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, 2018
or

☐ **TRANSITION REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission file number: 001-37515

Aqua Metals, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**47-1169572**
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification Number)

2500 Peru Dr.
McCarran, Nevada 89437
(Address of principal executive offices)

(775) 525-1936
(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:	**Name of Each Exchange on Which Registered:**
Common Stock	**The Nasdaq Capital Market**

Securities registered pursuant to Section 12(g) of the Act:
None

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 15(d) of the Exchange 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 past 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 such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers in response to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☒

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company (as defined in Rule 12b-2 of the Act):

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

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

State the aggregate market value of voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold, or the average bid and asked price of such common equity, as of the last business day of the registrant's most recently completed second fiscal quarter: $100,626,250.

The number of shares of the registrant's common stock outstanding as of February 26, 2019 was 44,354,852.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for the registrant's 2019 Annual Meeting of Stockholders to be filed pursuant to Regulation 14A within 120 days of the registrant's year ended December 31, 2018 are incorporated herein by reference into Part III of this Annual Report on Form 10-K.

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CAUTIONARY NOTICE

This annual report on Form 10-K contains 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. Those forward-looking statements include our expectations, beliefs, intentions and strategies regarding the future. Such forward-looking statements relate to, among other things,

- our future financial and operating results;
- our intentions, expectations and beliefs regarding anticipated growth, market penetration and trends in our business;
- the timing and success of the roll-out of our first 16 Aqua refining modules;
- the ability to maximize selling value from the broken lead-acid batteries, or LABs;
- the timing and success of our plan of commercialization;
- our ability to operate our AquaRefining process on a commercial scale;
- our ability to realize the expected benefits of our strategic partnership with Johnson Controls;
- our ability to procure LABs in sufficient quantities at competitive prices;
- the success of our first LAB recycling facility near Reno, Nevada;
- the availability of working capital to pursue the development of additional recycling centers;
- the effects of the putative class action and shareholder derivative lawsuits filed against us;
- the timing and success of our development of additional recycling facilities;
- the effects of market conditions on our stock price and operating results;
- our ability to maintain our competitive technological advantages against competitors in our industry;
- our ability to have our technology solutions gain market acceptance;
- our ability to maintain, protect and enhance our intellectual property;
- the effects of increased competition in our market and our ability to compete effectively;

- costs associated with defending intellectual property infringement and other claims;
- our expectations concerning our relationships with suppliers, partners and other third parties; and
- our ability to comply with evolving legal standards and regulations, particularly concerning requirements for being a public company and environmental regulations.

These and other factors that may affect our financial results are discussed more fully in “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” included in this report. Market data used throughout this report is based on published third party reports or the good faith estimates of management, which estimates are presumably based upon their review of internal surveys, independent industry publications and other publicly available information. Although we believe that such sources are reliable, we do not guarantee the accuracy or completeness of this information, and we have not independently verified such information. We caution readers not to place undue reliance on any forward-looking statements. We do not undertake, and specifically disclaim any obligation, to update or revise such statements to reflect new circumstances or unanticipated events as they occur, and we urge readers to review and consider disclosures we make in this and other reports that discuss factors germane to our business. See in particular our reports on Forms 10-K, 10-Q, and 8-K subsequently filed from time to time with the Securities and Exchange Commission.

PART I

Item 1. Business

Background

We were formed as a Delaware corporation on June 20, 2014 for the purpose of engaging in the business of recycling lead through a novel, proprietary and patent-pending process that we developed and named "AquaRefining". Since our formation, we have focused our efforts on the development and testing of our AquaRefining process, the development of our business plan, the raise of our present working capital and the development of our initial lead acid battery, or LAB, recycling facility in the Tahoe Regional Industrial Center, McCarran, Nevada ("TRIC").

We completed the development of our first LAB recycling facility at TRIC and commenced production of battery breaking and limited operations during the first quarter of 2017. The TRIC facility now produces varying products for commercial sales primarily consisting of ingoted AquaRefined lead, lead compounds, ingoted hard lead and as well as plastic. In April 2017, we commenced the shipment of products for sale, consisting of lead compounds as well as plastics. In April 2018, we commenced the limited production of lead bullion, including AquaRefined lead. In July 2018, we commenced the sale of pure AquaRefined lead in the form of two tonne blocks, and in October 2018, we commenced the sale of AquaRefined lead in the form of battery manufacturing ready ingots. In November 2018, we received official vendor certification from Johnson Controls for our AquaRefined lead and in December 2018, we commenced shipments directly to Johnson Controls owned and partner battery manufacturing facilities.

After several months of engaging in extensive diligence and engineering evaluations, on February 28, 2019, we has entered into an Operations, Management and Maintenance Agreement with Veolia North America Regeneration Services LLC (Veolia) to provide operations, maintenance and management services at our Aqua Metals' AquaRefining facility in McCarran, Nevada.

Veolia is expected to contribute operational and technological expertise and organizational capabilities in aqueous based process chemistries and electrolysis along with taking on responsibility for operations, supply chain, offtake and management of the plant. Veolia employees will begin working onsite starting March 4, 2019 at the McCarran facility. In addition to receiving expertise and support from Veolia North America resources overall, this Agreement provides for Veolia to relocate up to six (6) full time employees with strong operations, process engineering, management expertise to join the Aqua Metals team at our AquaRefinery in McCarran, Nevada. Veolia North America will take over the primary responsibility for scaling the facility through the remainder of 2019 to CP1-16 (Commercial Plant 1, 16 AquaRefining modules) of capacity. The Agreement also provides for Veolia and Aqua Metals to work together to plan in 2019 and complete the expansion of the TRIC facility to 32 AquaRefining modules.

We believe the Agreement will allow us to leverage off Veolia's supply chain and offtake and waste stream buying power and expertise. The intention of the parties is to grow the relationship where Veolia will serve as Aqua Metals' go to market execution partner to staff and manage AquaRefining facilities with mutually agreed performance metrics for Aqua Metals and our partners. We expect this will begin with the first facility we deploy with Johnson Controls Power Systems Division (being transitioned to Brookfield Asset Management, which has over $350B of assets under management) as a part of our efforts to complete the Joint Development Agreement with them by June 2019, with the blueprint for deploying AquaRefining upgrades to existing battery recycling facilities. A more complete summary of the terms of the Agreement is set forth in Part II, Item 9.B. "Other Information."

Veolia North America Regeneration Services, LLC is the wholly-owned subsidiary of Veolia Environnement S. A. (Paris Euronext: VIE). Veolia Environnement is the global leader in optimized resource management. With nearly 169,000 employees worldwide, Veolia Environnement designs and provides water, waste and energy management solutions that contribute to the sustainable development of communities and industries. Through its three complementary business activities, Veolia Environnement helps to develop access to resources, preserve available resources, and to replenish them. In 2017, Veolia Environnement supplied 96 million people with drinking water and 62 million people with wastewater service, produced nearly 55 million megawatt hours of energy and converted 47 million metric tons of waste into new materials and energy. Veolia Environnement recorded consolidated revenue of USD 30.1 billion in 2017. www.veolia.com.

Unless otherwise indicated, the terms "Aqua Metals", "Company", "we," "us," and "our" refer to Aqua Metals, Inc. and its wholly-owned subsidiaries.

All references in this report to "ton" or "tonne" refer to a metric ton, which is equal to approximately 2,204.6 pounds.

Since our organization in 2014, we have engaged in several capital raising transactions, the most recent of which are summarized below in "Management's Discussion and Analysis of Financial Condition and Results of Operations - General."

Overview

Aqua Metals is seeking to reinvent lead recycling with its patented and patent-pending AquaRefining™ technology. Unlike smelting, AquaRefining is a room temperature, water-based process. It is deployed as a factory built modular system which allows the lead-acid battery industry to simultaneously improve environmental impact and scale production to meet demand. Aqua Metals has built its first recycling facility in Nevada's Tahoe Reno Industrial Complex. Lead is a globally traded commodity with a worldwide market value in excess of $20 billion. Lead acid batteries (LABs) are the primary consumer use of all lead produced in the world. Because the chemical and metallurgical properties of lead allow it to be recycled and reused indefinitely, LABs are also the dominant feed source for lead production across the world. As such, LABs are almost 100% recycled for purposes of capturing the lead contained therein for re-use. We believe that our proprietary and patented AquaRefining process will provide for the existing LAB recycling facility to leverage our capabilities for expanded production of a much higher purity lead with fewer environmental and regulatory issues than is possible with the current conventional methods of lead production.

In recent years, recycled lead has become increasingly important to LAB production. Recycled lead surpassed mined lead in the 1990s and now represents more than 60% of the lead content in new LABs. Whether it is produced from lead ore or recycled LABs, lead has historically been produced by smelting. Smelting is a high-temperature, metallurgical/chemical reduction, energy intensive and often a highly polluting process. As a consequence of the environmental and health issues, lead smelting has become increasingly regulated in many countries. In the U.S., regulatory non-compliance has forced the closure of large lead smelters in Vernon, California, Frisco, Texas and Herculaneum, Missouri over the last several years. In response to increasing environmental regulation over the past three decades, there has been an expansion of LAB smelting capacity in Mexico and other less regulated countries. The resulting transportation of used LABs from where they originate in the U.S. to smelters in Mexico, South Korea, the Philippines and elsewhere is an increasingly significant logistical and global environmental cost.

AquaRefining uses a bio-degradable aqueous solvent and a novel ambient temperature electro-chemical process to produce lead suitable for use in LAB production. Our AquaRefining process produces lead with a purity that is equivalent to primary lead (i.e., higher than 99.99% purity). We believe that AquaRefining can provide a more efficient production process as compared with alternative methods of producing equivalent grades of lead. We also have the potential to locate AquaRefining facilities closer to the source of used LABs, thereby reducing transport costs and supply chain bottlenecks. On this basis, we believe that AquaRefining reduces environmental plant emissions, health concerns and permitting needs compared with lead smelting. We believe that the combined advantages offered by AquaRefining represent a potential step change in lead recycling technology that includes improved product quality, advantages in footprint and logistics as well as reduced environmental impact.

The modular nature of AquaRefining makes it possible both to start LAB recycling at a smaller scale than is possible with a typical smelter setup, and to add AquaRefining to existing battery recycling operations to expand production capacity or to reduce smelting processes. Our plan is to pursue two complementary business streams. The first is to supply AquaRefining and supporting equipment to third parties to supplement or replace smelting in their battery recycling operations. We intend to pursue this at least initially through our relationship with Johnson Controls Inc., with which we have entered exploratory discussions centered on the addition of AquaRefining to one of its existing battery recycling operations. We also intend to pursue similar arrangements with other companies operating recycling operations. The second is to expand our own lead recycling operations at our plant in McCarran, Nevada, subject to our receipt of additional capital.

Our Markets

The Lead Market

Lead is a globally traded metal commodity and is the essential component of over 80% of the world's rechargeable batteries. Lead is globally traded primarily on the London Metals Exchange, or LME, although the smaller Shanghai Metals Exchange (SHME) in China also trades the element. Conventionally in the industry, there are two separate groupings of lead: i) primary lead which refers to lead produced at primary smelters that use mined lead concentrates (generally lead sulfide) as their major feedstock, and ii) secondary lead which refers to lead smelters utilizing LABs as their main feed source.

Originally, the majority of the lead used in batteries was sourced from primary smelters but in recent decades, secondary lead has grown to become the dominate product used. Industry data shows that six million metric tons of lead was produced in 1995 of which approximately 45% was primary and 55% was from secondary sources. Twenty years later, by 2015, global lead production had increased to approximately 11 million metric tons, of which more than 65% was secondary. Importantly, primary lead production had increased only marginally during this period. This marginal increase is partially due to lead-zinc mine deposits are being depleted across the globe in existing mines. As such, an increasing quantity of primary lead is now the predominate byproduct of zinc mining.

In 2005, secondary lead traded on the LME in a range of $1,000 to $1,200 per metric ton. During 2018, secondary lead traded in a range of approximately $1,900 to $2,700 per metric ton.

As noted above, although lead is traded as a commodity on the LME/SHME, the major sales are the sales directly between producers/ traders and users (whom are typically battery manufacturers). The LME daily price is used as the benchmark in forming the basis of physical trades, forward contracts and hedge strategies for both primary and secondary lead. Based on market and product knowledge with buyers of lead in the U.S. and Global lead markets, different grades (termed alloys) of lead are traded at a premium to the base LME price. Lead alloys, which are generally specifically designed for the customer, are also sold at a premium above the base LME, whereas by-products (generally lead compounds or scrap) are traded at a discount to the LME as they are based on the lead content and its form.

Lead Smelting

Currently, smelters produce virtually all the world's mined and recycled lead. Smelting is an energy intensive and, in some poorly managed plants, a highly polluting process. At its core, smelting is a relatively high temperature (excess of 900°C) metallurgical reduction process in which lead compounds are heated and reacted with various reducing agents to remove the oxygen, sulfur, and other impurities. The process leaves behind bullion lead and waste slag. In smelting, depending upon the operation, 0.5% to 5% of the lead can be lost to the "slag", with the resultant lead bullion containing both wanted and unwanted impurities.

In developed countries, there is both increased environmental regulation and enforcement of such, including monitoring of permissible blood lead levels in employees and local populations. These regulations and the increasing enforcement have made it more expensive to operate smelters. According to a report titled "Hazardous Trade?" produced by the Secretariat of the Commission for Environmental Cooperation in 2013, this has led to a decline of lead smelters in the U.S., an expansion of smelting operations in Mexico and a resultant increase in the export of used LABs from the U.S. followed by the re-import of recycled lead. This trade is believed to be largely driven by the lower costs related to the less stringent environmental standards and enforcement in Mexico. For the foregoing reasons, we believe that lead smelting facilities are increasingly located in less regulated areas remote from both the source of used LABs and the demand for lead. We believe that the remote location of smelting increases the transport costs to the production of recycled lead.

Lead Acid Batteries

Although the LAB is one of the earliest battery technologies, in terms of energy capacity deployed and installed manufacturing capacity, it still dominates the battery industry today. Historically, the largest market for LABs has been as starter batteries for vehicles. However, with the increasing electrical load on modern vehicles and the adoption of "Stop-Start" conventional 12V "starter batteries", LABs are evolving into more capable and higher value products. At the same time, large new markets such as Cell Tower, Data Center and Industrial back-up are adding to demand. Consequently, existing LAB production facilities are being expanded and new facilities are being built.

According to CHR Metals, total lead output in 2017 was expected to be 20% higher than it was in 2012. Similar prospects for healthy growth in the lead industry continue to be published and support continued growth in demand for lead for at least the next 20 years. We believe that grid storage and other energy storage applications linked to renewable energy (solar and wind) will also generate increased demand for LABs, where low cost, safety and reliability will make them attractive options.

The increase in LAB manufacturing in general and particularly in China, India and Southeast Asia, has increased demand for lead, putting pressure on global recycling networks to meet this demand. At present, we believe that much of the LAB recycling performed outside of the U.S., Canada, the EU, Japan, and Australia is carried out in outdated facilities with poor environmental standards and insufficient enforcement. China, India, Pakistan and South America appear to be moving toward tougher regulation and enforcement. We believe that this will drive a demand in foreign markets for more less polluting LAB recycling processes.

AquaRefining Process

We developed AquaRefining to be a less expensive, cleaner and modular alternative to smelting. Our process has two key elements, both of which are integral to our issued patents and pending-patent applications. The first is our use of a proprietary, non-toxic solvent that dissolves lead compounds. The second is a proprietary electro-chemical process and electrolyzer that converts the dissolved lead compounds into high purity lead suitable for use in LAB production.

Similar to conventional LAB smelter recycling, our AquaRefining process begins with the crushing of used LABs and the separation of the metallic lead, active material (lead compounds), sulfuric acid and plastic for recycling. The active material (lead compounds) are first processed to remove sulfur and then dissolved in our solvent. Lead is then plated from the solvent using our patented and patent-pending process allowing the solvent to be reused.

Our AquaRefining process can generate the following outputs:

- Lead and lead-based products, including high purity lead, lead alloys and lead compounds which are primarily intended for the LAB industry. We are also exploring higher value lead-based products which may offer performance and life-cycle benefits to the LAB industry; and
- Recovered plastic chips, intended for re-use in the manufacture of battery casings and other recycled plastic products.

We expect to derive revenue primarily from the sale of lead-based products, with additional revenue derived from the sale of plastic chips.

A significant benefit of our AquaRefining process is that it is capable of producing higher purity product than that derived from primary smelters with product from secondary sources. As indicated above, primary grade lead is generally sold directly to battery companies.

Another significant benefit of our process is that we designed our AquaRefining equipment to be manufactured on a purpose-built production line in standard sized modules. This is not possible with the smelting process, as smelters need to be constructed on site. This gives us the ability to provide AquaRefining systems with capacities ranging from four metric tons per day to more than 400 metric tons per day all based on our standard module.

Lead recycling is subject to a variety of domestic and international regulations related to hazardous materials, emissions, employee safety and other matters. While our operations will be subject to these regulations, we believe that one of our potential advantages will be our ability to conduct lead recycling operations with less regulatory cost and burden than smelting operators due to the nature of our process. One of our key objectives will be to educate regulators and the public as to the environmental benefits of AquaRefining. We believe that we have the potential to develop a business model that offers the opportunity to conduct, in an environmentally friendly manner, an important recycling activity that historically has been conducted in an often highly polluting manner.

Our Business Model

Overall, our objective is to progress the lead recycling industry from one which is based primarily on smelting to one which is based on AquaRefining. Our expectation is that this will be a moderately paced process of evolution in which multiple business models will be evaluated. The two business models that we are currently most focused on are:

1) the supply of AquaRefining and supporting equipment and services to third parties to use in their recycling operations on a licensing model. We are currently focused on exploring this business stream through our relationship with Johnson Controls;
2) the expansion of our own AquaRefining capacity and facilities, subject to our receipt of additional capital.

The market for lead is global in scale but local in nature and execution, with large differences in local regulation, custom and practice. In some regions, it is highly regulated, and in others it is not. Consequently, we are evolving our business model to commercialize our technology optimally across multiple locations.

Lead recycling is subject to a variety of domestic and international regulations related to hazardous materials, emissions, employee safety and other matters. While our operations will be subject to these regulations, we believe that one of our potential advantages will be our ability to conduct lead recycling operations with less regulatory cost and burden than smelting operators. One of our key objectives will be to educate regulators and the public as to the environmental benefits of AquaRefining. We believe we have the potential to develop a business model that offers less regulatory cost and burden and the opportunity to conduct business in a socially responsible manner.

In the U.S. and similarly regulated countries, our plan is to build and operate LAB recycling facilities, both directly and in association with third parties through joint ventures, licensing and direct sales. As an example, on February 7, 2017, we entered into a series of agreements with Johnson Controls Inc., (Johnson Controls), pursuant to which, among other things, we agreed to work with Johnson Controls on the development of a program for upgrades of Johnson Controls' and certain strategic partners' of Johnson Controls existing lead smelters throughout North and South America, China and Europe to a lead recycling process utilizing our proprietary and patented AquaRefining technology and equipment, know-how and services.

Competition

At the present time, our primary competition in the production of lead comes from operators of existing smelters and other parties heavily invested in the existing supply chain for smelting. Our approach to this competition is to make AquaRefining available for the conversion of existing smelter-based facilities. However, it is prudent to assume that outside of our strategic relationships, a conversion to AquaRefining may be resisted by some of the incumbent lead producers. Competition in the supply of lead from such incumbents may come in the form of price competition for lead produced. However, to the extent we are successful in being a producer of high quality lead without the regulatory costs or burden associated with smelting, we should be able to compete effectively with smelting as the preferred method of recycling lead, at least in the more regulated jurisdictions.

Another area where incumbents may seek to compete is in controlling access to used LABs. The market for used LABs is made up of the members of the LAB reverse supply chains, including auto repair shops, auto parts stores and auto dealers, LAB manufacturers who operate their own smelting operations and third parties who engage in the purchase and sale of used LABs. We believe that some LAB manufacturers who maintain their own smelting operations may feel threatened by our AquaRefining process. Such parties may attempt to restrict our access to used LABs. We have assumed at least some level of interference by incumbents, however, based on our operations to date, including our discussions and arrangements with certain suppliers of used LABs, we do not view access to used LABs be a significant risk to our LAB recycling operations.

Our business plan is not dependent on the acceptance of our process by lead smelters. We still intend to initially focus on operating our own AquaRefining facilities directly and working with Johnson Controls to implement Aqua Refining in a nominated lead smelting facility followed by deployments with additional 3rd parties to propagate AquaRefining as the technology of choice for recycling LABs.

We do not expect to experience significant competition in connection with our sale of lead. We believe that the market for lead is established, fluid and effective; and like the markets for other natural resources, such as oil, gas, gold, silver, etc., we do not expect to encounter any issues, conditions or qualifications for the sale of our lead production at prevailing market prices set by the LME. The vertically integrated LAB manufacturers who conduct smelting operations also are buyers of lead from third parties. We believe that they will still purchase lead from us if we are able to offer it at the market price.

Our First Recycling Facility: McCarran, Nevada

In May 2015, we purchased 11.73 acres of undeveloped land in the Tahoe Reno Industrial Center (TRIC), at McCarran, Nevada where we subsequently built a 136,750 square foot LAB recycling facility.

The building phase was completed by August 2016, at which time we started installing and commissioning equipment. We installed and commissioned the first production AquaRefining module in October 2016 and produced our first lead ingot using electrolyte we produced on-site using materials supplied by a third party, which were recovered from recycled batteries. We verified that the lead we produced by this method was over 99.99 percent pure.

We commenced initial battery breaking during December 2016 and progressed to regular single shift operation of the battery breaker in January 2017. From late 2016 through the date of this report, we implemented a number of upgrades to the facility, the battery breaking and separation processes and other more conventional aspects of our process.

As of December 2017, we had installed 16 AquaRefining modules at TRIC. To date, we have operated the first four of the 16 modules and have made continuous improvements which have led to individual modules running in a steady state producing 100Kg/hour for several days at a time. As we bring the modules into commercial operation, we expect to continue to adjust the modules to further enhance operation. Although we staffed the facility and ran one or two AquaRefining Modules on a 24x7 basis from October to December 2018, we are currently running one or two modules 24-hours a day, four days a week to allow safe times for some of the key work to be completed for our contribution margin improvement projects. Subject to key work being completed in the first quarter of 2019, we intend to re-instate 24-hour, seven days a week, continuous operations shortly thereafter and scale to running all four of the initial four modules before bringing the next four modules on line. We believe this operational strategy will allow us to maximize lead production, while enabling the remaining components of the plant to be synchronized in support of increased AquaRefining. Once we are satisfied with the operation of the first four modules, additional modules will be brought into production. This process will be repeated until full production is reached with all 16 modules. Our goal is to operate all 16 modules on a 24/7 continuous basis by the end of 2019. However, due to the delays and unforeseen issues in the completion of the AquaRefining production line we have experienced to date, there can be no assurance that we will not encounter additional delays and issues.

Supply, Off-Take and Other Strategic Agreements

In support of our first facility, we have entered into a series of agreements and relationships providing for our supply of LABs and the off-take of the recycled lead we produce. As described in more detail below, Interstate Battery has agreed to supply us with LABs pursuant to a written agreement entered into in May 2016. In addition, we have established an important relationship with Battery Systems. Inc., an independent LAB distributor with a distribution facility located next to our TRIC facility, for Battery Systems' supply of used LABS to us. We have also entered into an agreement with Johnson Controls pursuant to which Johnson Controls has agreed to purchase from us, recycled lead on both a tolling (fee to convert used LABs to recycled materials) and merchanting (sale of recycled materials) basis. We have made progress in diversifying our feedstock supply through various sources at more favorable pricing. Consequently, we believe that we have secured an ample supply of used LABs and demand for our lead-based products for the foreseeable future.

Johnson Controls Agreements

Equipment Supply Agreement. We entered into an equipment supply agreement dated February 7, 2017 with Johnson Controls pursuant to which we agreed to collaborate on the development of a program for the installation of new greenfield builds and conversion of existing Johnson Controls and certain strategic partners of Johnson Controls' existing lead smelters to a lead recycling process utilizing our proprietary and patent-pending AquaRefining technology and equipment, know-how and services. We have agreed with Johnson Controls to develop an appropriate program blueprint, and enter into a definitive development program agreement reflecting that blueprint, pursuant to which we will provide to Johnson Controls and certain strategic partners of Johnson Controls, by way of licensing or sale, the following products and services in the regions of North and South America, Europe and China:

- AquaRefining technology and the related equipment, engineering and systems integration support sufficient to convert or retrofit existing smelter-based operations and/or the construction of new Johnson Controls and Johnson Controls' strategic partners' battery recycling facilities based on our AquaRefining technology;
- Training, evaluation and certification of Johnson Controls' operations personnel sufficient for such personnel to competently operate our AquaRefining technology and equipment; and
- Ongoing technical support, maintenance services and warranties.

We plan to provide the above services and equipment to Johnson Controls in conjunction with our partner, Veolia North America Regeneration Services, LLC, on a serviced license basis, including Johnson Controls' ongoing licensing fees payable to us based on the operational capacity of the AquaRefining equipment supplied by us. We have agreed not to license our AquaRefining technology and equipment to third parties in the aforementioned regions until such time as we and Johnson Controls have agreed on certain matters relating to the initial conversion of a Johnson Controls facility. Johnson Controls and we have agreed to use good faith, commercial best-efforts to conclude the discussion and negotiation of the development program agreement no later than April 30, 2019, and to enter into a definitive development program agreement no later than June 30, 2019. The equipment supply agreement may be terminated by either party upon 60 days' prior written notice if the parties have not entered into the development program agreement by June 30, 2019, of which there can be no assurance. The equipment supply agreement allows each party the right to seek early termination based on a material breach by the other party that goes uncorrected for 30 days following notice of breach. The equipment supply agreement contains representations, warranties and indemnities that are customary to commercial agreements of this nature.

Tolling/Lead Purchase Agreement. We have entered into a tolling/lead purchase agreement dated February 7, 2017 with Johnson Controls pursuant to which we have agreed to sell to Johnson Controls, and Johnson Controls has agreed to purchase from us, recycled lead on both a tolling (fee to convert used LABs to recycled materials) and merchanting (sale of recycled materials) basis.

Pursuant to the agreement, Johnson Controls has agreed to purchase from us, and we have agreed to sell to Johnson Controls, up to 100% of the recycled lead we produce for automotive applications, other than by way of tolling arrangements, on a monthly basis, unless we receive notice from Johnson Controls six months advance of its intention to purchase less than 100% of our output in any given month. Our agreement with Johnson Controls excludes, and we are free to manufacture and sell to third parties, recycled lead for non-automotive uses, such as stationery batteries for back-up power systems for Internet/Cloud applications or grid scale storage applications. During fiscal year 2018 and 2017, approximately 88% and 96% of our revenues, respectively, were derived from sales to Johnson Controls.

We have also agreed to provide tolling services to Johnson Controls whereby Johnson Controls will deliver to us used lead acid batteries, or LABs, and we will recycle the used LABs and return the recycled lead to Johnson Controls for a fee. Johnson Controls has agreed to send to us for tolling, and we have agreed to toll for Johnson Controls, used LABs representing a significant allocation of the production capacity of our initial recycling facility in McCarran, Nevada. To date, none of our sales to Johnson Controls have been from tolling.

The tolling/lead purchase agreement has a minimum term of five years and upon the expiration of the initial term the agreement, either party can terminate the agreement upon three years prior written notice. Either party may elect to terminate the agreement for any reason after the second anniversary of the agreement, which termination shall be effective on the third anniversary of the notice of termination. Either party may terminate the agreement on ten days' prior written notice of breach that goes uncorrected during the notice period. The tolling/lead purchase agreement contains representations, warranties and indemnities that are customary to commercial agreements of this nature.

In the fourth quarter of 2018, Johnson Controls International announced that it would sell its power solutions business, which makes, distributes and recycles automotive batteries, to the investment firm Brookfield Business Partners L.P., in a cash deal valued at $13.2 billion. The deal is expected to close in mid-2019. We have received no indication from Johnson Controls or Brookfield that their current strategies relating to Aqua Metals may change.

Interstate Battery Partnership

On May 18, 2016, we entered into a supply agreement with Interstate Battery pursuant to which Interstate Battery agreed to sell to us, and we agreed to buy from Interstate Battery, used LABs. Interstate Battery will sell us used LABs on a cost-plus basis and the agreement subjects us and Interstate Battery to certain minimum purchase and sale requirements. We have granted Interstate Battery limited rights of first refusal to supply our future AquaRefineries. Our agreement with Interstate Battery is for an initial term of 18 months from the date of first delivery of used LABs to us and will be subject to automatic renewals thereafter unless either party elects to terminate the agreement. The agreement allows each party the right to seek early termination based on certain commercial contingencies. The supply agreement contains representations, warranties and indemnities that are customary to commercial agreements of this nature. In June 2018, we reinvigorated our partnership and established an Omnibus Agreement with Interstate Battery in consideration of adjusting the terms of a warrant to purchase 702,247 shares of our common stock from $7.12 per share to $3.33 per share and extending the expiration date of the warrant from May 2018 to June 2020. Interstate Battery materially improved our feedstock supply pricing and agreed to waive alleged violations of a negative covenant related to our purchase of Ebonex as well as the Clark Key Man event. Interstate Battery also reworked the Mould Key Man event to allow us to pay $500,000 for the transfer of the Key Man event to a Cotton Key Man event rather than paying $2,000,000 for a Mould Key Man event as previously specified in the Investor Rights Agreement. We opted for this transfer and subsequently paid Interstate Battery the $500,000 transfer fee in February 2019. In January 2019, we also repaid Interstate Battery the outstanding principal and interest on the convertible debt in the amount of $6.7 million.

Intellectual Property Rights

We regard the protection of our technologies and intellectual property rights as an important element of our business operations and crucial to our success. We endeavor to generate and protect our intellectual property assets through a series of patents, trademarks, internal and external policy and procedures and contractual provisions.

Patent Portfolio

Currently, we have secured one US patent, 13 international patents, and two allowances (one US and one international). In addition to the US patent, we have international patents/allowances in the European Union, Korea, Japan, China, Australia, Canada, African Intellectual Property Organization, Mexico, South Africa and the Ukraine. We also have 90 patent applications pending in the United States and numerous corresponding patent applications pending in 20 additional jurisdictions across seven distinct patent applications relating to certain elements of the technology underlying our AquaRefining process and related apparatus and chemical formulations. The claims of the granted patents substantially address the same subject matter and are drawn to various aspects of processing lead materials using an aqua refining process. Differences in the claim number and scope are due to local rules and practice.

We intend to continue to prepare and file domestic and foreign patent applications covering expanding aspects and applications of our technology, as circumstances warrant.

There can be no assurance that any patents will issue from any of our current or any future applications. Also, any patents that may issue may not survive a legal challenge to their scope, validity or enforceability, or provide significant protection for us. Competitors may work around our patents so they are not infringing. Our patent portfolio and our existing policy and procedures safeguarding our trade secrets nonetheless may face challenges so that our competitors can copy our AquaRefining process.

Trademark Portfolio

We have filed for trademark registration in the US and foreign countries for the following trademarks:

- AQUA METALS (US and 15 foreign countries)
- AQUAREFINING (US and 11 foreign countries)
- AQUAREFINE (US only)

Trade Secrets and Contract Protection

We have developed our internal policy and procedures in safeguarding our trade secrets and proprietary information. Our procedures generally require our employees, consultants and advisors to enter into confidentiality agreements. These agreements provide that all confidential information developed or made known to the individual during the course of the individual's relationship with us is to be kept confidential and not disclosed to third parties except under specific circumstances. In the case of our employees, the agreements provide that all of the technology that is conceived by the individual during the course of employment is our exclusive property. The development of our technology and many of our processes are dependent upon the knowledge, experience and skills of key scientific and technical personnel.

Government Regulation

Our operations in the United States will be subject to the Federal, state and local environmental, health and safety laws applicable to the reclamation of LABs. While the lead reclamation process itself is generally not subject to Federal permitting requirements, depending on how any particular operation is structured, our facilities may have to obtain environmental permits or approvals from Federal, state or local regulators to operate, including permits or regulatory approvals related to air emissions, water discharges, waste management, and the storage of LABs on-site should that become necessary. We may face opposition from local residents or public interest groups to the installation and operation of our facilities. Failure to secure (or significant delays in securing) the necessary approvals could prevent us from pursuing some of our planned operations and adversely affect our business, financial results and growth prospects.

In addition to permitting requirements, our operations are subject to environmental health, safety and transportation laws and regulations that govern the management of and exposure to hazardous materials such as the lead and acids involved in LAB reclamation. These include hazard communication and other occupational safety requirements for employees, which may mandate industrial hygiene monitoring of employees for potential exposure to lead. Failure to comply with these requirements could subject our business to significant penalties (civil or criminal) and other sanctions that could adversely affect our business. Changes to these regulatory requirements in the future could also increase our costs, require changes in or cessation of certain activities, and adversely affect the business.

The nature of our operations involves risks, including the potential for exposure to hazardous materials such as lead, that could result in personal injury and property damage claims from third parties, including employees and neighbors, which claims could result in significant costs or other environmental liability. Our operations also pose a risk of releases of hazardous substances, such as lead or acids, into the environment, which can result in liabilities for the removal or remediation of such hazardous substances from the properties at which they have been released, liabilities which can be imposed regardless of fault, and our business could be held liable for the entire cost of cleanup even if we were only partially responsible. Like any manufacturer, we are also subject to the possibility that we may receive notices of potential liability in connection with materials that were sent to third-party recycling, treatment, and/or disposal facilities under the Federal Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), and comparable state statutes, which impose liability for investigation and remediation of contamination without regard to fault or the legality of the conduct that contributed to the contamination, and for damages to natural resources. Liability under CERCLA is retroactive, and, under certain circumstances, liability for the entire cost of a cleanup can be imposed on any responsible party.

As our business expands outside of the United States, our operations will be subject to the environmental, health and safety laws of the countries where we do business, including permitting and compliance requirements that address the similar risks as do the laws in the United States, as well as international legal requirements such as those applicable to the transportation of hazardous materials. Depending on the country or region, these laws could be as stringent as those in the US, or they could be less stringent or not as strictly enforced. In some countries in which we are interested in expanding our business, such as Mexico and China, the relevant environmental regulatory and enforcement frameworks are in flux and subject to change. Therefore, while compliance with these requirements will cause our business to incur costs, and failure to comply with these requirements could adversely affect our business, it is difficult to evaluate such potential costs or adverse impacts until such time as we decide to initiate operations in particular countries outside the United States.

Employees

As of the date of this report, we employ 76 people on a full-time basis. None of our employees are represented by a labor union.

Financial and Segment Information

We operate our business as a single segment, as defined by generally accepted accounting principles. Our financial information is included in the consolidated financial statements and the related notes.

Available Information

Our website is located at www.aquametals.com and our investor relations website is located at https://ir.aquametals.com/. Copies of our Annual Report on Form 10-K, Quarterly Report on Form 10-Q, Current Reports on Form 8-K, and amendments to these reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, are available, free of charge, on our investor relations website as soon as reasonably practicable after we file such material electronically with or furnish it to the Securities and Exchange Commission, or the SEC. The SEC also maintains a website that contains our SEC filings. The address of the site is *www.sec.gov*. Further, a copy of this Annual Report on Form 10-K is located at the SEC's Public Reference Room at 100 F Street, NE, Washington, D.C. 20549. Information on the operation of the Public Reference Room can be obtained by calling the SEC at 1-800-SEC-0330. The contents of our website are not intended to be incorporated by reference into this Annual Report on Form 10-K or in any other report or document we file with the SEC, and any references to our websites are intended to be inactive textual references only.

Item 1A. Risk Factors

There are numerous and varied risks, known and unknown, that may prevent us from achieving our goals. If any of these risks actually occur, our business, financial condition or results of operation may be materially adversely affected. In such case, the trading price of our common stock could decline and investors could lose all or part of their investment.

Risks Relating to Our Business

Since we have a limited operating history and have only recently commenced revenue producing operations, it is difficult for potential investors to evaluate our business*.* We formed our corporation in June 2014 and only commenced revenue producing operations in the first quarter of 2017. From inception through December 31, 2018, we generated a total of $6.5 million of revenue, all of which was derived primarily from the sale of lead compounds and plastics and, to a lesser extent, the sale of lead bullion, including Aqua Refined lead. To date, our operations have primarily consisted of the development and testing of our AquaRefining process, the construction of our initial LAB recycling facility at TRIC, the continuing development of our LAB recycling operations at TRIC and limited revenue producing operations as we bring those LAB recycling operations online. Our limited operating history makes it difficult for potential investors to evaluate our technology or prospective operations. As an early stage company, we are subject to all the risks inherent in the initial organization, financing, expenditures, complications and delays in a new business, including, without limitation:

- the timing and success of our plan of commercialization and the fact that we continue to experience delays in ramping up our LAB recycling operations at TRIC;
- our ability to bring modules online and ramp up production on a commercial scale.
- our ability to profitably operate our AquaRefining process on a commercial scale;
- our ability to realize the expected benefits of our strategic partnership with Johnson Controls;
- our ability to procure LABs in sufficient quantities at competitive prices; and
- our ability to receive proper certification from and meet the requirements of our customers regarding the purity of our AquaRefined lead.

Investors should evaluate an investment in us in light of the uncertainties encountered by developing companies in a competitive environment. There can be no assurance that our efforts will be successful or that we will ultimately be able to attain profitability.

Our business is dependent upon our successful implementation of novel and unproven technologies and processes and there can be no assurance that we will be able to implement such technologies and processes in a manner that supports the successful commercial roll-out of our business model. While much of the technology and processes involved in our lead recycling operations are widely used and proven, the AquaRefining component of our lead recycling operations is largely novel and unproven. While we have shown that our proprietary technology can produce AquaRefined lead on a small scale, we have only recently completed, and put into limited operation, the processes that we believe will support the production of AquaRefined lead on a commercial scale. Further, as we complete our AquaRefining production line, we continue to encounter unforeseen complications that have delayed the ramping up of our AquaRefining modules and the integration of our AquaRefining process with the traditional lead recycling operations. There can be no assurance that we will be able to overcome these production and performance issues in a timely manner or that we will not encounter additional unforeseen complications that will cause further delays in our planned commercial roll-out of all 16 AquaRefining modules installed at TRIC and to ramp up the production of AquaRefined lead.

We will need additional financing to execute our business plan and fund operations, which additional financing may not be available on reasonable terms or at all*.* As of December 31, 2018, we had total cash of $20.9 million and working capital of $11.0 million, which gives no effect to a January 2019 public offering of our common shares from which we received approximately $9.1 million of net proceeds. As of the date of this report, we believe that we have working capital sufficient to fund our current plan of operations at TRIC over the next twelve months. However, we will require additional capital in order to increase production of AquaRefined lead at TRIC beyond that planned for 16 modules, to work with Johnson Controls on equipment integration and licensing to third parties, to fund working capital needs related to the ramp-up of our operations and to fund our continued losses from operations until such time as we are able to achieve positive cash flow from operations. There can be no assurance that we will be able to acquire the necessary funding on commercially reasonable terms or at all. There can also be no assurance we will be able to conclude the proposed development agreement with Johnson Controls. We intend to seek additional funds through various financing sources, including the sale of our equity and debt securities, licensing fees for our technology, joint ventures with capital partners and/or project financing of our recycling facilities. However, there can be no assurance that such funds will be available on commercially reasonable terms, if at all. If such funding is not available on satisfactory terms, we may be unable to further pursue our business plan and we may be unable to continue operations, in which case you may lose your entire investment.

We have assigned the operation and management of our TRIC facility and any future facilities we may develop directly to Veolia, and there can be no assurance that we will realize the intended benefits of our relationship with Veolia or, if we do, that we will not develop a dependency on Veolia. In February 2018, we entered into an Operations, Management and Maintenance Agreement with Veolia North America Regeneration Services, LLC, or Veolia. Pursuant to the Agreement, Veolia will provide operations, maintenance and management services at our AquaRefining facility at TRIC. We expect Veolia to contribute operational and technological expertise and organizational capabilities in aqueous based process chemistries and electrolysis along with taking on responsibility for operations, supply chain, offtake and management of the plant. While we believe the Agreement will allow us to leverage Veolia's operations and process engineering expertise and supply chain, offtake and waste stream buying power and expertise, there can be no assurance that we will realize the expected benefits our agreement with Veolia. In addition, we have agreed to grant Veolia the right of first refusal to operate and manage any future facilities developed or licensed by us. It is our expectation that Veolia will serve as our go-to-market execution partner to staff and manage AquaRefining facilities with mutually agreed performance metrics for Aqua Metals and our partners. In the event, Veolia is successful in operating and managing the recycling facilities developed by us and our licensees, there is a risk that we will become dependent on Veolia for the operational and managerial expertise and labor. There can be no assurance that Veolia will be able successfully in managing our recycling facilities and those of our partners. There can also be no assurance that Veolia will continue to provide such services in the future, in which case the loss of Veolia as our service provider could cause a serious disruption in our operations.

There can be no assurance that we will be able to negotiate a long-term agreement with Veolia, in which case we may lose Veolia's services at the end of the two-year term of our initial agreement. Our Operations, Management and Maintenance Agreement with Veolia is for a two-year term. Pursuant to the Agreement, we have agreed to enter into good faith negotiations for a longer-term version of the Agreement that will provide for Veolia's management and operation of the TRIC facility for a ten-year term. We have agreed with Veolia to use our good faith commercial best-efforts to conclude negotiations for the long-term agreement by September 30, 2020. We have also agreed to enter into good faith negotiations with Veolia for a long-term agreement concerning Veolia's participation in the commercial licensing and management of our future AquaRefining facilities developed by licensees of Aqua Metals. We have agreed with Veolia to use our good faith commercial best-efforts to conclude negotiations for the long-term licensing and future facilities agreement by June 30, 2020. There can be no assurance that we will be able to negotiate and conclude a definitive long-term agreement with Veolia on commercially reasonable terms, or at all. If we are unable to conclude long-term agreements with Veolia by the designated dates, it is likely that we will lose Veolia as the operator and manager of our TRIC facility.

We are subject to restrictive debt covenants that may limit our ability to run our business, finance our capital needs and pursue business opportunities and activities. As of the date of this report, we are indebted to Green Bank for approximately $9.5 million, which is secured by liens on substantially all of our assets. The credit agreement governing such indebtedness contains covenants that limit our ability to take certain actions. These covenants could limit our ability to finance our future operations and capital needs and our ability to pursue business opportunities and activities that may be in our interest. If we breach any of these covenants, the debt holder could declare a default under the credit agreement, in which case all of the indebtedness may then become immediately due and payable. If the debt under the credit agreement is accelerated, we may not have, or be able to obtain, sufficient funds to make these accelerated payments. In addition, since all of the indebtedness to Green Bank is secured by substantially all of our assets, a default under the credit facility could enable the debtholder to foreclose on its security interest and attempt to seize our assets. The affirmative and negative debt covenants could materially adversely impact our ability to operate and finance our business. In addition, our default under any of these covenants could subject us to accelerated debt payments or foreclosure proceedings that could threaten our ability to continue as a going concern.

In the event of the acceleration of the Green Bank loan, we will need additional financing to satisfy our obligations under the loan, which additional financing may not be available on reasonable terms or at all. As noted above, as of the date of this report, we are indebted to Green Bank for approximately $9.5 million. The credit agreement governing such indebtedness contain various affirmative and negative covenants and if we breach any of these covenants, the debt holder could declare a default under the credit agreement, in which case all of the indebtedness may then become immediately due and payable. If the debt under the credit agreement is accelerated, we may not have sufficient funds to make the accelerated payments, in which case we would be required to seek additional funds through various financing sources, most likely through the sale of our equity or debt securities. However, there can be no assurance that such funds will be available on commercially reasonable terms, if at all. Further, any sale of our equity or equity-linked securities will result in additional dilution to our stockholders.

Our outstanding debt may make it difficult for us obtain additional financing using our future operating cash flow. We currently owe approximately $9.5 million to Green Bank as of the date of this report. Such indebtedness could limit our ability to borrow additional funds to fund operations or expansion or increase the cost of any such borrowing, or both. Our inability to conduct additional debt financing could:

- limit our flexibility in developing our business operations and planning for, or reacting to, changes in our business;
- increase our vulnerability to, and reduce our flexibility to respond to, general adverse economic and industry conditions; and
- place us at a competitive disadvantage as compared to our competitors that are not as highly leveraged.

Any of these or other consequences or events could have a material adverse effect on our ability to finance our business and our operations.

We may be required to pay up to $2.0 million of key-man payments as the result of the resignations of our chief executive officer and chief operating officer. On April 19, 2018, Stephen Clarke resigned as our president and chief executive officer and on December 3, 2018 Selwyn Mould resigned as our chief operating officer. As a result of their resignations, we may be obligated to pay up to $2 million to Johnson Controls, payable, at our option, in cash or shares of our common stock, unless Johnson Controls approves the successor to Mr. Clarke and Mr. Mould. Following the December 3, 2018 resignation of Mr. Mould, Johnson Controls delivered to us its claim for payment of the key-man penalties for Messrs. Clarke and Mould in the total amount of $2 million. We believe, however, that Johnson Controls' demand was premature as it had not considered the adequacy of the replacements for Mr. Clarke or Mr. Mould and that any such claim can be asserted only after their replacements have been appointed and considered in good faith. We intend to dispute Johnson Controls' claims for the key-man payments, however there can be no assurance we will be successful in doing so. If we are unsuccessful in doing so, we may be obligated to pay Johnson Controls up to $2 million payable in cash or, at our option, shares of our common stock having a market value of $2 million.

Our business model is new and has not been proven by us or anyone else. We are engaged in the business of producing recycled lead through a novel and unproven technology. While the production of recycled lead is an established business, to date all recycled lead has been produced by way of traditional smelting processes. To our knowledge, no one has successfully produced recycled lead in commercial quantities other than by way of smelting. In addition, our lead recycling production line at TRIC is the first-of-its-kind and neither we nor anyone else has ever successfully built a production line that commercially recycles LABs without smelting. While we have commenced limited lead recycling operations at our TRIC facility, through December 31, 2018 all of our revenues have been derived primarily from the sale of lead compounds and plastics and to a lesser extent, the sale of lead bullion, including Aqua Refined lead. We began shipments of lead bullion, which included AquaRefined lead in April 2018. In addition to the general risks associated with a novel and unproven technology, our business model is subject to a number of related risks, including:

- our ability to acquire sufficient quantities of used LABs at competitive prices;
- our ability to produce AquaRefined lead that is priced competitively with lead produced by traditional smelting;
- our ability to produce AquaRefined lead on a commercial scale and at an adequate gross profit; and
- our ability to sell our AquaRefined lead at prices and in quantities that provide an adequate net profit from operations.

Further, there can be no assurance that we will be able to produce AquaRefined lead in commercial quantities at a cost of production that will provide us with an adequate profit margin. The uniqueness of our AquaRefining process and our production line at TRIC presents potential risks associated with the development of a business model that is untried and unproven. As of the date of this report, we have begun to ramp up our existing AquaRefining modules into commercial operation, however we continue to experience performance and production issues. There can be no assurance that we will be able to overcome these production and performance issues in a timely manner or that we will not encounter additional unforeseen complications that will cause further delays in our planned commercial roll-out of our AquaRefining modules and the ramp up the production of AquaRefined lead.

Certain industry participants may have the ability to restrict our access to used LABs and otherwise focus significant competitive pressure on us. We believe that our primary competition will come from operators of existing smelters and other parties invested in the existing supply chain for smelting, both of which may resist the change presented by our AquaRefining process. Competition from such incumbents may come in the form of restricted access to used LABs. We believe that LAB manufacturers who also maintain their own smelting operations control a significant part of the market for used LABs. We will require access to used LABs at market prices in order to carry out our business plan. If those LAB manufacturers and others involved in the reverse supply chain for used LABs attempt to restrict our access to used LABs, that may adversely affect our prospects and future growth. There can be no assurance that we will be able to effectively withstand the pressures applied by our competition.

Even if we are successful in recycling lead using our processes, there can be no assurance that the AquaRefined lead will meet the certification and purity requirements of our potential customers. A key component of our business plan is to produce recycled lead through our AquaRefining process of the highest purity (at least 99.99% pure lead), which we refer to as AquaRefined lead. We believe that our AquaRefined lead will provide us with a revenue premium over the market price of lead on the London Metal Exchange, or LME, and, more importantly, our ability to produce AquaRefined lead will be vital to confirming the efficacy and relevancy of our proprietary technology. Our customers will require that our AquaRefined lead meet certain minimum purity standards and, in all likelihood, require independent assays to confirm the lead's purity. As of the date of this report, we have produced limited quantities of AquaRefined lead and in November 2018 Johnson Controls confirmed its approval of the purity of our AquaRefined lead by providing to us official vendor approval to receive finished lead at its manufacturing facilities. However, we have not produced AquaRefined lead in commercial quantities and there can be no assurance that we will be able to do so or, if we are able to produce AquaRefined lead in commercial quantities, that such lead will continue to meet the required purity standards of our customers. If we are unable to commercially produce AquaRefined lead that meets the purity standards established by our customers, our entire business plan may be invalidated and you may suffer the loss of your entire investment.

While we have been successful in producing AquaRefined lead in small volumes, there can be no assurance that we will be able to replicate the process, along with all of the expected economic advantages, on a large commercial scale either for us or our

prospective licensees. As of the date of this report, our commercial operations have primarily involved the production of lead compounds and plastics from recycled LABs and, in April 2018, we commenced the limited production of lead bullion, including AquaRefined lead. While we believe that our development, testing and limited production to date has validated the concept of our AquaRefining process, the limited nature of our operations to date are not sufficient to confirm the economic returns on our production of recycled lead. There can be no assurance that the commencement of commercial production of AquaRefined lead at our TRIC facility will not incur unexpected costs or setbacks that might restrict the desired scale of our intended operations or that we will be to produce AquaRefined lead in commercial quantities at a cost of production that will provide us with an adequate profit margin.

We have completed the construction of our initial LAB recycling facility at TRIC, however we have been delayed in the ramping up of our lead recycling operations at TRIC and we may encounter further delays. We completed the construction of our initial LAB recycling facility at TRIC in August 2016 and commenced the limited production of recycled lead in the first quarter of 2017. However, as of the date of this report, our commercial operations have primarily involved the production of lead compounds and plastics from recycled LABs and we only recently commenced the limited commercial production of AquaRefined lead. However, we have encountered production and performance issues that have impaired and delayed our ability to ramp up the production of AquaRefined lead. There can be no assurance that we will be able to overcome these production and performance issues in a timely manner. In addition, since our lead recycling production line at TRIC is the first-of-its-kind, neither we nor anyone else has ever built a facility of this nature and there can be no assurance that we will not experience additional operational delays and issues, including significant downtime from time to time, as we progress into the commercial production of AquaRefined lead. There can be no assurance that the commencement of commercial AquaRefining operations at our TRIC facility will not incur unexpected costs or hurdles that might restrict the desired scale of our intended operations or negatively impact our projected gross profit margin.

Our business may be negatively affected by labor issues and higher labor costs. Our ability to maintain our workforce depends on our ability to attract and retain new and existing employees. As of the date of this report, none of our employees are covered by collective bargaining agreements and we consider our labor relations to be acceptable. However, we could experience workforce dissatisfaction which could trigger bargaining issues, employment discrimination liability issues as well as wage and benefit consequences, especially during critical operation periods. We could also experience a work stoppage or other disputes which could disrupt our operations and could harm our operating results. In addition, legislation or changes in regulations could result in labor shortages and higher labor costs. There can be no assurance that we may not experience labor issues that negatively impact our operations or results of operations.

Our intellectual property rights may not be adequate to protect our business. As of the date of this report, we have secured granted/allowed patents in the following countries/regions: U.S. (9837689, allowed 14/957026), Canada (2930945), China (105981212), Europe (3072180), Eurasia (allowed 201691047), South Africa (2016-04083), Korea (101739414, 101882932, 101926033), Japan (6173595), Mexico (357027), OAPI (17808), Ukraine (118037), and Australia (2014353227, 2015350562).

We also have further patent applications pending in the United States and numerous corresponding patent applications pending in 20 additional jurisdictions relating to certain elements of the technology underlying our AquaRefining process and related apparatus and chemical formulations. However, no assurances can be given that any patent issued, or any patents issued on our current and any future patent applications, will be sufficiently broad to adequately protect our technology. In addition, we cannot assure you that any patents issued now or in the future will not be challenged, invalidated, or circumvented.

Even patents issued to us may not stop a competitor from illegally using our patented processes and materials. In such event, we would incur substantial costs and expenses, including lost time of management in addressing and litigating, if necessary, such matters. Additionally, we rely upon a combination of trade secret laws and nondisclosure agreements with third parties and employees having access to confidential information or receiving unpatented proprietary know-how, trade secrets and technology to protect our proprietary rights and technology. These laws and agreements provide only limited protection. We can give no assurance that these measures will adequately protect us from misappropriation of proprietary information.

Our processes may infringe on the intellectual property rights of others, which could lead to costly disputes or disruptions. The applied science industry is characterized by frequent allegations of intellectual property infringement. Though we do not expect to be subject to any of these allegations, any allegation of infringement could be time consuming and expensive to defend or resolve, result in substantial diversion of management resources, cause suspension of operations or force us to enter into royalty, license, or other agreements rather than dispute the merits of such allegation. If patent holders or other holders of intellectual property initiate legal proceedings, we may be forced into protracted and costly litigation. We may not be successful in defending such litigation and may not be able to procure any required royalty or license agreements on acceptable terms or at all.

Our business strategy includes licensing arrangements and entering into joint ventures and strategic alliances, however as of the date of this report we have no such agreements in place and there can be no assurance we will be able to do so. Failure to successfully integrate such licensing arrangements, joint ventures, or strategic alliances into our operations could adversely affect our business. We propose to commercially exploit our AquaRefining process, in part, by licensing our technology to third parties and entering into joint ventures and strategic relationships with parties involved in the manufacture and recycling of LABs, including Johnson

Controls, among others. However, as of the date of this report, we have not entered into any such licensing, joint venture or strategic alliance agreements, apart from our equipment supply agreement with Johnson Controls, and there can be no assurance that we will be able to do so on terms that benefit us, if at all. In addition, licensing programs, joint ventures and strategic alliances may involve significant other risks and uncertainties, including distraction of management's attention away from normal business operations, insufficient revenue generation to offset liabilities assumed and expenses associated with the transaction, and unidentified issues not discovered in our due diligence process, such as product quality, technology issues and legal contingencies. In addition, we may be unable to effectively integrate any such programs and ventures into our operations. Our operating results could be adversely affected by any problems arising during or from any licenses, joint ventures or strategic alliances.

There can be no assurance that we will be able to negotiate our key agreement with Johnson Controls on commercially reasonable terms, or at all. In February 2017, we entered into a series of agreements with Johnson Controls, including an equipment supply agreement pursuant to which, among other things, we agreed to work with Johnson Controls on the development of a program for the conversion of Johnson Controls and certain strategic partners of Johnson Controls' existing lead smelters throughout North and South America, China and Europe to a lead recycling process utilizing our AquaRefining technology and equipment, know-how and services. The equipment supply agreement discusses the development of the conversion program in general terms and contemplates that the parties will enter into a definitive development program agreement that is based on the general terms set forth in the equipment supply agreement and provides more detailed terms and conditions, including the economic obligations and rights of each party. We have agreed not to license our AquaRefining technology and equipment to third parties in the aforementioned regions until such time as we and Johnson Controls have agreed on certain matters relating to the initial conversion of a Johnson Controls facility. Johnson Controls and we have agreed to use good faith, commercial best-efforts to conclude the discussion and negotiation of the development program agreement no later than April 30, 2019, and to enter into a definitive development program agreement no later than June 30, 2019. The equipment supply agreement may be terminated by either party upon 60 days' prior written notice if the parties have not entered into the development program agreement by June 30, 2019. There can be no assurance that we will be able to negotiate and conclude a definitive development program agreement with Johnson Controls on commercially reasonable terms, or at all.

We are dependent on a limited number of suppliers of certain materials used in our AquaRefining process and our inability to obtain these materials as and when needed could cause a material disruption in our operations. Our AquaRefining process involves a significant number of elements, chemicals, solvents and other materials, in addition to used LABs. There are a limited number of suppliers of certain materials used in our AquaRefining process and we have no agreements in place for our supply of such materials. Our ability to conduct our AquaRefining process on a commercial scale will depend significantly on obtaining timely and adequate supply of these materials on competitive terms. Our inability to source these materials on a timely and cost-efficient manner could interrupt our operations, significantly limit our revenue sales and increase our costs. This factor could also impair our ability to meet our commitments to supply our customers. Our inability to obtain these materials as and when needed could cause a material disruption in our operations.

If we are unable to manage future expansion effectively, our business, operations and financial condition may suffer significantly, resulting in decreased productivity. If our AquaRefining process proves to be commercially viable, growth and expansion activities could place a significant strain on our managerial, administrative, technical, operational and financial resources. Our organization, procedures and management may not be adequate to fully support the expansion of our operations or the efficient execution of our business strategy. If we are unable to manage future expansion effectively, our business, operations and financial condition may suffer significantly, resulting in decreased productivity.

We may experience significant fluctuations in raw material prices and the price of our principal product, either of which could have a material adverse effect on our liquidity, growth prospects and results of operations. Used LABs are our primary raw material and we believe that in recent years the cost of used LABs has been volatile at times. In addition, we believe that the cost of used LABs can be seasonal, with prices trending lower in the winter months (as automobile owners increase their purchase of new LABs, thereby putting a greater number of used LABs on the market) and trend higher in the spring (as the purchase of new LABs, and supply of used LABs, decreases). Our principal product, recycled lead, has also experienced price volatility from time to time as well. For example, the market price of lead on the LME during 2018 ranged from approximately $1,900 to $2,700 per tonne. While we intend to pursue supply and tolling arrangements as appropriate to offset any price volatility, the volatile nature of prices for used LABs and recycled lead could have an adverse impact on our liquidity, growth prospects and results of operations.

Global economic conditions could negatively affect our prospects for growth and operating results. Our prospects for growth and operating results will be directly affected by the general global economic conditions of the industries in which our suppliers, partners and customer groups operate. We believe that the market price of our principal product, recycled lead, is relatively volatile and reacts to general global economic conditions. Lead prices decreased from $2,139 per tonne on May 5, 2015 to a low of $1,554 per tonne on November 23, 2015 because of fluctuations in the market. A month later, the price per tonne increased back up to $1,801 per tonne; the price per tonne was $2,008 on December 31, 2018. Our business will be highly dependent on the economic and market conditions in each of the geographic areas in which we operate. These conditions affect our business by reducing the demand for LABs and decreasing the price of lead in times of economic down turn and increasing the price of used LABs in times of increasing demand of LABs and recycled lead. There can be no assurance that global economic conditions will not negatively impact our liquidity, growth prospects and results of operations.

We are subject to the risks of conducting business outside the United States. A part of our strategy involves our pursuit of growth opportunities in certain international market locations. We intend to pursue licensing or joint venture arrangements with local partners who will be primarily responsible for the day-to-day operations. Any expansion outside of the US will require significant management attention and financial resources to successfully develop and operate any such facilities, including the sales, supply and support channels, and we cannot assure you that we will be successful or that our expenditures in this effort will not exceed the amount of any resulting revenues. Our international operations expose us to risks and challenges that we would otherwise not face if we conducted our business only in the United States, such as:

- increased cost of enforcing our intellectual property rights;
- heightened price sensitivities from customers in emerging markets;
- our ability to establish or contract for local manufacturing, support and service functions;
- localization of our LABs and components, including translation into foreign languages and the associated expenses;
- compliance with multiple, conflicting and changing governmental laws and regulations;
- foreign currency fluctuations;
- laws favoring local competitors;
- weaker legal protections of contract terms, enforcement on collection of receivables and intellectual property rights and mechanisms for enforcing those rights;
- market disruptions created by public health crises in regions outside the United States;
- difficulties in staffing and managing foreign operations, including challenges presented by relationships with workers' councils and labor unions;
- issues related to differences in cultures and practices; and
- changing regional economic, political and regulatory conditions.

U.S. Government regulation and environmental, health and safety concerns may adversely affect our business. Our operations in the United States will be subject to the Federal, State and local environmental, health and safety laws applicable to the reclamation of lead acid batteries. Our facilities will have to obtain environmental permits or approvals to operate, including those associated with air emissions, water discharges, and waste management and storage. We may face opposition from local residents or public interest groups to the installation and operation of our facilities. In addition to permitting requirements, our operations are subject to environmental health, safety and transportation laws and regulations that govern the management of and exposure to hazardous materials such as the lead and acids involved in battery reclamation. These include hazard communication and other occupational safety requirements for employees, which may mandate industrial hygiene monitoring of employees for potential exposure to lead. Failure to comply with these requirements could subject our business to significant penalties (civil or criminal) and other sanctions that could adversely affect our business.

In the event we are unable to present and operate our AquaRefining process and operations as safe and environmentally responsible, we may face opposition from local governments, residents or public interest groups to the installation and operation of our facilities.

The development of new AquaRefining facilities by us or our partners or licensees, and the expansion of our operations at TRIC, will depend on our ability to acquire necessary permits and approvals, of which there can be no assurance. As noted above, our AquaRefining facilities will have to obtain environmental permits or approvals to operate, including those associated with air emissions, water discharges, and waste management and storage. In addition, we expect that our planned expansion of AquaRefining operations at TRIC will require additional permitting and approvals. Failure to secure (or significant delays in securing) the necessary permits and approvals could prevent us and our partners and licensees from pursuing additional AquaRefining facilities or expanding operations at TRIC, and otherwise adversely affect our business, financial results and growth prospects. Further, the loss of any necessary permit or approval could result in the closure of an AquaRefining facility and the loss of our investment associated with such facility.

Our business involves the handling of hazardous materials and we may become subject to significant fines and other liabilities in the event we mishandle those materials. The nature of our operations involves risks, including the potential for exposure to hazardous materials such as lead, that could result in personal injury and property damage claims from third parties, including employees and neighbors, which claims could result in significant costs or other environmental liability. Our operations also pose a risk of releases of hazardous substances, such as lead or acids, into the environment, which can result in liabilities for the removal or remediation of such hazardous substances from the properties at which they have been released, liabilities which can be imposed regardless of fault, and our business could be held liable for the entire cost of cleanup even if we were only partially responsible. We are also subject to the possibility that we may receive notices of potential liability in connection with materials that were sent to third-party recycling, treatment, and/or disposal facilities under the Federal Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), and comparable state statutes, which impose liability for investigation and remediation of contamination without regard

to fault or the legality of the conduct that contributed to the contamination, and for damages to natural resources. Liability under CERCLA is retroactive, and, under certain circumstances, liability for the entire cost of a cleanup can be imposed on any responsible party. Any such liability could result in judgments or settlements that restrict our operations in a manner that materially adversely effects our operations and could result in fines, penalties or awards that could materially impair our financial condition and even threaten our continued operation as a going concern.

We will be subject to foreign government regulation and environmental, health and safety concerns that may adversely affect our business. As our business expands outside of the United States, our operations will be subject to the environmental, health and safety laws of the countries where we do business, including permitting and compliance requirements that address the similar risks as do the laws in the United States, as well as international legal requirements such as those applicable to the transportation of hazardous materials. Depending on the country or region, these laws could be as stringent as those in the US, or they could be less stringent or not as strictly enforced. In some countries in which we are interested in expanding our business, such as Mexico and China, the relevant environmental regulatory and enforcement frameworks are in flux and subject to change. Compliance with these requirements will cause our business to incur costs, and failure to comply with these requirements could adversely affect our business.

In the event we are unable to present and operate our AquaRefining process and operations as safe and environmentally responsible, we may face opposition from local governments, residents or public interest groups to the installation and operation of our facilities.

Risks Related to Owning Our Common Stock

A securities class action lawsuit and shareholder derivative lawsuit are pending against us and could have a material adverse effect on our business, results of operations and financial condition. A putative consolidated class action lawsuit and shareholder derivative lawsuit are pending against us and certain of our directors and officers. These lawsuits may divert financial and management resources that would otherwise be used to benefit our operations. Although we deny the material allegations in the lawsuits and intend to defend ourselves vigorously, defending the lawsuits could result in substantial costs. No assurances can be given that the results of these matters will be favorable to us. An adverse resolution of any of these lawsuits could have a material adverse effect on our results of operations and financial condition. In addition, we may be the target of securities-related litigation in the future, both related and unrelated to the existing class action and shareholder derivative lawsuits. Such litigation could divert our management’s attention and resources, result in substantial costs, and have an adverse effect on our business, results of operations and financial condition.

We maintain director and officer insurance that we regard as reasonably adequate to protect us from potential claims; however, we are responsible for meeting certain deductibles under the policies and, in any event, we cannot assure you that the insurance coverage will adequately protect us from claims made. Further, as a result of the pending litigation the costs of insurance may increase and the availability of coverage may decrease. As a result, we may not be able to maintain our current levels of insurance at a reasonable cost, or at all, which might make it more difficult to attract qualified candidates to serve as executive officers or directors.

Our common stock is thinly traded and our share price has been volatile. Our common stock has traded on the Nasdaq Capital Market, under the symbol “AQMS”, since July 31, 2015. Since that date, our common stock has at times been relatively thinly traded and subject to price volatility. There can be no assurance that we will be able to successfully maintain a liquid market for our common shares. The stock market in general, and early stage public companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of such companies. If we are unable to develop and maintain a liquid market for our common shares, you may not be able to sell your common shares at prices you consider to be fair or at times that are convenient for you, or at all. In addition, following periods of volatility in the market price of a company's securities, litigation has often been brought against that company and we may become the target of litigation as a result of price volatility. Litigation could result in substantial costs and divert our management's attention and resources from our business. This could have a material adverse effect on our business, results of operations and financial condition.

We are an “emerging growth company” under the JOBS Act of 2012 and we cannot be certain if the reduced disclosure requirements applicable to emerging growth companies will make our common stock less attractive to investors*.* We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012 (“JOBS Act”), and we may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not “emerging growth companies” including, but not limited to:

- not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act;
- reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements;
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments; and
- extended transition periods available for complying with new or revised accounting standards.

We have chosen to “opt out” of the extended transition periods available for complying with new or revised accounting standards, but we intend to take advantage of all of the other benefits available under the JOBS Act, including the exemptions discussed above. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

We will remain an “emerging growth company until 2020, although we will lose that status sooner if our revenues exceed $1.07 billion, if we issue more than $1.07 billion in non-convertible debt in a three-year period, or if the market value of our common stock that is held by non-affiliates exceeds $700 million as of any June 30.

Our status as an “emerging growth company” under the JOBS Act may make it more difficult to raise capital as and when we need it. Because of the exemptions from various reporting requirements provided to us as an “emerging growth company,” we may be less attractive to investors and it may be difficult for us to raise additional capital as and when we need it. Investors may be unable to compare our business with other companies in our industry if they believe that our reporting is not as transparent as other companies in our industry. If we are unable to raise additional capital as and when we need it, our financial condition and results of operations may be materially and adversely affected.

We have not paid dividends in the past and have no plans to pay dividends. We plan to reinvest all of our earnings, to the extent we have earnings, in order to develop our recycling centers and cover operating costs and to otherwise become and remain competitive. We do not plan to pay any cash dividends with respect to our securities in the foreseeable future. We cannot assure you that we would, at any time, generate sufficient surplus cash that would be available for distribution to the holders of our common stock as a dividend. Therefore, you should not expect to receive cash dividends on our common stock.

Shares eligible for future sale may adversely affect the market for our common stock. Of the 44,354,852 shares of our common stock outstanding as of the date of this report, approximately 40,422,488 shares are held by “non-affiliates” and are freely tradable without restriction pursuant to Rule 144. In addition, in August 2016, we filed with the SEC a Registration Statement on Form S-3 for purposes of registering the resale of 3,711,872 shares of restricted common stock sold to Interstate Battery in May 2016, including 3,009,625 shares of common stock issuable to Interstate Battery upon exercise of its warrants and conversion of its convertible note, and in February 2017, we filed with the SEC a Registration Statement on Form S-3 for purposes of registering the resale of the 939,005 shares of restricted common stock we sold to Johnson Controls in February 2017. Both registration statements were declared effective by the SEC and the shares registered thereunder are eligible for sale without restriction. Any substantial sale of our common stock pursuant to Rule 144 or pursuant to any resale prospectus may have a material adverse effect on the market price of our common stock.

Our charter documents and Delaware law may inhibit a takeover that stockholders consider favorable. Provisions of our certificate of incorporation and bylaws and applicable provisions of Delaware law may delay or discourage transactions involving an actual or potential change in control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. The provisions in our certificate of incorporation and bylaws:

- limit who may call stockholder meetings;
- do not permit stockholders to act by written consent;
- do not provide for cumulative voting rights;
- establish an advance notice procedure for stockholders' proposals to be brought before an annual meeting, including proposed nominations of persons for election to our board of directors, and
- provide that all vacancies may be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum.

In addition, Section 203 of the Delaware General Corporation Law may limit our ability to engage in any business combination with a person who beneficially owns 15% or more of our outstanding voting stock unless certain conditions are satisfied. This restriction lasts for a period of three years following the share acquisition. These provisions may have the effect of entrenching our management team and may deprive you of the opportunity to sell your shares to potential acquirers at a premium over prevailing prices. This potential inability to obtain a control premium could reduce the price of our common stock.

Our bylaws designate the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain litigation that may be initiated by our stockholders, which could limit our stockholders’ ability to obtain a favorable judicial forum for disputes with the Company. Our bylaws provide that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (iii) any action asserting a claim against us or any our directors, officers or other employees arising pursuant to any provision of the Delaware General Corporation Law or our certificate of incorporation or bylaws, or (iv) any action asserting a claim against us or any our directors, officers or other employees governed by the internal affairs doctrine. This forum selection provision in our bylaws may limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or any our directors, officers or other employees.

Item 1B. Unresolved Staff Comments

Not applicable.

Item 2. Properties

Our executive offices are presently located in 14,016 square feet of mixed office and warehouse space in McCarran, Nevada. We lease these facilities at a lease rate of approximately $10,000 per month. The lease term began in July 2018 and expires December 31, 2021.

Our executive offices were previously located in 21,697 square feet of office and industrial space in a multi-building commercial project known as "Marina Village" located in Alameda, California. The lease term is 76 months, commencing February 1, 2016 and expiring May 31, 2022. Subsequent to year end we sublet the property with the sublease commencing February 2019, and expiring May 31, 2022.

We have developed and own a 136,750 square foot LAB recycling facility on 11.73 acres of land located in TRIC, a 107,000-acre park located nine miles east of Reno, Nevada on I-80.

Item 3. Legal Proceedings

Beginning on December 15, 2017, three purported class action lawsuits were filed in the United Stated District Court for the Northern District California against us, Stephen Clarke, Thomas Murphy and Mark Weinswig. On March 23, 2018, the cases were consolidated under the caption *In Re: Aqua Metals, Inc. Securities Litigation* Case No 3:17-cv-07142. On May 23, 2018, the Court appointed lead plaintiffs and approved counsel for the lead plaintiffs. On July 20, 2018, the lead plaintiffs filed a consolidated amended complaint ("Amended Complaint"), on behalf of a class of persons who purchased our securities between May 19, 2016 and November 9, 2017, against us, Stephen Clarke, Thomas Murphy and Selwyn Mould. The Amended Complaint alleges the defendants made false and misleading statements concerning our lead recycling operations in violation of Section 10(b) of the Securities Exchange Act of 1934 ("Exchange Act") and Rule 10b-5 promulgated thereunder and seeks to hold the individual defendants as control persons pursuant to Section 20(a) of the Exchange Act. The Amended Complaint also alleges a violation of Section 11 of the Securities Act of 1933 ("Securities Act") based on alleged false and misleading statements concerning our lead recycling operations contained in, or incorporated by reference in, our Registration Statement on Form S-3 filed in connection with our November 2016 public offering. That claim is asserted on behalf of a class of persons who purchased shares pursuant to, or that are traceable to, that Registration Statement. The Amended Complaint seeks to hold the individual defendants liable as control persons pursuant to Section 15 of the Securities Act. The Amended Complaint seeks unspecified damages and plaintiffs' attorneys' fees and costs. On September 18, 2018, the defendants filed a motion to dismiss the Amended Complaint in its entirety and the plaintiff subsequently filed its opposition to the motion. In January 2019, the court notified the parties that it will rule on the motion to dismiss without a hearing. We deny that the claims in the Amended Complaint have any merit and we intend to vigorously defend the action.

Beginning on February 2, 2018, five purported shareholder derivative actions were filed in the United States District Court for the District of Delaware against us and certain of our current and former executive officers and directors, Stephen R. Clarke, Selwyn Mould, Thomas Murphy, Mark Weinswig, Vincent DiVito, Mark Slade and Mark Stevenson. On May 3, 2018, the cases were consolidated under the caption *In re Aqua Metals, Inc. Stockholder Derivative Litigation*, Case No. 1:18-cv-00201-LPS (D. Del.). The complaints were filed by persons claiming to be stockholders of Aqua Metals and generally allege that certain of our officers and directors breached their fiduciary duties to us by violating the federal securities laws and exposing us to possible financial liability. The complaints seek unspecified damages and plaintiffs' attorneys' fees and costs. The parties have entered into a stipulation staying the action until 30 days after a decision on our motion to dismiss the Amended Complaint in the class action described above. The individual defendants deny that the claims in the shareholder derivative action have any merit and intend to vigorously defend the action.

We are not party to any other legal proceedings. We may, from time to time, be party to litigation and subject to claims incident to the ordinary course of business. As our growth continues, we may become party to an increasing number of litigation matters and claims. The outcome of litigation and claims cannot be predicted with certainty, and the resolution of any future matters could materially affect our future financial position, results of operations or cash flows.

Item 4. Mine Safety Disclosures

Inapplicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Repurchases of Equity Securities

Market Information

Our common stock has traded on the NASDAQ Capital Market under the symbol "AQMS," since our initial public offering on July 31, 2015. Since then, our common stock has been relatively thinly traded at times and has experienced, and is expected to experience in the future, significant price and volume volatility. The following table shows the reported high and low closing prices per share for our common stock based on information provided by the NASDAQ Capital Market for the periods indicated.

	2018		2017		2016	
	High	Low	High	Low	High	Low
First Quarter	$ 3.00	$ 1.59	$ 21.89	$ 10.68	$ 6.65	$ 4.51
Second Quarter	$ 4.14	$ 2.26	$ 18.56	$ 10.44	$ 12.92	$ 7.15
Third Quarter	$ 3.11	$ 2.24	$ 12.55	$ 5.49	$ 12.73	$ 8.18
Fourth Quarter	$ 2.92	$ 1.55	$ 6.91	$ 1.88	$ 13.66	$ 8.62

Holders of Record

As of February 26, 2019, there were 10 holders of record of our common stock.

Dividend Policy

We have never declared or paid cash dividends on our common stock. We presently intend to retain earnings, if any, to finance the operation and expansion of our business.

Equity Compensation Plan Information

We have adopted the Aqua Metals, Inc. 2014 Stock Incentive Plan providing for the grant of non-qualified stock options and incentive stock options to purchase shares of our common stock and for the grant of restricted and unrestricted share grants. We have reserved 2,113,637 shares of our common stock under the plan. All of our officers, directors, employees and consultants are eligible to participate under the plan. The purpose of the plan is to provide eligible participants with an opportunity to acquire an ownership interest in our company.

The following table sets forth the number and weighted-average exercise price of securities to be issued upon exercise of outstanding options and warrants, and the number of securities remaining available for future issuance, under our equity compensation plan at December 31, 2018.

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights		Weighted-Average Exercise Price of Outstanding Options and Warrants	Number of Securities Remaining Available for Future Issuance Under Equity compensation Plans
Equity compensation plans approved by stockholders	950,691	(1)	$ 4.18	805,749
Equity compensation plans not approved by stockholders	3,180,828	(2)	$ 6.57	—

(1) Includes 854,068 shares relating to outstanding options and 96,623 relating to restricted stock units under our Amended and Restated 2014 Stock Incentive Plan.

(2) Consists of warrants issued in connection with financing activities and 840,000 shares relating to outstanding options granted in reliance on Nasdaq Rule 5635(c)(4) .

Unregistered Sales of Equity Securities and Use of Proceeds

None.

Item 6. Selected Financial Data

Set forth below is selected consolidated financial data of Aqua Metals, Inc. as of and for the years ended December 31, 2018, 2017, 2016, 2015 and the period from June 2014 (inception) to December 31, 2014. The financial data has been obtained or derived from our audited consolidated financial statements. The information below is not necessarily indicative of the results of future operations and should be read in conjunction with Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations," and Item 1A, "Risk Factors," of this Annual Report on Form 10-K, and the consolidated financial statements and related notes thereto included in Item 8, "Financial Statements and Supplementary Data", of this Annual Report on Form 10-K, in order to fully understand factors that may affect the comparability of the information presented below.

	Year Ended December 31,				Period from Inception (June 20, 2014) to December 31,
	2018	2017	2016	2015	2014
	(in thousands, except share and per share data)				
Consolidated Statements of Operations:					
Product sales	$ 4,449	$ 2,088	$ —	$ —	—
Operating cost and expense					
Cost of product sales	22,761	9,541	—	—	—
Research and development cost	4,502	8,103	6,348	2,280	231
General and administrative expense	14,214	6,891	6,610	3,171	1,176
Impairment charge	—	2,411	—	—	—
Total operating expense	41,477	26,946	12,958	5,451	1,407
Loss from operations	(37,028)	(24,858)	(12,958)	(5,451)	(1,407)
Other income and expense					
Increase in fair value of derivative liabilities	—	—	—	(5,776)	(1,172)
Interest expense	(3,447)	(1,761)	(639)	(1,128)	(217)
Interest and other income	223	41	41	26	1
Total other income (expense), net	(3,224)	(1,720)	(598)	(6,878)	(1,388)
Loss before income tax expense	(40,252)	(26,578)	(13,556)	(12,329)	(2,795)
Income tax expense	(2)	(2)	(1)	(3)	421
Net loss	$ (40,254)	$ (26,580)	$ (13,557)	$ (12,332)	$ (2,374)
Weighted average shares outstanding, basic and diluted	34,154,826	20,293,100	15,267,233	8,404,311	4,363,641
Basic and diluted net loss per share	$ (1.18)	$ (1.31)	$ (0.89)	$ (1.47)	$ (0.54)

	As of December 31,	
	2018	2017
Selected Consolidated Balance Sheet Data:		
Cash, cash equivalents	$ 20,892	$ 22,793
Total assets	71,371	74,442
Working capital	10,953	21,850
Current liabilities	11,799	3,834
Long-term obligations, less current portion	9,482	11,643
Common stock and additional paid-in capital	145,186	113,807
Accumulated deficit	(95,096)	(54,842)
Total stockholders’ equity	$ 50,090	$ 58,965

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

General

Aqua Metals (NASDAQ: AQMS) is engaged in the business of lead recycling through its novel, proprietary and patented AquaRefining™ technology. AquaRefining is a near room temperature, water and organic acid-based process that greatly reduces environmental emissions. We believe our suite of patented and patent pending AquaRefining technologies will allow the lead-acid battery industry to simultaneously improve the environmental impact of lead recycling and scale recycling production to meet demand. Furthermore, our AquaRefining technologies result in high purity lead. We were formed as a Delaware corporation on June 20, 2014 and since our formation, we have focused our efforts on the development and testing of our AquaRefining process, the construction of our initial lead acid battery, or LAB, recycling facility at the Tahoe-Reno Industrial Center, or TRIC, located in McCarran, Nevada and commercializing the AquaRefining process.

We completed the development of our first LAB recycling facility at TRIC and commenced production of battery breaking and limited operations during the first quarter of 2017. The TRIC facility now produces varying products for commercial sales primarily consisting of ingoted AquaRefined lead, lead compounds, ingoted hard lead and as well as plastic. In April 2017 we commenced the shipment of products for sale, consisting of lead compounds as well as plastics. In April 2018 we commenced the limited production of lead bullion, including AquaRefined lead. In July 2018 we commenced the sale of pure AquaRefined lead in the form of two tonne blocks and in October 2018 we commenced the sale of AquaRefined lead in the form of battery manufacturing ready ingots. In November 2018 we received official vendor certification from Johnson Controls for our AquaRefined lead and in December 2018 we commenced shipments directly to Johnson Controls owned and partner battery manufacturing facilities.

As of December 2017, we had installed 16 AquaRefining modules at TRIC. To date, we have operated the first four of the 16 modules and have made continuous improvements which have led to individual modules running in a steady state producing 100Kg/hour for several days at a time. As we bring the modules into commercial operation, we expect to continue to adjust the modules to further enhance operation. Although we staffed the facility and ran one or two AquaRefining Modules on a 24x7 basis from October to December of 2018, we are currently running one or two modules 24-hours a day, four days a week to allow safe times for some of the key work to be completed for our contribution margin improvement projects. Subject to key work being completed in the first quarter of 2019, we intend to re-instate 24-hour, seven days a week, continuous operations shortly thereafter and scale to running all four of the initial four modules before bringing the next four modules on line. In addition, we believe this operational strategy will allow us to maximize lead production, while enabling the remaining components of the plant to be synchronized in support of increased AquaRefining. Once we are satisfied with the operation of the first four modules, additional modules will be brought into production. This process will be repeated until full production is reached with all 16 modules. Our goal is to operate all 16 modules on a 24/7 continuous basis by the end of 2019. However, due to the delays and unforeseen issues in the completion of the AquaRefining production line we have experienced to date, there can be no assurance that we will not encounter additional delays and issues.

Upon completing and commissioning the infrastructure and operational improvements already underway in the facility which are intended to result in positive contribution margin for AquaRefined lead product, we will then scale the plant and bring additional modules on line. These infrastructure and operational improvements are expected to allow us to recover and recycle our chemical feedstock much more efficiently thus improving our contribution margin. In December 2018, we announced that we were nearing completion of Phase One of our two-phase capital improvement program. Specifically, electrolyte recovery is critical to achieving positive contribution margin and, as of the date of this report, we are now conserving 67% of our target for electrolyte recovery. We expect to conserve 75% of our target for electrolyte recovery when we complete Phase One of the program during the first half of 2019 and conserve 100% when we complete Phase Two. We are already running a successful pilot program for the Phase Two solution of our capital improvement program, which, along with conserving additional electrolyte, should generate higher lead yields for our AquaRefining process, further improving contribution margin.

Ultimately, our goal is to operate all 16 modules running on a continuous basis, however we have decided that the initial operation of fewer modules continuously will allow us to reach full scale operations in a more cost-effective manner. In addition, we believe this operational strategy will allow us to synchronize the remaining components of the plant in support of increased AquaRefining. Once we have achieved positive contribution margin and are satisfied with the operation of the first four modules and the supporting infrastructure, additional modules will be brought into production. This process will be repeated until full production is reached with all 16 modules. However, due to the delays and unforeseen operational issues we have experienced to date, there can be no assurance that we will be able to overcome the current production and performance issues in a timely manner or that we will not encounter additional delays and issues.

Since January 1, 2018, we have engaged in the following financing transactions:

Amendments of Interstate Battery agreements. On June 24, 2018, we entered into a series of agreements with Interstate Battery International, Inc. and its wholly-owned subsidiary ("Interstate Battery"), including an amendment to the Investor Rights Agreement dated May 18, 2016 with Interstate Battery pursuant to which, among other things, we agreed to compensate Interstate Battery should either Stephen Clarke, our former chief executive officer, or Selwyn Mould, our former chief operating officer, no longer hold such positions or no longer devote substantially all of their business time and attention to our company, whether as a result of resignation, death, disability or otherwise (such an event referred to as a "key-man event"). Pursuant to the Investor Rights Agreement, we agreed to pay Interstate Battery $2,000,000, per occurrence, if either officer was subject to a key-man event during the two years following May 18, 2016. We also agreed to pay Interstate Battery $2,000,000 if either or both officers are subject to a key-man event during the third year following May 18, 2016. Pursuant to the amendment to the Investor Rights Agreement, Interstate Battery agreed to waive all payments under the key-man provisions of the Investor Rights Agreement with respect to the resignation of our former chief executive officer, Stephen Clarke. In addition, the parties agreed that we, at our option, can elect to eliminate the key-man event and all related key-man payments associated with Mr. Mould by (i) paying Interstate Battery a one-time fee of $0.5 million, payable by us in cash and (ii) agreeing to pay Interstate Battery $2.0 million, payable at our election in cash or shares of our common stock, should our current president, Steve Cotton no longer serve as our president during the period ending May 18, 2019. Additionally:

- With respect to a Credit Agreement dated May 18, 2016 between us and Interstate Battery, Interstate Battery waived the alleged breach of the Credit Agreement based on our acquisition of Ebonex IPR, Ltd.;
- We adjusted the terms of a warrant to purchase 702,247 shares of its common stock issued to Interstate Battery in May 2016, pursuant to which the exercise price of the warrant was decreased from $7.12 per share to $3.33 per share and the expiration date of the warrant was extended to June 23, 2020; and
- Interstate Battery agreed to provide us with more favorable pricing and payment terms under the Supply Agreement dated May 18, 2016 pursuant to which we buy used lead acid batteries from Interstate Battery.

Public Offering. On June 18, 2018, we completed a public offering of 10,085,500 shares of our common stock, at the price of $2.85 per share, for gross proceeds of $28.7 million. After the payment of underwriter discounts and offering expenses we received net proceeds of approximately $26.6 million.

In January 2019, we completed a public offering of 5,175,000 shares of our common stock, at the price of $1.90 per share, for gross proceeds of $9.8 million. After the payment of underwriter discounts and offering expenses, we received net proceeds of approximately $9.1 million.

Plan of Operations

Our plan of operations for the 12-month period following the date of this report, and upon the satisfactory operation of the first four modules, is to complete the commercial roll-out of all 16 AquaRefining modules installed at TRIC and to ramp up the production of AquaRefined lead. We may also install an additional 16 AquaRefining modules at TRIC, subject to the receipt of additional capital and any design improvements that are recommended based on the operation of the first 16 modules.

On February 28, 2019, after engaging in extensive diligence and engineering evaluations, we signed a long-term contract with Veolia North America Regeneration Services LLC (Veolia), to provide operations, maintenance and management services at Aqua Metals' AquaRefining facility in McCarran, Nevada.

Veolia will contribute operational and technological expertise and organizational capabilities in aqueous based process chemistries and electrolysis along with taking on responsibility for operations, supply chain, offtake and management of the plant. Veolia employees will begin working onsite starting March 4, 2019 at the McCarran facility. In addition to receiving expertise and support from Veolia North America resources overall, this Agreement provides for Veolia to relocate up to six (6) full time employees with strong operations, process engineering, management expertise to join the Aqua Metals team at AquaRefinery in McCarran, NV. Veolia North America will take over the primary responsibility for scaling the facility through the remainder of 2019 to CP1-16 (Commercial Plant 1, 16 AquaRefining Modules) of capacity. The Agreement also provides for Veolia and Aqua Metals to work together to plan in 2019 and complete the expansion of the TRIC facility to 32 AquaRefining Modules.

We are now receiving the full previously negotiated premium value for ongoing shipments of AquaRefined lead from our partner Johnson Controls. As previously announced in October 2018, we have our ingot casting line in production, which enables us to ship our key product in final ingot form directly to battery manufacturing facilities and be compatible with the equipment in those facilities. We are also working with other prospective buyers in the lead industry who are seeking ultra-pure lead for both offtake diversity and an average higher premium than we've negotiated with Johnson Controls. In 2019, in addition to batteries being made from AquaRefined lead, we are also exploring non-battery products incorporating AquaRefining technologies.

Additionally, we plan to further improve the plant economics by processing a growing proportion of the metallic lead we recover from breaking batteries within the AquaRefinery and have begun to commission the third of our six kettles in the refining area. We anticipate the success of this planned program will unlock additional contribution margin in early 2019 by enabling us to finish a growing proportion of these materials in-house, thus realizing a continually improving margin and positioning us for earning a premium later in 2019 by refining alloys in-house. We are in the process of commissioning the third of the already purchased kettles as a key part of our project to enable our capability to process this material. We are also developing what we believe to be industry leading know-how and other intellectual property that we are making every effort to secure and add to our suite of smelting-free lead recycling technologies that we believe we can in turn monetize by licensing.

In parallel with our efforts to commercialize our existing AquaRefining operations and test further the premiums we can receive for our ultra-pure AquaRefined lead, our 12-month plan of operations also includes our proposal to license our technology and to provide planning, engineering, technical assistance, equipment and other services in support of the addition of an AquaRefining facility to a battery recycling facility owned by Johnson Controls. Licensing could take the form of either a co-processing arrangement whereby we operate our technology in conjunction with an existing smelter or our licensee operates directly utilizing our technology. The proposed work with Johnson Controls is expected to produce a blueprint for further additions of AquaRefining facilities under a proposed definitive development agreement with Johnson Controls. Pursuant to this proposed definitive development agreement, we will collaborate with Johnson Controls for the deployment of AquaRefining technologies within Johnson Controls' and certain strategic partners of Johnson Controls existing lead smelters to implement a lead recycling process utilizing our proprietary AquaRefining technology and equipment, know-how and services. However, there can be no assurance that we will be able to conclude a definitive development agreement with Johnson Controls on terms that benefit us, if at all.

Our 12-month plan of operations also includes the pursuit and evaluation of additional strategic relationships, including our recently announced relationship with Veolia and the licensing of our technology and the provision of equipment and services to other potential strategic partners. However, there can be no assurance that we will be able to effect any of these additional partnerships in the future on commercially reasonable terms, or at all.

Results of Operations for the Fiscal Year Ended December 31, 2018 Compared to the Fiscal Year Ended December 31, 2017

We were formed on June 20, 2014 and did not commence revenue producing operations until January 2017. During the second quarter of 2017, we began shipments of lead compounds and plastics to customers. During the second quarter of 2018, we began shipments of lead bullion in addition to lead compounds and plastics to customers. The following table summarizes results of operations with respect to the items set forth below for the year ended December 31, 2018 and 2017 together with the percentage change in those items (in thousands).

	Year ended December 31,			
	2018	2017	Favorable (Unfavorable)	% Change
Product sales	$ 4,449	$ 2,088	$ 2,361	113 %
Cost of product sales	22,761	9,541	(13,220)	(139)%
Research and development cost	4,502	8,103	3,601	44 %
General and administrative expense	14,214	6,891	(7,323)	(106)%
Impairment charge	—	2,411	2,411	100 %
Total operating expense	$ 41,477	$ 26,946	$ (14,531)	(54)%

As mentioned above, product sales, consisting of lead compounds and plastics began in April 2017. Cost of product sales consists of all operating costs incurred at TRIC following the commencement of product sales. Costs incurred at TRIC prior to commencement of sales are included in research and development costs. Cost of product sales includes raw materials, supplies and related costs, salaries and benefits, consulting and outside services costs, depreciation and amortization costs and insurance, travel and overhead costs.

Revenue for the year ended December 31, 2018 doubled compared to the year ended December 31, 2017. This increase is due to increased sales of AquaRefined lead in our product mix as well as having a full year of operations in 2018 versus approximately eight months during 2017. AquaRefined lead sales comprised 16% and 9% of total revenue during the three and twelve months ended December 31, 2018, respectively. At full capacity, we expect AquaRefined lead sales to reach approximately 50% of total revenue. Prior to the increased sales of AquaRefined lead, including during the three months ended March 31, 2018, we ran the balance of the plant at a high level to pressure test the non-AquaRefining infrastructure and sold the constituent components of LABs, lead compounds and plastics, with little or no additional processing.

Cost of product sales remains high and can be attributed to a number of items, including but not limited to the cost of filling the AquaRefining system with electrolyte for our AquaRefining process, greater loss of electrolyte in the process than we expect to achieve following certain additional process improvements expected to be brought on-line over the next 12 months, increase in maintenance costs as we continue to adjust the modules as we increase operating time and hiring and training of personnel to run continuous operations of all 16 modules in advance of reaching continuous operations. At December 31, 2018, we had 61 employees in the TRIC facility versus 41 at December 31, 2017 due to increased level of operations and commissioning of our plant.

Research and development cost in 2017 included TRIC operating cost prior to the commencement of product sales, including the cost incurred to prepare our TRIC plant for operations. During the year ended December 31, 2018, research and development costs decreased by 44% over the comparable period in 2017. The decline in research and development expense is primarily associated with the cost of the TRIC facility being included in cost of product sales rather than research and development subsequent to the commencement of product sales during the second quarter of 2017 as well as an overall shift to production and commercial activities by the Company.

General and administrative expense has increased for the year ended December 31, 2018 versus December 31, 2017, primarily due to a $2.5 million accrual of key man penalties associated with our Interstate Battery Credit Agreement and Johnson Controls Investor Rights Agreement due to the resignations of Dr. Clarke and Mr. Mould; $0.6 million increased legal fees associated with shareholder lawsuits; $0.9 million in legal, proxy and solicitation fees associated with the efforts to address activist investors; $0.3 million in patent related legal fees; a $0.9 million severance accrual for our former chief executive officer; a $0.9 million severance accrual for our former chief operating officer; a net $0.4 million non-cash charge associated with modifying a warrant for 702,247 shares of common stock in connection with our settlement agreement with Interstate Battery (see Note 13 in the Consolidated Financial Statements for a more detailed description); a $0.8 million non-cash write-off of leasehold improvements at our former California location; as well as other increases in other professional fees. General and administrative expense during the year ended December 31, 2017 included a $0.6 million accrual for estimated costs to resolve a claim of breach of a negative covenant in our convertible loan agreement with Interstate Battery.

As described in Note 6 to the Consolidated Financial Statements, in April 2017, we acquired all of the capital shares of Ebonex IPR Limited for consideration of $2.5 million, consisting of cash, transaction costs and 123,776 shares of our common stock. The principal asset of Ebonex IPR Limited consisted of a patent portfolio with an independent fair value of $112,000. Included in the purchase were certain fixed assets that have been determined by management to have no immediate value and were not considered in the valuation of Ebonex IPR.

Due to the fair value of the patent portfolio being significantly less than total consideration, the early development stage of the technology acquired and the uncertainties inherent in research and development, we recorded a non-cash impairment charge of $2.4 million during the year ended December 31, 2017.

The following table summarizes our other income and interest expense for the year ended December 31, 2018 and 2017 together with the percentage change in those items (in thousands).

	Year ended December 31,			
	2018	2017	Favorable (Unfavorable)	% Change
Other (expense) income				
Interest expense	$ (3,447)	$ (1,761)	$ (1,686)	96%
Interest and other income	$ 223	$ 41	$ 182	444%

Interest during the year ended December 31, 2018 and 2017 relates primarily to the $5.0 million Interstate Battery convertible note and the $10.0 million notes payable, amortization of debt issuance costs incurred in connection with both of these notes, as well as an accrual for the USDA guarantee fee on the $10.0 million note to Green Bank.

The note discount associated with the Interstate Battery convertible note is amortized using the effective interest method over the three-year term of the note, maturing on May 24, 2019. Using the effective interest method results in higher expense in later periods. Thus, non-cash interest expense associated with the note discount amortization was $0.4 million in 2017, $2.0 million in 2018 and will be $2.6 million in 2019.

Results of Operations for the Fiscal Year Ended December 31, 2017 Compared to the Fiscal Year Ended December 31, 2016

As mentioned above, we did not commence revenue producing operations until January 2017. During the second quarter of 2017, we began shipments of lead compounds and plastics to customers. Prior to that, our operations consisted of the development and limited testing of our AquaRefining process, the development of our business plan, the raise of our working capital and the development of our initial lead acid battery, or LAB, recycling facility near Reno, Nevada. The following table summarizes our results of operations with respect to the items set forth below for the years ended December 31, 2017 and 2016 together with the percentage change in those items (in thousands).

	Year Ended December 31,			
	2017	2016	Favorable (Unfavorable)	% Change
Product sales	$ 2,088	$ —	$ 2,088	— %
Cost of product sales	9,541	—	(9,541)	— %
Research and development cost	8,103	6,348	(1,755)	(28)%
General and administrative expense	6,891	6,610	(281)	(4)%
Impairment charge	2,411	—	(2,411)	— %
Total operating expense	$ 26,946	$ 12,958	$ (13,988)	(108)%

As mentioned above, product sales, consisting of lead compounds and plastics began in April 2017. Cost of product sales consists of all operating costs incurred at TRIC following the commencement of product sales. Costs incurred at TRIC prior to commencement of sales are included in research and development costs. Cost of product sales includes raw materials, supplies and related costs, salaries and benefits, consulting and outside services costs, depreciation and amortization costs and insurance, travel and overhead costs. There are no comparatives for the previous periods.

Research and development cost included TRIC operating cost prior to the commencement of product sales, including cost incurred to prepare our TRIC plant for operations. During the year ended December 31, 2017, research and development costs increased by 28% over the comparable period in 2016. At December 31, 2016, we had 30 employees in the TRIC facility and we focused on building the plant (cost included in research and development expense). At December 31, 2017, we had 41 employees at the TRIC facility and were focused on recycling lead operations as well as continuing to commission various processes within the plant (cost included in research and development expense until product sales began, at which point forward they were included in cost of product sales). The increase in research and development cost during the year ended December 31, 2017 versus the prior period is due to increased level of operations and commissioning of our plant in TRIC.

General and administrative expense was relatively consistent during the years ended December 31, 2017 and December 31, 2016. The small increase is primarily due to our $0.6 million accrual for estimated costs to resolve a claim of breach of a negative covenant in our convertible loan agreement with Interstate Battery.

As described above and in Note 6 to the Consolidated Financial Statements, in April 2017, we recorded a non-cash impairment charge of $2.4 million on our Ebonex IPR Limited acquisition during the year ended December 31, 2017.

The following table summarizes our other income and interest expense for the year ended December 31, 2017 and 2016 together with the percentage change in those items (in thousands).

	Year Ended December 31,			
	2017	2016	Favorable (Unfavorable)	% Change
Other (expense) income				
Interest expense	$ (1,761)	$ (639)	$ 1,122	(175.59)%
Interest income	$ 41	$ 41	$ —	— %

Interest during the year ended December 31, 2017 relates primarily to the $5.0 million Interstate Battery convertible note and the $10.0 million notes payable, amortization of debt issuance costs incurred in connection with both of these notes, as well as an accrual for the USDA guarantee fee on the $10.0 million note to Green Bank. Interest relating to the $10.0 million notes payable during the year ended December 31, 2016 and 2015 was capitalized as part of the building cost of the TRIC facility in the amount of $0.5 million and $0.1 million, respectively. Interest capitalization ceased upon completion of the building in November 2016.

The note discount associated with the Interstate Battery convertible note is amortized using the effective interest method over the three-year term of the note, maturing on May 24, 2019. Using the effective interest method results in higher expense in later periods. Thus, non-cash interest expense associated with the note discount amortization was $0.4 million in 2017.

Liquidity and Capital Resources

As of December 31, 2018, we had total assets of $71.4 million and working capital of $11.0 million, which gives no effect to a January 2019 public offering of our common shares from which we received approximately $9.1 million of net proceeds.

The following table summarizes our cash used in operating, investing and provided by financing activities (in thousands):

	Year ended December 31,		
	2018	2017	2016
Net cash used in operating activities	$ (26,318)	$ (19,002)	$ (11,121)
Net cash used in investing activities	$ (3,929)	$ (9,775)	$ (29,606)
Net cash provided by financing activities	$ 28,346	$ 24,988	$ 35,501

Net cash used in operating activities

Net cash used in operating activities for the year ended December 31, 2018, 2017 and 2016 was $26.3 million, $19.0 million and $11.1 million, respectively. Net cash used in operating activities during each of these periods consisted primarily of our net loss adjusted for non-cash items such as depreciation, amortization, stock-based compensation charges, warrant modification charges (2018), loss on disposal of leasehold improvements (2018) and non-cash charges related the impairment charge (2017), as well as net changes in working capital.

Net cash used in investing activities

Net cash used in investing activities for the year ended December 31, 2018, 2017 and 2016 was $3.9 million, $9.8 million and $29.6 million, respectively. Net cash used in investing activities during each of these periods consists primarily of purchases of fixed assets related to the build out of our TRIC recycling facility in Nevada, and, to a lesser extent, our corporate headquarters during 2016.

Net cash provided by financing activities

Net cash provided by financing activities for the year ended December 31, 2018 consisted of $26.6 million net proceeds from our June 2018 public offering and $2.1 million net proceeds from underwriters' exercise, in January 2018, of their overallotment option related to our December 2017 public offering partially offset by lease and debt payments. Net cash provided by financing activities for the year ended December 31, 2017 primarily consisted of $13.8 million net proceeds from the issuance of common stock in our December 2017 public offering, $10.5 million net proceeds from the issuance of common stock to Johnson Controls and $1.1 million proceeds from the exercise of stock options partially offset by lease and debt payments.

Net cash provided by financing activities for the year ended December 31, 2016 primarily consisted of $21.5 million net proceeds from the issuance of common stock in our November 2016 public offering; $9.1 million net proceeds from the issuance of common stock to Interstate Battery and other investors through our placement agent, National Securities Corporation; and $4.9 million net proceeds from the Interstate Battery convertible note.

As of the date of this report, and after giving effect to a January 2019 public offering of our common shares from which we received approximately $9.1 million of net proceeds, we believe that our working capital is sufficient to fund our current plan of operations at TRIC over the next twelve months. However, we will require additional capital in order to increase production of AquaRefined lead at TRIC beyond that planned for 16 modules, and to fund our continued losses from operations until such time as we are able to achieve positive cash flow from operations. We intend to seek additional funds through various financing sources, includin g the sale of our equity and debt securities, licensing fees for our technology, joint ventures with capital partners and/or project financing of our recycling facilities. However, there can be no guarantees that such funds will be available on commercially reasonable terms, if at all. If such financing is not available on satisfactory terms, we may be unable to further pursue our business plan and we may be unable to continue operations. Additionally, Aqua Metals Reno, or AMR, was not in compliance with its the minimum debt service coverage ratio covenant on its loan from Green Bank as of the fiscal quarter ends between March 31, 2017 and December 31, 2018. AMR received a waiver for the minimum debt service coverage ratio covenant for those periods. While we expect to continue to receive waivers from Green Bank for non-compliance with such covenant, there is no guarantee that we will receive such waivers. If Green Bank determines not to grant us a waiver for non-compliance in the future, we would be in default of the loan and Green Bank would be able to accelerate the payment of all amounts under the loan.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet financing arrangements.

Critical Accounting Policies and Significant Judgments and Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles, or U.S. GAAP. The preparation of our consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the consolidated financial statements, and the reported amounts of expenses during the period. Significant items subject to such estimates and assumptions include the carrying amount and valuation of long-lived assets, the valuation of conversion features of convertible debt, valuation allowances for deferred tax assets, the determination of estimated asset retirement obligations, the determination of stock option expense, and the determination of the fair value of stock warrants issued. Our actual results could differ from these estimates under different assumptions or conditions.

While our significant accounting policies are more fully described in Note 2 to the consolidated financial statements included in Item 8 of this Annual Report on Form 10-K, we believe that the following accounting policies are the most critical to assist stockholders and investors reading the consolidated financial statements in fully understanding and evaluating our financial condition and results of operations.

Accounts receivable

We sell our products to large well-established companies and extend credit without requiring collateral, based on an ongoing evaluation of the customer's business prospects and financial condition. In the event that payment of a customer's account receivable is doubtful, we would reserve the receivable under an allowance for doubtful accounts.

Inventory

Inventory is stated as the lower of cost or net realizable value. Inventory cost is recorded on a first-in, first-out basis using the weighted average method. Net realizable value is determined as the estimated selling price in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation.

Property and equipment

Property and equipment are stated at cost net of accumulated depreciation. Depreciation on property and equipment is calculated on the straight-line basis over the estimated useful lives of the assets. Leasehold improvements are depreciated over the shorter of the life of the asset or the remaining term of the lease.

Intangible and other long-lived assets

The intangible assets consist of a patent application contributed to us by five founding stockholders, patent applications for technology developed by us and trademark applications. The useful life of the intangible assets has been determined to be ten years and the assets are being amortized. We periodically evaluate our intangible and other long-lived assets for indications that the carrying amount of an asset may not be recoverable. In reviewing for impairment, we compare the carrying value of such assets to the estimated undiscounted future cash flows expected from the use of the assets and their eventual disposition. When the estimated undiscounted future cash flows are less than their carrying amount, an impairment loss is recognized equal to the difference between the assets' fair value and their carrying value. In addition to the recoverability assessment, we routinely review the remaining estimated lives of our long-lived assets. Any reduction in the useful life assumption will result in increased depreciation and amortization expense in the period when such determination is made, as well as in subsequent periods. We evaluate the need to record impairment during each reporting period. No impairment has been recorded. We determined that the estimated life of the intellectual property properly reflected the current remaining economic life of the asset.

Asset retirement obligations

We record the fair value of estimated asset retirement obligations associated with tangible long-lived assets in the period incurred. Retirement obligations associated with long-lived assets are those for which there is an obligation for closures and/or site remediation at the end of the assets' useful lives. These obligations are initially estimated based on discounted cash flow estimates and are accreted to full value over time through charges to operating expense. In addition, asset retirement costs are capitalized as part of the related asset's carrying value and are depreciated on a straight-line basis over the assets' respective useful lives.

Revenue Recognition

The Company records revenue recognition in accordance with ASC 606, *Revenue from Contracts with Customers*. ASC 606 provides a single comprehensive model for the recognition of revenue arising from contracts with customers and supersedes most current revenue recognition guidance, including industry-specific guidance. It requires an entity to recognize revenue when the entity transfers promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. ASC 606 creates a five-step model that requires entities to exercise judgment when considering the terms of contract(s), which includes (1) identifying the contract(s) with the customer, (2) identifying the separate performance obligations in the contract, (3) determining the transaction price, (4) allocating the transaction price to the separate performance obligations, and (5) recognizing revenue as each performance obligation is satisfied. ASC 606 requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including qualitative and quantitative information about contracts with customers, significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract.

Research and development

Research and development expenditures are expensed as incurred.

Income taxes

We account for income taxes in accordance with the liability method of accounting for income taxes. Under the liability method, deferred assets and liabilities are recognized based upon anticipated future tax consequences attributable to differences between financial statement carrying amounts of assets and liabilities and their respective tax bases. The provision for income taxes is comprised of the current tax liability and the changes in deferred tax assets and liabilities. We established a valuation allowance to the extent that it is more likely than not that deferred tax assets will not be recoverable against future taxable income.

We recognize the effect of uncertain income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs.

Stock-based compensation

We recognize compensation expense for stock-based compensation in accordance with ASC 718 "Compensation – Stock Compensation." For employee stock-based awards, we calculate the fair value of the award on the date of grant using the Black-Scholes-Merton method for stock options; the expense is recognized over the service period for awards to vest.

The estimation of stock-based awards that will ultimately vest requires judgment and to the extent actual results or updated estimates differ from the original estimates, such amounts are recorded as a cumulative adjustment in the period estimates are revised. The Company considers many factors when estimating expected forfeitures, including types of awards, employee class and historical experience.

Recent accounting pronouncements

See recent accounting pronouncements in Note 2 of the Consolidated Financial Statements located in Item 8 in this Annual Report.

Contractual Obligations and Commitments

The following table summarizes our contractual obligations as of December 31, 2018 and the effect such obligations are expected to have on our liquidity and cash flow in the future years (in thousands):

	Total	Less than 1 year	1 to 3 years	3 to 5 years	More than 5 years
Operating lease obligations	$ 2,156	$ 624	$ 1,305	$ 227	—
Capital lease obligations	39	16	12	11	—
Convertible debt	6,651	6,651	—	—	—
Notes payable	9,506	295	648	737	7,826
	$ 18,352	$ 7,586	$ 1,965	$ 975	$ 7,826

Operating lease obligations

We lease our Alameda, California and McCarran, Nevada spaces under non-cancelable operating leases, expiring in 2022 and 2021, respectively. On February 4, 2019, we entered into a sublease agreement effective as of February 1, 2019 for the Alameda, California facility. The term of the sublease commenced in February 2019, and ends on May 1, 2022. The above obligations do not include partially offsetting sublease income of approximately $1.5 million.

Capital lease obligations

We financed certain of our lab equipment purchases through the use of capital leases. The lease terms are between 24 and 36 months with an option to purchase the asset at the end of the lease term for $1.

Convertible debt

Our convertible debt bears interest at 11% per annum and both interest and principal are due at maturity on May 25, 2019. Interest is not convertible. See Note 10 in the accompanying notes to the consolidated financial statements for further description. In January 2019, this note was paid in full.

Long-term debt

AMR entered into a $10,000,000 loan with Green Bank on November 3, 2015. The term of the loan is twenty-one years. For the first twelve months only interest was payable; thereafter monthly payments of interest and principal are due. The interest rate adjusts on the first day of each calendar quarter equal to the greater of six percent (6%) or two percent (2%) per annum above the minimum prime lending rate charged by large U.S. money center commercial banks as published in the Wall Street Journal. See Note 12 in the accompanying notes to the consolidated financial statements for further description.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We do not enter into financial instruments for trading or speculative purposes. Our cash, cash equivalents and restricted cash balances as of December 31, 2018 consisted of cash and cash equivalents. Our primary exposure to market risk is interest expense related to our debt with Green Bank. The interest rate on this loan adjusts on the first day of each calendar quarter equal to the greater of six percent (6%) or two percent (2%) per annum above the minimum prime lending rate charged by large U.S. money center commercial banks as published by the Wall Street Journal. We experience market risk with respect to the volatility of lead commodity prices. The purchase price of our primary raw material used lead acid batteries (used LABs), and the sales price of our lead-based finished products are based on commodity pricing. Due to the relatively short turnaround between the purchase of used LABs and the sale of our finished goods, we believe the risk is minimized.

Item 8. Financial Statements and Supplementary Data

Index To Consolidated Financial Statements

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and
Stockholders of Aqua Metals, Inc. and Subsidiaries:

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Aqua Metals, Inc. and Subsidiaries (collectively the "Company") as of December 31, 2018 and 2017, the related consolidated statements of operations, stockholders' equity, and cash flows, for each of the three years in the period ended December 31, 2018, 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, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated 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 consolidated 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 consolidated 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 consolidated 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 consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

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

/s/ Armanino LLP
San Ramon, CA
February 28, 2019

AQUA METALS, INC.
Consolidated Balance Sheets
(in thousands, except share and per share amounts)

ASSETS	December 31, 2018	December 31, 2017
Current assets		
Cash and cash equivalents	$ 20,892	$ 22,793
Accounts receivable	725	882
Inventory	765	1,239
Prepaid expenses and other current assets	370	770
Total current assets	22,752	25,684
Non-current assets		
Property and equipment, net	45,548	45,733
Intellectual property, net	1,271	1,461
Other assets	1,800	1,564
Total non-current assets	48,619	48,758
Total assets	$ 71,371	$ 74,442
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities		
Accounts payable	$ 2,088	$ 1,436
Accrued expenses	5,196	1,801
Deferred rent, current portion	8	192
Lease liability, current portion	121	—
Notes payable, current portion	311	405
Convertible note payable, current portion	4,075	—
Total current liabilities	11,799	3,834
Deferred rent, non-current portion	27	771
Lease liability, non-current portion	110	—
Asset retirement obligation	745	701
Notes payable, non-current portion	8,600	8,839
Convertible note payable, non-current portion	—	1,332
Total liabilities	21,281	15,477
Commitments and contingencies		
Stockholders' equity		
Common stock; $0.001 par value; 50,000,000 shares authorized; 38,932,437 and 27,554,076 shares issued and outstanding as of December 31, 2018 and December 31, 2017, respectively	39	27
Additional paid-in capital	145,147	113,780
Accumulated deficit	(95,096)	(54,842)
Total stockholders' equity	50,090	58,965
Total liabilities and stockholders' equity	$ 71,371	$ 74,442

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

AQUA METALS, INC.
Consolidated Statements of Operations
(in thousands, except share and per share amounts)

	Year ended December 31, 2018	2017	2016
Product sales	$ 4,449	$ 2,088	$ —
Operating cost and expense			
Cost of product sales	22,761	9,541	—
Research and development cost	4,502	8,103	6,348
General and administrative expense	14,214	6,891	6,610
Impairment charge	—	2,411	—
Total operating expense	41,477	26,946	12,958
Loss from operations	(37,028)	(24,858)	(12,958)
Other income and expense			
Interest expense	(3,447)	(1,761)	(639)
Interest and other income	223	41	41
Total other expense, net	(3,224)	(1,720)	(598)
Loss before income tax expense	(40,252)	(26,578)	(13,556)
Income tax expense	(2)	(2)	(1)
Net loss	$ (40,254)	$ (26,580)	$ (13,557)
Weighted average shares outstanding, basic and diluted	34,154,826	20,293,100	15,267,233
Basic and diluted net loss per share	$ (1.18)	$ (1.31)	$ (0.89)

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

AQUA METALS, INC.
Consolidated Statements of Stockholders' Equity (Deficit)
(in thousands, except share amounts)

	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Accumulated Deficit	Total Stockholders' Equity (Deficit)
December 31, 2015	14,137,442	$ 14	$ 48,356	$ (14,705)	$ 33,665
Stock-based compensation - stock options	—	—	1,060	—	1,060
Warrants issued for consulting services	—	—	138	—	138
Cashless exercise of warrant	15,203	—	—	—	—
Exercise of options to purchase common stock	4,500	—	19	—	19
Common stock issued in May 2016 Private Placement, net of $345 offering costs	719,333	1	4,777	—	4,778
Common stock issued for cash in May 2016 from Interstate Battery, net of $629 allocated transaction cost	702,247	1	4,369	—	4,370
Common stock issued in November 2016 public offering, net of $1,688 offering costs	2,300,000	2	21,540	—	21,542
Proceeds allocated to warrants issued and beneficial conversion feature in connection with Interstate Batteries Agreement	—	—	4,975	—	4,975
Net loss	—	—	—	(13,557)	(13,557)
December 31, 2016	17,878,725	$ 18	$ 85,234	$ (28,262)	$ 56,990
Stock-based compensation	—	—	1,081	—	1,081
Cashless exercise of warrants	1,173,296	1	(1)	—	—
Exercise of warrants to purchase common stock	2,500	—	15	—	15
Exercise of options to purchase common stock	284,370	—	1,071	—	1,071
Common stock issued under Officers and Directors Purchase Plan	2,404	—	8	—	8
Common stock issued for cash in February 2017 from Johnson Controls, net of $167 transaction cost	939,005	1	10,471	—	10,472
Common stock issued for purchase of Ebonex IPR Limited	123,776	—	2,149	—	2,149
Common stock issued in December 2017 public offering, net of $1,256 transaction cost	7,150,000	7	13,752	—	13,759
Net loss	—	—	—	(26,580)	(26,580)
December 31, 2017	27,554,076	$ 27	$ 113,780	$ (54,842)	$ 58,965
Stock-based compensation	—	—	1,201	—	1,201
Common stock issued under Officers and Directors Purchase Plan	2,034	—	4	—	4
Common stock issued upon RSU vesting	65,600	—	—	—	—
Common stock issued for consulting services	152,727	—	423	—	423
Common stock issued in overallotment related to December 2017 Public Offering, net of $10 transaction cost	1,072,500	2	2,101	—	2,103
Common stock issued for cash in June 2018 Public Offering, net of $2,096 transaction cost	10,085,500	10	26,636	—	26,646
Modification of Interstate Batteries warrant #1	—	—	1,002	—	1,002
Net loss	—	—	—	(40,254)	(40,254)
Balances, December 31, 2018	38,932,437	$ 39	$ 145,147	$ (95,096)	$ 50,090

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

AQUA METALS, INC.
Consolidated Statements of Cash Flows
(in thousands)

	Year ended December 31,		
	2018	2017	2016
Cash flows from operating activities:			
Net loss	$ (40,254)	$ (26,580)	$ (13,557)
Reconciliation of net loss to net cash used in operating activities			
Depreciation	3,213	2,908	687
Amortization of intellectual property	190	163	128
Accretion of asset retirement obligation	—	—	—
Fair value of warrant modification, net	402	—	—
Fair value of warrants issued for consulting services	—	—	138
Fair value of common stock issued for consulting services	423	—	—
Stock-based compensation	1,201	1,081	1,060
Amortization of debt discount	2,006	360	54
Amortization of deferred financing costs	83	83	62
Non-cash convertible note interest expense	690	618	343
Lease liability, net of deferred rent write-off	(493)	—	—
Amortization of lease liability	(80)	—	—
Impairment of acquired intellectual property	—	2,411	—
Loss on sale of equipment	869	76	—
Inventory write down	179	456	—
Changes in operating assets and liabilities			
Accounts receivable	157	(882)	—
Inventory	295	(1,636)	(59)
Prepaid expenses and other current assets	400	236	(394)
Accounts payable	472	926	(176)
Accrued expenses	4,009	924	564
Deferred rent	(124)	(177)	—
Net cash used in operating activities	(26,318)	(19,002)	(11,121)
Cash flows from investing activities:			
Purchases of property and equipment	(3,693)	(8,819)	(29,156)
Proceeds from sale of equipment	—	4	—
Other assets	(236)	(345)	(250)
Intellectual property related expenditures	—	(615)	(200)
Net cash used in investing activities	(3,929)	(9,775)	(29,606)
Cash flows from financing activities:			
Proceeds from issuance of common stock, net of transaction costs	28,753	25,325	30,709
Payments on notes payable	(277)	(201)	(14)
Payments on capital leases	(130)	(136)	(52)
Proceeds from issuance of convertible notes payable, net of issuance costs	—	—	4,858
Net cash provided by financing activities	28,346	24,988	35,501
Net decrease in cash, cash equivalents and restricted cash	(1,901)	(3,789)	(5,226)
Cash, cash equivalents and restricted cash at beginning of period	22,793	26,582	31,808
Cash, cash equivalents and restricted cash at end of period	$ 20,892	$ 22,793	$ 26,582

(Continued)

AQUA METALS, INC.
Consolidated Statements of Cash Flows
(in thousands)

	Year ended December 31, 2018	Year ended December 31, 2017	Year ended December 31, 2016
Supplemental disclosure of cash flow information:			
Cash paid for interest, net of amounts capitalized	$ 668	$ 699	$ 330
Cash paid for income taxes	$ 2	$ 2	$ 1
Non-cash investing activities			
Tenant improvement allowances	$ —	$ —	$ 78
Non-cash financing activities			
Capital lease	$ 38	$ —	$ 310
Fair value of consulting warrants	$ —	$ —	$ 138
Fair value of financing warrants	$ —	$ —	$ 229
Fair value of common stock issued to consultants	$ 423	$ —	$ —
Total non-cash financing activities	$ 461	$ —	$ 677
Supplemental disclosure of non-cash transactions			
Change in property and equipment resulting from change in accounts payable	$ 180	$ (1,062)	$ 1,200
Change in property and equipment resulting from change in accrued expenses	$ (14)	$ (1,098)	$ 1,330
Recognition of convertible debt discount	$ —	$ —	$ 4,975
Asset retirement obligation offset with asset retirement cost (property and equipment)	$ —	$ 670	$ —
Fair value of common stock issued for intellectual property	$ —	$ 2,149	$ —
Reduction in accrued liabilities upon modification of Interstate Battery warrant #1	$ 600	$ —	$ —

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

1. Organization and Operations

Aqua Metals, Inc. (the "Company") was incorporated in Delaware and commenced operations on June 20, 2014 (inception). On January 27, 2015, the Company formed two wholly-owned subsidiaries, Aqua Metals Reno, Inc. ("AMR") and Aqua Metals Operations, Inc. (collectively, the "Subsidiaries"), both incorporated in Delaware. The Company is engaged in the business of lead recycling through its patented and patent-pending AquaRefining™ technology. Unlike smelting, AquaRefining is a room temperature, water-based process that emits less pollution than smelting, the traditional method of lead recycling. The Company has built its first recycling facility in Nevada's Tahoe Regional Industrial Complex ("TRIC") in McCarran, Nevada and intends to pursue the development of additional lead acid battery recycling facilities based on the Company's AquaRefining technology, likely through licensing or joint development arrangements. The Company commenced the shipment of products for sale, consisting of lead compounds and plastics, in April 2017, and through March 31, 2018, substantially all revenue was derived from the sale of lead compounds and plastics. In April 2018, the Company began shipping cast lead bullion (mixture of lead purchased to prime the kettles and AquaRefined lead from our AquaRefining process) blocks in addition to lead compounds and plastics and in June 2018, the Company began shipping high purity lead from its AquaRefining process.

Liquidity and Management Plans

The Company completed the development of its first LAB recycling facility at the Tahoe Reno Industrial Center ("TRIC") and commenced production during the first quarter of 2017. The TRIC facility produces recycled lead, consisting of lead compounds, ingoted hard lead and ingoted AquaRefined lead as well as plastic.

The Company generated revenues of $4.4 million and $2.1 million during 2018 and 2017, had no revenue in 2016, and had net losses of $40.3 million, $26.6 million and $13.6 million for the years ended December 31, 2018, 2017 and 2016, respectively. As of December 31, 2018, the Company's cash balance was $20.9 million. The Company believes that its working capital as of the date of this report is sufficient to fund the commissioning and commencement of commercial operations of 16 AquaRefining modules and its commercial operations at TRIC through, at least, April 2020, assuming the successful commercial rollouts of the 16 AquaRefining modules.

2. Summary of Significant Accounting Policies

Basis of presentation and consolidation

The accompanying consolidated financial statements include those of Aqua Metals, Inc. and its subsidiaries, after elimination of all intercompany accounts and transactions. We have prepared the accompanying consolidated financial statements in accordance with accounting principles generally accepted in the United States of America ("GAAP") and pursuant to the rules and regulations of the United States Securities and Exchange Commission (the "SEC").

Use of estimates

The preparation of the consolidated financial statements requires management of the Company to make a number of estimates and assumptions relating to the reported amount of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the consolidated financial statements, and the reported amounts of expenses during the period. Significant items subject to such estimates and assumptions include the carrying amount and valuation of long-lived assets, the valuation of conversion features of convertible debt, valuation allowances for deferred tax assets, the determination of fair value of estimated asset retirement obligations, the determination of stock option expense and the determination of the fair value of stock warrants issued. Actual results could differ from those estimates.

Cash and cash equivalents

The Company considers all highly liquid instruments with original or remaining maturities of ninety days or less at the date of purchase to be cash equivalents. The Company maintains its cash balances in large financial institutions. Periodically, such balances may be in excess of federally insured limits.

Restricted cash

Restricted cash was comprised of funds held in escrow at Green Bank for the purpose of paying for the construction of the lead recycling plant building in McCarran, Nevada. As of December 31, 2017, the building was complete and the funds had been dispersed.

In November 2016, the Financial Accounting Standards Board, FASB issued Accounting Standards Update ("ASU") No. 2016-18. The amendments in ASU 2016-18 require an entity to reconcile and explain the period-over-period change in total cash, cash equivalents and restricted cash within its statements of cash flows rather than reconciling and explaining the period-over-period change in total cash and cash equivalents (excluding restricted cash). The Company adopted this new ASU beginning January 1, 2018 using the required full retrospective approach. The adoption of this standard resulted in an increase in net cash used in investing activities of $1.1 million and $10.5 million in the consolidated statements of cash flows for the year ended December 31, 2017 and December 31, 2016, respectively. As there is no restricted cash at December 31, 2018 or 2017, there is no effect on the year ended December 31, 2018.

	December 31,	
	2016	2015
Cash and cash equivalents	$ 25,458	$ 20,141
Restricted cash	1,124	11,667
Total cash, cash equivalents and restricted cash shown in the statement of cash flows	$ 26,582	$ 31,808

Accounts receivable

The Company sells its products to large well-established companies and extends credit without requiring collateral, based on an ongoing evaluation of the customer's business prospects and financial condition. In the event that payment of a customer's account receivable is doubtful, the Company would reserve the receivable under an allowance for doubtful accounts. As of December 31, 2018, and 2017, the Company believes that all receivables have been or will be collected and, therefore, has not created any reserve for doubtful accounts.

Inventory

Inventory is stated as the lower of cost or net realizable value. Cost is recorded on a first-in, first-out basis using the weighted average method. Net realizable value is determined as the estimated selling price in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. The Company records a write-down, if necessary, to reduce the carrying value of inventory to its net realizable value. The effect of these write-downs is to establish a new cost basis in the related inventory, which is not subsequently written up.

Property and equipment

Property and equipment are stated at cost net of accumulated depreciation. Depreciation on property and equipment is calculated on the straight-line basis over the estimated useful lives of the assets. Leasehold improvements are depreciated over the shorter of the life of the asset or the remaining term of the lease.

Intangible and other long-lived assets

Intangible assets consist of a patent application contributed to the Company by five founding stockholders, patent applications for technology developed by the Company, trademark applications and a patent portfolio acquired during 2017. The useful life of this intellectual property has been determined to be ten years and the assets are being amortized straight-line over this period. The Company periodically evaluates its intangible and other long-lived assets for indications that the carrying amount of an asset may not be recoverable. In reviewing for impairment, the Company compares the carrying value of such assets to the estimated undiscounted future cash flows expected from the use of the assets and their eventual disposition. When the estimated undiscounted future cash flows are less than their carrying amount, an impairment loss is recognized equal to the difference between the assets' fair value and their carrying value. In addition to the recoverability assessment, the Company routinely reviews the remaining estimated lives of its long-lived assets. Any reduction in the useful life assumption will result in increased depreciation and amortization expense in the period when such determination is made, as well as in subsequent periods. The Company evaluates the need to record impairment during each reporting period. As further described in Note 6, the Company recorded an impairment of $2.4 million in the second quarter of 2017 on its patent portfolio. As of December 31, 2018, the Company determined that the estimated life of the Intellectual Property properly reflected the current remaining economic life of the asset.

Asset retirement obligations

The Company records the fair value of estimated asset retirement obligations associated with tangible long-lived assets in the period incurred. Retirement obligations associated with long-lived assets are those for which there is an obligation for closures and/or site remediation at the end of the assets' useful lives. These obligations are initially estimated based on discounted cash flow estimates and are accreted to full value over time through charges to operating expense. In addition, asset retirement costs are capitalized as part of the related asset's carrying value and are depreciated on a straight-line basis over the assets' respective useful lives.

Revenue Recognition

The Company records revenue in accordance with Accounting Standards Codification ("ASC") 606, Revenue from Contracts with Customers. ASC 606 provides a single comprehensive model for the recognition of revenue arising from contracts with customers and supersedes most current revenue recognition guidance, including industry-specific guidance. It requires an entity to recognize revenue when the entity transfers promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. ASC 606 creates a five-step model that requires entities to exercise judgment when considering the terms of contract(s), which includes (1) identifying the contract(s) with the customer, (2) identifying the separate performance obligations in the contract, (3) determining the transaction price, (4) allocating the transaction price to the separate performance obligations, and (5) recognizing revenue as each performance obligation is satisfied. ASC 606 requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including qualitative and quantitative information about contracts with customers, significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract.

Revenue is generally recognized with the delivery of the Company's products, primarily hard lead, lead compounds and plastics, to customers. Sales, value add, and other taxes, if any, that are collected concurrent with revenue-producing activities are excluded from revenue as they are subsequently remitted to governmental authorities. Incidental items that are immaterial in the context of the contract are recognized as expense. Freight and shipping costs related to the transfer of the Company's products to customers are included in revenue and cost of product sales. Payment on invoices is generally due within 30 days of the invoice.

Arrangements with Multiple Performance Obligations

Contracts with customers may include multiple performance obligations. 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 in ASC 606. A contract's transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. The Company expects that many of our contracts will have a single performance obligation as the promise to transfer the individual goods or services will not be separately identifiable from other promises in the contracts and therefore, not distinct. For contracts with multiple performance obligations, revenue will be allocated to each performance obligation based on the Company's best estimate of the standalone selling price of each distinct good or service in the contract. The primary method used to estimate standalone selling prices is based on prices charged separately to customers or expected cost-plus margin. At present, the Company does not have any arrangements with multiple performance obligations.

Significant Judgments

The Company estimates variable consideration for arrangements where the transaction price is not fully determinable until the completion of yield testing. The Company estimates variable consideration at the most likely amount to which it expects to be entitled and includes estimated amounts in revenue to the extent it is probable that a significant reversal of revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. Adjustments to revenue is recognized in the period when the uncertainty is resolved. To date, any adjustments to estimates have not been material.

Practical Expedients and Exemptions

The Company does not disclose the value of unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed.

Research and development

Research and development expenditures are expensed as incurred.

Income taxes

The Company accounts for income taxes in accordance with the liability method of accounting for income taxes. Under the liability method, deferred assets and liabilities are recognized based upon anticipated future tax consequences attributable to differences between financial statement carrying amounts of assets and liabilities and their respective tax bases. The provision for income taxes is comprised of the current tax liability and the changes in deferred tax assets and liabilities. The Company establishes a valuation allowance to the extent that it is more likely than not that deferred tax assets will not be recoverable against future taxable income.

The Company recognizes the effect of uncertain income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs.

Fair value measurements

The carrying amounts of cash and cash equivalents, accounts receivable, inventory, prepaid expenses and other current assets, accounts payable, accrued expenses, and deferred rent approximate fair value due to the short-term nature of these instruments. The carrying value of short and long-term debt, and lease liabilities also approximates fair value since these instruments bear market rates of interest or are calculated using market rates of interest. None of these instruments are held for trading purposes.

Fair value is defined as an exit price, representing the amount that would be received upon the sale of an asset or payment to transfer a liability in an orderly transaction between market participants. Fair value is a market-based measurement that is determined based on assumptions that market participants would use in pricing an asset or liability. A three-tier far value hierarchy is used to prioritize the inputs in measuring fair value as follows:

Level 1. Quoted prices in active markets for identical assets or liabilities.

Level 2. Quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, or other inputs that are observable, either directly or indirectly.

Level 3. Significant unobservable inputs that cannot be corroborated by market data.

The asset or liability's fair value measurement within the fair value hierarchy is based upon the lowest level of any input that is significant to the fair value measurement.

There are no assets or liabilities that are measured at fair value on a recurring basis at December 31, 2018 or 2017.

Stock-based compensation

The Company recognizes compensation expense for stock-based compensation in accordance with ASC 718 "Compensation – Stock Compensation." For employee stock-based awards, the Company calculates the fair value of the award on the date of grant using the Black-Scholes-Merton method for stock options; the expense is recognized over the service period for awards to vest.

The estimation of stock-based awards that will ultimately vest requires judgment and to the extent actual results or updated estimates differ from the original estimates, such amounts are recorded as a cumulative adjustment in the period estimates are revised.

Net loss per share

Basic net loss per share is computed by dividing net loss by the weighted average number of vested shares outstanding during the period. Diluted net loss per share is computed by giving effect to all potential dilutive common securities, including convertible notes, options and warrants. Potential dilutive common shares include the dilutive effect of the common stock underlying in-the-money stock options and is calculated based on the average share price for each period using the treasury stock method. Under the treasury stock method, the exercise price of an option and the average amount of compensation cost, if any, for future services that the Company has not yet recognized when the option is exercised, are assumed to be used to repurchase shares in the current period.

For all periods presented in this report, convertible notes, stock options, and warrants were not included in the computation of diluted net loss per share because such inclusion would have had an antidilutive effect.

	Year Ended December 31,		
Excluded potentially dilutive securities (1):	2018	2017	2016
Convertible note - principal	702,247	702,247	702,247
Consulting warrants to purchase common stock	—	—	486,364
Options to purchase common stock	1,694,068	578,813	915,572
Unvested restricted stock	96,623	180,951	—
Financing warrants to purchase common stock	2,340,828	2,340,828	3,316,208
Total potential dilutive securities	4,833,766	3,802,839	5,420,391

(1) The number of shares is based on the maximum number of shares issuable on exercise or conversion of the related securities as of the period end. Such amounts have not been adjusted for the treasury stock method or weighted average outstanding calculations as required if the securities were dilutive.

Segment and Geographic Information

Operating segments are defined as components of an enterprise engaging in business activities for which discrete financial information is available and regularly reviewed by the chief operating decision maker in deciding how to allocate resources and in assessing performance. The Company views its operations and manages its business in one operating segment, and the Company operates in only one geographic segment.

Concentration of Credit Risk

Revenues from the following customers each represented at least 10% of total revenue for the periods listed below. Johnson Controls Battery Group, Inc. also represented a significant portion of our accounts receivable as of December 31, 2018 and 2017.

	Revenue			Accounts Receivable As of December 31,	
	2018	2017	2016	2018	2017
Johnson Controls Battery Group, Inc.	88%	96%	—%	95%	95%

Substantially all of the chemicals used in our refining process are provided by one supplier and supply of used lead acid batteries has, during 2018 and 2017, been provided by two vendors as indicated below.

	2018	2017
Supplier A	32%	56%
Supplier B	64%	44%

Recent accounting pronouncements

In February 2016, the FASB issued ASU 2016-2 - Leases (ASC 842), which sets out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract (i.e. lessees and lessors). The new standard requires lessees to apply a dual approach, classifying leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine whether lease expense is recognized based on an effective interest method or on a straight-line basis over the term of the lease, respectively. A lessee is also required to record a right-of-use asset and a lease liability for all leases with a term of greater than 12 months regardless of their classification. Leases with a term of 12 months or less will be accounted for similar to existing guidance for operating leases today. ASC 842 supersedes the previous leases standard, ASC 840 Leases. The standard is effective on January 1, 2019, with early adoption permitted. The new standard requires a modified retrospective transition approach for all leases existing at, or entered into after, the date of initial application, with an option to use certain transition relief. In July 2018, the FASB issued ASU No. 2018-11, Leases (Topic 842): Targeted Improvements, which amends ASC Topic 842 to provide another transition method, allowing a cumulative effect adjustment to the opening balance of retained earnings during the period of adoption. The Company has two longer term office leases and a few small equipment leases. At January 1, 2019, the Company will record a lease liability equal to the present value of future lease payments not yet paid on each of these leases and an asset for its right to use the underlying assets, net of any previously recorded impairment. The effect of the adoption of this standard is an increase in lease liabilities of $1.6 million offset by an increase in assets of the same amount.

There were no other recent accounting pronouncements or changes in accounting pronouncements during the year ended December 31, 2018 that are of significance or potential significance to the Company.

3. Revenue recognition

The Company generates revenues by recycling lead acid batteries (“LABs”) and selling the recovered lead to its customers. Primary components of the recycling process include sales of recycled lead consisting of lead compounds, ingoted hard lead and ingoted AquaRefined lead as well as plastics. The Company commenced the shipment of products for sale, consisting of lead compounds and plastics, in April 2017, and through March 31, 2018, all revenue was derived from the sale of lead compounds and plastics. In April 2018, the Company began shipping lead bullion in addition to lead compounds and plastics. In June 2018, the Company began shipping high purity lead from its AquaRefining process.

Revenue from products transferred to customers at a single point in time with the delivery of the Company’s products to customers accounted for 100% of our revenue during the years ended December 31, 2018 and 2017.

4. Inventory, net

Inventory consisted of the following (in thousands):

	December 31, 2018	December 31, 2017
Finished goods	$ 43	$ 512
Work in process	164	182
Raw materials	558	545
	$ 765	$ 1,239

5. Property and equipment, net

Property and equipment, net, consisted of the following (in thousands):

Asset Class	Useful Life (Years)	December 31, 2018	December 31, 2017
Operational equipment	3-10	$ 15,926	$ 15,457
Lab equipment	5	698	685
Computer equipment	3	201	174
Office furniture and equipment	3	336	326
Leasehold improvements	5-7	—	1,408
Land	—	1,047	1,047
Building	39	24,820	24,847
Asset retirement cost	20	670	670
Equipment under construction		7,892	4,552
		51,590	49,166
Less: accumulated depreciation		(6,042)	(3,433)
		$ 45,548	$ 45,733

Depreciation expense was $3.2 million, $2.9 million and $0.7 million for the years ended December 31, 2018, 2017 and 2016, respectively. The building is a 136,750 square foot lead acid battery recycling plant being built in McCarran, Nevada. Equipment under construction is primarily AquaRefining modules manufactured by the Company to be used in the McCarran, Nevada recycling plant.

Certain costs necessary to make the recycling facility ready for its intended use have been capitalized, including interest expense on notes payable. Capitalized interest totaled $0.5 million and $0.1 million for the years ended December 31, 2016 and 2015, respectively. Capitalization of interest ceased upon completion of the building in early November 2016.

The Company has financed certain of its lab equipment purchases through the use of capital leases. The lease terms are generally between 24 and 36 months with an option to purchase the asset at the end of the lease for $1. Total lab equipment included in the above table at December 31, 2018 subject to capital leases is $0.4 million less accumulated depreciation of $0.2 million resulting in net fixed assets under capital lease of $0.2 million. Total lab equipment included in the above table at December 31, 2017 subject to capital leases was $0.4 million less accumulated depreciation of $0.1 million resulted in net fixed assets under capital lease of $0.3 million. These assets are depreciated using the same useful lives as noted above and included in depreciation expense. See Note 12 – Notes Payable for minimum future payments related to these equipment leases.

6. Intellectual Property

On April 13, 2017, the Company entered into an agreement to purchase all the capital shares of Ebonex IPR Limited, a company registered in England and Wales. Ebonex IPR Limited is a pre-revenue IP-based company that has developed patented technology in the field of advanced materials and manufacturing methods for advanced lead acid batteries. Total consideration was $2.5 million, consisting of cash, transaction costs and 123,776 shares of the Company's common stock, which at the time had a closing market price of $17.36 per share. In accordance with ASC Topic 805-50, "Business Combinations – Related Issues", the Company accounted for the transaction as an asset acquisition and allocated the consideration to the relative fair value of the assets acquired. The Company determined that the transaction was an asset acquisition rather than a business combination following the guidance in the above-mentioned standard. In order to be treated as a business combination, the acquired assets and assumed liabilities must constitute a business. A business requires a set of inputs and processes applied to those inputs that have the ability to contribute to the creation of outputs. Ebonex IPR Limited has no processes such as strategic management processes, operational processes, or employees. Further, Ebonex IPR Limited provides no goods or services to customers, nor has it any investment or other revenues. Therefore, the Company concluded that the acquired assets and assumed liabilities do not constitute a business and are instead treated as an asset acquisition. Assets acquired consisted of a patent portfolio. The fair value of the patent portfolio, of $112,000, was determined by management with the assistance of an independent valuation specialist using an income approach. Included in the purchase were certain fixed assets that have been determined by management to have no immediate value and were not considered in the valuation of Ebonex IPR.

The Company initially recorded the transaction as an increase of $2.5 million to intellectual property, net on the balance sheet. Subsequently, due to the fair value of the patent portfolio being significantly less than total consideration, the early development stage of the technology acquired and the uncertainties inherent in research and development, the Company recorded a non-cash impairment charge of $2.4 million during the three-month period ended June 30, 2017.

The remaining $0.1 million is being amortized straight-line over a 10-year period.

The increase of $0.6 million (including the Ebonex transaction detailed above) and $0.2 million in 2017 and 2016, respectively, was due to fees associated with additional patent and trademark filings. There were no increases to intellectual property in 2018. The intellectual property balance is being amortized straight-line over a 10-year period.

Intellectual property, net, is comprised of the following (in thousands):

	2018	2017
Intellectual property	$ 1,906	$ 1,906
Accumulated amortization	(635)	(445)
Intellectual property, net	$ 1,271	$ 1,461

Aggregate amortization expense for the year ended December 31, 2018, 2017 and 2016 was $0.2 million, $0.2 million and $0.1 million, respectively.

Estimated future amortization is as follows as of December 31, 2018 (in thousands):

2019	$ 191
2020	191
2021	191
2022	191
2023	191
Thereafter	316
Total estimated future amortization	$ 1,271

7. Other Assets

Other assets consist of the following (in thousands).

	December 31, 2018	December 31, 2017
Alameda security deposit (1)	$ 55	$ 321
CD for Green Bank collateral security (2)	1,026	1,019
Nevada sales and use tax deposit	49	49
Facility Closure Trust deposit (3)	670	450
	1,800	1,839
Less: current portion (1)	—	(275)
Other assets, non-current	$ 1,800	$ 1,564

(1) The lease deposit related to the Alameda headquarters was released over time: $275,000 was released in June 2018; the remainder will be released at the end of the lease term. The current portion in 2017 was included in prepaid expenses and other current assets in the consolidated balance sheet.

(2) The $1.0 million certificate of deposit is held by Green Bank as collateral for the Green Bank note payable balance. The deposit with Green Bank will be released after TRIC has three consecutive months of positive cash flow from operations.

(3) The Company has entered into a Facility Closure Trust Agreement for the benefit of the Nevada Division of Conservation and Natural Resources (NDEP). Funds deposited in the Trust are to be available when and if needed, for closure and/or post-closure care of the facility related to potential decontamination and hazardous material cleanup. The Trustee will reimburse the Company or other persons as specified by the NDEP from the fund for closure and post-closure expenditures in such amounts as the NDEP shall direct in writing. In addition, the Trustee shall refund to the Company such amounts as the NDEP specifies in writing. $100,000 was deposited upon establishment of the Trust Fund, on October 31, 2016; $350,000 was deposited on October 31, 2017; and $220,000 was deposited on October 31, 2018.

8. Accrued liabilities

Accrued liabilities consist of the following (in thousands).

	December 31, 2018	December 31, 2017
Fixed asset related	$ 218	$ 232
Payroll related	2,115	470
Use tax accrual	2	75
Professional services	159	88
Key man penalty accrual	2,500	—
Estimated Interstate Battery settlement	—	600
Other	202	336
	$ 5,196	$ 1,801

9. Asset Retirement Obligation

ASC Topic 410-20, “Asset Retirement and Environmental Obligations, Asset Retirement Obligations” requires the recording of a liability in the period in which an asset retirement obligation (ARO) is incurred, in an amount equal to the discounted estimated fair value of the obligation that is capitalized. In each subsequent fiscal quarter, this liability is accreted up to the final retirement cost. The determination of the ARO is based on an estimate of the future cost to remove and decontaminate the Company’s facility at TRIC upon closure. The estimated fair value of the closure costs is based on vendor quotes to remove and decontaminate the McCarran facility in accordance with the Company’s closure plan as filed with the State of Nevada in its “Application for the Recycling of Hazardous Waste, by Written Determination” in 2016. The actual costs could be higher or lower than current estimates. The discounted estimated fair value of the closure costs was $0.7 million and the obligation was recorded as of March 31, 2017, when the obligation was deemed to have occurred. Offsetting this ARO is, as noted in Note 5 above, an asset retirement cost of the same amount that was capitalized. Accretion of the ARO for the year ended December 31, 2018 and 2017 was $44,000 and $31,000 respectively.

The Company entered into a facility closure trust agreement in October 2017 for the benefit of the Nevada Division of Environmental Protection (NDEP), an agency of the Nevada Division of Conservation and Natural Resources. Funds deposited in the trust are to be available, when and if needed, for potential decontamination and hazardous material cleanup in connection with the closure and/or post-closure care of the facility. The trustee will reimburse the Company or other persons as specified by the NDEP from the fund for closure and post-closure expenditures in such amounts as the NDEP shall direct in writing. Through December 31, 2018, $670,000 has been contributed to the trust fund.

10. Convertible Notes

As described more completely under the caption "Interstate Battery Agreements" below in Note 13, the Company issued to Interstate Battery System International, Inc. and its wholly-owned subsidiary (collectively "Interstate Battery") a convertible note with a face amount of $5.0 million and interest of 11% per annum due May 25, 2019. The note is convertible at $7.12 per share of common stock. The Company allocated the proceeds from the Interstate Battery agreements to the convertible note, common stock and warrants comprising the financing agreements based on the relative fair value of the individual securities on the May 24, 2016 closing date of the agreements. Additionally, the convertible notes contained an embedded conversion feature having intrinsic value at the issuance date, which value the Company treated as an additional discount attributed to the convertible note, subject to limitations on the absolute amount of discount attributable to the convertible notes and its allocated value. The Company recorded a corresponding credit to additional paid-in capital attributable to the beneficial conversion feature ("BCF"). The discounts attributable to the convertible note, an aggregate of $4,975,000, are being amortized using the effective interest method over the three-year term of the note, maturing on May 24, 2019. Because the discount on the convertible note exceeds 99% of its initial face value, and because the discount is amortized over the period from issuance to maturity, the calculated effective interest rate is 184.75% per annum.

Interest cost on the note for the years ended December 31, 2018, 2017 and 2016 totaled $0.7 million, $0.6 million and $0.3 million, respectively. Amortization of the note discount for the years ended December 31, 2018, 2017 and 2016 totaled $2.0 million, $0.4 million and $0.1 million, respectively. Amortization of the deferred financing costs, more fully described in Note 13, totaled $47,000, $48,000 and $27,000 for the years ended December 31, 2018, 2017 and 2016, respectively.

The convertible note payable is comprised of the following (in thousands):

	December 31, 2018	December 31, 2017
Convertible note payable	$ 5,000	$ 5,000
Accrued interest	1,651	961
Deferred financing costs, net	(20)	(67)
Note discount	(2,556)	(4,562)
Less current portion	$ 4,075	$ —
Convertible note payable, non-current portion	$ —	$ 1,332

As of December 31, 2018, the Interstate Battery convertible note's "if-converted value" did not exceed its principal amount. As further described in Note 19 - Subsequent Events. This note was fully paid off in January 2019.

11. Deferred Rent

On August 7, 2015, the Company signed a lease for 21,697 square feet of mixed office and manufacturing space in Alameda, CA. The term of the lease is 76 months plus 6 months pre-commencement date for tenant improvement construction. The total cost of the lease is $3.0 million which was being amortized over 82 months at approximately $37,000 per month. As of December 31, 2016, the landlord had paid for $0.9 million in tenant improvements. The tenant improvements cost has been included in owned assets and deferred rent and was being amortized over the life of the lease.

In July 2018, the Company signed a lease for 14,016 square feet of mixed office and warehouse space in McCarran, Nevada. The lease term is 42 months. The total cost of the lease is $0.4 million, which is being amortized over 42 months at approximately $9,000 per month.

Amortization of deferred rent expense for the years ended December 31, 2018 and 2017 was $0.1 million and $0.2 million, respectively. Net deferred rent expense for the year ended December 31, 2016 was $29,000.

In October 2018, the Company moved its corporate headquarters to its McCarran, Nevada facility and ceased to use its Alameda, California facility. In February 2019, the Company sublet the California facility. Upon vacating the property, the Company wrote off the remaining amount of deferred rent in the amount of $0.8 million, and recorded a liability for the present value of remaining lease payments less estimated sublease income in the amount of $0.3 million recorded in the balance sheet as lease liability. Additionally, the Company wrote off the net book value of its leasehold improvements of approximately $0.8 million during the fourth quarter of 2018.

12. Notes Payable

AMR entered into a $10,000,000 loan with Green Bank on November 3, 2015. The term of the loan is twenty-one years. For the first twelve months only interest was payable; thereafter monthly payments of interest and principal are due. The interest rate adjusts on the first day of each calendar quarter equal to the greater of six percent (6%) or two percent (2%) per annum above the minimum prime lending rate charged by large U.S. money center commercial banks as published in the Wall Street Journal. The terms of the Loan Agreement contain various affirmative and negative covenants. Among them, AMR must maintain a minimum debt service coverage ratio of 1.25 to 1.0 (beginning with the twelve-month period ending March 31, 2017), a maximum debt-to-net worth ratio of 1.0 to 1.0 and a minimum current ratio of 1.5 to 1.0. AMR was in compliance with all covenants as of and for the years ending December 31, 2016 and 2015. AMR was in compliance with all but the minimum debt service coverage ratio covenant as of and for each of the calendar quarters in the period March 31, 2017 through December 31, 2018. AMR has received a waiver for the minimum debt service coverage ratio covenant for each period of non-compliance.

Collateral for this loan is AMR's accounts receivable, goods, equipment, fixtures, inventory, accessions and a certificate of deposit in the amount of $1.0 million.

The loan is guaranteed by the United States Department of Agriculture Rural Development ("USDA"), in the amount of 90% of the principal amount of the loan. The Company paid a guarantee fee to the USDA in the amount of $270,000 at the time of closing and will be required to pay to the USDA an annual fee in the amount of 0.50% of the guaranteed portion of the outstanding principal balance of the loan as of December 31 of each year.

Notes payable is comprised of the following (in thousands):

	December 31, 2018	December 31, 2017
Notes payable, current portion		
Capital equipment leases, current portion	$ 16	$ 128
Green Bank, net of issuance costs	295	277
	$ 311	$ 405
Notes payable, non-current portion		
Capital equipment leases, non-current portion	$ 31	$ 11
Green Bank, net of issuance costs	8,569	8,828
	$ 8,600	$ 8,839

The capital equipment lease obligations relate to capital leases further discussed in Note 5 – Property and Equipment, net. The costs associated with obtaining the Green Bank loan of $0.8 million were recorded as a reduction to the carrying amount of the note and are being amortized as interest expense over the twenty-one year life of the loan. Amortization of the deferred financing costs was $35,000, $35,000 and $35,000 for the years ended December 31, 2018, 2017 and 2016, respectively. The principal payments detailed below are excluding the effect of the reduction in the carrying amount related to the deferred financing costs.

The future principal payments related to the Green Bank note and capital equipment lease obligations are as follows as of December 31, 2018 (in thousands):

2019	311
2020	319
2021	341
2022	363
2023	385
Thereafter	7,826
Total loan payments	9,545

13. Stockholders' Equity

Authorized capital

The authorized capital stock of the Company consists of 50,000,000 shares of common stock, par value $0.001 per share. In the event of liquidation of the Company, dissolution or winding up, the holders of common stock are entitled to share ratably in all assets remaining after payment of liabilities. The common stock has no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to the common stock. The outstanding shares of common stock are fully paid and non-assessable.

The holders of the Company's common stock are entitled to one vote per share. Holders of common stock are entitled to receive a ratable share of dividends, if any, as may be declared by the board of directors.

Interstate Battery Agreements

Investment Agreement

The Company entered into a Credit Agreement dated May 18, 2016 with Interstate Battery pursuant to which Interstate Battery loaned the Company $5.0 million in consideration of the Company's issuance of a secured convertible promissory note in the original principal amount of $5.0 million. The note bears interest at the rate of eleven percent (11%) per annum, compounding monthly, and all interest is payable upon the earlier of maturity or conversion of the principal amount. The loan matures on May 24, 2019. The outstanding principal is convertible into shares of the Company's common stock at a conversion price of $7.12 per share. The Company's obligations under the note and Credit Agreement are secured by a second priority lien on the real estate, fixtures and equipment at the Company's recycling facility at McCarran, Nevada. The Credit Agreement includes representations, warranties, and affirmative and negative covenants that are customary of institutional credit agreements. Interstate Battery had previously raised a claim that the Company was in technical breach of a negative covenant under loan. The claimed breach related to the Company's failure to obtain Interstate Battery's prior written consent to the Company's acquisition of Ebonex IPR, Ltd. The Company estimated in 2017 that resolving the claim would result in a charge of $0.6 million. The Company recorded the $0.6 million in general and administrative expenses as of December 31, 2017 with the offset in accrued liabilities. The Company resolved this alleged breach in connection with a series of agreements with Interstate Battery in June 2018 as further described below and in Note 14.

Pursuant to the Credit Agreement, the Company also issued to Interstate Battery two common stock purchase warrants, including:

- a warrant to purchase 702,247 shares of the Company's common stock, at an exercise price of $7.12 per share, that is exercisable upon grant and expires on May 24, 2018; and
- a warrant to purchase 1,605,131 shares of the Company's common stock, at an exercise price of $9.00 per share, that is exercisable commencing November 24, 2016 and expires on May 24, 2019.

The warrants contain cashless exercise and standard anti-dilution adjustment provisions. The first warrant issued above was modified in June 2018 to extend the expiration date to June 30, 2020 and reduce the exercise price to $3.33 peer share. See Note 14 for further details of this modification. If Interstate converts its convertible note and exercises both warrants in their entirety, it will own approximately 8.3% of the Company's common stock at an average price per share of approximately $7.22.

The Company also entered into a Stock Purchase Agreement dated May 18, 2016 with Interstate Battery pursuant to which the Company issued and sold to Interstate Battery 702,247 shares of the Company's common stock at $7.12 per share for gross proceeds of approximately $5.0 million. The Stock Purchase Agreement includes customary representations, warranties, and covenants by Interstate Battery and us, and an indemnity from us in favor of Interstate Battery.

In connection with the investment transactions, the Company also entered into an Investors Rights Agreement dated May 18, 2016 with Interstate Battery pursuant to which the Company granted Interstate Battery customary demand and piggyback registration rights, limited board observation rights over the next three years and limited preemptive rights allowing Interstate Battery the right to purchase its proportional share of certain future equity issuances by the Company over the next three years. The Company included all of the Interstate Battery shares in its S-3 Registration Statement filed with the Securities and Exchange Commission on August 1, 2016.

The investment transactions with Interstate Battery closed on May 24, 2016. There were no sales commissions paid by the Company in connection with its sale of securities to Interstate Battery.

The Company allocated the $10.0 million proceeds from the Credit Agreement and Stock Purchase Agreement, to the various securities based on their relative fair values on the closing date of May 24, 2016.

- The fair value of the note was calculated using an average of the Merrill Lynch US High Yield CCC rate of 16.21% on May 24, 2016 and the Merrill Lynch US High Yield B effective yield of 7.44% on May 24, 2016.
- The fair value of the common stock was based on the closing market price of the Company's common stock on the NASDAQ stock market on May 24, 2016.

The fair value of the warrants using the Black-Scholes-Merton option pricing model and the assumptions are listed in the table below (FV of warrant in thousands).

	Warrant #1	Warrant #2
Warrant shares issued	702,247	1,605,131
Market price	11.39	11.39
Exercise price	7.12	$ 9.00
Term (years)	2 years	3 years
Risk-free interest rate	0.91%	1.05%
Volatility	65.70%	67.80%
Dividend rate	—%	—%
Per share FV of warrant	5.89	5.89
FV of warrant	$ 4,136	$ 9,450

Both warrants were issued on May 24, 2016, when the closing market price of the Company's stock was $11.39.
The table below presents the allocation of the proceeds based on the relative fair values of the stock, warrants and note (in thousands).

	Fair value	Allocated value
Allocation of Proceeds		
Convertible note	$ 4,879	$ 1,844
Warrants	13,586	5,134
Common stock	7,998	3,022
	$ 26,463	$ 10,000

The difference between the face value of the convertible note and the allocated amount (which considers both the allocated fair value of the issued stock and allocated fair value of the warrants) was recorded as an initial discount to the convertible note; common stock was recorded at its allocated fair value as a credit to par value and additional paid-in capital as appropriate, based on the number of shares issued, and the allocated fair value of the warrant was credited to additional paid-in capital. After taking into consideration the amortization of the note discount, the effective interest rate on the convertible note is 184.75% per annum.

The convertible note includes an embedded BCF. The intrinsic value of the BCF was treated as an additional component of the discount attributable to the convertible note. The initial discount (attributable to the stock and warrants as noted above) and the discount attributable to the BCF exceeds the face amount of the convertible note. To avoid reducing the initial net carrying value of the convertible note to or below zero, the discount attributable to the BCF was limited such that the aggregate of all discounts does not exceed 99.5% of the face amount of the convertible note. The discount is being accreted to interest expense using the effective interest method over the three-year life of the loan. If the loan is converted prior to its maturity, any remaining discount will be expensed immediately.

Costs incurred in connection with the deal of $771,000 were allocated between additional paid-in capital and prepaid financing/ debt discount (“debt issuance costs”) in the same manner as the above allocation of proceeds. The allocated debt issuance costs of $142,000 were recorded as a reduction to the carrying amount of the convertible note and are being amortized as interest expense over the three-year life of the loan. The remaining $629,000 was recorded as a reduction to additional paid-in capital.

National Securities Placement

On May 18, 2016, the Company entered into a Stock Purchase Agreement and a Registration Rights Agreement with certain accredited investors pursuant to which the Company issued and sold to the investors 719,333 shares of its common stock at a price of $7.12 per share for the gross proceeds of approximately $5.1 million. The Stock Purchase Agreement includes customary representations, warranties, and covenants by the investors and the Company, and an indemnity from the Company in favor of the investors. The private placement closed on May 24, 2016. The Company included all of these shares in its S-3 Registration Statement filed with the Securities and Exchange Commission on August 1, 2016.

National Securities Corporation acted as placement agent for the private placement and received sales commission in the amount of six percent (6%) of the gross proceeds, or a total of $307,000 in commissions from us. In addition, we reimbursed National Securities for its out-of-pocket expenses and legal fees in the aggregate amount of $38,000. The total costs of $345,000 have been recorded as a reduction to additional paid-in capital.

2016 Public Offering

On November 21, 2016, the Company completed a public offering of 2.3 million shares of its common stock at a public offering price o f $10.00 per share. Net proceeds to the Company from the public offering were approximately $21.5 million after deducting underwriting discounts, commissions and offering expenses. In connection with the public offering, the underwriter received a fee of $1.4 million and a warrant to purchase 33,450 shares of the Company’s common stock at $10.00 per share that is exercisable commencing May 20, 2017 and expires on November 21, 2019. The fair value of the warrant, $229,000, was recorded as an increase to offering expenses and an increase to additional paid-in capital. The Company calculated the fair value of the warrant using a BlackScholes Merton model with the assumptions as follows: $12.66 closing market value on the date of grant; 3-year term; 72% volatility; 1.36% discount rate and 0% annual dividend rate.

Johnson Controls Agreement

On February 7, 2017, the Company entered into a Stock Purchase Agreement with Johnson Controls pursuant to which the Company issued and sold to a wholly-owned subsidiary of Johnson Controls International plc, (“Johnson Controls”), 939,005 shares of its common stock at $11.33 per share for the gross proceeds of approximately $10.6 million. Costs incurred in connection with the transaction, primarily legal fees, totaled approximately $167,000. The Stock Purchase Agreement includes customary representations, warranties, and covenants by Johnson Controls and the Company, and an indemnity from the Company in favor of Johnson Controls.

In connection with the investment transactions, the Company also entered into an Investors Rights Agreement dated February 7, 2017 with Johnson Controls pursuant to which the Company granted Johnson Controls customary demand and piggyback registration rights, limited board observation rights and limited preemptive rights allowing Johnson Controls the right to purchase its proportional share of certain future equity issuances by the Company. The board observation and preemptive rights shall expire on the earlier of (i) such time as Johnson Controls no longer owns 50% of the acquired shares or (ii) the termination of both the Tolling/Lead Purchase Agreement and Equipment Supply Agreement.

There were no sales commissions paid by the Company in connection with the sale of its common shares to Johnson Controls.

2017 Public Offering

On December 12, 2017, the Company completed a public offering of 7,150,000 shares of its common stock at a public offering price of $2.10 per share. Net proceeds to the Company from the public offering were approximately $13.8 million after deducting underwriting discounts, commissions and offering expenses. In January 2018, the underwriter exercised their overallotment option resulting in an additional 1,072,500 shares being issued and net proceeds of approximately $2.1 million.

2018 Public Offering

On June 18, 2018, the Company completed a public offering of 10,085,500 shares of its common stock, at the price of $2.85 per share, for gross proceeds of $28.7 million. After the payment of underwriter discounts and offering expenses, the Company received net proceeds of approximately $26.6 million.

Other shares issued

The Company issued 65,600 shares of common stock upon vesting of Restricted Stock Units during the year ended December 31, 2018. Additionally, the Company issued 2,034 shares of common stock pursuant to the Officers and Directors Purchase Plan during the year ended December 31, 2018 for proceeds of $4,000.

The Company issued 152,727 shares of common stock in conjunction with consulting agreements during the fourth quarter of 2018 with a fair value of $0.4 million. Fair value was determined using the intrinsic value method: total number of shares issued under the consulting contract multiplied by the closing market price of the date of issuance.

Warrants issued

Warrants to purchase 12,500 of the Company's common stock were issued on January 31, 2016, April 30, 2016 and July 31, 2016, all with an exercise price of $6.00 per share. The warrants were fully vested upon issuance and expire, if not exercised, on July 31, 2018. All of these warrants were exercised during 2017.

The following assumptions were used in the Black-Scholes-Merton pricing model to estimate the fair value of the warrants (FV of warrants in thousands).

	1/31/2016	4/30/2016	7/31/2016
Warrant shares issued	12,500	12,500	12,500
Market price	4.63	8.37	9.31
Exercise price	$ 6.00	$ 6.00	$ 6.00
Term (years)	1.25	2.25	2
Risk-free interest rate	0.97%	0.77%	0.72%
Volatility	80.00%	80.00%	80.00%
Dividend rate	—%	—%	—%
Per share FV of warrant	1.24	4.58	5.19
FV of warrant	$ 16	$ 57	$ 65

The fair value of each of the warrants was recorded as increase to business development and management costs and increase in additional paid in-capital.

As noted in the preceding section, warrants to purchase 2,307,378 and 33,450 shares of the Company's common stock were also issued for the Interstate Battery deal and the November 2016 Public Offering, respectively, during 2016. Please refer to the above section for specific valuation assumptions for these warrants.

Warrants exercised

On June 7, 2016, when the five-day average of closing prices for the Company's common stock was $12.16 per share, 15,203 shares of the Company's common stock were issued pursuant to a cashless exercise of a warrant for 30,000 shares of the Company's common stock with an exercise price of $6.00 per share.

During the year ended December 31, 2017, 1,175,796 shares were issued pursuant to cash and cashless warrant exercises as detailed below. Generally, the warrants specify using the preceding five-day average of closing prices for the Company's common stock in the calculation of common stock to be issued pursuant to a cashless exercise.

Date of Warrant Exercise	Average Closing Market Price Per Share	Exercise Price Per Share	Warrant Shares Exercised	Common Shares Issued
2/10/2017	$ 11.016	0.0034375	392,728	392,605
2/13/2017	$ 13.062	$ 3.00	25,119	19,349
2/13/2017	$ 13.062	$ 6.00	72,420	39,154
2/15/2017	$ 16.768	$ 6.00	65,177	41,856
2/16/2017	$ 16.768	$ 6.00	35,000	22,470
3/17/2017	$ 20.262	$ 6.00	2,500	2,500
3/20/2017	$ 20.304	$ 3.00	226,068	192,666
3/20/2017	$ 20.304	$ 6.00	586,596	413,253
4/3/2017	$ 19.148	0.0034375	43,636	43,628
4/11/2017	$ 17.920	$ 6.00	12,500	8,315
			1,461,744	1,175,796

Warrant modification

On June 24, 2018, the Company entered into a series of agreements (see Note 14 for details) with Interstate Battery, which modified the terms of a warrant to purchase 702,247 shares of our common stock by reducing the exercise price of the warrant from $7.12 per share to $3.33 per share and extended the expiration date of the warrant from June 24, 2018 to June 23, 2020. The expiration date had previously been extended from May 2018 to June 2018 as part of the overall negotiations. The incremental fair value resulting from this modification was calculated to be $1.0 million using the Black-Scholes-Merton Option Pricing Model with the assumptions as follows: $3.26 per share fair value on the date of modification; 2-year term; 80.2% volatility; 2.56% discount rate and 0% annual dividend rate.

The Company previously recorded $0.6 million in general and administrative expense during the year ended December 31, 2017 with the offset in accrued liabilities as an estimate of this liability. Upon modification, the Company recorded an additional $0.4 million in general and administrative expense for the three months ended June 30, 2018, relieved $0.6 million in accrued liabilities with the $1.0 million offset to additional paid-in capital.

Warrants outstanding

Warrants outstanding to purchase shares of the Company's common stock at a weighted average exercise price of $7.31 per share are as follows.

Exercise Price per Share	Expiration Date	Shares Subject to purchase at December 31, 2018
$ 3.33	6/23/2020	702,247
$ 9.00	5/18/2019	1,605,131
$ 10.00	11/21/2019	33,450
		2,340,828

Stock-based compensation

In 2014, the Board of Directors adopted the Company's stock incentive plan (the "2014 Plan"). The 2014 Plan was most recently amended and restated effective as of the Company's 2017 Annual Stockholders' Meeting. A total of 2,113,637 shares of common stock was authorized for issuance pursuant to the 2014 Plan at the time of its most recent amendment and restatement in 2017.

The 2014 Plan provides for the following types of stock-based awards: incentive stock options; non-statutory stock options; restricted stock; and performance stock. The 2014 Plan, under which equity incentives may be granted to employees and directors under incentive and non-statutory agreements, requires that the option price may not be less than the fair value of the stock at the date the option is granted. Option awards are exercisable until their expiration, which may not exceed 10 years from the grant date.

Stock-based compensation expense recorded was allocated as follows (in thousands):

	Year ended December 31, 2018	2017	2016
Cost of product sales	$ 154	$ 143	—
Research and development cost	215	456	256
General and administrative expense	832	482	804
Total	$ 1,201	$ 1,081	$ 1,060

The following assumptions were used in the Black-Scholes-Merton option pricing model to estimate the fair value of the awards granted during the year ended December 31, 2018, 2017 and 2016.

	Year ended December 31, 2018	2017	2016
Expected stock volatility	76.9% - 86.3	70.5% - 73.2	71%-80
Risk free interest rate	2.1% - 3.0	1.4% - 2.0	0.9%-1.8
Expected years until exercise	2.5-3.5	2.5-3.5	2.5-4.0
Dividend yield	—%	—%	—%

The risk-free interest rate assumption was based on the United States Treasury's zero-coupon bonds with maturities similar to those of the expected term of the award being valued. The assumed dividend yield was based on the Company's expectation of not paying dividends in the foreseeable future. The weighted-average expected life of the options was calculated using the simplified method as prescribed by the Securities and Exchange Commission ("SEC") Staff Accounting Bulletin No. 107 and No. 110 ("SAB No. 107 and 110"). This decision was based on the lack of relevant historical data due to the Company's limited historical experience. In addition, due to the Company's limited historical data, the estimated volatility also reflects the application of SAB No. 107 and 110, using the weighted average of the Company's historical volatility and the historical volatility of several unrelated public companies within the recycling industry. Forfeitures are recognized as they occur.

The following table summarizes the 2014 Plan activity and related information through December 31, 2018.

		Options Outstanding		RSU's outstanding	
	Number of Shares Available for Grant	Number of Shares	Weighted-Average Exercise Price Per Share	Number of RSU's	Weighted-Average Grant Date Fair Value Per Share
Balance at December 31, 2016	443,565	915,572	$ 4.96	—	$ —
Authorized	750,000				
Granted	(330,884)	134,933	11.19	195,951	7.28
Exercised	—	(284,370)	3.77	—	—
Forfeited	202,322	(187,322)	6.44	(15,000)	5.78
Balance at December 31, 2017	1,065,003	578,813	6.51	180,951	7.40
Granted	(640,275)	1,269,925	3.99	207,623	2.42
Exercised	—	—	—	(65,600)	5.78
Forfeited	381,021	(154,670)	7	(226,351)	4.74
Balance at December 31, 2018	805,749	1,694,068	$ 4.57	96,623	$ 4.01

The number of options granted during 2018 include 840,000 options subject to the terms and conditions of the Company's Amended and Restated 2014 Stock Incentive Plan ("2014 Plan) but were not issued under the 2014 Plan in reliance on Nasdaq Rule 5635(c)(4) and therefore do not reduce the number of shares available under the 2014 Plan.

The weighted-average grant-date fair value of options granted during the year ended December 31, 2018, 2017 and 2016 was $1.71, $5.55 and $4.47 per share, respectively. The intrinsic value of options exercised during the year ended December 31, 2017 and 2016 was $1.5 million and $22,000, respectively. There were no stock option exercises during the year ended December 31, 2018. The amount of cash received from exercise of stock options during the year ended December 31, 2017 was $1.1 million.

Additional information related to the status of options at December 31, 2018 is as follows:

	Shares	Weighted-Average Exercise Price Per Share	Weighted-Average Remaining Contractual Life (Years)	Aggregate Intrinsic Value (in thousands)
Outstanding	1,694,068	4.57	3.77	6
Vested and exercisable	678,264	5.21	2.86	—

The intrinsic value of options is the fair value of the Company's stock at December 31, 2018 less the per share exercise price of the option multiplied by the number of shares.

As of December 31, 2018, there is approximately $1.7 million of total unrecognized compensation cost related to the unvested share-based (option and RSU) compensation arrangements granted under the 2014 Plan. The remaining unrecognized compensation cost will be recognized over a weighted-average period of 2.1 years.

The following table summarizes information about stock options outstanding as of December 31, 2018:

	Options Outstanding		Options Exercisable	
Range of Exercise Prices	Quantity	Weighted-Average Remaining Contractual Life (Years)	Quantity	Weighted-Average Remaining Contractual Life (Years)
$1.60 -$2.93	212,750	4.77	—	0.00
$2.94 - $3.00	422,500	4.33	82,500	4.33
$3.01 - $3.95	395,220	2.98	305,458	2.58
$3.96 - $6.92	310,267	3.44	134,494	2.30
$6.93 - $19.20	353,331	3.70	155,812	3.13
	1,694,068	3.78	678,264	2.86

Stock option issuances

In connection with his appointment as President of the Company in May 2018, Stephen Cotton was awarded options to purchase up to 840,000 shares of the Company's common stock. Options to purchase 420,000 common shares are exercisable over a five-year period at an exercise price of $3.00 per share. Options to purchase 210,000 common shares are exercisable over a five-year period at an exercise price of $5.00 per share and options to purchase 210,000 common shares are exercisable over a five-year period at an exercise price of $7.00 per share. The options vest in 1/36th increments during each of the first twelve months following the date of grant and thereafter the options vest in one-third increments on the second and third anniversary of the date of grant. The options issued are subject to the terms and conditions of the 2014 Plan but were not issued under the 2014 Plan in reliance on with Nasdaq Rule 5635(c)(4) and therefore do not reduce the number of shares available under the 2014 Plan.

Option modification

In connection with his termination, the stock options of the Company's former CEO were modified to extend the exercise period upon termination from 90 days to 2 years. The expense related to the modification of these stock option awards was approximately $15,000 and was recorded during the second quarter of 2018.

During the three months ended June 30, 2016, the Compensation Committee of the Board of Directors approved the modification of the terms of a stock option previously granted to a member of its Board of Directors to accelerate vesting and the waiver of the early termination of the option based upon the director's end of service to the Company. The modification resulted in additional compensation expense of $175,000.

Restricted Stock Units

In April 2018, the Company granted 150,000 restricted stock units (RSUs), all of which were subject to vesting, with a grant fair value of $339,000 to its then-Chief Financial Officer, Francis Knuettel II, as part of his employment agreement. Mr. Knuettel resigned in August 2018 and all of the RSUs expired by their terms prior to vesting.

In July 2017, the Company granted 49,751 restricted stock units (RSUs) with a grant date fair value per share of $11.68 to its then Chief Financial Officer, Mr. Weinswig, as part of his employment agreement. Mr. Weinswig resigned in March 2018 and all of the RSUs expired by their terms prior to vesting.

Total intrinsic value of RSUs vested and released during 2018 was $0.1 million. Intrinsic value of RSUs outstanding at December 31, 2018 was $0.2 million.

As of December 31, 2018, there is approximately $11,000 of total unrecognized compensation cost related to the unvested share-based (RSU) compensation arrangements granted under the 2014 Plan. The remaining unrecognized compensation cost will be recognized over a weighted-average period of 11 days.

Reserved shares

At December 31, 2018, the Company has reserved shares of common stock for future issuance as follows:

	Number of Shares
Equity Plan	
Subject to outstanding options and restricted shares	1,790,691
Available for future grants	805,749
Convertible note-principal	702,247
Officer and Director Purchase Plan	245,562
Warrants	2,340,828
	5,885,077

14. Commitments and Contingencies

Executive resignations

On April 19, 2018, Stephen Clarke resigned as president and chief executive officer and as a member of the Board. Dr. Clarke's resignation as an officer the Company was treated as a termination without cause under his employment agreement with the Company. Pursuant to his employment agreement, Dr. Clarke was entitled to one-time severance benefits that includes severance and benefits continuation expense of approximately $0.9 million paid out over a 2-year period in consideration of his execution of a customary release and separation agreement. Additionally, as noted above, Dr. Clarke was granted an extension of the exercise period of his stock options upon termination from 90 days to 2 years. The expense related to the modification of these stock option awards was approximately $15,000.

On December 3, 2018, Sewlyn Mould resigned as chief operating officer. Mr. Mould's resignation as an officer the Company was treated as a termination without cause under his employment agreement with the Company. Pursuant to his employment agreement, Mr. Mould was entitled to one-time severance benefits that includes severance and benefits continuation expense of approximately $0.9 million paid out over a 2-year period in consideration of his execution of a customary release and separation agreement. Pursuant to a Separation Agreement and Release between the Company and Mr. Mould, Mr. Mould has agreed to receive, in lieu of two years of salary, a cash severance payment of $100,000 payable in six equal installments in accordance with the Company's regular payroll practices, plus an award of restricted stock units that will entitle him to receive, for each of the 21 consecutive months commencing on March 1, 2019, $33,333 of the Company's common shares based on volume-weighted average price over the 20 trading days preceding the first business day of the respective month. The Company has reserved the right, at its option, to pay Mr. Mould $33,333 of cash in lieu of any of the 21 monthly share issuances. The Separation Agreement and Release includes customary indemnification, confidentiality, non-disparagement and non-solicitation covenants and agreements of the parties.

Lease commitments

As discussed in Note 11, On August 7, 2015, the Company signed a lease for 21,697 square feet of mixed office and manufacturing space in Alameda, CA. On October 10, 2014, the Company entered into an operating lease for its current Oakland facility which expired in April 2018. The Company entered into a sublease agreement dated as of February 4, 2019 for the Alameda facility. The term of the sublease commences in February 2019, and ends on May 1, 2022. Total base rent payable by the sublessee through the end of the term of the sublease is approximately $1.5 million.

In July 2018, the Company signed a lease for 14,016 square feet of mixed office and warehouse space in McCarran, Nevada.

The future minimum payments related to these leases are as follows as of December 31, 2018 (in thousands):

2019		624
2020		643
2021		662
2022		227
Total minimum lease payments	$	2,156

During the years ended December 31, 2018, 2017 and 2016, the Company has incurred total rent expense of $0.5 million, $0.5 million and $0.3 million, respectively.

See Note 12 for lease commitments associated with capital leases for fixed assets.

Interstate Battery Agreement commitment

Pursuant to the 2016 Interstate Battery Investor Rights Agreement, the Company had agreed to compensate Interstate Battery should either Stephen Clarke, the Company's former chief executive officer, or Selwyn Mould, the Company's current chief operating officer, no longer hold such positions or no longer devote substantially all of their business time and attention to the Company, whether as a result of resignation, death, disability or otherwise (such an event referred to as a "key-man event"). The Company had agreed to pay Interstate Battery $2.0 million, per occurrence, if either officer was subject to a key-man event during the two years following May 18, 2016. The Company also agreed to pay Interstate Battery $2.0 million if either or both officers were subject to a key-man event during the third year following May 18, 2016. Pursuant to the Interstate Battery Investor Rights Agreement, the key-man payments are payable, at the option of the Company, in cash or shares of the Company's common stock. Pursuant to the agreement, if Interstate Battery, in its sole and absolute discretion, agrees with the Company on mutually acceptable replacements. for Messrs. Clarke and/or Mould, as the case may be, the key man penalties shall be deemed waived by Interstate Battery.

Interstate Battery had previously raised a claim that the Company was in technical breach of a negative covenant under the Credit Agreement dated May 18, 2016 between the Company and Interstate Battery. The claimed breach related to the Company's failure to obtain Interstate Battery's prior written consent to its acquisition of Ebonex IPR, Ltd.

On June 24, 2018, the Company entered into a series of agreements with Interstate Battery, including an amendment to the Investor Rights Agreement. Pursuant to the amendment to the Investor Rights Agreement, Interstate Battery agreed to waive all payments under the key-man provisions of the Investor Rights Agreement with respect to the resignation of the Company's former chief executive officer, Stephen Clarke. In addition, the parties agreed that the Company, at its option, can elect to eliminate the key-man event and all related key-man payments associated with Mr. Mould by (i) paying Interstate Battery a one-time fee of $0.5 million, payable in cash and (ii) agreeing to pay Interstate Battery $2.0 million, payable at the Company's election in cash or shares of its common stock, should the Company's current president, Stephen Cotton no longer serve as president of the Company during the period ending May 18, 2019. On December 3, 2018, Mr. Mould resigned as chief operating officer. The Company agreed to to pay the one time fee of $0.5 million. Additionally:

- With respect to a Credit Agreement dated May 18, 2016 between the Company and Interstate Battery, Interstate Battery waived the alleged breach of the Credit Agreement based on the Company's acquisition of Ebonex IPR, Ltd.;
- The Company adjusted the terms of a warrant to purchase 702,247 shares of its common stock issued to Interstate Battery in May 2016, pursuant to which the exercise price of the warrant was decreased from $7.12 per share to $3.33 per share and the expiration date of the warrant was extended to June 23, 2020; and
- Interstate Battery agreed to provide the Company with more favorable pricing and payment terms under the Supply Agreement dated May 18, 2016 pursuant to which the Company buys used lead acid batteries from Interstate Battery.

Johnson Controls Agreement Commitment

Pursuant to the Johnson Controls Investor Rights Agreement, the Company has agreed to compensate Johnson Controls should either Stephen Clarke, the Company's current chief executive officer, or Selwyn Mould, the Company's current chief operating officer, no longer hold such positions or no longer devote substantially all of their business time and attention to the Company, whether as a result of resignation, death, disability or otherwise (such an event referred to as a "key-man event"). The Company has agreed to pay Johnson Controls $1.0 million per occurrence, if either officer is subject to a key-man event during the 18 months following February 7, 2017. The Company also agreed to pay Johnson Controls $1.0 million if either or both key-man events occur after 18 months and prior to 30 months following February 7, 2017. Pursuant to the agreement, if Johnson Controls, in its sole and absolute discretion, agrees with the Company on mutually acceptable replacements. for Dr. Clarke and/or Mr. Mould, as the case may be, the key man penalties shall be deemed waived by Johnson Controls. In connection with the resignations by Dr. Clarke and Mr. Mould described above, Johnson Controls has submitted to the Company its claim for payment of the key-man penalties in the total amount of $2.0 million. The Company has accrued the $2.0 million at December 31, 2018 but believes, however, that Johnson Controls' demand was premature as it had not considered the adequacy of the replacements for Dr. Clarke or Mr. Mould and that any such claim can be asserted after their replacements have been appointed and considered in good faith.

Legal proceedings

Beginning on December 15, 2017, three purported class action lawsuits were filed in the United Stated District Court for the Northern District California against the Company, Stephen Clarke, Thomas Murphy and Mark Weinswig. On March 23, 2018, the cases were consolidated under the caption In Re: Aqua Metals, Inc. Securities Litigation Case No 3:17-cv-7142. On May 23, 2018, the Court appointed lead plaintiffs and approved counsel for the lead plaintiffs. On July 20, 2018, the lead plaintiffs filed a consolidated amended complaint ("Amended Complaint"), on behalf of a class of persons who purchased the Company's securities between May 19, 2016 and November 9, 2017, against the Company, Stephen Clarke, Thomas Murphy and Selwyn Mould. The Amended Complaint alleges the defendants made false and misleading statements concerning the Company's lead recycling operations in violation of Section 10(b) of the Securities Exchange Act of 1934 ("Exchange Act") and Rule 10b-5 promulgated thereunder. The Amended Complaint seeks to hold the individual defendants as control persons pursuant to Section 20(a) of the Exchange Act. The Amended Complaint also alleges a violation of Section 11 of the Securities Act of 1933 ("Securities Act") based on alleged false and misleading statements concerning the Company's lead recycling operations contained in, or incorporated by reference in, the Company's Registration Statement on Form S-3 filed in connection with its November 2016 public offering. That claim is asserted on behalf of a class of persons who purchased shares pursuant to, or that are traceable to, that Registration Statement. The Amended Complaint seeks to hold the individual defendants liable as control persons pursuant to Section 15 of the Securities Act. The Amended Complaint seeks unspecified damages and plaintiffs' attorneys' fees and costs. On September 18, 2018, the defendants filed a motion to dismiss the Amended Complaint in its entirety and the plaintiff subsequently filed its opposition to the motion. In January 2019, the court notified the parties that it will rule on the motion to dismiss without a hearing. The Company denies that the claims in the Amended Complaint have any merit and it intends to vigorously defend the action.

Beginning on February 2, 2018, five purported shareholder derivative actions were filed in the United States District Court for the District of Delaware against the Company and certain of its current and former executive officers and directors, Stephen R. Clarke, Selwyn Mould, Thomas Murphy, Mark Weinswig, Vincent DiVito, Mark Slade and Mark Stevenson. On May 3, 2018, the cases were consolidated under the caption In re Aqua Metals, Inc. Stockholder Derivative Litigation, Case No. 1:18-cv-201-LPS (D. Del.). The complaints were filed by persons claiming to be stockholders of Aqua Metals and generally allege that certain of the Company's officers and directors breached their fiduciary duties to the Company by violating the federal securities laws and exposing the Company to possible financial liability. The complaints seek unspecified damages and plaintiffs' attorneys' fees and costs. The parties have entered into a stipulation staying the action until 30 days after a decision on the Company's motion to dismiss the Amended Complaint in the class action described above. The individual defendants deny that the claims in the shareholder derivative action have any merit and it intends to vigorously defend the action.

The Company is not party to any other legal proceedings. The Company may, from time to time, be party to litigation and subject to claims incident to the ordinary course of business. As its growth continues, the Company may become party to an increasing number of litigation matters and claims. The outcome of litigation and claims cannot be predicted with certainty, and the resolution of any future matters could materially affect its future financial position, results of operations or cash flows.

15. Related Party Transactions

Related party transactions comprised the following for the years ended December 31, 2018, 2017 and 2016:

- a series of transactions with Interstate Battery and its affiliate, a greater than five percent owner of our common shares described at “Management’s Discussion and Analysis of Financial Condition and Results of Operations – General - Interstate Battery Partnership” in this Form 10-K; and
- the payment of $116,000 of salary during the year ended December 31, 2017; $156,000 of salary, bonus and consulting fees during the year ended December 31, 2016 to a former employee who is the brother of the Company’s former chief executive officer.

The Company has adopted a policy that any transactions with directors, officers, beneficial owners of five percent or more of our common shares, any immediate family members of the foregoing or entities of which any of the foregoing are also officers or directors or in which they have a financial interest, will only be on terms consistent with industry standards and approved by a majority of the disinterested directors of our board.

16. Income Taxes

Net loss before income tax expense consists of the following (in thousands):

	Year ended December 31, 2018	2017	2016
US	(40,252)	(26,578)	(13,556)
Foreign	—	—	—
Total	$ (40,252)	$ (26,578)	$ (13,556)

The components of the provision for income tax expense consist of the following (in thousands):

	Year ended December 31, 2018	2017	2016
Current			
Federal	—	—	—
State	2	2	1
Deferred			
Federal	—	—	—
State	—	—	—
Total provision for income taxes	2	2	1

Reconciliation of the statutory federal income tax rates consist of the following :

	Year ended December 31, 2018	2017	2016
Tax at federal statutory rate	21.00 %	34.00 %	34.00 %
State tax, net of federal benefit	0.22 %	— %	(0.01)%
Change in rate	(0.04)%	(22.13)%	(1.30)%
Valuation allowance	(20.24)%	(15.78)%	(30.70)%
Impairment charge of acquired IP	— %	6.86 %	— %
Excess benefits from equity compensation	— %	(3.08)%	— %
Other	(0.93)%	0.14 %	(2.00)%
Provision for taxes	0.01 %	0.01 %	(0.01)%

The components of deferred tax assets (liabilities) included on the consolidated balance sheet are as follows (in thousands):

	As of December 31, 2018	As of December 31, 2017
Deferred tax assets		
Capitalized start-up costs	$ 4,103	$ 4,312
Credits	465	484
Net operating losses	13,134	5,350
Others	1,153	818
Total gross deferred tax assets	18,855	10,964
Valuation allowance	(18,299)	(10,370)
Total gross deferred tax assets (net of valuation allowance)	556	594
Deferred tax liabilities		
Patents	(250)	(239)
Fixed assets	(108)	—
Beneficial conversion feature - debt discount	(198)	(355)
Total gross deferred tax liabilities	(556)	(594)
Net deferred tax assets	—	—

The Company's effective tax rate for the period ended December 31, 2018 was lower than the statutory tax rate primarily because of the valuation allowance on its US deferred tax assets taxed at lower rates, partially offset by state taxes and tax credits. The income tax expense for the year ended December 31, 2018, 2017 and 2016 relate to state minimum income tax.

On December 22, 2017, President Trump signed the Tax Cuts and Jobs Act (the "Act") into law. The new legislation decreases the U.S. corporate federal income tax rate from 35% to 21% effective January 1, 2018. There was no impact on recorded deferred tax balances as the remeasurement of net deferred tax assets was offset by a change in valuation allowance. The Act also includes a number of other provisions including the elimination of loss carrybacks and limitations on the use of future losses, repeal of the Alternative Minimum Tax regime, and the introduction of a base erosion and anti-abuse tax. These provisions are not expected to have immediate effects on the Company.

Based on the available objective evidence at this time, management believes that it is more likely than not that the net deferred tax assets of the Company will not be fully realized. Accordingly, management has applied a full valuation allowance against net deferred tax assets at both December 31, 2018 and December 31, 2017. The net valuation allowance increased by approximately $7.9 million during the year ended December 31, 2018. The increase in net valuation allowance primarily relates to net operating losses generated during 2018 partially offset by a decrease related to the lower U.S. corporate federal income tax rate effective January 1, 2018.

The Company has Federal and California net operating loss carry-forwards of approximately $61.3 million and $3.8 million, respectively, available to reduce future taxable income which will begin to expire in December 31, 2034 for Federal and California purposes.

At December 31, 2018, the Company had research and development credits carryforward of approximately $0.3 million and $0.5 million for Federal and California income tax purposes, respectively. If not utilized, the Federal research and development credits carryforward will begin to expire in December 31, 2034. The California credits can be carried forward indefinitely.

Utilization of the Company's net operating loss may be subject to substantial annual limitation due to the ownership change limitations provided by the Internal Revenue Code and similar state provisions. Such an annual limitation could result in the expiration of net operating loss carryforwards prior to utilization.

The Company's policy is to account for interest and penalties as income tax expense. As of December 31, 2018, the Company had no interest related to unrecognized tax benefits. No amounts of penalties related to unrecognized tax benefits were recognized in the provision for income taxes.

The Company maintains liabilities for uncertain tax positions. These liabilities involve considerable judgement and estimation and are continuously monitored by management based on the best information available, including changes in tax regulations, the outcome of relevant court cases, and other information. The Company recognizes potential accrued interest and penalties related to unrecognized tax benefits as income tax expense. At December 31, 2018, the Company's total amount of unrecognized tax benefit was approximately $0.2 million, none of which will affect the effective tax rate, if recognized. The Company does not expect its unrecognized benefits to change materially over the next twelve months.

The Company files income tax returns with the United States federal government and the State of California. The Company's tax returns for all prior years from the Company's inception in 2014 remain open to audit for Federal and California purposes.

Prior to January 1, 2017, the Company recognized the excess tax benefits of stock-based compensation expense as additional paid-in capital ("APIC"), and tax deficiencies of stock-based compensation expense in the income tax provision or as APIC to the extent that there were sufficient recognized excess tax benefits previously recognized. As a result of the prior requirement that excess tax benefits reduce taxes payable prior to be recognized as an increase in paid in capital, the Company had not recognized certain deferred tax assets (all tax attributes such as loss or credit carryforwards) that could be attributed to tax deductions related to equity compensation in excess of compensation recognized for financial reporting.

Effective as of January 1, 2017, the Company adopted a change in accounting policy in accordance with ASU 2016-9 to account for excess tax benefits and tax deficiencies as income tax expense or benefit, and to recognize previously unrecognized deferred tax assets that arose directly from (or the use of which was postponed by) tax deductions related to equity compensation in excess of compensation recognized for financial reporting. The change was applied on a modified retrospective basis; no prior periods were restated as a result of this change in accounting policy.

ASU 2016-9 also eliminates the requirement that excess tax benefits be realized as a reduction in current taxes payable before the associated tax benefit can be recognized as an increase in paid in capital. Approximately $0.2 million of capitalized start-up costs (none of which were included in the deferred tax assets recognized in the statement of financial position as of December 31, 2016) have been attributed to tax deduction for stock-based compensation in excess of the related book expense. Under ASU 2016-9, these previously unrecognized deferred tax assets were recognized on a modified retrospective basis as of January 1, 2017, the start of the year in which the Company adopted ASU 2016-9. The capitalized start-up costs recognized as of January 1, 2017, as described above, have been offset by a valuation allowance. As a result, there was no tax-related cumulative-effect to retained earnings for US tax purpose.

The Company made the election to early adopt ASU 2015-17 at December 31, 2016 to classify all deferred tax assets and liabilities, along with any related valuation allowance, as noncurrent on the balance sheet.

17. 401(k) Savings Plan

The Company maintains a defined-contribution savings plan under Section 401(k) of the Internal Revenue Code (the "401(k) Plan"). The 401(k) Plan covers all employees who meet defined minimum age and service requirements and allows participants to defer a portion of their annual compensation on a pretax basis. The Plan does not currently provide for matching contributions.

18. Supplemental Financial Information

Quarterly Results of Operations (Unaudited)

The following table presents the unaudited statements of operations data for each of the eight quarters in the period ended December 31, 2018. The information has been presented on the same basis as the audited financial statements and all necessary adjustments, consisting only of normal recurring adjustments, have been included in the amounts below to present fairly the unaudited quarterly results when read in conjunction with the audited financial statements and related notes. The operating results for any quarter should not be relied upon as necessarily indicative of results for any future period.

Unaudited Quarterly Results of Operations
(in thousands, except share and per share amounts)

	Three months ended March 31, 2018	Three months ended June 30, 2018	Three months ended September 30, 2018	Three months ended December 31, 2018	Total for year 2018
Revenue - sales	$ 1,726	$ 483	$ 1,169	$ 1,071	$ 4,449
Operating expenses					
Cost of product sales	5,436	4,600	6,453	6,272	22,761
Research and development cost	1,475	1,203	967	857	4,502
General and administrative expense	1,775	3,913	2,174	6,352	14,214
Total operating expenses	8,686	9,716	9,594	13,481	41,477
Loss from operations	(6,960)	(9,233)	(8,425)	(12,410)	(37,028)
Other income and expense					
Interest expense	(587)	(719)	(919)	(1,222)	(3,447)
Interest and other income	17	25	81	100	223
Total other expense, net	(570)	(694)	(838)	(1,122)	(3,224)
Loss before income tax expense	(7,530)	(9,927)	(9,263)	(13,532)	(40,252)
Income tax expense	(2)	—	—	—	(2)
Net loss	(7,532)	(9,927)	(9,263)	(13,532)	(40,254)
Weighted average shares outstanding, basic and diluted	27,768,008	30,134,995	38,779,710	38,905,282	34,154,826
Basic and diluted net loss per share	$ (0.27)	$ (0.33)	$ (0.24)	$ (0.35)	$ (1.18)

	Three months ended March 31, 2017	Three months ended June 30, 2017	Three months ended September 30, 2017	Three months ended December 31, 2017	Total for year 2017
Revenue - sales	—	603	589	896	2,088
Operating expenses					
Cost of product sales	—	2,531	3,140	3,870	9,541
Research and development cost	2,987	2,184	1,367	1,565	8,103
General and administrative expense	1,528	1,444	1,925	1,994	6,891
Impairment charge		2,411	—	—	2,411
Total operating expenses	4,515	8,570	6,432	7,429	26,946
Loss from operations	(4,515)	(7,967)	(5,843)	(6,533)	(24,858)
Other income and expense					
Interest expense	(388)	(408)	(454)	(511)	(1,761)
Interest and other income	11	10	7	13	41
Total other expense, net	(377)	(398)	(447)	(498)	(1,720)
Loss before income tax expense	(4,892)	(8,365)	(6,290)	(7,031)	(26,578)
Income tax expense	(2)	—	—	—	(2)
Net loss	(4,894)	(8,365)	(6,290)	(7,031)	(26,580)
Weighted average shares outstanding, basic and diluted	18,792,850	20,123,041	20,265,020	21,956,993	20,293,100
Basic and diluted net loss per share	(0.26)	(0.42)	(0.31)	(0.32)	(1.31)

19. Subsequent Events

The Company has evaluated subsequent events through the date which the consolidated financial statements were available to be issued.

2019 Public Offering

On January 21, 2019, the Company completed a public offering of 5,175,000 shares of its common stock, at the price of $1.90 per share, for gross proceeds of $9.8 million. After the payment of underwriter discounts and offering expenses, the Company received net proceeds of approximately $9.1 million.

Payment of outstanding convertible debt
On January 24, 2018, the Company repaid Interstate Batteries the outstanding principal and interest on the convertible debt in the amount of $6.7 million. In connection with the payoff, the Company amortized the remaining discount on the note of $2.6 million and remaining deferred financing expenses of $20,000 to interest expense.

Alameda, California sublease agreement
The Company entered into a sublease agreement dated as of February 4, 2019 for the Alameda facility. The term of the sublease commences on February 1, 2019 and ends on May 1, 2022. Total base rent payable by the sublessee through the end of the term of the sublease is approximately $1.5 million.

Equity awards
In January 2019, the Company granted 748,531 options and RSUs to employees and directors primarily in connection the Company's 2018 short-term and long-term incentive programs.

Operations, Management and Maintenance contract
On February 27, 2019, the Company entered into an Operations, Maintenance and Management Agreement ("Agreement") with Veolia North America Regeneration Services, LLC ("Veolia") pursuant to which Veolia will provide operational, maintenance and managerial services in regard to the Company's AquaRefining facility located at the Trans-Reno Industrial Complex outside of McCarran, Nevada ("TRIC").

The Agreement has a minimum term of two (2) years and upon the expiration of the initial term the Agreement automatically extends for an additional one-year period unless either party delivers its written notice of termination no later than 180 days' prior the end of the then current term. Either party may terminate the Agreement on ten days' prior written notice in the event of breach by the other party that goes uncorrected during the notice period. Veolia may terminate the Agreement for any reason during the first six months of the Agreement and may also terminate the Agreement in the event of the Company's failure to provide certain funding and support to the AquaRefining facility at TRIC. The Agreement contains representations, warranties and indemnities that are customary to commercial agreements of this nature.

Pursuant to the Agreement, the Company and Veolia have agreed to enter into good faith negotiations for a longer-term version of the Agreement that will provide for Veolia's management and operation of the TRIC facility for a ten-year term. The parties have agreed to commence negotiations no later than April 1, 2020 and to use their good faith commercial best-efforts to conclude negotiations by September 30, 2020.

In consideration of the services to be provided by Veolia under the Agreement, the Company has agreed to issue to Veolia a total of 2,350,000 shares of its common stock in eight quarterly installments of 293,750 shares. Each installment is subject to weighted average antidilution adjustments in the event of the Company's sale of common shares for cash consideration during the preceding quarterly period at a price less than $2.41 per share. In addition, the number of shares to be issued in each installment shall be capped at the current market value of $1.25 million based on the volume weighted average price of the Company's shares over the 20 trading days preceding the date for issuance of such installment. The Company has also agreed to issue to Veolia, on the one-year anniversary of the Agreement, warrants to purchase an additional 2,000,000 shares of its common stock at an exercise price of $5.00 per share and, on the second anniversary of the Agreement, warrants to purchase an additional 2,000,000 shares of its common stock at an exercise price $7.00 per share. The warrants will have a term of ten years from the date of issuance.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

Not applicable.

Item 9A. Controls and Procedures

(a) *Evaluation of Disclosure Controls and Procedures*.

Our management, with the participation of our chief executive officer and chief financial officer evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15 under the Securities Exchange Act of 1934, as amended (the “Exchange Act”). Based upon that evaluation, our management, including our chief executive officer and chief financial officer, concluded that for the reasons described below our disclosure controls and procedures were effective as of December 31, 2018 in ensuring all material information required to be filed has been made known in a timely manner.

(b) *Changes in internal control over financial reporting.*

There were no changes to our internal control over financial reporting, as defined in Rules 13a-15(f) under the Exchange Act that occurred during the fiscal quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

(c) *Management’s report on internal controls over financial reporting.*

Our management is responsible for establishing and maintaining adequate internal controls over financial reporting, as defined under Rule 15a-15(f) under the Exchange Act. Our management has assessed the effectiveness of our internal controls over financial reporting as of December 31, 2018 based on the framework established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”). Our internal control system was designed to provide reasonable assurance to our management and board of directors regarding the preparation and fair presentation of published financial statements. An internal control material weakness is a significant deficiency, or aggregation of deficiencies, that does not reduce to a relatively low level the risk that material misstatements in financial statements will be prevented or detected on a timely basis by employees in the normal course of their work. Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2018, and based on that evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2018.

This report does not include an attestation report of our registered public accounting firm regarding internal control over financial reporting. Management’s report was not subject to attestation by our registered public accounting firm pursuant to the rules of the Securities and Exchange Commission that permit us to provide only management’s report in this annual report.

Item 9B. Other Information

Veolia Agreement

On February 28, 2019, the Company entered into an Operations, Maintenance and Management Agreement ("Agreement") with Veolia North America Regeneration Services, LLC ("Veolia") pursuant to which Veolia will provide operational, maintenance and managerial services in regard to the Company’s AquaRefining facility located at the Trans-Reno Industrial Complex outside of McCarran, Nevada ("TRIC").

Pursuant to the Agreement, we have agreed with Veolia on annual capital and operational budgets and commercialization plans, and that the Veolia general manager will manage the operations of our AquaRefining facility at TRIC in accordance with those budgets and plans.

Pursuant to the Agreement, we have granted Veolia the right of first refusal to manage any future AquaRefining facilities directly owned by us on terms substantially similarly to those in the Agreement. We have also agreed to include Veolia in the marketing of any potential licensing of our AquaRefining technology to third parties with the goal of assisting Veolia in obtaining an engagement by the licensee to serve as operations and management service provider for such facility.

Pursuant to the Agreement, we and Veolia have agreed to enter into good faith negotiations for a longer-term version of the Agreement that will provide for Veolia’s management and operation of the TRIC facility for a ten-year term. The parties have agreed to commence negotiations no later than April 1, 2020 and to use their good faith commercial best-efforts to conclude negotiations by September 30, 2020. We have also agreed to enter into good faith negotiations with Veolia for a long-term agreement concerning Veolia's participation in the commercial licensing and management of future AquaRefining facilities developed by licensees of Aqua Metals. We have agreed to commence negotiations on the long-term licensing agreement no later than December 31, 2019 and to use our good faith commercial best-efforts to conclude negotiations by June 30, 2020.

The Agreement has a minimum term of two years and upon the expiration of the initial term the Agreement automatically extends for an additional one-year period unless either party delivers its written notice of termination no later than 180 days' prior the end of the then current term. Either party may terminate the Agreement on ten days' prior written notice in the event of breach by the other party that goes uncorrected during the notice period. Veolia may terminate the Agreement for any reason during the first six months of the Agreement and may also terminate the Agreement in the event of our failure to provide certain funding and support to the AquaRefining facility at TRIC. The Agreement contains representations, warranties and indemnities that are customary to commercial agreements of this nature.

In consideration of the services to be provided by Veolia under the Agreement, we have agreed to issue to Veolia a total of 2,350,000 shares of our common stock in eight quarterly installments of 293,750 shares. Each installment is subject to weighted average antidilution adjustments in the event of our sale of common shares for cash consideration during the preceding quarterly period at a price less than $2.41 per share. In addition, the number of shares to be issued in each installment shall be capped at the current market value of $1.25 million based on the volume weighted average price of our shares over the 20 trading days preceding the date for issuance of such installment. We have also agreed to issue to Veolia, on the one-year anniversary of the Agreement, warrants to purchase an additional 2,000,000 shares of our common stock at an exercise price of $5.00 per share and, on the second anniversary of the Agreement, warrants to purchase an additional 2,000,000 shares of our common stock at an exercise price $7.00 per share. The warrants will have a term of ten years from the date of issuance. The securities will be issued pursuant to the exemption from registration provided by Section 4(a)(2) of the Securities Act of 1933 and Rule 506(b) thereunder.

Executive Compensation

Effective as of February 25, 2019, we amended the Employment Agreement of our Chief Executive Officer, Stephen Cotton, to increase Mr. Cotton's salary to $450,000 per year, effective as of January 7, 2019. We also agreed to provide Mr. Cotton with a change-in-control payment equal to twice his then annual salary and target annual bonus amount in the event of his termination without cause or his resignation for good reason following a change-in-control of Aqua Metals. At the same time, we granted Mr. Cotton a non-incentive stock option to purchase up to 1,260,000 shares of our common stock, with 420,000 options vesting on a one-year anniversary and exercisable at $3.08 per share, 420,000 options vesting on a two-year anniversary and exercisable at $3.68 per share and 420,000 options vesting on a three-year anniversary and exercisable at $4.18 per share.

Effective as of February 25, 2019, we also agreed to amend the Employment Agreement of our Chief Financial Officer, Judd Merrill, to provide Mr. Merrill with a change-in-control payment equal to 150% of his then annual salary and target annual bonus amount in the event of his termination without cause or his resignation for good reason following a change-in-control of Aqua Metals.

PART III

The information required by Part III is omitted from this report because we will file a definitive proxy statement within 120 days after the end of our 2018 fiscal year pursuant to Regulation 14A for our 2019 Annual Meeting of Stockholders, or the 2019 Proxy Statement, and the information to be included in the 2019 Proxy Statement is incorporated herein by reference.

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this item will be contained in the 2019 Proxy Statement and is hereby incorporated by reference.

Item 11. Executive Compensation

The information required by this item will be contained in the 2019 Proxy Statement and is hereby incorporated by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this item will be contained in the 2019 Proxy Statement and is hereby incorporated by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item will be contained in the 2019 Proxy Statement and is hereby incorporated by reference.

Item 14. Principal Accountant Fees and Services

The information required by this item will be contained in the 2019 Proxy Statement and is hereby incorporated by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) Financial statements

Reference is made to the Index and Financial Statements under Item 8 in Part II hereof where these documents are listed.

(b) Financial statement schedules

Financial statement schedules are either not required or the required information is included in the consolidated financial statements or notes thereto filed under Item 8 in Part II hereof.

(c) Exhibits

The exhibits to this Annual Report on Form 10-K are set forth below. The exhibit index indicates each management contract or compensatory plan or arrangement required to be filed as an exhibit.

Number	Exhibit Description	Method of Filing
1.1	Underwriting Agreement dated as of December 7, 2017 between the Registrant and Oppenheimer & Co. Inc. as underwriter	Incorporated by reference from the Registrant's Current Report on Form 8-K filed on December 11, 2017.
1.2	Underwriting Agreement dated as of January 17, 2019 between the Registrant and National Securities Corporation as underwriter	Incorporated by reference from the Registrant's Current Report on Form 8-K filed January 17, 2019
3.1	First Amended and Restated Certificate of Incorporation of the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 9, 2015.
3.2	Second Amended and Restated Bylaws of the Registrant	Incorporated by reference from the Registrant's Current Report on Form 8-K filed on September 27, 2018.
3.3	Certificate of Amendment to First Amended and Restated Certificate of Incorporation of the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 25, 2015.
4.1	Specimen Certificate representing shares of common stock of Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on July 20, 2015.
4.2	Warrant dated September 8, 2014 issued to Liquid Patent Consulting, LLC	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 9, 2015.
4.3	Form of Senior Secured Convertible Promissory Note issued by the Registrant to investors in the offering completed on October 31, 2014	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 9, 2015.
4.4	Warrant dated October 31, 2014 issued to National Securities Corporation	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 9, 2015.
4.5	Form of Underwriters' Warrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on July 20, 2015.
4.6	Convertible Term Note issued by Aqua Metals, Inc. to Interstate Emerging Investments, LLC dated May 24, 2016	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed on August 10, 2016

4.7	Warrant to Purchase Common Stock issued by Aqua Metals, Inc. to Interstate Emerging Investments, LLC dated May 24, 2016 (Two Year)	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed on August 10, 2016
4.8	Warrant to Purchase Common Stock issued by Aqua Metals, Inc. to Interstate Emerging Investments, LLC dated May 24, 2016 (Three Year)	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed on August 10, 2016
4.9	Warrant to Purchase Common Stock issued by Aqua Metals, Inc. to National Securities Corporation dated November 21, 2016 (Three Year)	Incorporated by reference from the Registrant's Annual Report on Form 10-K filed on March 2, 2017
4.10	Warrant dated January 22, 2019 issued to National Securities Corporation	Filed electronically herewith
10.1	Form of Indemnification Agreement entered into by the Registrant with its Officers and Directors	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 9, 2015.
10.2*	Aqua Metals, Inc. Amended and Restated 2014 Stock Incentive Plan	Incorporated by reference from the Registrant's Proxy Statement on Form DEF 14A filed on April 24, 2017.
10.3*	Executive Employment Agreement dated January 15, 2015 between Stephen R. Clarke and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 9, 2015.
10.4*	Executive Employment Agreement dated January 15, 2015 between Thomas Murphy and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 9, 2015.
10.5*	Executive Employment Agreement dated January 1, 2015 between Selwyn Mould and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 9, 2015.
10.6*	Executive Employment Agreement dated January 15, 2015 between Stephen D. Cotton and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 9, 2015.
10.7	Lease Agreement dated August 7, 2015 between Registrant and with BSREP Marina Village Owner LLC	Incorporated by reference from the Registrant's Current Report on Form 8-K filed on August 27, 2015.
10.8	Loan Agreement dated November 3, 2015 between Aqua Metals Reno, Inc. and Green Bank. N.A.	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed November 10, 2015.
10.9	Deed of Trust, Security Agreement and Fixture Filing dated November 3, 2015 made by Aqua Metals Reno, Inc. in favor of Green Bank. N.A	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed November 10, 2015.
10.10	Investor Rights Agreement between Aqua Metals, Inc. and Interstate Emerging Investments, LLC dated May 18, 2016	Filed as an exhibit to the Registrant's Registration Statement on Form S-3 filed on August 1, 2016.
10.11*	Amendment No. 1 dated August 8, 2016 to Executive Employment Agreement dated January 15, 2015 between Aqua Metals, Inc. and Stephen R. Clarke	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed on August 10, 2016.
10.12*	Amendment No. 1 dated August 8, 2016 to Executive Employment Agreement dated January 15, 2015 between Aqua Metals, Inc. and Thomas Murphy	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed on August 10, 2016.
10.13*	Amendment No. 1 dated August 8, 2016 to Executive Employment Agreement dated January 15, 2015 between Aqua Metals, Inc. and Selwyn Mould	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed on August 10, 2016.

10.14*	Amendment No. 1 dated August 8, 2016 to Executive Employment Agreement dated January 15, 2015 between Aqua Metals, Inc. and Steve Cotton	Incorporated by reference from the Registrant’s Quarterly Report on Form 10-Q filed on August 10, 2016.
10.15+	Tolling/Lead Purchase Agreement dated February 7, 2017 between the Registrant and Johnson Controls Battery Group, Inc.	Incorporated by reference from the Registrant’s Quarterly Report on Form 10-Q filed on May 10, 2017.
10.16+	Equipment Supply Agreement dated February 7, 2017 between the Registrant and Johnson Controls Battery Group, Inc.	Incorporated by reference from the Registrant’s Quarterly Report on Form 10-Q filed on May 10, 2017.
10.17	Investor Rights Agreement dated February 7, 2017 between the Registrant and Tyco International Finance S.A.	Incorporated by reference from the Registrant’s Registration Statement on Form S-3 filed on February 27, 2017
10.18	Agreement dated April 13, 2017 between Registrant and Ebonex Limited	Incorporated by reference from the Registrant’s Quarterly Report on Form 10-Q filed on August 9, 2017.
10.19*	Executive Employment Agreement dated July 14, 2017 between Mark Weinswig and the Registrant	Incorporated by reference from the Registrant’s Quarterly Report on Form 10-Q filed on August 9, 2017.
10.20*	Aqua Metals, Inc. Officer and Director Share Purchase Plan	Incorporated by reference from the Registrant’s Quarterly Report on Form 10-Q filed on November 9, 2017.
10.21*	Executive Employment Agreement dated April 12, 2018 between Francis Knuettel II and Registrant	Incorporated by reference from the Registrant's Current Report on Form 8-K filed on April 19, 2018.
10.22	Amendment to the Equipment Supply Agreement dated April 16, 2018 between the Registrant and Johnson Controls Battery Group, Inc.	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed on May 9, 2018.
10.23*	Separation Agreement and Release dated April 19, 2018 between the Registrant and Stephen Clarke	Incorporated by reference from the Registrant's Current Report on Form 8-K filed on April 25, 2018.
10.24	Letter Agreement dated May 2, 2018 between David L. Kanen, Kanen Wealth Management LLC and the Registrant	Incorporated by reference from the Registrant's Current Report on Form 8-K filed on May 2, 2018.
10.25*	Employment Agreement dated May 2, 2018 between the Registrant and Stephen Cotton	Incorporated by reference from the Registrant's Current Report on Form 8-K filed on May 2, 2018.
10.26	Amendment No. 1 to Omnibus Amendment Agreement dated August 6, 2018 between the Registrant and Interstate Batteries Recycling, LLC	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed on August 8, 2018.
10.27*	Employment Agreement dated November 4, 2018 between the Registrant and Judd Merrill	Filed electronically herewith
10.28*	Separation Agreement and Release dated December 3, 2018 between the Registrant and Selwyn Mould	Filed electronically herewith
21.1	List of subsidiaries of Registrant.	Incorporated by reference from the Registrant’s Registration Statement on S-1 filed on June 9, 2015.
23.1	Consent of Armanino LLP, Independent Registered Public Accounting Firm.	Filed electronically herewith.

31.1	Certification under Section 302 of the Sarbanes-Oxley Act of 2002.	Filed electronically herewith.
31.2	Certification under Section 302 of the Sarbanes-Oxley Act of 2002.	Filed electronically herewith.
32.1	Certifications Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350.	Filed electronically herewith.
101.INS	XBRL Instance Document	Filed electronically herewith
101.SCH	XBRL Taxonomy Extension Schema Document	Filed electronically herewith
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	Filed electronically herewith
101.LAB	XBRL Taxonomy Extension Label Linkbase Document	Filed electronically herewith
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	Filed electronically herewith
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	Filed electronically herewith

* Indicates management compensatory plan, contract or arrangement.

+ Certain portions of the exhibit have been omitted pursuant to Registrant's confidential treatment request filed with the Commission pursuant to Rule 24b-2 under the Securities Exchange Act of 1934. The omitted text has been filed separately with the Commission.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this annual report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

AQUA METALS, INC.

Date: February 28, 2019 By: /s/ *Stephen Cotton*
Stephen Cotton,
President and Chief Executive 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 the capacities and on the dates indicated.

Signature	Title	Date
/s/ *Stephen Cotton* Stephen Cotton	President, Chief Executive Officer and Director *(Principal Executive Officer)*	February 28, 2019
/s/ *Judd Merrill* Judd Merrill	Chief Financial Officer *(Principal Financial and Accounting Officer*	February 28, 2019
/s/ S. Shariq Yosufzai S. Shariq Yosufzai	Director, Chairman of the Board	February 28, 2019
/s/*Vincent L. DiVito* Vincent L. DiVito	Director	February 28, 2019
/s/ Sushil Kapoor Sushil Kapoor	Director	February 28, 2019
/s/ Gayle Gibson Gayle Gibson	Director	February 28, 2019
/s/*Mark Stevenson* Mark Stevenson	Director	February 28, 2019

THIS WARRANT AND THE SECURITIES ISSUABLE UPON EXERCISE HEREOF HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), OR ANY OTHER SECURITIES LAWS AND MAY NOT BE OFFERED FOR SALE, SOLD, TRANSFERRED, PLEDGED OR HYPOTHECATED IN THE ABSENCE OF (1) AN EFFECTIVE REGISTRATION STATEMENT COVERING SUCH SECURITIES UNDER THE SECURITIES ACT AND ANY OTHER APPLICABLE SECURITIES LAWS, OR (2) AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED.

IN ADDITION, THIS WARRANT AND THE SECURITIES ISSUABLE UPON EXERCISE HEREOF MAY NOT BE SOLD, TRANSFERRED, ASSIGNED, PLEDGED, OR HYPOTHECATED, OR BE THE SUBJECT OF ANY HEDGING, SHORT SALE, DERIVATIVE, PUT, OR CALL TRANSACTION THAT WOULD RESULT IN THE EFFECTIVE ECONOMIC DISPOSITION OF SUCH SECURITIES BY ANY PERSON FOR A PERIOD OF ONE HUNDRED EIGHTY (180) DAYS IMMEDIATELY FOLLOWING THE DATE HEREOF, EXCEPT IN ACCORDANCE WITH FINRA RULE 5110(G)(2).

AQUA METALS, INC.

UNDERWRITER WARRANT

103,500 shares of Common Stock

January 22, 2019

This **UNDERWRITER WARRANT** (this "**Warrant")** of Aqua Metals, Inc., a corporation, duly organized and validly existing under the laws of the State of Delaware (the "**Company"),** is being issued pursuant to that certain Underwriting Agreement, dated January 17, 2019 (the "**Underwriting Agreement"),** between the Company and National Securities Corporation (the "**Underwriter")** relating to a public offering (the "**Offering")** of shares of common stock, $0.001 par value, of the Company (the "**Common Stock")** underwritten by the Underwriter.

FOR VALUE RECEIVED, the Company hereby grants to National Securities Corporation and its permitted successors and assigns (collectively, the "**Holder")** the right to purchase from the Company up to 103,500 shares of Common Stock (such shares underlying this Warrant, the "**Warrant Shares**"), at a per share purchase price equal to $1.90 (the "**Exercise Price**"), subject to the terms, conditions and adjustments set forth below in this Warrant.

1. Date of Warrant Exercise. This Warrant shall become exercisable upon the later of (i) one hundred eight (180) days after the date hereof and (ii) the day on which the Company files an amendment to its certificate of incorporation increasing the number of authorized shares of Common Stock to such number of authorized shares of Common Stock that permits this Warrant to be exercised in full by the Holder (the "**Exercise Date**"). Except as permitted by applicable rules of the Financial Industry Regulatory Authority, Inc. ("**FINRA**"), this Warrant and the underlying Warrant Shares shall not be sold, transferred, assigned, pledged or hypothecated prior to the date that is one hundred eighty (180) days immediately following the date hereof pursuant to FINRA Rule 5110(g)(1), except as permitted under FINRA Rule 5110(g)(2).

2. Expiration of Warrant. This Warrant shall expire on the five (5) year anniversary of the date hereof (the "**Expiration Date**").

3. Exercise of Warrant. This Warrant shall be exercisable pursuant to the terms of this Section 3.

3.1 Manner of Exercise.

(a) This Warrant may only be exercised by the Holder hereof on or after the Exercise Date and on or prior to the Expiration Date, in accordance with the terms and conditions hereof, in whole or in part (but not as to fractional shares) with respect to any portion of this Warrant, during the Company's normal business hours on any day other than a Saturday or a Sunday or a day on which commercial banking institutions in New York, New York are authorized by law to be closed (a "**Business Day**"), by surrender of this Warrant to the Company at its office maintained pursuant to Section 10.2(a) hereof, accompanied by a written exercise notice in the form attached as Exhibit A to this Warrant (or a reasonable facsimile thereof) duly executed by the Holder, together with the payment of the aggregate Exercise Price for the number of Warrant Shares purchased upon exercise of this Warrant. Upon surrender of this Warrant, the Company shall cancel this Warrant document and shall, in the event of partial exercise, replace it with a new Warrant document in accordance with Section 3.3.

(b) Except as provided for in Section 3.1(c) below, each exercise of this Warrant must be accompanied by payment in full of the aggregate Exercise Price in cash by check or wire transfer in immediately available funds for the number of Warrant Shares being purchased by the Holder upon such exercise.

(c) The aggregate Exercise Price for the number of Warrant Shares being purchased may also, in the sole discretion of the Holder, be paid in full or in part on a "cashless basis" at the election of the Holder:

(i) in the form of Common Stock owned by the Holder (based on the Fair Market Value (as defined below) of such Common Stock on the date of exercise);

(ii) in the form of Warrant Shares withheld by the Company from the Warrant Shares otherwise to be received upon exercise of this Warrant having an aggregate Fair Market Value on the date of exercise equal to the aggregate Exercise Price of the Warrant Shares being purchased by the Holder; or

(iii) by a combination of the foregoing, provided that the combined value of all cash and the Fair Market Value of any shares surrendered to the Company is at least equal to the aggregate Exercise Price for the number of Warrant Shares being purchased by the Holder.

For purposes of this Warrant, the term "**Fair Market Value**" means with respect to a particular date, the average closing price of the Common Stock for the five (5) trading days immediately preceding the applicable exercise herein as officially reported by the principal securities exchange on which the Common Stock is then listed or admitted to trading, or, if the Common Stock is not listed or admitted to trading on any securities exchange as determined in good faith by resolution of the Board of Directors of the Company, based on the best information available to it.

To illustrate a cashless exercise of this Warrant under Section 3.1 (c)(ii) (or for a portion thereof for which cashless exercise treatment is requested as contemplated by Section 3.1(c)(iii) hereof), the calculation of such exercise shall be as follows:

$$X = Y (A-B)/A$$

where:

X = the number of Warrant Shares to be issued to the Holder (rounded to the nearest whole share).

Y = the number of Warrant Shares with respect to which this Warrant is being exercised.

A = the Fair Market Value of the Common Stock.

B = the Exercise Price.

(d) For purposes of Rule 144 and sub-section (d)(3)(ii) thereof, it is intended, understood, and acknowledged that the Common Stock issuable upon exercise of this Warrant in a cashless exercise transaction as described in Section 3.1(c) above shall be deemed to have been acquired at the time this Warrant was issued. Moreover, it is intended, understood, and acknowledged that the holding period for the Common Stock issuable upon exercise of this Warrant in a cashless exercise transaction as described in Section 3.1(c) above shall be deemed to have commenced on the date this Warrant was issued.

3.2 When Exercise Effective. Each exercise of this Warrant shall be deemed to have been effected immediately prior to the close of business on the Business Day on which this Warrant shall have been duly surrendered to the Company as provided in Sections 3.1 and 12 hereof, and, at such time, the Holder in whose name any certificate or certificates for Warrant Shares shall be issuable upon exercise as provided in Section 3.3 hereof shall be deemed to have become the holder or holders of record thereof of the number of Warrant Shares purchased upon exercise of this Warrant.

3.3 Delivery of Common Stock Certificates and New Warrant. As soon as reasonably practicable after each exercise of this Warrant, in whole or in part, and in any event within three (3) Business Days thereafter, the Company, at its expense (including the payment by it of any applicable issue taxes), will cause to be issued in the name of and delivered to the Holder hereof or, subject to Sections 9 and 10 hereof, as the Holder (upon payment by the Holder of any applicable transfer taxes) may direct:

(a) a certificate or certificates (with appropriate restrictive legends, as applicable) for the number of duly authorized, validly issued, fully paid and non-assessable Warrant Shares to which the Holder shall be entitled upon exercise; and

(b) in case exercise is in part only, a new Warrant document of like tenor, dated the date hereof, for the remaining number of Warrant Shares issuable upon exercise of this Warrant after giving effect to the partial exercise of this Warrant (including the delivery of any Warrant Shares as payment of the Exercise Price for such partial exercise of this Warrant).

4. Certain Adjustments. For so long as this Warrant is outstanding:

4.1 Mergers or Consolidations. If at any time after the date hereof there shall be a capital reorganization (other than a combination or subdivision of Common Stock otherwise provided for herein) resulting in a reclassification to or change in the terms of securities issuable upon exercise of this Warrant (a "**Reorganization**"), or a merger or consolidation of the Company with another corporation, association, partnership, organization, business, individual, government or political subdivision thereof or a governmental agency (a "**Person**" or the "**Persons**") (other than a merger with another Person in which the Company is a continuing corporation and which does not result in any reclassification or change in the terms of securities issuable upon exercise of this Warrant or a merger effected exclusively for the purpose of changing the domicile of the Company) (a "**Merger**"), then, as a part of such Reorganization or Merger, lawful provision and adjustment shall be made so that the Holder shall thereafter be entitled to receive, upon exercise of this Warrant, the number of shares of stock or any other equity or debt securities or property receivable upon such Reorganization or Merger by a holder of the number of shares of Common Stock which might have been purchased upon exercise of this Warrant immediately prior to such Reorganization or Merger. In any such case, appropriate adjustment shall be made in the application of the provisions of this Warrant with respect to the rights and interests of the Holder after the Reorganization or Merger to the end that the provisions of this Warrant (including adjustment of the Exercise Price then in effect and the number of Warrant Shares) shall be applicable after that event, as near as reasonably may be, in relation to any shares of stock, securities, property or other assets thereafter deliverable upon exercise of this Warrant. The provisions of this Section 4.1 shall similarly apply to successive Reorganizations and/or Mergers.

4.2 Splits and Subdivisions; Dividends. In the event the Company should at any time or from time to time effectuate a split or subdivision of the outstanding shares of Common Stock or pay a dividend in or make a distribution payable in additional shares of Common Stock or other securities, or rights convertible into, or entitling the holder thereof to receive, directly or indirectly, additional shares of Common Stock (hereinafter referred to as "**Common Stock Equivalents**") without payment of any consideration by such holder for the additional shares of Common Stock or Common Stock Equivalents (including the additional shares of Common Stock issuable upon conversion or exercise thereof), then, as of the applicable record date (or the date of such distribution, split or subdivision if no record date is fixed), the per share Exercise Price shall be appropriately decreased and the number of Warrant Shares shall be appropriately increased in proportion to such increase (or potential increase) of outstanding shares; provided, however, that no adjustment shall be made in the event the split, subdivision, dividend or distribution is not effectuated.

4.3 Combination of Shares. If the number of shares of Common Stock outstanding at any time after the date hereof is decreased by a combination of the outstanding shares of Common Stock, the per share Exercise Price shall be appropriately increased and the number of shares of Warrant Shares shall be appropriately decreased in proportion to such decrease in outstanding shares.

4.4 Adjustments for Other Distributions. In the event the Company shall declare a distribution payable in securities of other Persons, evidences of indebtedness issued by the Company or other Persons, assets (excluding cash dividends or distributions to the holders of Common Stock paid out of current or retained earnings and declared by the Company's Board of Directors) or options or rights not referred to in Sections 4.2 or 4.3 then, in each such case for the purpose of this Section 4.4, upon exercise of this Warrant, the Holder shall be entitled to a proportionate share of any such distribution as though the Holder was the actual record holder of the number of Warrant Shares as of the record date fixed for the determination of the holders of Common Stock of the Company entitled to receive such distribution.

5. No Impairment. The Company will not, by amendment of its certificate of incorporation or by-laws or through any consolidation, merger, reorganization, transfer of assets, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all of the terms and in the taking of all actions necessary or appropriate in order to protect the rights of the Holder against impairment.

6. Notice as to Adjustments. With respect to each adjustment pursuant to Section 4 of this Warrant, the Company, at its expense, will promptly compute the adjustment or re-adjustment in accordance with the terms of this Warrant and furnish the Holder with a certificate certified and confirmed by the Secretary or Chief Financial Officer of the Company setting forth, in reasonable detail, the event requiring the adjustment or re-adjustment and the amount of such adjustment or re-adjustment, the method of calculation thereof and the facts upon which the adjustment or re-adjustment is based, and the Exercise Price and the number of

Warrant Shares or other securities purchasable hereunder after giving effect to such adjustment or re-adjustment, which report shall be mailed by first class mail, postage prepaid to the Holder.

7. Reservation of Shares. Upon the Company filing an amendment to its certificate of incorporation increasing the number of authorized shares of Common Stock to such number of authorized shares of Common Stock that permits this Warrant to be exercised in full by the Holder, which increase and reservation shall be effected by the Company by no later than July 22, 2019, the Company shall, solely for the purpose of effecting the exercise of this Warrant, reserve and keep available out of its authorized shares of Common Stock, free from all taxes, liens and charges with respect to the issue thereof and not subject to preemptive rights of shareholders of the Company, such number of its shares of Common Stock as shall from time to time be sufficient to effect in full the exercise of this Warrant. If at any time thereafter the number of authorized but unissued shares of Common Stock shall not be sufficient to effect in full the exercise of this Warrant, in addition to such other remedies as shall be available to Holder, the Company will promptly take such corporate action as may, in the opinion of its counsel, be necessary to increase the number of authorized but unissued shares of Common Stock to such number of shares as shall be sufficient for such purposes, including without limitation, using its Reasonable Commercial Efforts (as defined in Section 14 hereof) to obtain the requisite shareholder approval necessary to increase the number of authorized shares of Common Stock. The Company hereby represents and warrants that all shares of Common Stock issuable upon proper exercise of this Warrant shall be duly authorized and, when issued and paid for upon proper exercise, shall be validly issued, fully paid and nonassessable.

8. Registration and Listing.

8.1 Definition of Registrable Securities; Majority. As used herein, the term "**Registrable Securities**" means any shares of Common Stock issuable upon the exercise of this Warrant until the date (if any) on which such shares shall have been transferred or exchanged and new certificates for them not bearing a legend restricting further transfer shall have been delivered by the Company and subsequent disposition of the shares shall not require registration or qualification under the Securities Act or any similar state law then in force. For purposes of this Warrant, the term "**Majority Holders**" shall mean in excess of fifty percent (50%) of the then outstanding Warrant Shares.

8.2 Demand Registration Rights.

(a) The Company, upon written demand ("**Demand Notice**") of the Majority Holders, agrees to register on one occasion all of the Registrable Securities (a "**Demand Right**"). On such occasion, the Company will file a registration statement or a post-effective amendment to the Registration Statement covering the Registrable Securities within forty-five (45) days after receipt of a Demand Notice and use its Reasonable Commercial Efforts to have such registration statement or post-effective amendment declared effective as soon as possible thereafter; provided, however, that the Company shall not be required to comply with a Demand Notice if the Company has filed a registration statement with respect to which the Holder is entitled to piggyback registration rights pursuant to Section 8.3 hereof and either: (i) the Holder has elected to participate in the offering covered by such registration statement or (ii) if such registration statement relates to an underwritten primary offering of securities of the Company, until the offering covered by such registration statement has been withdrawn or until thirty (30) days after such offering is consummated. The demand for registration may be made at any time during a period of two and one-half years beginning six (6) months from the date hereof. The Company covenants and agrees to give written notice of its receipt of any Demand Notice to all other registered Holders of the Warrants and/or the Registrable Securities within ten days from the date of the receipt of any such Demand Notice.

(b) The Company shall bear all fees and expenses attendant to registering the Registrable Securities pursuant to Section 8.2(a), but the Holders shall pay any and all underwriting commissions and the expenses of any legal counsel selected by the Holders to represent them in connection with the sale of the Registrable Securities. The Company agrees to use its Reasonable Commercial Efforts to qualify or register the Registrable Securities in such states as are reasonably requested by the Majority Holder(s); provided, however, that in no event shall the Company be required to register the Registrable Securities in a state in which such registration would cause (i) the Company to be obligated to register, license or qualify to do business in such state, submit to general service of process in such state or would subject the Company to taxation as a foreign corporation doing business in such jurisdiction or (ii) the principal stockholders of the Company to be obligated to escrow their shares of capital stock of the Company. The Company shall cause any registration statement or post-effective amendment filed pursuant to the Demand Right granted under Section 8.2(a) to remain effective for a period of nine consecutive months from the effective date of such registration statement or post-effective amendment. The Holders shall only use the prospectuses provided by the Company to sell the Registrable Securities covered by such registration statement, and will immediately cease to use any prospectus furnished by the Company if the Company advises the Holder that such prospectus may no longer be used due to a material misstatement or omission.

8.3 Incidental Registration Rights.

(a) If the Company proposes to register any of its securities under the Securities Act (other than in connection with a transaction contemplated by Rule 145(a) promulgated under the Securities Act or pursuant to registration on Form S-4 or S-8 or any successor forms) whether for its own account or for the account of any holder or holders of its shares other than Registrable Securities (any shares of such holder or holders (but not those of the Company and not Registrable Securities) with respect to any registration are referred to herein as, "**Other Shares**"), the Company shall at each such time give prompt (but not less than thirty (30) days prior to the anticipated effectiveness thereof) written notice to the holders of Registrable Securities of its intention to do so. The holders of Registrable Securities shall exercise the "piggy-back" rights provided herein by giving written notice within ten (10) days after the receipt of any such notice (which request shall specify the Registrable Securities intended to be disposed of by such holder). Except as set forth in Section 8.3(b), the Company will use its Reasonable Commercial Efforts to effect the registration under the Securities Act of all of the Registrable Securities which the Company has been so requested to register by such holder, to the extent required to permit the disposition of the Registrable Securities so to be registered, by inclusion of such Registrable Securities in the registration statement which covers the securities which the Company proposes to register. The Company will pay all Registration Expenses in connection with each registration of Registrable Securities pursuant to this Section 8.3.

(b) If the Company at any time proposes to register any of its securities under the Securities Act as contemplated by this Section 8.3 and such securities are to be distributed by or through one or more underwriters, the Company will, if requested by a holder of Registrable Securities, use its Reasonable Commercial Efforts to arrange for such underwriters to include all the Registrable Securities to be offered and sold by such holder among the securities to be distributed by such underwriters, provided that if the managing underwriter of such underwritten offering shall inform the Company by letter of its belief that inclusion in such registration statement and/or distribution of all or a specified number of such securities proposed to be distributed by such underwriters would interfere with the successful marketing of the securities being distributed by such underwriters (such letter to state the basis of such belief and the approximate number of such Registrable Securities, such Other Shares and shares held by the Company proposed so to be registered which may be distributed without such effect), then the Company may, upon written notice to such holder, the other holders of Registrable Securities, and holders of such Other Shares, reduce pro rata in accordance with the number of shares of Common Stock desired to be included in such registration statement and/or distribution (if and to the extent stated by such managing underwriter to be necessary to eliminate such effect) the number of such Registrable Securities and Other Shares the registration and/or distribution of which shall have been requested by each holder thereof so that the resulting aggregate number of such Registrable Securities and Other Shares so included in such registration and/or distribution, together with the number of securities to be included in such registration and/or distribution for the account of the Company, shall be equal to the number of shares stated in such managing underwriter's letter.

8.4 Registration Procedures. Whenever the holders of Registrable Securities have properly requested that any Registrable Securities be registered pursuant to the terms of this Warrant, the Company shall use its Reasonable Commercial Efforts to effect the registration for the sale of such Registrable Securities in accordance with the intended method of disposition thereof, and pursuant thereto the Company shall as expeditiously as possible:

(a) prepare and file with the SEC a registration statement with respect to such Registrable Securities and use its Reasonable Commercial Efforts to cause such registration statement to become effective;

(b) notify such holders of the effectiveness of each registration statement filed hereunder and prepare and file with the SEC such amendments and supplements to such registration statement and the prospectus used in connection therewith as may be necessary to (i) keep such registration statement effective and the prospectus included therein usable for a period commencing on the date that such registration statement is initially declared effective by the SEC and ending on the earlier of (A) the date when all Registrable Securities covered by such registration statement have been sold pursuant to the registration statement or cease to be Registrable Securities, or (B) nine months from the effective date of the registration statement; and (ii) comply with the provisions of the Securities Act with respect to the disposition of all securities covered by such registration statement during such period in accordance with the intended methods of disposition by the sellers thereof set forth in such registration statement;

(c) furnish to such holders such number of copies of such registration statement, each amendment and supplement thereto, the prospectus included in such registration statement (including each preliminary prospectus) and such other documents as such seller may reasonably request in order to facilitate the disposition of the Registrable Securities owned by such holders;

(d) use its Reasonable Commercial Efforts to register or qualify such Registrable Securities under such other securities or blue sky laws of such jurisdictions as such holders reasonably request and do any and all other acts and things which may be reasonably necessary or advisable to enable such holders to consummate the disposition in such jurisdictions of the Registrable Securities owned by such holders; provided, however, that the Company shall not be required to: (i) qualify generally to do business in any jurisdiction where it would not otherwise be required to qualify but for this subparagraph; (ii) subject itself to taxation in any such jurisdiction; or (iii) consent to general service of process in any such jurisdiction;

(e) notify such holders, at any time when a prospectus relating thereto is required to be delivered under the Securities Act, of the happening of any event as a result of which the prospectus included in such registration statement contains an untrue statement of a material fact or omits any material fact necessary to make the statements therein, in light of the circumstances in which they are made, not materially misleading, and, at the reasonable request of such holders, the Company shall prepare a supplement or amendment to such prospectus so that, as thereafter delivered to the purchasers of such Registrable Securities, such prospectus shall not contain an untrue statement of a material fact or omit to state any material fact necessary to make the statements therein, in light of the circumstances in which they are made, not materially misleading;

(f) provide a transfer agent and registrar for all such Registrable Securities not later than the effective date of such registration statement;

(g) make available for inspection by any underwriter participating in any disposition pursuant to such registration statement, and any attorney, accountant or other agent retained by any such underwriter, all financial and other records, pertinent corporate documents and properties of the Company, and cause the Company's officers, directors, managers, employees and independent accountants to supply all information reasonably requested by any such underwriter, attorney, accountant or agent in connection with such registration statement;

(h) otherwise use its Reasonable Commercial Efforts to comply with all applicable rules and regulations of the SEC, and make available to its security holders, as soon as reasonably practicable, an earnings statement of the Company, which earnings statement shall satisfy the provisions of Section 11(a) of the Securities Act and, at the option of the Company, Rule 158 thereunder;

(i) in the event of the issuance of any stop order suspending the effectiveness of a registration statement, or of any order suspending or preventing the use of any related prospectus or suspending the qualification of any Registrable Securities included in such registration statement for sale in any jurisdiction, the Company shall use its Reasonable Commercial Efforts promptly to obtain the withdrawal of such order; and

(j) if the offering is underwritten, use its Reasonable Commercial Efforts to furnish on the date that Registrable Securities are delivered to the underwriters for sale pursuant to such registration, an opinion dated such date of counsel representing the Company for the purposes of such registration, addressed to the underwriters covering such issues as are reasonably required by such underwriters.

8.5 Listing. The Company shall secure the listing of the Common Stock underlying this Warrant upon each national securities exchange or automated quotation system upon which shares of Common Stock are then listed or quoted (subject to official notice of issuance) and shall maintain such listing of shares of Common Stock. The Company shall at all times comply in all material respects with the Company's reporting, filing and other obligations under the by-laws or rules of The NASDAQ Stock Market (or such other national securities exchange or market on which the Common Stock may then be listed, as applicable).

8.6 Expenses. The Company shall pay all Registration Expenses relating to the registration and listing obligations set forth in this Section 8. For purposes of this Warrant, the term "**Registration Expenses**" means: (a) all registration, filing and FINRA fees, (b) all reasonable fees and expenses of complying with securities or blue sky laws, (c) all word processing, duplicating and printing expenses, (d) the fees and disbursements of counsel for the Company and of its independent public accountants, including the expenses of any special audits or "cold comfort" letters required by or incident to such performance and compliance, (e) premiums and other costs of policies of insurance (if any) against liabilities arising out of the public offering of the Registrable Securities being registered if the Company desires such insurance, if any, and (f) fees and disbursements of one counsel for the selling holders of Registrable Securities; provided however, that, in any case where Registration Expenses are not to be borne by the Company, such expenses shall not include (and such expenses shall be borne by the Company): (i) salaries of Company personnel or general overhead expenses of the Company, (ii) auditing fees, or (iii) other expenses for the preparation of financial statements or other data, to the extent that any of the foregoing either is normally prepared by the Company in the ordinary course of its business or would have been incurred by the Company had no public offering taken place. Registration Expenses shall not include any underwriting discounts and commissions which may be incurred in the sale of any Registrable Securities and transfer taxes of the selling holders of Registrable Securities.

8.7 Information Provided by Holders. Any holder of Registrable Securities included in any registration shall furnish to the Company such information as the Company may reasonably request in writing, including, but not limited to, a completed and executed questionnaire requesting information customarily sought of selling security holders, to enable the Company to comply with the provisions hereof in connection with any registration referred to in this Warrant. The Holder agrees to suspend all sales of Registrable Securities pursuant to a registration statement filed under Section 8.3 in the event the Company notifies Holder pursuant to Section 8.4(e) that the prospectus relating thereto is no longer current and will not resume sales under such registration statement until advised by the Company that the prospectus has been appropriately supplemented or amended.

8.8 FINRA Public Offering System Filings. In the event that a registration statement covering the Registrable Securities is filed, within one (1) Business Day of the filing of such registration statement, the Company will prepare and file the selling stockholder resale offering described in such registration statement for review by FINRA via the FINRA's Public Offering System filing system ("**Public Offering System Filing**") for the purpose of having the prospectus contained within such registration statement treated as a "base prospectus" in connection with such resale offering. The Company will use its Reasonable Commercial Efforts to have the Public Offering System Filing approved by FINRA within thirty (30) days of such filing date. The Company shall bear all expenses of the Public Offering System Filing, including fees and expenses of one counsel or other advisor to the Holder. In all circumstances, the Company shall pay for all FINRA filing fees associated with the Public Offering System Filing.

8.9 Effectiveness Period. The Company shall use its Reasonable Commercial Efforts to keep each registration statement contemplated hereunder continuously effective under the Securities Act until the date which is the earlier date of when (i) all Registrable Securities covered by such Registration Statement have been sold, (ii) all Registrable Securities covered by such Registration Statement may be sold immediately without registration under the Securities Act and without volume restrictions pursuant to Rule 144 under the Securities Act, as determined by the counsel to the Company pursuant to a written opinion letter to such effect, addressed and reasonably acceptable to the Company's transfer agent and the affected holders of Registrable Securities, or (iii) nine months from the effective date of such registration statement.

8.10 Net Cash Settlement. Notwithstanding anything herein to the contrary, in no event will the Holder hereof be entitled to receive a net-cash settlement as liquidated damages in lieu of physical settlement in shares of Common Stock, regardless of whether the Common Stock underlying this Warrant is registered pursuant to an effective registration statement; provided, however, that the foregoing will not preclude the Holder from seeking other remedies at law or equity for breaches by the Company of its registration obligations hereunder.

9. Restrictions on Transfer.

9.1 Restrictive Legends. This Warrant and each Warrant issued upon transfer or in substitution for this Warrant pursuant to Section 10 hereof, each certificate for Common Stock issued upon the exercise of the Warrant and each certificate issued upon the transfer of any such Common Stock shall be transferable only upon satisfaction of the conditions specified in this Section 9. Each of the foregoing securities shall be stamped or otherwise imprinted with a legend reflecting the restrictions on transfer set forth herein and any restrictions required under the Securities Act or other applicable securities laws.

9.2 Notice of Proposed Transfer. Prior to any transfer of any securities which are not registered under an effective registration statement under the Securities Act **("Restricted Securities"),** which transfer may only occur if there is an exemption from the registration provisions of the Securities Act and all other applicable securities laws, the Holder will give written notice to the Company of the Holder's intention to effect a transfer (and shall describe the manner and circumstances of the proposed transfer). The following provisions shall apply to any proposed transfer of Restricted Securities:

(i) If in the opinion of counsel for the Holder reasonably satisfactory to the Company the proposed transfer may be effected without registration of the Restricted Securities under the Securities Act (which opinion shall state in detail the basis of the legal conclusions reached therein), the Holder shall thereupon be entitled to transfer the Restricted Securities in accordance with the terms of the notice delivered by the Holder to the Company. Each certificate representing the Restricted Securities issued upon or in connection with any transfer shall bear the restrictive legends required by Section 9.1 hereof.

(ii) If the opinion called for in (i) above is not delivered, the Holder shall not be entitled to transfer the Restricted Securities until either: (x) receipt by the Company of a further notice from such Holder pursuant to the foregoing provisions of this Section 9.2 and fulfillment of the provisions of clause (i) above, or (y) such Restricted Securities have been effectively registered under the Securities Act.

9.3 <u>Certain Other Transfer Restrictions</u>. Notwithstanding any other provision of this Warrant: (i) prior to the Exercise Date, this Warrant or the Restricted Securities thereunder may only be transferred or assigned to the persons permitted under FINRA Rule 5110(g), and (ii) subject at all times to FINRA Rule 5110(g), no opinion of counsel shall be necessary for a transfer of Restricted Securities by the holder thereof to any Person employed by or owning equity in the Holder, if the transferee agrees in writing to be subject to the terms hereof to the same extent as if the transferee were the original purchaser hereof and such transfer is permitted under applicable securities laws.

9.4 <u>Termination of Restrictions</u>. Except as set forth in Section 9.3 hereof and subject at all times to FINRA Rule 5110(g), the restrictions imposed by this Section 9 upon the transferability of Restricted Securities shall cease and terminate as to any particular Restricted Securities: (a) which shall have been effectively registered under the Securities Act, or (b) when, in the opinion of counsel for the Company, such restrictions are no longer required in order to insure compliance with the Securities Act or Section 10 hereof. Whenever such restrictions shall cease and terminate as to any Restricted Securities, the Holder thereof shall be entitled to receive from the Company, without expense (other than applicable transfer taxes, if any), new securities of like tenor not bearing the applicable legends required by Section 9.1 hereof.

10. <u>Ownership, Transfer, Sale and Substitution of Warrant</u>.

10.1 <u>Ownership of Warrant</u>. The Company may treat any Person in whose name this Warrant is registered in the Warrant Register maintained pursuant to Section 10.2(b) hereof as the owner and holder thereof for all purposes, notwithstanding any notice to the contrary, except that, if and when any Warrant is properly assigned in blank, the Company may (but shall not be obligated to) treat the bearer thereof as the owner of such Warrant for all purposes, notwithstanding any notice to the contrary. Subject to Sections 9 and 10 hereof, this Warrant, if properly assigned, may be exercised by a new holder without a new Warrant first having been issued.

10.2 <u>Office; Exchange of Warrant</u>.

(a) The Company will maintain its principal office at the location identified in the prospectus relating to the Offering or at such other offices as set forth in the Company's most current filing (as of the date notice is to be given) under the Securities Exchange Act of 1934, as amended, or as the Company otherwise notifies the Holder.

(b) The Company shall cause to be kept at its office maintained pursuant to Section 10.2(a) hereof a Warrant Register for the registration and transfer of the Warrant. The name and address of the holder of the Warrant, the transfers thereof and the name and address of the transferee of the Warrant shall be registered in such Warrant Register. The Person in whose name the Warrant shall be so registered shall be deemed and treated as the owner and holder thereof for all purposes of this Warrant, and the Company shall not be affected by any notice or knowledge to the contrary.

(c) Upon the surrender of this Warrant, properly endorsed, for registration of transfer or for exchange at the office of the Company maintained pursuant to Section 10.2(a) hereof, the Company at its expense will (subject to compliance with Section 9 hereof, if applicable) execute and deliver to or upon the order of the Holder thereof a new Warrant of like tenor, in the name of such holder or as such holder (upon payment by such holder of any applicable transfer taxes) may direct, calling in the aggregate on the face thereof for the number of shares of Common Stock called for on the face of the Warrant so surrendered (after giving effect to any previous adjustment(s) to the number of Warrant Shares).

10.3 Replacement of Warrant. Upon receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction or mutilation of this Warrant and, in the case of any such loss, theft or destruction of this Warrant, upon delivery of indemnity reasonably satisfactory to the Company in form and amount or, in the case of any mutilation, upon surrender of this Warrant for cancellation at the office of the Company maintained pursuant to Section 10.2(a) hereof, the Company will execute and deliver, in lieu thereof, a new Warrant of like tenor and dated the date hereof.

10.4 Opinions. In connection with the sale of the Warrant Shares by Holder, the Company agrees to cooperate with the Holder, and at the Company's expense, to have its counsel provide any legal opinions required to remove the restrictive legends from the Warrant Shares in connection with a sale, transfer or legend removal request of Holder.

11. No Rights or Liabilities as Stockholder. No Holder shall be entitled to vote or be deemed the holder of any equity securities which may at any time be issuable on the exercise hereof, nor shall anything contained herein be construed to confer upon the Holder, as such, any of the rights of a stockholder of the Company or any right to vote for the election of directors or upon any matter submitted to stockholders at any meeting thereof, or to give or withhold consent to any corporate action (whether upon any recapitalization, issuance of stock, reclassification of stock, change of par value, consolidation, merger, conveyance, or otherwise) or to receive notice of meetings until the Warrant shall have been exercised and the shares of Common Stock purchasable upon the exercise hereof shall have become deliverable, as provided herein.

12. Notices. Any notice or other communication in connection with this Warrant shall be given in writing and directed to the parties hereto as follows: (a) if to the Holder, at the address of the holder in the warrant register maintained pursuant to Section 10 hereof, or (b) if to the Company, to the attention of its Chief Executive Officer at its office maintained pursuant to Section 10.2(a) hereof; *provided,* that the exercise of the Warrant shall also be effected in the manner provided in Section 3 hereof. Notices shall be deemed properly delivered and received when delivered to the notice party (i) if personally delivered, upon receipt or refusal to accept delivery, (ii) if sent via facsimile, upon mechanical confirmation of successful transmission thereof generated by the sending telecopy machine, (iii) if sent by a commercial overnight courier for delivery on the next Business Day, on the first Business Day after deposit with such courier service, or (iv) if sent by registered or certified mail, five (5) Business Days after deposit thereof in the U.S. mail.

13. Payment of Taxes. The Company will pay all documentary stamp taxes attributable to the issuance of shares of Common Stock underlying this Warrant upon exercise of this Warrant; *provided, however,* that the Company shall not be required to pay any tax which may be payable in respect of any transfer involved in the transfer or registration of this Warrant or any certificate for shares of Common Stock underlying this Warrant in a name other that of the Holder. The Holder is responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving shares of Common Stock underlying this Warrant upon exercise hereof.

14. Miscellaneous. This Warrant and any term hereof may be changed, waived, discharged or terminated only by an instrument in writing signed by the party against which enforcement of the change, waiver, discharge or termination is sought. This Warrant shall be construed and enforced in accordance with and governed by the laws of the State of New York. Each of the parties consents to the exclusive jurisdiction of the Federal or state courts whose districts encompass any part of the County of New York located in the City of New York, New York in connection with any dispute arising under this Agreement and hereby waives, to the maximum extent permitted by law, any objection, including any objection based on *forum non conveniens,* to the bringing of any such proceeding in such jurisdictions. Each party to this Agreement irrevocably consents to the service of process in any such proceeding by any manner permitted by law. The section headings in this Warrant are for purposes of convenience only and shall not constitute a part hereof. When used herein, the term "**Reasonable Commercial Efforts"** means, with respect to the applicable obligation of the Company, reasonable commercial efforts for similarly situated, publicly-traded companies.

(Signature on Following Page)

IN WITNESS WHEREOF, the Company has caused this Underwriter Warrant to be duly executed as of the date first above written.

AQUA METALS, INC.

By:/s/ Stephen Cotton

Name: Stephen Cotton
Title: Chief Executive Officer

EXHIBIT A
FORM OF EXERCISE NOTICE
[To be executed only upon exercise of Warrant]

To AQUA METALS, INC.:

The undersigned registered holder of the within Warrant hereby irrevocably exercises the Warrant pursuant to Section 3.1 of the Warrant with respect to [_____] Warrant Shares, at an exercise price of $[____] per share, and requests that the certificates for such Warrant Shares be issued, subject to Sections 9 and 10, in the name of and delivered to:

____

____

____

The undersigned is hereby making payment for the Warrant Shares in the following manner:

[check one]

[ ] by cash in accordance with Section 3.1(b) of the Warrant

[ ] via cashless exercise in accordance with Section 3.1(c) of the Warrant in the following manner:

____

____

____

The undersigned hereby represents and warrants that it is, and has been since its acquisition of the Warrant, the record and beneficial owner of the Warrant.

Dated: ____________________
Print or Type Name:

____

(Signature must conform in all respects to name of holder as specified on the face of Warrant)

____
(Street Address)

____
(City) (State) (Zip Code)

EXHIBIT B
FORM OF ASSIGNMENT
[To be executed only upon transfer of Warrant]

For value received, the undersigned registered holder of the within Warrant hereby sells, assigns and transfers unto__[include name and addresses] the rights represented by the Warrant to purchase__shares of Common Stock of AQUA METALS, INC. to which the Warrant relates, and appoints__Attorney to make such transfer on the books of AQUA METALS, INC. maintained for the purpose, with full power of substitution in the premises.

Dated:

(Signature must conform in all respects to name of holder as specified on the face of Warrant)

____
(Street Address)

____
(City) (State) (Zip Code)

Signed in the presence of:

____
(Signature of Transferee)

____
(Street Address)

____
(City) (State) (Zip Code)

Signed in the presence of: ______________________________________

AQUA METALS, INC.

EXECUTIVE EMPLOYMENT AGREEMENT

THIS EXECUTIVE EMPLOYMENT AGREEMENT is entered into effective as of November 4, 2018, between AQUA METALS, INC., a Delaware corporation ("***Company***"), and JUDD MERRILL ("***Employee***").

1. EMPLOYMENT. Company hereby employs Employee in accordance with the terms of this Agreement and all the policies and procedures set forth in the Employee Handbook as in effect as of the date of this Agreement and as it may be modified or amended in the future ("***Employee Manual***"), and other Company policies or procedures currently in effect or subsequently implemented. Employee acknowledges that Employee is not employed for a specific term but is an at-will employee who may resign at any time without notice. Likewise, the Company may terminate the Employee at any time, with or without notice, and with or without cause or reason.

2. TITLE AND WORK RESPONSIBILITIES

2.1 Employee shall be employed hereunder as Chief Financial Officer of Company effective as of November 8, 2018 ("***Appointment Date***").

2.2 As Chief Financial Officer, Employee shall be responsible for the executive management of the financial, accounting and administrative departments of the Company and such other duties and responsibilities as are typically associated with such position at a publicly-traded company, including, but not limited, ensuring accurate accounting records, corporate insurance, tax reporting and planning, SEC reporting compliance and supervision of human resources and facilities. As Chief Financial Officer, Employee shall also be responsible for reporting all aspects of financial performance to the public and members of the Board of Directors as required by federal and state law, rules of the applicable stock market or exchange and other national and international regulatory agencies.

2.3 Work assignments are made at the exclusive discretion of the Company and the Company has the absolute right to assign Employee new or different job duties as deemed appropriate by the Company.

2.4 Employee shall commence his employment hereunder on November 8, 2018 or such earlier date as may be agreed to by Employee and Company. Employee's compensation and benefits under Sections 4.1 through 4.3 shall commence on the first day of Employee's service hereunder.

3. EMPLOYEE'S OBLIGATIONS. Employee covenants and agrees, as a condition of accepting or continuing employment with the Company, to all the terms and conditions in the Employee Manual, as amended, other agreements executed by Employee and all Company policies, procedures and other agreements now in existence or hereafter implemented, including, without limitation, the duty to:

3.1 Comply with all Company policies and procedures as set forth in the Employee Manual, policy and procedure manuals, safety manuals and other sources;

3.2 Devote his full time and attention to meet the requirements set forth in the job description which objectives or duties may change from year to year;

3.3 Follow the direction and recommendations of Company management, including the Chief Executive Officer and the Board of Directors;

3.4 Refrain from investing in any direct competitor of the Company except that Employee may at any time own beneficially up to one (1%) of the stock of any competing corporation whose securities are listed on a national securities exchange or regularly traded in the national over-the-counter-market; and

3.5 To observe and comply at all times with the provisions of the Company's Insider Trading Policy (as amended, from time to time) and with every rule of law and every regulation in force in relation to dealings in stock, shares, debentures or other securities of the Company (including in relation to unpublished price sensitive information affecting such securities), in whatever jurisdiction, and to observe and comply with all laws and regulations of any stock exchange, market or dealing system in which such dealings take place.

4. COMPENSATION

4.1 Salary. The Employee will be paid an annual salary of Two Hundred Seventy-Five Thousand Dollars ($275,000). Salary shall be paid on a bi-weekly basis as adjusted from time to time. During employment, the Company will pay Employee the annual base salary in accordance with the terms of the Employee Manual less state and federal withholding and authorized deductions.

4.2 Bonuses. Employee shall be eligible to receive both short- and long-term annual incentive bonus(es) (STIP & LTIP, respectively) based on mutually-agreed performance criteria, subject to Board approval. As the CFO, Employee shall be eligible for (i) a STIP with the potential of a target percentage of fifty percent (50%) of Employee's base salary paid in either cash or restricted stock units, and (ii) a LTIP with a potential of a target percentage of eighty percent (80%) of the Employee's base salary paid in the form of restricted stock units with a three-year vesting period (vesting at six-month intervals). The Employee will not be eligible to participate in the STIP and LTIP for 2018.

For the months of November and December 2018, the Employee will be eligible for a performance-based bonus for up to $50,000 to be paid in Restricted Stock Units ("***RSUs***") under the Company's Amended and Restated 2014 Stock Incentive Plan (the "***Plan***"). This bonus for November and December 2018 will be discretionary and subject to Board approval.

4.3 Benefits. Employee shall be entitled to the insurance and employee benefits set forth in the Employee Manual and such other benefits that are made available generally to senior management of the Company ("***Benefits***"). The Company does not warrant that it will continue to offer the same or similar medical insurance benefits or other related Benefits in the future and reserves the right to modify, reduce or eliminate benefits at its sole discretion.

4.4 Equity Awards . Concurrent with the execution of this Agreement, Employee shall be granted options to ("***Options***") purchase 100,000 shares of the Company's common stock under the Plan. The Options shall vest and first become exercisable over a three-year period from the date of grant, with one-third of the Options vesting on the one-year anniversary of the date of the grant and the balance vesting in 1/24 th installments over the next 24 months. The Options shall have an exercise price equal to the Fair Market Value (as defined in the Plan) on the date of the grant and shall otherwise confirm to the terms and conditions of the Plan.

4.5 Severance on Termination Without Cause Or For Good Reason . If the Company terminates the Employee for any reason without Cause (including death or Disability) or Employee resigns from the Company for Good Reason, the Employee shall be entitled to a lump sum payment in the amount of (i) two (2) months' base salary in the event of such a termination during the first 90 days of this Agreement or (ii) in the event of such a termination following first 90 days of this Agreement, six (6) months' salary, less all federal and state withholding. The receipt of any severance pursuant to this Section 4.5 will be subject to Employee signing, and not revoking, a customary separation agreement and release of claims in a form acceptable to the Company in its reasonable discretion. No severance will be paid or provided until the separation agreement and release agreement becomes effective.

4.6 Severance on Termination in the Event of a Change of Control. If, within the first 90 days of this Agreement, the Company terminates the Employee for any reason without Cause (including death or Disability) or Employee resigns from the Company as a result of a Change of Control, the Employee shall be entitled to a lump sum payment in the amount of six (6) months' base salary, less all federal and state withholding.

For purposes of this Agreement, "Change of Control" shall mean the occurrence of any of the following events within the first 90 days of this Agreement:

(a) one person (or more than one person acting as a group) acquires ownership of stock of the Company that, together with the stock held by such person or group, constitutes more than 50% of the total fair market value or total voting power of the stock of such corporation; provided that, a Change in Control shall not occur if any person (or more than one person acting as a group) owns more than 50% of the total fair market value or total voting power of the Company's stock and acquires additional stock;

(b) one person (or more than one person acting as a group) acquires (or has acquired during the twelve-month period ending on the date of the most recent acquisition) ownership of the Company's stock possessing 30% or more of the total voting power of the stock of such corporation;

(c) a majority of the members of the Board are replaced during any twelve-month period by directors whose appointment or election is not endorsed by a majority of the Board before the date of appointment or election; or

(d) the sale of all or substantially all of the Company's assets.

5. CONFIDENTIAL INFORMATION, NON DISCLOSURE, AND TRADE SECRETS AGREEMENT

5.1 Employee expressly agrees that he will never disclose to a third party or make unauthorized use of any "***Confidential Information***" as defined in the Confidential Information, Non-Disclosure, and Trade Secrets Agreement attached hereto as Exhibit A to this Agreement.

5.2 Employee shall not during his employment directly or indirectly render any services of a business, commercial or professional nature to any other person or organization, whether for compensation or otherwise, which would be in competition with the Company, or which would prevent Employee from rendering the agreed services to Company during the tenure of his employment.

6. INTENTIONALLY OMITTED.

7. TERMINATION. Upon termination of employment, Employee shall return all Company's property such as cell phones, lap tops, or other tangible and intangible property including, without limitation, customer lists, manuals, contract forms, documents or any other tangible or intangible documents or information used by the Company in the Employee's possession at the time of termination, in a manner consistent with Company policy.

8. SURVIVAL OF PROVISIONS OF AGREEMENT POST TERMINATION . All the obligations set forth in Sections 4, 5.1, 7 and 8 shall survive the termination of the Agreement and the termination of Employee's employment with the Company.

9. MISCELLANEOUS

9.1 Notices. All notices required or permitted hereunder shall be in writing and deemed properly given when delivered in person to Employee or to a corporation officer of Company, as the case may be, or when deposited in the United States mail, postage prepaid and properly addressed to the party to be notified, if to Employee, to his residence, and if to Company, to its Secretary, at the home office, Alameda, California, or to any such other address as shall have last been given by the party to be notified.

9.2 Parties Benefited. This Agreement shall inure to the benefit of, and be binding on Employee, his heirs, executors and administrators and on Company, its successors and assigns.

9.3 Assignments. This Agreement may be assigned at any time by Company to any related corporation or a successor corporation. In the event of such an assignment, the assignee corporation to which the Agreement is assigned shall automatically be substituted for the assignor Company for all intentions and purposes and to the same extent as if this assignee were the Company that had originally executed this Agreement. This is a personal contract and the Employee cannot assign or transfer all or any portion of the contract except that in the event of the Employee's death the compensation due and owing the Employee can be paid in accordance with any assignment of death benefits.

9.4 Waiver. The waiver by either party of a default or a breach of any provision of this Agreement by the other party shall not operate or be construed as a waiver of any subsequent default or breach.

9.5 Modifications. The provisions of this Agreement shall constitute the entire agreement between the parties, with respect to the specific terms set forth herein, and may only be modified by an agreement in writing signed by the party against whom enforcement is sought. Modifications to this Agreement do not change or alter the at-will status of the Employee.

9.6 Construction of Agreement. This Agreement shall be construed consistently with the terms and conditions of all other Company policies and procedures, which are referenced in this Agreement. If there is any conflict with the terms of this Agreement and Company policy or procedure, this Agreement shall be interpreted to comply with Company policies or procedures.

9.7 Supersedes Prior Agreements. This Agreement and all the terms thereof supersede all prior employment agreements executed by Employee but shall be interpreted consistent with the Employee Manual and other policies and procedures of the Company. This Agreement will be interpreted independently of any and all agreements executed by Employee pertaining to equity awards.

9.8 Attorneys Fees. The prevailing party in any action brought to enforce this Agreement may recover reasonable attorneys' fees and costs including all costs and fees incurred in the preparation, trial and appeal of an action brought to enforce this Agreement.

9.9 Applicable Law. It is the intent of the parties that all provisions of this Agreement be enforced to the fullest extent permissible under the law and public policy of the state of California, unless prohibited by law in which case this Agreement shall be enforced in accordance with the laws where the action for enforcement is filed. If any section is determined by a court of law to be unenforceable, that section shall be severed from the Agreement and the balance of the Agreement shall be enforced according to its terms.

10. Definitions. Capitalized terms used in this Agreement but not otherwise defined herein shall have the meaning hereby assigned to them as follows:

10.1 "**Disability.**" The Employee shall be deemed to have a Disability for purposes of this Agreement if either (i) the Employee is deemed disabled for purposes of any group or individual disability policy or (ii) in the good faith judgment of the Board, the Employee is substantially unable to perform the Employee's duties under this Agreement for more than ninety (90) days, whether or not consecutive, in any twelve (12) month period, by reason of a physical or mental illness or injury.

10.2 "Cause" shall mean (i) Employee's conviction of, or plea of nolo contendere to, a felony; (ii) a willful act by the Employee which constitutes gross misconduct and which is injurious to the Company; (iii) any act or acts of dishonesty by Employee intended or reasonable expected to result in any gain or personal enrichment of Employee at the expense of the Company; or (iv) if Employee fails to perform the duties and responsibilities of his position after a written demand from the Board which describes the basis for the Board's belief that Employee has not substantially performed his duties and provides Employee with thirty (30) days to take corrective action.

10.3 "Good Reason" shall mean, in the context of a resignation by the Employee, upon no less than thirty (30) day's written notice of termination to Company, following the occurrence, without the written consent of the Employee, of one or more of the following events: (a) material demotion of position not commensurate with his position as Chief Financial Officer (this shall not include any removal of responsbilities that do not have an impact on the essential job duties as the Chief Financial Officer); (b) any material failure by the Company to comply with and satisfy its obligations under this Agreement where such breach is not cured within thirty (30) days after receipt of reasonably detailed written notice from the Employee describing such breach; and

(c) direction by the Company to commit, endorse or ratify any act that Employee reasonably believes is in violation of law, regulation or public policy. “Good Cause” shall not include a corporate reorganization or change of control that does not result in Employee’s demotion of position.

11. EMPLOYEE CERTIFICATION . Employee hereby certifies that he has had an adequate opportunity to review, and understands all the terms and conditions of, this Agreement.

IN WITNESS WHEREOF, the parties have caused this Agreement to be duly executed as of the day and year first above written.

EMPLOYEE

/s/ Judd Merrill ________________________________
Judd Merrill

COMPANY

Aqua Metals, Inc.,
A Delaware corporation

By: */s/ Stephen Cotton* ______________________________
Stephen Cotton, President

SEPARATION AGREEMENT AND RELEASE

This Separation Agreement and Release ("Agreement") is made by and between Selwyn Mould ("Executive") and Aqua Metals, Inc., a Delaware corporation, (the "Company") (collectively referred to as the "Parties" or individually referred to as a "Party").

RECITALS

WHEREAS, Executive was employed by the Company in the capacity as Chief Operating Officer;

WHEREAS, Executive signed a Confidential Information, Non-Disclosure, and Trade Secrets Agreement with the Company on August 1, 2014 (the "Confidentiality Agreement");

WHEREAS, the Parties hereto previously entered into an Executive Employment Agreement dated January 15, 2015, (the "Executive Employment Agreement") and Amendment No. 1 to the Executive Employment Agreement dated July 8, 2016 (the "Amendment");

WHEREAS, the Company and Executive have entered into an Incentive Stock Option Agreement, dated January 8, 2016, granting Executive the option to purchase shares of the Company's common stock, $0.001 par value ("Common Stock "), subject to the terms and conditions of the Company's 2014 Stock Incentive Plan ("2014 Plan") and the Incentive Stock Option Agreement (collectively the "Stock Agreements");

WHEREAS, the Company and Executive mutually agreed to end Executive's employment with the Company, without cause, as defined in the Executive Employment Agreement and the Amendment, effective November 19, 2018 (the "Termination Date"); and

WHEREAS, the Parties wish to resolve any and all disputes, claims, complaints, grievances, charges, actions, petitions, and demands that the Executive may have against the Company and any of the Releasees as defined below, including, but not limited to, any and all claims arising out of or in any way related to Executive's employment with or separation from the Company;

NOW, THEREFORE, in consideration of the mutual promises made herein, the Company and Executive hereby agree as follows:

COVENANTS

1. Consideration. Pursuant to Paragraph 4.5 of the Amendment, in consideration for the Executive's execution of, non-revocation of, and compliance with this Agreement, including the Executive's waiver and release of claims in Paragraph 5, the Employer agrees to provide the following benefits,

a. Payment.

1. Cash: A cash severance payment equal to One Hundred Thousand Dollars and No Cents ($100,000.00), less all relevant taxes and other withholdings. The payment will be made in six (6) installments in accordance with the Company's regular payroll practices commencing with the first regularly scheduled pay date that occurs after the Effective Date.
2. Issuance of Restricted Stock Units : The Company hereby grants to Executive an award of Restricted Stock Units (RSUs) for the number of shares of the Company's Common Stock as follows:
    a. Starting on the first business day of March 2019, and occurring on the first business day of each month for the next twenty (20) months thereafter (21 months in total), and conditioned on Executive's continued compliance with this Agreement, the Company will issue Executive, no later than the fourth business day of the respective month, a number of shares ("Shares") of Common Stock of the Company equal to $33,333 divided by the volume-weighted average price (VWAP) of the Company's Common Stock over the twenty (20) trading days preceding the first business day of the respective month.
    b. The Shares will be issued pursuant to the 2014 Plan and deposited in Executive's trading account available for trading on or before the fourth business day of the respective month.
    c. In lieu of issuing the Shares for any month, the Company may, at its option, pay Executive $33,333.
3. COBRA: The Company shall reimburse Executive for the payments Executive makes for

COBRA coverage for a period of twenty-four (24) months, or until Executive has obtained full replacement health insurance reimbursement elsewhere, whichever occurs first, provided Executive timely elects and pays for continuation coverage pursuant to the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended ("COBRA"), within the time period prescribed pursuant to COBRA. If Executive's other replacement health insurance ceases during the twenty-four (24) month period, Executive will be eligible to receive COBRA reimbursements from Company through the end of the 24-month period. COBRA reimbursements shall be made by the Company to Executive consistent with the Company's normal expense reimbursement policy, provided that Executive submits documentation to the Company substantiating his/her payments for COBRA coverage.

4. INDEMNIFICATION: The Parties agree that the Indemnification Agreement dated May 5, 2015 ("Indemnification Agreement") between Executive and the Company shall survive the execution of this Agreement and shall not be terminated, modified, waived, or otherwise effected by this Agreement of any of the terms set forth herein.

2. Stock. The Parties agree that for purposes of determining the number of shares of the Company's common stock that Executive is entitled to purchase from the Company, all options granted to him under the Incentive Stock Option Agreement shall vest and become immediately exercisable. Executive acknowledges that as of the Termination Date, Executive will have vested in 22,248 options. The exercise of Executive's vested options and shares shall continue to be governed by the terms and conditions of the Company's Stock Agreements.

3. Benefits. Executive's health insurance benefits shall cease on the last day of November 2018, subject to Executive's right to continue his health insurance under COBRA. Executive's participation in all benefits and incidents of employment, including, but not limited to, the accrual of bonuses, vacation, and paid time off, ceased as of the Termination Date.

4. Payment of Salary and Receipt of All Benefits. Executive acknowledges and represents that, other than the consideration set forth in this Agreement, the Company has paid or provided all salary, wages, bonuses, accrued vacation/paid time off, premiums, leaves, housing allowances, relocation costs, interest, severance, outplacement costs, fees, reimbursable expenses, commissions, stock, stock options, vesting, and any and all other benefits and compensation due to Executive.

5. Release of Claims by Executive. Executive agrees that the foregoing consideration represents settlement in full of all outstanding obligations owed to Executive by the Company and its current and former officers, directors, employees, agents, investors, attorneys, shareholders, administrators, affiliates, benefit plans, plan administrators, insurers, trustees, divisions, and subsidiaries, and predecessor and successor corporations and assigns (collectively, the "Releasees"). Executive, on his own behalf and on behalf of his respective heirs, family members, executors, agents, and assigns, hereby and forever releases the Releasees from, and agrees not to sue concerning, or in any manner to institute, prosecute, or pursue, any claim, complaint, charge, duty, obligation, demand, or cause of action relating to any matters of any kind, whether presently known or unknown, suspected or unsuspected, that Executive may possess against any of the Releasees arising from any omissions, acts, facts, or damages that have occurred up until and including the Effective Date of this Agreement, including, without limitation:

a. any and all claims relating to or arising from Executive's employment relationship with the Company and the termination of that relationship;

b. any and all claims relating to, or arising from, Executive's right to purchase, or actual purchase of shares of stock of the Company, including, without limitation, any claims for fraud, misrepresentation, breach of fiduciary duty, breach of duty under applicable state corporate law, and securities fraud under any state or federal law;

c. any and all claims for wrongful discharge of employment; termination in violation of public policy; discrimination; harassment; retaliation; breach of contract, both express and implied; breach of covenant of good faith and fair dealing, both express and implied; promissory estoppel; negligent or intentional infliction of emotional distress; fraud; negligent or intentional misrepresentation; negligent or intentional interference with contract or prospective economic advantage; unfair business practices; defamation; libel; slander; negligence; personal injury; assault; battery; invasion of privacy; false imprisonment; conversion; and disability benefits;

d. any and all claims for violation of any federal, state, or municipal statute, including, but not limited to, Title VII of the Civil Rights Act of 1964; the Civil Rights Act of 1991; the Rehabilitation Act of 1973; the Americans with Disabilities Act of 1990; the Equal Pay Act; the Fair Labor Standards Act; the Fair Credit Reporting Act; the Age Discrimination in Employment Act of 1967; the Older Workers Benefit Protection Act; the Executive Retirement Income Security Act of 1974; the Worker Adjustment and Retraining Notification Act; the Family and Medical Leave Act; the Sarbanes-Oxley Act of 2002; the Immigration Control and Reform Act; the California Family Rights Act; the California Labor Code; the California Workers' Compensation Act; and the California Fair Employment and Housing Act;

e. any and all claims for violation of the federal or any state constitution;

f. any and all claims arising out of any other laws and regulations relating to employment or employment discrimination;

g. any claim for any loss, cost, damage, or expense arising out of any dispute over the nonwithholding or other tax treatment of any of the proceeds received by Executive as a result of this Agreement; and

h. any and all claims for attorneys' fees and costs.

Executive agrees that the release set forth in this section shall be and remain in effect in all respects as a complete general release as to the matters released.

EXECUTIVE FURTHER AGREES, EXCEPT TO ENFORCE THE TERMS OF THE AGREEMENT AND SUBJECT TO THE RIGHTS ENUMERATED IN PARAGRAPH 6, TO WAIVE ANY RIGHT TO RECOVER FRONT PAY, BACK PAY, LIQUIDATED DAMAGES, PUNITIVE DAMAGES, COMPENSATORY DAMAGES, AND ATTORNEYS' FEES IN ANY SUIT, COMPLAINT, CHARGE, OR OTHER PROCEEDING FILED BY EXECUTIVE OR ANYONE ELSE ON EXECUTIVE'S BEHALF.

6. Protected Rights. **NOTWITHSTANDING THE ABOVE, BY SIGNING THIS AGREEMENT, EXECUTIVE DOES NOT RELEASE AND DISCHARGE: (A) ANY VESTED RIGHT THAT THE EXECUTIVE MAY HAVE UNDER THE TERMS OF ANY PROFIT-SHARING, RETIREMENT, OR SIMILAR EMPLOYEE WELFARE BENEFIT PLAN ADMINISTRATED BY THE COMPANY; (B) ANY CLAIMS THAT ARE NOT PERMITTED TO BE WAIVED OR RELEASED UNDER APPLICABLE LAW, INCLUDING BUT NOT LIMITED TO, THE RIGHT TO FILE A CHARGE WITH OR PARTICIPATE IN AN INVESTIGATION BY THE EEOC, CLAIMS FOR WORKERS' COMPENSATION, AND CLAIMS FOR UNEMPLOYMENT COMPENSATION; (C) ANY CLAIM FOR BREACH OF THIS AGREEMENT OR TO CHALLENGE ITS VALIDITY UNDER THE AGE DISCRIMINATION IN EMPLOYMENT ACT ("ADEA") ; (D) ANY CLAIMS ARISING AFTER THE DATE ON WHICH EXECUTIVE SIGNS THIS AGREEMENT; AND E) ANY OF EXECUTIVE'S UNDER THE INDEMNIFICATION AGREEMENT. NOR IS THIS AGREEMENT INTENDED IN ANY WAY TO LIMIT EXECUTIVE'S RIGHT OR ABILITY TO: (A) BRING A LAWSUIT AGAINST THE COMPANY TO ENFORCE THE COMPANY'S OBLIGATIONS UNDER THIS AGREEMENT; (B) MAKE ANY DISCLOSURE OF INFORMATION REQUIRED BY LAW; (C) REPORT A POSSIBLE VIOLATION OF ANY FEDERAL LAW OR REGULATION TO ANY GOVERNMENT AGENCY OR ENTITY INCLUDING BUT NOT LIMITED TO THE EEOC, THE NATIONAL LABOR RELATIONS BOARD ("NLRB"), THE DEPARTMENT OF JUSTICE ("DOJ"), THE SECURITIES AND EXCHANGE COMMISSION ("SEC"), CONGRESS, AND ANY AGENCY INSPECTOR GENERAL, OR MAKING DISCLOSURES THAT ARE PROTECTED UNDER THE WHISTLEBLOWER PROVISIONS OF ANY LAW; (D) INITIATE, PROVIDE INFORMATION TO, TESTIFY AT, PARTICIPATE, OR OTHERWISE ASSIST, IN ANY INVESTIGATION OR PROCEEDING BROUGHT BY ANY FEDERAL REGULATORY OR LAW ENFORCEMENT AGENCY OR LEGISLATIVE BODY, SUCH AS THE EEOC AND SEC, ANY SELF-REGULATORY ORGANIZATION, OR THE COMPANY'S LEGAL, COMPLIANCE, OR HUMAN RESOURCES OFFICERS RELATING TO AN ALLEGED VIOLATION OF ANY FEDERAL, STATE, OR MUNICIPAL LAW; OR (E) RESPOND TO ANY INQUIRY FROM SUCH AUTHORITY, INCLUDING AN INQUIRY ABOUT THE EXISTENCE OF THIS AGREEMENT OR ITS UNDERLYING FACTS. THIS AGREEMENT DOES *NOT* REQUIRE THE EXECUTIVE TO NOTIFY THE COMPANY OF ANY SUCH COMMUNICATIONS OR INQUIRY DESCRIBED IN THIS SECTION OF THE AGREEMENT.**

7. No Pending Claims or Assignments . Executive represents and warrants that there are no claims, charges, lawsuits, or any similar matters of any kind filed by him or on his behalf or for his benefit currently pending against the Company or the Releasees, or any of them, in any forum whatsoever, including, without limitation, in any state or federal court, or before any before any federal, state, or local administrative agency, board or governing body. Executive also represents and warrants that there has been no assignment or other transfer of any interest in any claim he may have against the Company or any Releasee, and Executive agrees to indemnify and hold them and each of them, harmless from any liability, claims, demands, damages, costs, expenses, and attorneys' fees incurred by them or any of them, as a result of any person asserting any such assignment or transfer. This indemnity shall not require payment as a condition precedent to recover by the Company or any Releasee against Executive under this indemnity.

8. Acknowledgment of Waiver of Claims under ADEA . Executive acknowledges that he is waiving and releasing any rights he may have under the Age Discrimination in Employment Act of 1967 ("ADEA"), and that this waiver and release is knowing and voluntary. Executive agrees that this waiver and release does not apply to any rights or claims that may arise under the ADEA after the Effective Date of this Agreement. Executive acknowledges that the consideration given for this waiver and release is in addition to anything of value to which Executive was already entitled. Executive further acknowledges that he has been advised by this writing that: (a) he should consult with an attorney prior to executing this Agreement; (b) he has twenty-one (21) days within which to consider this Agreement; (c) he has seven (7) days following his execution of this Agreement to revoke this Agreement; (d) this Agreement shall not be effective until after the revocation period has expired; and (e) nothing in this Agreement prevents or precludes Executive from challenging or seeking a determination in good faith of the validity of this waiver under the ADEA, nor does it impose any condition precedent, penalties, or costs for doing so, unless specifically authorized by federal law. In

the event Executive signs this Agreement and returns it to the Company in less than the 21-day period identified above, Executive hereby acknowledges that he has freely and voluntarily chosen to waive the time period allotted for considering this Agreement. Executive acknowledges and understands that revocation must be accomplished by a written notification to the person executing this Agreement on the Company's behalf that is received prior to the Effective Date. The parties agree that changes, whether material or immaterial, do not restart the running of the 21-day period.

9. California Civil Code Section 1542. Executive acknowledges that he has been advised to consult with legal counsel and is familiar with the provisions of California Civil Code Section 1542, a statute that otherwise prohibits the release of unknown claims, which provides as follows:

> A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR.

Executive, being aware of said code section, agrees to expressly waive any rights he may have thereunder, as well as under any other statute or common law principles of similar effect.

10. No Pending or Future Lawsuits. Excluding those matters permitted under "Protected Rights" above, Executive agrees and covenants not to file any suit, charge, or complaint against the Company or any Releasees in any court or administrative agency, with regard to any claim, demand, liability or obligation arising out of Executive's employment and/or other service with the Company, the termination of Executive's positions as described in this Agreement, or the cessation of Executive's employment and/or other service with the Company. Executive further represents that no claims, complaints, charges, or other proceedings are pending in any court, administrative agency, commission or other forum relating directly or indirectly to Executive's employment and/or other service with, or separation from, the Company.

11. Release of Claims by Company. Company agrees that in exchange for the covenants provided by Executive herein, such consideration represents settlement in full of all outstanding obligations owed to Company by the Executive (the "Releasee"). Company, on his own behalf, hereby and forever releases the Releasee from, and agrees not to sue concerning, or in any manner to institute, prosecute, or pursue, any claim, complaint, charge, duty, obligation, demand, or cause of action relating to any matters of any kind, whether presently known or unknown, suspected or unsuspected, that Company may possess against the Releasee arising from any omissions, acts, facts, or damages that have occurred up until and including the Effective Date of this Agreement, including, without limitation: any and all claims relating to or arising from Executive's employment relationship with the Company and the termination of that relationship. The Company acknowledges that it has consulted with legal counsel and is familiar with the provisions of California Civil Code Section 1542, a statute that otherwise prohibits the release of unknown claims, which provides as follows:

> A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR.

Company, being aware of said code section, agrees to expressly waive any rights it may have thereunder, as well as under any other statute or common law principles of similar effect.

12. Trade Secrets and Confidential Information/Company Property. Executive reaffirms and agrees to observe and abide by the terms of the Confidentiality Agreement, specifically including the provisions therein regarding nondisclosure of the Company's trade secrets and confidential and proprietary information, and non-solicitation of Company employees. Executive's signature below constitutes his certification under penalty of perjury that he will make reasonable efforts to, within ten (10) business days after the Effective Date return or destroy all documents and other items provided to Executive by the Company, developed or obtained by Executive in connection with his employment with the Company, or otherwise belonging to the Company.

13. No Cooperation. Executive agrees that he will not knowingly encourage, counsel, or assist any attorneys or their clients in the presentation or prosecution of any disputes, differences, grievances, claims, charges, or complaints by any third party against any of the Releasees, unless under a subpoena or other court order to do so or as related directly to the ADEA waiver in this Agreement. Executive agrees both to immediately notify the Company upon receipt of any such subpoena or court order, and to furnish, within three (3) business days of its receipt, a copy of such subpoena or other court order. If approached by anyone for counsel or assistance in the presentation or prosecution of any disputes, differences, grievances, claims, charges, or complaints against any of the Releasees, Executive shall state no more than that he cannot provide counsel or assistance.

14. Non-Disparagement. Executive agrees that Executive will not in any way disparage the name or reputation of the Company, including: (1) Executive agrees not to make any derogatory or negative remarks about the Company; (2) Executive agrees not to make any negative or derogatory remarks about the Releasees; and (3) Executive

agrees not to make any remarks about any disputes Executive has had with the Company or the Releasees. The Company agrees that the Company and its current and future executive officers and directors (its "Executive Officers and Directors"), will not in any way disparage the name or reputation of the Executive, including (1) the Company and its Executive Officers and Directors agree not to make any derogatory or negative remarks about Executive; and (2) the Company and its Executive Officers and Directors agree not to make any remarks about any disputes they have had with the Executive.

15. Breach. In addition to the rights provided in the "Attorneys' Fees" section below, Executive acknowledges and agrees that upon receiving written notice of a material breach of the Agreement from the Company and such breach is not cured by Executive within three business days, or is not capable of being cured, unless such breach constitutes a legal action by Executive asserting Protected Rights defined hereing, or challenging or seeking a determination in good faith of the validity of the waiver herein under the ADEA, or of any provision of the Confidentiality Agreement shall entitle the Company immediately to cease providing the consideration provided to Executive under this Agreement and to obtain damages, except as provided by law.

16. No Admission of Liability . The Parties understands and acknowledges that this Agreement constitutes a compromise and settlement of any and all actual or potential disputed claims. No action taken by the Parties hereto, either previously or in connection with this Agreement, shall be deemed or construed to be (a) an admission of the truth or falsity of any actual or potential claims or (b) an acknowledgment or admission by the Parties of any fault or liability whatsoever.

17. Non-Solicitation. During Executive's employment with the Company, Executive came into contact and became familiar with the Company's employees, and learned about their knowledge, skills, abilities, salaries, commissions, benefits, and other matters with respect to such employees, all of which is not generally known to the public but has been developed or compiled by the Company at its great effort and expense. To that end, Executive Agrees that for a period of one (1) year following his Termination Date, Executive shall not, on his own behalf or on behalf of any other person, partnership, association, corporation, or other entity, solicit, encourage, or in any manner induce any employee of the Company to leave his or her employment with the Company for any reason.

18. Future Cooperation. The Parties agree that certain matters in which the Executive has been involved during the Executive's employment may need the Executive's cooperation with the Employer in the future including, but not limited to, any assignments of intellectual property, and any and all other matters that require his cooperation. Accordingly, following the Termination Date, to the extent reasonably requested by the Company, the Executive shall cooperate with the Employer in connection with such matters arising out of the Executive's service to the Employer, provided that the Employer shall make reasonable efforts to minimize disruption of the Executive's other activities. During such time, Executive shall make himself reasonably available to the Company, via e-mail, telephone, or in-person at mutually acceptable times, to provide additional services and/or cooperate with the Company with respect to business issues and other matters (the "Post-Termination Services"). Executive will be compensated for the time he actually spends, if any, providing the requested Post-Termination Services, if any, at an hour rate of $288 (pro-rated for partial hours) (the "Consulting Fees"). Executive shall submit weekly invoices to the Company for any Consulting Fees earned related to the Post-Termination Services, which invoice shall set forth the dates and hours that Executive actually provided Post-Termination Services at the request of an authorized officer of the Company and the total Consulting Fees claimed for such week. The Company shall pay any Consulting Fees earned by Executive within ten (10) days of the date of receipt by the Company of Executive's invoice therefor. Executive and the Company agree that in furnishing any Post-Termination Services, Executive will be acting as an independent contractor and, accordingly Executive will have no authority to act on behalf of the Company (or any of its affiliates) or bind the Company (or any of its affiliates). While providing Post-Termination Services, if any, Executive will not be considered to have employee status for federal or state tax purposes, for purposes of employee benefit plans or other benefits applicable to the Company's employees generally or for any other purposes. While providing Post-Termination Services, if any, the Company shall not pay any contributions to Social Security, unemployment insurance, federal or state withholding taxes, or provide any other contributions or benefits which might be expected in an employer-employee relationship, and Executive expressly waives any right to such participation or coverage. Executive agrees that Executive shall make such contributions and pay applicable taxes, and hereby agrees to indemnify and hold harmless the Company and all Releasees from and against any costs, fees, damages or penalties assessed against the Company or any Releasees by virtue of Executive's failure to make such contributions or payments.

19. Costs. The Parties shall each bear their own costs, attorneys' fees, and other fees incurred in connection with the preparation of this Agreement.

20. ARBITRATION. THE PARTIES AGREE THAT ANY AND ALL DISPUTES ARISING OUT OF THE TERMS OF THIS AGREEMENT, THEIR INTERPRETATION, AND ANY OF THE MATTERS HEREIN RELEASED, SHALL BE SUBJECT TO ARBITRATION IN ALAMEDA COUNTY, CALIFORNIA BEFORE JUDICIAL ARBITRATION & MEDIATION SERVICES ("JAMS"), PURSUANT TO ITS EMPLOYMENT ARBITRATION RULES & PROCEDURES ("JAMS RULES"). THE ARBITRATOR MAY GRANT INJUNCTIONS AND OTHER RELIEF IN SUCH DISPUTES. THE ARBITRATOR SHALL ADMINISTER AND CONDUCT ANY ARBITRATION IN ACCORDANCE WITH CALIFORNIA LAW, INCLUDING THE CALIFORNIA CODE OF CIVIL PROCEDURE, AND THE ARBITRATOR SHALL APPLY SUBSTANTIVE AND PROCEDURAL CALIFORNIA LAW TO ANY DISPUTE OR CLAIM, WITHOUT REFERENCE TO ANY CONFLICT-OF-LAW PROVISIONS OF ANY JURISDICTION. TO THE EXTENT THAT THE JAMS RULES CONFLICT WITH CALIFORNIA LAW, CALIFORNIA LAW SHALL TAKE PRECEDENCE. THE DECISION OF THE ARBITRATOR SHALL BE FINAL, CONCLUSIVE, AND BINDING ON THE PARTIES TO THE ARBITRATION.

THE PARTIES AGREE THAT THE PREVAILING PARTY IN ANY ARBITRATION SHALL BE ENTITLED TO INJUNCTIVE RELIEF IN ANY COURT OF COMPETENT JURISDICTION TO ENFORCE THE ARBITRATION AWARD. THE PARTIES TO THE ARBITRATION SHALL EACH PAY AN EQUAL SHARE OF THE COSTS AND EXPENSES OF SUCH ARBITRATION, AND EACH PARTY SHALL SEPARATELY PAY FOR ITS RESPECTIVE COUNSEL FEES AND EXPENSES; PROVIDED, HOWEVER, THAT THE ARBITRATOR SHALL AWARD ATTORNEYS' FEES AND COSTS TO THE PREVAILING PARTY, EXCEPT AS PROHIBITED BY LAW. THE PARTIES HEREBY AGREE TO WAIVE THEIR RIGHT TO HAVE ANY DISPUTE BETWEEN THEM RESOLVED IN A COURT OF LAW BY A JUDGE OR JURY. NOTWITHSTANDING THE FOREGOING, THIS SECTION WILL NOT PREVENT EITHER PARTY FROM SEEKING INJUNCTIVE RELIEF (OR ANY OTHER PROVISIONAL REMEDY) FROM ANY COURT HAVING JURISDICTION OVER THE PARTIES AND THE SUBJECT MATTER OF THEIR DISPUTE RELATING TO THIS AGREEMENT AND THE AGREEMENTS INCORPORATED HEREIN BY REFERENCE. SHOULD ANY PART OF THE ARBITRATION AGREEMENT CONTAINED IN THIS PARAGRAPH CONFLICT WITH ANY OTHER ARBITRATION AGREEMENT BETWEEN THE PARTIES, THE PARTIES AGREE THAT THIS ARBITRATION AGREEMENT SHALL GOVERN.

21. Tax Consequences. The Company makes no representations or warranties with respect to the tax consequences of the payments and any other consideration provided to Executive or made on his behalf under the terms of this Agreement. Executive agrees and understands that he is responsible for payment, if any, of local, state, and/or federal taxes on the payments and any other consideration provided hereunder by the Company and any penalties or assessments thereon. Executive further agrees to indemnify and hold the Company harmless from any claims, demands, deficiencies, penalties, interest, assessments, executions, judgments, or recoveries by any government agency against the Company for any amounts claimed due on account of (a) Executive's failure to pay or delayed payment of federal or state taxes, or (b) damages sustained by the Company by reason of any such claims, including attorneys' fees and costs.

22. Section 409A. The Parties intend that upon the Separation Date, Executive will have a "separation from service" within the meaning of Section 409A of the Internal Revenue Code of 1986, as amended (the "Code") and the final regulations and official guidance thereunder ("Section 409A"). The provisions of this Agreement and all compensation and benefits provided for under this Agreement are intended to comply with Section 409A and any ambiguities herein will be interpreted to so comply and/or be exempt from Section 409A. Each payment and benefit to be paid or provided under this Agreement is intended to constitute a series of separate payments for purposes of Section 1.409A-2(b)(2) of the Treasury Regulations. The Company and Executive will work together in good faith to consider either (i) amendments to this Agreement; or (ii) revisions to this Agreement with respect to the payment of any awards, which are necessary or appropriate to avoid imposition of any additional tax or income recognition prior to the actual payment to Executive under Section 409A. In no event will the Company reimburse Executive for any taxes that may be imposed on Executive under Section 409A or any other provision of the Code with respect to any payments or benefits Executive may receive from the Company under this Agreement or under any other agreement or arrangement.

23. Authority. The Company represents and warrants that the undersigned has the authority to act on behalf of the Company and to bind the Company and all who may claim through it to the terms and conditions of this Agreement. Executive represents and warrants that he has the capacity to act on his own behalf and on behalf of all who might claim through him to bind them to the terms and conditions of this Agreement. Each Party warrants and represents that there are no liens or claims of lien or assignments in law or equity or otherwise of or against any of the claims or causes of action released herein.

24. No Representations. Executive represents that he has had an opportunity to consult with an attorney, and has carefully read and understands the scope and effect of the provisions of this Agreement. Executive has not relied upon any representations or statements made by the Company that are not specifically set forth in this Agreement.

25. Severability. In the event that any provision or any portion of any provision hereof or any surviving agreement made a part hereof becomes or is declared by a court of competent jurisdiction or arbitrator to be illegal, unenforceable, or void, this Agreement shall continue in full force and effect without said provision or portion of provision.

26. Attorneys' Fees. Except with regard to a legal action challenging or seeking a determination in good faith of the validity of the waiver herein under the ADEA, in the event that either Party brings an action to enforce or effect its rights under this Agreement, the prevailing Party shall be entitled to recover its costs and expenses, including the costs of mediation, arbitration, litigation, court fees, and reasonable attorneys' fees incurred in connection with such an action.

27. Entire Agreement. This Agreement represents the entire agreement and understanding between the Company and Executive concerning the subject matter of this Agreement and Executive's employment with and separation from the Company and the events leading thereto and associated therewith, and supersedes and replaces any and all prior agreements and understandings concerning the subject matter of this Agreement and Executive's relationship with the Company, with the exception of the Confidentiality Agreement and the Stock Agreements, except as modified herein.

28. No Oral Modification. This Agreement may only be amended in a writing signed by Executive and the Company's Chief Executive Officer.

29. Governing Law. This Agreement shall be governed by the laws of the State of California, without regard for choice-of-law provisions. Executive consents to personal and exclusive jurisdiction and venue in the State of California.

30. Effective Date. Executive understands that this Agreement shall be null and void if not executed by him within twenty one (21) days. Each Party has seven (7) days after that Party signs this Agreement to revoke it. This Agreement will become effective on the eighth (8th) day after Executive signed this Agreement, so long as it has been signed by the Parties and has not been revoked by either Party before that date (the "Effective Date").

31. Counterparts. This Agreement may be executed in counterparts and by facsimile, and each counterpart and facsimile shall have the same force and effect as an original and shall constitute an effective, binding agreement on the part of each of the undersigned.

32. Voluntary Execution of Agreement. Executive understands and agrees that he executed this Agreement voluntarily, without any duress or undue influence on the part or behalf of the Company or any third party, with the full intent of releasing all of his claims against the Company and any of the other Releasees. Executive acknowledges that:

(a) he has read this Agreement;

(b) he has been represented in the preparation, negotiation, and execution of this Agreement by legal counsel of his own choice or has elected not to retain legal counsel;

(c) he understands the terms and consequences of this Agreement and of the releases it contains; and

(d) he is fully aware of the legal and binding effect of this Agreement.

IN WITNESS WHEREOF, the Parties have executed this Agreement on the respective dates set forth below.

Selwyn Mould, an individual

Dated: 29 November, 2018 */s/ Selwyn Mould*
Selwyn Mould

Aqua Metals, Inc.

Dated: 3 December, 2018 By */s/ Steve Cotton*
Steve Cotton
President

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and
Stockholders of Aqua Metals, Inc. and Subsidiaries:

We consent to the incorporation by reference in the registration statements (No. 333-211810 and 333-220171) on Form S-8 and (Nos. 333-212808, 333-213501 and 333-216250) on Form S-3 of Aqua Metals, Inc. of our report dated February 28, 2019, with respect to the consolidated financial statements of Aqua Metals, Inc. and subsidiaries as of December 31, 2018 and December 31, 2017, and the related consolidated statements of operations, stockholders' equity, and cash flows for each of the three years in the period ended December 31, 2018.

/s/ Armanino LLP

San Ramon, CA
February 28, 2019

EXHIBIT 31.1

CERTIFICATIONS

I, Stephen Cotton, certify that:

(1) I have reviewed this annual report on Form 10-K of Aqua Metals, 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(s) 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 company 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 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 quarter (the registrant's fourth 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(s) and I have disclosed, based on our most recent evaluation of 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.

AQUA METALS, INC.

Date: February 28, 2019 By: /s/ *Stephen Cotton*

Stephen Cotton, Chief Executive Officer

EXHIBIT 31.2

CERTIFICATIONS

I, Judd Merrill, certify that:

(1) I have reviewed this annual report on Form 10-K of Aqua Metals, 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(s) 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 company 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 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 quarter (the registrant's fourth 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(s) and I have disclosed, based on our most recent evaluation of 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.

AQUA METALS, INC.

Date: February 28, 2019 By: */s/ Judd Merrill*

Judd Merrill, Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. ss.1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Aqua Metals, Inc. (the “Company”) on Form 10-K for the period ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Stephen Cotton, the Chief Executive Officer, and Judd Merrill, the Chief Financial Officer, of the Company, respectively, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

By: /s/ *Stephen Cotton* Dated: February 28, 2019
Stephen Cotton
Title: Chief Executive Officer
(Principal Executive Officer)

By: /s/ Judd Merrill Dated: February 28, 2019
Judd Merrill
Title: Chief Financial Officer
(Principal Financial and Accounting Officer)

This certification is made solely for the purposes of 18 U.S.C. Section 1350, subject to the knowledge standard contained therein, and not for any other purpose.