

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, 2022

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

8302 Dunwoody Place, #250, Atlanta, GA
(Address of principal executive offices)

58-1954497

(IRS Employer
Identification Number)

30350
(Zip Code)

(770) 587-9898

(Registrant's telephone number)

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

Title of each class	Trading Symbol	Name of each exchange on which registered
Common Stock, \$.001 Par Value	PESI	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 every Interactive Data File required to be submitted 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 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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

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, 2022), was approximately \$64,147,134. 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 14, 2023, there were 13,358,075 shares of the registrant's Common Stock, \$.001 par value, outstanding.

Documents incorporated by reference: None

	Page No.
PART I	
Item 1. Business	1
Item 1A. Risk Factors	7
Item 1B. Unresolved Staff Comments	16
Item 2. Properties	17
Item 3. Legal Proceedings	17
Item 4. Mine Safety Disclosure	17
PART II	
Item 5. Market for Registrant's Common Equity and Related Stockholder Matters	17
Item 6. Selected Financial Data	18
Item 7. Management's Discussion and Analysis of Financial Condition And Results of Operations	18
Item 7A. Quantitative and Qualitative Disclosures About Market Risk	30
Special Note Regarding Forward-Looking Statements	30
Item 8. Financial Statements and Supplementary Data	33
Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	74
Item 9A. Controls and Procedures	74
Item 9B. Other Information	76
PART III	
Item 10. Directors, Executive Officers and Corporate Governance	76
Item 11. Executive Compensation	87
Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	104
Item 13. Certain Relationships and Related Transactions, and Director Independence	107
Item 14. Principal Accountant Fees and Services	110
PART IV	
Item 15. Exhibits and Financial Statement Schedules	110

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 1990, is an environmental and environmental technology know-how company.

The principal element of our business strategy consists of upgrading our facilities within our Treatment Segment to increase efficiency and modernize and expand treatment capabilities to meet the changing markets associated with the waste management industry. Within our Services Segment, we continue to bid on projects, increase competitive procurement effectiveness and broaden the market penetration within both the commercial and government sectors. The Company continues to remain focused on expansion into both commercial and international markets to supplement government spending in the United States of America ("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.

COVID-19 and Other Impacts

Our 2022 financial results continued to be impacted by COVID-19, among other things. Our Treatment Segment began to see steady improvements in waste receipts starting in the second quarter of 2022 from certain customers who had previously delayed waste shipments due, in part, from the impact of COVID-19. This positive trend was negatively impacted by occurrences of severe weather conditions which resulted in temporary delays in waste shipments from certain customers and a temporary shortage in skilled production personnel which peaked through the fourth quarter of 2022 at one of our facilities. In early part of 2022, our Services Segment continued to experience delays/curtailments in project work by certain customers since the award of projects to us late in the second quarter of 2021 due to COVID-19 impact and/or administrative delays. However, starting in the second quarter of 2022, work under these projects had resumed/increased as the pandemic impacts began to subside and has since reached full operational status. In 2022, we continued to realize delays in procurement and planning on behalf of our government clients that saw easing through the second half of the year. Heading into 2023, we expect to see continued improvements in waste receipts and continued increases in project work from contracts recently won and bids submitted in both segments that are awaiting awards, subject to potential COVID-19 and economic impacts. (See "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations – COVID-19 and Other Impact" for a full discussion of COVID-19 and other impacts on the Company's results of operations).

Segment Information and Foreign and Domestic Operations and Sales

For 2022, the Company has two reportable segments. In accordance with Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("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 four uniquely licensed (Nuclear Regulatory Commission or state equivalent) and permitted (U.S. Environmental Protection Agency ("EPA") or state equivalent) treatment and storage facilities as follow: Perma-Fix of Florida, Inc. ("PFF"), Diversified Scientific Services, Inc., ("DSSI"), Perma-Fix Northwest Richland, Inc. ("PFNWR") and Oak Ridge Environmental Waste Operations Center ("EWOC"); and
- Research & Development ("R&D") activities to identify, develop and implement innovative waste processing techniques for problematic waste streams.

For 2022, the Treatment Segment accounted for \$33,358,000, or 47.2%, of total revenue, as compared to \$32,992,000, or 45.7%, of total revenue for 2021. See "Dependence Upon a Single or Few Customers" for further details and a discussion as to our Segments' contracts with government clients (domestic and foreign) or with others as a subcontractor to government clients.

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 health physics services including health physicists, radiological engineers, nuclear engineers and health physics technicians support to government and private radioactive materials licensees;
 - 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 (civil, nuclear, mechanical, chemical, radiological and environmental), project management, waste management, environmental, and decontamination and decommissioning (“D&D”) field, technical, and management personnel and services to commercial and government customers; and
 - o waste management services to commercial and governmental customers.
- Nuclear services, which include:
 - o D&D of government and commercial facilities impacted with radioactive material and hazardous constituents including engineering, technology applications, specialty services, logistics, transportation, processing and disposal; and
 - o license termination support of radioactive material licensed and federal facilities over the entire cycle of the termination process: project management, planning, characterization, waste stream identification and delineation, remediation/demolition, final status survey, compliance demonstration, reporting, transportation, disposal and emergency response.
- 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 2022, the Services Segment accounted for \$37,241,000, or 52.8%, of total revenue, as compared to \$39,199,000, or 54.3%, of total revenue for 2021. See “Dependence Upon a Single or Few Customers” for further details and a discussion as to our Segments’ contracts with government clients (domestic and foreign) or with others as a subcontractor to government clients.

Our Treatment and Services Segments provide services to research institutions, commercial companies, public utilities, and governmental agencies (domestic and foreign), 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 and Initiative

Our consolidated revenue for 2022 and 2021 included approximately \$406,000, or 0.6%, and \$9,277,000, or 12.9%, respectively, from Canadian customers.

During March 2022, we signed a joint venture term sheet addressing plans to partner with Springfields Fuels Limited (“SFL”), an affiliate of Westinghouse Electric Company LLC, to develop and manage a nuclear waste-materials treatment facility (the “Facility”) in the United Kingdom. The Facility is for the purpose of expanding the partners’ waste treatment capabilities for the European nuclear market. It is expected that upon finalization of a partnership agreement, SFL will have an ownership interest of fifty-five (55) percent and our interest will be forty-five (45) percent. The finalization, form and capitalization of this unpopulated partnership is subject to numerous conditions, including but not limited to, winning a certain contract, completion and execution of a definitive agreement and facility design, granting of required regulatory, lender or permitting approvals and updated cost and profitability analysis based on current and forecast future economic conditions. Upon finalization of this venture, we will be required to make an investment in this venture. The amount of our investment, the period of which it is to be made and the method of funding are to be determined.

Seasonal Factors of our Business

Our operations are generally subject to seasonal factors. See “Risk Factors – Risks Related to our Business and Operations – Our operations are subject to seasonal factors, which causes our revenues to fluctuate” for a discussion of our seasonal factors.

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 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, biomedical, 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, Division of radiological health. Co-regulated TSCA Polychlorinated Biphenyl (“PCB”) wastes are also managed for PCB destruction under EPA Approval.

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.

EWOC, located in Oak Ridge, Tennessee, operates a low-level radioactive waste material processing facility. Radioactive material processing is authorized under radioactive material licenses issued by the State of Tennessee Department of Environmental and Conservation, Division of radiological health.

The combination of RCRA Part B hazardous waste permits, TSCA authorizations, and radioactive material licenses held by the Company and its subsidiaries comprising our Treatment Segment is very difficult to obtain for a single facility and make this Segment 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.

Number of Employees

At December 31, 2022, we employed approximately 296 employees, of whom 287 are full-time employees and 9 are part-time/temporary employees. None of our employees are unionized.

Environmental, Social and Governance (“ESG”)

During 2022, we continued to improve our ESG performance. Our ESG subcommittee under our Corporate Governance and Nominating Committee continues to provide guidance on ESG management. Our executive team is responsible for the development of a strategic roadmap for ESG efforts with support from management from key functional areas. The key areas of focus under our ESG initiatives continue to be health and safety, environmental performance, DEI (diversity, equality and inclusion), talent retention and development, corporate governance and climate-forward service development that support our customers’ transition to low carbon economy. Our executive team is involved in policy planning and coordination of corporate-wide ESG efforts. See our website at <https://www.perma-fix.com/esg.aspx> for some highlights of our ESG initiatives as well as our policies under our ESG as we continue to improve our ESG initiatives. The information on our website is not part of, or incorporated by reference in this Form 10-K.

Dependence Upon a Single or Few Customers

Our Treatment and Services Segments have significant relationships with the U.S. governmental authorities. Our Services Segment also had significant relationships with the Canadian government authorities. A significant amount of our revenues from our Treatment and Services Segments are generated indirectly as subcontractors for others who are prime contractors to government authorities, particularly the DOE and DOD, or directly as the prime contractor to government authorities. The contracts that we are a party to with others as subcontractors to the U.S. federal government or directly with the U.S. federal government generally provide that the government may terminate the contract at any time for convenience at the government’s option. The contracts/task order agreements (“TOA”) that we are a party to with Canadian governmental authorities also generally provide that the government authorities may terminate the contracts/task order agreements at any time for any reason for convenience. Project work under TOAs with Canadian government authority has substantially been completed. A significant account receivable due to our Perma-Fix Canada, Inc. (“PF Canada”) is subject to continuing negotiations. See “Known Trends and Uncertainties – Perma-Fix Canada, Inc. (“PF Canada”)” in Part II – Item 7 – “Management’s Discussion and Analysis of financial Condition and Results of Operations” for additional discussion as to a terminated Canadian TOA. Our inability to continue under existing contracts that we have with U.S. government authorities (directly or indirectly as a subcontractor) or significant reductions in the level of governmental funding in any given year could have a material adverse impact on our operations and financial condition.

We performed services relating to waste generated by government clients (domestic and foreign (primarily Canadian)), either indirectly for others as a subcontractor to government entities or directly as a prime contractor to government entities, representing approximately \$60,030,000, or 85.0%, of our total revenue during 2022, as compared to \$60,812,000, or 84.2%, of our total revenue during 2021.

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.

Competitive Conditions

The Treatment Segment's largest competitor is EnergySolutions which operates treatment facilities in Oak Ridge, TN and Erwin, TN and treatment/disposal facilities for low level radioactive waste in Clive, UT and Barnwell, SC. Waste Control Specialists, which has licensed treatment/disposal capabilities for low level radioactive waste in Andrews, TX, is also a competitor in the treatment market with increasing market share. These two competitors also provide us with options for disposal of our treated nuclear waste. The Treatment Segment treats and disposes of DOE generated waste largely at DOE owned sites. Our Treatment Segment currently solicits business primarily on a North America 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 relating to 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, 2022, we had total accrued environmental remediation liabilities of \$861,000, a decrease of \$15,000 from the December 31, 2021 balance of \$876,000. The decrease represents payments for remediation projects. At December 31, 2022, \$112,000 of the total accrued environmental liabilities was recorded as current.

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 potentially responsible party ("PRP") 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.

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. R&D totaled \$336,000 and \$746,000 for 2022 and 2021, respectively.

Governmental Regulation

Environmental companies, such as us, and their customers are subject to extensive and evolving environmental laws and regulations by a number of federal, 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 Department of Health (with the USNRC oversight), Office of Radiation Control, regulates the licensing and radiological program of the PFF facility; the State of Tennessee (with the USNRC oversight), Tennessee Division of Radiological Health, regulates licensing and the radiological program of the DSSI facility and the EWOC facility; and the State of Washington (with the USNRC oversight) Department of Health, regulates licensing 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 Business and 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.

Natural disasters and/or public health events, including COVID-19 and their direct and indirect macroeconomic impacts, could continue to negatively impact our business and results of operations.

Public health threats and outbreaks such as COVID-19 and natural disasters such as hurricanes and severe weather conditions have negatively impacted our results of operations. The direct impacts of these such events resulted in delayed waste shipments from certain of our customers and delays in procurement, contract awards and planning on behalf of our government clients which negatively impacted our revenue. Residual and lingering macroeconomic effects from these such events could continue to impact supply chain, workforce availability, and/or increased costs which could have a downward effect on our business, financial condition and results of operations. We may attempt to increase our sales prices in order to maintain satisfactory margin; however, competitive pressures in our industry may have the effect of inhibiting our ability to reflect these increased costs in the prices of our services that we provide to our customers and therefore reduce our profitability.

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 government contracts or subcontracts. Our revenues from governmental contracts and subcontracts relating to governmental facilities within our segments were approximately \$60,030,000, or 85.0%, and \$60,812,000, or 84.2%, of our consolidated revenues for 2022 and 2021, 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. Contracts with, or subcontracts involving, the U.S. federal government are generally terminable for convenience at any time at the option of the governmental agency. The contracts/TOAs that we are a party to with Canadian governmental authorities also generally provide that the government authorities may terminate the contracts/TOAs at any time for any reason for convenience. 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 government clients) 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 government to approve necessary budgets, or to reduce the amount of the budget necessary, to fund remediation sites, including 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 government.

These events could result in or cause government clients to terminate or cancel existing contracts involving us to treat, store or dispose of contaminated waste and/or to perform remediation projects, at one or more of government sites. 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, reductions in government funding or other events (including COVID-19) beyond our control 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, without limitation, 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, large budget deficits that the federal government and many states are experiencing, and other events beyond our control, including, but not limited to the impact from COVID-19, 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 (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 flow.

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.

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.

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 our nuclear waste. Currently, there are only four commercial disposal sites for our low-level radioactive waste and six commercial disposal sites for our very low-level activity waste we receive from non-governmental sites, allowing us to take advantage of the pricing competition between these sites. If one or more of these commercial 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 have limited remaining site to dispose of our nuclear waste. With limited 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 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.

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, regional firms and some international 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 we believe we have 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.

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 or maximum 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, continued supply chain interruptions, weather delays, cost of raw materials, our suppliers' or subcontractors' inability to perform, and/or other events beyond our control, such as the impact of COVID-19, 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 certain of our 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.

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.

Risks Related to Laws and Regulations

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 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.

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 environmental 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 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.

If environmental regulation or enforcement is relaxed, the demand for our services could 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 could 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.

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 may 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.

Risks Relating to our Financial Performance and Position and Need for Financing

We sustained a loss in 2022, and if we are unable to improve our results of operations in 2023, it could have a material adverse effect on the Company.

In 2022, we sustained a loss in our results of operations. We believe that we will be able to improve our results of operations in 2023. If we are unable to substantially improve our results in 2023, it could have a material adverse effect on the Company and our operations.

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. 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. We may be required, in the future, to record 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.

Breach of any of the covenants in our credit facility could result in a default, triggering repayment of outstanding debt under the credit facility and the termination of our 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. We failed to meet our quarterly fixed charge coverage ratio ("FCCR") requirement for the second quarter of 2022; however, our lender waived this non-compliance. We were not required to perform testing of our FCCR in the first and third quarters of 2022. As a result of a recent amendment that we entered into with our lender in March 2023, we were not required to perform testing our FCCR for the fourth quarter of 2022. Additionally, in the past, when we also failed to meet our minimum FCCR requirement in certain instances, our lender has either waived these instances of non-compliance or provided certain amendments to our FCCR requirements which enabled us to meet our quarterly FCCR requirements. Also, our lender has in the past waived our FCCR testing requirement in certain quarters. If we fail to meet any of our financial covenants going forward, including the minimum quarterly FCCR requirement, and our lender does not further waive the non-compliance or further revise our covenant requirement so that we are in compliance, our lender could accelerate the payment of our borrowings under our credit facility and terminate our credit facility. In such event, we may not have sufficient liquidity to repay our debt under our credit facility and other indebtedness and/or operate our business.

Our debt and borrowing availability under our credit facility could adversely affect our operations.

At December 31, 2022, our aggregate consolidated debt was approximately \$1,039,000. Our Second Amended and Restated Revolving Credit, Term Loan and Security Agreement dated May 8, 2020, as amended, provides for a total credit facility commitment consisting of a \$18,000,000 revolving line of credit, a term loan balance of approximately \$1,742,000 and a capital line of \$1,000,000, with advances available through May 4, 2022. As a result of a recent amendment to our credit facility that we entered into with our lender in March 2023, the revolving line of credit was reduced to \$12,500,000. 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 has or may impose from time to time. At December 31, 2022, we had no borrowing under the revolving part of our credit facility and borrowing availability of up to an additional \$4,290,000. The borrowing availability of \$4,290,000 at December 31, 2022 included a requirement from our lender that we maintain a minimum of \$3,000,000 in borrowing availability. As a result of the amendment to our credit facility that we entered into with our lender as discussed above, we are required to continue to maintain a minimum of \$3,000,000 in borrowing availability under the revolving credit until the minimum FCCR requirement for the quarter ended June 30, 2023 has been met and certified to our lender. 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, to refinance indebtedness, and borrow under our credit facility 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, including the impact of COVID-19.

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:

- required 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.

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

We have approximately \$25,413,000 and \$78,400,000 in net operating loss carryforwards for federal and state income tax purposes, respectively and expires in various amounts starting in 2022 if not used against future federal and state income tax liabilities, respectively. Approximately \$25,296,000 of our federal net operating loss carryforwards were generated after December 31, 2017 and thus do not expire. 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.

Risks Relating to our Common Stock

Issuance of substantial amounts of our common stock, par value \$0.001 per share (the "Common Stock") could depress our stock price or dilute the percentage ownership of our Common Stockholders.

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, 2022, we had 13,324,756 shares of Common Stock outstanding. In addition, at December 31, 2022, we had outstanding options to purchase 1,018,400 shares of our Common Stock at exercise prices ranging from \$2.79 to \$7.50 per share and an outstanding warrant to purchase 60,000 shares of our Common Stock at exercise price of \$3.51 per share. 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.

General Risk Factors

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 (especially in the current labor market environment) 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.

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.

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.

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 us 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. 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.

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

Climate change is receiving ever increasing attention from scientists, legislators and the public. 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 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.

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. For the year ended December 31, 2021, management concluded that a material weakness existed in internal control over financial reporting related to our application of ASC 606, "Revenue from Contracts with Customers," specifically to contracts that contain nonstandard terms and conditions. This material weakness has been remediated (see "Item 9A. Controls and Procedures" for a discussion of this material weakness and the remediation plan that were implemented). If we are unable to maintain adequate internal control over financial reporting at any time going forward, 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.

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 15,589,202 (which include shares issuable under outstanding options to purchase 1,018,400 shares of our Common Stock and shares issuable under an outstanding warrant to purchase 60,000 shares of our Common Stock) shares of our Common Stock and 2,000,000 shares of our Preferred Stock as of December 31, 2022. These unissued shares could be used by our management to make it more difficult for, and thereby discourage, an attempt to acquire control of us.

Third party expectations relating to ESG factors may impose additional costs and expose us and our clients to new risks.

There is an increasing focus from certain investors and certain of our customers, and other stakeholders concerning corporate responsibility, specifically related to ESG factors. Some investors may use these factors to guide their investment strategies and, in some cases, may choose not to invest in us, or otherwise do business with us, if they believe our policies relating to corporate responsibility are inadequate or do not align with theirs. Third party providers of corporate responsibility ratings and reports on companies have increased in number, resulting in varied standards. In addition, the criteria by which companies’ corporate responsibility practices are assessed are evolving, which could result in greater expectations of us and cause us to undertake costly initiatives to satisfy such new criteria. Alternatively, if we elect not to or are unable to satisfy such new criteria or do not meet the criteria of a specific third-party provider, some investors may conclude that our policies with respect to corporate responsibility are inadequate. We may face reputational damage in the event that our corporate responsibility procedures or standards do not meet the standards set by various constituencies. If we fail to satisfy the expectations of investors, our customers and other stakeholders or our initiatives are not executed as planned, our reputation and financial results could be adversely affected and our revenues, results of operations and ability to grow our business may be negatively impacted. Additionally, new legislative or regulatory initiatives related to ESG could adversely affect our business.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not Applicable.

ITEM 2. PROPERTIES

Our principal executive office is in Atlanta, Georgia. Our Business Center is located in Oak Ridge, Tennessee. Our Treatment Segment facilities are located in Gainesville, Florida; Kingston, Tennessee; Richland, Washington; and Oak Ridge, Tennessee. All of the properties where these facilities operate on are pledged to our senior lender as collateral for our credit facility with the exception of the property at Oak Ridge, Tennessee which is leased. Our Services Segment maintains offices, 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 Company currently leases properties in the following locations for operations and administrative functions within our Treatment and Services Segments, including our corporate office and Business Center:

Location	Square Footage (SF)/ Acreage (AC)		Expiration of Lease
	Oak Ridge, TN (Business Center)	16,319 SF	
Oak Ridge, TN (Services)	5,000 SF	September 30, 2023	
Blaydon On Tyne, England (Services)	1,000 SF	Monthly	
New Brighton, PA (Services)	3,558 SF	June 30, 2024	
Newport, KY (Services)	1,566 SF	Monthly	
Atlanta, GA (Corporate)	6,499 SF	July 31, 2024	
Oak Ridge, TN (Treatment)	8.7 AC, including 17,400 SF	September 30, 2023	

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

See "Part II – Item 8 - Financial Statements and Supplementary Data – Notes to Consolidated Financial Statements – Note 16 – Commitments and Contingencies – Legal Matters" for a discussion of our legal proceedings.

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.

		2022		2021	
		Low	High	Low	High
Common Stock	1 st Quarter	\$ 4.89	\$ 6.52	\$ 5.74	\$ 7.99
	2 nd Quarter	4.91	6.09	6.70	7.95
	3 rd Quarter	4.26	5.93	5.53	7.56
	4 th Quarter	3.20	4.57	6.00	7.30

At February 14, 2023, there were approximately 128 stockholders of record of our Common Stock. The actual number of our stockholders is greater than this number, and includes beneficial owners whose shares are held in "street name" by banks, brokers, and other nominees.

Since our inception, we have not paid any cash dividends on our Common Stock and have no dividend policy. Our loan agreement dated May 8, 2020, as amended, 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.

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 2022.

See “Note 6 - Capital Stock, Stock Plans, Warrants, and Stock Based Compensation” in Part II, Item 8, “Financial Statements and Supplementary Data” and “Equity Compensation Plans” 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 Act, 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, on our audited consolidated financial statements and includes our accounts, the accounts of our wholly-owned subsidiaries and the account of a variable interest entity for which we were the primary beneficiary.

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.

COVID-19 and Other Impacts

Our 2022 financial results continued to be impacted by COVID-19, among other things. Our Treatment Segment began to see steady improvements in waste receipts starting in the second quarter of 2022 from certain customers who had previously delayed waste shipments due, in part, from the impact of COVID-19 which is reflective of our Treatment Segment’s backlog of approximately \$9,156,000 at December 31, 2022, an increase of approximately \$2,027,000 from the balance of \$7,129,000 at December 31, 2021. This positive trend was negatively impacted by occurrences of severe weather conditions which contributed to temporary delays in waste shipments from certain customers and a temporary shortage in skilled production personnel which peaked through the fourth quarter of 2022 at one of our facilities. In early part of 2022, our Services Segment continued to experience delays/curtailments in project work by certain customers since the award of projects to us late in the second quarter of 2021 due to COVID-19 impact and/or administrative delays. However, starting in the second quarter of 2022, work under these projects had resumed/increased as the pandemic impacts began to subside and has since reached full operational status.

In 2022, we continued to realize delays in procurement and planning on behalf of our government clients that saw easing through the second half of the year. Heading into 2023, we expect to see continued improvements in waste receipts and continued increases in project work from contracts recently won and bids submitted in both segments that are awaiting awards, subject to potential impact of COVID-19 and economic impacts.

Liquidity Overview

We believe we have sufficient liquidity on hand to continue business operations during the next twelve months. At December 31, 2022, we had borrowing availability under our revolving credit facility of approximately \$4,290,000 which was based on a percentage of eligible receivables and subject to certain reserves. Our borrowing availability of \$4,290,000 at December 31, 2022 included a requirement from our lender that we maintain a minimum of \$3,000,000 in borrowing availability. As a result of an amendment to our Loan Agreement that we entered into with our lender in March 2023, we are required to continue to maintain a minimum of \$3,000,000 in borrowing availability under our revolving credit until the minimum FCCR requirement for the quarter ended June 30, 2023 has been met and certified to our lender (see "Financing Activities" within this MD&A for a discussion of this amendment). We continue to assess ways to improve our liquidity and the need in reducing operating costs during this volatile time. Reducing operating costs may include curtailing certain capital expenditures and eliminating non-essential expenditures. We continue to closely monitor any potential impact from the countries' economic conditions and COVID-19 pandemic on all aspects of our business.

Although we believe we have sufficient liquidity to support our operations over the next twelve months, due to losses incurred in 2022 and our lender requiring us to maintain a minimum borrowing availability of \$3,000,000 as discussed above, we are working toward improving our liquidity by either amending our existing lines of credit, obtaining new term loans or entering into equity transactions. There are no assurances that we will be successful in increasing our liquidity through these efforts.

Review

Revenue decreased by \$1,592,000 or 2.2% to \$70,599,000 for the twelve-month ended December 31, 2022 from \$72,191,000 for the corresponding period of 2021. The decrease was entirely within our Services Segment where revenue decreased by \$1,958,000 or 5.0% to \$37,241,000 from \$39,199,000. As previously disclosed, work under certain of the new projects awarded to our Services Segment at the end of the second quarter of 2021 continued to be delayed/curtailed into most of the first quarter of 2022 due to COVID-19 impact and/or administrative delays experienced by certain customers. However, work under these projects resumed/increased starting in the second quarter of 2022 and has since reached full operational status. The lower revenue in 2022 was further exacerbated by the completion of a large project in the second quarter of 2021 which was not replaced with a similar size contract because of delays in contract awards and procurement from COVID-19 impact which continued into the first half of 2022 and eased through the second half of 2022. Our Treatment Segment revenue increased by \$366,000 or 1.1% primarily due to overall higher waste volume which was offset by lower averaged price waste due to revenue mix. As disclosed above, our Treatment Segment began to see steady improvements in waste receipts starting in the second quarter of 2022 from certain customers who had previously delayed waste shipments due, in part, from the impact of COVID-19. This positive trend was negatively impacted by occurrences of severe weather conditions which resulted in temporary delays in waste shipments from certain customers and a temporary shortage in skilled production personnel which peaked through the fourth quarter of 2022 at one of our facilities.

Overall gross profit for 2022 increased \$2,785,000 or 40.8%. The increase was entirely from our Services Segment due to higher margin projects. The decrease in Treatment Segment gross profit was impacted by overall lower averaged price waste from revenue mix and the impact of the increase in fixed costs. SG&A expenses increased by approximately \$1,807,000 or 14.1% for the year ended December 31, 2022 as compared to the corresponding period of 2021.

During the third quarter of 2022, we recorded approximately \$1,975,000 in other income and other receivables (within current assets in our Consolidated Balance Sheets), which represent an employee retention credit that we are eligible for under the Coronavirus Aid, Relief, and Economic Security Act, as amended (the "CARES Act") as result of the COVID-19 pandemic (see "Employee Retention Credit ("ERC")" within this MD&A for a discussion of this refund that we are expecting resulting from this tax credit).

Business Environment

Our Treatment and Services Segments' business continues to be heavily dependent on services that we provide to governmental clients, primarily as subcontractors for others who are prime contractors to government entities or directly as the prime contractor. We believe demand for our services will continue to be subject to fluctuations due to a variety of factors beyond our control, including, without limitation, the economic conditions, the manner in which the applicable government will be required to spend funding to remediate various sites, and/or potential further impact from COVID-19. In addition, our governmental contracts and subcontracts relating to activities at governmental sites in the United States are generally subject to termination for convenience at any time at the government's option, and our governmental contracts/TOAs with the Canadian government authorities also allow the authorities to terminate the contract/task orders at any time for convenience. Work under all of our contracts/TOAs with Canadian government authorities has substantially been completed. A significant account receivable due to PF Canada is subject to continuing negotiations. See "Known Trends and Uncertainties – Perma-Fix Canada, Inc. ("PF Canada")" within this MD&A for additional discussion as to a terminated Canadian TOA. 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.

We are continually reviewing methods to raise additional capital to supplement our liquidity requirements, when needed, and reducing our operating costs. We continue to aggressively bid on various contracts, including potential contracts within the international markets.

Results of Operations

The reporting of financial results and pertinent discussions are tailored to our two reportable segments: The Treatment Segment ("Treatment") and the Services Segment ("Services"). Our financial results for 2021 also included our Medical Segments. As previously disclosed, we made the strategic decision to cease all R&D activities under the Medical Segment and sold 100% of our interest in Perma-Fix Medical S.A. ("PFM Poland" - which comprised the Medical Segment) in December 2021. Our Medical Segment had not generated any revenue and was involved in our medical isotope production technology. All costs previously incurred by the Medical Segment were included within R&D.

Summary – Years Ended December 31, 2022 and 2021

Below are the results of continuing operations for years ended December 31, 2022 and 2021 (amounts in thousands):

(Consolidated)	2022	%	2021	%
Net revenues	\$ 70,599	100.0	\$ 72,191	100.0
Cost of goods sold	60,990	86.4	65,367	90.5
Gross profit	9,609	13.6	6,824	9.5
Selling, general and administrative	14,652	20.8	12,845	17.8
Research and development	336	.4	746	1.0
Loss on disposal of property and equipment	18	—	2	—
Loss from operations	(5,397)	(7.6)	(6,769)	(9.3)
Interest income	99	.1	26	—
Interest expense	(175)	(.3)	(247)	(.3)
Interest expense – financing fees	(61)	(.1)	(41)	(.1)
Other income (expense)	1,945	2.8	(86)	(.1)
Gain on extinguishment of debt	—	—	5,381	7.4
Loss on deconsolidation of subsidiary	—	—	(1,062)	(1.5)
Loss from continuing operations before taxes	(3,589)	(5.1)	(2,798)	(3.9)
Income tax benefit	(378)	(.6)	(3,890)	(5.4)
(Loss) income from continuing operations	\$ (3,211)	(4.5)	\$ 1,092	1.5

Revenue

Consolidated revenues decreased \$1,592,000 for the year ended December 31, 2022 compared to the year ended December 31, 2021, as follows:

(In thousands)	2022	% Revenue	2021	% Revenue	Change	% Change
Treatment						
Government waste	\$ 21,946	31.1	\$ 20,816	28.8	\$ 1,130	5.4
Hazardous/non-hazardous (1)	5,062	7.1	4,915	6.8	147	3.0
Other nuclear waste	6,350	9.0	7,261	10.1	(911)	(12.5)
Total	33,358	47.2	32,992	45.7	366	1.1
Services						
Nuclear	35,952	50.9	37,834	52.4	(1,882)	(5.0)
Technical	1,289	1.9	1,365	1.9	(76)	(5.6)
Total	37,241	52.8	39,199	54.3	(1,958)	(5.0)
Total	\$ 70,599	100.0	\$ 72,191	100.0	\$ (1,592)	(2.2)

¹⁾ Includes wastes generated by government clients of \$2,380,000 and \$2,299,000 for the twelve months ended December 31, 2022 and 2021, respectively.

Treatment Segment revenue increased by \$366,000 or 1.1% for the twelve months ended December 31, 2022 over the same period in 2021. The overall increase was primarily due to higher waste volume as certain customers who had previously delayed waste shipments due to COVID-19 resumed steady waste shipments starting in the latter part of the second quarter. This positive trend was negatively impacted by occurrences of severe weather conditions which resulted in temporary delays in waste shipments from certain customers and a temporary shortage in skilled production personnel which peaked through the fourth quarter of 2022 at one of our facilities. The higher revenue from higher waste volume was offset by lower averaged price waste from revenue mix. Services Segment revenue decreased by approximately \$1,958,000 or 5.0%. As previously disclosed, work under certain of the new projects awarded to our Services Segment at the end of the second quarter of 2021 continued to be delayed/curtailed into most of the first quarter of 2022 due to COVID-19 impact and/or administrative delays experienced by certain customers. However, since the second quarter of 2022, work under these projects had resumed/increased and has since reached full operational status. The lower revenue in 2022 was further exacerbated by the completion of a large project in the second quarter of 2021 which was not replaced with a similar size contract because of delays in contract awards and procurement from COVID-19. 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. In 2022, our Segments continued to realize delays in procurement and planning on behalf of our government clients which did not ease until the second half of 2022.

Cost of Goods Sold

Cost of goods sold decreased \$4,377,000 for the year ended December 31, 2022, as compared to the year ended December 31, 2021, as follows:

(In thousands)	2022	% Revenue	2021	% Revenue	Change
Treatment	\$ 28,115	84.3	\$ 26,274	79.6	\$ 1,841
Services	32,875	88.3	39,093	99.7	(6,218)
Total	\$ 60,990	86.4	\$ 65,367	90.5	\$ (4,377)

Cost of goods sold for the Treatment Segment increased by approximately \$1,841,000 or 7.0%. Treatment Segment's variable costs increased by approximately \$607,000 primarily due to higher material and supplies, transportation, and outside services costs. Treatment Segment's overall fixed costs were higher by approximately \$1,234,000 resulting from the following: general expenses were higher by \$483,000 primarily due to higher utility costs; depreciation expenses were higher by approximately \$392,000 due to depreciation for asset retirement obligations in connection with our EWOC facility; regulatory expenses were higher by approximately \$232,000 primarily due to additional closure costs recorded for our EWOC facility due to change in estimated costs; maintenance costs were higher by approximately \$109,000; salaries and payroll related expenses were higher by \$61,000; and travel expenses were lower by approximately \$43,000. Services Segment cost of goods sold decreased \$6,218,000 or 15.9% primarily due to lower revenue. The decrease in cost of goods sold was primarily due to lower salaries/payroll related, outside services, material and supplies and travel costs totaling approximately \$6,863,000 which was offset by higher disposal, transportation and general expenses totaling approximately \$645,000. Included within cost of goods sold is depreciation and amortization expense of \$2,027,000 and \$1,654,000 for the twelve months ended December 31, 2022, and 2021, respectively.

Gross Profit

Gross profit for the year ended December 31, 2022 was \$2,785,000 higher than 2021 as follows:

(In thousands)	2022	% Revenue	2021	% Revenue	Change
Treatment	\$ 5,243	15.7	\$ 6,718	20.4	\$ (1,475)
Services	4,366	11.7	106	0.3	4,260
Total	\$ 9,609	13.6	\$ 6,824	9.5	\$ 2,785

Treatment Segment gross profit decreased by \$1,475,000 or approximately 22.0% and gross margin decreased to 15.7% from 20.4% primarily due to lower averaged price waste from revenue mix and the impact of the increase in fixed costs. Services Segment gross profit increased by \$4,260,000 or 4,018.9% and gross margin increased to 11.7% from 0.3% primarily due to higher margin projects. 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 \$1,807,000 for the year ended December 31, 2022 as compared to the corresponding period for 2021 as follows:

(In thousands)	2022	% Revenue	2021	% Revenue	Change
Administrative	\$ 6,882	—	\$ 5,751	—	\$ 1,131
Treatment	4,419	13.2	4,030	12.2	389
Services	3,351	9.0	3,064	7.8	287
Total	\$ 14,652	20.8	\$ 12,845	17.8	\$ 1,807

Administrative SG&A expenses were higher primarily due to the following: overall outside services expenses were higher by approximately \$654,000 resulting from higher consulting/outside services/audit fees; travel expenses were higher by approximately \$19,000; general expenses were higher by approximately \$13,000 in various categories; and salaries and payroll related expenses were higher by approximately \$445,000 primarily due to higher stock-based compensation expenses from options granted to certain employees in October 2021 and higher 401(k) plan matching expenses as our payroll expenses in 2021 included more forfeitures of 401(k) plan matching funds contributed by us for former employees who failed to meet the 401(k) plan vesting requirements. Additionally, Administrative salaries and payroll related expenses were higher as in 2021, resources were allocated in supporting Medical Segment's R&D/administrative functions. Treatment Segment SG&A expenses were higher primarily due to the following: outside services expense were higher by \$120,000 due to more consulting/business matters (including our ESG initiatives); salaries and payroll related expenses were higher by \$46,000; travel expenses were higher by approximately \$59,000; and general expenses were higher by \$164,000 which included higher tradeshow expenses and various other categories. The increase in SG&A expenses within our Services Segment was primarily due to the following: travel expenses were higher by \$32,000; general expenses were higher by approximately \$107,000 which included higher tradeshow expenses and various other categories; salaries/payroll related and consulting expenses were higher by approximately \$202,000, and credit loss expense on accounts receivable was lower by approximately \$54,000. Included in SG&A expenses is depreciation and amortization expense of \$82,000 and \$33,000 for the twelve months ended December 31, 2022 and 2021, respectively.

R&D

R&D expenses decreased \$410,000 for the year ended December 31, 2022 as compared to the corresponding period of 2021 as follows:

(In thousands)	2022	2021	Change
Administrative	\$ 67	\$ 40	\$ 27
Treatment	246	221	25
Services	23	71	(48)
PF Medical	—	414	(414)
Total	\$ 336	\$ 746	\$ (410)

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 technologies and technological enhancement of new potential waste treatment processes. The decrease was primarily the result of the sale of PFM Poland in December 2021 which comprised of our Medical Segment and which previously was involved in the R&D of our medical isotope technology.

Interest Income

Interest income increased by approximately \$73,000 for the twelve months ended December 31 2022 as compared to the corresponding period of 2021 primarily due to higher interest earned from our finite risk sinking fund.

Interest Expense

Interest expense decreased by approximately \$72,000 for the twelve months ended December 31, 2022 as compared to the corresponding period of 2021 primarily due to lower interest expense from our declining term loan balance outstanding. Also, interest expense for the first six months of 2021 included interest accrued for our Paycheck Protection Program ("PPP") Loan which was forgiven by the U.S. Small Business Administration ("SBA") effective June 15, 2021. The overall lower interest expense was offset by monthly interest incurred starting in June of 2022 from the capital line under our credit facility.

Income Taxes

We had income tax benefits of \$378,000 and \$3,890,000 for continuing operations for the twelve months ended December 31, 2022 and 2021, respectively. Our effective tax rates were approximately 10.5% and 139.0% for the twelve months ended December 31, 2022 and 2021, respectively. Our effective tax rates for the twelve months ended December 31, 2022 were impacted by non-deductible expenses and state taxes. Our effective tax rate for the twelve months ended December 31, 2021 was substantially impacted by the release of our valuation allowance on deferred tax assets primarily related to U.S. Federal income taxes during the third quarter of 2021 of approximately \$2,351,000. For the twelve months ended December 31, 2021, the primary reasons for the differences between our effective tax rate and statutory tax rate were due to the release of valuation allowance and the forgiveness of our PPP Loan which was included in our Consolidated Statement of Operations as "Gain on extinguishment of debt" but is exempt from income taxes.

Backlog

Our Treatment Segment 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, 2022, our Treatment Segment had a backlog of approximately \$9,156,000, as compared to approximately \$7,129,000 at December 31, 2021. 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.

Discontinued Operations and Environmental Contingencies

Our discontinued operations consist of all our subsidiaries included in our Industrial Segment which encompasses subsidiaries divested in 2011 and prior and three previously closed locations.

Our discontinued operations had no revenue for the twelve months ended December 31, 2022 and 2021. We incurred net losses of \$605,000 (net of tax benefit of \$199,000) and \$421,000 (net of tax benefit of \$139,000) for our discontinued operations for the twelve months ended December 31, 2022 and 2021, respectively. The increase in net losses in 2022 as compared to 2021 was primarily due to costs incurred in connection with management of administrative and regulatory matters within our discontinued operations. We have three environmental remediation projects, all within our discontinued operations, which principally entail the removal/remediation of contaminated soil, and, in most cases, the remediation of surrounding ground water.

Liquidity and Capital Resources

Our cash flow requirements during the twelve months ended December 31, 2022 were primarily financed by our operations, cash on hand and credit facility availability. Subject to COVID-19 and other impacts as discussed above, 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, and planned capital expenditures. We plan to fund these requirements from our operations, credit facility availability, cash on hand and a refund that we expect to receive under the ERC program under the CARES Act (see a discussion of this expected refund below – “Employee Retention Credit (“ERC”)”). We continue to explore all sources of increasing our capital and/or liquidity and to improve our revenue and working capital (see our discussion contained in this “MD&A – Liquidity Overview” above for further discussion as to liquidity). We are continually reviewing operating costs and reviewing the possibility of further reducing operating costs and non-essential expenditures to bring them in line with revenue levels, when necessary. At this time, we believe that our cash flows from operations, our available liquidity from our credit facility, our cash on hand and the expected refund from the ERC program should be sufficient to fund our operations for the next twelve months. However, due to the uncertainty of the countries’ current economic environment and the COVID-19 as disclosed in “COVID-19 and Other Impacts” within this MD&A, there are no assurances such will be the case.

The following table reflects the cash flow activity for the year ended December 31, 2022 and the corresponding period of 2021:

(In thousands)	2022	2021
Cash provided by (used in) operating activities of continuing operations	\$ 164	\$ (6,316)
Cash used in operating activities of discontinued operations	(717)	(521)
Cash used in investing activities of continuing operations	(997)	(1,564)
Cash (used in) provided by financing activities of continuing operations	(921)	4,943
Effect of exchange rate changes on cash	(4)	(1)
Decrease in cash and finite risk sinking fund (restricted cash)	\$ (2,475)	\$ (3,459)

At December 31, 2022, we were in a positive cash position with no revolving credit balance. At December 31, 2021, we had cash on hand of approximately \$1,866,000.

Operating Activities

Accounts receivable, net of credit losses, totaled \$9,364,000 at December 31, 2022, a decrease of \$2,008,000 from the December 31, 2021 balance of \$11,372,000. The decrease was attributed to timing of invoicing and accounts receivable collection. Our contracts with our customers are subject to various payment terms and conditions. Additionally, our contracts with our customers may sometimes result in modifications which can cause delays in collections. Our accounts receivable at December 31, 2022 include invoices for work performed which previously was in our unbilled account for a certain Canadian project that remain outstanding and subject to negotiations (see unbilled receivables discussion below). See discussion under “Known Trends and Uncertainties – Perma-Fix Canada, Inc. (“PF Canada”)” for a discussion as to this certain account receivable.

Unbilled receivables totaled \$6,062,000 at December 31, 2022, a decrease of \$2,933,000 from the December 31, 2021 balance of \$8,995,000. The decrease in unbilled receivables was primarily within our Services Segment due to invoicing in connection with our Canadian projects.

Accounts payable, totaled \$10,325,000 at December 31, 2022, a decrease of \$1,650,000 from the December 31, 2021 balance of \$11,975,000. Our accounts payable are impacted by the timing of payments as we are continually managing payment terms with our vendors to maximize our cash position throughout all segments.

We had working capital of \$818,000 (which included working capital of our discontinued operations) at December 31, 2022, as compared to working capital of \$4,060,000 at December 31, 2021. Our working capital was negatively impacted primarily by our results of operations which were heavily impacted from COVID-19 and other delays as discussed previously, especially in the first quarter of 2022. Our working capital was positively impacted by the employee retention credit in the amount of approximately \$1,975,000 recorded as current receivables (within "Prepaid and other assets" on our Consolidated Balance Sheets. See a discussion of this credit below "Employee Retention Credit ("ERC)").

Investing Activities

During 2022, our purchases of capital equipment totaled approximately \$1,137,000, of which \$114,000 was subject to financing, with the remaining funded from cash from operations and our credit facility. We have budgeted approximately \$2,000,000 for 2023 capital expenditures primarily for our Treatment and Services Segments to maintain operations and regulatory compliance requirements and support revenue growth. Certain of these budgeted projects may either be delayed until later years or deferred altogether. 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.

During March 2022, we signed a joint venture term sheet addressing plans to partner with Springfields Fuels Limited ("SFL"), an affiliate of Westinghouse Electric Company LLC, to develop and manage a nuclear waste-materials treatment facility (the "Facility") in the United Kingdom. The Facility is for the purpose of expanding the partners' waste treatment capabilities for the European nuclear market. It is expected that upon finalization of a partnership agreement, SFL will have an ownership interest of fifty-five (55) percent and our interest will be forty-five (45) percent. The finalization, form and capitalization of this unpopulated partnership is subject to numerous conditions, including but not limited to, winning a certain contract, completion and execution of a definitive agreement and facility design, granting of required regulatory, lender or permitting approvals and updated cost and profitability analysis based on current and forecast future economic conditions. Upon finalization of this venture, we will be required to make an investment in this venture. The amount of our investment, the period of which it is to be made and the method of funding are to be determined.

Financing Activities

We entered into a Second Amended and Restated Revolving Credit, Term Loan and Security Agreement, dated May 8, 2020, (the "Loan Agreement"), with PNC National Association ("PNC"), acting as agent and lender. The Loan Agreement provides us with the following credit facility with a maturity date of March 15, 2024: (a) up to \$18,000,000 revolving credit ("revolving credit") (see discussion below as to an amendment dated March 21, 2023 which reduced the revolving credit to \$12,500,000) and (b) a term loan ("term loan") of approximately \$1,742,000, requiring monthly installments of \$35,547. 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. Our Loan Agreement, as amended (the "Amended Loan Agreement"), also provides a capital expenditure line of up to \$1,000,000 with advances on the line, subject to certain limitations, permitted for up to twelve months starting May 4, 2021 (the "Borrowing Period"). Only interest is payable on advances during the Borrowing Period. At the end of the Borrowing Period, the total amount advanced under the line will amortize equally based on a five-year amortization schedule with principal payment due monthly plus interest. At the maturity date of the Amended Loan Agreement, any unpaid principal balance plus interest, if any, will become due. At the end of the Borrowing Period, advance on the capital line totaled approximately \$524,000. We are required to make monthly principal installment payment of approximately \$8,700 starting June 1, 2022 plus interest. At December 31, 2022, balance on the capital line was approximately \$463,000. The advance made on the capital line was used to purchase the underlying asset under a previous finance lease.

During 2022, we entered into further amendments to our Amended Loan Agreement with our lender, which provided the following, among other things (with the amended terms set forth in a Revised Loan Agreement):

- waived our failure to meet the minimum quarterly fixed charge coverage ratio ("FCCR") requirement for the fourth quarter of 2021 and second quarter of 2022;
- removed the quarterly FCCR testing requirement for the first and third quarters of 2022;
- reinstated the quarterly FCCR testing requirement starting for the fourth quarter of 2022 and revised the methodology in calculating the FCCR for the quarter ended December 31, 2022 and the methodology to be used in calculating the FCCR for the quarter ending March 31, 2023 (with no change to the minimum 1.15:1 ratio requirement for each quarter);
- required maintenance of a minimum of \$3,000,000 in borrowing availability under the revolving credit until the minimum FCCR requirement for the quarter ended December 31, 2022 has been met and certified to the lender;
- revised the annual rate used to calculate the Facility Fee (as defined in the Loan Agreement) on the revolving credit, with addition of the capital expenditure line, from 0.375% to 0.500%. Upon meeting the minimum FCCR requirement of 1.15:1 on a twelve-month trailing basis, the Facility Fee rate of 0.375% will be reinstated;
- added certain additional anti-terrorism provisions to the covenants; and
- replaced the London InterBank Offer Rate ("LIBOR") based interest rate benchmark with the Secured Overnight Finance Rate ("SOFR"). As a result of this new provision, payment of annual rate of interest due on the revolving credit is at prime (7.50% at December 31, 2022) plus 2% or Term SOFR Rate (as defined in the Revised Loan Agreement) plus 3.00% plus an SOFR Adjustment applicable for an interest period selected by us and payment of annual rate of interest due on the term loan and the capital expenditure line is at prime plus 2.50% of Term SOFR Rate plus 3.50% plus an SOFR Adjustment applicable for an interest period selected by us. A SOFR Adjustment rates of 0.10% and 0.15% are applicable for a one-month interest period and three-month period, respectively, that may be selected by us

In connection with the amendments, we paid our lender fees totaling \$30,000 which is being amortized over the remaining term of the Revised Loan Agreement as interest expense-financing fees.

Our credit facility under our Revised Loan Agreement 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. We were not required to perform testing of the FCCR requirement in the first and third quarters of 2022 pursuant to the amendments that we entered with our lender in 2022 as discussed above. Based on an amendment that we entered into with our lender on March 21, 2023 as discussed below, we were not required to perform testing of the FCCR requirement in the fourth quarter of 2022. We failed to meet our FCCR requirement in the second quarter of 2022; however, this non-compliance was waived by our lender pursuant to an amendment that we entered into with our lender in 2022 as discussed above. Other than the above discussion pertaining to our FCCR requirements, we met all of our other financial covenant requirements in each of the quarters of 2022. We expect to meet our quarterly financial covenant requirements for the next twelve months under our Amended Loan Agreement.

On March 21, 2023, we entered into an amendment to our Revised Loan Agreement with our lender which provides, among other things, the following:

- removed the quarterly FCCR testing requirement for the fourth quarter of 2022 and removes the FCCR testing requirement the first quarter of 2023;

- reduced the maximum revolving credit line under the credit facility from \$18,000,000 to \$12,500,000;
- reinstates the quarterly FCCR testing requirement starting in the second quarter of 2023 using a trailing twelve months period (with no change to the minimum 1.15:1 ratio requirement for each quarter); and
- requires maintenance of a minimum of \$3,000,000 in borrowing availability under the revolving credit until the minimum FCCR requirement for the quarter ended June 30, 2023 has been met and certified to the lender.

In connection with the amendment, the Company paid its lender a fee of \$25,000.

From this point on, we may terminate our Revised Loan Agreement upon 90 days' prior written notice upon payment in full of our obligations under the Revised Loan Agreement with no early termination fees.

Employee Retention Credit ("ERC")

The CARES Act, which was enacted on March 27, 2020, provides an ERC for qualifying businesses keeping employees on their payroll during the COVID-19 pandemic. The ERC was subsequently amended by the Taxpayer Certainty and Disaster Tax Relief Act of 2020, the Consolidated Appropriation Act of 2021, and the American Rescue Plan Act of 2021, all of which amended and extended the ERC availability and guidelines under the CARES Act. Following these amendments, we determined that we were eligible for the ERC, and as a result of the foregoing legislations, are eligible to claim a refundable tax credit against our share of certain payroll taxes equal to 70% of the qualified wages paid to employees between July 1, 2021 and September 30, 2021. Qualified wages are limited to \$10,000 per employee per calendar quarter in 2021 for a maximum allowable ERC per employee of \$7,000 per calendar quarter in 2021. For purposes of the amended ERC, an eligible employer is defined as having experienced a significant (20% or more) decline in gross receipts during one or more of the first three 2021 calendar quarters when compared to 2019.

During the third quarter of 2022, we determined we were eligible for the ERC and amended our third quarter 2021 employer payroll tax filings claiming a refund from the U.S. Treasury in the amount of approximately \$1,975,000. As there is no authoritative guidance under U.S. GAAP on accounting for government assistance to for-profit business entities, we account for the ERC by analogy to International Accounting Standard ("IAS") 20, Accounting for Government Grants and Disclosure of Government Assistance. In accordance with IAS 20, management determined it has reasonable assurance for receipt of the ERC and recorded the expected refund as other income (within "Other income (expense)") on our Consolidated Statements of Operations and other receivables (within "Prepaid and other assets") on our Consolidated Balance Sheets.

Payment of Deferred Employment Tax Deposits

The CARES Act provided employers the option to defer the payment of an employer's share of social security taxes beginning on March 27, 2020 through December 31, 2020, with 50% of the amount of social security taxes deferred to become due on December 31, 2021 with the remaining 50% due on December 31, 2022. Our deferment of such taxes totaled approximately \$1,252,000 of which approximately \$626,000 was paid in December 2021 with the remaining paid in December 2022 (previously included in "Accrued expenses" within current liabilities in our Consolidated Balance Sheets).

Off Balance Sheet Arrangements

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, 2022, the total amount of standby letters of credit outstanding totaled approximately \$3,016,000 and the total amount of bonds outstanding totaled approximately \$35,432,000. We also provide closure and post-closure requirements through a financial assurance policy for certain of our Treatment Segment facilities through American International Group, Inc. ("AIG"). At December 31, 2022, the closure and post-closure requirements for these facilities were approximately \$21,175,000.

Critical Accounting Policies and Estimates

Our consolidated financial statements are prepared based upon the selection and application of US GAAP, which may require us to make estimates, judgments and assumptions that affect amounts reported in our financial statements and accompanying notes. The accounting policies below are those we believe affect the more significant estimates and judgments used in preparation of our financial statements. Our other accounting policies are described in the accompanying notes to our consolidated financial statements of this Form 10-K (see "Item 8 – Financial Statements and Supplementary Data – Notes to Consolidated Financial Statements – "Note 2 – Summary of Significant Accounting Policies"):

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, 2022 and 2021 resulted in no impairment charges.

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. 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.

Our future cash flow assumptions and conclusions with respect to asset impairments could be impacted by changes arising from (i) a sustained period of economic and industrial slowdowns (ii) inability to scale our operations and implement cost reduction efforts during reduced demand and/or (iii) a significant decline in our share price for a sustained period of time. These factors, among others, could significantly impact the impairment analysis and may result in future asset impairment charges that, if incurred, could have a material adverse effect on our financial condition and results of operations. We believe that the assumptions and estimates utilized for the reporting periods are appropriate based on the information available to management.

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. We develop estimates for the cost of these activities based on our evaluation of site-specific facts and circumstances, such as the existence of structures and other improvements that would need to be dismantled and the length of the post-closure period as determined by the applicable regulatory agency, among other things. Included in our cost estimates are our interpretation of current regulatory requirements and any proposed regulatory changes. These cost estimates may change in the future due to various circumstances including, but not limited to, permit modifications, changes in legislation or regulations, technological changes and results of environmental studies. Our cost estimates are calculated using internal sources as well as input from third-party experts. 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, we 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.

Income Taxes. The provision for income tax is determined in accordance with ASC 740, "Income Taxes." As part of the process of preparing our consolidated financial statements, 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 regularly review deferred tax assets by jurisdiction to assess their potential realization and establish a valuation allowance for portions of such assets that we believe will not be realized. In performing this review, we make estimates and assumptions regarding projected future taxable income, the expected timing of the reversals of existing temporary differences and the implementation of tax planning strategies. A change in these assumptions could cause an increase or decrease to the valuation allowance which could materially impact our results of operations.

Recent Accounting Pronouncements

See "Item 8 – Financial Statements and Supplementary Data" – Notes to Consolidated Financial Statements" – Note 2 – Summary of Significant Accounting Policies" for the recent accounting pronouncements that have been adopted during the year ended December 31, 2022, or will be adopted in future periods.

Known Trends and Uncertainties

Economic Conditions. Our business continues to be heavily dependent on services that we provide to governmental clients, primarily as subcontractors for others who are prime contractors to government authorities (particularly the DOE and DOD) or directly as the prime contractor. We believe demand for our services will continue to be subject to fluctuations due to a variety of factors beyond our control, including without limitation, the economic conditions, the manner in which the government entity will be required to spend funding to remediate various sites, and potential COVID-19 impact. In addition, our U.S. governmental contracts and subcontracts relating to activities at governmental sites are generally subject to termination for convenience at any time at the option of the government. Our TOAs with the Canadian government also provided that the government may terminate a TOA at any time for convenience. 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 U.S. governmental authorities through contracts entered into indirectly as subcontractors for others who are prime contractors or directly as the prime contractor to government authorities. We also had significant relationships with Canadian government authorities primarily through TOAs entered into with Canadian government authorities. Project work under TOAs with Canadian government authorities has substantially been completed. Our inability to continue under existing contracts that we have with the U.S. government (directly or indirectly as a subcontractor) or significant reductions in the level of governmental funding in any given year could have a material adverse impact on our operations and financial condition.

We performed services relating to waste generated by government clients (domestic and foreign (primarily Canadian)), either directly as a prime contractor or indirectly for others as a subcontractor to government entities, representing approximately \$60,030,000, or 85.0%, of our total revenue during 2022, as compared to \$60,812,000, or 84.2%, of our total revenue during 2021.

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.

Perma-Fix Canada, Inc. ("PF Canada")

During the fourth quarter of 2021, PF Canada received a Notice of Termination ("NOT") from Canadian Nuclear Laboratories, LTD. ("CNL") on a Task Order Agreement ("TOA") that PF Canada entered into with CNL in May 2019 for remediation work within Ontario, Canada ("Agreement"). The NOT was received after work under the TOA was substantially completed and work under the TOA has since been completed. CNL may terminate the TOA at any time for convenience. As of December 31, 2022, PF Canada has approximately \$1,853,000 in unpaid receivables due from CNL as a result of work performed under the TOA. Additionally, CNL has approximately \$1,060,000 in contractual holdback under the TOA that is payable to PF Canada. CNL also established a bond securing approximately \$1,900,000 (CAD) to cover certain issues raised in connection with the TOA. Under the TOA, CNL may be entitled to set off certain costs and expenses incurred by CNL in connection with the termination of the TOA, including the bond as discussed above, against amounts owed to PF Canada for work performed by PF Canada or its subcontractors. PF Canada continues to be in discussions with CNL to finalize the amounts due to PF Canada under the TOA and continues to believe these amounts are due and payable to PF Canada.

Supply Chain. We use various commercially available materials and supplies which include among other things chemicals, containers/drums and PPE in our operations. We generally source these items from various suppliers in order to take advantage of competitive pricing.

We also utilize various types of equipment, which include among other things trucks, flatbeds, lab equipment, heavy machineries, in carrying out our business operations. Our equipment may be obtained through direct purchase, rental option or leases. Due to some of our specialized waste treatment processes, certain equipment that we utilize are designed and built to our specifications. We rely on various commercial equipment suppliers for the construction of these equipment. Due to supply chain challenges, we previously experienced a delay in the delivery of a new waste processing unit to us by our supplier due to shortage of parts required for the construction of the unit, among other things, This supply chain interruption delayed deployment of our new technology which negatively impacted our revenue for 2021 and the first quarter of 2022 as associated revenue was not able to be generated. Deployment of this unit commenced in mid-May of 2022. Continued increases in pricing and/or potential delays in procurements of material and supplies and equipment required for our operations resulting from further tightening supply chain could further adversely affect our operations and profitability.

Inflation and Cost Increases. Continued increases in any of our operating costs, including further changes in fuel prices, wage rates, supplies, and utility costs, may further increase our overall cost of goods sold or operating expenses. Some of these cost increases have been the result of inflationary pressures that could further reduce profitability. We may attempt to increase our sales prices in order to maintain satisfactory margin, however, competitive pressures in our industry may have the effect of inhibiting our ability to reflect these increased costs in the prices of our services that we provide to our customers and therefore reduce our profitability.

Liquidity. See above discussion contained herein as to issues relating to “Liquidity” and efforts to improve our liquidity

Related Party Transactions

See a discussion of the Company’s related party transactions in “Item 8 – Financial Statements and Supplementary Data – Notes to Consolidate Financial Statements – Note 18 – Related Party Transactions and Note 20 – Subsequent Events – Executive Compensation - MIPs.”

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;
- reductions and improvement in the level of government funding in future years;

- reducing operating costs and non-essential expenditures;
- ability to meet loan agreement quarterly financial covenant requirements;
- funding of cash flow requirements;
- Canadian receivables;
- sufficient liquidity to continue business;
- future results of operations and liquidity;
- increasing liquidity;
- government funding for our services;
- may not have liquidity to repay debt if our lender accelerates payment of our borrowings;
- manner in which the applicable government will be required to spend funding to remediate various sites;
- funding operations;
- continued increases in pricing and/or further tightening supply chain;
- fund capital expenditures from cash from operations and/or financing;
- impact from COVID-19 and economic conditions;
- continue improvement in waste receipts and project work;
- submitted bid;
- ownership percentage interest upon finalization of partnership agreement;
- investment requirement upon finalization of joint venture;
- positive trends;
- compliance with environmental laws, rules and regulations;
- potential effect of being a PRP;
- potential sites for violations of environmental laws and remediation of our facilities;
- ERC refund;
- future price increases;
- sales prices; and
- continuation of contracts with federal government.

While the Company believes the expectations reflected in such forward-looking statements are reasonable, it can give no assurance such expectations will prove to be 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;
- contract bids, including international markets;
- 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 government agencies or subcontracts involving government agencies or reduction in amount of waste delivered to the Company under the contracts or subcontracts;
- renegotiation of contracts involving government agencies;
- 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;
- impact of the COVID-19 and economic uncertainties;
- new governmental regulations;
- lender refuses to waive non-compliance or revise our covenant so that we are in compliance;
- continued supply chain interruptions;
- continued inflationary pressures;
- recession;
- challenge by regulatory authorities of our claim to the ERC; and
- risk factors contained in Item 1A of this report.

FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

ITEM 8.

Index to Consolidated Financial Statements

<u>Consolidated Financial Statements</u>		<u>Page No.</u>
Report of Independent Registered Public Accounting Firm (PCAOB ID Number 248)		34
Consolidated Balance Sheets as of December 31, 2022 and 2021		36
Consolidated Statements of Operations for the years ended December 31, 2022 and 2021		38
Consolidated Statements of Comprehensive (Loss) Income for the years ended December 31, 2022 and 2021		39
Consolidated Statements of Stockholders' Equity for the years ended December 31, 2022 and 2021		40
Consolidated Statements of Cash Flows for the years ended December 31, 2022 and 2021		41
Notes to Consolidated Financial Statements		42

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, 2022 and 2021, the related consolidated statements of operations, comprehensive (loss) income, stockholders' equity, and cash flows for the years then ended, 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, 2022 and 2021, and the results of its operations and its cash flows for the years then ended, 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 regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical audit matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Revenue recognition for certain revenue contracts

As described further in note 2 to the financial statements, the Company has certain fixed price contracts that are long term in nature with non-standard terms. These terms and contract modifications impact revenue recognition and require significant effort and judgement by management. We have identified revenue recognition for these contracts as a critical audit matter.

The principal considerations for our determination that revenue recognition for these contracts is a critical audit matter are that there is a considerable auditor effort and judgement required to analyze and evaluate contracts for the types of terms and conditions that impact revenue recognition.

Our audit procedures related to the revenue recognition for these contracts included the following, among others.

- We obtained and inspected a selection of long-term, non-standard contracts and modifications and amendments to understand the terms and conditions and the related impact on revenue recognition, specifically the identification of:
 - contract term,
 - performance obligations, and
 - determination of the measure of progress.
- We obtained the detail of underlying costs for each project and tested the underlying accuracy of the data by agreeing to supporting documentation.
- We utilized the cost data to recalculate management's measure of completion for selected projects under the input method.
- We performed a retrospective review using contracts, which were tested through prior year procedures and completed during the current year, to evaluate management's ability to accurately budget for input method contracts.
- We evaluated the appropriateness of the recording of revenue for both billed and unbilled amounts related to these contracts.

Realizability of deferred tax assets

As described further in note 14 to the financial statements, deferred tax assets are reduced by a valuation allowance if, based on the evaluation of positive and negative evidence, in management's judgment it is more likely than not that some portion or all, of the deferred tax assets will not be realized. During the year ended December 31, 2022, management concluded that sufficient positive evidence exists to ensure the realizability of the US federal deferred tax assets.

The principal considerations for our determination that the realizability of US federal deferred tax assets is a critical audit matter are that the projected financial information related to the profitability of the Company which is reliant on the ability to predict future revenue is subject to significant management judgments in determining whether the net deferred tax assets are more likely than not to be realized in the future, which in turn led to a high degree of auditor judgement and effort in performing procedures and evaluating audit evidence related to management's assessment of the realization of deferred tax assets.

Our audit procedures related to the realizability of US federal deferred tax assets included the following, among others.

- We evaluated the positive and negative evidence available to support management's assessment of the realizability of the assets
- We tested the completeness and accuracy of the underlying data used in management's assessment
- We evaluated the prospective financial information related to future profitability including consideration of:
 - the current and past performance of the Company
 - the consistency with external market and industry data
 - the consistency with evidence obtained in other areas.

/s/GRANT THORNTON LLP

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

Atlanta, Georgia
March 23, 2023

PERMA-FIX ENVIRONMENTAL SERVICES, INC.
CONSOLIDATED BALANCE SHEETS
As of December 31.

(Amounts in Thousands, Except for Share and Per Share Amounts)

	2022	2021
ASSETS		
Current assets:		
Cash	\$ 1,866	\$ 4,440
Accounts receivable, net of allowance for credit losses of \$57 and \$85, respectively	9,364	11,372
Unbilled receivables	6,062	8,995
Inventories	814	680
Prepaid and other assets	5,405	4,472
Current assets related to discontinued operations	15	15
Total current assets	23,526	29,974
Property and equipment:		
Buildings and land	24,021	20,631
Equipment	21,242	22,131
Vehicles	442	443
Leasehold improvements	23	23
Office furniture and equipment	1,299	1,316
Construction-in-progress	727	2,997
Total property and equipment	47,754	47,541
Less accumulated depreciation	(28,797)	(28,932)
Net property and equipment	18,957	18,609
Property and equipment related to discontinued operations	81	81
Operating lease right-of-use assets	1,971	2,460
Intangibles and other long term assets:		
Permits	9,610	9,476
Other intangible assets - net	629	894
Finite risk sinking fund (restricted cash)	11,570	11,471
Deferred tax assets	4,116	3,527
Other assets	438	809
Total assets	\$ 70,898	\$ 77,301

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)

	2022	2021
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 10,325	\$ 11,975
Accrued expenses	4,593	5,078
Disposal/transportation accrual	887	1,065
Deferred revenue	4,813	5,580
Accrued closure costs - current	682	578
Current portion of long-term debt	476	393
Current portion of operating lease liabilities	416	406
Current portion of finance lease liabilities	154	333
Current liabilities related to discontinued operations	362	506
Total current liabilities	<u>22,708</u>	<u>25,914</u>
Accrued closure costs	7,284	6,613
Long-term debt, less current portion	563	600
Long-term operating lease liabilities, less current portion	1,584	2,029
Long-term finance lease liabilities, less current portion	318	884
Long-term liabilities related to discontinued operations	908	677
Total long-term liabilities	<u>10,657</u>	<u>10,803</u>
Total liabilities	<u>33,365</u>	<u>36,717</u>
Commitments and Contingencies (Note 16)		
Stockholders' Equity:		
Preferred Stock, \$0.01 par value; 2,000,000 shares authorized, no shares issued and outstanding	—	—
Common Stock, \$0.01 par value; 30,000,000 shares authorized; 13,332,398 and 13,222,552 shares issued, respectively; 13,324,756 and 13,214,910 shares outstanding, respectively	13	13
Additional paid-in capital	115,209	114,307
Accumulated deficit	(77,436)	(73,620)
Accumulated other comprehensive loss	(165)	(28)
Less Common Stock in treasury, at cost; 7,642 shares	(88)	(88)
Total stockholders' equity	<u>37,533</u>	<u>40,584</u>
Total liabilities and stockholders' equity	<u>\$ 70,898</u>	<u>\$ 77,301</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)

	2022	2021
Net revenues	\$ 70,599	\$ 72,191
Cost of goods sold	60,990	65,367
Gross profit	9,609	6,824
Selling, general and administrative expenses	14,652	12,845
Research and development	336	746
Loss on disposal of property and equipment	18	2
Loss from operations	(5,397)	(6,769)
Other income (expense):		
Interest income	99	26
Interest expense	(175)	(247)
Interest expense-financing fees	(61)	(41)
Other (Note 11)	1,945	(86)
Gain on extinguishment of debt (Note 11)	—	5,381
Loss on deconsolidation of subsidiary (Note 15)	—	(1,062)
Loss from continuing operations before taxes	(3,589)	(2,798)
Income tax benefit	(378)	(3,890)
(Loss) income from continuing operations, net of taxes	(3,211)	1,092
Loss from discontinued operations (Note 9)	(605)	(421)
Net (loss) income	(3,816)	671
Net loss attributable to non-controlling interest	—	(164)
Net (loss) income attributable to Perma-Fix Environmental Services, Inc. common stockholders	\$ (3,816)	\$ 835
Net (loss) income per common share attributable to Perma-Fix Environmental Services, Inc. stockholders - basic and diluted:		
Continuing operations	\$ (.24)	\$.10
Discontinued operations	(.05)	(.03)
Net (loss) income per common share	\$ (.29)	\$.07
Number of common shares used in computing net (loss) income per share:		
Basic	13,280	12,433
Diluted	13,280	12,673

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

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

(Amounts in Thousands)	2022	2021
Net (loss) income	\$ (3,816)	\$ 671
Other comprehensive (loss) income:		
Foreign currency translation reclass to loss on deconsolidation of subsidiary (Note 15)	—	148
Foreign currency translation adjustments	(137)	31
Total other comprehensive (loss) income	(137)	179
Comprehensive (loss) income	(3,953)	850
Comprehensive loss attributable to non-controlling interest	—	(164)
Comprehensive (loss) income attributable to Perma-Fix Environmental Services, Inc. common stockholders	\$ (3,953)	\$ 1,014

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 Income	Non-controlling Interest in Subsidiary	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount						
Balance at December 31, 2020	<u>12,161,539</u>	<u>\$ 12</u>	<u>\$ 108,931</u>	<u>\$ (88)</u>	<u>\$ (207)</u>	<u>\$ (1,742)</u>	<u>\$ (74,455)</u>	<u>\$ 32,451</u>
Net (loss) income	—	—	—	—	—	(164)	835	671
Foreign currency translation	—	—	—	—	31	—	—	31
Deconsolidation of subsidiary (Note 15)	—	—	(1,004)	—	148	1,906	—	1,050
Issuance of Common Stock for services	60,723	—	427	—	—	—	—	427
Stock-Based Compensation	—	—	250	—	—	—	—	250
Issuance of Common Stock upon exercise of options	290	—	—	—	—	—	—	—
Sale of Common Stock, net of offering costs (Note 7)	1,000,000	1	5,703	—	—	—	—	5,704
Balance at December 31, 2021	<u>13,222,552</u>	<u>\$ 13</u>	<u>\$ 114,307</u>	<u>\$ (88)</u>	<u>\$ (28)</u>	<u>\$ —</u>	<u>\$ (73,620)</u>	<u>\$ 40,584</u>
Net loss	—	—	—	—	—	—	(3,816)	(3,816)
Foreign currency translation	—	—	—	—	(137)	—	—	(137)
Issuance of Common Stock for services	90,920	—	481	—	—	—	—	481
Stock-Based Compensation	—	—	408	—	—	—	—	408
Issuance of Common Stock upon exercise of options	18,926	—	13	—	—	—	—	13
Balance at December 31, 2022	<u>13,332,398</u>	<u>\$ 13</u>	<u>\$ 115,209</u>	<u>\$ (88)</u>	<u>\$ (165)</u>	<u>\$ —</u>	<u>\$ (77,436)</u>	<u>\$ 37,533</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)	2022	2021
Cash flows from operating activities:		
Net (loss) income	\$ (3,816)	\$ 671
Less: loss on discontinued operations (Note 9)	(605)	(421)
(Loss) income from continuing operations	(3,211)	1,092
Adjustments to reconcile net (loss) income from continuing operations to cash provided by (used in) operating activities:		
Depreciation and amortization	2,109	1,687
Interest on finance lease with purchase option	—	7
Loss on deconsolidation of subsidiary (Note 15)	—	1,062
Gain on extinguishment of debt (Note 11)	—	(5,381)
Amortization of debt issuance costs	60	40
Deferred tax benefit	(390)	(3,860)
(Recovery of) provision for credit losses on accounts receivable	(20)	26
Loss on disposal of property and equipment	18	2
Issuance of common stock for services	481	427
Stock-based compensation	408	250
Changes in operating assets and liabilities of continuing operations:		
Accounts receivable	2,028	(1,739)
Unbilled receivables	2,933	5,458
Prepaid expenses, inventories and other assets	2,018	1,165
Accounts payable, accrued expenses and unearned revenue	(6,270)	(6,552)
Cash provided by (used in) provided by continuing operations	164	(6,316)
Cash used in discontinued operations	(717)	(521)
Cash used in operating activities	(553)	(6,837)
Cash flows from investing activities:		
Purchases of property and equipment (net)	(1,023)	(1,577)
Proceeds from sale of property and equipment	26	17
Deconsolidation of subsidiary - cash	—	(4)
Cash used in investing activities of continuing operations	(997)	(1,564)
Cash flows from financing activities:		
Borrowing on revolving credit	73,322	74,987
Repayments of revolving credit borrowings	(73,322)	(74,987)
Proceeds from capital line	524	—
Principal repayment of finance lease liabilities	(860)	(334)
Principal repayments of long term debt	(502)	(440)
Payment of debt issuance costs	(35)	(48)
(Offering costs paid)/ proceeds from sale of Common Stock, net of offering costs paid (Note 7)	(61)	5,765
Proceeds from issuance of Common Stock upon exercise of options	13	—
Cash (used in) provided by financing activities of continuing operations	(921)	4,943
Effect of exchange rate changes on cash	(4)	(1)
Decrease in cash and finite risk sinking fund (restricted cash) (Note 2)	(2,475)	(3,459)
Cash and finite risk sinking fund (restricted cash) at beginning of period (Note 2)	15,911	19,370
Cash and finite risk sinking fund (restricted cash) at end of period (Note 2)	\$ 13,436	\$ 15,911
Supplemental disclosure:		
Interest paid	\$ 173	\$ 230
Income taxes paid	6	47
Non-cash investing and financing activities:		
Equipment purchase subject to finance lease	114	556
Equipment purchase subject to financing	—	29

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

PERMA-FIX ENVIRONMENTAL SERVICES, INC.
Notes to Consolidated Financial Statements
December 31, 2022 and 2021

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 four uniquely licensed and permitted treatment and storage facilities; and
- R&D activities to identify, develop and implement innovative waste processing techniques for problematic waste streams.

SERVICES SEGMENT, which includes:

- Technical services, which include:
 - professional radiological measurement and site survey of large government and commercial installations using advanced methods, technology and engineering;
 - integrated Occupational Safety and Health services including 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 OSHA citation assistance;
 - global technical services providing consulting, engineering, project management, waste management, environmental, and D&D field, technical, and management personnel and services to commercial and government customers; and
 - on-site waste management services to commercial and governmental customers.
- Nuclear services, which include:
 - technology-based services including engineering, D&D, specialty services and construction, logistics, transportation, processing and disposal;
 - 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 NEOSH instrumentation.

The Company's continuing operations consist of the operations of our subsidiaries/facilities as follow: Diversified Scientific Services, Inc. ("DSSI"), Perma-Fix of Florida, Inc. ("PFF"), Perma-Fix of Northwest Richland, Inc. ("PFNWR"), Safety & Ecology Corporation ("SEC"), Perma-Fix Environmental Services UK Limited ("PF UK Limited"), Perma-Fix of Canada, Inc. ("PF Canada") and Oak Ridge Environmental Waste Operations Center ("EWOC").

The Company's continuing operations also consisted of Perma-Fix ERRG, a variable interest entity ("VIE") for which we were the primary beneficiary. The VIE was an unpopulated joint venture ("JV") entered between the Company and Engineering/Remediation Resources Group, Inc. ("ERRG") for a specific project under the Services Segment in which the Company and ERRG had a 51% and 49% partnership interest in the joint venture, respectively. During the fourth quarter of 2022, project work under the JV was completed. As of December 31, 2022, total assets and liabilities under the VIE were each \$0.

The Company's discontinued operations (see "Note 9 – Discontinued Operations") consist of operations of all our subsidiaries included in our Industrial Segment which encompasses subsidiaries divested in 2011 and prior and three previously closed locations.

For 2021, the Company's segment also included the Medical Segment. The Medical Segment entailed the R&D of the Company's medical isotope production technology by the Company's majority-owned Polish subsidiary, Perma-Fix Medical S.A. ("PFM Poland"), and PFM Poland's wholly-owned subsidiary, Perma-Fix Medical Corporation ("PFMC"). The Company's Medical Segment (or "PF Medical") had not generated any revenue. During the fourth quarter of 2021, the Company made the strategic decision to cease all R&D activities under the Medical Segment which resulted in the sale of 100% of PFM Poland (See "Note 15 – PF Medical" for a discussion of this sale).

Financial Positions and Liquidity

The Company's 2022 financial results continued to be impacted by COVID-19, among other things. The Company's Treatment Segment began to see steady improvements in waste receipts starting in the second quarter of 2022 from certain customers who had previously delayed waste shipments due, in part, from the impact of COVID-19. This positive trend was negatively impacted by occurrences of severe weather conditions which resulted in temporary delays in waste shipments from certain customers and a temporary shortage in skilled production personnel which peaked through the fourth quarter of 2022 at one of the Company's facilities. In early part of 2022, the Company's Services Segment continued to experience delays/curtailments in project work by certain customers since the award of projects to us late in the second quarter of 2021 due to COVID-19 impact and/or administrative delays. However, starting in the second quarter of 2022, work under these projects had resumed/increased as the pandemic impacts began to subside and has since reached full operational status.

In 2022, the Company continued to realize delays in procurement and planning on behalf of our government clients that saw easing through the second half of the year. Heading into 2023, the Company expects to see continued improvements in waste receipts and continued increases in project work from contracts recently won and bids submitted in both segments that are awaiting awards, subject to potential impact of COVID-19 and economic impacts.

The Company's cash flow requirements during the twelve months ended December 31, 2022 were primarily financed by its operations, cash on hand and credit facility availability. The Company's cash flow requirements for the next twelve months will consist primarily of general working capital needs, scheduled principal payments on its debt obligations, remediation projects, and planned capital expenditures. The Company plans to fund these requirements from its operations, credit facility availability, cash on hand and a refund that it expects to receive under the Employee Retention Credit program under the CARES Act (see a discussion of this expected refund in "Note 11 – The Coronavirus Aid, Relief, and Economic Security Act ("CARES ACT") – Employee Retention Credit ("ERC")"). The Company continues to explore all sources of increasing its capital and/or liquidity and to improve its revenue and working capital, including either amending our existing lines of credit, obtaining new term loans or entering into equity transactions. There are no assurances that we will be successful in increasing our liquidity through these efforts. The Company is continually reviewing operating costs and reviewing the possibility of further reducing operating costs and non-essential expenditures to bring them in line with revenue levels, when necessary. At this time, the Company believes that its cash flows from operations, available liquidity from its credit facility, cash on hand and the expected refund from the ERC program should be sufficient to fund its operations for the next twelve months. The Company continues to closely monitor any potential impact from the countries' economic conditions and COVID-19 pandemic on all aspects of our business.

NOTE 2 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Principles of Consolidation

The Company's consolidated financial statements include our accounts, those of our wholly-owned subsidiaries, and Perma-Fix ERRG, a VIE for which we were the primary beneficiary as discussed above, after elimination of all significant intercompany accounts and transactions. The consolidated financial statements for 2021 also included the accounts of the Company's Medical Segment which was divested in December 2021 as discussed above.

Use of Estimates

The Company prepares financial statements in conformity with accounting standards generally accepted in the United States ("U.S. GAAP"), which may require estimates of future cash flows 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. Due to the inherent uncertainty involved in making estimates, actual results could differ from those estimates.

Cash and Finite Risk Sinking Fund (Restricted Cash)

At December 31, 2022, the Company had cash on hand of approximately \$1,866,000. At December 31, 2021, the Company had cash on hand of approximately \$4,440,000. At December 31, 2022 and 2021, the Company had finite risk sinking funds of approximately \$11,570,000 and \$11,471,000, respectively, which represented cash held as collateral under the Company's financial assurance policy (see "Note 16 – Commitment and Contingencies – Insurance" for a discussion of this finite risk sinking fund).

Accounts Receivable

During the fourth quarter of 2022, the Company adopted ASU 2016-13, "Credit Losses (Topic 326) Measurement of Credit Losses on Financial Instruments." This ASU replaces the incurred loss impairment model with an expected credit loss impairment model for financial instruments, including 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 new standard requires entities to consider forward-looking information to estimate expected credit losses, resulting in earlier recognition of losses for receivables that are current or not yet due, which were not considered under the previous accounting guidance. In accordance with ASU 2016-13, the Company's expected loss allowance methodology for receivables is developed using historical collection experience, current and future economic and market conditions that may affect customers' ability to pay, and a review of the current status of customers' accounts receivables. The Company does not apply a credit loss allowance to government related receivables due to our past successful experience in their collectability. The Company's monitoring activities include routine follow-up on past due accounts and consideration of customers' financial conditions. 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 sets forth the activity in the allowance for credit losses for the years ended December 31, 2022 and 2021 (in thousands):

	Year Ended December 31,	
	2022	2021
Allowance for credit losses - beginning of year	\$ 85	\$ 404
(Recovery of) provision charges	(21)	41
Write-off	(7)	(360)
Allowance for credit losses - end of year	\$ 57	\$ 85

Unbilled Receivables

Unbilled receivables are generated by differences between invoicing timing and our over time revenue recognition 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 which include: 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 can take months to complete but are generally completed within twelve months.

Unbilled receivables within our Services Segment can result from work performed under contracts but invoice milestones have not yet been met and/or contract claims and pending change orders, including requests for equitable adjustments ("REA") 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 net realizable value with cost determined by the first-in, first-out method.

Disposal and Transportation Costs

The Company accrues for waste disposal based on 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 for the transportation and disposal accruals.

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.

Certain property and equipment expenditures are financed through leases. Amortization of financed leased assets is computed using the straight-line method over the estimated useful lives of the assets. At December 31, 2022, assets recorded under finance leases were \$1,201,000 less accumulated depreciation of \$549,000, resulting in net fixed assets under finance leases of \$652,000. At December 31, 2021, assets recorded under finance leases were \$2,409,000 less accumulated depreciation of \$475,000, resulting in net fixed assets under finance leases of \$1,934,000. These assets are recorded within net property and equipment on the Consolidated Balance Sheets.

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.

Our depreciation expense totaled approximately \$1,872,000 and \$1,476,000 in 2022 and 2021, respectively.

Leases

The Company accounts for leases in accordance with FASB's ASU 2016-02, "Leases (Topic 842)." At the inception of an arrangement, the Company determines if an arrangement is, or contains, a lease based on facts and circumstances present in that arrangement. Lease classifications, recognition, and measurement are then determined at the lease commencement date.

The Company's operating lease right-of-use ("ROU") assets and operating lease liabilities represent primarily leases for office and warehouse spaces used to conduct our business. These leases have remaining terms of approximately one to seven years which include additional options to renew. The Company includes renewal options in valuing its ROU assets and liabilities when it determines that it is reasonably certain to exercise these renewal options. As most of our operating leases do not provide an implicit rate, the Company uses its incremental borrowing rate as the discount rate when determining the present value of the lease payments. The incremental borrowing rate is determined based on the Company's secured borrowing rate, lease terms and current economic environment. Some of our operating leases include both lease (rent payments) and non-lease components (maintenance costs such as cleaning and landscaping services). The Company has elected the practical expedient to account for lease component and non-lease component as a single component for all leases under ASU 2016-02. Lease expense for operating leases is recognized on a straight-line basis over the lease term.

Finance leases primarily consist of processing and transport equipment used by our facilities' operations. The Company's finance leases also included a building with land utilized for our waste treatment operations which included a purchase option. During the third quarter of 2021, the Company concluded that it was more likely than not that it would not exercise this purchase option but will continue to lease the property. Accordingly, a reassessment of this lease was performed which resulted in reclassification of this lease to an operating lease. The Company's finance leases have remaining terms of approximately one to three years. See "Property and Equipment" above for assets recorded under financed leases. Borrowing rates for our finance leases are either explicitly stated in the lease agreements or implicitly determined from available terms in the lease agreements.

The Company adopted the policy to not recognize ROU assets and liabilities for short term leases.

Intangible Assets

Intangible assets consist primarily of the recognized value of the permits required to operate our business. 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, a quantitative test is performed 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. Judgments and estimates 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 indefinite-lived permits related to our Treatment reporting unit as of October 1, 2022 and 2021 resulted in no impairment charges.

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. 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 are 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."

Accrued Closure Costs and 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 and PF Canada and also included 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 government clients (domestic and foreign (primarily Canadian)), either indirectly for others as a subcontractor to government entities or directly as a prime contractor, representing approximately \$60,030,000, or 85.0%, of our total revenue during 2022, as compared to \$60,812,000, or 84.2%, of our total revenue during 2021.

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.

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 government entities.

The Company had two government related customers whose total unbilled and net outstanding receivable balances represented 12.5% and 23.0% of the Company's total consolidated unbilled and net accounts receivable at December 31, 2022. The Company had two government related customers whose total unbilled and net outstanding receivable balances represented 18.2% and 23.5% of the Company's total consolidated unbilled and net accounts receivable at December 31, 2021.

Revenue Recognition and Related Policies

The Company recognizes revenue in accordance with FASB's ASC 606, "Revenue from Contracts with Customers." ASC 606 provides a single, comprehensive revenue recognition model for all contracts with customers. Under ASC 606, 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. Under ASC 606, a performance obligation is a promise in a contract to transfer a distinct good or service to the customer and is the unit of account. A contract transaction price is allocated to each distinct performance obligation and recognized as revenues as the performance obligation is satisfied.

Treatment Segment Revenues:

Contracts in our Treatment Segment primarily have a single performance obligation as the promise to receive, treat and dispose of waste is not separately identifiable in the contract and, therefore, not distinct. Performance obligations are generally satisfied over time using the input method. Under the input method, the Company uses a measure of progress divided into major phases which include receipt (ranging from 9.0% to 33%), treatment/processing (ranging from 40% to 79%) and shipment/final disposal (ranging from 9.0% to 27%). As major processing phases are completed and the costs are incurred, the proportional percentage of revenue is recognized. Transaction price for Treatment Segment contracts are determined by the stated fixed rate per unit price as stipulated in the contract.

The Company periodically enter into arrangements with customers for transportation of wastes to either our facility or to non-company owned disposal sites. Revenue from this arrangement is recognized at a point in time, upon the transfer of control. Control transfers when the wastes are picked up by the Company.

Services Segment Revenues:

Revenues for our Services Segment are generated from time and materials or fixed price arrangements:

The Company's primary obligation to customers in time and materials contracts relate to the provision of services to the customer at the direction of the customer. This provision of services at the request of the customer is the performance obligation, which is satisfied over time. Revenue earned from time and materials contracts is determined using the input method and is based on contractually defined billing rates applied to services performed and materials delivered.

Under fixed price contracts, the objective of the project is not attained unless all scope items within the contract are completed and all of the services promised within fixed fee contracts constitute a single performance obligation. Transaction price is estimated based upon the estimated cost to complete the overall project. Revenue from fixed price contracts is recognized over time primarily using the input method. For the input method, revenue is recognized based on costs incurred on the project relative to the total estimated costs of the project.

As discussed above for the Treatment and Services Segments, the Company' revenue is generally recognized using the input method. This method of measuring progress provides a faithful depiction of the transfer to goods and services because the costs incurred are expected to be substantially proportionate to the Company's satisfaction of the performance obligation.

Contracts with our customers within our Treatment Segment are generally short term with an original expected length of one year or less. For the Services Segment, contracts with our customers generally have original terms ranging from one year or less to approximately twenty-four months. The Company's contracts and subcontracts relating to activities at governmental sites generally allow for termination for convenience at any time at the government's option without payment of a substantial penalty.

Variable Consideration

The Company's contracts generally do not give rise to variable consideration. However, from time to time, the Company may submit requests for equitable adjustments under certain of its government contracts for price or other modifications that are determined to be variable consideration. The Company estimates the amount of variable consideration to include in the estimated transaction price based on historical experience with government contracts, anticipated performance and management's best judgment at the time and to the extent it is probable that a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. These estimates are re-assessed each reporting period as required.

Significant Payment Terms

Invoicing is based on schedules established in customer contracts. Payment terms vary by customers but are generally established at 30 days from invoicing.

Incremental Costs to Obtain a Contract

Costs incurred to obtain contracts with our customers are immaterial and as a result, the Company expenses (within selling, general and administration expenses ("SG&A")) incremental costs incurred in obtaining contracts with our customer as incurred.

Remaining Performance Obligations

The Company applies the practical expedient in ASC 606-10-50-14 and does not disclose information about remaining performance obligations that have original expected durations of one year or less.

Within our Services Segment, there are service contracts which provide that the Company has a right to consideration from a customer in an amount that corresponds directly with the value to the customer of our performance completed to date. For those contracts, the Company has utilized the practical expedient in ASC 606-10-55-18, which allows the Company to recognize revenue in the amount for which we have the right to invoice; accordingly, the Company does not disclose the value of remaining performance obligations for those contracts.

The Company's contracts and subcontracts relating to activities at governmental sites generally allow for termination for convenience at any time at the government's option without payment of a substantial penalty. The Company does not disclose remaining performance obligations on these contracts.

Stock-Based Compensation

Stock-based compensation granted to employees are accounted for in accordance with ASC 718, "Compensation – Stock Compensation." Stock-based payment transactions for acquiring goods and services from nonemployees are also accounted for under ASC 718. ASC 718 requires stock-based payments to employees and nonemployees, including grant of options, to be recognized in the Statement of Operations 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-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 (Loss) Income

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

(Loss) Income Per Share

Basic (loss) income per share is calculated based on the weighted-average number of outstanding common shares during the applicable period. Diluted (loss) income 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. (Loss) income 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, 2022 and December 31, 2021, 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 May 2021, the FASB issued Accounting Standards Update ("ASU") No. 2021-04, "Earnings Per Share (Topic 206), Debt-Modifications and Extinguishments (Subtopic 470-50), Compensation-Stock Compensation (Topic 718), and Derivatives and Hedging-Contracts in Entity's Own Equity (Subtopic 815-40): Issuer's Accounting for Certain Modifications or Exchanges of Freestanding Equity-Classified Written Call Options (a consensus of the FASB Emerging Issues Task Force)." ASU 2021-04 addresses issuer's accounting for certain modifications or exchanges of freestanding equity-classified written call options. This ASU is effective for all entities, for fiscal years beginning after December 15, 2021, including interim periods within those fiscal years. Early adoption is permitted. The adoption of this ASU by the Company effective January 1, 2022 did not have a material impact on its financial statements.

In March 2020, the FASB issued ASU 2020-04, "Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting," which provides optional expedients and exceptions for applying U.S. GAAP to contracts, hedging relationships and other transactions affected by the discontinuation of the London Interbank Offered Rate ("LIBOR") or by another reference rate expected to be discontinued because of reference rate reform. The guidance was effective beginning March 12, 2020 and can be applied prospectively through December 31, 2022. In January 2021, the FASB issued ASU No. 2021-01, "Reference Rate Reform (Topic 848): Scope," which clarified the scope and application of the original guidance. The Company determined that only its obligations under its credit facility were impacted by these ASUs. During the third quarter of 2022, the Company entered into an amendment dated August 29, 2022 to its loan agreement which replaced the LIBOR option with the Secured Overnight Finance Rate ("SOFR") option under its credit facility. The adoption of these aforementioned ASUs by the Company during the third quarter of 2022 did not have a material impact to its financial statements (see "Note 10 – Long Term Debt" for a discuss of the Company's credit facility and the amendment dated August 29, 2022). On December 21, 2022, the FASB issued ASU 2022-06, Reference Rate Reform (Topic 848): Deferral of the Sunset Date of Topic 848," which extends the period of time entities can utilize the reference rate reform relief guidance under ASU 2020-04 from December 31, 2022 to December 31, 2024.

In June 2016, the FASB issued ASU No. 2016-13, "Credit Losses (Topic 326) - Measurement of Credit Losses on Financial Instruments," and various subsequent amendments to the initial guidance (collectively, "Topic 326"). Topic 326 introduces an approach, based on expected losses, to estimate credit losses on certain types of financial instruments and modifies the impairment model for available-for-sale debt securities. The new approach to estimating credit losses (referred to as the current expected credit losses model) applies to most financial assets measured at amortized cost and certain other instruments, including trade and other receivables and loans. Entities are required to apply the standard's provisions as a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is adopted. In November 2019, FASB issued ASU 2019-10, "Financial Instruments - Credit Losses (Topic 326), Derivatives and Hedging (Topic 815), and Leases (Topic 842)," which defers the effective date of ASU 2016-13 for public companies that are considered smaller reporting companies ("SRC") as defined by the Commission to fiscal years beginning after December 15, 2022, including interim periods within those fiscal years. The adoption of these ASUs by the Company during the fourth quarter of 2022 did not have a material impact to its financial statements.

Recently Issued Accounting Standards – Not Yet Adopted

In August 2020, the FASB issued ASU No. 2020-06, "Debt – Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging – Contracts in Entity's Own Equity." ASU 2020-06 simplifies the accounting for convertible instruments by removing major separation models and removing certain settlement condition qualifiers for the derivatives scope exception for contracts in an entity's own equity, and simplifies the related diluted net income per share calculation for both Subtopics. ASU 2020-06 is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2023, for the Company as an SRC. Early adoption is permitted, but no earlier than fiscal years beginning after December 15, 2020, including interim periods within those fiscal years. The Company is currently evaluating the impact of this ASU on its consolidated financial statements and disclosures.

NOTE 3 REVENUE

Disaggregation of Revenue

In general, the Company's business segmentation is aligned according to the nature and economic characteristics of our services and provides meaningful disaggregation of each business segment's results of operations. The following tables present further disaggregation of our revenues by different categories for our Services and Treatment Segments:

Revenue by Contract Type (In thousands)

	Twelve Months Ended			Twelve Months Ended		
	December 31, 2022			December 31, 2021		
	Treatment	Services	Total	Treatment	Services	Total
Fixed price	\$ 33,358	\$ 26,960	\$ 60,318	\$ 32,992	\$ 11,236	\$ 44,228
Time and materials	—	10,281	10,281	—	27,963	27,963
Total	\$ 33,358	\$ 37,241	\$ 70,599	\$ 32,992	\$ 39,199	\$ 72,191

Revenue by generator (In thousands)

	Twelve Months Ended			Twelve Months Ended		
	December 31, 2022			December 31, 2021		
	Treatment	Services	Total	Treatment	Services	Total
Domestic government	\$ 23,752	\$ 35,906	\$ 59,658	\$ 22,538	\$ 29,013	\$ 51,551
Domestic commercial	8,307	1,408	9,715	9,294	1,412	10,706
Foreign government	574	(202)	372	577	8,684	9,261
Foreign commercial	725	129	854	583	90	673
Total	\$ 33,358	\$ 37,241	\$ 70,599	\$ 32,992	\$ 39,199	\$ 72,191

Contract Balances

The timing of revenue recognition and billings results in unbilled receivables (contract assets). The Company's contract liabilities consist of deferred revenues which represent advance payment from customers in advance of the completion of our performance obligation. The following table represents changes in our contract asset and contract liabilities balances:

(In thousands)	December 31, 2022	December 31, 2021	Year-to-date Change (\$)	Year-to-date Change (%)
Contract assets				
Unbilled receivables - current	\$ 6,062	\$ 8,995	\$ (2,933)	(32.6)%
Contract liabilities				
Deferred revenue	\$ 4,813	\$ 5,580	\$ (767)	(13.7)%

The decrease in unbilled receivables was primarily due to invoicing in connection with the Company's Canadian projects within the Services Segment.

The decrease in deferred revenue was attributed primarily to revenue recognized in connection with a Services Segment contract.

During the twelve months ended December 31, 2022 and 2021, the Company recognized revenue of \$6,576,000 and \$7,196,000, respectively, related to untreated waste that was in the Company's control as of the beginning of each respective year. Revenue recognized in each period related to performance obligations satisfied within the respective period.

NOTE 4 LEASES

The components of lease cost for the Company's leases were as follows (in thousands):

	Twelve Months Ended December 31,	
	2022	2021
Operating Leases:		
Lease cost	\$ 627	\$ 499
Finance Leases:		
Amortization of ROU assets	176	220
Interest on lease liability	37	97
	213	317
Short-term lease rent expense	7	13
Total lease cost	\$ 847	\$ 829

The weighted average remaining lease term and the weighted average discount rate for operating and finance leases at December 31, 2022 were:

	Operating Leases	Finance Leases
Weighted average remaining lease terms (years)	6.2	3.0
Weighted average discount rate	7.8%	5.3%

The weighted average remaining lease term and the weighted average discount rate for operating and finance leases at December 31, 2021 were:

	Operating Leases	Finance Leases
Weighted average remaining lease terms (years)	6.9	4.0
Weighted average discount rate	7.6%	6.2%

The following table reconciles the undiscounted cash flows for the operating and finance leases at December 31, 2022 to the operating and finance lease liabilities recorded on the balance sheet (in thousands):

	Operating Leases		Finance Leases	
2023	\$	556	\$	174
2024		416		170
2025		325		149
2026		301		18
2027		286		—
2028 and thereafter		656		—
Total undiscounted lease payments		2,540		511
Less: Imputed interest		(540)		(39)
Present value of lease payments	\$	2,000	\$	472
Current portion of operating lease obligations	\$	416	\$	—
Long-term operating lease obligations, less current portion	\$	1,584	\$	—
Current portion of finance lease obligations	\$	—	\$	154
Long-term finance lease obligations, less current portion	\$	—	\$	318

Supplemental cash flow and other information related to our leases were as follows (in thousands):

	Twelve Months Ended December 31,			
	2022		2021	
Cash paid for amounts included in the measurement of lease liabilities:				
Operating cash flow from operating leases	\$	573	\$	439
Operating cash flow from finance leases	\$	37	\$	97
Financing cash flow from finance leases	\$	860	\$	334
ROU assets obtained in exchange for lease obligations for:				
Finance liabilities	\$	147	\$	577
Operating liabilities	\$	—	\$	491
Reduction to ROU assets resulting from reassessment for:				
Finance liabilities	\$	—	\$	(364)

NOTE 5 PERMIT AND OTHER INTANGIBLE ASSETS

The following table summarizes changes in the carrying value of permits, which exist only in our Treatment Segment.

Permit (amount in thousands)	Treatment	
Balance as of December 31, 2020	\$	8,922
Permit renewal		121
Permit in progress		433
Balance as of December 31, 2021	\$	9,476
Permit in progress		134
Balance as of December 31, 2022	\$	9,610

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

Other Intangibles (amount in thousands)	Weighted Average Amortization Period (Years)	December 31, 2022			December 31, 2021		
		Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Patent	8.3	\$ 711	\$ (374)	\$ 337	\$ 787	\$ (351)	\$ 436
Software	3	640	(468)	172	592	(415)	177
Customer relationships	10	3,370	(3,250)	120	3,370	(3,089)	281
Total		\$ 4,721	\$ (4,092)	\$ 629	\$ 4,749	\$ (3,855)	\$ 894

The intangible assets noted above were amortized on a straight-line basis over their useful lives with the exception of customer relationships which were 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)
2023	\$ 195
2024	63
2025	26
2026	25
2026	22

Amortization expense recorded for definite-lived intangible assets was approximately \$237,000 and \$211,000, for the years ended December 31, 2022 and 2021, respectively.

NOTE 6 CAPITAL STOCK, STOCK PLANS, WARRANTS AND STOCK BASED COMPENSATION

Stock Option Plans

The Company's 2003 Outside Directors Stock Plan (the "2003 Plan") provides for the grant of Non-Qualified Stock Options ("NQSOs") to member of the Company's Board of Directors (the "Board") who is not an employee of the Company or its subsidiaries ("Eligible Director"). On July 20, 2021, the Company's stockholders approved an amendment (the "Amendment") to the 2003 Plan which provided the following, among other things: i) authorized an additional 500,000 shares of the Company's Common Stock for issuance under the 2003 Plan, (ii) increased (a) the number of shares of Common Stock subject to the automatic option grant made to each Eligible Director upon initial election, from 6,000 to 20,000 shares, and (b) the number of shares of Common Stock subject to the automatic option grant made to each Eligible Director upon reelection, from 2,400 to 10,000 shares, (iii) amended the vesting period of options granted under the 2003 Plan, from a six-month vesting period to 25% per year, beginning on the first anniversary date of the grant, and (iv) provided for acceleration of vesting under certain conditions. The exercise price of options to be granted under the 2003 Plan continued to equal to the closing trade price on the date prior to the grant date. The 2003 Plan continued to provide for the issuance to each Eligible 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. The number of shares issued is determined at 75% of the market value as defined in the 2003 Plan (the Company recognizes 100% of the market value of the shares issued). The number of shares of the Company's Common Stock authorized under the 2003 Plan is 1,600,000. At December 31, 2022, the 2003 Plan had available for issuance 448,534 shares.

The Company's 2017 Stock Option 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 Stock Option Plan, as amended (the "2017 Plan"), authorizes an aggregate grant of 1,140,000 NQSOs and Incentive Stock Options ("ISOs"). 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 and Stock Option Committee (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 ISO 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. At December 31, 2022, the 2017 Plan had available for issuance 353,000 shares.

Stock Options to Employees and Outside Director

On July 21, 2022, the Company issued a NQSO to each of the Company's seven reelected outside directors for the purchase, under the Company's 2003 Plan, of up to 10,000 shares of the Company's Common Stock. The Company's Executive Vice President ("EVP") of Strategic Initiatives and also a member of the Company's Board, was not eligible to receive an option under the 2003 Plan as an employee of the Company. Each NQSO granted is for a contractual term of ten years with one-fourth vesting annually over a four-year period. The exercise price of the NQSO is \$5.15 per share, which was equal to the fair market value of the Company's Common Stock the day preceding the grant date, pursuant to the 2003 Plan.

On July 21, 2022, the Company granted ISOs to certain employees for purchase under the Company's 2017 Plan, of up to an aggregate of 24,000 shares of the Company's Common Stock. Each ISO granted is for a contractual term of six years with one-fifth vesting annually over a five-year period. The exercise price of the ISO is \$5.34 per share, which was equal to the fair market value of the Company's Common Stock on the date of grant.

On October 14, 2021, the Company granted ISOs to certain employees for the purchase, under the Company's 2017 Plan, of up to an aggregate 305,000 shares of the Company's Common Stock. The total ISOs granted included an ISO for each of the Company's executive officers for the purchase set forth in his respective ISO Agreement, as follows: 50,000 shares for the CEO; 25,000 shares for the CFO; 20,000 shares for the EVP of Strategic Initiatives; 25,000 shares for the EVP of Waste Treatment Operations; and 25,000 shares for the EVP of Nuclear and Technical Services. Each of the ISOs granted has a contractual term of six years with one-fifth yearly vesting over a five-year period. The exercise price of the ISO is \$7.005 per share, which was equal to the fair market value of the Company's Common Stock on the date of grant.

On July 20, 2021, the Company issued a NQSO to each of the Company's seven reelected outside directors for the purchase, under the Company's 2003 Plan, of up to 10,000 shares of the Company's Common Stock. Each NQSO granted has for a contractual term of ten years with one-fourth vesting annually over a four-year period. The exercise price of the NQSO is \$5.93 per share, which was equal to the fair market value of the Company's Common Stock the day preceding the grant date, pursuant to the 2003 Plan.

On May 4, 2021, the Company issued a NQSO to a new director elected by the Company's Board, for the purchase, under the Company's 2003 Plan, of up to 6,000 shares of the Company's Common Stock. The NQSO granted has a contractual term of ten years with a vesting period of six months. The exercise price of the NQSO is \$7.50 per share, which was equal to the fair market value of the Company's Common Stock the day preceding the grant date, pursuant to the 2003 Plan.

During 2022, the Company issued 16,526 shares of its Common Stock from a cashless exercise of an option for the purchase of 50,000 shares of the Company's Common Stock at \$3.97 per share. Additionally, the Company issued 2,400 shares of its Common Stock from the exercise of an option for the purchase of 2,400 shares of the Company's Common Stock at \$5.50 per share resulting in proceeds of approximately \$13,000. During 2021, the Company issued 290 shares of its Common Stock from a cashless exercise of an option for the purchase of 500 shares of the Company's Common Stock at \$3.15 per share.

The Company estimates 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 2022 and 2021 and the related assumptions used in the Black-Scholes option model used to value the options granted were as follows:

	Employee Stock Options Granted	
	2022	2021
Weighted-average fair value per share	\$ 2.71	3.51
Risk -free interest rate ⁽¹⁾	3.00%	1.05%
Expected volatility of stock ⁽²⁾	55.72%	58.61%
Dividend yield	None	None
Expected option life ⁽³⁾	5.0 years	5.0 years

	Outside Director Stock Options Granted	
	2022	2021
Weighted-average fair value per share	\$ 3.61	\$ 3.9
Risk -free interest rate ⁽¹⁾	2.91%	1.23%-1.61%
Expected volatility of stock ⁽²⁾	55.04%	55.84%-55.91%
Dividend yield	None	None
Expected option life ⁽³⁾	10.0 years	10.0 years

(1) 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.

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

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

The following table summarizes stock-based compensation recognized for fiscal years 2022 and 2021.

	Year Ended	
	2022	2021
Employee Stock Options	\$ 313,000	\$ 178,000
Director Stock Options	95,000	72,000
Total	\$ 408,000	\$ 250,000

At December 31, 2022, the Company has approximately \$1,293,000 of total unrecognized compensation costs related to unvested options for employee and directors. The weighted average period over which the unrecognized compensation costs are expected to be recognized is approximately 3.6 years.

Stock Options to Consultant

The Company granted a NQSO to Robert Ferguson on July 27, 2017 from the Company's 2017 Plan for the purchase of up to 100,000 shares of the Company's Common Stock ("Ferguson Stock Option") in connection with his work as a consultant to the Company's Test Bed Initiative ("TBI") at our PFNWR facility at an exercise price of \$3.65 per share, which was the fair market value of the Company's Common Stock on the date of grant. The term of the Ferguson Stock Option is seven years from the grant date. The vesting of the Ferguson Stock Option is subject to the achievement of three separate milestones by certain dates. The first milestone was met and the 10,000 shares under the first milestone were issued to Robert Ferguson in May 2018. The Company had previously entered into amendments whereby the vesting dates for the second and third milestones for the purchase of up to 30,000 and 60,000 shares of the Company's Common Stock were extended to December 31, 2022 and December 31, 2023, respectively. The 30,000 shares under the second milestone failed to vest by December 31, 2022 and therefore were forfeited. The Company has not recognized compensation costs (fair value of approximately \$39,000 at December 31, 2022) for the remaining 60,000 Ferguson Stock Option under the remaining final milestone since achievement of the performance obligation under the remaining final milestone is uncertain at December 31, 2022. Upon Mr. Ferguson's death, the remaining Ferguson Stock Option is now held by Mr. Ferguson's estate.

Summary of Stock Option Plans

The summary of the Company's total plans as of December 31, 2022 and 2021, 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 ⁽²⁾
Options outstanding January 1, 2022	1,019,400	\$ 4.91		
Granted	94,000	\$ 5.20		
Exercised	(52,400)	\$ 4.04		\$ 97,856
Forfeited/expired	(42,600)	\$ 4.08		
Options outstanding end of period ⁽¹⁾	1,018,400	\$ 5.02	3.8	\$ 44,262
Options exercisable at December 31, 2022 ⁽¹⁾	530,900	\$ 4.27	2.4	\$ 30,962

	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value ⁽²⁾
Options outstanding January 1, 2021	658,400	\$ 3.87		
Granted	381,000	\$ 6.82		
Exercised	(500)	\$ 3.15		\$ 2,175
Forfeited/expired	(19,500)	\$ 6.75		
Options outstanding end of period ⁽¹⁾	1,019,400	\$ 4.91	4.0	\$ 1,669,687
Options exercisable at December 31, 2021 ⁽¹⁾	438,400	\$ 3.95	2.7	\$ 1,064,432

⁽¹⁾Options with exercise prices ranging from \$2.79 to \$7.50

⁽²⁾The intrinsic value of a stock option is the amount by which the market value of the underlying stock exceeds the exercise price

The summary of the Company's nonvested options as of December 31, 2022 and changes during the period then ended are presented as follows:

	Shares	Weighted Average Grant-Date Fair Value
Non-vested options January 1, 2022	581,000	\$ 3.13
Granted	94,000	3.39
Vested	(154,500)	2.67
Forfeited	(33,000)	3.08
Non-vested options at December 31, 2022	487,500	\$ 3.32

Warrant

In connection with a \$2,500,000 loan that the Company entered into with Mr. Robert Ferguson (the "Ferguson Loan") on April 1, 2019, the Company issued a warrant to Mr. Ferguson for the purchase of up to 60,000 shares of our Common Stock at an exercise price of \$3.51 per share. The warrant expires on April 1, 2024 and remains outstanding at December 31, 2022. Upon Mr. Ferguson's death, the warrant is now held by Mr. Ferguson's estate. The Ferguson Loan was paid-in-full in December 2020.

Common Stock Issued for Services

The Company issued a total of 90,920 and 60,723 shares of our Common Stock in 2022 and 2021, 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 \$477,000 and \$467,000 in compensation expense (included in SG&A expenses) for the twelve months ended December 31, 2022 and 2021, respectively, for the portion of director fees earned in the Company's Common Stock.

Sale of Common Stock

On September 30, 2021, the Company entered into subscription agreements with certain institutional and retail investors in a registered direct offering, for the sale and issuance of 1,000,000 shares of the Company's Common Stock (See "Note 7 – Common Stock Subscription Agreements" for a discussion of the issuance of the shares from this direct offering).

Shares Reserved

At December 31, 2022, the Company has reserved approximately 1,018,400 shares of our Common Stock for future issuance under all of the option arrangements.

NOTE 7 COMMON STOCK SUBSCRIPTION AGREEMENTS

On September 30, 2021, the Company entered into subscription agreements (the "Subscription Agreements") with certain institutional and retail investors (the "Purchasers"), pursuant to which the Company agreed to sell and issue, in a registered direct offering, an aggregate of 1,000,000 shares (the "Shares") of our Common Stock, at a negotiated purchase price per share of \$6.20 (the "Shares"), for aggregate gross proceeds to us of approximately \$6,200,000. The offering price per share was negotiated based on the average closing price of our Common Stock as quoted on Nasdaq over the three-week period immediately preceding the date of the Subscription Agreements, less a five percent discount.

The Shares were offered and sold by the Company through a prospectus supplement pursuant to the Company's "shelf" registration statement on Form S-3, which was previously filed with the Commission on May 13, 2019 and subsequently declared effective on May 22, 2019 (the "Registration Statement").

Wellington Shields & Co., LLC ("Wellington") served as the exclusive placement agent in connection with the Offering, pursuant to a placement agency agreement dated as of September 23, 2021 (the "Placement Agency Agreement"), between the Company and Wellington. The Company paid Wellington a cash fee of 6.00% of the aggregate gross proceeds in the Offering which totaled \$372,000. The Company also reimbursed Wellington for certain expenses in connection with the Offering in an aggregate amount not to exceed \$50,000. After deducting costs incurred directly in connection with the offering of approximately \$496,000 which were recorded as deduction to equity, net proceeds to the Company totaled approximately \$5,704,000. Approximately \$61,000 of the offering costs were paid in 2022.

The aggregate net proceeds from the offering were primarily used for working capital and general corporate purposes, including for certain facility expansion and upgrades.

NOTE 8 INCOME (LOSS) PER SHARE

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

(Amounts in Thousands, Except for Per Share Amounts)	Years Ended December 31,	
	2022	2021
Net (loss) income attributable to Perma-Fix Environmental Services, Inc., common stockholders:		
(Loss) income from continuing operations, net of taxes	\$ (3,211)	\$ 1,092
Net loss attributable to non-controlling interest	—	(164)
(Loss) income from continuing operations attributable to Perma-Fix Environmental Services, Inc. common stockholders	\$ (3,211)	\$ 1,256
Loss from discontinuing operations attributable to Perma-Fix Environmental Services, Inc. common stockholders	(605)	(421)
Net (loss) income attributable to Perma-Fix Environmental Services, Inc. common stockholders	\$ (3,816)	\$ 835
Basic (loss) income per share attributable to Perma-Fix Environmental Services, Inc. common stockholders	\$ (.29)	\$.07
Diluted (loss) income per share attributable to Perma-Fix Environmental Services, Inc. common stockholders	\$ (.29)	\$.07
Weighted average shares outstanding:		
Basic weighted average shares outstanding	13,280	12,433
Add: dilutive effect of stock options	—	211
Add: dilutive effect of warrants	—	29
Diluted weighted average shares outstanding	13,280	12,673
Potential shares excluded from above weighted average share calculations due to their anti-dilutive effect include:		
Stock options	499	323
Warrant	—	—

NOTE 9 DISCONTINUED OPERATIONS

The Company's discontinued operations consist of all our subsidiaries included in our Industrial Segment which encompasses subsidiaries divested in 2011 and prior and three previously closed locations.

The Company incurred losses from discontinued operations of \$605,000 (net of tax benefit of \$199,000) and \$421,000 (net of tax benefit of \$139,000) for the years ended December 31, 2022 and 2021, respectively. The increase in net losses in 2022 as compared to 2021 was primarily due to costs incurred in connection with management of administrative and regulatory matters for the Company's remediation projects as discussed below.

The following table presents the major class of assets of discontinued operations at December 31, 2022 and December 31, 2021. No assets and liabilities were held for sale at each of the periods noted.

(Amounts in Thousands)	December 31, 2022	December 31, 2021
Current assets		
Other assets	\$ 15	\$ 15
Total current assets	15	15
Long-term assets		
Property, plant and equipment, net ⁽¹⁾	81	81
Total long-term assets	81	81
Total assets	\$ 96	\$ 96
Current liabilities		
Accounts payable	\$ 104	\$ 3
Accrued expenses and other liabilities	146	154
Environmental liabilities	112	349
Total current liabilities	362	506
Long-term liabilities		
Closure liabilities	159	150
Environmental liabilities	749	527
Total long-term liabilities	908	677
Total liabilities	\$ 1,270	\$ 1,183

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

Environmental Liabilities

The Company has three remediation projects, which are currently in progress relating to our PFD, PFM and PFSG (closed locations) subsidiaries, all within our discontinued operations. 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, 2022, the Company had total accrued environmental remediation liabilities of \$861,000, a decrease of \$15,000 from the December 31, 2021 balance of \$876,000. The decrease represents payments for remediation projects. At December 31, 2022, \$112,000 of the total accrued environmental liabilities was recorded as current.

The current and long-term accrued environmental liabilities at December 31, 2022 are summarized as follows (in thousands).

	Current Accrual	Long-term Accrual	Total
PFD	—	\$ 60	\$ 60
PFM	—	15	15
PFSG	112	674	786
Total liability	\$ 112	\$ 749	\$ 861

NOTE 10 LONG-TERM DEBT

Long-term debt consists of the following at December 31, 2022 and December 31, 2021:

(Amounts in Thousands)	December 31, 2022	December 31, 2021
Revolving Credit facility dated May 8, 2020, borrowings based upon eligible accounts receivable, subject to monthly borrowing base calculation, balance due on May 15, 2024. Effective interest rate for 2022 and 2021 was 8.9% and 5.3%, respectively ⁽¹⁾	\$ —	\$ —
Term Loan dated May 8, 2020, payable in equal monthly installments of principal, balance due on May 15, 2024. Effective interest rate for 2022 and 2021 was 5.6% and was 4.5%, respectively ⁽¹⁾	552 ⁽²⁾	954 ⁽²⁾
Capital Line dated May 4, 2021, payable in equal monthly installments of principal, balance due on May 15, 2024. Effective interest rate for 2022 was 6.2%. ⁽¹⁾	463	—
Notes Payable to 2023 and 2025, annual interest rate of 5.6% and 9.1%.	24	39
Total debt	<u>1,039</u>	<u>993</u>
Less current portion of long-term debt	476	393
Long-term debt	<u>\$ 563</u>	<u>\$ 600</u>

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

(2) Net of debt issuance costs of (\$88,000) and (\$112,000) at December 31, 2022 and December 31, 2021, respectively.

Revolving Credit, Term Loan and Capital Line Agreement

The Company entered into a Second Amended and Restated Revolving Credit, Term Loan and Security Agreement, dated May 8, 2020 ("Loan Agreement"), with PNC National Association ("PNC"), acting as agent and lender. The Loan Agreement provides the Company with the following credit facility with a maturity date of March 15, 2024: (a) up to \$18,000,000 revolving credit ("revolving credit") see "Note 20 – Subsequent Events – Credit Facility" for a discussion of an amendment that the Company entered into with its lender on March 21, 2023 which reduced the maximum revolving credit to \$12,500,000 and (b) a term loan ("term loan") of approximately \$1,742,000, requiring monthly installments of \$35,547. The maximum that the Company 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 the Company's lender may impose from time to time. The Loan Agreement, as amended (the "Amended Loan Agreement"), also provides a capital expenditure line of up to \$1,000,000 with advances on the line, subject to certain limitations, permitted for up to twelve months starting May 4, 2021 (the "Borrowing Period"). Only interest is payable on advances during the Borrowing Period. At the end of the Borrowing Period, the total amount advanced under the line will amortize equally based on a five-year amortization schedule with principal payment due monthly plus interest. At the maturity date of the Amended Loan Agreement, any unpaid principal balance plus interest, if any, will become due. Amount advanced under the capital line totaled approximately \$524,000 which requires monthly installments in principal of approximately \$8,700 plus interest, starting June 1, 2022. The advance was used to purchase the underlying asset under a previous finance lease.

During 2022, the Company entered into further amendments to the Amended Loan Agreement with its lender, which provided the following, among other things (with the amended terms set forth in a Revised Loan Agreement):

- waived the Company's failure to meet the minimum quarterly FCCR requirement for the fourth quarter of 2021 and second quarter of 2022;
- removed the quarterly FCCR testing requirement for the first and third quarters of 2022;
- reinstated the quarterly FCCR testing requirement starting for the fourth quarter of 2022 and revised the methodology in calculating the FCCR for the quarter ended December 31, 2022 and the methodology to be used in calculating the FCCR for the quarter ending March 31, 2023 (with no change to the minimum 1.15:1 ratio requirement for each quarter);
- required maintenance of a minimum of \$3,000,000 in borrowing availability under the revolving credit until the minimum FCCR requirement for the quarter ended December 31, 2022 has been met and certified to the lender;

- revised the annual rate used to calculate the Facility Fee (as defined in the Loan Agreement) on the revolving credit, with addition of the capital expenditure line, from 0.375% to 0.500%. Upon meeting the minimum FCCR requirement of 1.15:1 on a twelve-month trailing basis, the Facility Fee rate of 0.375% will be reinstated;
- added certain additional anti-terrorism provisions to the covenants; and
- replaced the LIBOR based interest rate benchmark with the SOFR. As a result of this new provision, payment of annual rate of interest due on the revolving credit is at prime (7.50% at December 31, 2022) plus 2% or Term SOFR Rate (as defined in the Revised Loan Agreement) plus 3.00% plus an SOFR Adjustment applicable for an interest period selected by us and payment of annual rate of interest due on the term loan and the capital expenditure line is at prime plus 2.50% or Term SOFR Rate plus 3.50% plus an SOFR Adjustment applicable for an interest period selected by us. A SOFR Adjustment rates of 0.10% and 0.15% are applicable for a one-month interest period and three-month period, respectively, that may be selected by us

In connection with the amendments, the Company paid its lender fees totaling \$30,000 which is being amortized over the remaining term of the Revised Loan Agreement as interest expense-financing fees.

The Company's credit facility under its Revised Loan Agreement 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's Revised Loan Agreement prohibits us from paying cash dividends on our Common Stock without prior approval from our lender. The Company was not required to perform testing of the FCCR requirement in the first and third quarters of 2022 pursuant to amendments as discussed above. Based on an amendment that the Company entered into with its lender on March 21, 2023, the Company was not required to perform testing of the FCCR requirement in the fourth quarter of 2022 (see "Note 20 – Subsequent Events – Credit Facility" for a discussion of this amendment which provided for this provision, among other things). The Company failed to meet its FCCR requirement in the second quarter of 2022; however, this non-compliance was waived by our lender pursuant to an amendment that we entered into with our lender in 2022 as discussed above. Other than the above discussion pertaining to the Company's FCCR requirements, the Company met all of its other financial covenant requirements in each of the quarters of 2022.

After May 7, 2022, the Company may terminate its Revised Loan Agreement upon 90 days' prior written notice upon payment in full of our obligations under the Revised Loan Agreement with no early termination fees.

At December 31, 2022, the borrowing availability under the Company's revolving credit was approximately \$4,290,000 based on our eligible receivables and is net of approximately \$3,016,000 in outstanding standby letters of credit. The Company's borrowing availability of \$4,290,000 at December 31, 2022 included a requirement from our lender that we maintain a minimum of \$3,000,000 in borrowing availability.

The following table details the amount of the maturities of long-term debt maturing in future years at December 31, 2022 (excludes debt issuance costs of \$88,000).

Year ending December 31:	(In thousands)	2023	\$	542
		2024		578
		2025		7
	Total		\$	<u>1,127</u>

NOTE 11 CORONAVIRUS AID, RELIEF, AND ECONOMIC SECURITY ACT (“CARES ACT”)*Employee Retention Credit (“ERC”)*

The CARES Act, which was enacted on March 27, 2020, provides an Employee Retention Credit (“ERC”) for qualifying businesses keeping employees on their payroll during the COVID-19 pandemic. The ERC was subsequently amended by the Taxpayer Certainty and Disaster Tax Relief Act of 2020, the Consolidated Appropriation Act of 2021, and the American Rescue Plan Act of 2021, all of which amended and extended the ERC availability and guidelines under the CARES Act. Following these amendments, the Company determined that it was eligible for the ERC, and as a result of the foregoing legislations, is eligible to claim a refundable tax credit against the Company’s share of certain payroll taxes equal to 70% of the qualified wages paid to employees between July 1, 2021 and September 30, 2021. Qualified wages are limited to \$10,000 per employee per calendar quarter in 2021 for a maximum allowable ERC per employee of \$7,000 per calendar quarter in 2021. For purposes of the amended ERC, an eligible employer is defined as having experienced a significant (20% or more) decline in gross receipts during one or more of the first three 2021 calendar quarters when compared to 2019.

During the third quarter of 2022, the Company determined it was eligible for the ERC and amended its third quarter 2021 employer payroll tax filings claiming a refund from the U.S. Treasury in the amount of approximately \$1,975,000. As there is no authoritative guidance under U.S. GAAP on accounting for government assistance to for-profit business entities, we account for the ERC by analogy to International Accounting Standard (“IAS”) 20, Accounting for Government Grants and Disclosure of Government Assistance. In accordance with IAS 20, management determined it has reasonable assurance for receipt of the ERC and recorded the expected refund as other income (within “Other income (expense)”) on the Company’s Consolidated Statements of Operations and other receivables (within “Prepaid and other assets”) on the Company’s Consolidated Balance Sheets. For federal income tax purposes, this item was treated as a reduction in payroll costs for 2021, the year in which the costs originated. This resulted in a timing difference for the benefit between financial statement inclusion and tax inclusion between 2021 and 2022. This timing difference does not impact the Company’s effective tax rate.

Paycheck Protection Program (“PPP”) Loan

In April 2020, the Company received a PPP Loan in the amount of approximately \$5,318,000 under the CARES Act, as amended. The PPP Loan was administered by the SBA. Proceeds from the promissory note was used by the Company for eligible payroll costs, mortgage interest, rent and utility costs as permitted by the CARES Act, as amended. The annual interest rate on the PPP Loan was 1.0%. In late 2020, the Company applied for forgiveness on repayment of the PPP Loan and effective June 15, 2021, the entire balance of the PPP Loan of approximately \$5,318,000, along with accrued interest of approximately \$63,000 was forgiven by the SBA. Accordingly, the Company recorded the entire forgiven PPP Loan balance, along with accrued interest, totaling approximately \$5,381,000 as “Gain on extinguishment of debt” on its Consolidated Statement of Operations for the year ended 2021.

Deferral of Employment Tax Deposits

The CARES Act, as amended, provided employers the option to defer the payment of an employer’s share of social security taxes beginning on March 27, 2020 through December 31, 2020 with 50% of the amount of social security taxes deferred to become due on December 31, 2021 with the remaining 50% due on December 31, 2022. The Company’s deferment of such taxes totaled approximately \$1,252,000 of which approximately \$626,000 was paid in December 2021 with the remaining paid in December 2022 (previously included in “Accrued expenses” within current liabilities in our Consolidated Balance Sheets).

NOTE 12 ACCRUED EXPENSES

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

	2022	2021
Salaries and employee benefits	\$ 2,629	\$ 3,049
Accrued sales, property and other tax	240	183
Interest payable	8	3
Insurance payable	1,253	1,209
Other	463	634
Total accrued expenses	<u>\$ 4,593</u>	<u>\$ 5,078</u>

NOTE 13 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 (current and long-term) for the years ended December 31, 2022 and 2021, were as follows:

Amounts in thousands	
Balance as of December 31, 2020	\$ 6,365
Accretion expense	377
Addition to closure liability	499
Spending	(50)
Balance as of December 31, 2021	<u>\$ 7,191</u>
Accretion expense	411
Addition to closure liability	1,339
Spending	(975)
Balance as of December 31, 2022	<u>\$ 7,966</u>

In 2022, the Company recorded a total of approximately \$1,339,000 in additional estimated closure liabilities of which approximately \$465,000 (within long-term) was recorded in connection with the footprint expansion at one of our facilities and an update to a processing enclosure area at another facility. The remaining additional closure liabilities was recorded for our EWOC facility for decommissioning activities due to changes in estimated closure costs. At December 31, 2022, current portion of the closure liabilities totaled approximately \$682,000 which reflects primarily closure liabilities for our EWOC facility. The spending made in 2022 was primarily for our EWOC facility.

The addition to closure liabilities for 2021 reflected primarily estimated costs for decommissioning activities required to restore the leased property at our EWOC facility back to its original condition at the end of its lease term. As of December 31, 2021, current portion of the closure liabilities totaled approximately \$578,000 which consists primarily of the closure liabilities for our EWOC facility.

The reported closure asset or ARO, is reported as a component of "Net Property and equipment" in the Consolidated Balance Sheets at December 31, 2022 and 2021 with the following activity for the years ended December 31, 2022 and 2021:

Amounts in thousands	
Balance as of December 31, 2020	\$ 3,348
Addition to closure and post-closure asset	478
Amortization of closure and post-closure asset	(250)
Balance as of December 31, 2021	\$ 3,576
Addition to closure and post-closure asset	1,128
Amortization of closure and post-closure asset	(603)
Balance as of December 31, 2022	\$ 4,101

The addition to ARO reflects closure obligations as discussed above.

NOTE 14 INCOME TAXES

The components of (loss) income before income tax benefits by jurisdiction for continuing operations for the years ended December 31, consisted of the following (in thousands):

	2022	2021
United States	(2,782)	(1,733)
Canada	(630)	(1,880)
United Kingdom	(177)	(246)
Poland	—	1,061
Total loss before tax benefit	\$ (3,589)	\$ (2,798)

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

	2022	2021
Federal income tax benefit - deferred	(331)	(3,503)
State income tax expense (benefit) - current	12	(56)
Foreign income tax expense - current	—	26
State income tax benefit - deferred	(59)	(357)
Total income tax benefit	\$ (378)	\$ (3,890)

An overall reconciliation between the expected tax benefit using the federal statutory rate of 21% for each of the years ended 2022 and 2021 and the benefit for income taxes from continuing operations as reported in the accompanying Consolidated Statement of Operations is provided below (in thousands).

	2022	2021
Federal tax benefit at statutory rate	\$ (754)	\$ (588)
State tax expense (benefit), net of federal benefit	5	(412)
Change in deferred tax rates	20	(93)
Permanent items	220	62
PPP Loan forgiveness	—	(1,130)
Debt forgiveness (PFM Poland)	—	(518)
Difference in foreign rate	(42)	(135)
True-up of deferred tax items	63	1,058
Other	—	(7)
Increase (decrease) in valuation allowance	110	(2,127)
Income tax benefit	<u>\$ (378)</u>	<u>\$ (3,890)</u>

During the fourth quarter of 2021, the Company sold PFM Poland resulting from its decision to cease all R&D activities under its Medical Segment. Prior to the sale, the Company purchased Perma-Fix Medical LLC which was converted from PFMC, a wholly-owned subsidiary of PFM Poland. Perma-Fix Medical LLC was treated as a disregarded entity for tax purposes, resulting in a realized tax loss of \$2,466,000 from uncollected payables. As a condition of the sale of PFM Poland, the Company forgave its receivables from PFM Poland resulting in a \$3,089,000 capital loss on the sale of 100% interest of PFM Poland stock (see "Note 15 – PF Medical for a discussion on the sale of PFM Poland).

The Company regularly assesses the likelihood that the deferred tax asset will be recovered from future taxable income. In conducting this assessment, 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. As of September 30, 2021, the Company determined that it was more likely than not that it would be able to realize a portion of the deferred income tax assets. As a result, a deferred income tax benefit in the amount of approximately \$2,351,000 attributable to the valuation allowance release on beginning of year deferred tax assets primarily related to U.S. Federal income taxes was realized in the three months ended September 30, 2021. The Company had previously maintained a full valuation allowance against its net deferred income tax assets. The Company continues to maintain a valuation allowance against certain state and foreign tax attributes that may not be realizable along with the capital loss carryover generated during 2021 that it does not expect to realize.

As of December 31, 2022, the Company assessed whether its deferred tax asset will more likely than not to be realized. This assessment included both positive and negative available evidences, which included the Company's current contracts, cumulative loss, future reversal of existing taxable differences, and overall prospect of future business and earnings. Based on the weight of these available evidences, the Company concluded that it will more likely than not utilize its Federal and certain state net operating losses.

The global intangible low-taxed income ("GILTI") provisions under the Tax Cuts and Jobs Act of 2017 (the "TCJA") 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 years ended December 31, 2022 and 2021. As the Canada and United Kingdom foreign subsidiaries are in loss positions for 2022, no GILTI inclusion is expected for these entities for the current year. In addition, the aforementioned sale of PFM Poland in 2021 did not result in any GILTI inclusion.

On March 27, 2020, the CARES Act was enacted and signed into law. The CARES Act included a number of income tax law changes, including modifications to the interest limitation under Internal Revenue Code ("IRC") §163(j) and reinstatement of the ability to carry back net operating losses. The Company received forgiveness of its PPP Loan effective June 15, 2021 which was included in its Consolidated Statement of Operations as "Gain on extinguishment of debt" but was exempt from income taxes.

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, 2022 and 2021 as follows (in thousands):

Deferred tax assets:	2022	2021
Net operating losses	\$ 11,647	\$ 10,057
Environmental and closure reserves	2,269	2,040
Lease liability	482	575
Capital loss carryforward	756	740
Other	936	1,099
Deferred tax liabilities:		
Depreciation and amortization	(4,351)	(3,362)
Indefinite lived intangible assets	(503)	(464)
Right-of-use lease asset	(476)	(583)
481(a) adjustment	(53)	(104)
Prepaid expenses	(30)	(24)
Valuation allowance	10,677	9,974
Net deferred income tax asset	(6,560)	(6,447)
	4,117	3,527

The Company has estimated net operating loss carryforwards ("NOLs") for federal and state income tax purposes of approximately \$25,413,000 and \$78,400,000, respectively, as of December 31, 2022. These NOLs can be carried forward and applied against future taxable income, if any, and expire in various amounts starting in 2022. Approximately \$25,296,000 of our federal NOLs were generated after December 31, 2017 and thus do not expire.

The tax years 2019 through 2021 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.

The Company had no federal income tax payable for the years ended December 31, 2022 and 2021.

Beginning in 2022, the TCJA amended Section 174 to eliminate current-year deductibility of research and experimentation ("R&E") expenditures and software development costs (collectively, "R&E expenditures") and instead require taxpayers to charge their R&E expenditures to a capital account amortized over five years (15 years for expenditures attributable to R&E activity performed outside the United States). For the 2022 tax year, the Company has capitalized \$303,000 of research and development expenses. While Management believes this estimate to be materially accurate, the Company plans to complete a formal IRC Section 174 analysis in advance of filing the tax return for the year ended December 31, 2022.

NOTE 15 PF MEDICAL

The Company made the strategic decision during the fourth quarter of 2021 to cease all R&D activities under its Medical Segment. The Medical Segment conducted its activities through the Company's majority-owned Polish subsidiary, PFM Poland and PFM Poland's wholly-owned subsidiary PFMC, a Delaware corporation. On December 30, 2021, the Company entered into a Sales of Shares Agreement (the "sales agreement") for its entire stock ownership (60.54%) of PFM Poland for notes receivable of approximately \$47,000 (USD) which was paid by the buyer in 2022. As condition precedent to the sales agreement, the Company released PFM Poland from unsatisfied trade payables owed by PFM Poland to the Company totaling approximately \$2,537,000 (USD). The Company ceased to have any continuing involvement with PFM Poland.

Immediately before the sales agreement was executed, the Company converted PPMC from a S Corporation to a limited liability company (Perm-Fix Medical LLC or "PFM LLC") and acquired the entire ownership from the majority-owned Polish subsidiary for \$10. The transaction was deemed to be a common control transaction and all assets and liabilities were transferred using the historical carrying values in accordance with guidance in ASC 805-50-25, "Business Combinations, Related Issues, Recognition." The carrying amount of the non-controlling interest was adjusted to reflect the change in the ownership of the subsidiary. As a result, approximately \$1,004,000 of the non-controlling interest related to the cumulative loss of PFM LLC was recognized as additional paid-in capital on the Company's Consolidated Statements of Stockholders' Equity and approximately \$902,000 was recognized as a component within "Loss on deconsolidation of subsidiary" recorded on the Company's Consolidated Statement of Operations.

As a result, effective December 30, 2021, PFM Poland was no longer a subsidiary of the Company and the Company deconsolidated the entity from its consolidated financial statements in accordance with guidance in ASC 810-10-40, "Consolidation, Overall, Derecognition." Accordingly, the December 31, 2021 Consolidated Balance Sheet did not include balances for PFM due to the sale and deconsolidation of PFM Poland. The Company's Consolidated Statements of Operations included results of its majority-owned Polish subsidiary for the period through December 30, 2021.

The Company recognized a non-cash "Loss on deconsolidation of subsidiary" of approximately \$1,062,000 on its Consolidated Statements of Operation from the above transaction. The loss included approximately \$94,000 in legal and accounting costs incurred for the transaction.

(In thousands)	
Note receivable consideration received	\$ 47
Less:	
Carrying amount of non-controlling interest	902
Carrying amount of accumulated other comprehensive loss	148
Net liabilities	(35)
Transaction costs	94
Loss on deconsolidation of subsidiary	<u>\$ (1,062)</u>

NOTE 16 COMMITMENTS AND CONTINGENCIES

Hazardous Waste

In connection with our waste management services, the Company processes hazardous, non-hazardous, low-level radioactive and mixed (containing both hazardous and low-level radioactive) 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, the Company 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, the Company may be involved in various litigation. The Company is 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.

Tetra Tech EC, Inc. ("Tetra Tech")

During July 2020, Tetra Tech EC, Inc. ("Tetra Tech") filed a complaint in the United States District Court for the Northern District of California (the "Court") against CH2M Hill, Inc. ("CH2M") and four subcontractors of CH2M, including the Company ("Defendants"). The complaint alleges various claims, including a claim for negligence, negligent misrepresentation, equitable indemnification and related business claims against all defendants related to alleged damages suffered by Tetra Tech in respect of certain draft reports prepared by defendants at the request of the U.S. Navy as part of an investigation and review of certain whistleblower complaints about Tetra Tech's environmental restoration at the Hunter's Point Naval Shipyard in San Francisco.

CH2M was hired by the Navy in 2016 to review Tetra Tech's work. CH2M subcontracted with environmental consulting and cleanup firms Battelle Memorial Institute, Cabrera Services, Inc., SC&A, Inc. and the Company to assist with the review, according to the complaint.

Our insurance carrier is providing a defense on our behalf in connection with this lawsuit, subject to a \$100,000 self-insured retention and the terms and limitations contained in the insurance policy.

The majority of Tetra Tech's claims have been dismissed by the Court. Remaining claims include: (1) Intentional Interference with Contractual Relations; and (2) Inducing a Breach of Contract. The Company continues to believe it has no liability exposure to Tetra Tech.

PF Canada

During the fourth quarter of 2021, PF Canada received a Notice of Termination ("NOT") from Canadian Nuclear Laboratories, LTD. ("CNL") on a Task Order Agreement ("TOA") that PF Canada entered into with CNL in May 2019 for remediation work within Ontario, Canada ("Agreement"). The NOT was received after work under the TOA was substantially completed and work under the TOA has since been completed. CNL may terminate the TOA at any time for convenience. As of December 31, 2022, PF Canada has approximately \$1,853,000 in unpaid receivables due from CNL as a result of work performed under the TOA. Additionally, CNL has approximately \$1,060,000 in contractual holdback under the TOA that is payable to PF Canada. CNL also established a bond securing approximately \$1,900,000 (CAD) to cover certain issues raised in connection with the TOA. Under the TOA, CNL may be entitled to set off certain costs and expenses incurred by CNL in connection with the termination of the TOA, including the bond as discussed above, against amounts owed to PF Canada for work performed by PF Canada or its subcontractors. PF Canada continues to be in discussions with CNL to finalize the amounts due to PF Canada under the TOA and continues to believe these amounts are due and payable to PF Canada.

Insurance

The Company has a 25-year finite risk insurance policy entered into in June 2003 ("2003 Closure Policy") with AIG which provides financial assurance to the applicable states for our permitted facilities in the event of unforeseen closure. The 2003 Closure Policy, as amended, provides for a maximum allowable coverage of \$28,177,000 which includes available capacity to allow for annual inflation and other performance and surety bond requirements. Total coverage under the 2003 Closure Policy, as amended, was \$21,175,000 at December 31, 2021. At December 31, 2022 and December 31, 2021, finite risk sinking funds contributed by the Company related to the 2003 Closure Policy which is included in other long term assets on the accompanying Consolidated Balance Sheets totaled \$11,570,000 and \$11,471,000, respectively, which included interest earned of \$2,099,000 and \$2,000,000 on the finite risk sinking funds as of December 31, 2022 and December 31, 2021, respectively. Interest income for the year ended 2022 and 2021 was approximately \$99,000 and \$25,000, respectively. If the Company so elects, AIG is obligated to pay us an amount equal to 100% of the finite risk 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.

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, 2022, the total amount of standby letters of credit outstanding was approximately \$3,016,000 and the total amount of bonds outstanding was approximately \$35,432,000.

NOTE 17 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 2022 and 2021, the Company contributed approximately \$575,000 and \$589,000 in 401(k) matching funds, respectively.

NOTE 18 RELATED PARTY TRANSACTIONS*David Centofanti*

David Centofanti serves as our Vice President of Information Systems. For such position, he received annual compensation of \$187,000 and \$184,000 for 2022 and 2021, respectively. David Centofanti is the son of our EVP of Strategic Initiatives and a Board member.

Employment Agreements

The Company entered into an employment agreement dated July 22, 2020 with each of our executive officers (each employment agreement referred to as "Employment Agreement").

Each Employment Agreement is effective for three years from July 22, 2020 (the "Initial Term") unless earlier terminated by the Company 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 salary, performance bonuses (as provided in the Management Incentive Plan ("MIP") as approved by the Company's Compensation Committee and Board) and other benefits commonly found in such agreement.

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

If the executive officer terminates his employment for "good reason" (as defined in the agreement) 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, and two times the performance compensation (under the MIP) earned with respect to the fiscal year immediately preceding the date of termination provided the performance compensation earned with respect to the fiscal year immediately preceding the date of termination has not been paid. If performance compensation earned with respect to the fiscal year immediately preceding the date of termination has been made to the executive officer, the executive officer will be paid an additional year of the performance compensation earned 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 with respect to the fiscal year immediately preceding the date of termination.

If there is a Change in Control (as defined in the agreement), 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)).

MIPs

On January 20, 2022, the Board and the Compensation Committee also approved individual MIP for the calendar year 2022 for each of our executive officers. Each MIP was effective January 1, 2022 and applicable for year 2022. Each MIP provided guidelines for the calculation of annual cash incentive-based compensation, subject to Compensation Committee oversight and modification. The performance compensation under each of the MIPs was based upon meeting certain of the Company's separate target objectives during 2022. Assuming each target objective was achieved under the same performance threshold range under each MIP, the total potential target performance compensation payable ranged from 25% to 150% of the 2022 base salary for the CEO (\$93,717 to \$562,304), 25% to 100% of the 2022 base salary for the CFO (\$76,193 to \$304,772), 25% to 100% of the 2022 base salary for the EVP of Strategic Initiatives (\$63,495 to \$253,980), 25% to 100% of the 2022 base salary for the EVP of Nuclear and Technical Services (\$76,193 to \$304,772) and 25% to 100% (\$65,308 to \$261,233) of the 2022 base salary for the EVP of Waste Treatment Operations. No compensation was earned under each of the MIPs.

NOTE 19 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 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 have two reporting segments, consisting of the Treatment and Services Segments, which are based on a service offering approach. The Company's segment in 2021 also included the Medical Segment which primary purpose was the R&D of a medical isotope production technology. The Medical Segment had not generated any revenues. During December 2021, the Company made the strategic decision to cease all R&D activities under the Medical Segment which resulted in the sale of 100% of its interest of PFM Poland (see "Note 15 – PF Medical" for a discussion of this transaction). Our reporting segments exclude our corporate headquarter, business center and our discontinued operations (see "Note 9 – Discontinued Operations") which do not generate revenues.

The table below shows certain financial information of our reporting segments as of and for the years ended December 31, 2022 and 2021 (in thousands).

Segment Reporting as of and for the year ended December 31, 2022

	Treatment	Services	Segments Total	Corporate ⁽²⁾	Consolidated Total
Revenue from external customers	\$ 33,358	\$ 37,241	\$ 70,599 ⁽³⁾⁽⁴⁾	\$ —	\$ 70,599
Intercompany revenues	56	213	269	—	—
Gross profit	5,243	4,366	9,609	—	9,609
Research and development	246	23	269	67	336
Interest income	—	—	—	99	99
Interest expense	(74)	(3)	(77)	(98)	(175)
Interest expense-financing fees	—	(1)	(1)	(60)	(61)
Depreciation and amortization	1,710	334	2,044	65	2,109
Segment income (loss) before income taxes	1,531	1,565	3,096	(6,685)	(3,589) ⁽¹³⁾
Income tax benefit	(236)	(133)	(369)	(9)	(378)
Segment income (loss)	1,767	1,698	3,465	(6,676)	(3,211)
Segment assets ⁽¹⁾	37,918	8,473 ⁽⁸⁾	46,391	24,507 ⁽⁵⁾	70,898
Expenditures for segment assets (net)	866	157	1,023	—	1,023 ⁽⁷⁾
Total debt	482	5	487	552	1,039 ⁽⁶⁾

Segment Reporting as of and for the year ended December 31, 2021

	Treatment	Services	Medical	Segments Total	Corporate ⁽²⁾	Consolidated Total
Revenue from external customers	\$ 32,992	\$ 39,199	—	\$ 72,191 ⁽³⁾⁽⁴⁾	\$ —	\$ 72,191
Intercompany revenues	1,265	47	—	1,312	—	—
Gross profit	6,718	106	—	6,824	—	6,824
Research and development	221	71	414	706	40	746
Interest income	1	—	—	1	25	26
Interest expense	(100)	(10)	—	(110)	(137)	(247)
Interest expense-financing fees	—	(1)	—	(1)	(40)	(41)
Depreciation and amortization	1,306	353	—	1,659	28	1,687
Segment income (loss) before income taxes	2,283	(3,044)	(1,476) ⁽¹¹⁾⁽¹²⁾	(2,237)	(561) ⁽⁹⁾⁽¹¹⁾	(2,798)
Income tax (benefit) expense	(150)	(962)	26	(1,086)	(2,804)	(3,890) ⁽¹⁰⁾
Segment income (loss)	2,433	(2,082)	(1,502)	(1,151)	2,243	1,092
Segment assets ⁽¹⁾	37,050	15,244 ⁽⁸⁾	48	52,342	24,959 ⁽⁵⁾	77,301
Expenditures for segment assets (net)	1,363	205	—	1,568	9	1,577 ⁽⁷⁾
Total debt	25	14	—	39	954	993 ⁽⁶⁾

(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 government clients (domestic and foreign (primarily Canadian)), either directly as a prime contractor or indirectly for others as a subcontractor to government entities, representing approximately 60,030,000 or 85.0% of total revenue for 2022 and 60,812,000 or 84.2% of total revenue for 2021. The following reflects such revenue generated by our two segments:

	2022			2021		
	Treatment	Services	Total	Treatment	Services	Total
Domestic government	\$ 23,752	\$ 35,906	\$ 59,658	\$ 22,538	\$ 29,013	\$ 51,551
Foreign government	574	(202)	372	577	8,684	9,261
Total	\$ 24,326	\$ 35,704	\$ 60,030	\$ 23,115	\$ 37,697	\$ 60,812

(4) The following table reflects revenue based on customer location:

	2022		2021	
	2022	2021	2022	2021
United States	\$ 69,373	\$ 62,257	—	—
Canada	406	9,277	—	—
Germany	678	567	—	—
Italy	14	—	—	—
United Kingdom	128	90	—	—
Total	\$ 70,599	\$ 72,191	—	—

(5) Amount includes assets from our discontinued operations of \$96,000 and \$96,000 at December 31, 2022 and 2021, respectively.

- (6) Net of debt issuance costs of (\$88,000) and (\$112,000) for 2022 and 2021, respectively (see “Note 10 – “Long-Term Debt” for additional information).
- (7) Net of financed amount of \$114,000 and \$585,000 for the year ended December 31, 2022 and 2021, respectively.
- (8) Includes long-lived asset (net) for our PF Canada, Inc. subsidiary of \$0 and \$25,000 for the year ended December 31, 2022 and 2021, respectively.
- (9) Amount includes approximately \$5,381,000 of “Gain on extinguishment of debt” recorded in connection with the Company’s PPP Loan which was forgiven by the SBA effective June 15, 2021 (see “Note 11 – Coronavirus Aid, Relief and Economic Securities Act (“CARES ACT”) – Paycheck Protection Program (“PPP”) Loan” for information of this loan forgiveness).
- (10) Includes tax benefit recorded in amount of approximately \$2,351,000 resulting from release of valuation allowance on the Company’s deferred tax assets.
- (11) Includes elimination of gain/loss of \$2,537,000 in debt forgiveness between PFM Poland and the Company (see “Note 15 – PF Medical” for a discussion of this debt forgiveness).
- (12) Amount includes a “Loss on deconsolidation of subsidiary” recorded in the amount of approximately \$1,062,000 resulting from the sale of PFM Poland (see “Note 15 – PF Medical” for a discussion of this loss).
- (13) Includes approximately \$1,975,000 recorded as other income under the Employee Retention Credit program under the CARES Act, as amended (see “Note 11 – Coronavirus Aid, Relief and Economic Securities Act (“CARES ACT”) – Employee Retention Credit (“ERC”)” for a discussion of this expected refund amount).

NOTE 20 SUBSEQUENT EVENTS

Management evaluated events occurring subsequent to December 31, 2022 through March 23, 2023, the date these consolidated financial statements were available for issuance, and other than as noted below determined that no material recognizable subsequent events occurred.

Executive Compensation

MIPs

On January 19, 2023, the Board and the Compensation Committee approved individual MIP for the calendar year 2023 for each of our executive officers. Each MIP is effective January 1, 2023 and applicable for year 2023. Each MIP provides guidelines for the calculation of annual cash incentive-based compensation, subject to Compensation Committee oversight and modification. The performance compensation under each of the MIPs is based upon meeting certain of the Company’s separate target objectives during 2023. Assuming each target objective is achieved under the same performance threshold range under each MIP, the total potential target performance compensation payable ranges from 25% to 150% of the 2023 base salary for the CEO (\$93,717 to \$562,305), 25% to 100% of the 2023 base salary for the CFO (\$76,193 to \$304,772), 25% to 100% of the 2023 base salary for the EVP of Strategic Initiatives (\$63,495 to \$253,980), 25% to 100% of the 2023 base salary for the EVP of Nuclear and Technical Services (\$76,193 to \$304,772) and 25% to 100% (\$65,308 to \$261,233) of the 2023 base salary for the EVP of Waste Treatment Operations.

ISOs

On January 19, 2023, the Company granted ISOs to certain employees for the purchase, under the Company’s 2017 Plan, of up to an aggregate 295,000 shares of the Company’s Common Stock. The total ISOs granted included an ISO for each of the Company’s executive officers for the purchase set forth in his respective ISO Agreement, as follows: 70,000 shares for the CEO; 40,000 shares for the CFO; 30,000 shares for the EVP of Strategic Initiatives; 30,000 shares for the EVP of Waste Treatment Operations; and 30,000 shares for the EVP of Nuclear and Technical Services. Each of the ISOs granted has a contractual term of six years with one-fifth yearly vesting over a five-year period. The exercise price of the ISO is \$3.95 per share, which was equal to the fair market value of the Company’s Common Stock on the date of grant.

Credit Facility

On March 21, 2023, the Company entered into an amendment to its Revised Loan Agreement with its lender which provides, among other things, the following:

- removed the quarterly FCCR testing requirement for the fourth quarter of 2022 and removes the FCCR testing requirement the first quarter of 2023;
- reduced the maximum revolving credit line under the credit facility from \$18,000,000 to \$12,500,000;
- reinstates the quarterly FCCR testing requirement starting in the second quarter of 2023 using a trailing twelve months period (with no change to the minimum 1.15:1 ratio requirement for each quarter); and
- requires maintenance of a minimum of \$3,000,000 in borrowing availability under the revolving credit until the minimum FCCR requirement for the quarter ended June 30, 2023 has been met and certified to the lender.

In connection with the amendment, the Company paid its lender a fee of \$25,000.

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, 2022.

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.

In our annual report on Form 10-K for the year ended December 31, 2021 and our quarterly reports on Form 10-Q for the periods ended March 31, 2022, June 30, 2022 and September 30, 2022, management concluded that internal controls over financial reporting were not effective as of those dates because of a material weakness in our internal control over financial reporting as described below. A material weakness is defined as a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is reasonable possibility that a material misstatement of a Company's annual or interim financial statements will not be prevented or detected on a timely basis.

Certain revenue contracts that contained nonstandard terms and conditions were not appropriately evaluated in accordance with ASC 606, "Revenue from Contracts with Customers." Specifically, management did not have the appropriate controls in place over the determination of revenue recognition for nonroutine and complex revenue transactions. The material weakness identified resulted in errors in the Company's books and records in fiscal year 2021 which led to audit adjustments. However, the errors arising from the underlying revenue adjustments were not material to the financial statements reported in any interim or annual period and therefore, did not result in a revision to any previously filed financial statements.

During the year ended December 31, 2022, management implemented its remediation plan which included the following:

- consulted with third-party experts for guidance on large and/or unique contracts to ensure ASC 606 guidance was accurately applied and documented;
- updated our ASC 606 revenue templates to ensure unique contract provisions were able to be identified so ASC 606 guidance was applied accurately;
- instituted more robust collaboration with the Company's operation personnel to identify nonstandard contract terms in order to determine appropriate treatment under ASC 606; and
- continued training of accounting and operations personnel on ASC 606 by subject matter experts and internal financial department to ensure proper application of guidance under ASC 606.

We tested and evaluated the design and operating effectiveness of our remediation plan and have determined that the material weakness identified above has been remediated.

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, 2022 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 and our CEO and CFO, concluded that the Company's internal control over financial reporting was effective as of December 31, 2022.

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

Other than the steps taken in implementing our remediation plan as discussed above, there was no other change in our internal control over financial (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the fiscal quarter ended December 31, 2022 that have materially affected, or are reasonably likely to materially affect, our internal controls over financial reporting.

OTHER INFORMATION

ITEM 9B.

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 (the "Board"):

NAME	AGE	POSITION
Mr. Thomas P. Bostick	66	Director
Dr. Louis F. Centofanti	79	Director; EVP of Strategic Initiatives
Ms. Kerry C. Duggan	44	Director
Mr. Joseph T. Grumski	61	Director
The Honorable Joe R. Reeder	75	Director
Mr. Larry M. Shelton	69	Chairman of the Board
The Honorable Zach P. Wamp	65	Director
Mr. Mark A. Zwecker	72	Director

Each director is elected to serve until the next annual meeting of stockholders or until their respective successors are duly elected and qualified.

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 are 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.

Mr. Thomas P. Bostick

Mr. Bostick, a director since August 2020, is currently the Chief Executive Officer ("CEO") of Bostick Global Strategies, LLC, a position he has held since July 2016. Bostick Global Strategies, LLC provides strategic advisory support in the areas of engineering, environmental sustainability, human resources, biotechnology, education, executive coaching, and Agile Project Management. In February 2021, Mr. Bostick was selected by U. S. Senator Jack Reed, Chairman of the Senate Armed Services Committee, to serve as a member of the Naming Commission consisting of eight appointed individuals, tasked with renaming Confederate-named military bases and property. Mr. Bostick previously served (from November 2017 to February 2020) as the Chief Operating Officer ("COO") and President of Intrexon Bioengineering, a division of Intrexon Corporation (formerly NASDAQ: XON; now NASDAQ: PGEN). Intrexon Bioengineering addresses global challenges across food, agriculture, environmental, energy, and industrial fields by advancing biologically engineered solutions to improve sustainability and efficiency. Since October 2020, Mr. Bostick has served as a board member of CSX Corporation (NASDAQ: CSX), a publicly-held rail transportation company, and since December 2020, as a member of both the Finance Committee and the Governance Committee of CSX Corporation. Since June 2021, Mr. Bostick has served on the Board of Trustees of Fidelity Equity and High Income Funds overseeing equity funds and high yield funds sponsored by Fidelity Investments, Inc., a privately-owned investment management company. Mr. Bostick continues to serve as a board member for several other privately-held and nonprofit organizations. Mr. Bostick was named as one of 2021's Most Influential Black Corporate Directors by Savoy Magazine, a national publication that showcases and drives positive dialogue about Black culture.

Mr. Bostick has had a distinguished career in the U.S. military, retiring from the U.S. Army in July 2016 with the rank of Lieutenant General. Prior to his retirement, General Bostick held a variety of positions within the U.S. Army, including the 53rd Chief of Engineers and Commanding General, U.S. Army Corps of Engineers (2012-2016) and Deputy Chief of Staff and Director of Human Resources, U.S. Army (2009-2012). General Bostick has been awarded many military honors and decorations during his military career, including the Distinguished Service Medal, the Defense Superior Service Medal, and the Bronze Star Medal.

As a White House Fellow, one of America's most prestigious programs for leadership and public service, General Bostick was a special assistant to the Secretary of Veterans Affairs. He graduated with a Bachelor of Science degree from the U.S. Military Academy at West Point and later returned to the Academy to serve as an Associate Professor of Mechanical Engineering. He holds Master's degrees in Civil Engineering and Mechanical Engineering from Stanford University and a Doctorate in Systems Engineering from George Washington University. He is a Member of the National Academy of Engineering and the National Academy of Construction.

Mr. Bostick's distinguished career in both the government and private sectors brings valuable experience and insight into solving complex issues domestically and globally. His extensive knowledge and problem-solving experiences enhance 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. Louis F. Centofanti

Dr. Centofanti, the founder of the Company and a director of the Company since its inception in 1991, currently holds the position of EVP of Strategic Initiatives. 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 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 and Mark Zweeker, a current Board member of the Company, 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.

Kerry C. Duggan

Ms. Duggan, a director of the Company since May 2021, is the founder of SustainabiliD, a woman-owned advisory services firm working with gamechangers to equitably solve the climate crisis. She has been named the founding director of the University of Michigan's SEAS Sustainability Clinic in Detroit.

In 2021, Ms. Duggan was appointed to the Department of Energy's prestigious Secretary of Energy Advisory Board, serving under Secretary Jennifer Granholm. In February 2021, Michigan Governor Gretchen Whitmer also appointed Duggan to the State of Michigan's Council on Climate Solutions, to advise on the implementation of the MI Healthy Climate Plan, to reduce greenhouse gas emissions and to transition toward economy-wide carbon neutrality. In 2020-21, Ms. Duggan was a member of the Biden-Harris Transition Team on the Department of Energy Agency Review Team. In May 2020, Ms. Duggan was named a member of the Biden-Sanders Unity Task Force on Climate Change, serving as one of Biden's five delegates alongside Gina McCarthy and Sec. John Kerry; and later co-chaired the climate change policy committee and served as a Surrogate for the Biden campaign.

Previously, Ms. Duggan served nearly seven years in public-service leadership roles, including inside the Obama-Biden White House as Deputy Director for Policy in the Office of Vice President Biden Policy to then Vice President Joe Biden for energy, environment, climate, and distressed communities. Simultaneously, she served as Deputy Director of the Detroit Federal Working Group to support Detroit's revitalization. Prior to the White House, Ms. Duggan held several senior roles at the Department of Energy, including as Secretary Moniz's embedded Liaison to the City of Detroit (where she championed a citywide LED streetlight conversion), and in the Office of Energy Efficiency & Renewable Energy as Director of Stakeholder Engagement, Director of Legislative, Regulatory & Urban Affairs, and as a Senior Policy Advisor.

After her time in federal service, Ms. Duggan co-founded the Smart Cities Lab, was a Partner with the Honorable Thomas J. Ridge's firm, RIDGE-LANE Limited Partners, and served on the external advisory board of the University of Michigan's Erb Institute for Global Sustainable Enterprise and was a Board Member at the Global Council for Science and the Environment. She was also a Trustee of the University Liggett School. In 2018, Ms. Duggan was named to the prestigious "40 Under 40" list by Crain's Detroit Business. She previously worked at the League of Conservation Voters in Washington, D.C.

Currently, Ms. Duggan serves as a senior advisor at The RockCreek Group, LP, a registered private fund adviser that manages fund of funds portfolios and direct equity trading portfolios. She also sits on the corporate advisory boards of Our Next Energy, Inc. (ONE), a privately-held energy storage solutions company; Aclima, Inc., a public benefit corporation dedicated to protecting public health, reducing climate-changing emissions, and advancing environmental justice; BlueConduit, a privately-held water analytics company that builds machine learning software to support the efficient removal of lead and other dangerous materials from communities; Walker-Miller Energy Services, L.L.C., a privately-held energy efficiency services company; Commonweal Investors, a private equity firm that invests in early-stage technology companies advancing a sustainable economy, upgrading transportation and infrastructure systems, and revitalizing the urban environment; and Arctaris Impact Investors, LLC, an investment management company that manages funds which invest in growth-oriented operating businesses and community infrastructure projects located in underserved communities, among others.

Ms. Duggan earned her B.S. in Environmental Studies from the University of Vermont and her M.S. in Natural Resource Policy & Behavior from the University of Michigan.

Ms. Duggan's career in both the government and private sectors brings valuable experience and insight into solving complex issues. Her extensive knowledge and problem-solving experiences, with an Environmental, Social and Governance ("ESG") mindset and Diversity, Equity and Inclusion ("DEI") core values, led the Board to conclude that she should serve as a director.

Mr. Joseph T. Grumski

Mr. Grumski, a director of the Company since February 2020, has served since April 2020 as the President and CEO of TAS Energy Inc. ("TAS"), a wholly-owned subsidiary of Comfort Systems USA, Inc. (NYSE: FIX), a publicly-held company that provides mechanical and electrical contracting services in 139 locations and 114 cities throughout the United States. Prior to the acquisition of TAS by Comfort Systems USA, Inc., Mr. Grumski served as President and CEO and a board member of TAS from May 2013 to March 2020. From 1997 to February 2013, Mr. Grumski was employed with Science Applications International Corporation ("SAIC") (NYSE: SAIC), a publicly-held company that provides government services and information technology support. During his employment with SAIC, Mr. Grumski held various senior management positions, including the positions of President of SAIC's Energy, Environment & Infrastructure ("E2I") commercial subsidiary and General Manager of the E2I Business Unit. SAIC's E2I commercial subsidiary and Business Unit is comprised of approximately 5,200 employees performing over \$1.1 billion of services for federal, commercial, utility and state customers. Mr. Grumski's many accomplishments with SAIC included growing SAIC's \$300 million federal environmental business to a top ranked, \$1.1 billion business; receiving the National Safety Council "Industry Leader" award in 2009; and receiving highest senior executive performance rating three years in a row. Mr. Grumski began his career with Gulf Oil Company and has progressed through senior level engineering, operations management, and program management positions with various companies, including Westinghouse Electric Corporation and Lockheed Martin, Inc. Mr. Grumski received a B.S. in Mechanical Engineering from The University of Pittsburgh and a M.S in Mechanical Engineering from West Virginia University.

Mr. Grumski has had an extensive career in solving and overseeing solutions to complex issues involving both domestic and international concerns. In addition, his extensive experience in companies that provide services to the government sector as well as his experience in the commercial sector provide solid experience for the continuing growth of the Company's Treatment and Services Segment. Mr. Grumski's extensive knowledge and problem-solving experiences, executive operational leadership experience and governance experience enhance 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.

The Honorable Joe R. Reeder

Mr. Reeder, a director since 2003, is a principal shareholder of the law firm of Greenberg Traurig LLP, one of the nation's largest law firms, with 43 locations and 2,500 attorneys worldwide, for which Mr. Reeder served as Shareholder-in-Charge of the law firm's Mid-Atlantic Region offices from 1999 to 2008. His clientele includes celebrities, heads of state, sovereign nations, international corporations, and law firms. As the 14th Undersecretary of the U.S. Army (1993-97), he also served three years as Chairman of the Panama Canal Commission's Board, overseeing a multibillion-dollar infrastructure program. For the past 18 years, he has served on the Canal's International Advisory Board. He has written extensively in leading journals on the subject of corporate cybersecurity, served on the boards of the National Defense Industry Association ("NDIA"), chairing NDIA's Ethics Committee, the Armed Services YMCA, the Marshall Legacy Institute, and many other private companies and charitable organizations. Mr. Reeder served as a director of ELBIT Systems of America, LLC, (2005-2020), a subsidiary of Elbit Systems Ltd. (NASDAQ: ESLT), a multi-billion-dollar provider of defense, homeland security, and commercial aviation system solutions. Mr. Reeder has served as a director of WashingtonFirst Bank, the bank subsidiary of WashingtonFirst Bankshares, Inc. (NASDAQ: WSBI), from 2004 to 2017; as a director of WashingtonFirst Bankshares, Inc., from 2009 to 2017; Sandy Spring Bancorp, Inc. (NASDAQ: SASR), from 2018 to 2020; and Trustar Bank, a Virginia state-chartered bank (2022 - present).

After successive 4-year appointments by Virginia Governors Mark Warner and Tim Kaine, Mr. Reeder served seven years as Chairman of two Commonwealth of Virginia military boards, and 10 years on the USO Board of Governors. Appointed by former Governor Terry McAuliffe to the Virginia Military Institute's Board of Visitors (2014), he was reappointed in 2018 by former Virginia Governor Ralph Northam, with his term ending in 2022. Mr. Reeder, who has been a television commentator on legal and national security issues, has consistently been named a Super Lawyer for Washington, D.C., most recently in 2022.

In May 2018 Mr. Reeder was appointed to the Advisory Council Bid Protest Committee to the United States Court of Federal Claims.

A West Point graduate who served in the 82nd Airborne Division after Ranger School, Mr. Reeder earned his J.D. from the University of Texas, and L.L.M. from Georgetown University.

Mr. Reeder has devoted his career to resolving complex domestic and international issues, and continues to greatly enhance the Board's ability to address major challenges in the nuclear market and day-to-day corporate, and Washington D.C.- related challenges.

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 2014. Mr. Shelton served as the CFO of S K Hart Management, LLC, a private investment management company ("S K Hart Management"), from 1999 until August 2018. Mr. Shelton served as President of Pony Express Land Development, Inc. (an affiliate of SK Hart Management), a privately held land development company, from January 2013 until August 2017, and has served on its board since December 2005. Mr. Shelton served as Director and CFO of S K Hart Ranches (PTY) Ltd, a private South African Company involved in agriculture, from March 2012 to March 2020. Mr. Shelton continues to provide advisory services to S K Hart Ranches (PTY) Ltd. Mr. Shelton has over 20 years of experience as an executive financial officer for several waste management companies, including as CFO of Envirocare of Utah, Inc. (now EnergySolutions, Inc. (1995-1999)), a privately held nuclear waste services company, and as CFO of USPCI, Inc. (1982-1987), then a NYSE- listed public company engaged in the hazardous waste business. 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 industry 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.

The Honorable Zach P. Wamp

Mr. Wamp, a director since January 2018, 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. government). From January 1995 to January 2011, Mr. Wamp served as a member of the U.S. House of Representatives from Tennessee's 3rd Congressional District. 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 outlets 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, for which he was named Chattanooga's Small Business Person of the Year. He is a founder and Board Chair of Learning Blade, the nation's premiere STEM education platform, which is now operating in six states with deployment in another 10 states. Learning Blade is owned and operated by SAI Interactive, Inc., d/b/a Thinking Media, a privately-held educational products and services company.

Mr. Wamp has an 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 expertise enhance 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

Mr. Zwecker, a director since the Company's inception in January 1991, previously served as the CFO and a board member for JCI US Inc. from 2013 to 2019. JCI US Inc. is 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. Mr. Zwecker has held various other senior management positions, including President of ACI Technology, LLC, a privately-held IT services provider, and Vice President of Finance and Administration for American Combustion, Inc., a privately-held combustion technology solutions provider. In 1981, 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 Skills Matrix

The Company is focused on nominating a Board of Directors with a balance of functional expertise, leadership experience, high moral character, critical thinking, and a diversity of backgrounds and tenure necessary to effectively oversee the Company's business. The Company's Corporate Governance and Nominating Committee is responsible for developing the criteria and qualifications required for directors. The following Board Skills Matrix below reflects how certain relevant and important skills, experience, characteristics and other criteria are currently represented on our Board.

KEY SKILLS/EXPERIENCE	NUMBER OF DIRECTORS
Corporate Governance: Supports management and board accountability, transparency and protection of shareholder interests	8
Financial Literacy: Knowledge of financial reporting, internal controls and procedures and complex financial transactions, as is involved with the Company business	6
Government/DOE/DOD Policies: Significant work experience with government decision makers	8
Business/Investment Structures: Work experience with infrastructure for financial interests and proven success	7
Risk Management and Compliance: Understanding and experience with identification, assessment and oversight of risk management and programs, including cyber-security risks	8
Nuclear Waste Management: Understanding the compliance and environmentally responsible nuclear services and radioactive waste management solutions	6
Environmental Studies: Analytical tools and skills understanding the environment, while emphasizing the role of beliefs, values and ethics of the corporate body	8
Human Capital Management: Experience and understanding talent management and development, executive compensation issues and succession planning efforts	8
Regulatory/Legal Processes: Knowledge of the various regulatory processes governing Perma-Fix business sectors, such as financial, environmental, nuclear, safety and food and drug	8
International Work: Experience in overseeing global operations and assessing opportunities and challenges	8

Board Diversity Matrix

The following table reflects the Company's Board diversity matrix as of the date of this Form 10-K. In addition to gender and demographic diversity, two of our eight current directors are also military veterans.

Total Number of Directors	8			
	Female	Male	Non-Binary	Did Not Disclose Gender
Gender Identity:				
Directors	1	7	-	-
Number of Directors Who Identify in Any of The Categories Below:				
African American or Black	-	-	-	-
Alaskan Native or Native American	-	-	-	-
Asian	-	-	-	-
Hispanic or Latinx	-	-	-	-
Native Hawaiian or Pacific Islander	-	-	-	-
White	1	6	-	-
Two or More Races or Ethnicities	-	1	-	-
LGBTQ	-	-	-	-
Did not Disclose Demographic Background	-	-	-	-

CORPORATE GOVERNANCE AND NOMINATING COMMITTEE

We have a separately-designated standing Corporate Governance and Nominating Committee (the "Nominating Committee"). Members of the Nominating Committee during 2022 were Joe R. Reeder (Chairperson), Thomas P. Bostick, Kerry C. Duggan and Zach P. Wamp. 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 directors at each annual meeting of stockholders. In making such recommendations, the Nominating Committee takes into account information provided to them from the candidates, 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 Bylaws sets forth certain minimum director qualifications to qualify as a nominee for election as a director. To qualify for nomination or for 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 of Directors;
- 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 Company is subject so as not to cause the Company 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 in the Bylaws);
- not have been convicted of a felony or of any misdemeanor involving moral turpitude; and
- have been nominated for election to the Board of Directors in accordance with the terms of the Bylaws.

In addition to the minimum director qualifications as mentioned above, in order for any proposed nominee to be eligible to be a candidate for election to the Board, such candidate must deliver to the Nominating Committee a completed questionnaire with respect to the background, qualifications, stock ownership and independence of such proposed nominee. The Nominating Committee reviews each candidate's qualifications to include considerations of:

- standards of integrity, personal ethics and values, 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, risk management, environmental knowledge, business operations (domestic and international), 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, diversity is one of the many factors taken into account when considering potential candidates to serve on the Board of Directors. The Company generally views and values diversity from the perspective of professional and life experiences, as well as geographic location, representative of the markets in which we do business. The Company recognizes that diversity in professional and life experiences may include consideration of gender, race, cultural background or national origin, in identifying individuals who possess the qualifications that the Nominating Committee believes are important to be represented on the Board. The Company believes that the inclusion of diversity as one of many factors considered in selecting director nominees is consistent with the Company's goal of creating a board of directors that best serves our needs and those of our shareholders.

Stockholder Nominees

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 Company's 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 is 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 Company's Bylaws, the Chairman of the Meeting shall declare the nomination defective and it will be disregarded.

BOARD LEADERSHIP STRUCTURE

We continue to 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 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 such 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. Members of the Audit Committee are Mark A. Zwecker (Chairperson), Joseph T. Grumski and Larry M. Shelton.

Our Board has determined that each of our Audit Committee members is 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 applicable NASDAQ rules. Dr. Centofanti is not deemed to be an "independent director" because of his employment as an executive officer of the Company.

COMPENSATION AND STOCK OPTION COMMITTEE

The Compensation and Stock Option Committee (the "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 2022. Members of the Compensation Committee during 2022 were Joseph T. Grumski (Chairperson), Zach P. Wamp and Mark A. Zwecker. None of the members of the Compensation Committee has been or is an officer or employee of the Company or has had or has any relationship with the Company requiring disclosure under applicable Commission regulations.

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 identification of potential new business opportunities. The members of the Strategic Advisory Committee are Dr. Louis Centofanti (Chairperson), Kerry C. Duggan, Joe R. Reeder and Mark A. Zwecker.

The Board has adopted a written charter for each of the Audit Committee, the Compensation Committee, the Nominating Committee, and the Strategic Advisory Committee, each of which is available on our website at <https://ir.perma-fix.com/governance-docs>.

EXECUTIVE OFFICERS OF THE REGISTRANT

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

NAME	AGE	POSITION
Mr. Mark Duff	60	President and CEO
Mr. Ben Naccarato	60	CFO, EVP, and Secretary
Dr. Louis Centofanti	79	EVP of Strategic Initiatives
Mr. Andrew Lombardo	63	EVP of Nuclear and Technical Services
Mr. Richard Grondin	64	EVP of Waste Treatment Operations

Mr. Mark Duff

Mr. Mark Duff has held the position of President and CEO of the Company since September 2017. Since joining the Company in 2016, Mr. Duff has developed and implemented strategies to meet aggressive growth objectives in both the Treatment and Services Segments. In the Treatment Segment, he continues to upgrade each facility to increase efficiency and modernize treatment capabilities to meet the changing markets associated with the waste management industry. This growth includes expansion into additional market sectors including development of new clients in the commercial power and oil and gas industries. In the Services Segment, which encompasses all field operations, he has completed the revitalization of business development programs, which has resulted in increased competitive procurement effectiveness and broadened the market penetration within both the commercial and government sectors. Within the Services Segment, Mr. Duff has established a team of professionals with experience in conducting safe and efficient field operations while addressing complex technical challenges associated with removal of radioactive and hazardous contamination. Mr. Duff has over 38 years of management and technical experience in the DOE and DOD environmental and construction markets as a corporate officer, senior project manager, co-founder of a consulting firm, and federal employee. 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 Company's CFO since February 2009. Mr. Naccarato joined the Company in September 2004, holding the positions of Vice President of Finance for the Company's Industrial Segment until May 2006, when he was named Vice President, Corporate Controller/Treasurer. Mr. Naccarato has over 34 years of experience in senior financial positions in the waste management and used oil industries. Mr. Naccarato was the CFO of a privately held company in the fuel distribution and used waste oil industry from 2002 to 2004 and prior to that served in numerous senior financial roles in the waste management industry in both the US and Canada. Mr. Naccarato is a graduate of the University of Toronto with a Bachelor of Commerce and Finance Degree and is a Chartered Professional Accountant, Certified Management Accountant (CPA, CMA).

Since March 2021, Mr. Naccarato has served as an independent director and as a member of both the Audit Committee and the Compensation Committee of PyroGenesis Canada, Inc., a high-tech company involved in the design, development, manufacture and commercialization of advanced plasma processes and products and whose stock is listed for trading on the Toronto Stock Exchange and the NASDAQ Stock Exchange under the trading symbol "PYR."

Dr. Louis Centofanti

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

Mr. Andrew ("Andy") Lombardo

Mr. Lombardo has held the position of EVP of Nuclear and Technical Services since January 2020. Since joining the Company in 2011, Mr. Lombardo has held various positions within the Company's Services Segment, including SVP of Nuclear and Technical Services.

Mr. Lombardo, a Certified Health Physicist ("CHP"), has over 40 years of management and technical experience in the commercial nuclear reactor market, and the DOE and DOD environmental and construction markets as a senior director, senior project manager, senior CHP and chemist. Prior to joining the Company, Mr. Lombardo held the position of Vice President of Technical Services for Safety and Ecology Corporation ("SEC"), a subsidiary of Homeland Security Capital Corporation, a publicly traded environmental services company, prior to the acquisition of SEC by the Company in 2011. In his positions with both the Company and SEC, Mr. Lombardo procured and performed greater than \$30 million a year in health physics and radioactive material management projects across the DOE and DOD complex while managing a professional staff of engineers and health physicists and an instrumentation laboratory. Among his many accomplishments, Mr. Lombardo has developed an expertise characterizing and managing naturally occurring radioactive material ("NORM") and technologically enhanced NORM ("TENORM") waste streams across multiple industries including oil and gas exploration and production. As a result of his expertise, he was appointed to a scientific committee of the National Council on Radiation Protection and Measurement to provide a commentary on the generation and disposal of TENORM waste. Mr. Lombardo began his career as a chemist and health physicist for the Duquesne Light Company at two commercial reactor sites and one joint DOE/Naval Reactors Duquesne Light test reactor in Shippingport, PA. Mr. Lombardo is certified in comprehensive practice of health physics, and has a M.S. degree in Health Physics from the University of Pittsburgh and a B.S. in Natural Sciences from Indiana University of Pennsylvania.

Mr. Richard Grondin

Mr. Grondin has held the position of EVP of Waste Treatment Operations since July 2020. Since joining the Company in 2002, Mr. Grondin has held various positions within the Company's Treatment Segment, including Vice President of Technical Services, Vice President/General Manager of the Perma-Fix Northwest Richland, Inc. Facility and Vice President of Western Operations. Mr. Grondin, a Project Management Professional, has over 35 years of management and technical experience in the highly regulated and specialized radioactive/hazardous waste management industry with the majority of his experience concentrated on managing start-up waste management processing and disposal facilities for four different organizations in the commercial and government sectors. Prior to joining the Company, Mr. Grondin held the position of Vice President of Mixed Waste Operations for Allied Technology Group in Richland, Washington; Vice President of Operations for Waste Control Specialists in Andrews Texas; and Technical Manager/Director of Operations for Rollins Environmental Services Facility in Deer Trail, Colorado. Mr. Grondin is recognized in the United States and Canada as an authority in hazardous and mixed waste treatment. Mr. Grondin has a Diploma of Collegial Studies in Pure and Applied Sciences from CEGEP of Amiante (Theftord-Mines, Canada) and Analytical Chemistry Techniques from CEGEP of Ahuntsic (Montreal, Canada), a Geography minor from Montreal University (Montreal, Canada) and a Certificate of Business Management from the School of Higher Commercial Studies from Montreal University (Montreal, Canada).

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 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 2022 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).

Schelhammer Capital Bank AG, a banking institution regulated by the banking regulations of Austria, has represented to the Company that as of February 1, 2023, it holds of record as a nominee for, and as an agent of, certain accredited investors, 1,897,794 shares of our Common Stock. Schelhammer Capital Bank AG has also represented to the Company that none of the investors, individually or as a group, as the term “group” is defined under Rule 13d-5(b) of the Exchange Act, beneficially owns more than 4.9% of our Common Stock. Additionally, the investors for whom Schelhammer Capital Bank AG acts as nominee with respect to such shares maintain full voting and dispositive power over the Common Stock beneficially owned by such investors, and Schelhammer Capital Bank AG has neither voting nor investment power over such shares. Accordingly, Schelhammer Capital Bank AG 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 Schelhammer Capital Bank AG’s name because (a) Schelhammer Capital Bank AG holds the Common Stock as a nominee only, (b) Schelhammer Capital Bank AG has neither voting nor investment power over such shares, and (c) Schelhammer Capital Bank AG 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 Schelhammer Capital Bank AG.

If the representations of, or information provided by Schelhammer Capital Bank AG, are incorrect or Schelhammer Capital Bank AG was historically acting on behalf of its investors as a group, rather than on behalf of each investor independent of other investors, then Schelhammer Capital Bank AG 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 on such date of 1,100 shares of our Preferred Stock that were convertible into a maximum of 256,560 shares of our Common Stock. If either Schelhammer Capital Bank AG or a group of Schelhammer Capital Bank AG’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 Schelhammer Capital Bank AG 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 Matters – Security Ownership of Certain Beneficial Owners” for a discussion of Schelhammer Capital Bank AG’s current record ownership of our securities).

Code of Ethics

Our Code of Business Conduct and Ethics (“Code of Ethics”), which applies to our Board and all our employees, including our CEO and our senior financial officers, complies with applicable SEC rules and Nasdaq listing standards, and is available on our website at <https://ir.perma-fix.com/governance-docs>. The provisions of the Code of Ethics that apply to the CEO and our senior financial officers, including our CFO and our chief accounting officer, complies with the requirements imposed by the Sarbanes-Oxley Act of 2002 and the rules issued thereunder for codes of ethics applicable to such officers. 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, that are applicable to our CEO and our senior financial 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 of the Company's named executive officers ("NEOs") for the fiscal years ended December 31, 2022 and 2021.

Name and Principal Position	Year	Salary (\$)	Bonus (\$)	Option Awards (\$) ⁽¹⁾	Non-Equity Incentive Plan Compensation (\$)	All other Compensation (\$) ⁽²⁾	Total Compensation (\$)
Mark Duff President and CEO	2022	374,870	–	–	–	41,270	416,140
	2021	350,341	–	175,518	–	37,121	562,980
Ben Naccarato EVP and CFO	2022	304,772	–	–	–	51,484	356,256
	2021	284,830	–	87,759	–	45,440	418,029
Dr. Louis Centofanti EVP of Strategic Initiatives	2022	253,980	–	–	–	38,776	292,756
	2021	237,361	–	70,207	–	35,836	343,404
Andy Lombardo EVP of Nuclear & Technical Services	2022	304,772	–	–	–	15,088	319,860
	2021	284,830	–	87,759	–	15,500	388,089
Richard Grondin EVP of Waste Treatment Operations	2022	261,233	–	–	–	38,240	299,473
	2021	244,140	–	87,759	–	33,943	365,842

(1) 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 "Part II – Item 8 – Financial Statements and Supplementary Data – Notes to Consolidated Financial Statements - Note 6 – Capital Stock, Stock Plans, Warrants and Stock Based Compensation."

(2) The amount shown includes a monthly automobile allowance, insurance premiums (health, disability and life) paid by the Company on behalf of the NEO, and 401(k) matching contributions.

Name	Insurance Premium	Auto Allowance	401(k) match	Total
Mark Duff	\$ 25,770	\$ 9,000	\$ 6,500	\$ 41,270
Ben Naccarato	\$ 35,734	\$ 9,000	\$ 6,750	\$ 51,484
Dr. Louis Centofanti	\$ 24,705	\$ 9,000	\$ 5,071	\$ 38,776
Andy Lombardo	\$ –	\$ 9,000	\$ 6,088	\$ 15,088
Richard Grondin	\$ 24,705	\$ 6,785	\$ 6,750	\$ 38,240

Pay Versus Performance Table

As required by Section 953(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Item 402(v) of Regulation S-K, we are providing the following information about the relationship between executive compensation actually paid and certain financial performance of the Company.

Year	Summary Compensation Table (SCT) Total for Principal Executive Officer (PEO) ⁽¹⁾	Compensation Actually Paid to PEO ⁽²⁾	Average Summary Compensation Table Total for Non-PEO NEOs ⁽³⁾	Average Compensation Actually Paid to Non-PEO NEOs ⁽⁴⁾	Value of Initial Fixed \$100 Investment Based On Total Shareholder Return ⁽⁵⁾	Net (loss) income ⁽⁶⁾
(a)	(b)	(c)	(d)	(e)	(f)	(g)
2022	\$ 416,140	\$ 276,985	\$ 317,086	\$ 250,745	\$ 59	\$ (3,816,000)
2021	\$ 562,980	\$ 526,242	\$ 378,841	\$ 364,503	\$ 106	\$ 671,000

(1) Reflect amount for Mark Duff, President and CEO for each corresponding year in the "Total Compensation" column of the Summary Compensation Table above.

(2) The dollar amounts reported in column (c) represent the amount of "compensation actually paid" to Mr. Duff, as computed in accordance with Item 402(v) of Regulation S-K. The dollar amounts do not reflect the actual amount of compensation earned by or paid to Mr. Duff during the applicable year. In accordance with the requirements of Item 402(v) of Regulation S-K, the following adjustments were made to Mr. Duff's total compensation for each year to determine the compensation actually paid:

Year	Reported Summary Compensation Table Total for PEO (\$)	Reported Value of Equity Awards (a) (\$)	Equity Award Adjustments (b) (\$)	Compensation Actually Paid to PEO (\$)
2022	\$ 416,140	\$ -	\$ (139,155)	\$ 276,985
2021	\$ 562,980	\$ (175,518)	\$ 138,780	\$ 526,242

(a) The grant date fair value of equity awards represents the total of the amounts reported in the "Option Awards" column in the Summary Compensation Table for the applicable year.

(b) The equity award adjustments for each applicable year include the addition (or subtraction, as applicable) of the following: (i) the year-end fair value of any equity awards granted in the applicable year that are outstanding and unvested as of the end of the year; (ii) the amount of change as of the end of the applicable year (from the end of the prior fiscal year) in fair value of any awards granted in prior years that are outstanding and unvested as of the end of the applicable year; (iii) for awards that are granted and vest in same applicable year, the fair value as of the vesting date; (iv) for awards granted in prior years that vest in the applicable year, the amount equal to the change as of the vesting date (from the end of the prior fiscal year) in fair value; (v) for awards granted in prior years that are determined to fail to meet the applicable vesting conditions during the applicable year, a deduction for the amount equal to the fair value at the end of the prior fiscal year; and (vi) the dollar value of any dividends or other earnings paid on stock or option awards in the applicable year prior to the vesting date that are not otherwise reflected in the fair value of such award or included in any other component of total compensation for the applicable year. The valuation assumptions used to calculate fair values did not materially differ from those disclosed at the time of grant. The amounts deducted or added in calculating the equity award adjustments are as follows:

Year	Year End Fair Value of Outstanding and Unvested Equity Awards Granted in the Year (\$)	Year over Year Change in Fair Value of Outstanding and Unvested Equity Award Granted in Prior Years (\$)	Fair Value as of Vesting Date of Equity Awards Granted and Vested in the Year (\$)	Year over Year Change in Fair Value of Equity Award Granted in Prior Years that Vested in the Year (\$)	Fair Value at the End of the Prior Year of Equity Awards that Failed to Meet Vesting Conditions in the Year (\$)	Value of Dividends or other Earnings Paid on Stock or Option Awards not Otherwise Reflected in Fair Value or Total Compensation (\$)	Total Equity Award Adjustments (\$)
2022	\$ -	\$ (99,870)	\$ -	\$ (39,285)	\$ -	\$ -	\$ (139,155)
2021	\$ 147,050	\$ (3,860)	\$ -	\$ (4,410)	\$ -	\$ -	\$ 138,780

(3) Reflect the average of the amounts reported for the Company's NEO as a group (excluding Mr. Duff) in the "Total Compensation" column of the Summary Compensation Table in each applicable year. The names of each of the NEOs (excluding Mr. Duff) included for purposes of calculating the average amounts in each applicable year were Ben Naccarato, CFO; Dr. Louis Centofanti, EVP of Strategic Initiatives; Andy Lombardo, EVP of Nuclear and Technical Services; and Richard Grondin, EVP of Waste Treatment Operations.

(4) The dollar amounts reported in column (e) represent the average amount of “compensation actually paid” to the NEOs as a group (excluding Mr. Duff), as computed in accordance with Item 402(v) of Regulation S-K. The dollar amounts do not reflect the actual average amount of compensation earned by or paid to NEOs as a group (excluding Mr. Duff) during the applicable year. In accordance with the requirements of Item 402(v) of Regulation S-K, the following adjustments were made to average total compensation for the NEOs as a group (excluding Mr. Duff) for each year to determine the compensation actually paid, using the same methodology described in Note (2):

Year	Average Reported Summary Compensation Table	Average Reported Value of Equity Awards (\$)	Average Equity Award Adjustments (a) (\$)	Average Compensation Actually Paid to Non-PEO NEOs (\$)
	Total for Non-PEO NEOs (\$)			
2022	\$ 317,086	\$ -	\$ (66,341)	\$ 250,745
2021	\$ 378,841	\$ (83,371)	\$ 69,033	\$ 364,503

(a) The amount deducted or added in calculating the total average equity adjustments are as follows:

Year	Average Year End Fair Value of Outstanding and Unvested Equity Awards Granted in the Year (\$)	Average Year over Year Change in Fair Value of Outstanding and Unvested Equity Award Granted in Prior Years (\$)	Average Fair Value as of Vesting Date of Equity Awards Granted and Vested in the Year (\$)	Average Year over Year Change in Fair Value of Equity Award Granted in Prior Years that Vested in the Year (\$)	Fair Value at the Average End of the Prior Year of Equity Awards that Failed to Meet Vesting Conditions in the Year (\$)	Average Value of Dividends or other Earnings Paid on Stock or Option Awards not Otherwise Reflected in Fair Value of Total Compensation (\$)	Average Total Equity Award Adjustments (\$)
2022	\$ -	\$ (48,134)	\$ -	\$ (18,207)	\$ -	\$ -	\$ (66,341)
2021	\$ 69,849	\$ (1,127)	\$ -	\$ 311	\$ -	\$ -	\$ 69,033

(5) Cumulative TSR is calculated by dividing the sum of the cumulative amount of dividends (which is none for the Company) for the measurement period, assuming dividend reinvestment, and the difference between our share price at the end and the beginning of the measurement period by our share price at the beginning of the measurement period.

(6) The dollar amounts reported represent the amount of net (loss) income reflected in our consolidated audited financial statements for the applicable year.

All information provided in the “Pay Versus Performance” table above and the related disclosures will not be deemed to be incorporated by reference in any of our filings under the Securities Act of 1933, as amended, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.

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, 2022

Name	Option Awards				
	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) ⁽¹⁾ Unexercisable	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price (\$)	Option Expiration Date
Mark Duff	100,000 ⁽²⁾	— ⁽²⁾	—	3.650	7/27/2023
	15,000 ⁽³⁾	10,000 ⁽³⁾	—	3.150	1/17/2025
	10,000 ⁽⁵⁾	40,000 ⁽⁵⁾	—	7.005	10/14/2027
Ben Naccarato	50,000 ⁽²⁾	— ⁽²⁾	—	3.650	7/27/2023
	9,000 ⁽³⁾	6,000 ⁽³⁾	—	3.150	1/17/2025
	5,000 ⁽⁵⁾	20,000 ⁽⁵⁾	—	7.005	10/14/2027
Dr. Louis Centofanti	50,000 ⁽²⁾	— ⁽²⁾	—	3.650	7/27/2023
	9,000 ⁽³⁾	6,000 ⁽³⁾	—	3.150	1/17/2025
	4,000 ⁽⁵⁾	16,000 ⁽⁵⁾	—	7.005	10/14/2027
Andy Lombardo	12,000 ⁽⁴⁾	— ⁽⁴⁾	—	3.600	10/19/2023
	4,000 ⁽³⁾	4,000 ⁽³⁾	—	3.150	1/17/2025
	5,000 ⁽⁵⁾	20,000 ⁽⁵⁾	—	7.005	10/14/2027
Richard Grondin	20,000 ⁽⁴⁾	— ⁽⁴⁾	—	3.600	10/19/2023
	6,000 ⁽³⁾	4,000 ⁽³⁾	—	3.150	1/17/2025
	5,000 ⁽⁵⁾	20,000 ⁽⁵⁾	—	7.005	10/14/2027

⁽¹⁾ Pursuant to each of the employment agreements between the Company and, respectively, Mark Duff, Ben Naccarato, Dr. Louis Centofanti, Andy Lombardo, and Richard Grondin, each dated July 22, 2020, 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 events pursuant to which accelerated exercise of the respective NEO's outstanding options can arise).

⁽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 January 17, 2019 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.

⁽⁴⁾ Incentive stock option granted on October 19, 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.

⁽⁵⁾ Incentive stock option granted on October 14, 2021 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.

Option Exercises

The table below reflects options exercised by our NEO in 2022.

Name	Number of Shares Acquired on Exercise (#) ⁽¹⁾	Value Realized on Exercise (\$) ⁽²⁾
Mark Duff	16,526	\$ 98,000

⁽¹⁾ On May 9, 2022, Mr. Duff exercised 100% of an ISO granted to him on May 15, 2016 under the Company's 2010 Stock Option Plan for the purchase of up to 50,000 shares of the Company's Common Stock at \$3.97 per share. As permitted by the 2010 Stock Option Plan, Mr. Duff elected to pay the exercise price of the Option Shares by having the Company withhold from the Option Shares a number of shares having a fair market value equal to the aggregate exercise price of \$198,500. Since the fair market value of the Company's Common Stock on May 9, 2022 (as determined in accordance with the 2010 Stock Option Plan) was \$5.93 per share, the Company withheld 33,474 shares of Common Stock (\$198,500 divided by \$5.93) to pay the aggregate exercise price of the option and issued 16,526 shares to Mr. Duff.

⁽²⁾ Realized value determined based on the difference between the (a) exercise price (\$3.97) per share of the Option Shares multiplied by the 50,000 Option Shares exercised, and (b) the market value (\$5.93) on the date of exercise of the Option Shares times the 50,000 Option Shares exercised.

Employment Agreements

Each of the NEOs entered into an employment agreement with the Company dated July 22, 2020 (each, an “Employment Agreement” and, collectively, the “Employment Agreements”). Each of the Employment Agreements, which are substantially identical, provides for a specified annual base salary, which annual salary may be increased from time to time, but not reduced, as determined by the Compensation Committee. In addition, each of the NEOs is entitled to participate in the Company’s broad-based benefits plans and to certain performance compensation payable under separate Management Incentive Plans (“MIPs”) as approved by the Company’s Compensation Committee and Board. The Company’s Compensation Committee and the Board approved individual 2022 MIPs on January 20, 2022 (which were effective January 1, 2022 and applicable for the 2022 fiscal year) for each of the executive officers (see discussion of each of the 2022 MIPs below under “2022 MIPs”).

Each of the Employment Agreements is effective for three years from July 22, 2020 (the “Initial Term”) unless earlier terminated by the Company or by the respective NEO. 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, the Company or the respective NEO provides written notice not to extend the terms of the Employment Agreement.

Each of the Employment Agreements provides that, if an NEO’s employment is terminated due to death/disability or for cause (as defined in the agreements), the Company will pay to the NEO 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 NEO under any employee benefit plan (the “Accrued Amounts”) and any performance compensation payable pursuant to the MIP applicable to such NEO.

If the NEO 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 agreements)), the Company will pay the NEO the Accrued Amounts, (a) two years of full base salary, plus (b) (i) two times the performance compensation (under the NEO’s MIP) earned with respect to the fiscal year immediately preceding the date of termination provided the performance compensation earned with respect to the fiscal year immediately preceding the date of termination has not yet been paid, or (ii) if performance compensation earned with respect to the fiscal year immediately preceding the date of termination has already been paid to the NEO, the NEO will be paid an additional year of the performance compensation earned with respect to the fiscal year immediately preceding the date of termination. If the NEO 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 applicable to such NEO.

If there is a Change in Control (as defined in the agreements), all outstanding stock options to purchase the common stock held by the NEO 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 NEO, all outstanding stock options to purchase common stock held by the NEO 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 NEO’s death. In the event an NEO 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 NEO 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 NEO’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 Upon Termination or Change in Control

The following table sets forth the potential (estimated) payments and benefits to which each NEO would be entitled upon termination of employment by the NEO for “good reason” or by the Company “without cause,” or following a Change in Control of the Company, as specified under each of their respective Employment Agreements with the Company, assuming each circumstance described below occurred on December 31, 2022, the last day of our most recent fiscal year. Such potential payments include any Accrued Amounts (accrued base salary earned for 2022 but paid in 2023, as well as accrued unused vacation/sick time and other vested benefits under the Company plans in which he participates). The NEO is not entitled to payment of any benefits upon termination for cause or resignation without good reason other than for Accrued Amounts.

Name and Principal Position Potential Payment/Benefit		By Executive for Good Reason or by Company Without Cause	Change in Control of the Company
Mark Duff			
President and CEO			
Base salary and Accrued Amounts	\$	773,867 ⁽¹⁾	\$ 773,867 ⁽¹⁾
Performance compensation	\$	— ⁽²⁾	\$ — ⁽²⁾
Stock Options	\$	9,500 ⁽³⁾	\$ 9,500 ⁽³⁾
Ben Naccarato			
EVP and CFO			
Base salary and Accrued Amounts	\$	668,286 ⁽¹⁾	\$ 668,286 ⁽¹⁾
Performance compensation	\$	— ⁽²⁾	\$ — ⁽²⁾
Stock Options	\$	5,700 ⁽³⁾	\$ 5,700 ⁽³⁾
Dr. Louis Centofanti			
EVP of Strategic Initiatives			
Base salary and Accrued Amounts	\$	666,448 ⁽¹⁾	\$ 666,448 ⁽¹⁾
Performance compensation	\$	— ⁽²⁾	\$ — ⁽²⁾
Stock Options	\$	5,700 ⁽³⁾	\$ 5,700 ⁽³⁾
Andy Lombardo			
EVP of Nuclear and Technical Services			
Base salary and Accrued Amounts	\$	624,667 ⁽¹⁾	\$ 624,667 ⁽¹⁾
Performance compensation	\$	— ⁽²⁾	\$ — ⁽²⁾
Stock Options	\$	3,040 ⁽³⁾	\$ 3,040 ⁽³⁾
Richard Grondin			
EVP of Waste Treatment Operations			
Base salary and Accrued Amounts	\$	615,343 ⁽¹⁾	\$ 615,343 ⁽¹⁾
Performance compensation	\$	— ⁽²⁾	\$ — ⁽²⁾
Stock Options	\$	3,800 ⁽³⁾	\$ 3,800 ⁽³⁾

(1) Represents two times the base salary of the NEO at December 31, 2022 plus “Accrued Amounts.”

(2) Represents two times the performance compensation earned for fiscal year 2022 which was \$0 (see “2022 MIPs” below).

(3) Benefit is calculated based on the difference between the exercise price of each option and the market value of the Company’s Common Stock per share (as reported on the NASDAQ) at December 31, 2022 times the number of options outstanding at December 31, 2022. Benefit excludes options which were out-of-the-money at December 31, 2022.

2022 Executive Compensation Components

For the fiscal year ended December 31, 2022, 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 2022, salary accounted for approximately 89.0% of the total compensation of our NEOs, while equity option awards, MIP compensation, and other compensation accounted for approximately 11.0% of the total compensation of the NEOs.

Base Salary

The NEOs, other officers, and other employees of the Company receive a base annual salary. 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 similar companies within the business segments in which the Company operates.

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

- market data and comparisons to similar companies within the business segments in which the Company operates;
- 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.

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 option 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.

2022 MIPs

On January 20, 2022, the Compensation Committee and the Board approved individual MIPs for the calendar year 2022 for each of the NEOs. Each of the MIPs was effective January 1, 2022.

The performance compensation payable under each MIP was based upon meeting certain of the Company's separate target objectives during 2022 as described in each of the MIPs below. The Compensation Committee believes performance compensation payable under each of the MIPs should be based on achievement of at least 75% of EBITDA (earnings before interest, taxes, depreciation and amortization), a non-GAAP financial measurement, as the Company believes that this target provides a better indicator of operating performance as it excludes certain non-cash items. 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. No performance compensation was earned for each of the target objectives under any of the MIPs for 2022 since a minimum of 75% of the EBITDA target was not achieved.

Certain targets set forth in each of the 2022 MIPs took into account the Board-approved budget for 2022 as well as the Compensation Committee's expectation for performance that in its estimation would warrant payment of incentive cash compensation. In formulating certain targets, the Compensation Committee and the Board considered 2021 results, economic conditions, potential continued impact of COVID-19 and forecasts for 2022 government spending.

Performance compensation, if any, was to be paid on or about 90 days after year-end, or sooner, based on the Company's audited financial statements included in the Company's Form 10-K filed with the SEC. The Compensation Committee retained 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 that was to be paid to the NEOs under the MIPs was not to exceed 50% of the Company's pre-tax net income prior to the calculation of performance compensation.

The following schedules reflect performance compensation that was payable under each of the MIPs, along with a description of the target objectives. As noted above, no performance compensation was earned under any of the MIPs for 2022 since a minimum of 75% of the EBITDA target was not achieved.

CFO MIP:

Annualized Base Pay:	\$	374,870
Performance Incentive Compensation Target (at 100% of Plan):	\$	187,435
Total Annual Target Compensation (at 100% of Plan):	\$	<u>562,305</u>

Perma-Fix Environmental Services, Inc.
2022 Management Incentive Plan
CEO MIP MATRIX

Target Objectives	Performance Target Achieved				
	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue (1) (6)	\$ 9,372	\$ 18,744	\$ 32,132	\$ 45,520	\$ 72,297
EBITDA (2)	56,229	112,461	192,790	273,120	433,778
Health & Safety (3) (6)	14,058	28,115	28,115	28,115	28,115
Permit & License Violations (4) (6)	14,058	28,115	28,115	28,115	28,115
	<u>\$ 93,717</u>	<u>\$ 187,435</u>	<u>\$ 281,152</u>	<u>\$ 374,870</u>	<u>\$ 562,305</u>

CFO MIP:

Annualized Base Pay:	\$	304,772
Performance Incentive Compensation Target (at 100% of Plan):	\$	152,386
Total Annual Target Compensation (at 100% of Plan):	\$	<u>457,158</u>

Perma-Fix Environmental Services, Inc.
2022 Management Incentive Plan
CFO MIP MATRIX

Target Objectives	Performance Target Achieved				
	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue (1) (6)	\$ 7,619	\$ 15,239	\$ 25,035	\$ 33,743	\$ 40,273
EBITDA (2)	57,146	114,289	150,209	202,455	241,641
Health & Safety (3) (6)	5,714	11,429	11,429	11,429	11,429
Permit & License Violations (4) (6)	5,714	11,429	11,429	11,429	11,429
	<u>\$ 76,193</u>	<u>\$ 152,386</u>	<u>\$ 198,102</u>	<u>\$ 259,056</u>	<u>\$ 304,772</u>

EVP of Strategic Initiatives MIP:

Annualized Base Pay:	\$	253,980
Performance Incentive Compensation Target (at 100% of Plan):	\$	126,990
Total Annual Target Compensation (at 100% of Plan):	\$	<u>380,970</u>

Perma-Fix Environmental Services, Inc.
2022 Management Incentive Plan
EVP OF STRATEGIC INITIATIVES MIP MATRIX

Target Objectives	Performance Target Achieved				
	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue (1) (6)	\$ 6,350	\$ 12,699	\$ 20,863	\$ 28,119	\$ 33,562
EBITDA (2)	47,621	95,243	125,176	168,716	201,370
Health & Safety (3) (6)	4,762	9,524	9,524	9,524	9,524
Permit & License Violations (4) (6)	4,762	9,524	9,524	9,524	9,524
	<u>\$ 63,495</u>	<u>\$ 126,990</u>	<u>\$ 165,087</u>	<u>\$ 215,883</u>	<u>\$ 253,980</u>

EVP of Waste Treatment Operations MIP:

Annualized Base Pay:	\$ 261,233
Performance Incentive Compensation Target (at 100% of Plan):	\$ 130,617
Total Annual Target Compensation (at 100% of Plan):	<u>\$ 391,850</u>

Perma-Fix Environmental Services, Inc.
2022 Management Incentive Plan
EVP OF WASTE TREATMENT OPERATIONS MIP MATRIX

Target Objectives	Performance Target Achieved				
	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue (1) (6)	\$6,531	\$ 13,062	\$ 18,660	\$ 26,123	\$ 31,721
EBITDA (2)	39,185	78,371	111,958	156,741	190,328
Health & Safety (3) (6)	9,796	19,592	19,592	19,592	19,592
Permit & License Violations (4) (6)	9,796	19,592	19,592	19,592	19,592
	<u>\$65,308</u>	<u>\$ 130,617</u>	<u>\$ 169,802</u>	<u>\$ 222,048</u>	<u>\$ 261,233</u>

EVP of Nuclear and Technical Services MIP:

Annualized Base Pay:	\$ 304,772
Performance Incentive Compensation Target (at 100% of Plan):	\$ 152,386
Total Annual Target Compensation (at 100% of Plan):	<u>\$ 457,158</u>

Perma-Fix Environmental Services, Inc.
2022 Management Incentive Plan
EVP OF NUCLEAR & TECHNICAL SERVICES MIP MATRIX

Target Objectives	Performance Target Achieved				
	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue (1) (6)	\$ 7,619	\$ 15,239	\$ 21,769	\$ 30,477	\$ 37,008
EBITDA (2)	45,716	91,431	130,617	182,863	222,048
Health & Safety (3) (6)	11,429	22,858	22,858	22,858	22,858
Cost Performance Incentive (5) (6)	11,429	22,858	22,858	22,858	22,858
	<u>\$ 76,193</u>	<u>\$ 152,386</u>	<u>\$ 198,102</u>	<u>\$ 259,056</u>	<u>\$ 304,772</u>

(1) Revenue was defined as the total consolidated third-party top line revenue as publicly reported in the Company's 2022 financial statements. The percentage achieved was determined by comparing the actual consolidated revenue for 2022 to the Board approved Revenue target for 2022.

(2) EBITDA was defined as earnings before interest, taxes, depreciation, and amortization from continuing and discontinued operations. The percentage achieved was determined by comparing the actual EBITDA to the Board approved EBITDA target for 2022.

(3) The Health and Safety Incentive target was based upon the actual number of Worker's Compensation Lost Time Accidents in the Company's Services Segment, 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 2022.

Work Comp. Claim Number	Performance Target Achieved
3	75%-89%
2	90%-110%
1	111%-129%
1	130%-150%
1	>150%

(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 2022 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) which included a material financial obligation, as determined by the Company's Board of Directors in their sole discretion, to the Company.

Permit and License Violations	Performance Target Achieved
3	75%-89%
2	90%-110%
1	111%-129%
1	130%-150%
1	>150%

(5) CPI incentive was earned/determined by maintaining project performance metrics for all Firm Fixed Price task orders and projects to include monitoring CPI based on recognized earned value calculations. As defined through monthly project reviews, all CPI metrics should exceed 1.0 for Nuclear Services Projects. A cumulative CPI (CCPI) was calculated from all fixed cost contracts. The following CCPI and corresponding performance target thresholds were established for annual incentive compensation plan calculation for 2022.

CPI (if CCPI is)	Performance Target Achieved
\$0.75-0.89	75%-89%
0.90-1.10	90%-110%
1.11-1.29	111%-129%
1.30-1.50	130%-150%
>1.50	>150%

(6) No performance incentive compensation was payable for the target objective unless a minimum of 75% of the EBITDA target objective is achieved.

2023 MIPs

On January 19, 2023, the Compensation Committee and the Board approved individual MIPs for the calendar year 2023 for each of the NEOs. Each of the MIPs is effective January 1, 2023.

The performance compensation payable under each MIP is based upon meeting certain of the Company's separate target objectives during 2023 as described in each of the MIPs below, provided, however, no performance compensation will be paid for attaining any of the Company's separate target objectives unless a minimum of 75% of the EBITDA target objective is achieved.

Certain targets set forth in each of the 2023 MIPs take into account the Board-approved budget for 2023 as well as the Compensation Committee's expectation for performance that in its estimation would warrant payment of incentive cash compensation. In formulating certain targets, the Compensation Committee and the Board considered 2022 results, economic conditions, potential continued impact of COVID-19 and forecasts for 2023 government spending.

Performance compensation amounts under the 2023 MIPs are to be paid on or about 90 days after year-end, or sooner, based on finalization of our audited financial statements for 2023.

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 to be paid to the NEOs under the MIPs shall not exceed 50% of the Company's pre-tax net income prior to the calculation of performance compensation.

The following schedules reflect performance compensation payable under each of the MIPs, along with a description of the target objectives.

CEO MIP:

Annualized Base Pay:	\$	374,870
Performance Incentive Compensation Target (at 100% of Plan):	\$	187,435
Total Annual Target Compensation (at 100% of Plan):	\$	562,305

Perma-Fix Environmental Services, Inc.
2023 Management Incentive Plan
CEO MIP MATRIX

Target Objectives	Performance Target Achieved				
	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue (1) (6)	\$ 9,372	\$ 18,744	\$ 32,132	\$ 45,520	\$ 72,297
EBITDA (2)	56,229	112,461	192,790	273,120	433,778
Health & Safety (3) (6)	14,058	28,115	28,115	28,115	28,115
Permit & License Violations (4) (6)	14,058	28,115	28,115	28,115	28,115
	<u>\$ 93,717</u>	<u>\$ 187,435</u>	<u>\$ 281,152</u>	<u>\$ 374,870</u>	<u>\$ 562,305</u>

CFO MIP:

Annualized Base Pay:	\$ 304,772
Performance Incentive Compensation Target (at 100% of Plan):	\$ 152,386
Total Annual Target Compensation (at 100% of Plan):	<u>\$ 457,158</u>

Perma-Fix Environmental Services, Inc.
2023 Management Incentive Plan
CFO MIP MATRIX

Target Objectives	Performance Target Achieved				
	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue (1) (6)	\$ 7,619	\$ 15,239	\$ 25,035	\$ 33,743	\$ 40,273
EBITDA (2)	57,146	114,289	150,209	202,455	241,641
Health & Safety (3) (6)	5,714	11,429	11,429	11,429	11,429
Permit & License Violations (4) (6)	5,714	11,429	11,429	11,429	11,429
	<u>\$ 76,193</u>	<u>\$ 152,386</u>	<u>\$ 198,102</u>	<u>\$ 259,056</u>	<u>\$ 304,772</u>

EVP of Strategic Initiatives MIP:

Annualized Base Pay:	\$ 253,980
Performance Incentive Compensation Target (at 100% of Plan):	\$ 126,990
Total Annual Target Compensation (at 100% of Plan):	<u>\$ 380,970</u>

Perma-Fix Environmental Services, Inc.
2023 Management Incentive Plan
EVP OF STRATEGIC INITIATIVES MIP MATRIX

Target Objectives	Performance Target Achieved				
	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue (1) (6)	\$ 6,350	\$ 12,699	\$ 20,863	\$ 28,119	\$ 33,562
EBITDA (2)	47,621	95,243	125,176	168,716	201,370
Health & Safety (3) (6)	4,762	9,524	9,524	9,524	9,524
Permit & License Violations (4) (6)	4,762	9,524	9,524	9,524	9,524
	<u>\$ 63,495</u>	<u>\$ 126,990</u>	<u>\$ 165,087</u>	<u>\$ 215,883</u>	<u>\$ 253,980</u>

EVP of Waste Treatment Operations MIP:

Annualized Base Pay:	\$	261,233
Performance Incentive Compensation Target (at 100% of Plan):	\$	130,617
Total Annual Target Compensation (at 100% of Plan):	\$	391,850

Perma-Fix Environmental Services, Inc.
2023 Management Incentive Plan
EVP OF WASTE TREATMENT OPERATIONS MIP MATRIX

Target Objectives	Performance Target Achieved				
	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue (1) (6)	\$ 6,531	\$ 13,062	\$ 18,660	\$ 26,123	\$ 31,721
EBITDA (2)	39,185	78,371	111,958	156,741	190,328
Health & Safety (3) (6)	9,796	19,592	19,592	19,592	19,592
Permit & License Violations (4) (6)	9,796	19,592	19,592	19,592	19,592
	\$ 65,308	\$ 130,617	\$ 169,802	\$ 222,048	\$ 261,233

EVP of Nuclear and Technical Services MIP:

Annualized Base Pay:	\$	304,772
Performance Incentive Compensation Target (at 100% of Plan):	\$	152,386
Total Annual Target Compensation (at 100% of Plan):	\$	457,158

Perma-Fix Environmental Services, Inc.
2023 Management Incentive Plan
EVP OF NUCLEAR & TECHNICAL SERVICES MIP MATRIX

Target Objectives	Performance Target Achieved				
	75%-89%	90%-110%	111%-129%	130%-150%	>150%
Revenue (1) (6)	\$ 7,619	\$ 15,239	\$ 21,769	\$ 30,477	\$ 37,008
EBITDA (2)	45,716	91,431	130,617	182,863	222,048
Health & Safety (3) (6)	11,429	22,858	22,858	22,858	22,858
Cost Performance Incentive (5) (6)	11,429	22,858	22,858	22,858	22,858
	\$ 76,193	\$ 152,386	\$ 198,102	\$ 259,056	\$ 304,772

(1) Revenue is defined as the total consolidated third-party top line revenue as publicly reported in the Company's 2023 financial statements. The percentage achieved is determined by comparing the actual consolidated revenue for 2023 to the Board approved Revenue target for 2023.

(2) EBITDA is defined as earnings before interest, taxes, depreciation, and amortization from continuing and discontinued operations. The percentage achieved is determined by comparing the actual EBITDA to the Board approved EBITDA target for 2023.

(3) The Health and Safety Incentive target is based upon the actual number of Worker's Compensation Lost Time Accidents in the Company's Services Segment, 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 2023.

Work Comp. Claim Number	Performance Target Achieved
3	75%-89%
2	90%-110%
1	111%-129%
1	130%-150%
1	>150%

- (4) Permits or License Violations incentive is earned/determined according to the scale set forth below: An "official notice of non-compliance" is defined as an official communication during 2023 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 results in a facility's implementation of corrective action(s) which includes a material financial obligation, as determined by the Company's Board of Directors in their sole discretion, to the Company.

Permit and License Violations	Performance Target Achieved
3	75%-89%
2	90%-110%
1	111%-129%
1	130%-150%
1	>150%

- (5) CPI incentive is earned/determined by maintaining project performance metrics for all Firm Fixed Price task orders and projects to include monitoring CPI based on recognized earned value calculations. As defined through monthly project reviews, all CPI metrics should exceed 1.0 for Nuclear Services Projects. A cumulative CPI (CCPI) will be calculated from all fixed cost contracts. The following CCPI and corresponding performance target thresholds have been established for annual incentive compensation plan calculation for 2023.

CPI (if CCPI is)	Performance Target Achieved
0.75-0.89	75%-89%
0.90-1.10	90%-110%
1.11-1.29	111%-129%
1.30-1.50	130%-150%
>1.50	>150%

- (6) No performance incentive compensation will be payable for the target objective unless a minimum of 75% of the EBITDA target objective is achieved.

Long-Term Incentive Compensation

Employee Stock Option Plans

The 2017 Stock Option Plan ("2017 Option Plan") encourages 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 2017 Option Plan authorizes the grant of NQSOs and ISOs for the purchase of our Common Stock.

The 2017 Option Plan assists 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 the Company 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.

The Company's NEOs have outstanding options from the Company's 2017 Plan (See "Item 11 – Executive Compensation – Outstanding Equity Awards at Fiscal Year-End - Outstanding Equity Awards at December 31, 2022" for outstanding options for each of our NEOs). On January 19, 2023, the Company's Board and Compensation Committee approved ISO for each of the Company's executive officers for the purchase set forth in his respective ISO Agreement, as follows: 70,000 shares for the CEO; 40,000 shares for the CFO; 30,000 shares for the EVP of Strategic Initiatives; 30,000 shares for the EVP of Waste Treatment Operations; and 30,000 shares for the EVP of Nuclear and Technical Services. Each of the ISOs granted has a contractual term of six years with one-fifth yearly vesting over a five-year period. The exercise price of the ISO is \$3.95 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 the exercisability term of these options in each of these circumstances in "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

The Company 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. At our discretion, we may make matching contributions based on the employee's elective contributions. Company contributions vest over a period of five years. In 2022, the Company contributed approximately \$575,000 in 401(k) matching funds, of which approximately \$31,000 was for our NEOs (see the "Summary Compensation" table in this section for 401(k) matching fund contributions made for the NEOs for 2022).

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.

Compensation of Directors

Directors who are employees receive no additional compensation for serving on the Board or its committee(s). In 2022, the Company provided the following annual compensation to each non-employee director and the committee(s) for which he/she serves:

- a quarterly fee of \$11,500;
- an additional quarterly fee of \$8,750 to the Chairman of the Board;
- an additional quarterly fee of \$6,250 to the Chairman of the Audit Committee;
- an additional quarterly fee of \$3,125 to the Chairman of each of the Compensation Committee, the Governance and Nominating Committee, and the Strategic Committee. The Chairman of the Board was not eligible to receive a quarterly fee for serving as the Chairman of any of the aforementioned committees;
- an additional \$1,250 to each Audit Committee member (excluding the Chairman of the Audit Committee);
- an additional quarterly fee of \$500 to each member of the Compensation Committee, the Governance and Nominating Committee, and the Strategic Committee. Such fee was payable only if the member did not also serve as the Chairman of any other standing committees or as the Chairman of the Board; and
- a fee of \$1,000 for each in-person board meeting attended 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, if any, payable in cash.

Each non-employee director was also granted an option to purchase 10,000 shares of Common Stock upon reelection with vesting period of 25% per year, beginning on the first anniversary date of the grant, with each option having a 10-year term.

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 of the Company (see "Summary Compensation" table in this section for Dr. Centofanti's annual salary and other compensation as an employee of the Company).

The table below summarizes the director compensation expenses recognized by the Company for director options and stock awards (resulting from fees earned) for the year ended December 31, 2022. 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 (S)(1)	Stock Awards (S)(2)	Option Awards (S)(4)	Non-Equity Incentive Plan Compensation (S)	Nonqualified Deferred Compensation Earnings (S)	All Other Compensation (S)	Total (S)
Thomas P. Bostick	—	68,664	36,100(3)	—	—	—	104,764
Kerry C. Duggan	18,550	45,935	36,100(3)	—	—	—	100,585
Joseph T. Grumski	—	89,999	36,100(3)	—	—	—	126,099
Joe R. Reeder	—	82,663	36,100(3)	—	—	—	118,763
Larry M. Shelton	31,500	77,999	36,100(3)	—	—	—	145,599
Zach P. Wamp	18,725	46,369	36,100(3)	—	—	—	101,194
Mark A. Zwecker	26,250	65,000	36,100(3)	—	—	—	127,350

(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 director's 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) Reflects options granted under the Company's 2003 Outside Directors Plan resulting from re-election to the Board on July 21, 2022. Options are for a 10-year period with an exercise price of \$5.15 per share and vest 25% per year, beginning on the first anniversary date of the grant. The value of the option award for each outside director is calculated based on the fair value of the option per share (approximately \$3.61) on the date of grant times the number of options granted, which was 10,000 for each director, pursuant to ASC 718, "Compensation – Stock Compensation."

(4) The following table reflects the aggregate number of outstanding NQSO held by the Company's directors at December 31, 2022. 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 Plan as discussed previously:

Name	Options Outstanding at December 31, 2022
Dr. Louis Centofanti	85,000
Thomas P. Bostick	26,000
Kerry C. Duggan	26,000
Joseph T. Grumski	28,400
Joe R. Reeder	39,200
Larry M. Shelton	39,200
Zach P. Wamp	33,200
Mark A. Zwecker	39,200
Total	316,200

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 Plan, each outside director is granted a 10-year NQSO to purchase up to 20,000 shares of Common Stock on the date such director is initially elected to the Board, and receives on each re-election date a NQSO to purchase up to another 10,000 shares of our Common Stock, with the exercise price being the fair market value of the Common Stock preceding the option grant date. Common Stock shares subject to option granted vest at 25% per year, beginning on the first anniversary date of the grant and no option shall be exercisable after the expiration of ten years from the date the option is granted. At December 31, 2022, options to purchase 262,400 shares of Common Stock were outstanding under the 2003 Outside Directors Plan, of which 139,900 were vested at December 31, 2022.

As a member of the Board, each director may elect to receive either 65% or 100% of his 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 2022, the fees earned by our outside directors totaled approximately \$572,000.

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 February 14, 2023 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 ⁽¹⁾
Heartland Advisors, Inc. ⁽²⁾	Common	1,110,500	8.3%

⁽¹⁾ The number of shares and the percentage of outstanding Common Stock shown as beneficially owned by a person are based upon 13,358,075 shares of Common Stock outstanding on February 14, 2023, 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 13D of Heartland Advisors, Inc., an investment advisor, filed with the Commission on January 10, 2023, disclosing that at December 31, 2022, each of Heartland Advisors, Inc., Heartland Holdings, Inc. and Mr. William Nasgovitz, as a control person of Heartland Advisors, Inc., had shared dispositive power over all shares shown above and shared voting power over 1,015,500 of such shares. The address of Heartland Advisors, Inc. is 790 North Water Street, Milwaukee, WI 53202.

Additionally, Schelhammer Capital Bank AG, a banking institution regulated by the banking regulations of Austria, has represented to the Company that as of February 1, 2023, it holds of record as a nominee for, and as an agent of, certain accredited investors, 1,897,794 shares of our Common Stock. None of the Common Stock held by Schelhammer Capital Bank AG for the account of any single investor represents more than 4.9% of our Common Stock and, to the best knowledge of Schelhammer Capital Bank AG, as far as stocks held by such investors in accounts with Schelhammer Capital Bank AG, none of such 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, the investors for whom Schelhammer Capital Bank AG acts as nominee with respect to such shares maintain full voting and dispositive power over the Common Stock beneficially owned by such investors, and Schelhammer Capital Bank AG has neither voting nor investment power over such shares. Accordingly, Schelhammer Capital Bank AG 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 Schelhammer Capital Bank AG's name because (a) Schelhammer Capital Bank AG holds the Common Stock as a nominee only, (b) Schelhammer Capital Bank AG has neither voting nor investment power over such shares, and (c) Schelhammer Capital Bank AG 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 Schelhammer Capital Bank AG.

Notwithstanding the previous paragraph, if Schelhammer Capital Bank AG's representations to us described above are incorrect or if the investors for whom Schelhammer Capital Bank AG acts as nominee are acting as a group, then Schelhammer Capital Bank AG or a group of such investors could be a beneficial owner of more than 5% of our voting securities. If Schelhammer Capital Bank AG was deemed the beneficial owner of such shares, the following table sets forth information as to the shares of voting securities that Schelhammer Capital Bank AG may be considered to beneficially own on February 1, 2023:

Name of Record Owner	Title Of Class	Amount and Nature of Ownership	Percent Of Class (*)
Schelhammer Capital Bank AG	Common	1,897,794 ⁽⁺⁾	14.2%

^(*) This calculation is based upon 13,358,75 shares of Common Stock outstanding on February 14, 2023, plus the number of shares of Common Stock which Schelhammer Capital Bank AG, 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 Schelhammer Capital Bank AG has represented to us that it holds of record as nominee for, and as an agent of, certain accredited investors. As of February 1, 2023, the date of Schelhammer Capital Bank AG's representations to us, Schelhammer Capital Bank AG has no warrants or options to acquire, as agent for certain investors, additional shares of our Common Stock. Although Schelhammer Capital Bank AG is the record holder of the shares of Common Stock described in this note, Schelhammer Capital Bank AG 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. Schelhammer Capital Bank AG has advised us that it (a) 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 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. Accordingly, we do not believe that Schelhammer Capital Bank AG is our affiliate. Schelhammer Capital Bank AG's address is Goldschmiedgasse 3, A-1010 Wien, Austria.

Security Ownership of Management

The following table sets forth information as to the shares of voting securities beneficially owned as of February 14, 2023, 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 ⁽²⁾	Amount and Nature of Beneficial Owner ⁽¹⁾	Percent of Class ⁽¹⁾
Thomas P. Bostick ⁽³⁾	36,548 ⁽³⁾	*
Kerry C. Duggan ⁽⁴⁾	23,115 ⁽⁴⁾	*
Dr. Louis F. Centofanti ⁽⁵⁾	303,025 ⁽⁵⁾	2.26%
Joseph T. Grumski ⁽⁶⁾	50,910 ⁽⁶⁾	*
Joe R. Reeder ⁽⁷⁾	246,483 ⁽⁷⁾	1.84%
Larry M. Shelton ⁽⁸⁾	179,087 ⁽⁸⁾	1.34%
Zack P. Wamp ⁽⁹⁾	53,420 ⁽⁹⁾	*
Mark A. Zwecker ⁽¹⁰⁾	237,893 ⁽¹⁰⁾	1.78%
Mark Duff ⁽¹¹⁾	170,984 ⁽¹¹⁾	1.27%
Richard Grondin ⁽¹²⁾	34,036 ⁽¹²⁾	*
Andy Lombardo ⁽¹³⁾	29,900 ⁽¹³⁾	*
Ben Naccarato ⁽¹⁴⁾	71,393 ⁽¹⁴⁾	*
Directors and Executive Officers as a Group (12 persons)	1,436,794⁽¹⁵⁾	10.42%

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

⁽¹⁾ See footnote (1) of the table under "Security Ownership of Certain Beneficial Owners."

⁽²⁾ 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.

⁽³⁾ Mr. Bostick has sole and voting and investment power over all shares shown, which include: (i) 28,048 shares of Common Stock held of record by Mr. Bostick, and (ii) immediately exercisable options to purchase 8,500 shares.

⁽⁴⁾ Ms. Duggan has sole and voting and investment power over all shares shown, which include: (i) 14,615 shares of Common Stock held of record by Ms. Duggan, and (ii) immediately exercisable options to purchase 8,500 shares.

⁽⁵⁾ These shares include (i) 174,225 shares held of record by Dr. Centofanti, (ii) immediately exercisable options to purchase 66,000 shares, and (iii) 62,800 shares held by Dr. Centofanti's wife. Dr. Centofanti has sole voting and investment power over all such shares, except for the shares held by Dr. Centofanti's wife, over which Dr. Centofanti shares voting and investment power.

⁽⁶⁾ Mr. Grumski has sole and voting and investment power over all shares shown, which include: (i) 40,010 shares of Common Stock held of record by Mr. Grumski, and (ii) immediately exercisable options to purchase 10,900 shares.

⁽⁷⁾ Mr. Reeder has sole voting and investment power over all shares shown, which include: (i) 224,783 shares of Common Stock held of record by Mr. Reeder, and (ii) immediately exercisable options to purchase 21,700 shares.

⁽⁸⁾ Mr. Shelton has sole voting and investment power over all shares shown, which include: (i) 157,387 shares of Common Stock held of record by Mr. Shelton, and (ii) immediately exercisable options to purchase 21,700 shares.

⁽⁹⁾ Mr. Wamp has sole voting and investment power over all shares shown, which include: (i) 37,720 shares of Common Stock held of record by Mr. Wamp, and (ii) immediately exercisable options to purchase 15,700 shares.

(10) Mr. Zwecker has sole voting and investment power over all shares shown, which include: (i) 216,193 shares of Common Stock held of record by Mr. Zwecker, and (ii) immediately exercisable options to purchase 21,700 shares.

(11) Mr. Duff has sole voting and investment power over all shares shown, which include: (i) 40,984 shares of Common Stock held of record by Mr. Duff, and (ii) immediately exercisable options to purchase 130,000 shares.

(12) Mr. Grondin has sole voting and investment power over all shares shown, which include: (i) 1,036 shares of Common Stock held of record by Mr. Grondin, and (ii) immediately exercisable options to purchase 33,000 shares.

(13) Mr. Lombardo has sole voting and investment power over all shares shown, which include: (i) 6,900 shares of Common Stock held of record by Mr. Lombardo, and (ii) immediately exercisable options to purchase 23,000 shares.

(14) Mr. Naccarato has sole voting and investment power over all shares shown, which include: (i) 4,393 shares of Common Stock held of record by Mr. Naccarato, and (ii) immediately exercisable options to purchase 67,000 shares.

(15) Amount includes 427,700 immediately exercisable options.

Equity Compensation Plans

The following table sets forth information as of December 31, 2022, 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	Weighted average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))
	(a)	(b)	(c)
Equity compensation plans approved by stockholders	1,018,400	\$ 5.02	801,534
Equity compensation plans not approved by stockholders	—	—	—
Total	1,018,400	\$ 5.02	801,534

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, holders of more than 5% of any class of the Company's voting securities, 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.

In addition, as applicable, the Audit Committee considers Section 144 of the Delaware General Corporation Law ("DGCL") and the Company's Code of Ethics.

The provisions of Section 144 of the DGCL apply to transactions between the Company and any of its officers or directors, or any organization in which any such individual has a financial interest or serves as a director or officer (individually, a "Section 144 Related Party," and, collectively, "Section 144 Related Parties"). Section 144 provides that a transaction between a corporation and any Section 144 Related Party will not be void or voidable solely because such transaction involves the corporation and the Section 144 Related Party, or solely because the Section 144 Related Party is present at or participates or votes in the meeting of the board or committee which authorizes the transaction, if the transaction (a) is approved in good faith after full disclosure of the material facts of the transaction by a majority vote of (i) the disinterested directors, or (ii) the stockholders, and (b) is fair as to the corporation as of the time it is authorized, approved, or ratified by the board, a committee or the stockholders.

Our Code of Ethics, which applies to our Board and all our employees, including the executive officers identified under the heading "Named Executive Officers" and our senior financial officers, provide that such individuals must exhibit and promote honest and ethical conduct in connection with the performance of his or her duties for and on behalf of the Company, including the ethical handling of actual or apparent conflicts of interest involving such individual and the Company, by, among other considerations:

- not entering into a transaction that would result in a conflict of interest with what is in the best interest of the Company and that is reasonably likely to result in material personal gain to any such individuals or their affiliates;
- not having a personal financial interest in any of the Company's suppliers, customers or competitors that could cause divided loyalty as a result of having the ability to influence the Company's decisions with that particular supplier or customer or actions to be taken by the Company that could materially benefit a competitor.

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 \$187,000 and \$184,000 for 2022 and 2021, respectively. David Centofanti is the son of Dr. Louis F. Centofanti, our EVP of Strategic Initiatives and 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 nominating and corporate governance committees be independent under applicable provisions of the Securities Exchange Act of 1934, as amended (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 of Directors and its committees and the independence of each director. Based upon information requested from and provided by each director concerning his background, employment and affiliations, including family relationships, our Board of Directors has determined that Ms. Kerry C. Duggan and each of Messrs. Thomas P. Bostick, Joseph T. Grumski, Joe R. Reeder, Larry M. Shelton, Zach P. Wamp and Mark A. Zwecker is an "independent director" as defined under the Nasdaq Marketplace Rules. Our Board of Directors has also determined that each member of our Audit Committee, consisting of Mark A. Zwecker (Chairperson), Joseph T. Grumski, and Larry M. Shelton, and each member of our Compensation Committee, consisting of Joseph T. Grumski (Chairperson), Zach P. Wamp and Mark A. Zwecker satisfy the independence standards for such committees established by the Commission and the Nasdaq Marketplace Rules, as applicable. In making such determination, our Board of Directors considered the relationships that each such non-employee director has with our Company and all other facts and circumstances our Board of Directors deemed relevant in determining independence, including the beneficial ownership of our capital stock by each non-employee director.

Our Board of Directors has determined that Dr. Centofanti is not deemed to be an "independent director" because of his employment as a senior executive of the Company.

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 2022 and 2021:

Fee Type	2022	2021
Audit Fees ⁽¹⁾	\$ 743,000	\$ 968,000
Tax Fees ⁽²⁾	113,000	146,000
Total	\$ 856,000	\$ 1,114,000

⁽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. Audit fees for 2021 included work performed for attestation of the Company's internal control over financial reporting.

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

Engagement of the Independent Auditor

To ensure that our independent registered public accounting firm is engaged only to provide audit and non-audit services that are compatible with maintaining its independence, the Audit Committee has a policy that requires the Committee to review and approve in advance all services to be provided by the Company's independent accounting firm before the firm is engaged to provide those services. The Audit Committee considers non-audit services and fees when assessing auditor independence, and determined that tax return preparation and other tax compliance services is compatible with maintaining our accounting firm's independence. 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 23, 2023
Mark Duff
Chief Executive Officer, President and
Principal Executive Officer

By /s/ Ben Naccarato Date March 23, 2023
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/ Thomas P. Bostick Date March 23, 2023
Thomas P. Bostick, Director

By /s/ Kerry C. Duggan Date March 23, 2023
Kerry C. Duggan, Director

By /s/ Dr. Louis F. Centofanti Date March 23, 2023
Dr. Louis F. Centofanti, Director

By /s/ Joseph T. Grumski Date March 23, 2023
Joseph T. Grumski

By /s/ Joe R. Reeder Date March 23, 2023
Joe R. Reeder, Director

By /s/ Larry M. Shelton Date March 23, 2023
Larry M. Shelton, Chairman of the Board

By /s/ Zach P. Wamp Date March 23, 2023
Zach P. Wamp, Director

By /s/ Mark A. Zwecker Date March 23, 2023
Mark A. Zwecker, Director

EXHIBIT INDEX

Exhibit No.	Description
3(i)	Restated Certificate of Incorporation, as amended, of Perma-Fix Environmental Services, Inc., as incorporated by reference from Exhibit 3(i) to the Company's Form 10-O for Quarter ended March 31, 2021 filed on May 6, 2021.
3(ii)	Second Amended and Restated Bylaws, as amended effective January 21, 2021, of Perma-Fix Environmental Services, Inc., as incorporated by reference from Exhibit 3(ii) to the Company's 8-K filed on January 26, 2021.
4.1	Fifth Amendment to Second Amended and Restated Revolving Credit Term Loan and Security Agreement dated August 29, 2022, as incorporated by reference from Exhibit 4.1 to the Company's Form 8-K filed on August 29, 2022.
4.2	Revised Second Amended and Restated Revolving Credit Term Loan and Security Agreement referenced as Annex A in the Fifth Amendment, as incorporated by reference from Exhibit 4.2 to the Company's Form 8-K filed on August 29, 2022.
4.3	Sixth Amendment to Second Amended and Restated Revolving Credit Term Loan and Security Agreement dated March 21, 2023, between Perma-Fix Environmental Services, Inc. and PNC Bank, National Association.
4.4	Common Stock Purchase Warrant dated April 1, 2019 for Robert L. Ferguson, as incorporated by reference from Exhibit 4.16 to the Company's 2018 Form 10-K filed on April 1, 2019.
10.1	2003 Outside Directors' Stock Plan of the Company, as incorporated by reference from Exhibit 10.1 to the Company's 2019 Form 10-K filed on March 20, 2020.
10.2	First Amendment to 2003 Outside Directors Stock Plan, as incorporated by reference from Exhibit 10.2 to the Company's 2019 Form 10-K filed on March 20, 2020.
10.3	Second Amendment to 2003 Outside Directors Stock Plan, as incorporated by reference from Exhibit 10.3 to the Company's 2017 Form 10-K filed on March 16, 2018.
10.4	Third Amendment to 2003 Outside Directors Stock Plan, as incorporated by reference from Exhibit 10.4 to the Company's 2017 Form 10-K filed on March 16, 2018.
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	Fifth Amendment to 2003 Outside Directors Stock Plan, as incorporated by reference from Exhibit A to the Company's Proxy Statement for its 2021 Annual Meeting of Stockholders filed on June 10, 2021.
10.7	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.
10.8	First Amendment to 2017 Stock Option Plan, as incorporated by reference from Appendix "A" to the Company's Proxy Statement for its 2020 Annual Meeting of Stockholders filed on June 12, 2020.
10.9	Employment Agreement dated July 22, 2020 between Mark Duff, Chief Executive Officer, and Perma-Fix Environmental Services, Inc., as incorporated by reference from Exhibit 99.1 to the Company's Form 8-K filed on July 27, 2020.
10.10	Employment Agreement dated July 22, 2020 between Dr. Louis Centofanti, Executive Vice President of Strategic Initiatives, and Perma-Fix Environmental Services, Inc., as incorporated by reference from Exhibit 99.2 to the Company's Form 8-K filed on July 27, 2020.
10.11	Employment Agreement dated July 22, 2020 between Ben Naccarato, Chief Financial Officer, and Perma-Fix Environmental Services, Inc., as incorporated by reference from Exhibit 99.3 to the Company's Form 8-K filed on July 27, 2020.
10.12	Employment Agreement dated July 22, 2020 between Andy Lombardo, EVP of Nuclear and Technical Services, Inc. and Perma-Fix Environmental Services, Inc., as incorporated by reference from Exhibit 99.4 to the Company's Form 8-K filed on July 27, 2020.

- 10.13 [Employment Agreement dated July 22, 2020 between Richard Grondin, EVP of Waste Treatment Operations and Perma-Fix Environmental Services, Inc., as incorporated by reference from Exhibit 99.5 to the Company's Form 8-K filed on July 27, 2020.](#)
- 10.14 [2023 Incentive Compensation Plan for Chief Executive Officer, effective January 1, 2023, as incorporated by reference from Exhibit 99.1 to the Company's Form 8-K filed on January 23, 2023. CERTAIN INFORMATION WITHIN THIS EXHIBIT HAS BEEN EXCLUDED BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED.](#)
- 10.15 [2023 Incentive Compensation Plan for Chief Financial Officer, effective January 1, 2023, as incorporated by reference from Exhibit 99.2 to the Company's Form 8-K filed on January 23, 2023. CERTAIN INFORMATION WITHIN THIS EXHIBIT HAS BEEN EXCLUDED BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED.](#)
- 10.16 [2023 Incentive Compensation Plan for Executive Vice President of Strategic Initiatives, effective January 1, 2023, as incorporated by reference from Exhibit 99.3 to the Company's Form 8-K filed on January 23, 2023. CERTAIN INFORMATION WITHIN THIS EXHIBIT HAS BEEN EXCLUDED BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED.](#)
- 10.17 [2023 Incentive Compensation Plan for Executive Vice President of Nuclear and Technical Services, effective January 1, 2023, as incorporated by reference from Exhibit 99.4 to the Company's Form 8-K filed on January 23, 2023. CERTAIN INFORMATION WITHIN THIS EXHIBIT HAS BEEN EXCLUDED BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED.](#)
- 10.18 [2023 Incentive Compensation Plan for Executive Vice President of Waste Treatment Operations, effective January 1, 2023, as incorporated by reference from Exhibit 99.5 to the Company's Form 8-K filed on January 23, 2023. CERTAIN INFORMATION WITHIN THIS EXHIBIT HAS BEEN EXCLUDED BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED.](#)
- 10.19 [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.](#)
- 10.20 [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.](#)
- 10.21 [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.](#)
- 10.22 [Incentive Stock Option Agreement dated January 17, 2019 between Perma-Fix Environmental Services, Inc., and Chief Executive Officer, as incorporated by reference from Exhibit 99.4 to the Company's Form 8-K filed on January 23, 2019.](#)
- 10.23 [Incentive Stock Option Agreement dated January 17, 2019 between Perma-Fix Environmental Services, Inc., and Chief Financial Officer, as incorporated by reference from Exhibit 99.5 to the Company's Form 8-K filed on January 23, 2019.](#)
- 10.24 [Incentive Stock Option Agreement dated January 17, 2019 between Perma-Fix Environmental Services, Inc., and EVP of Strategic Initiatives, as incorporated by reference from Exhibit 99.6 to the Company's Form 8-K filed on January 23, 2019.](#)
- 10.25 [Incentive Stock Option Agreement dated October 19, 2017 between Perma-Fix Environmental Services, Inc., and Richard Grondin, as incorporated by reference from Exhibit 99.11 to the Company's Form 8-K filed on July 27, 2020.](#)
- 10.26 [Incentive Stock Option Agreement dated January 17, 2019 between Perma-Fix Environmental Services, Inc., and Richard Grondin, as incorporated by reference from Exhibit 99.12 to the Company's Form 8-K filed July 27, 2020.](#)

- 10.27 [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 second quarter Form 10-Q filed on August 9, 2017.](#)
- 10.28 [First Amendment to Stock Option Agreement dated July 27, 2017 between Perma-Fix Environmental Services, Inc. and Mr. Robert L. Ferguson, as incorporated by reference from Exhibit 10.23 to the Company 2018 Form 10-K filed on April 1, 2019.](#)
- 10.29 [Second Amendment to Stock Option Agreement dated July 27, 2017 between Perma-Fix Environmental Services, Inc. and Mr. Robert L. Ferguson, as incorporated by reference from Exhibit 99.3 to the Company Form 8-K filed on March 31, 2020.](#)
- 10.30 [Third Amendment to Stock Option Agreement dated July 27, 2017 between Perma-Fix Environmental Services, Inc. and Mr. Robert L. Ferguson, as incorporated by reference from Exhibit 99.4 to the Company Form 8-K filed on January 25, 2022.](#)
- 10.31 [Task Order Agreement for Small Scales Remediation Package between Canadian Nuclear Laboratories LTD and Perma-Fix Canada Inc., as incorporated by reference from Exhibit 10.1 to the Company's Form 10-Q for the quarter ended March 31, 2019 filed on May 9, 2019. CERTAIN INFORMATION WITHIN SCHEDULE 2 – PRICE INFORMATION OF THIS EXHIBIT HAS BEEN EXCLUDED FROM THE EXHIBIT BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED.](#)
- 10.32 [Solicitation, Offer and Award dated September 17, 2021 issued to Perma-Fix Environmental Services, Inc. by Norfolk Naval Shipyard, as incorporated by reference from Exhibit 10.1 to the Company Form 10- for the Quarter Ended September 30, 2021 filed on November 12, 2021.](#)
- 10.33 [Placement Agency Agreement, dated as of September 23, 2021, by and between the Company and Wellington Shields & Co., LLC, as incorporated by reference from Exhibit 10.1 to the Company's Form 8-K filed on October 4, 2021.](#)
- 10.34 [Form of Subscription Agreement, dated as of September 30, 2021, between the Company and each purchase named in the signature pages of the respective Subscription Agreements, as incorporated by reference from Exhibit 10.2 to the Company's Form 8-K filed on October 4, 2021.](#)
- 10.35 [Joint Venture Term Sheet between Springfield Fuels Limited, an affiliate of Westinghouse, and the Company, as incorporated by reference from Exhibit 10.42 to the Company's 2021 Form 10-K filed on April 6, 2022. CERTAIN INFORMATION WITHIN THIS EXHIBIT HAS BEEN EXCLUDED BECAUSE IT IS NOT MATERIAL AND WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED.](#)
- 10.36 [Incentive Stock Option Agreement between Perma-Fix Environmental Services, Inc. and Chief Executive Officer, dated October 14, 2021, as incorporated by reference from Exhibit 99.1 to the Company's Form 8-K/A filed on October 20, 2021.](#)
- 10.37 [Incentive Stock Option Agreement between Perma-Fix Environmental Services, Inc. and Chief Financial Officer, dated October 14, 2021, as incorporated by reference from Exhibit 99.2 to the Company's Form 8-K/A filed on October 20, 2021.](#)
- 10.38 [Incentive Stock Option Agreement between Perma-Fix Environmental Services, Inc. and EVP of Strategic Initiatives, dated October 14, 2021, as incorporated by reference from Exhibit 99.3 to the Company's Form 8-K/A filed on October 20, 2021.](#)
- 10.39 [Incentive Stock Option Agreement between Perma-Fix Environmental Services, Inc. and EVP of Waste Treatment Operations, dated October 14, 2021, as incorporated by reference from Exhibit 99.4 to the Company's Form 8-K/A filed on October 20, 2021.](#)
- 10.40 [Incentive Stock Option Agreement between Perma-Fix Environmental Services, Inc. and EVP of Nuclear and Technical Services, dated October 14, 2021, as incorporated by reference from Exhibit 99.5 to the Company's Form 8-K/A filed on October 20, 2021.](#)
- 10.41 [Incentive Stock Option Agreement between Perma-Fix Environmental Services, Inc. and Chief Executive Officer, dated January 19, 2023, as incorporated by reference from Exhibit 99.6 to the Company's Form 8-K filed on January 23, 2023.](#)
- 10.42 [Incentive Stock Option Agreement between Perma-Fix Environmental Services, Inc. and Chief Financial Officer, dated January 19, 2023, as incorporated by reference from Exhibit 99.7 to the Company's Form 8-K filed on January 23, 2023.](#)

10.43	Incentive Stock Option Agreement between Perma-Fix Environmental Services, Inc. and EVP of Strategic Initiatives, dated January 19, 2023, as incorporated by reference from Exhibit 99.8 to the Company's Form 8-K filed on January 23, 2023.
10.44	Incentive Stock Option Agreement between Perma-Fix Environmental Services, Inc. and EVP of Nuclear and Technical Services, dated January 19, 2023, as incorporated by reference from Exhibit 99.9 to the Company's Form 8-K filed on January 23, 2023.
10.45	Incentive Stock Option Agreement between Perma-Fix Environmental Services, Inc. and EVP of Waste Treatment Operations, dated January 19, 2023, as incorporated by reference from Exhibit 99.10 to the Company's Form 8-K filed on January 23, 2023.
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	Inline XBRL Instance Document*
101.SCH	Inline XBRL Taxonomy Extension Schema Document*
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document*
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document*
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document*
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document*
104	Cover Page Interactive Data File (embedded within the Inline XBRL 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.

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

THIS SIXTH AMENDMENT TO SECOND AMENDED AND RESTATED REVOLVING CREDIT, TERM LOAN AND SECURITY AGREEMENT, dated as of March 21, 2023 (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 Second Amended and Restated Revolving Credit, Term Loan and Security Agreement dated as of May 8, 2020 (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; and

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. Amendments. The Credit Agreement is amended as set forth below.

(a) Section 1.2 is amended by amending the definition of "Maximum Revolving Advance Amount" in its entirety as follows:

““Maximum Revolving Advance Amount” shall mean \$12,500,000.”

(b) Section 6.5(b) is amended to read as follows:

“(b) Fixed Charge Coverage Ratio.

Cause to be maintained a Fixed Charge Coverage Ratio of not less than 1.15 to 1.0 for the four quarter period ending as June 30, 2023 and for each fiscal quarter thereafter.”

(c) Section 6.5(c) is amended to read as follows:

“(c) Minimum Undrawn Availability.

Maintain Undrawn Availability of at least \$3,000,000 at all times until receipt by Agent of Borrower’s June 30, 2023 Compliance Certificate.”

(d) Exhibit 1.2(a) is deleted in its entirety and replaced with a new Exhibit 1.2(a) attached hereto and incorporated herein by reference.

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

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

(b) receipt by the Agent of an amendment fee of \$25,000.

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/ Scott Goldstein
Name : Scott Goldstein
Title : Senior Vice President

Sixth Amendment to Second Amended and Restated
Revolving Credit, Term Loan and Security Agreement
Perma-Fix

[Letterhead of Company]

COMPLIANCE CERTIFICATE _____, 20__

PNC Bank, National Association, as Agent
One Piedmont Town Center
4720 Piedmont Row Drive
Suite 300
Charlotte, NC 28210
Attention: Scott Goldstein

The undersigned, the [Chief Executive Officer][President][Chief Financial Officer][Controller] of **Perma-Fix Environmental Services, Inc.**, a Delaware corporation, gives this certificate to **PNC Bank, National Association**, as Agent (in such capacity, the "Agent"), in accordance with the requirements of **Section 9.7 and 9.8** (Annual and Quarterly Financial Statements) of that certain Second Amended and Restated Revolving Credit, Term Loan and Security Agreement dated as of May 8, 2020, among the Borrower, the financial institutions which are parties thereto as Lenders, and the Agent (the "Loan Agreement").

Capitalized terms used in this Certificate, unless otherwise defined herein, shall have the meanings ascribed to them in the Loan Agreement.

1. Based upon my review of the financial statements of the Company for the [Fiscal Year/Quarter] ending _____, 20__, copies of which are attached hereto, I hereby certify that:

- (a) Section 6.5(a), the Tangible Adjusted Net Worth is [satisfied / not satisfied] at \$_____ when compared to the required amount of at least \$27,000,000.
 - (b) Section 6.5(b), the Fixed Charge Coverage Ratio is [satisfied / not satisfied] at _____ to 1.0 when compared to the required **1.15 to 1.0** for the four quarter period ending as of June 30, 2023 and as of the end of each fiscal quarter thereafter.
 - (c) Section 6.5(c), Minimum Undrawn Availability is [satisfied/not satisfied] of \$_____ when compared to the required \$3,000,000.
 - (d) Sections 7.4, Investments are [satisfied/not satisfied] as there are \$xx,xxx (if none, so state) outstanding.
 - (e) Sections 7.5(a), Loans are [satisfied/not satisfied] as no advances, loans or extensions of credit have been made except for extensions of trade credit in connection with the sale of Inventory in the Ordinary Course of Business and Section 7.5(b), Loans to employees in the Ordinary Course of Business in the amount of \$xx,xxx (if none, so state) are [less/more] than the allowable amount of \$1,000,000 in the aggregate.
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- (f) Sections 7.6, Capital Expenditures are [satisfied/not satisfied] as \$xx,xxx is [less/more] than the allowable amount of \$6,000,000 for any fiscal year.
 - (g) Sections 7.7, Dividends and Distributions are [satisfied/not satisfied] as the payment of all dividends and distributions comply with the provisions of Section 7.7.
 - (h) Sections 7.8, Create additional Indebtedness is [satisfied/not satisfied] as such additional Indebtedness complies with the provisions of Section 7.8.
 - (i) Sections 7.11, Leases are [satisfied/not satisfied] as \$xx,xxx is [less/ more] when compared to the annual rental payments for all property of \$1,000,000.
2. No Default exists on the date hereof, other than: _____ [if none, so state]; and
 3. No Event of Default exists on the date hereof, other than _____ [if none, so state].
 4. As of the date hereof, if applicable, Borrower is current in all material respects in payment of all accrued rent, warehouse fees, and other charges to Persons who own or lease any premises where any of the Collateral is located, and there are no pending disputes or claims regarding Borrowers' failure to pay or delay in payment of any such rent or other charges.
 5. Additionally, as of the date hereof, as required by Section 9.3, to the best of my knowledge, Borrower is in compliance in all material respects with all federal, state and local laws relating to environmental protection and control and occupational safety and health, or if such is not the case, specifying in all areas of material non-compliance of which such officer has actual knowledge and the proposed action Borrower will implement in order to achieve compliance in all material respects unless full compliance is otherwise required.
 6. The financial statements attached hereto are complete and accurate in all respects and were prepared in accordance with GAAP, consistently applied, except for the absence of footnotes and subject to year end audit adjustments, and except as may be disclosed in such financial statements.

PERMA-FIX ENVIRONMENTAL SERVICES, INC.

_____ as **[Chief Executive Officer] [President] [Chief Financial Officer] [Controller]**

Dated _____

Spreadsheet

Sixth Amendment to Second Amended and Restated
Revolving Credit, Term Loan and Security Agreement
Perma-Fix

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 100% owned subsidiary of the Company.

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.

SEC Radcon Alliance, LLC ("SECRA"), a Tennessee 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.

SEC 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 LLC, is a 100% owned subsidiary of the Company.

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.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our report dated March 23, 2023, 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, 2022. We consent to the incorporation by reference of said reports in the Registration Statements of Perma-Fix Environmental Services, Inc. on Forms S-8 (File No. 333-254907, File No. 333-223917, File No. 333-203137, File No. 333-153086, and File No. 333-110995).

/s/ GRANT THORNTON LLP

Atlanta, Georgia
March 23, 2023

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 23, 2023

/s/ Mark Duff

Mark Duff

Chief Executive Officer, President and Principal Executive Officer

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 23, 2023

/s/ Ben Naccarato

Ben Naccarato

Chief Financial Officer and Principal Financial Officer

**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, 2022 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 23, 2023

/s/ Mark Duff

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.

**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. ("PEST") on Form 10-K for the year ended December 31, 2022 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 23, 2023

/s/ Ben Naccarato

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.
