

GET Committee

From: Mike Wildberger <mike@kiheiice.com>
Sent: Wednesday, May 22, 2019 5:23 PM
To: GET Committee
Subject: Testimony get 26

Mike Wildberger, South Maui Citizen.

I am writing in support of GET-26.

Let's say I build a catapult. And then I poop in the 'bucket' over and over. Then I cut the restraining rope loose to throw my feces into your yard. Then when you complain I defended myself saying "I'm not pooping in your yard I'm pooping on my catapult". Then when you finally call the authorities to take me to court I defend myself saying "I want to build a better Catapult and throw my feces into the way back of your yard". Would you or anyone else be OK with that? What if it turned out that it was not your backyard but it was everybody's favorite park where the poop landed? On your family picnic?

Well that's what's going on with Maui county. We have been catapulting everybody's watered down feces underground using injection wells, into everybody's favorite park, our own ocean and beaches. Even worse, we are going to the Supreme Court to win the right to continue to poop on ourselves and our families. If we win, we lose, but others, mostly old giant corporations that own dirty old production factories and mines win big. This lawsuit could "Clarify" the the clean water act and allow these guys to catapult chemicals all over America.

I don't like being used. And I don't like Maui being used. And that's what's happening. We find ourselves in a case going all the way to the supreme court the only benefit inland polluters all over America. But it does not have to be that way. We have changed county administration and Corporate Counsel (the guys that got us into this). The Maui County Democratic party has approved a resolution to stop the court case and Kelly King has proposed that the county council accepts the newest settlement and stops with this ludicrous appeals process. A lot of work has been done to able to accomplish change in the county behavior this is why! .

Demonstrate the common sense that your voters think you have and hear and accept this settlement!

Mahalo
Mike Wildberger
8088701741

GET Committee

From: travis liggett <travis.liggett@gmail.com>
Sent: Wednesday, May 22, 2019 3:25 PM
To: GET Committee
Subject: GET Committee testimony May 23 2019
Attachments: Travis Liggett GET committee testimony May 23 2019 meeting.pdf; Travis Liggett.jpg; STOP THE FIRE!.jpg

Aloha Councilmembers,

Attached please find my testimony to support your decision to settle the injection well case at hand in your May 23 2019 meeting.

Please vote to settle the case. Somewhere on the mainland there are families with combustible drinking water coming from their drinking wells in fracking country who have no legal standing to fight the flammable water because the contamination travels from fracking wells through groundwater. Please give those suffering families legal standing by voting to settle and not go to the supreme court.

<https://www.youtube.com/watch?v=4LBjSXWQRV8>

I have a viable and affordable plan to eliminate injection wells in Lahaina in a short time.

Please vote to settle -- show yourself as on the right side of history. This could be the most important vote in the history of Maui County Council -- please vote for the aina!

Mahalo!
Travis Liggett
President
Reef Power LLC
(808) 291-9934

To: Maui County Council Governance, Ethics and Transparency Committee

From: Travis Liggett, President, Reef Power LLC (a Maui company)

Re: Addendum to May 20th 2019 GET Testimony

May 22, 2019

Aloha Councilmembers,

Thank you for the opportunity to testify on Monday about my three-step plan to eliminate injection well discharge:

- 1. Implement conventional treatment upgrades at the existing wastewater facilities, such as the Bardenpho Process or Enhanced Nutrient Removal, as recommended to the County Council by Steve Parabolicoli in November 2018;**
- 2. Polish the wastewater to very low nutrient levels using freshwater limu (native Hawaiian algae) in an Algal Turf Scrubber. The Algal Turf Scrubber is a natural regenerative system that grows native algae by the acre to consume pollutants in the wastewater stream; and**
- 3. Achieve 100% reuse in a short timescale by irrigating with polished wastewater a multi-acre forest that is planted with native Hawaiian trees such as 'Ohi'a and Sandalwood, and vetiver, next to the wastewater facility.**

I am writing to submit the attached informational materials describing the Algal Turf Scrubber from one of our partners in the DOE grant application, Hydromentia Technologies LLC out of Florida. They have a long history of building Algal Turf Scrubbers, but no one has ever grown an ATS with Hawaiian limu on Hawaiian water in the Hawaiian environment before, and we anticipate our system will outperform any on the mainland in pollutant removal rates.

I also wanted to amend my testimony from Monday May 20th to say that, in the case of oyster remediation, the pollutants **are** removed from the water column, when the oysters are harvested. I misspoke during my oral testimony and want to express that I believe that the oyster project concept is a great idea and should be supported in any way possible.

Finally, I would like to call attention to the false and misleading testimony of Maui County Acting Director of Environmental Management Eric Nakagawa in Monday's meeting. When Councilmember Molina asked Mr. Nakagawa if Eric knew about the system I proposed during my testimony, he presented grossly untrue information describing my project plan. Here is a transcript of the testimony in question, with the true and correct information following:

Councilmember Molina: "What are the alternatives besides injection wells? You know we heard a testifier this morning present a proposal to us that could be done I guess as the pilot project for \$10M. Any thoughts from the Department aside from injection wells?"

(First let me state that a full scale ATS system at Kihei will cost on the order of \$10M, *not* just a pilot. The DOE grant I want to partner with the County in is for \$3-5M, so would cover the cost of all of the development of the ATS system and maybe even part of the actual treatment.)

A. Mr. Nakagawa: "Yah, so he referred to this treatment system that, from Steve Parabolicoli I believe, and we were actually talking to Steve Parabolicoli and his group. I think it's called Organica, basically they use plant-based type of treatment to help polish the water to make it clean"

The injection well elimination plan I am proposing is *not* Organica, it is **Algal Turf Scrubbers + Native Forest Restoration**. Steve Parabolicoli is a true gentleman and expert, but he is not associated with my company, Reef Power LLC. My mention of expert Steve Parabolicoli in my testimony was to call attention to his written recommendations to the County Council for improvements to the Kihei conventional wastewater treatment facility, such as the Bardenpho Process or Enhanced Nutrient Removal. (Excerpt from Steve Parabolicoli's recommendations submitted to the County Council in November 2018 is attached.) Algal Turf Scrubbers are a low-tech but cutting-edge regenerative system that uses local, native freshwater limu (*not* land-based plants) to scrub nutrients to very low levels, as a post-polishing step to the conventional treatment facility. ATS can reduce nutrient concentrations in wastewater to much lower levels than conventional treatment or Organica can achieve, enabling reef-friendly 100% reuse.

B. Mr. Nakagawa: "but I think the key was when, I think it was Member Kama asked him about the effluent, he basically said to divert 100%"

I want to clarify that step #3 of my plan is 100% diversion, but the way I want to reuse is radically different than the standard practice in Maui. Instead of investing \$100M's in laying pipe to distribute reuse water at long distances to customers that don't exist yet, **my idea is to polish wastewater with ATS, then apply 100% of the reuse water on a forest of native Hawaiian trees with an emphasis on endangered species**. By growing a municipal forest on unused land directly adjacent to the wastewater facility, we don't have to pay for any expensive redistribution pipe network extension, or for any electrical power to pump water long distances. The County can become its own polished R1 customer and zero out injection in less than a year by planting and irrigating a municipal forest. The native forest element can even be installed in parallel with or before installing the full scale ATS polishing system.

C. Mr. Nakagawa: "so really it's that Organica or that plant-based type of treatment, it's just another type of treatment, it's just a green treatment, it's no different than what we do now with our equipment so it doesn't really pertain to what this case is about."

ATS is *not* "*just a green treatment [that is] no different than what we do now.*" ATS is radically different from the best conventional treatment because ATS runs on photosynthesis and ATS can remove nutrients to much lower concentrations than conventional treatment, that is why ATS is key to restoring reefs, because redistribution of high nutrient content water alone is not enough. We need more treatment to lower nutrient levels for reef-friendly 100% reuse. In the past ten years we have distributed over 130 **TONS** of dissolved nutrients in the Lahaina watershed through reuse. Nutrients in reuse water are still going into the watershed, and therefore into the ocean in some part. ATS makes 100% reuse sane for the reefs by taking nutrient levels from conventional treatment concentrations, down to ocean background levels. The County is currently doing nothing with any equipment that comes even close to the low nutrient levels that ATS can achieve, as Mr. Nakamura testified.

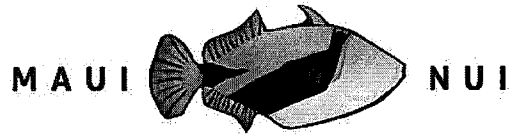
When Mr. Nakagawa testifies that "*[my proposal] doesn't really pertain to what this case is about,*" he really strikes at a key falsehood in the County's case defending injection wells: that there is no viable alternative. What Mr. Nakagawa's false testimony showcases is that some members of the County Administration and Corporation Council do not want it to be known that **there are emerging but viable and affordable alternatives to injection wells** that will eliminate the discharge and thereby eliminate the need to obtain an NPDES permit. For the record, **I have presented to the Council a viable and affordable alternative to injection wells, and the County of Maui Acting Director of Environmental Management has provided false testimony that misleads the Council into the false narrative that there is no viable and affordable alternative to injection.**

My goal at this juncture is to secure official partnership from the County by the June 3rd initial submission deadline for this DOE grant that could pay to demonstrate my plan, with little or no cash contribution from the County, but with some in-kind cost matching such as land rental. Let me repeat: **I believe I can develop and demonstrate a solution to the injection well crisis with minimal financial investment from the County of Maui.**

To that end I have a meeting with Mayor's staff members next Tuesday May 28th. Please do everything you can to support a partnership with the County on this DOE grant application in collaboration with my Maui company, Reef Power LLC, Sandia National Lab and Hydromentia Technologies LLC, so that I can implement my plan to eliminate injection wells without delay.

Sincere mahalos for your attention, and have a nice day!

Travis Liggett
President
Reef Power, LLC
(808) 291-9934



MARINE RESOURCE COUNCIL

Options to Improve Wastewater Management in South Maui

Prepared by: Steve Parabolici

9/8/2016

mechanism as required by the HDOH WWB's HAR 11-62 Regulations. Therefore, it makes sense to improve the quality of the effluent that is disposed of into the injection wells. This can be accomplished in two ways.

2.11A-1 Option 1: Disinfect all of the effluent that the Kihei WWRF produces to R-1 recycled water standards using ultra violet (UV) disinfection

Currently, only the effluent that is sent to the recycled water users is disinfected with UV. The Kihei WWRF has ample UV disinfection capacity to also disinfect the effluent that is directed to its injection wells. A piping connection from the facility's UV disinfection channel to the injection well system is required and would need to be constructed. The WWRD will also need to budget accordingly as disinfecting all of the Kihei WWRF's effluent will result in additional costs due to the required additional electricity, UV equipment parts and labor. Disinfecting the effluent that is injected will address the concern that the Kihei WWRF's injection wells are contaminating the ground water and ultimately the near shore coastal waters with pathogenic organisms.

2.11A-2 Option 2: Improve the nutrient removal capability at the Kihei WWRF

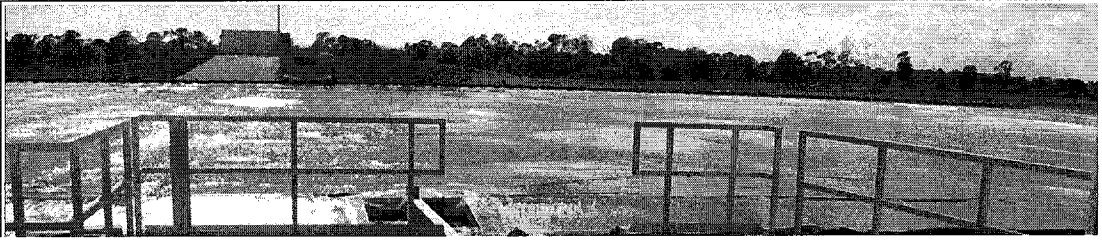
As stated previously, the Kihei WWRF is already utilizing BNR to reduce nutrients (primarily nitrogen) in its effluent. Total nitrogen is reduced to between 8 and 12 mg/L. Reducing the nutrient level in the Kihei WWRF effluent will address the concern that injection wells are contributing nutrients that leach into the coastal waters via groundwater seeps. It will also address the concern that the recycled water that is used for landscape irrigation at locations near the coastline is leaching past vegetation root zones and contributing nutrients to coastal waters. There are two methods than could be considered to improve nutrient removal at the Kihei WWRF.

2.11A-2a Option 2A: Utilize the Bardenpho Process

The Bardenpho Process is effective at removing nitrogen and phosphorous by alternating anaerobic, anoxic and aerobic zones in the activated sludge basins. The Lahaina WWRF has successfully utilized a similar concept and has been able to reduce effluent total nitrogen to as low as 5 mg/L. This concept will require some study by the WWRD to determine if it can be configured at the Kihei WWRF and if it can, it should be able to be set up fairly quickly.

2.11A-2b Option 2B: Utilize Enhanced Nutrient Removal (ENR) Technology

Enhanced Nutrient Removal (ENR) has been successfully utilized at WWRFs in other parts of the United States where effluent is discharged to sensitive receiving waters. The Chesapeake Bay Restoration Program was created to improve the water quality of Chesapeake Bay. Part of this program required WWRFs that discharge to the Bay to improve their nutrient removal capacity so that effluent total nitrogen does not exceed 3 mg/L and total phosphorous does not exceed 0.3 mg/L.⁴ ENR is accomplished by adding methanol or some other carbon source to either anoxic zones in activated sludge basins or to deep bed effluent filters. The additional carbon drives denitrification further so that lower total nitrogen and phosphorous levels can be achieved. The Kihei WWRF is not equipped with deep bed effluent filters. Thus, ENR could be accomplished by adding methanol to an anoxic zone in a Bardenpho Process configuration. This concept will need to be evaluated by a consulting engineering firm that specializes in wastewater treatment design to determine if it is feasible at the Kihei WWRF. Figure 4 shows the Bardenpho Process with supplemental carbon addition.



CORPORATE FACTSHEET

CORPORATE HEADQUARTERS:

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CORPORATE OVERVIEW

HydroMentia Technologies LLC is a water pollution control company specializing in the design and development of innovative natural water treatment technology and systems.

Formed in 1996, HydroMentia Inc. began designing and operating commercial scale Algal Turf Scrubber® systems. In 2016 HydroMentia Technologies LLC acquired the assets of HydroMentia, Inc. Today its team includes individuals that have developed and designed aquatic plant production and processing systems for over three decades.

With over eighty years collective experience designing, constructing and operating commercial scale systems, HydroMentia is the only company in the business with this depth of experience and knowledge. HydroMentia's practical, cost-effective systems are proven and reliable.

Algal Turf Scrubber® Technology

HydroMentia is the exclusive world-wide licensee of the Algal Turf Scrubber® (ATS™) technology, which was invented by Dr. Walter Adey of the Smithsonian Institution.

The Algal Turf Scrubber® is a managed aquatic plant system that uses periphytic (attached) algae grown on an open, engineered system designed to maximize algae production and remove excess nutrient pollutants from surface waters. The design of the Algal Turf Scrubber® optimizes production of naturally occurring periphytic algae and the efficient harvest and management of biomass.

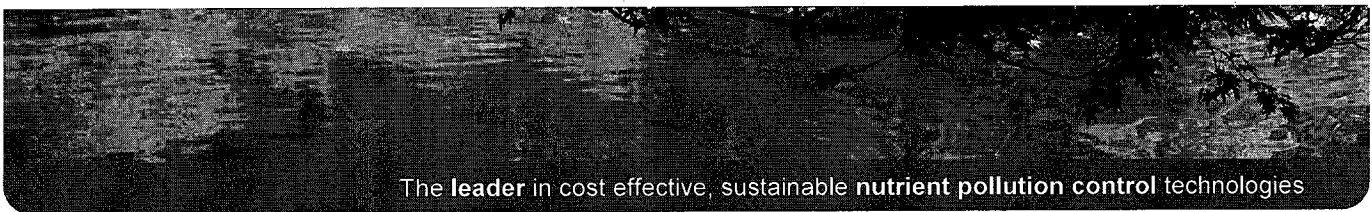
Point and Nonpoint Source Nitrogen and Phosphorus Control

The Algal Turf Scrubber® offers unparalleled performance for low level nutrient pollution control. The Algal Turf Scrubber® provides these high levels of performance because periphytic algae cultured within Algal Turf Scrubber® systems have high rates of algal productivity even under low nutrient conditions. This unique capacity allows the Algal Turf Scrubber® to provide cost-effective nitrogen and phosphorus control of nonpoint source and point source wastewaters.

As algae within the Algal Turf Scrubber® treatment units grow, they absorb nutrient pollutants (primarily nitrogen and phosphorus) from the water. The algal biomass produced within the system is then harvested on a 7-14 day cycle. Regular harvest of algal biomass maintains the algal turf in an accelerated growth phase, which optimizes nutrient pollutant uptake. The result is efficient, sustainable, and cost-effective water treatment and the production of significant quantities of algal biomass.

The periphytic algae grown in Algal Turf Scrubber® systems are native species with high rates of production that have evolved naturally over more than a billion years. Algal growth in these commercial scale Algal Turf Scrubber® systems achieve mean production rates of 15-30 grams dry weight per square meter per day (dry-g/m²-day); with rates of over 90 dry-g/m²-day achieved under ideal conditions.

In addition to direct plant uptake, the Algal Turf Scrubber® is optimized through system design and operational practices to facilitate precipitation of phosphorus into the algal biomass. This increases the system's ability to capture phosphorus, further enhancing its cost-effectiveness as a pollutant recovery tool.



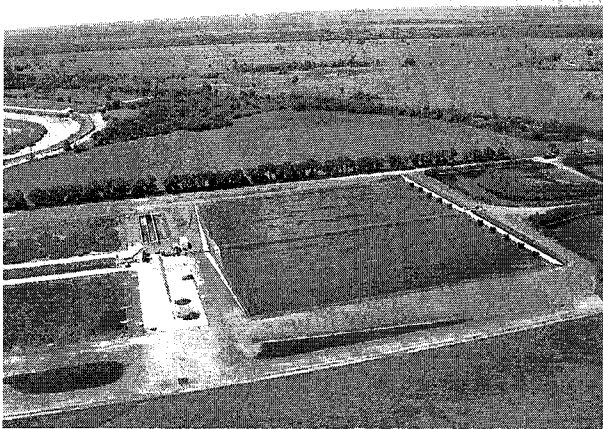
The leader in cost effective, sustainable nutrient pollution control technologies

PROVEN EXPERIENCE

The Algal Turf Scrubber® is a commercial scale algal production technology currently sold for use in regional water treatment applications. Algal Turf Scrubber® systems are supported by a 30-year performance record in research and commercial applications.

Dr. Walter Adey in the late 1970s was among the first researchers to disclose periphytic algae's high levels of productivity under low nutrient conditions. In the early 1980s Dr. Adey applied this unique dynamic in developing and patenting the first Algal Turf Scrubber® systems.

Based on this background, the following projects that scaled the Algal Turf Scrubber® technology to commercial level were developed:



Algal Turf Scrubber® system (2.5 acres) constructed in the Lake Okeechobee S-154 Watershed, Okeechobee County, Florida.

Algal Turf Scrubber® Systems

- Florida Everglades, Nonpoint Source Runoff; 50' floway.
- Patterson, California, Domestic Wastewater Tertiary Treatment, 0.25 acre, 0.25 Million gallons per day (Mgpd)
- Fruitland, Maryland, Domestic Wastewater Tertiary Treatment 0.25 acre, 0.25 Mgpd
- Falls City, Texas, Closed-Loop Aquaculture, 7 acre multi-unit Algal Turf Scrubber®, 10-20 Mgpd
- Okeechobee, Florida, Closed-Loop Aquaculture, 4.0 acre, 30.0 Mgpd
- S-154 Watershed Okeechobee, Florida, Nonpoint Source Runoff, 2.5 acre, 6.0 Mgpd

ALGAL TURF BASED BIOFUEL PRODUCTION

HydroMentia, Inc. was originally founded as a water pollution control company, and its algae-based technology is now seen as an answer to cleaning up the world's impaired water bodies. Equally exciting, however, is that algae production for biofuel has become a burgeoning industry, and HydroMentia now finds itself in the enviable position of being capable of the most cost-effective algae production in the world. As HydroMentia's patented Algal Turf Scrubber® removes phosphorous and nitrogen from our waterways it produces large quantities of algae that are harvested every seven to fourteen days.

Today, algae are seen as the most probable candidate for large scale production of biofuels. Biofuel-per-acre estimates for algae are far superior to other biomass candidates. In addition, algae cultivation does not interfere with production of food for humans and animals, and the price thereof, the way corn-based ethanol does.

Through development of Algal Turf Scrubber® technology, HydroMentia has resolved the most critical challenges of large scale algae cultivation: maximizing production and cost-effective harvesting of algae. The Algal Turf Scrubber® is a managed system, engineered to cost-effectively utilize algae as a medium by which harmful excess nutrients, phosphorus and nitrogen are removed from water. The result is a technology that provides both water restoration and more cost-effective algae production per unit area than any other commercial scale algae cultivation system.

The next step is to develop a cost effective process for processing algal turf into useable energy products. These efforts have already begun as researchers at Sandia National Laboratories are currently processing algal biomass from Algal Turf Scrubber® systems into fuel products at a laboratory scale.

Compost/Fertilizer and Livestock Feed

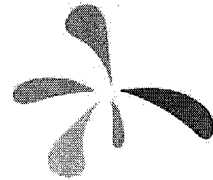
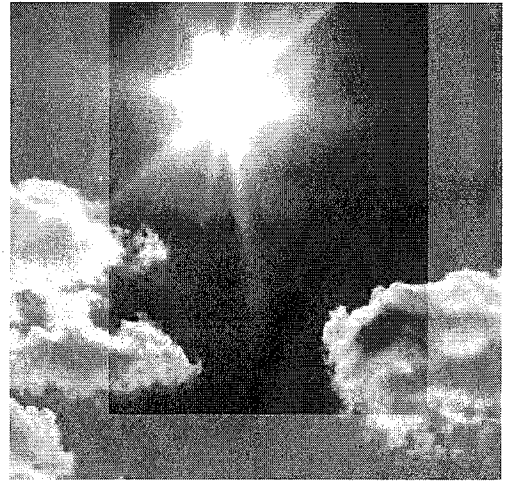
HydroMentia also has commercially processed algal biomass into soil-enhancing compost/organic fertilizer and livestock feed.

WATER RESTORATION AND BIOFUEL PRODUCTION IN THE FUTURE

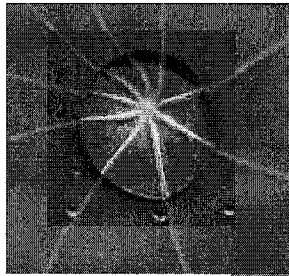
Applications for the Algal Turf Scrubbers® on a global basis are unlimited. As an example, HydroMentia estimates that development of nearly 300,000 acres of Algal Turf Scrubbers® on the Mississippi River would achieve the government's objective of a 20% annual reduction in nitrogen discharges while producing over 1 billion gallons of biofuel annually.

A network of Mississippi River Algal Turf Scrubber® facilities would thus create an opportunity to restore impaired surface waters including reduction of the Gulf Hypoxic Zone, produce large quantities of renewable fuels, create local jobs, and potentially restore historic wetlands.

Major impaired surface waters throughout the US offer similar opportunities for the restoration of surface waters and production of renewable fuels.



HydroMentia
WATER TREATMENT TECHNOLOGIES





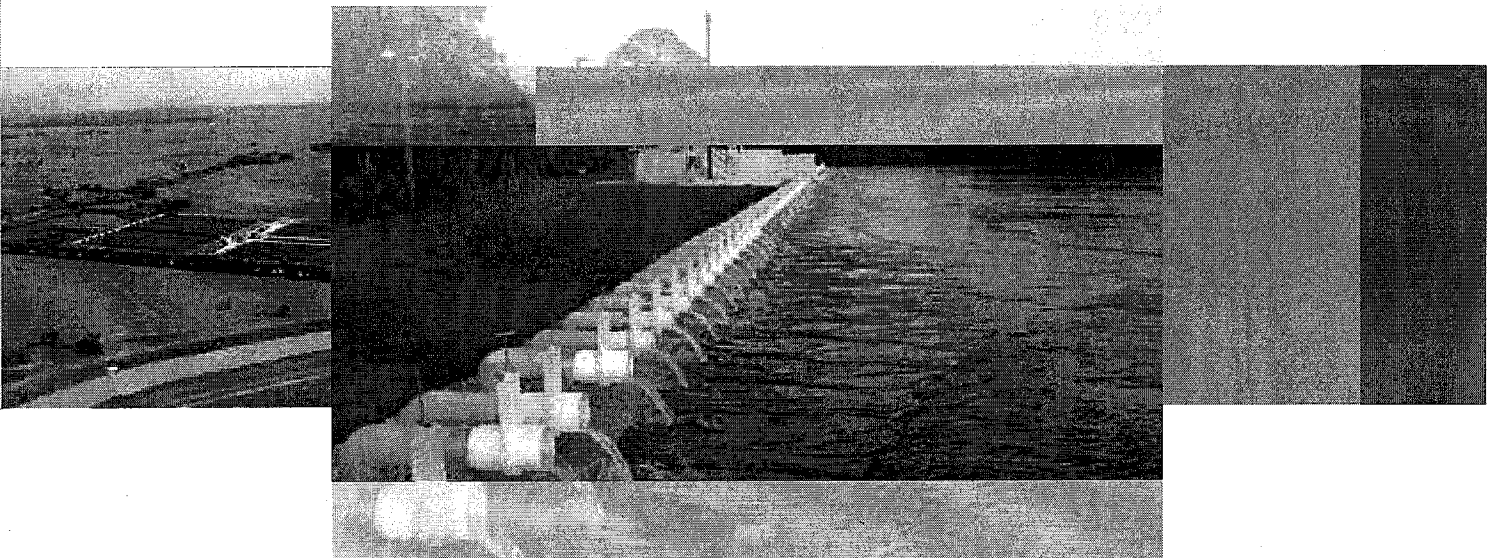
HydroMentia: **Solutions** for a Changing Environment

HydroMentia is a water treatment company recognized as a pioneer in achieving pollution control naturally.

The HydroMentia process is both natural...and economical...because we use a managed approach that results in a significant savings in both land and treatment costs.

Our patented treatment technologies, including the Algal Turf Scrubber® (ATS™), harness nature's own restorative power, using engineered systems to purify polluted lakes, streams, and estuaries.

Developed and proven through three decades of scientific research and commercial application, HydroMentia's technologies successfully remove and recycle harmful pollutants. Equally important, our technologies provide this solution at a lower cost.



"The Algal Turf Scrubber' harnesses the **natural cleansing properties** of periphytic algae, one of the most productive plants on earth."



HydroMentia's ATSTM Technology: Innovation and Results

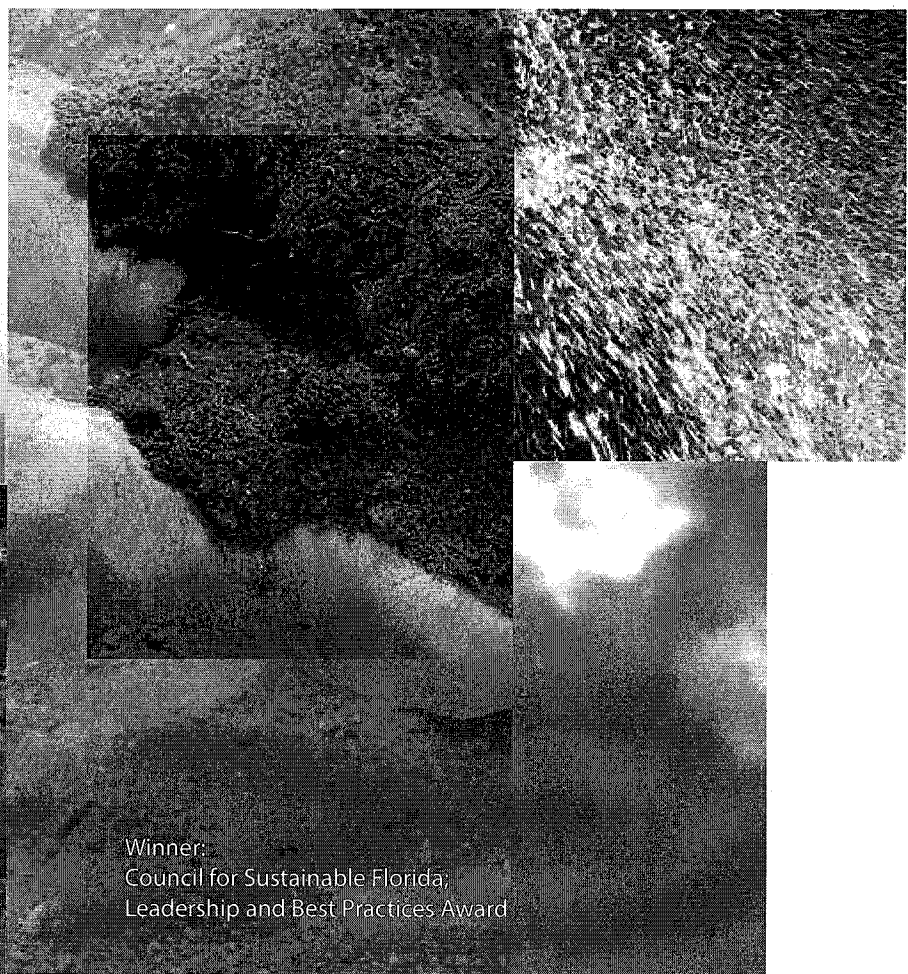
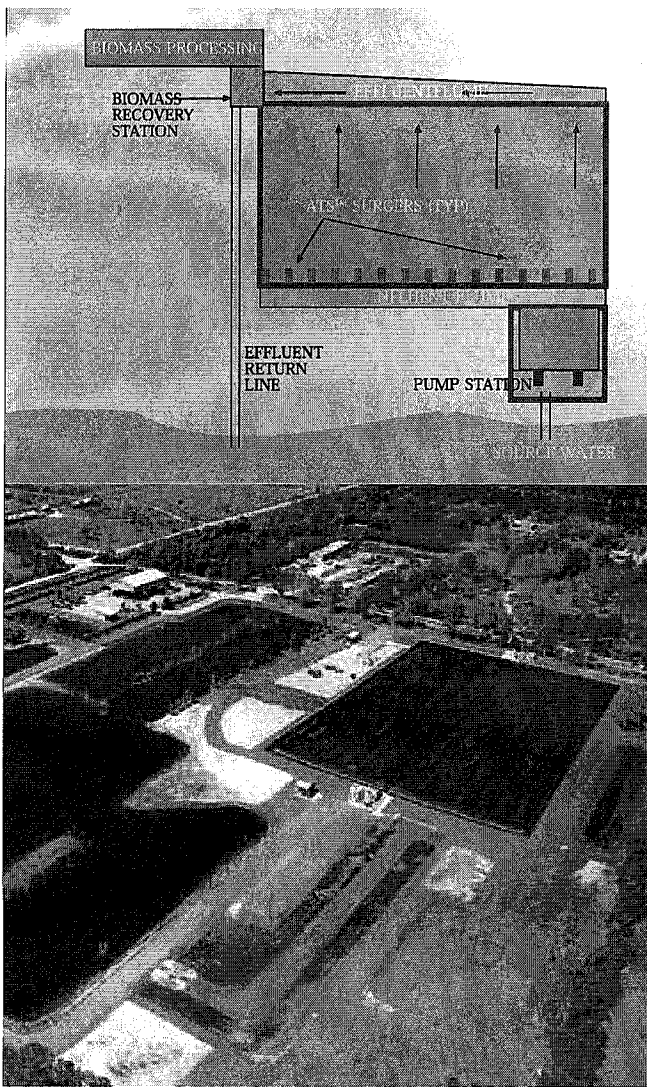
HydroMentia's Algal Turf Scrubber® (ATSTM): The Algal Turf Scrubber® was pioneered by Dr. Walter Adey, former Director of Marine Systems Laboratories at the Smithsonian Institution and HydroMentia.

ATSTM systems are typically constructed near the impaired surface water. Polluted water is conveyed to the treatment system, where it is pulsed in waves across a sloped flowway.

Algal turf, or dense mats of simple algae, are cultivated on a grid structure on the surface of the treatment flowway. As water travels down the turf scrubber, pollutants are absorbed by the algae within the ATSTM treatment unit. A patented precipitation process helps to rapidly remove harmful pollutants from the water, including phosphorus and heavy metals.

Because the entire natural process is engineered and controlled, efficiencies in the treatment process are continuously maximized.





Resource Recovery and Performance

Resource Recovery: Nitrogen and phosphorus - commonly found in polluted water bodies - are also essential plant nutrients.... but when they are allowed to build up in excess amounts, they overburden natural ecosystems. Other life forms cannot compete and rich biological diversity is lost.

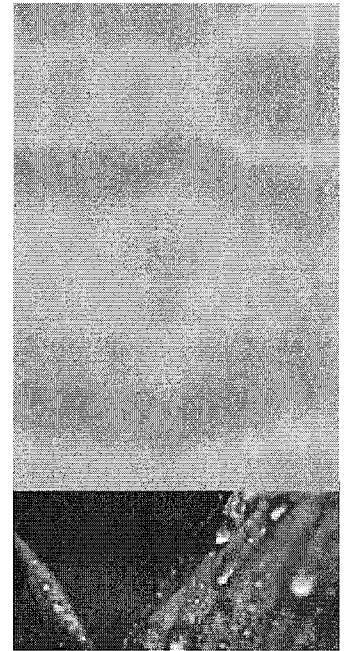
The patented technologies developed by HydroMentia feature water treatment and crop recovery systems, which unlike typical stormwater and surface water treatment systems, collect and recycle these excess nutrients.

Cultured algae are routinely harvested and then processed into a marketable compost product. With this 100% sustainability approach, we can significantly reduce land requirements and treatment costs versus traditional treatment options.

Performance: HydroMentia's treatment systems are capable of reducing nutrient pollutants to meet the most stringent state and federal standards. Our technologies can be implemented as stand-alone systems, incorporated as an integral element of new facility designs or adapted as upgrades of existing facilities.

HydroMentia's team of water pollution control professionals work with clients and their engineering advisors to develop specific treatment designs and costs for each application.

Cost Performance Environmental Responsibility



The Benefits of Using HydroMentia Technology

Low Treatment Cost

HydroMentia's pollution control systems can be designed to reduce pollutants to natural background levels at a fraction of the capital and operating costs of competing systems.

Proven Performance

Managed aquatic plant systems are backed by a 30-year performance record in large scale applications up to 30 million gallons per day (mgd).

Compact Land Requirement

In typical stormwater applications, Algal Turf Scrubber® systems will remove 200-1,000 pounds of phosphorous and 500-8,000 pounds of nitrogen for every acre of process area. At these rates, ATSTM requires only 3-10% of the land area of treatment wetlands. The footprint for a 10 mgd treatment module requires as little as 2.5 acres, making ATSTM ideal where land is limited.

Sustainable & Recyclable Process

Pollutants are naturally recycled into harvested algal biomass. Processed biomass can be sold as organic soil enhancers and compost. Environmental concerns associated with the storage and disposal of sludge byproducts from chemical treatment systems are eliminated, and the process is 100% sustainable.

Adaptable

ATSTM systems offer custom solutions scaled to meet the severity of the pollution problem with capacities from several thousand to over 100 million gallons per day.

Fast Start-up

Due to simple construction and ease of installation, phases for design, construction and start-up can be streamlined to enable a fast, low-cost startup.

To learn more about HydroMentia and the potential benefits for your pollution control needs, contact Mark Zivojnovich at **(352) 804-5126** or visit us on the web at **hydromentia.com**



HydroMentia

WATER TREATMENT TECHNOLOGIES

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