agreements, if the executive officer's employment is terminated due to death/disability or for cause (as defined in the agreements), the Company will pay to the executive officer or to his estate an amount equal to the sum of any unpaid base salary, accrued unused vacation time through the date of termination, any benefits due to the executive officer under any employee benefit plan (the "Accrued Amounts") and any performance compensation payable pursuant to the MIP.

If the executive officer terminates his employment for "good reason" (as defined in the agreements) or is terminated by the Company without cause (including any such termination for "good reason" or without cause within 24 months after a Change in Control (as defined in the agreement)), the Company will pay the executive officer the Accrued Amounts, two years of full base salary, performance compensation (under the MIP) earned with respect to the fiscal year immediately preceding the date of termination, and an additional year of performance compensation (under the MIP) earned, if not already paid, with respect to the fiscal year immediately preceding the date of termination. If the executive terminates his employment for a reason other than for good reason, the Company will pay to the executive an amount equal to the Accrued Amounts plus any performance compensation payable pursuant to the MIP.

If there is a Change in Control (as defined in the agreements), all outstanding stock options to purchase common stock held by the executive officer will immediately become exercisable in full commencing on the date of termination through the original term of the options. In the event of the death of an executive officer, all outstanding stock options to purchase common stock held by the executive officer will immediately become exercisable in full commencing on the date of death, with such options exercisable for the lesser of the original option term or twelve months from the date of the executive officer's death. In the event an executive officer terminates his employment for "good reason" or is terminated by the Company without cause, all outstanding stock options to purchase common stock held by the executive officer will immediately become exercisable in full commencing on the date of termination, with such options exercisable for the lesser of the original option term or within 60 days from the date of the executive's date of termination. Severance benefits payable with respect to a termination (other than Accrued Amounts) shall not be payable until the termination constitutes a "separation from service" (as defined under Treasury Regulation Section 1.409A-1(h)).

### **Potential Payments**

The following table sets forth the potential (estimated) payments and benefits to which our NEOs, Mark Duff, Ben Naccarato, and Dr. Centofanti would be entitled upon termination of employment or following a Change in Control of the Company, as specified under each of their respective agreements with the Company, assuming each circumstance described below occurred on December 31, 2017, the last day of our fiscal year.

Name and Principal Position Potential Payment/Benefit	Disability or For Cause	Death	By Executive for Good Reason or by Company Without Cause	Change in Control of the Company
<b>Mark Duff</b>				
President and CEO				
Salary	\$ —	\$ —	\$ 534,000(1)	\$ 534,000(1)
Performance compensation	\$ —(2)	\$ —(2)	—(2)	—(2)
Stock Options	\$ —(3)	\$ —(4)	—(4)	—(4)
<b>Ben Naccarato</b>				
CFO				
Salary	\$ —	\$ —	\$ 458,988(1)	\$ 458,988(1)
Performance compensation	\$ —(2)	\$ —(2)	—(2)	—(2)
Stock Options	\$ —(5)	\$ —(4)	—(4)	—(4)
<b>Dr. Louis Centofanti</b>				
EVP of Strategic Initiatives				
Salary	\$ —	\$ —	\$ 446,800(1)	\$ 446,800(1)
Performance compensation	\$ —(2)	\$ —(2)	—(2)	—(2)
Stock Options	\$ —(5)	\$ —(4)	—(4)	—(4)

- (1) Represents two times the base salary of executive at December 31, 2017.
- (2) No amount was earned and payable under the 2017 MIP. Additionally, pursuant to the 2017 MIP, if the participant's employment with the Company is voluntarily or involuntarily terminated prior to the annual payment of the MIP compensation period, no MIP is payable (see "2017 Management Incentive Plans ("MIPs") below).
- (3) Benefit is zero since the number of stock options vested was at-the-money at December 31, 2017 (as reported on the NASDAQ).
- (4) All outstanding options become vested immediately upon circumstances noted; however, benefit is zero since the number of stock options that was outstanding is either out-of-the money or at-the money at December 31, 2017.
- (5) Benefit is zero since no stock option was vested at December 31, 2017.

### 2017 Executive Compensation Components

For the fiscal year ended December 31, 2017, the principal components of compensation for executive officers were:

- base salary;
- performance-based incentive compensation;
- long term incentive compensation;
- retirement and other benefits; and
- perquisites.

Based on the amounts set forth in the Summary Compensation table, during 2017, salary accounted for approximately 61.4% of the total compensation of our NEOs, while equity option awards, MIP compensation, and other compensation accounted for approximately 38.6% of the total compensation of the NEOs.

### Base Salary

The NEOs, other officers, and other employees of the Company receive a base salary during the fiscal year. Base salary ranges for executive officers are determined for each executive based on his or her position and responsibility by using market data and comparisons to the Peer Group.

During its review of base salaries for executives, the Compensation Committee primarily considers:

- market data and Peer Group comparisons;
- internal review of the executive's compensation, both individually and relative to other officers; and
- individual performance of the executive.

Salary levels are typically considered annually as part of the performance review process as well as upon a promotion or other change in job responsibility. Merit based salary increases for executives are based on the Compensation Committee's assessment of the individual's performance. The base salary and potential annual base salary adjustments for the NEOs are set forth in their respective employment agreements.

Effective April 20, 2017, the Compensation Committee and the Board approved an increase to the CFO's (Ben Naccarato) base salary to \$229,494 and effective September 8, 2017, as a result of Dr. Centofanti's retirement from the position of President and CEO and his appointment to the position of EVP of Strategic Initiatives, Dr. Centofanti's annual base salary was amended to \$223,400 from \$279,248.

#### **Performance-Based Incentive Compensation**

The Compensation Committee has the latitude to design cash and equity-based incentive compensation programs to promote high performance and achievement of our corporate objectives by directors and the NEOs, encourage the growth of stockholder value and enable employees to participate in our long-term growth and profitability. The Compensation Committee may grant stock options and/or performance bonuses. In granting these awards, the Compensation Committee may establish any conditions or restrictions it deems appropriate. In addition, the CEO has discretionary authority to grant stock options to certain high-performing executives or officers, subject to the approval of the Compensation Committee. The exercise price for each stock options granted is at or above the market price of our Common Stock on the date of grant. Stock options may be awarded to newly hired or promoted executives at the discretion of the Compensation Committee. Grants of stock options to eligible newly hired executive officers are generally made at the next regularly scheduled Compensation Committee meeting following the hire date.

#### **2017 Management Incentive Plans ("MIPs")**

On January 19, 2017, the Board and the Compensation Committee approved individual MIPs for each of Dr. Louis Centofanti, the then CEO, Mark Duff, the then EVP/COO, and Ben Naccarato, CFO. The MIPs were effective January 1, 2017. Each MIP provided guidelines for the calculation of annual cash incentive based compensation, subject to Compensation Committee oversight and modification. Each MIP awarded cash compensation based on achievement of performance thresholds, with the amount of such compensation established as a percentage of the executive's 2017 base salary on the approval date of the MIP. The potential target performance compensation ranged from 5% to 100% of the 2017 base salary for the CEO (\$13,962 to \$279,248), 5% to 100% of the 2017 base salary for the EVP/COO (\$13,350 to \$267,000), and 5% to 100% of the 2017 base salary for the CFO (\$11,033 to \$220,667). The Compensation Committee retains the right to modify, change or terminate each MIP and may adjust the various target amounts described below, at any time and for any reason.

Performance compensation is paid on or about 90 days after year-end, or sooner, based on finalization of our audited financial statements for 2017. If the MIP participant's employment with the Company is voluntarily or involuntarily terminated prior to a regularly scheduled MIP compensation payment date, no MIP payment will be payable for and after such period.

The total performance compensation payable under the MIPs to the CEO, EVP/COO, and CFO as a group is not to exceed 50% of the Company's pre-tax net income (exclusive of PF Medical) prior to the calculation of performance compensation.

No cash incentive based compensation was paid to any of the NEOs under his respective 2017 MIP.

The following describes the principal terms of each MIP as approved on January 19, 2017:

*CEO MIP:*

2017 CEO performance compensation was based upon meeting corporate revenue, EBITDA (earnings before interest, taxes, depreciation and amortization), health and safety, and environmental compliance (permit and license violations) objectives during fiscal year 2017 from our continuing operations (excluding PF Medical). The Compensation Committee believes performance compensation payable under each of the 2017 MIPs as discussed herein and below should be based on achievement of an EBITDA target, which excludes certain non-cash items, as this target provides a better indicator of operating performance. However, EBITDA has certain limitations as it does not reflect all items of income or cash flows that affect the Company's financial performance under GAAP. At achievement of 70% to 119% of the revenue and EBITDA targets, the potential performance compensation was payable at 5% to 50% of the CEO's 2017 base salary. For this compensation, 60% was based on the EBITDA goal, 10% on the revenue goal, 15% on the number of health and safety claim incidents that occurred during fiscal year 2017, and the remaining 15% on the number of notices alleging environmental, health, or safety violations under our permits or licenses that occurred during the fiscal year 2017. At achievement of 120% to 160%+ of the revenue and EBITDA targets, the potential performance compensation was payable at 65% to 100% of the CEO's 2017 base salary. For this compensation, the amount payable was based on the four objectives noted above, with the payment of such performance compensation being weighted more heavily toward the EBITDA objective. Each of the revenue and EBITDA components was based on our Board-approved revenue target and EBITDA target. The 2017 target performance incentive compensation for our CEO was as follows:

Annualized Base Pay:	\$ 279,248
Performance Incentive Compensation Target (at 100% of MIP):	\$ 139,624
<b>Total Annual Target Compensation (at 100% of MIP):</b>	<b>\$ 418,872</b>

CEO MIP MATRIX  
2017

Performance Target Column:	(a)	(b)	(c)	(d)	(e)	(f)	
				<b>TARGET</b>			
Revenue Target	< \$56,000,000	\$56,000,000	\$68,000,000	<b>\$80,000,000</b>	\$96,000,000	\$112,000,000	\$128,000,000
EBITDA Target	< \$ 6,510,000	\$ 6,510,000	\$ 7,905,000	<b>\$ 9,300,000</b>	\$11,160,000	\$ 13,020,000	\$ 14,880,000
% of Performance Incentive Target	0%	10%	50%	<b>100%</b>	130%	170%	200%
<b>% of Target Achieved</b>	<b>&lt;70%</b>	<b>70%-84%</b>	<b>85%-99%</b>	<b>100%-119%</b>	<b>120%-139%</b>	<b>140%-159%</b>	<b>160% +</b>
Revenue	\$ -	\$ 1,397	\$ 6,981	<b>\$ 13,962</b>	\$ 19,945	\$ 27,924	\$ 33,908
EBITDA	-	8,377	41,887	<b>83,774</b>	119,678	167,549	203,452
Health and Safety	-	2,094	10,472	<b>20,944</b>	20,944	20,944	20,944
Permit & License Violations	-	2,094	10,472	<b>20,944</b>	20,944	20,944	20,944
	<u>\$ -</u>	<u>\$ 13,962</u>	<u>\$ 69,812</u>	<u><b>\$ 139,624</b></u>	<u>\$ 181,511</u>	<u>\$ 237,361</u>	<u>\$ 279,248</u>

- Revenue was defined as the total consolidated third-party top line revenue from continuing operations (excluding PF Medical) as publicly reported in the Company's 2017 financial statements. The percentage achieved was determined by comparing the actual consolidated revenue from continuing operations to the Board-approved revenue target from continuing operations, which was \$80,000,000. The Board reserved the right to modify or change the revenue targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.
- EBITDA was defined as earnings before interest, taxes, depreciation, and amortization from continuing operations (excluding PF Medical). The percentage achieved was determined by comparing the actual EBITDA to the Board-approved EBITDA target for 2017, which was \$9,300,000. The Board reserved the right to modify or change the EBITDA targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.

- 3) The health and safety incentive target was based upon the actual number of Worker’s Compensation Lost Time Accidents, as provided by the Company’s Worker’s Compensation carrier. The Corporate Controller submitted a report on a quarterly basis documenting and confirming the number of Worker’s Compensation Lost Time Accidents, supported by the Worker’s Compensation Loss Report provided by the company’s carrier or broker. Such claims were identified on the loss report as “indemnity claims.” The following number of Worker’s Compensation Lost Time Accidents and corresponding Performance Target Thresholds was established for the annual incentive compensation plan calculation for 2017.

Work Comp. Claim Number	Performance Target Payable Under Column
6	(a)
5	(b)
4	(c)
3	(d)
2	(e)
1	(f)

- 4) Permits or license violations incentive was earned/determined according to the scale set forth below: An “official notice of non-compliance” was defined as an official communication during 2017 from a local, state, or federal regulatory authority alleging one or more violations of an otherwise applicable Environmental, Health or Safety requirement or permit provision, which resulted in a facility’s implementation of corrective action(s).

Permit and License Violations	Performance Target Payable Under Column
6	(a)
5	(b)
4	(c)
3	(d)
2	(e)
1	(f)

- 5) No performance incentive compensation was payable for achieving the health and safety, permit and license violation, and revenue targets unless a minimum of 70% of the EBITDA target was achieved.

*EVP/COO MIP:*

2017 EVP/COO performance compensation was based upon meeting corporate revenue, EBITDA, health and safety, and environmental compliance (permit and license violations) objectives during fiscal year 2017 from our continuing operations (excluding PF Medical). At achievement of 70% to 119% of the revenue target and 60% to 119% of the EBITDA target, the potential performance compensation was payable at 5% to 50% of the 2017 base salary. For this compensation, 60% was based on EBITDA goal, 10% on revenue goal, 15% on the number of health and safety claim incidents that occurred during fiscal year 2017, and the remaining 15% on the number of notices alleging environmental, health or safety violations under our permits or licenses that occurred during the fiscal year 2017. Upon achievement of 120% to 160%+ of the revenue and EBITDA targets, the potential performance compensation was payable at 65% to 100% of the EVP/COO’s 2017 base salary. For this compensation, the amount payable was based on the four objectives noted above, with the payment of such performance compensation being weighted more heavily toward the EBITDA objective. Each of the revenue and EBITDA components was based on our Board-approved revenue target and EBITDA target. The 2017 target performance incentive compensation for our EVP/COO was as follows:

Annualized Base Pay:	\$	267,000
Performance Incentive Compensation Target (at 100% of Plan):	\$	133,500
Total Annual Target Compensation (at 100% of Plan):	\$	400,500

EVP/COO MIP MATRIX  
2017

Performance Target Column:	(a)	(b)	(c)	(d)	(e)	(f)	
	<b>TARGET</b>						
Revenue Target <	\$56,000,000	\$56,000,000	\$63,586,000	<b>\$80,000,000</b>	\$96,000,000	\$112,000,000	\$128,000,000
EBITDA Target <	\$ 5,600,000	\$ 5,600,000	\$ 6,358,600	<b>\$ 9,300,000</b>	\$11,160,000	\$ 13,020,000	\$ 14,880,000
% of Performance Incentive Target	0%	10%	50%	<b>100%</b>	130%	170%	200%
<b>% of Revenue Target Achieved</b>	<b>&lt;70%</b>	<b>70%-78%</b>	<b>79%-99%</b>	<b>100%-119%</b>	<b>120%-139%</b>	<b>140%-159%</b>	<b>160% +</b>
<b>% of EBITDA Target Achieved</b>	<b>&lt;60%</b>	<b>60%-67%</b>	<b>68%-99%</b>	<b>100%-119%</b>	<b>120%-139%</b>	<b>140%-159%</b>	<b>160% +</b>
Revenue	\$ -	\$ 1,334	\$ 6,674	<b>\$ 13,350</b>	\$ 19,071	\$ 26,700	\$ 32,421
EBITDA	-	8,010	40,050	<b>80,100</b>	114,429	160,200	194,529
Health and Safety	-	2,003	10,013	<b>20,025</b>	20,025	20,025	20,025
Permit & License Violations	-	2,003	10,013	<b>20,025</b>	20,025	20,025	20,025
	<u>\$ -</u>	<u>\$ 13,350</u>	<u>\$ 66,750</u>	<u><b>\$ 133,500</b></u>	<u>\$ 173,550</u>	<u>\$ 226,950</u>	<u>\$ 267,000</u>

- Revenue was defined as the total consolidated third-party top line revenue from continuing operations (excluding PF Medical) as publicly reported in the Company's 2017 financial statements. The percentage achieved was determined by comparing the actual consolidated revenue from continuing operations to the Board-approved revenue target from continuing operations, which was \$80,000,000. The Board reserved the right to modify or change the revenue targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.
- EBITDA was defined as earnings before interest, taxes, depreciation, and amortization from continuing operations (excluding PF Medical). The percentage achieved was determined by comparing the actual EBITDA to the Board-approved EBITDA target for 2017, which was \$9,300,000. The Board reserved the right to modify or change the EBITDA targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.
- The health and safety incentive target was based upon the actual number of Worker's Compensation Lost Time Accidents, as provided by the Company's Worker's Compensation carrier. The Corporate Controller submitted a report on a quarterly basis documenting and confirming the number of Worker's Compensation Lost Time Accidents, supported by the Worker's Compensation Loss Report provided by the company's carrier or broker. Such claims were identified on the loss report as "indemnity claims." The following number of Worker's Compensation Lost Time Accidents and corresponding Performance Target Thresholds was established for the annual incentive compensation plan calculation for 2017.

Work Comp. Claim Number	Performance Target Payable Under Column
6	(a)
5	(b)
4	(c)
3	(d)
2	(e)
1	(f)

- 4) Permits or license violations incentive was earned/determined according to the scale set forth below: An “official notice of non-compliance” was defined as an official communication during 2017 from a local, state, or federal regulatory authority alleging one or more violations of an otherwise applicable Environmental, Health or Safety requirement or permit provision, which resulted in a facility’s implementation of corrective action(s).

Permit and License Violations	Performance Target Payable Under Column
6	(a)
5	(b)
4	(c)
3	(d)
2	(e)
1	(f)

- 5) No performance incentive compensation was payable for achieving the health and safety, permit and license violation, and revenue targets unless a minimum of 60% of the EBITDA target was achieved.

*CFO MIP:*

2017 CFO performance compensation was based upon meeting corporate revenue, EBITDA, health and safety, and environmental compliance (permit and license violations) objectives during fiscal year 2017 from our continuing operations (excluding PF Medical). At achievement of 70% to 119% of the revenue and EBITDA targets, the potential performance compensation was payable at 5% to 50% of the 2017 base salary. For this compensation, 60% was based on EBITDA goal, 10% on revenue goal, 15% on the number of health and safety claim incidents that occurred during fiscal year 2017, and the remaining 15% on the number of notices alleging environmental, health or safety violations under our permits or licenses that occurred during the fiscal year 2017. Upon achievement of 120% to 160%+ of the revenue and EBITDA targets, the CFO’s potential performance compensation was payable at 65% to 100% of the CFO’s 2017 base salary. For this compensation, the amount payable was based on the four objectives noted above, with the payment of such performance compensation being weighted more heavily toward the EBITDA objective. Each of the revenue and EBITDA components was based on our Board-approved revenue target and EBITDA target. The 2017 target performance incentive compensation for our CFO was as follows:

Annualized Base Pay:	\$	220,667
Performance Incentive Compensation Target (at 100% of Plan):	\$	110,334
<b>Total Annual Target Compensation (at 100% of Plan):</b>	<b>\$</b>	<b>331,001</b>

CFO MIP MATRIX  
2017

Performance Target  
Column:

		(a)	(b)	(c)	TARGET	(d)	(e)	(f)
Revenue Target	<	\$56,000,000	\$56,000,000	\$68,000,000	<b>\$80,000,000</b>	\$96,000,000	\$112,000,000	\$128,000,000
EBITDA Target	<	\$ 6,510,000	\$ 6,510,000	\$ 7,905,000	<b>\$ 9,300,000</b>	\$11,160,000	\$ 13,020,000	\$ 14,880,000
<b>% of Performance</b>								
Incentive Target		0%	10%	50%	<b>100%</b>	130%	170%	200%
<b>% of Target Achieved</b>		<b>&lt;70%</b>	<b>70%-84%</b>	<b>85%-99%</b>	<b>100%-119%</b>	<b>120%-139%</b>	<b>140%-159%</b>	<b>160% +</b>
Revenue	\$	-	\$ 1,103	\$ 5,517	<b>\$ 11,034</b>	\$ 15,762	\$ 22,067	\$ 26,795
EBITDA		-	6,620	33,100	<b>66,200</b>	94,572	132,400	160,772
Health and Safety		-	1,655	8,275	<b>16,550</b>	16,550	16,550	16,550
Permit & License								
Violations		-	1,655	8,275	<b>16,550</b>	16,550	16,550	16,550
	\$	<u>-</u>	<u>\$ 11,033</u>	<u>\$ 55,167</u>	<u><b>\$ 110,334</b></u>	<u>\$ 143,434</u>	<u>\$ 187,567</u>	<u>\$ 220,667</u>

- Revenue was defined as the total consolidated third-party top line revenue from continuing operations (excluding PF Medical) as publicly reported in the Company's 2017 financial statements. The percentage achieved was determined by comparing the actual consolidated revenue from continuing operations to the Board-approved revenue target from continuing operations, which was \$80,000,000. The Board reserved the right to modify or change the revenue targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.
- EBITDA was defined as earnings before interest, taxes, depreciation, and amortization from continuing operations (excluding PF Medical). The percentage achieved was determined by comparing the actual EBITDA to the Board-approved EBITDA target for 2017, which was \$9,300,000. The Board reserved the right to modify or change the EBITDA targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.
- The health and safety incentive target was based upon the actual number of Worker's Compensation Lost Time Accidents, as provided by the Company's Worker's Compensation carrier. The Corporate Controller submitted a report on a quarterly basis documenting and confirming the number of Worker's Compensation Lost Time Accidents, supported by the Worker's Compensation Loss Report provided by the company's carrier or broker. Such claims were identified on the loss report as "indemnity claims." The following number of Worker's Compensation Lost Time Accidents and corresponding Performance Target Thresholds was established for the annual incentive compensation plan calculation for 2017.

Work Comp. Claim Number	Performance Target Payable Under Column
6	(a)
5	(b)
4	(c)
3	(d)
2	(e)
1	(f)

- Permits or license violations incentive was earned/determined according to the scale set forth below: An "official notice of non-compliance" was defined as an official communication during 2017 from a local, state, or federal regulatory authority alleging one or more violations of an otherwise applicable Environmental, Health or Safety requirement or permit provision, which resulted in a facility's implementation of corrective action(s).

Permit and License Violations	Performance Target Payable Under Column
6	(a)
5	(b)
4	(c)
3	(d)
2	(e)
1	(f)

- 5) No performance incentive compensation was payable for achieving the health and safety, permit and license violation, and revenue targets unless a minimum of 70% of the EBITDA target was achieved.

### 2017 MIP Targets

As discussed above, 2017 MIPs approved for the CEO, EVP/COO, and CFO by the Board and the Compensation Committee provided for the award of cash compensation based on achievement of performance targets which included revenue and EBITDA targets as approved by our Board. The 2017 MIP revenue target of \$80,000,000 and EBITDA target of \$9,300,000 were set by the Compensation Committee taking into account the Board-approved budget for 2017 as well as the committee's expectations for performance that in its estimation would warrant payment of incentive cash compensation. In formulating the revenue target of \$80,000,000, the Board considered 2016 results, current economic conditions, and forecasts for 2017 government (U.S DOE) spending. The Compensation Committee believed the performance targets were likely to be achieved, but not assured. No cash incentive-based compensation was paid under any of the 2017 MIPs.

### 2018 MIPs

On January 18, 2018, the Board and the Compensation Committee approved individual MIP for our CEO, CFO and EVP of Strategic Initiatives. The MIPs are effective January 1, 2018 and applicable for year 2018. Each MIP provides guidelines for the calculation of annual cash incentive-based compensation, subject to Compensation Committee oversight and modification. Each MIP awards cash compensation based on achievement of performance thresholds, with the amount of such compensation established as a percentage of the executive's 2018 annual base salary on the approval date of the MIP. The potential target performance compensation ranges from 5% to 100% of the base salary for the CEO (\$13,350 to \$267,000), 5% to 100% of the base salary for the CFO (\$11,475 to \$229,494) and 5% to 100% of the base salary for the EVP of Strategic Initiatives (\$11,170 to \$223,400).

Performance compensation is paid on or about 90 days after year-end, or sooner, based on finalization of our audited financial statements for 2018. The Compensation Committee retains the right to modify, change or terminate each MIP and may adjust the various target amounts described below, at any time and for any reason.

The total performance compensation paid to the CEO, CFO and EVP of Strategic Initiatives as a group is not to exceed 50% of the Company's pre-tax net income (exclusive of PF Medical) prior to the calculation of performance compensation.

The following describes the principal terms of each 2018 MIP as approved on January 18, 2018:

*CEO MIP:*

2018 CEO performance compensation is based upon meeting corporate revenue, EBITDA, health and safety, and environmental compliance (permit and license violations) objectives during fiscal year 2018 from our continuing operations (excluding PF Medical). The Compensation Committee believes performance compensation payable under each of the 2018 MIPs as discussed herein and below should be based on achievement of an EBITDA target, which excludes certain non-cash items, as this target provides a better indicator of operating performance. However, EBITDA has certain limitations as it does not reflect all items of income or cash flows that affect the Company's financial performance under GAAP. At achievement of 60% to 110% of each of the revenue and EBITDA targets, the potential performance compensation is payable at 5% to 50% of the 2018 base salary. For this compensation, 60% is based on EBITDA goal, 10% on revenue goal, 15% on the number of health and safety claim incidents that occur during fiscal year 2018, and the remaining 15% on the number of notices alleging environmental, health or safety violations under our permits or licenses that occur during the fiscal year 2018. Upon achievement of 111% to 150%+ of each of the revenue and EBITDA targets, the potential performance compensation is payable at 65% to 100% of the CEO's 2018 base salary. For this compensation, the amount payable is based on the four objectives noted above, with the payment of such performance compensation being weighted more heavily toward the EBITDA objective. Each of the revenue and EBITDA components is based on our Board-approved revenue target and EBITDA target. The 2018 target performance incentive compensation for our CEO is as follows:

Annualized Base Pay:	\$ 267,000
Performance Incentive Compensation Target (at 100% of Plan):	\$ 133,500
<b>Total Annual Target Compensation (at 100% of Plan):</b>	<b>\$ 400,500</b>

Perma-Fix Environmental Services, Inc.  
2018 Management Incentive Plan  
CEO MIP MATRIX

	Performance Target Achieved						
	<u>&lt;60%</u>	<u>60%-74%</u>	<u>75%-89%</u>	<u>90%-110%</u>	<u>111%-129%</u>	<u>130%-150%</u>	<u>&gt;150%</u>
Revenue	\$ -	\$ 1,334	\$ 6,674	\$ 13,350	\$ 19,071	\$ 26,700	\$ 32,421
EBITDA	-	8,010	40,050	80,100	114,429	160,200	194,529
Health & Safety	-	2,003	10,013	20,025	20,025	20,025	20,025
Permit & License Violations	-	2,003	10,013	20,025	20,025	20,025	20,025
	<u>\$ -</u>	<u>\$ 13,350</u>	<u>\$ 66,750</u>	<u>\$ 133,500</u>	<u>\$ 173,550</u>	<u>\$ 226,950</u>	<u>\$ 267,000</u>

- 1) Revenue is defined as the total consolidated third-party top line revenue from continuing operations (excluding PF Medical) as publicly reported in the Company's 2018 financial statements. The percentage achieved is determined by comparing the actual consolidated revenue from continuing operations to the Board-approved revenue target from continuing operations, which is \$63,398,000. The Board reserves the right to modify or change the revenue targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.
- 2) EBITDA is defined as earnings before interest, taxes, depreciation, and amortization from continuing operations (excluding PF Medical). The percentage achieved is determined by comparing the actual EBITDA to the Board-approved EBITDA target for 2018, which is \$7,682,000. The Board reserves the right to modify or change the EBITDA targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.
- 3) The health and safety incentive target is based upon the actual number of Worker's Compensation Lost Time Accidents, as provided by the Company's Worker's Compensation carrier. The Corporate Controller will submit a report on a quarterly basis documenting and confirming the number of Worker's Compensation Lost Time Accidents, supported by the Worker's Compensation Loss Report provided by the company's carrier or broker. Such claims will be identified on the loss report as "indemnity claims." The following number of Worker's Compensation Lost Time Accidents and corresponding Performance Target Thresholds has been established for the annual incentive compensation plan calculation for 2018.

Work Comp. Claim Number	Performance Target Payable Under Column
6	60%-74%
5	75%-89%
4	90%-110%
3	111%-129%
2	130%-150%
1	>150%

- 4) Permits or license incentive is earned/determined according to the scale set forth below: An “official notice of non-compliance” is defined as an official communication during 2018 from a local, state, or federal regulatory authority alleging one or more violations of an otherwise applicable Environmental, Health or Safety requirement or permit provision, which resulted in a facility’s implementation of corrective action(s).

Permit and License Violations	Performance Target Payable Under Column
6	60%-74%
5	75%-89%
4	90%-110%
3	111%-129%
2	130%-150%
1	>150%

- 5) No performance incentive compensation will be payable for achieving the health and safety, permit and license violation, and revenue targets unless a minimum of 60% of the EBITDA target is achieved.

*CFO MIP:*

2018 CFO performance compensation is based upon meeting corporate revenue, EBITDA, health and safety, and environmental compliance (permit and license violations) objectives during fiscal year 2018 from our continuing operations (excluding PF Medical). At achievement of 60% to 110% of each of the revenue and EBITDA targets, the potential performance compensation is payable at 5% to 50% of the 2018 base salary. For this compensation, 60% is based on EBITDA goal, 10% on revenue goal, 15% on the number of health and safety claim incidents that occur during fiscal year 2018, and the remaining 15% on the number of notices alleging environmental, health or safety violations under our permits or licenses that occur during the fiscal year 2018. Upon achievement of 111% to 150%+ of each of the revenue and EBITDA targets, the potential performance compensation is payable at 65% to 100% of the CFO’s 2018 base salary. For this compensation, the amount payable is based on the four objectives noted above, with the payment of such performance compensation being weighted more heavily toward the EBITDA objective. Each of the revenue and EBITDA components is based on our Board-approved revenue target and EBITDA target. The 2018 target performance incentive compensation for our CFO is as follows:

Annualized Base Pay:	\$ 229,494
Performance Incentive Compensation Target (at 100% of Plan):	\$ 114,747
Total Annual Target Compensation (at 100% of Plan):	\$ 344,241

Perma-Fix Environmental Services, Inc.  
2018 Management Incentive Plan  
CFO MIP MATRIX

	Performance Target Achieved						
	<u>&lt;60%</u>	<u>60%-74%</u>	<u>75%-89%</u>	<u>90%-110%</u>	<u>111%-129%</u>	<u>130%-150%</u>	<u>&gt;150%</u>
Revenue	\$ -	\$ 1,146	\$ 5,736	\$ 11,475	\$ 16,392	\$ 22,949	\$ 27,867
EBITDA	-	6,885	34,424	68,848	98,355	137,696	167,203
Health & Safety	-	1,722	8,607	17,212	17,212	17,212	17,212
Permit & License Violations	-	1,722	8,607	17,212	17,212	17,212	17,212
	<u>\$ -</u>	<u>\$ 11,475</u>	<u>\$ 57,374</u>	<u>\$ 114,747</u>	<u>\$ 149,171</u>	<u>\$ 195,069</u>	<u>\$ 229,494</u>

- 1) Revenue is defined as the total consolidated third-party top line revenue from continuing operations (excluding Medical) as publicly reported in the Company's 2018 financial statements. The percentage achieved is determined by comparing the actual consolidated revenue from continuing operations to the Board-approved revenue target from continuing operations, which is \$63,398,000. The Board reserves the right to modify or change the revenue targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.
- 2) EBITDA is defined as earnings before interest, taxes, depreciation, and amortization from continuing operations (excluding PF Medical). The percentage achieved is determined by comparing the actual EBITDA to the Board-approved EBITDA target for 2018, which is \$7,682,000. The Board reserves the right to modify or change the EBITDA targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.
- 3) The health and safety incentive target is based upon the actual number of Worker's Compensation Lost Time Accidents, as provided by the Company's Worker's Compensation carrier. The Corporate Controller will submit a report on a quarterly basis documenting and confirming the number of Worker's Compensation Lost Time Accidents, supported by the Worker's Compensation Loss Report provided by the company's carrier or broker. Such claims will be identified on the loss report as "indemnity claims." The following number of Worker's Compensation Lost Time Accidents and corresponding Performance Target Thresholds has been established for the annual incentive compensation plan calculation for 2018.

Work Comp. Claim Number	Performance Target Payable Under Column
6	60%-74%
5	75%-89%
4	90%-110%
3	111%-129%
2	130%-150%
1	>150%

- 4) Permits or license incentive is earned/determined according to the scale set forth below: An "official notice of non-compliance" is defined as an official communication during 2018 from a local, state, or federal regulatory authority alleging one or more violations of an otherwise applicable Environmental, Health or Safety requirement or permit provision, which resulted in a facility's implementation of corrective action(s).

Permit and License Violations	Performance Target Payable Under Column
6	60%-74%
5	75%-89%
4	90%-110%
3	111%-129%
2	130%-150%
1	>150%

- 5) No performance incentive compensation will be payable for achieving the health and safety, permit and license violation, and revenue targets unless a minimum of 60% of the EBITDA target is achieved.

*EVP of Strategic Initiatives MIP:*

2018 EVP of Strategic Initiatives performance compensation is based upon meeting corporate revenue, EBITDA, health and safety, and environmental compliance (permit and license violations) objectives during fiscal year 2018 from our continuing operations (excluding PF Medical). At achievement of 60% to 110% of each of the revenue and EBITDA targets, the potential performance compensation is payable at 5% to 50% of the 2018 base salary. For this compensation, 60% is based on EBITDA goal, 10% on revenue goal, 15% on the number of health and safety claim incidents that occur during fiscal year 2018, and the remaining 15% on the number of notices alleging environmental, health or safety violations under our permits or licenses that occur during the fiscal year 2018. Upon achievement of 111% to 150%+ of each of the revenue and EBITDA targets, the potential performance compensation is payable at 65% to 100% of the EVP of Strategic Initiative's 2018 base salary. For this compensation, the amount payable is based on the four objectives noted above, with the payment of such performance compensation being weighted more heavily toward the EBITDA objective. Each of the revenue and EBITDA components is based on our Board-approved revenue target and EBITDA target. The 2018 target performance incentive compensation for our EVP of Strategic Initiatives is as follows:

Annualized Base Pay:	\$ 223,400
Performance Incentive Compensation Target (at 100% of Plan):	\$ 111,700
Total Annual Target Compensation (at 100% of Plan):	\$ 335,100

Perma-Fix Environmental Services, Inc.  
2018 Management Incentive Plan  
EVP OF STRATEGIC INITIATIVES MIP MATRIX

	Performance Target Achieved						
	<60%	60%-74%	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue	\$ -	\$ 1,116	\$ 5,584	\$ 11,170	\$ 15,957	\$ 22,340	\$ 27,127
EBITDA	-	6,702	33,510	67,020	95,743	134,040	162,763
Health & Safety	-	1,676	8,378	16,755	16,755	16,755	16,755
Permit & License Violations	-	1,676	8,378	16,755	16,755	16,755	16,755
	<u>\$ -</u>	<u>\$ 11,170</u>	<u>\$ 55,850</u>	<u>\$ 111,700</u>	<u>\$ 145,210</u>	<u>\$ 189,890</u>	<u>\$ 223,400</u>

- 1) Revenue is defined as the total consolidated third-party top line revenue from continuing operations (excluding Medical) as publicly reported in the Company's 2018 financial statements. The percentage achieved is determined by comparing the actual consolidated revenue from continuing operations to the Board-approved revenue target from continuing operations, which is \$63,398,000. The Board reserves the right to modify or change the revenue targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.

- 2) EBITDA is defined as earnings before interest, taxes, depreciation, and amortization from continuing operations (excluding PF Medical). The percentage achieved is determined by comparing the actual EBITDA to the Board-approved EBITDA target for 2018, which is \$7,682,000. The Board reserves the right to modify or change the EBITDA targets as defined herein in the event of the sale or disposition of any of the assets of the Company or in the event of an acquisition.
- 3) The health and safety incentive target is based upon the actual number of Worker’s Compensation Lost Time Accidents, as provided by the Company’s Worker’s Compensation carrier. The Corporate Controller will submit a report on a quarterly basis documenting and confirming the number of Worker’s Compensation Lost Time Accidents, supported by the Worker’s Compensation Loss Report provided by the company’s carrier or broker. Such claims will be identified on the loss report as “indemnity claims.” The following number of Worker’s Compensation Lost Time Accidents and corresponding Performance Target Thresholds has been established for the annual incentive compensation plan calculation for 2018.

Work Comp. Claim Number	Performance Target Payable Under Column
6	60%-74%
5	75%-89%
4	90%-110%
3	111%-129%
2	130%-150%
1	>150+

- 4) Permits or license incentive is earned/determined according to the scale set forth below: An “official notice of non-compliance” is defined as an official communication during 2018 from a local, state, or federal regulatory authority alleging one or more violations of an otherwise applicable Environmental, Health or Safety requirement or permit provision, which resulted in a facility’s implementation of corrective action(s).

Permit and License Violations	Performance Target Payable Under Column
6	60%-74%
5	75%-89%
4	90%-110%
3	111%-129%
2	130%-150%
1	>150%

- 5) No performance incentive compensation will be payable for achieving the health and safety, permit and license violation, and revenue targets unless a minimum of 60% of the EBITDA target is achieved.

## 2018 MIP Targets

As discussed above, 2018 MIPs approved for the CEO, CFO and EVP of Strategic Initiatives by the Board and the Compensation Committee provide for the award of cash compensation based on achievement of performance targets which included revenue and EBITDA targets as approved by our Board. The 2018 MIP revenue target of \$63,398,000 and EBITDA target of \$7,682,000 were set by the Compensation Committee taking into account the Board-approved budget for 2018 as well as the committee's expectations for performance that in its estimation would warrant payment of incentive cash compensation. In formulating the revenue target of \$63,398,000, the Board considered 2017 results, current economic conditions, and forecasts for 2018 government (U.S DOE) spending. The Compensation Committee believes the performance targets are likely to be achieved, but not assured.

## Long-Term Incentive Compensation

### Employee Stock Option Plans

The 2010 Stock Option Plan and 2017 the Stock Option Plan (together, the "Option Plans") encourage participants to focus on long-term performance and provides an opportunity for executive officers and certain designated key employees to increase their stake in the Company. Stock options succeed by delivering value to executives only when the value of our stock increases. The Option Plans authorize the grant of Non-Qualified Stock Options ("NQSOs") and Incentive Stock Options ("ISOs") for the purchase of our Common Stock.

The Option Plans assist the Company to:

- enhance the link between the creation of stockholder value and long-term executive incentive compensation;
- provide an opportunity for increased equity ownership by executives; and
- maintain competitive levels of total compensation;

Stock option award levels are determined based on market data, vary among participants based on their positions with us and are granted generally at the Compensation Committee's regularly scheduled July or August meeting. Newly hired or promoted executive officers who are eligible to receive options are generally awarded such options at the next regularly scheduled Compensation Committee meeting following their hire or promotion date.

Options are awarded with an exercise price equal to or not less than the closing price of the Company's Common Stock on the date of the grant as reported on the NASDAQ. In certain limited circumstances, the Compensation Committee may grant options to an executive at an exercise price in excess of the closing price of the Company's Common Stock on the grant date.

On July 27, 2017, the Company granted ISOs from the 2017 Stock Option Plan to the NEOs as follows: 100,000 ISOs to Mr. Mark Duff; 50,000 ISOs to Dr. Louis Centofanti; and 50,000 ISOs to Mr. Ben Naccarato. The ISOs granted were for a contractual term of six years with one-fifth yearly vesting over a five year period. The exercise price of the ISOs was \$3.65 per share, which was equal to the fair market value of the Company's common stock on the date of grant.

Additionally, Mr. Duff has outstanding 50,000 ISO's granted to him by the Company on May 15, 2016 from the 2010 Stock Option Plan. The ISOs granted were for a contractual term of six years with one-third vesting annually over a three-year period. The exercise price of the ISOs was \$3.97 per share, which was equal to the fair market value of the Company's Common Stock on the date of grant.

In cases of termination of an executive officer's employment due to death, by the executive for "good reason", by the Company without cause, and due to a "change of control," all outstanding stock options to purchase common stock held by the executive officer will immediately become exercisable in full (see further discussion of these fully vested options and exercisability term of these options in each of these circumstances in "Item 11 – EXECUTIVE COMPENSATION – Employment Agreements." Otherwise, vesting of option awards ceases upon termination of employment and exercise right of the vested option amount ceases upon three months from termination of employment except in the case of retirement (subject to a six month limitation) and disability (subject to a one-year limitation).

## *Accounting for Stock-Based Compensation*

We account for stock-based compensation in accordance with ASC 718, “Compensation – Stock Compensation.” ASC 718 establishes accounting standards for entity exchanges of equity instruments for goods or services. It also addresses transactions in which an entity incurs liabilities in exchange for goods or services that are based on the fair value of the entity’s equity instruments or that may be settled by the issuance of those equity instruments. ASC 718 requires all stock-based payments to employees, including grants of employee stock options, to be recognized in the income statement based on their fair values. The Company uses the Black-Scholes option-pricing model to determine the fair-value of stock-based awards which requires subjective assumptions. Assumptions used to estimate the fair value of stock options granted include the exercise price of the award, the expected term, the expected volatility of the Company’s stock over the option’s expected term, the risk-free interest rate over the option’s expected term, and the expected annual dividend yield. We recognize stock-based compensation expense using a straight-line amortization method over the requisite period, which is the vesting period of the stock option grant.

## **Retirement and Other Benefits**

### **401(k) Plan**

We adopted the Perma-Fix Environmental Services, Inc. 401(k) Plan (the “401(k) Plan”) in 1992, which is intended to comply with Section 401 of the Internal Revenue Code and the provisions of the Employee Retirement Income Security Act of 1974. All full-time employees who have attained the age of 18 are eligible to participate in the 401(k) Plan. Eligibility is immediate upon employment but enrollment is only allowed during four quarterly open periods of January 1, April 1, July 1, and October 1. Participating employees may make annual pretax contributions to their accounts up to 100% of their compensation, up to a maximum amount as limited by law. We, at our discretion, may make matching contributions based on the employee’s elective contributions. Company contributions vest over a period of five years. In 2017, the Company contributed approximately \$326,000 in 401(k) matching funds, of which approximately \$15,000 was for our NEOs (see the “Summary Compensation” table in this section for 401(k) matching fund contributions made for the NEOs for 2017). In 2016, the Company contributed approximately \$307,000 in 401(k) matching funds, of which approximately \$15,000 was for our NEOs.

### **Perquisites and Other Personal Benefits**

The Company provides executive officers with limited perquisites and other personal benefits (health/disability/life insurance) that the Company and the Compensation Committee believe are reasonable and consistent with its overall compensation program to better enable the Company to attract and retain superior employees for key positions. The Compensation Committee periodically reviews the levels of perquisites and other personal benefits provided to executive officers. The executive officers are provided an auto allowance.

### **Consideration of Stockholder Say-On-Pay Advisory Vote.**

At our Annual Meeting of Stockholders held on July 27, 2017, our stockholders voted, on a non-binding, advisory basis, on the compensation of our NEOs for 2016. A substantial majority (approximately 88%) of the total votes cast on our say-on-pay proposal at that meeting approved the compensation of our NEOs for 2016 on a non-binding, advisory basis. The Compensation Committee and the Board believes that this affirms our stockholders’ support of our approach to executive compensation. The Compensation Committee expects to continue to consider the results of future stockholder say-on-pay advisory votes when making future compensation decisions for our NEOs. We will hold an advisory vote on the compensation of our NEOs at our 2018 annual meeting of stockholders.

### **Compensation of Directors**

Directors who are employees receive no additional compensation for serving on the Board or its committees. In 2017, we provided the following annual compensation to directors who are not employees:

- options to purchase 2,400 shares of our Common Stock with each option having a 10 year term and being fully vested after six months from grant date;
- a quarterly director fee of \$8,000;
- an additional quarterly fee of \$5,500 and \$7,500 to the Chairman of our Audit Committee and Chairman of the Board (non-employee), respectively; and
- a fee of \$1,000 for each board meeting attendance and a \$500 fee for meeting attendance via conference call.

Each director may elect to have either 65% or 100% of such fees payable in Common Stock under the 2003 Outside Directors Stock Plan (“2003 Outside Directors Plan”), with the balance payable in cash.

Dr. Louis Centofanti, a current member of the Board, is not eligible to receive compensation for his service as a director of the Company as he is an employee (named executive officer) of the Company. Mr. John Climaco, who did not stand for reelection at the Company’s 2017 Annual Meeting, was also not eligible to receive compensation for his service as director of the Company as he was EVP of PF Medical (the Company’s majority-owned Polish subsidiary) from June 2, 2015 to June 30, 2017. As EVP of PF Medical, Mr. Climaco was provided an annual salary of \$150,000 from PF Medical. See “Summary Compensation” table in this section for Dr. Centofanti’s annual salary as an employee of the Company.

The table below summarizes the director compensation expenses recognized by the Company for the director options and stock awards (resulting from fees earned) for the year ended December 31, 2017. The terms of the 2003 Outside Directors Plan are further described below under “2003 Outside Directors Plan.”

**Director Compensation**

Name	Fees Earned or Paid In Cash	Stock Awards	Option Awards	Non-Equity Incentive Plan Compensation	Change in Pension Value and Nonqualified Deferred Compensation Earnings	All Other Compensation	Total
	(\$) <sup>(1)</sup>	(\$) <sup>(2)</sup>	(\$) <sup>(3)</sup>	(\$)	(\$)	(\$)	(\$)
S. Robert Cochran	6,101	40,446	21,732	—	—	—	68,279
Dr. Gary G. Kugler	13,125	32,502	5,952	—	—	—	51,579
Joe R. Reeder	—	50,002	5,952	—	—	—	55,954
Larry M. Shelton	23,800	58,936	5,952	—	—	—	88,688
Mark A. Zwecker	21,000	52,000	5,952	—	—	—	78,952

- (1) Under the 2003 Outside Directors Plan, each director elects to receive 65% or 100% of the director’s fees in shares of our Common Stock. The amounts set forth above represent the portion of the director’s fees paid in cash and exclude the value of the directors’ fee elected to be paid in Common Stock under the 2003 Outside Directors Plan, which values are included under “Stock Awards.”
- (2) The number of shares of Common Stock comprising stock awards granted under the 2003 Outside Directors Plan is calculated based on 75% of the closing market value of the Common Stock as reported on the NASDAQ on the business day immediately preceding the date that the quarterly fee is due. Such shares are fully vested on the date of grant. The value of the stock award is based on the market value of our Common Stock at each quarter end times the number of shares issuable under the award. The amount shown is the fair value of the Common Stock on the date of the award.
- (3) Options granted under the Company’s 2003 Outside Directors Plan resulting from re-election to the Board of Directors on July 27, 2017. Options are for a 10-year period with an exercise price of \$3.55 per share and are fully vested in six months from grant date. The value of the option award for each outside director is calculated based on the fair value of the option per share (\$2.48) on the date of grant times the number of options granted, which was 2,400 for each director, pursuant to ASC 718, “Compensation – Stock Compensation.” Option awards for S. Robert Cochran also included 6,000 options granted to him upon initial appointment to the Board on January 13, 2017. The options are for a 10-year period with an exercise price of \$3.79 per share and are fully vested six months from date of grant. The fair value of the 6,000 options was determined to be approximately \$15,780 based on fair value of \$2.63 per share. The following table reflects the aggregate number of outstanding non-qualified stock options held by the Company’s directors at December 31, 2017. As an employee of the Company or its subsidiaries, Dr. Centofanti is not eligible to participate in the 2003 Outside Directors Plan. Options reflected below for Dr. Centofanti were granted from the 2017 Option Plan as discussed previously:

Name	Options Outstanding at December 31, 2017
S. Robert Cochran	8,400
Dr. Louis Centofanti	50,000
Dr. Gary G. Kugler	9,600
Joe R. Reeder	24,000
Larry M. Shelton	24,000
Mark A. Zwecker	24,000
Total	140,000

## 2003 Outside Directors Plan

We believe that it is important for our directors to have a personal interest in our success and growth and for their interests to be aligned with those of our stockholders; therefore, under our 2003 Outside Directors Stock Plan, as amended (“2003 Outside Directors Plan”), each outside director is granted a 10-year option to purchase up to 6,000 shares of Common Stock on the date such director is initially elected to the Board, and receives on each re-election date an option to purchase up to another 2,400 shares of our Common Stock, with the exercise price being the fair market value of the Common Stock preceding the option grant date. No option granted under the 2003 Outside Directors Plan is exercisable until after the expiration of six months from the date the option is granted and no option shall be exercisable after the expiration of ten years from the date the option is granted. At December 31, 2017, options to purchase 154,800 shares of Common Stock were outstanding under the 2003 Outside Directors Plan, of which 142,800 were vested at December 31, 2017.

As a member of the Board, each director may elect to receive either 65% or 100% of the director’s fee in shares of our Common Stock. The number of shares received by each director is calculated based on 75% of the fair market value of the Common Stock determined on the business day immediately preceding the date that the quarterly fee is due. The balance of each director’s fee, if any, is payable in cash. In 2017, the fees earned by our outside directors totaled approximately \$298,000. Reimbursements of expenses for attending meetings of the Board are paid in cash at the time of the applicable Board meeting. As a management director, Dr. Centofanti is not eligible to participate in the 2003 Outside Directors Plan.

At December 31, 2017, we have issued 547,985 shares of our Common Stock in payment of director fees since the inception of the 2003 Outside Directors Plan.

In the event of a “change of control” (as defined in the 2003 Outside Directors Plan), each outstanding stock option and stock award shall immediately become exercisable in full notwithstanding the vesting or exercise provisions contained in the stock option agreement.

## ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

### Security Ownership of Certain Beneficial Owners

The table below sets forth information as to the shares of Common Stock beneficially owned as of December 31, 2017, by each person known by us to be the beneficial owners of more than 5% of any class of our voting securities.

Name of Beneficial Owner	Title Of Class	Amount and Nature of Ownership	Percent Of Class <sup>(1)</sup>
Heartland Advisors, Inc. <sup>(2)</sup>	Common	1,397,560	11.9%
TALANTA Investment Group, LLC <sup>(3)</sup>	Common	772,356	6.6%

<sup>(1)</sup> The number of shares and the percentage of outstanding Common Stock shown as beneficially owned by a person are based upon 11,747,055 shares of Common Stock outstanding on February 20, 2018, and the number of shares of Common Stock which such person has the right to acquire beneficial ownership of within 60 days. Beneficial ownership by our stockholders has been determined in accordance with the rules promulgated under Section 13(d) of the Exchange Act.

(2) This information is based on the Schedule 13F of Heartland Advisors, Inc., an investment advisor, filed with the Securities and Exchange Commission on February 2, 2018, disclosing that at December 31, 2017, Heartland Advisors, Inc. had dispositive power over all shares shown above, but shared voting power over 1,236,833 of such shares and no voting power over 160,727 of the shares. The address of Heartland Advisors, Inc. is 789 North Water Street, Milwaukee, WI 53202.

(3) This information is based on the Schedule 13D of TALANTA Investment Group, LLC, a private investment firm, filed with the Securities and Exchange Commission on August 2, 2017, disclosing that as of July 25, 2017, (i) TALANTA Investment Group, LLC, (ii) TALANTA Fund, L.P, and (iii) Justyn R. Putnam (collectively, the “Reporting Persons”), had shared dispositive power and shared voting power over all shares shown in the table above. The address of the Reporting Persons is 401N. Tryon Street, 10<sup>th</sup> Floor, Charlotte, North Carolina 28202.

As of February 12, 2018, Capital Bank–Grawe Gruppe AG (“Capital Bank”), a banking institution regulated by the banking regulations of Austria, holds of record as a nominee for, and as an agent of, certain accredited investors, 1,413,029 shares of our Common Stock. None of Capital Bank’s investors beneficially own more than 4.9% of our Common Stock and to its best knowledge, as far as stocks held in accounts with Capital Bank, none of Capital Bank’s investors act together as a group or otherwise act in concert for the purpose of voting on matters subject to the vote of our stockholders or for purpose of disposition or investment of such stock. Additionally, Capital Bank’s investors maintain full voting and dispositive power over the Common Stock beneficially owned by such investors, and Capital Bank has neither voting nor investment power over such shares. Accordingly, Capital Bank believes that (i) it is not the beneficial owner, as such term is defined in Rule 13d-3 of the Exchange Act, of the shares of Common Stock registered in Capital Bank’s name because (a) Capital Bank holds the Common Stock as a nominee only, (b) Capital Bank has neither voting nor investment power over such shares, and (c) Capital Bank has not nominated or sought to nominate, and does not intend to nominate in the future, any person to serve as a member of our Board; and (ii) it is not required to file reports under Section 16(a) of the Exchange Act or to file either Schedule 13D or Schedule 13G in connection with the shares of our Common Stock registered in the name of Capital Bank.

Notwithstanding the previous paragraph, if Capital Bank’s representations to us described above are incorrect or if Capital Bank’s investors are acting as a group, then Capital Bank or a group of Capital Bank’s investors could be a beneficial owner of more than 5% of our voting securities. If Capital Bank was deemed the beneficial owner of such shares, the following table sets forth information as to the shares of voting securities that Capital Bank may be considered to beneficially own on February 12, 2018:

Name of Record Owner	Title Of Class	Amount and Nature of Ownership	Percent Of Class (*)
Capital Bank-Grawe Gruppe	Common	1,413,029 (+)	12.0%

(\*) This calculation is based upon 11,747,055 shares of Common Stock outstanding on February 20, 2018, plus the number of shares of Common Stock which Capital Bank, as agent for certain accredited investors has the right to acquire within 60 days, which is none.

(+) This amount is the number of shares that Capital Bank has represented to us that it holds of record as nominee for, and as an agent of, certain of its accredited investors. As of the date of this report, Capital Bank has no warrants or options to acquire, as agent for certain investors, additional shares of our Common Stocks. Although Capital Bank is the record holder of the shares of Common Stock described in this note, Capital Bank has advised us that it does not believe it is a beneficial owner of the Common Stock or that it is required to file reports under Section 16(a) or Section 13(d) of the Exchange Act. Because Capital Bank (a) has advised us that it holds the Common Stock as a nominee only and that it does not exercise voting or investment power over the Common Stock held in its name and that no one investor of Capital Bank for which it holds our Common Stock holds more than 4.9% of our issued and outstanding Common Stock and (b) has not nominated, and has not sought to nominate, and does not intend to nominate in the future, any person to serve as a member of our Board, we do not believe that Capital Bank is our affiliate. Capital Bank’s address is Burgring 16, A-8010 Graz, Austria.

## Security Ownership of Management

The following table sets forth information as to the shares of voting securities beneficially owned as of February 20, 2018, by each of our directors and NEOs and by all of our directors and NEOs as a group. Beneficial ownership has been determined in accordance with the rules promulgated under Section 13(d) of the Exchange Act. A person is deemed to be a beneficial owner of any voting securities for which that person has the right to acquire beneficial ownership within 60 days.

Name of Beneficial Owner <sup>(2)</sup>	Amount and Nature of Beneficial Owner <sup>(1)</sup>	Percent of Class <sup>(1)</sup>
Dr. Louis F. Centofanti <sup>(3)</sup>	215,925 <sup>(3)</sup>	1.84%
S. Robert Cochran <sup>(4)</sup>	19,636 <sup>(4)</sup>	*
Dr. Gary Kugler <sup>(5)</sup>	51,560 <sup>(5)</sup>	*
Joe R. Reeder <sup>(6)</sup>	160,701 <sup>(6)</sup>	1.37%
Larry M. Shelton <sup>(7)</sup>	112,164 <sup>(7)</sup>	*
Zack Wamp <sup>(8)</sup>	— <sup>(8)</sup>	*
Mark A. Zwecker <sup>(9)</sup>	180,062 <sup>(9)</sup>	1.53%
Ben Naccarato <sup>(10)</sup>	1,500 <sup>(10)</sup>	*
Mark Duff <sup>(11)</sup>	22,667 <sup>(11)</sup>	*
Directors and Executive Officers as a Group (9 persons)	764,215 <sup>(12)</sup>	6.45%

\*Indicates beneficial ownership of less than one percent (1%).

<sup>(1)</sup> See footnote (1) of the table under “Security Ownership of Certain Beneficial Owners.”

<sup>(2)</sup> The business address of each person, for the purposes hereof, is c/o Perma-Fix Environmental Services, Inc., 8302 Dunwoody Place, Suite 250, Atlanta, Georgia 30350.

<sup>(3)</sup> These shares include (i) 153,125 shares held of record by Dr. Centofanti, and (iii) 62,800 shares held by Dr. Centofanti’s wife. Dr. Centofanti has sole voting and investment power of these shares, except for the shares held by Dr. Centofanti’s wife, over which Dr. Centofanti shares voting and investment power. Dr. Centofanti also owns 700 shares of PF Medical’s Common Stock.

<sup>(4)</sup> Mr. Cochran has sole voting and investment power over these shares which include: (i) 11,236 shares of Common Stock held of record by Mr. Cochran, and (ii) options to purchase 8,400 shares, which are immediately exercisable.

<sup>(5)</sup> Dr. Kugler has sole voting and investment power over these shares which include: (i) 41,960 shares of Common Stock held of record by Dr. Kugler, and (ii) options to purchase 9,600 shares, which are immediately exercisable.

<sup>(6)</sup> Mr. Reeder has sole voting and investment power over these shares which include: (i) 136,701 shares of Common Stock held of record by Mr. Reeder, and (ii) options to purchase 24,000 shares, which are immediately exercisable.

<sup>(7)</sup> Mr. Shelton has sole voting and investment power over these shares which include: (i) 88,164 shares of Common Stock held of record by Mr. Shelton, and (ii) options to purchase 24,000 shares, which are immediately exercisable. Mr. Shelton also owns 750 shares of PF Medical’s Common Stock.

<sup>(8)</sup> Mr. Wamp does not beneficially own any of the Company’s shares.

(9) Mr. Zwecker has sole voting and investment power over these shares which include: (i) 156,062 shares of Common Stock held of record by Mr. Zwecker, and (ii) options to purchase 24,000 shares, which are immediately exercisable.

(10) Mr. Naccarato has sole voting and investment power over all such shares, which are held of record by Mr. Naccarato. Mr. Naccarato also owns 100 shares of PF Medical's Common Stock.

(11) Mr. Duff has sole voting and investment power over these shares which include: (i) 6,000 shares of Common Stock held of record by Mr. Duff, and (ii) options to purchase 16,667 shares, which are immediately exercisable.

(12) Amount includes 106,667 options, which are immediately exercisable.

### Equity Compensation Plans

The following table sets forth information as of December 31, 2017, with respect to our equity compensation plans.

Plan Category	Equity Compensation Plan		
	Number of securities to be issued upon exercise of outstanding options warrants and rights (a)	Weighted average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by stockholders	624,800	\$ 4.42	521,215
Equity compensation plans not approved by stockholders	—	—	—
<b>Total</b>	<b>624,800</b>	<b>\$ 4.42</b>	<b>521,215</b>

### ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

We describe below transactions to which we were a party during our last two fiscal years or to which we currently propose to be a party in the future, and in which:

- the amounts involved exceeded or will exceed the lesser of \$120,000 or one percent of the average of our total assets at year-end for the last two completed fiscal years; and
- any of our directors, executive officers or beneficial owners of more than 5% of any class of our voting securities, or any member of the immediate family of the foregoing persons, had or will have a direct or indirect material interest.

#### Audit Committee Review

Our Audit Committee Charter provides for the review by the Audit Committee of any related party transactions, other than transactions involving an employment relationship with the Company, which are reviewed by the Compensation Committee. Although we do not have written policies for the review of related party transactions, the Audit Committee reviews transactions between the Company and its directors, executive officers, and their respective immediate family members. In reviewing a proposed transaction, the Audit Committee takes into account, among other factors it deems appropriate:

- (1) the extent of the related person's interest in the transaction;
- (2) whether the transaction is on terms generally available to an unaffiliated third-party under the same or similar circumstances;
- (3) the cost and benefit to the Company;

- (4) the impact or potential impact on a director's independence in the event the related party is a director, an immediate family member of a director or an entity in which a director is a partner, stockholder or executive officer;
- (5) the availability of other sources for comparable products or services;
- (6) the terms of the transaction; and
- (7) the risks to the Company.

Related party transactions are reviewed by the Audit Committee prior to the consummation of the transaction. With respect to a related party transaction arising between Audit Committee meetings, the CFO may present it to the Audit Committee Chairperson, who will review and may approve the related party transaction subject to ratification by the Audit Committee at the next scheduled meeting. Our Audit Committee shall approve only those transactions that, in light of known circumstances, are not inconsistent with the Company's best interests.

### **Related Party Transactions**

#### *David Centofanti*

David Centofanti serves as our Vice President of Information Systems. For such position, he received annual compensation of \$168,000 for each of the years 2017 and 2016. David Centofanti is the son of Dr. Louis F. Centofanti, our EVP of Strategic Initiatives and a Board member. Dr. Louis Centofanti previously held the position of President and CEO until September 8, 2017.

#### *Robert L. Ferguson*

Robert L. Ferguson serves as an advisor to the Company's Board and is also a member of the Supervisory Board of PF Medical, a majority-owned Polish subsidiary of the Company. Robert Ferguson previously served as a Board member of the Company from June 2007 to February 2010 and again from August 2011 to September 2012. The Company previously completed a lending transaction with Robert Ferguson and William Lampson in August 2013 (collectively, the "Lenders") whereby the Company borrowed from the Lenders \$3,000,000 which was paid in full by the Company in August 2016. Robert Ferguson is also a consultant to the Company in connection with the Company's Test Bed Initiative ("TBI") at its Perma-Fix Northwest Richland, Inc. ("PFNWR") facility. As an advisor to the Company's Board, Robert Ferguson is paid \$4,000 monthly plus reasonable expenses. For such services, Robert Ferguson received compensation of approximately \$51,000 and \$59,000 for the years ended December 31, 2017 and 2016, respectively. For Robert Ferguson's consulting work in connection with the Company's TBI, on July 27, 2017 ("grant date"), the Company granted Robert Ferguson a stock option from the Company's 2017 Stock Option Plan for the purchase of up to 100,000 shares of the Company's common stock at an exercise price of \$3.65 a share, which was the fair market value of the Company's common stock on the date of grant ("Ferguson Stock Option"). The vesting of the Ferguson Stock Option is subject to the achievement of the following milestones ("waste" as noted below is defined as liquid LAW ("low activity waste") and/or liquid TRU ("transuranic waste")):

- Upon treatment and disposal of three gallons of waste at the PFNWR facility by January 27, 2018, 10,000 shares of the Ferguson Stock Option shall become exercisable;
- Upon treatment and disposal of 2,000 gallons of waste at the PFNWR facility by January 27, 2019, 30,000 shares of the Ferguson Stock Option shall become exercisable; and
- Upon treatment and disposal of 50,000 gallons of waste at the PFNWR facility and assistance, on terms satisfactory to the Company, in preparing certain justifications of cost and pricing data for the waste and obtaining a long-term commercial contract relating to the treatment, storage and disposal of waste by January 27, 2021, 60,000 shares of the Ferguson Stock Option shall become exercisable.

The term of the Ferguson Stock Option is seven (7) years from the grant date. Each of the milestones is exclusive of each other; therefore, achievement of any of the milestones above by Robert Ferguson by the designated date will provide Robert Ferguson the right to exercise the number of options in accordance with the milestone attained. The 10,000 options as noted above become vested by Robert Ferguson on December 19, 2017. The fair value of the 10,000 options was determined to be approximately \$20,000.

John Climaco, who had been a director since October 2013, did not stand for reelection at the Company's 2017 Annual Meeting of Stockholders held on July 27, 2017. In addition to his previous service as a board member, John Climaco also served as EVP of PF Medical, a majority-owned Polish subsidiary of the Company, from June 2, 2015 to June 30, 2017. As EVP of PF Medical, John Climaco received an annual salary of \$150,000 and was not eligible to receive compensation for serving on the Company's Board. PF Medical had entered into a multi-year supplier agreement and stock subscription agreement in July 2015 with Digirad Corporation, where John Climaco serves as a board member.

### **Board Independence**

Our Common Stock is listed on the NASDAQ Capital Market. Rule 5605 of the NASDAQ Marketplace Rules requires a majority of a listed company's board of directors to be comprised of independent directors. In addition, the NASDAQ Marketplace Rules require that, subject to specified exceptions, each member of a listed company's audit, compensation and corporate governance and nominating committees be independent under applicable provisions of the Exchange Act. Audit committee members must also satisfy independence criteria set forth in Rule 10A-3 under the Exchange Act, and compensation committee members must also satisfy the independence criteria set forth in Rule 10C-1 under the Exchange Act. Under NASDAQ Rule 5605(a)(2), a director will only qualify as an "independent director" if, in the opinion of our Board, that person does not have a relationship that would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. In order to be considered independent for purposes of Rule 10A-3 under the Exchange Act, a member of an audit committee of a listed company may not, other than in his or her capacity as a member of the audit committee, the board of directors, or any other board committee, accept, directly or indirectly, any consulting, advisory, or other compensatory fee from the listed company or any of its subsidiaries or otherwise be an affiliated person of the listed company or any of its subsidiaries. In order to be considered independent for purposes of Rule 10C-1, the board must consider, for each member of a compensation committee of a listed company, all factors specifically relevant to determining whether a director has a relationship to such company which is material to that director's ability to be independent from management in connection with the duties of a compensation committee member, including, but not limited to: the source of compensation of the director, including any consulting advisory or other compensatory fee paid by such company to the director; and whether the director is affiliated with the company or any of its subsidiaries or affiliates.

Our Board annually undertakes a review of the composition of our Board and its committees and the independence of each director. Based upon information requested from and provided by each director concerning his or her background, employment and affiliations, including family relationships, our Board has determined that each of Messrs. S. Robert Cochran, Dr. Gary Kugler, Honorable Joe R. Reeder, Larry M. Shelton, Zach Wamp and Mark A. Zwecker is an "independent director" as defined under the NASDAQ Marketplace Rules. Our Board has also determined that Mr. Mark A. Zwecker (Chairperson), Dr. Gary G. Kugler, Mr. S. Robert Cochran, and Mr. Larry M. Shelton (who was a member of the Audit Committee until April 20, 2017), who comprise/comprised our Audit Committee, and Dr. Gary G. Kugler (Chairperson), Mr. Larry M. Shelton, and the Honorable Joe R. Reeder, who comprise our Compensation and Stock Option Committee, satisfy the independence standards for such committees established by the Securities and Exchange Commission and the NASDAQ Marketplace Rules, as applicable. In making such determination, our Board considered the relationships that each such non-employee director has with our Company and all other facts and circumstances our Board deemed relevant in determining independence, including the beneficial ownership of our capital stock by each non-employee director.

Our Board has determined that Dr. Centofanti is not deemed to be an "independent director" because of his employment as an executive officer of the Company. Our Board of Director also determined that Mr. Climaco, who did not stand for re-election at the Company's 2017 Annual Meeting of Stockholders on July 27, 2017, did not qualify as an "independent director" because of his previous employment as EVP of PF Medical, a majority-owned Polish subsidiary of the Company and because of his directorship at Digirad Corporation, a company which PF Medical had previously entered into a multi-year supplier agreement and stock subscription agreement.

#### ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The following table reflects the aggregate fees for the audit and other services provided by Grant Thornton LLP, the Company's independent registered public accounting firm, for fiscal years 2017 and 2016:

Fee Type	2017	2016
Audit Fees <sup>(1)</sup>	\$ 454,000	393,000
Tax Fees <sup>(2)</sup>	92,000	165,000
Total	<u>\$ 546,000</u>	<u>558,000</u>

(1) Audit fees consist of audit work performed in connection with the annual financial statements, the reviews of unaudited quarterly financial statements, and work generally only the independent registered accounting firm can reasonably provide, such as consents and review of regulatory documents filed with the Securities and Exchange Commission.

(2) Fees for income tax planning, filing, and consulting.

The Audit Committee of the Company's Board has considered whether Grant Thornton's provision of the services described above for the fiscal years 2017 and 2016 was compatible with maintaining its independence.

##### *Engagement of the Independent Auditor*

The Audit Committee approves in advance all engagements with the Company's independent accounting firm to perform audit or non-audit services for us. All services under the headings Audit Fees and Tax Fees were approved by the Audit Committee pursuant to paragraph (c) (7)(i)(C) of Rule 2-01 of Regulation S-X of the Exchange Act. The Audit Committee's pre-approval policy provides as follows:

- The Audit Committee will review and pre-approve on an annual basis all audits, audit-related, tax and other services, along with acceptable cost levels, to be performed by the independent accounting firm and any member of the independent accounting firm's alliance network of firms, and may revise the pre-approved services during the period based on later determinations. Pre-approved services typically include: audits, quarterly reviews, regulatory filing requirements, consultation on new accounting and disclosure standards, employee benefit plan audits, reviews and reporting on management's internal controls and specified tax matters.
- Any proposed service that is not pre-approved on the annual basis requires a specific pre-approval by the Audit Committee, including cost level approval.
- The Audit Committee may delegate pre-approval authority to one or more of the Audit Committee members. The delegated member must report to the Audit Committee, at the next Audit Committee meeting, any pre-approval decisions made.

#### PART IV

#### ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULE

The following documents are filed as a part of this report:

(a)(1) Consolidated Financial Statements

See Item 8 for the Index to Consolidated Financial Statements.

(a)(2) Financial Statement Schedule

Schedules are not required, are not applicable or the information is set forth in the consolidated financial statements or notes thereto.

(a)(3) Exhibits

The Exhibits listed in the Exhibit Index are filed or incorporated by reference as a part of this report.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Perma-Fix Environmental Services, Inc.

By /s/ Mark Duff Date March 16, 2018  
Mark Duff  
Chief Executive Officer, President and  
Principal Executive Officer

By /s/ Ben Naccarato Date March 16, 2018  
Ben Naccarato  
Chief Financial Officer and  
Principal Financial Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in capacities and on the dates indicated.

By /s/ Dr. Louis F. Centofanti Date March 16, 2018  
Dr. Louis F. Centofanti, Director

By /s/ S. Robert Cochran Date March 16, 2018  
Robert Cochran, Director

By /s/ Dr. Gary G. Kugler Date March 16, 2018  
Dr. Gary Kugler, Director

By /s/ Joe R. Reeder Date March 16, 2018  
Joe R. Reeder, Director

By /s/ Larry M. Shelton Date March 16, 2018  
Larry M. Shelton, Chairman of the Board

By /s/ Zach P. Wamp Date March 16, 2018  
Zach P. Wamp, Director

By /s/ Mark A. Zwecker Date March 16, 2018  
Mark A. Zwecker, Director

EXHIBIT INDEX

Exhibit No.	Description
3(i)	<a href="#"><u>Restated Certificate of Incorporation, as amended, of Perma-Fix Environmental Services, Inc., as incorporated by reference from Exhibit 3(i) to the Company's 2014 Form 10-K filed on March 31, 2015.</u></a>
3(ii)	<a href="#"><u>Amended and Restated Bylaws, as amended effective July 28, 2016, of Perma-Fix Environmental Services, Inc., as incorporated by reference from Exhibit 3(ii) to the Company's 8-K filed on August 1, 2016.</u></a>
4.1	<a href="#"><u>Rights Agreement dated as of May 2, 2008 between the Company and Continental Stock Transfer &amp; Trust Company, as Rights Agent, as incorporated by reference from Exhibit 4.2 to the Company's 2014 Form 10-K filed on March 31, 2015.</u></a>
4.2	<a href="#"><u>Letter Agreement dated September 29, 2008, between the Company and Continental Stock Transfer &amp; Trust Company to correct certain subparagraph numbering on the Rights Agreement dated as of May 2, 2008 between the Company and Continental Stock Transfer &amp; Trust Company, as Rights Agent, as incorporated by reference from Exhibit 4.3 to the Company's 2014 Form 10-K filed on March 31, 2015.</u></a>
4.3	<a href="#"><u>Amended and Restated Revolving Credit, Term Loan and Security Agreement between Perma-Fix Environmental Services, Inc. and PNC Bank, National Association (as Lender and as Agent), dated October 31, 2011.</u></a>
4.4	<a href="#"><u>First Amendment to Amended and Restated Revolving Credit, Term Loan and Security Agreement, dated November 7, 2012, between the Company and PNC Bank, National Association.</u></a>
4.5	<a href="#"><u>Second Amendment to Amended and Restated Revolving Credit, Term Loan and Security Agreement and Waiver, dated May 9, 2013, between the Company and PNC Bank, National Association, as incorporated by reference from Exhibit 4.1 to the Company's Form 10-Q for the quarter ended March 31, 2013, filed on May 10, 2013.</u></a>
4.6	<a href="#"><u>Third Amendment to Amended and Restated Revolving Credit, Term Loan and Security Agreement between PNC Bank, National Association and Perma-Fix Environmental Services, Inc., dated August 2, 2013, as incorporated by reference from Exhibit 4.1 to the Company's Form 10-Q for the quarter ended June 30, 2013, filed on August 8, 2013.</u></a>
4.7	<a href="#"><u>Third Amended, Restated and Substituted Revolving Credit Note between PNC Bank, National Association and Perma-Fix Environmental Services, Inc., dated August 2, 2013, as incorporated by reference from Exhibit 4.2 to the Company's Form 10-Q for the quarter ended June 30, 2013, filed on August 8, 2013.</u></a>
4.8	<a href="#"><u>Fourth Amendment to Amended and Restated Revolving Credit, Term Loan and Security Agreement and Waiver between PNC Bank, National Association and Perma-Fix Environmental Services, Inc., dated April 14, 2014, as incorporated by reference from Exhibit 4.17 to the Company's 2013 Form 10-K.</u></a>
4.9	<a href="#"><u>Fifth Amendment to Amended and Restated Revolving Credit, Term Loan and Security Agreement between PNC Bank, National Association and Perma-Fix Environmental Services, Inc., dated July 25, 2014, as incorporated by reference from Exhibit 4.1 to the Company's 8-K filed on July 31, 2014.</u></a>
4.10	<a href="#"><u>Sixth Amendment to Amended and Restated Revolving Credit, Term Loan and Security Agreement between PNC Bank, National Association and Perma-Fix Environmental Services, Inc., dated July 28, 2014, as incorporated by reference from Exhibit 4.2 to the Company's 8-K filed on July 31, 2014.</u></a>
4.11	<a href="#"><u>Seventh Amendment to Amended and Restated Revolving Credit, Term Loan and Security Agreement between PNC Bank, National Association and Perma-Fix Environmental Services, Inc., dated March 24, 2016, as incorporated by reference from Exhibit 4.17 to the Company's 2015 Form 10-K filed on March 24, 2016.</u></a>
4.12	<a href="#"><u>Eighth Amendment to Amended and Restated Revolving Credit, Term Loan and Security Agreement between PNC Bank, National Association and Perma-Fix Environmental Services, Inc., dated August 22, 2016, as incorporated by reference from Exhibit 4.9 to the Company's Form 10-Q for the quarter ended June 30, 2016 filed on August 22, 2016.</u></a>

- 4.13 [Ninth Amendment to Amended and Restated Revolving Credit, Term Loan and Security Agreement between PNC Bank, National Association and Perma-Fix Environmental Services, Inc., dated November 17, 2016, as incorporated by reference from Exhibit 4.10 to the Company's Form 10-Q for the quarter ended September 30, 2016 filed on November 18, 2016.](#)
- 10.1 [2003 Outside Directors' Stock Plan of the Company, as incorporated by reference from Exhibit 10.2 to the Company's 2014 Form 10-K filed on March 31, 2015.](#)
- 10.2 [First Amendment to 2003 Outside Directors Stock Plan, as incorporated by reference from Exhibit 10.3 to the Company's 2014 Form 10-K filed on March 31, 2015.](#)
- 10.3 [Second Amendment to 2003 Outside Directors Stock Plan.](#)
- 10.4 [Third Amendment to 2003 Outside Directors Stock Plan.](#)
- 10.5 [Fourth Amendment to 2003 Outside Directors Stock Plan, as incorporated by reference from Exhibit A to the Company's Proxy Statement for its 2017 Annual Meeting of Stockholders filed on June 22, 2017.](#)
- 10.6 [2017 Stock Option Plan, as incorporated by reference from Exhibit B to the Company's Proxy Statement for its 2017 Annual Meeting of Stockholders filed on June 22, 2017.](#)
- 10.7 [Employment Agreement dated September 8, 2017 between Mark Duff, Chief Executive Officer, and Perma-Fix Environmental Services, Inc., which is incorporated by reference from Exhibit 99.1 to the Company's Form 8-K filed on September 12, 2017.](#)
- 10.8 [Employment Agreement dated September 8, 2017 between Dr. Louis Centofanti, Executive Vice President of Strategic Initiatives, and Perma-Fix Environmental Services, Inc., which is incorporated by reference from Exhibit 99.2 to the Company's Form 8-K filed on September 12, 2017.](#)
- 10.9 [Employment Agreement dated September 8, 2017 between Ben Naccarato, Chief Financial Officer, and Perma-Fix Environmental Services, Inc., which is incorporated by reference from Exhibit 99.3 to the Company's Form 8-K filed on September 12, 2017.](#)
- 10.10 [2017 Incentive Compensation Plan for Chief Executive Officer, effective January 1, 2017, as incorporated by reference from Exhibit 99.2 to the Company's Form 8-K filed on January 25, 2017.](#)
- 10.11 [2017 Incentive Compensation Plan for Executive Vice President/Chief Operating Officer, effective January 1, 2017, as incorporated by reference from Exhibit 99.3 to the Company's Form 8-K filed on January 25, 2017.](#)
- 10.12 [2017 Incentive Compensation Plan for Chief Financial Officer, effective January 1, 2017, as incorporated by reference from Exhibit 99.4 to the Company's Form 8-K filed on January 25, 2017.](#)
- 10.13 [2018 Incentive Compensation Plan for Chief Executive Officer, effective January 1, 2018, as incorporated by reference from Exhibit 99.1 to the Company's Form 8-K filed on January 23, 2018.](#)
- 10.14 [2018 Incentive Compensation Plan for Chief Financial Officer, effective January 1, 2018, as incorporated by reference from Exhibit 99.2 to the Company's Form 8-K filed on January 23, 2018.](#)
- 10.15 [2018 Incentive Compensation Plan for Executive Vice President of Strategic Initiatives, effective January 1, 2018, as incorporated by reference from Exhibit 99.3 to the Company's Form 8-K filed on January 23, 2018.](#)
- 10.16 [Incentive Stock Option Agreement dated July 27, 2017 between Perma-Fix Environmental Services, Inc., and Chief Executive Officer, as incorporated by reference from Exhibit 99.1 to the Company's Form 8-K filed on August 2, 2017.](#)
- 10.17 [Incentive Stock Option Agreement dated July 27, 2017 between Perma-Fix Environmental Services, Inc., and Executive Vice President/Chief Operating Officer, as incorporated by reference from Exhibit 99.2 to the Company's Form 8-K filed on August 2, 2017.](#)
- 10.18 [Incentive Stock Option Agreement dated July 27, 2017 between Perma-Fix Environmental Services, Inc., and Chief Financial Officer, as incorporated by reference from Exhibit 99.3 to the Company's Form 8-K filed on August 2, 2017.](#)
- 10.19 [Stock Option Agreement dated July 27, 2017 between Perma-Fix Environmental Services, Inc., and Mr. Robert L. Ferguson, as incorporated by reference from Exhibit 10.6 to the Company's third quarter Form 10-Q filed on August 9, 2017.](#)
- 21.1 [List of Subsidiaries](#)
- 23.1 [Consent of Grant Thornton, LLP](#)
- 31.1 [Certification by Mark Duff, Chief Executive Officer and Principal Executive Officer of the Company pursuant to Rule 13a-14\(a\) and 15d-14\(a\).](#)
- 31.2 [Certification by Ben Naccarato, Chief Financial Officer and Principal Financial Officer of the Company pursuant to Rule 13a-14\(a\) and 15d-14\(a\).](#)
- 32.1 [Certification by Mark Duff, Chief Executive Officer and Principal Executive Officer of the Company furnished pursuant to 18 U.S.C. Section 1350.](#)
- 32.2 [Certification by Ben Naccarato, Chief Financial Officer and Principal Financial Officer of the Company furnished pursuant to 18 U.S.C. Section 1350.](#)
- 101.INS XBRL Instance Document\*
- 101.SCH XBRL Taxonomy Extension Schema Document\*
- 101.CAL XBRL Taxonomy Extension Calculation Linkbase Document\*
- 101.DEF XBRL Taxonomy Extension Definition Linkbase Document\*
- 101.LAB XBRL Taxonomy Extension Labels Linkbase Document\*
- 101.PRE XBRL Taxonomy Extension Presentation Linkbase Document\*

\*Pursuant to Rule 406T of Regulation S-T, the Interactive Data File in Exhibit 101 hereto are deemed not filed or part of a registration statement or prospectus for purposes of Section 11 or 12 of the Securities Act of 1933, as amended, are deemed not filed for purpose of Section 18 of the Securities Exchange Act of 1934, as amended, and otherwise are not subject to liability under those sections.



FIRST AMENDMENT TO AMENDED AND RESTATED REVOLVING CREDIT,  
TERM LOAN AND SECURITY AGREEMENT

THIS FIRST AMENDMENT TO AMENDED AND RESTATED REVOLVING CREDIT, TERM LOAN AND SECURITY AGREEMENT, dated as of November 7, 2012 (this "Amendment"), relating to the Credit Agreement referenced below, is by and among PERMA-FIX ENVIRONMENTAL SERVICES, INC., a Delaware corporation (the "Borrower"), the lenders identified on the signature pages hereto (the "Lenders"), and PNC Bank, National Association, a national banking association, as agent for the Lenders (in such capacity, the "Agent"). Terms used herein but not otherwise defined herein shall have the meanings provided to such terms in the Credit Agreement.

WITNESSETH

WHEREAS, a credit facility has been extended to the Borrower pursuant to the terms of that certain Amended and Restated Revolving Credit, Term Loan and Security Agreement dated as of October 31, 2011 (as amended and modified from time to time, the "Credit Agreement") among the Borrower, the Lenders identified therein, and PNC Bank, National Association, as agent for the Lenders;

WHEREAS, the Borrower has requested certain modifications to the Credit Agreement;

WHEREAS, the Required Lenders have agreed to the requested modifications on the terms and conditions set forth herein;

NOW, THEREFORE, IN CONSIDERATION of the premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Amendment. The definition of "Fixed Charge Coverage Ratio" set forth in Section 1.2 of the Credit Agreement is amended to read as follows:

"Fixed Charge Coverage Ratio" shall mean and include, with respect to any fiscal period, the ratio of (a) EBITDA for such period minus Unfinanced Capital Expenditures made during such period minus cash taxes paid by Borrower during such period minus any cash dividends or distributions made by Borrower during such period to (b) all Senior Debt Payments during such period. For purposes of calculating the Fixed Charge Coverage Ratio, commencing on September 30, 2012 \$700,000 of non-recurring costs relating to the Acquisition and \$1,600,000 in Fair Value Purchase Accounting adjustments relating to the final purchase price of the Acquisition shall be deducted from the numerator."

2. Conditions Precedent. This Amendment shall be effective as of the date hereof upon satisfaction of each of the following conditions precedent:

- (a) the execution of this Amendment by the Borrower, the Required Lenders and the Agent; and
-

(b) receipt by the Agent of a \$15,000 amendment fee.

3 . Representations and Warranties. The Borrower hereby represents and warrants in connection herewith that as of the date hereof (after giving effect hereto) (i) the representations and warranties set forth in Article V of the Credit Agreement are true and correct in all material respects (except those which expressly relate to an earlier date), and (ii) no Default or Event of Default has occurred and is continuing under the Credit Agreement.

4 . Acknowledgments, Affirmations and Agreements. The Borrower (i) acknowledges and consents to all of the terms and conditions of this Amendment and (ii) affirms all of its obligations under the Credit Agreement and the Other Documents.

5 . Credit Agreement. Except as expressly modified hereby, all of the terms and provisions of the Credit Agreement remain in full force and effect.

6 . Expenses. The Borrower agrees to pay all reasonable costs and expenses in connection with the preparation, execution and delivery of this Amendment, including the reasonable fees and expenses of the Agent's legal counsel.

7 . Counterparts. This Amendment may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed an original. It shall not be necessary in making proof of this Amendment to produce or account for more than one such counterpart.

8 . Governing Law. This Amendment shall be deemed to be a contract under, and shall for all purposes be construed in accordance with, the laws of the State of New York.

IN WITNESS WHEREOF, each of the parties hereto has caused a counterpart of this Amendment to be duly executed and delivered as of the date first above written.

BORROWER:

PERMA-FIX ENVIRONMENTAL SERVICES, INC.

By: /s/ Ben Naccarato

Name: Ben Naccarato

Title: CFO

AGENT AND LENDER:

PNC BANK, NATIONAL ASSOCIATION,  
in its capacity as Agent and as Lender

By: /s/Alex M. Council IV

Name: Alex M. Council

Title: Vice President



**APPENDIX "A"**

**SECOND AMENDMENT**

**to**

**2003 OUTSIDE DIRECTORS STOCK PLAN**

THIS SECOND AMENDMENT TO THE PERMA-FIX ENVIRONMENTAL SERVICES, INC. 2003 OUTSIDE DIRECTORS STOCK PLAN (the "Second Amendment") was approved by the Board of Directors (the "Board") of Perma-Fix Environmental Services, Inc. (the "Company") to be effective on July 12, 2012, subject to the approval of the shareholders of the Company.

WHEREAS, Article IX of the 2003 Outside Directors Stock Plan, effective July 29, 2003 (as amended, the "Plan"), provides that the Board may at any time, and from time to time and, in any respect amend or modify the Plan;

WHEREAS, as of July 9, 2012, the maximum number of shares of our common stock that may be issued under the Plan is 2,000,000 shares (subject to adjustment as provided in the 2003 Plan), of which 1,810,168 have previously been issued or reserved for issuance under the Plan, comprised of 1,054,168 shares previously been issued under the Plan, and 756,800 shares issuable under outstanding options granted under the Plan;

WHEREAS, in order to continue to attract and retain qualified members of the Board who are not employees of the Company, the Board is of the opinion that it is necessary that the maximum number of shares of Common Stock that may be issued under the Plan be increased from 2,000,000 to 3,000,000 shares (subject to adjustment as provided in the Plan); and,

NOW, THEREFORE, the following amendments to the plan are unanimously adopted by the Board, subject to the approval of the shareholders of the Company:

Amendment to Section 4.1:

Section 4.1 of the Plan is hereby amended by deleting the number "2,000,000" from the first full sentence contained therein and substituting in lieu thereof the number "3,000,000."

The Plan is hereby amended and modified only to the extent specifically amended or modified by this Second Amendment to the 2003 Outside Directors Stock Plan. None of the other terms, conditions or provisions of the Plan, is amended or modified by this Second Amendment to the 2003 Outside Directors Stock Plan.

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**EXHIBIT "B"**

**THIRD AMENDMENT  
to  
2003 OUTSIDE DIRECTORS STOCK PLAN**

THIS THIRD AMENDMENT TO THE PERMA-FIX ENVIRONMENTAL SERVICES, INC. 2003 OUTSIDE DIRECTORS STOCK PLAN (the "Third Amendment") was approved by the Board of Directors (the "Board") of Perma-Fix Environmental Services, Inc. (the "Company") to be effective on July 10, 2014, subject to the approval of the shareholders of the Company.

WHEREAS, Article IX of the 2003 Outside Directors Stock Plan, effective July 29, 2003 (as amended, the "Plan"), provides that the Board may at any time, and from time to time and, in any respect amend or modify the Plan;

WHEREAS, as of July 10, 2014, the maximum number of shares of our common stock that may be issued under the Plan is 600,000 shares (subject to adjustment as provided in the 2003 Plan), of which 509,841 shares have previously been issued or reserved for issuance under the Plan, comprised of 341,898 shares previously issued under the Plan, and 167,943 shares issuable under outstanding options granted under the Plan;

WHEREAS, in order to continue to attract and retain qualified members of the Board who are not employees of the Company, the Board is of the opinion that it is necessary that the maximum number of shares of Common Stock that may be issued under the Plan be increased from 600,000 to 800,000 shares (subject to adjustment as provided in the Plan); and,

NOW, THEREFORE, the following amendments to the plan are unanimously adopted by the Board, subject to the approval of the shareholders of the Company:

1. Amendment to Section 4.1

Section 4.1 of the Plan is hereby amended by deleting the number "600,000" from the first full sentence contained therein and substituting in lieu thereof the number "800,000" (subject to adjustment as provided in the Plan).

2. Amendment to Section 4.2.1

Section 4.2.1 of the Plan is hereby amended by deleting Section 4.2.1 in its entirety and replacing such section with the following:

There shall be a proportionate adjustment of (a) the aggregate number of shares of Stock under the Plan for which Options may be granted or for which Stock Awards may be issued, and (b) the aggregate number of shares of Stock for which Options may be granted pursuant to Section 5.2.1 and Section 5.2.2 hereof.

3. Amendment to Section 5.2.1

Section 5.2.1 of the Plan is hereby amended by deleting Section 5.2.1 in its entirety and replacing such section with the following:

"Each Eligible Director shall automatically be granted an Option to purchase 6,000 shares of Stock on the Initial Election Date to the Board of Directors of the Company, subject to adjustment in accordance with Section 4.2.1 hereof.

4. Amendment to Section 5.2.2

Section 5.2.2 of the Plan is hereby amended by deleting Section 5.2.2 in its entirety and replacing such section with the following:

"Each Eligible Director shall automatically be granted an Option to purchase 2,400 shares of Stock on each Grant Date subsequent to such Eligible Director's Initial Election Date, subject to adjustment in accordance with Section 4.2.1 hereof.

The Plan is hereby amended and modified only to the extent specifically amended or modified by this Second Amendment to the 2003 Outside Directors Stock Plan. None of the other terms, conditions or provisions of the Plan, is amended or modified by this Third Amendment to the 2003 Outside Directors Stock Plan.

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EXHIBIT 21.1

LIST OF SUBSIDIARIES OF PERMA-FIX ENVIRONMENTAL SERVICES, INC.  
(THE "COMPANY")

**Treatment**

Perma-Fix of Florida, Inc. ("PFF"), a Florida Corporation, is a 100% owned subsidiary of the Company.

Diversified Scientific Services, Inc., ("DSSI") a Tennessee Corporation, is a 100% owned subsidiary of the Company.

East Tennessee Materials and Energy Corporation, ("M&EC") a Tennessee Corporation, is a subsidiary of the Company. The Company owns all of the issued voting Common Stock. M&EC has issued non-voting preferred stock owned by third parties.

Perma-Fix of Northwest Richland, Inc. ("PFNWR"), a Washington Corporation, is a 100% owned subsidiary of the Company.

Perma-Fix Northwest, Inc. ("PFNW"), a Washington Corporation, is a 100% owned subsidiary of the Company.

**Services**

Safety and Ecology Corporation ("SEC"), a Nevada corporation, is a 100% owned subsidiary of the Company.

Safety and Ecology Radcon Alliance, LLC ("SECRA"), a Nevada corporation, is a 100% owned subsidiary of the Company.

Perma-Fix Environmental Services UK Limited, a United Kingdom corporation, is a 100% owned subsidiary of the Company.

Safety and Ecology Holdings Corporation ("SEHC"), a Nevada corporation, is a 100% owned subsidiary of the Company.

Safety and Ecology Federal Services Corporation, a Nevada corporation, is a 100% owned subsidiary of the Company.

Perma-Fix of Canada, a Canadian corporation, is a 100% owned subsidiary of the Company.

**Medical**

Perma-Fix Medical S.A, a Polish Corporation, is a majority owned subsidiary of the Company.

Perma-Fix Medical Corporation, a Delaware corporation, is a 100% owned subsidiary of Perma-Fix Medical, S.A.

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**Discontinued Operations**

Perma-Fix of South Georgia, Inc. (“PFSG”), a Georgia Corporation, is a 100% owned subsidiary of the Company.

Perma-Fix of Michigan, Inc. (“PFMI”), a Michigan Corporation, is a 100% owned subsidiary of the Company.

Perma-Fix of Memphis, Inc. (“PFM”), a Tennessee Corporation, is a 100% owned subsidiary of the Company.

Perma-Fix of Dayton, Inc. (“PFD”), an Ohio Corporation, is a 100% owned subsidiary of the Company.

Perma-Fix Treatment Services, Inc. (“PFTS”), an Oklahoma Corporation, is a 100% owned subsidiary of the Company.

Perma-Fix of Orlando, Inc. (“PFO”), a Florida Corporation, is a 100% owned subsidiary of the Company.

Perma-Fix of Maryland, Inc. (“PFMD”), a Maryland Corporation, is a 100% owned subsidiary of the Company.

Perma-Fix of Pittsburgh, Inc. (“PFP”), a Maryland Corporation, is a 100% owned subsidiary of the Company.

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**CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM**

We have issued our report dated March 16, 2018, with respect to the consolidated financial statements included in the Annual Report of Perma-Fix Environmental Services, Inc. on Form 10-K for the year ended December 31, 2017. We consent to the incorporation by reference of said report in the Registration Statements of Perma-Fix Environmental Services, Inc. on Forms S-3 (File No. 333-115061, File No. 33-85118, File No. 333-14513, File No. 333-158472, File No. 333-43149, File No. 333-70676, and File No. 333-87437) and Forms S-8 (File No. 333-153086, File No. 333-110995, and File No. 333-203137).

*/s/ GRANT THORNTON LLP*

Atlanta, Georgia

March 16, 2018

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EXHIBIT 31.1

CERTIFICATIONS

I, Mark Duff, certify that:

1. I have reviewed this annual report on Form 10-K of Perma-Fix Environmental Services, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of the internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):
  - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 16, 2018

/s/ Mark Duff

Mark Duff

Chief Executive Officer, President and Principal Executive Officer

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EXHIBIT 31.2

CERTIFICATIONS

I, Ben Naccarato, certify that:

1. I have reviewed this annual report on Form 10-K of Perma-Fix Environmental Services, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of the internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):
  - a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 16, 2018

/s/ Ben Naccarato

Ben Naccarato

Chief Financial Officer and Principal Financial Officer

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**EXHIBIT 32.1**

**CERTIFICATION PURSUANT TO  
18 U.S.C. SECTION 1350,  
AS ADOPTED PURSUANT TO SECTION 906  
OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of Perma-Fix Environmental Services, Inc. ("PESI") on Form 10-K for the year ended December 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the "Form 10-K"), I, Mark Duff, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Form 10-K fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. §78m or §78o(d)); and
- (2) The information contained in the Form 10-K fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 16, 2018

*/s/ Mark Duff*

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Mark Duff

Chief Executive Officer, President and Principal Executive Officer

This certification is furnished to the Securities and Exchange Commission solely for purpose of 18 U.S.C. §1350 subject to the knowledge standard contained therein, and not for any other purpose.

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**EXHIBIT 32.2**

**CERTIFICATION PURSUANT TO  
18 U.S.C. SECTION 1350,  
AS ADOPTED PURSUANT TO SECTION 906  
OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of Perma-Fix Environmental Services, Inc. ("PESI") on Form 10-K for the year ended December 31, 2017 as filed with the Securities and Exchange Commission on the date hereof (the "Form 10-K"), I, Ben Naccarato, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Form 10-K fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. §78m or §78o(d)); and
- (2) The information contained in the Form 10-K fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 16, 2018

*/s/ Ben Naccarato*

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Ben Naccarato  
Chief Financial Officer and Principal Financial Officer

This certification is furnished to the Securities and Exchange Commission solely for purpose of 18 U.S.C. §1350 subject to the knowledge standard contained therein, and not for any other purpose.

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