

# Automating Coastal Water Management with Smart Monitoring & Autonomous Vessels



[cleanearthrovers.com](http://cleanearthrovers.com) Cincinnati Ohio 

Robotics

## Highlights

- 1 \$300k in contracts in Q1 2023
- 2 Over \$250,000 raised through grant and venture-backed funding
- 3 Our coastal-water management is 10x more efficient than current practices (human and net)
- 4 Founding & advisory team of 4 industry experts and former founders with 8 exits under their belts
- 5 Low-Voltage IoT Water Quality data systems that are 40x cheaper than existing buoy tech.
- 6 5 strategic partnerships with small, medium, and multi-billion dollar corporations.
- 7 Named Cincinnati's top sustainability startup via the Cincy Inno Fire Awards
- 8 2 Joint marketing campaigns showcasing our technologies and partnerships

### LEAD INVESTOR



#### Keith Daniel Heffington

I have had the privilege of knowing the CEO Michael Arens from the time he showed up to a hockey tryout as an incoming high school freshman. His work ethic, integrity, drive and intellect has always set him apart from his peers. Coaches much like teachers develop a sense for those students or players that stand out and hope that your influence on them lasts as long as their's does on you. When it comes to picking the winners at that time of their life's I have yet to miss. That great kid has become an honorable man and one of few left in the world I would do a deal with on a hand shake. This is the easiest investment I have ever made on an idea and product that will affect everybody not just a select few. This is my small way of investing indirectly in my grandchildren's future and trying to leave a better cleaner planet for them to grow up in. I am counting and betting on Micheal and his team to insure that actually has a chance to happen

**Invested \$30,000 this round**

---

## Our Team



**Michael Arens** CEO & Co-Founder

I started Clean Earth Rovers in 2019 as an undergraduate student. During that time, I also served as the captain of the hockey team and was recognized with the Excellence in Entrepreneurship & Management Award from the Williams College of Business.



**David Constantine** COO & Co-Founder

One of my greatest accomplishments was receiving my MBA as a full-time student while being a founding member of Clean Earth Rovers. There were many challenges that I had to overcome, but ultimately my education was pivotal to pursuing my passions.



**Jonathan Rosales** Co-Founder & Head Engineering Adviser

I have lived and studied in 4 different countries and gotten exposure and learning about how engineering is done around the world in each one of the countries I've practiced in. This has allowed me to apply the best of each to what we build at CER.



**Rob Charvat** CTO

My biggest accomplishment is being 'Team Lead' for GE's advanced fuel program at over \$1B in annual sales. I'm most proud of my Deans & Presidential Service Award for service to my Nation, and I am happy to say at CER I feel I continue my service daily.



**Nic Munson** Lead Full stack developer

I'm most proud of being a Dad. Professionally, I'm proudest of the work here at CER because of the complexity & challenges I've overcome. I'm proud of the mission we are pursuing because I can contribute to making the earth a better place for my children.



**Allen Schutte** Lead Fabrication expert

My proudest accomplishment: I diagnosed an ongoing problem with a production part that cost my past employer hundreds of thousands of dollars by going unnoticed for years. I saved another employer \$10k on repair parts using my industry knowledge.



**Oleg Kaganovich** Growth Advisor and Executive Coach

I've been on both sides of the table, as a 4x startup founder, as well as an early stage venture investor with several funds across the U.S, Asia and Middle East. Proud of the women-friendly entrepreneurship center we founded in Saudi Arabia.



**Mike Halloran** Executive team Advisor

Helping guide students at both the undergraduate & MBA levels into successful careers & advancements based upon working with them during & after their time at Xavier. Pay It Forward to all those who helped me in my position as a 5X founder in my career.

my career:



**Karen Eutsler** Sales and Marketing Advisor

The 2021 XU commencement was in a socially-distanced format where speakers recorded their speeches to be aired at the event. When my speech aired, I was in tears at the applause from the graduates, in appreciation for the energy/love I showed them at XU.



**Scott Grindy** Marine Industry advisor

Served as Dir. of Facility Services at UW Bothell, completed 2 phases of new campus & Cascadia Community College under budget/on time. As Port operator, expanded 3rd largest cargo port & opened new berthing at largest public marina on US west coast.



**Chi Miller** Financial advisor

As founder and CFO/COO of Cloud Data Center Semiconductor company, I enjoyed the challenge of going from startup to product to revenue.



**Curt Wilson** Engineering and Manufacturing advisor

While still being able to spend time with my wife and kids, I have the privilege of leading a world class design and innovation team, advise socially and environmentally friendly start-ups, and promote diversity, equity, and inclusion.

## Why Clean Earth Rovers?



Our mission is to empower municipalities and coastal communities to make informed decisions about the health of their coastal waterways. We believe that every beach-goer deserves to know the water quality before they swim. By

Every beach goes tested to know the water quality before they can enjoy building a comprehensive water quality monitoring network, we're working towards a future where a day at the beach is not a health risk, but a day to make memories.



Every Year Harmful Algal Blooms (HABs) wreak havoc on salt and fresh bodies of water around the world. The issue is primarily fueled by the release of fertilizers and other nutrient-rich chemicals into our waters. Due to a lack of water data infrastructure, it can be challenging to see these events coming. As a result, we respond reactively to the Billions in annual damages. In addition to the economic impact of this problem, we also see major risks at a public health and safety level with toxic bacteria exposure that can land beach-goers in the hospital, or cause death to their pets. There are as many as 20,000 health advisories posted in public waters annually.

*Annually, gastrointestinal illness from exposure to microbial pathogens in polluted U.S. coastal waters is estimated to cost \$350 million (Ralston et al. 2011)*

## Data Dilemma: Uncovering the Missing Pieces



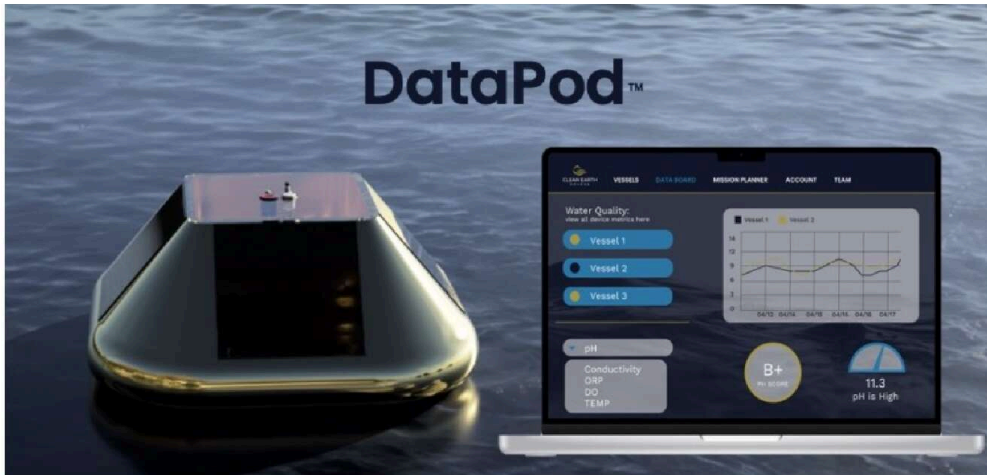


In many regions, this problem is exacerbated by the lack of widespread monitoring. The widespread current technique of sending someone once a week to the water to take a sample by hand is dated, costly, and takes time and resources to perform. In many cases, there isn't a remote monitoring system in place to solve this. If there is a remote monitoring system deployed, it's anywhere from \$40,000 to \$200,000 depending on how advanced it is.

*"Market Restraining Factors: Monitoring Systems Are Generally Expensive..."*

Not very scalable for widespread infrastructure right?


## Scalable Data Delivered: It's Time to Digitize Our Waters



Introducing the DataPod™. A one-of-a-kind solution for scalable, reliable water quality data. These are small-scale monitoring systems that operate at low voltages, making them smaller, cheaper, and easy to distribute.

### DataPod™

- ◆ 30x more affordable
- ◆ Predict pollution events before they happen
- ◆ IoT access from anywhere



With our new buoy technology, we are upscaling the opportunity for wide-scale data collection, all in one place. We are eliminating the human capital needed to monitor these metrics by hand. In turn, you're getting consistent and steady Data anytime you want it.

## How Robust are Our Datasets?

---

We currently monitor 6 metrics that are critical for understanding water quality and evolving pollution events:

- **PH:** to monitor the acidity of the water.
- **Temp:** for tracking rising water temperatures varying from ecosystem homeostasis.
- **Dissolved Oxygen:** monitors the level of available oxygen present in the water for consumption by organisms.
- **Oxygen Reduction Potential:** for reading oxidizing or reducing agents in a water sample. Oxidizers pull electrons from the water, while reducers add them. This is critical for indicating water contamination.
- **Conductivity:** for measuring the salinity and natural electrical current of the water.
- **Turbidity:** for measuring the clarity of the water and identifying bacteria and algae presence.

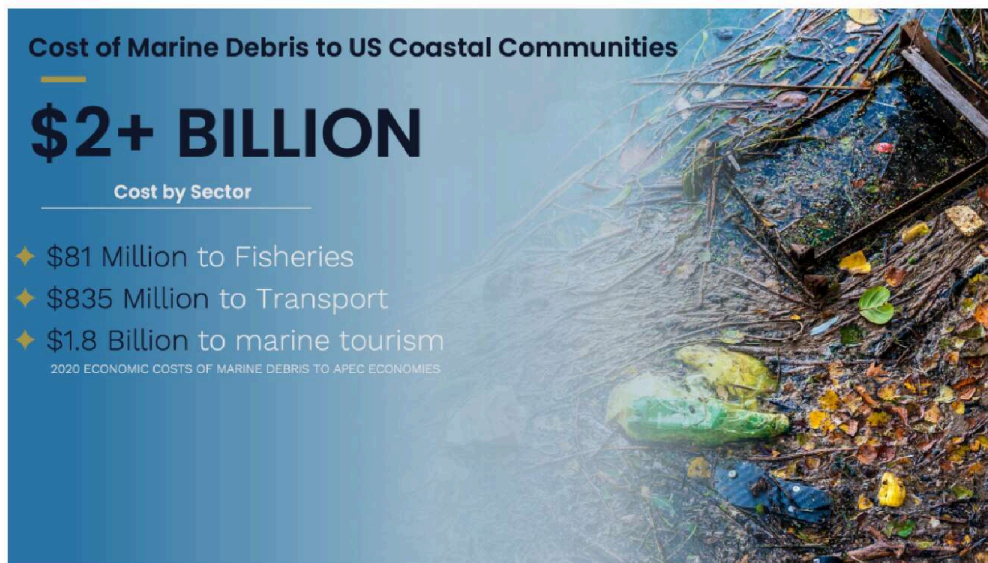
These sensors are baseline metrics for most monitoring efforts that are currently taking place. More robust sensors can be added to our Rover to capture more specific datasets in numerous locations.

## Revolutionizing Coastal Water Quality Management

---

Building data infrastructure is the right step toward an information system that allows municipalities and decision-makers to stay informed and act strategically. However what if it's too late? What if you need mobile data in shifting areas of concern? More robust data? What if you are not dealing with chemical pollutants

at all?



Unfortunately, HABs aren't the only pollutants that plague our coastal waters. In addition to these blooms, we see ever-increasing fish kills, oil spills, and a growing presence of trash. All of these typically appear in magnitudes that take hours to clean manually, costing coastal businesses upwards of \$20K in misplaced labor to manage. Additionally, the risks run high for marinas and refueling stations that may be spilling oil into the water. Events like this are a minimum \$5K fine from the USCG per incident.

## The Rover: Mastering Coastal Water Cleanliness



The Rover is a multi-purpose autonomous system designed to meet various coastal water quality management needs. It can be configured for advanced data collection through autonomous missions, facility surveillance, or physical debris removal, including trash, fish, oil, and algae. Upon receiving alerts from our data systems about impending pollution, we deploy the Rover to collect up to 100 lbs of debris before needing to be emptied. Using the Rover for physical pollution management brings several benefits, including:

## Sustainable Savings



### Performance Metrics

- ◆ 6x more efficient than a human at debris collection
- ◆ 10x Faster than a human
- ◆ 20 Ft<sup>2</sup>/min coverage
- ◆ Increased worker safety
- ◆ Less human exposure to toxic pollutants during cleanup response

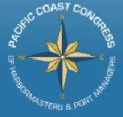
## Who Uses our Technology?

University Researchers    Municipal Public Works    Emergency Services Contractors

**FIU**

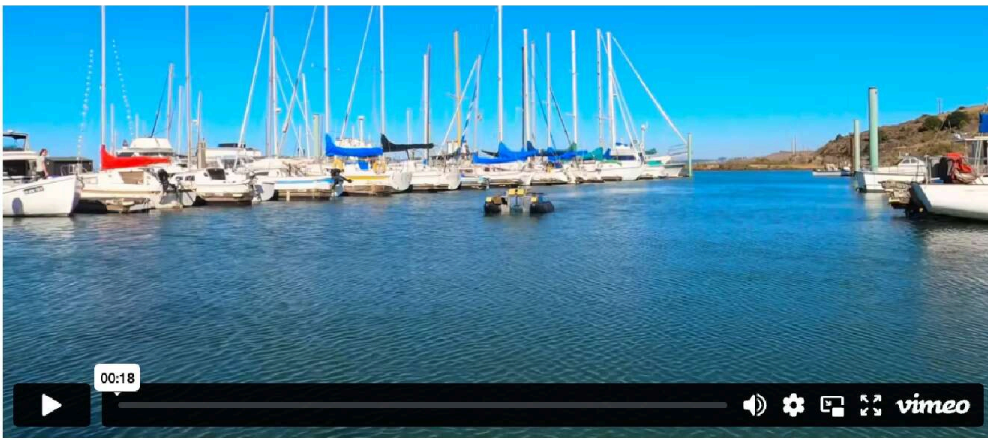
Public and Private Marinas



Our technology is highly adaptable, serving various segments within the maritime industry. We are proud to support universities in advancing their research, municipalities in building infrastructure and management solutions, and emergency services and marinas in their efforts to have efficient response tools. Our versatile technology helps meet the diverse needs of all of these customers.

 **player\_export**  
Clean Earth Rovers, LLC





Our devices are in use or soon to be deployed in marina settings and open harbors such as San Francisco, Newport Beach, and Biscayne Bay. They have also been utilized in Naples to enhance the safety and efficiency of disaster response contracting. The units shown below were deployed in December for hurricane Ian remediation and cleanup efforts, demonstrating the range and effectiveness of our technology.



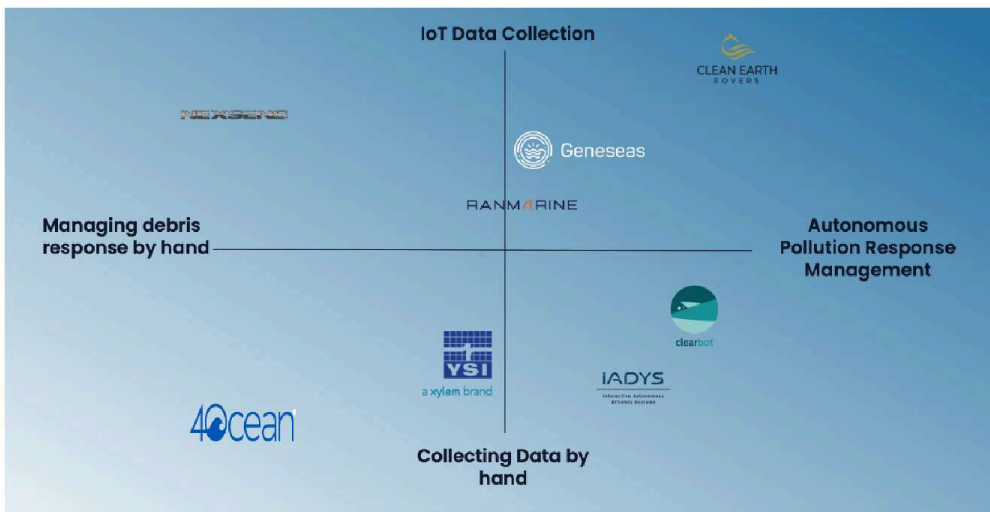
## Sizing Up the Opportunity: Our Potential is Huge

 <p><b>California TAM</b> <b>\$650M</b> Marine Debris Management <b>\$850M</b> Oil Spill Cleanup</p>	 <p><b>Florida TAM</b> <b>\$965M</b> Hurricane Debris Cleanup <b>\$82M</b> HAB Cleanup</p>
<p><b>Our Global Market is Unfathomably Large...</b></p>	

Our goal is to revolutionize the industry by transitioning from manual collection methods to remote sensing; using our low-cost, highly effective DataPod™ monitoring system. Initially, we will focus on California and Florida, with their 1600 miles of coastline and 60 million acres of freshwater, they offer huge potential. Our technology is highly scalable, allowing us to deploy roughly one DataPod™ per acre, generating \$3,600 in revenue per year with a single DataPod™ deployment. Scaling to all freshwater bodies and coastlines in these two states will be a massive opportunity. Imagine what the rest of the country holds!

*Forward-looking projections are not guaranteed.*

# We're Leading a New Era for Water Quality Management



We are spearheading the industry's transformation with our unparalleled and scalable solutions for water quality management. Our unique ability to both build data infrastructure and autonomously manage debris sets us apart from all competitors, big and small, in the market.

With the early support from the University of Cincinnati's 1819 Venture Labs and the entrepreneurial backing from Xavier University, we have gained invaluable insights into the importance of partnerships. This has been reflected in our products, which are a result of our collaboration with premier organizations to create top-notch innovative solutions for real-world problems:



**CLEAN EARTH ROVERS**

**Strategic Partners**

 <b>ADVANCED NAVIGATION</b> Ground Control Partner	 ESG Marketing Partner
 Oil Absorbent Partner	 Waste Sorting Partner

Our technology is not only a major highlight of our company, but our path to profitability is also impressive. In January 2023 alone, we have secured over \$300,000 in revenue commitments, with the potential to close contracts worth up to \$700,000 by the end of Q2 2023 at an estimated 80% profitability rate.

*Forward-looking projections are not guaranteed.*

## We Have a Story Worth Telling...



**CLEAN EARTH ROVERS**

Featured in

# ...We Hope You Choose to Be a Part of It!

 Invest Now for Special Perks		
\$10,000	\$25,000	\$50,000
1 DataPod with 12-month personal Data access	1 DataPod with 24-month personal Data access	Lifetime access to our entire data network <small>(where data is available) *</small>

## Our Investment Strategy

As Clean Earth Rovers evolves from its pre-seed stage, we are aware of the challenges and opportunities ahead. Our promise to you as an investor is to prioritize your safety and success, tirelessly investing in making this a low-risk, high-impact investment. While the future of startups can never be certain, we will leave no stone unturned to secure your investment and bring you the best outcomes. Your trust in us drives us to give our all every day.

\*Forward-looking projections cannot be guaranteed

### Exit Strategy:

As Clean Earth Rovers evolves into a leading force in impact, technology, and coastal sciences, an eventual exit strategy, such as a merger or acquisition, is on the horizon. This not only provides an opportunity to reward our founders, investors, and other stakeholders for their hard work and support but also positions us to join a larger network of organizations and maximize the scaling potential of our technology to make a greater impact.

### Valuation Cap:

Our valuation is heavily based on the state and strength of our technology, our progress since our last \$100,000 investment, and our current pipeline of traction. Since our last investment in July of 2022, we have completed the development and R&D cycles on both The Rover and the DataPods. We have begun customer trials and started to sell to early adopters; our revenue commitments alone are

significant factors in our valuation cap. We have validated for product market fit. We are working on one global joint marketing campaign and another national joint marketing campaign with our partners. We have also retained our IP ownership through collaboration with the UC tech transfer office. The wind is at our sails and we aren't stopping now!

**Terms:**

We are looking to raise \$250,000 at an early bird post-money, valuation cap of \$3,000,000 and a remaining \$985,000 at a \$4,000,000 post-money valuation cap.

By launching on WeFunder, we aim to democratize the investment opportunity and give a chance to a wider community to join us in our mission. With an investment in Clean Earth Rovers, not only will you have a chance to earn financial returns, but you'll also be a part of creating a positive impact that will have a lasting effect on future generations. This is a chance to be a part of something meaningful and make a difference with your money. We invite our networks, friends, family, and early supporters to join us on this journey toward a more sustainable future.

Join us on a mission to revolutionize the way we manage coastal water pollution. With our team of dedicated and passionate founders, we aim to make a tangible impact that will benefit not only current generations but also future ones. Let's work together to create a cleaner, healthier, and more sustainable coastal environment.

**Invest In**



**CLEAN EARTH**  
R O V E R S