

# Budget, Finance, and Economic Development Committee (2025-2027) on 2026-04-16 1:00 PM

Meeting Time: 04-16-26 13:00

## eComments Report

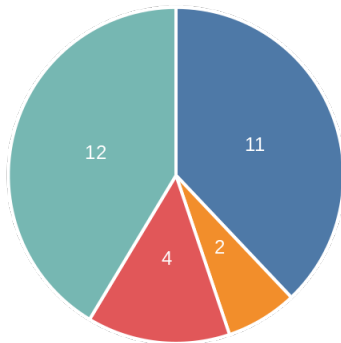
Meetings	Meeting Time	Agenda Items	Comments	Support	Oppose	Neutral
Budget, Finance, and Economic Development Committee (2025-2027) on 2026-04-16 1:00 PM	04-16-26 13:00	2	29	11	2	4

### Sentiments for All Meetings

The following graphs display sentiments for comments that have location data. Only locations of users who have commented will be shown.

#### Overall Sentiment

Support (37%)   Oppose (6%)   Neutral (13%)  
No Response (41%)



**Budget, Finance, and Economic Development Committee (2025-2027) on 2026-04-16 1:00 PM**  
04-16-26 13:00

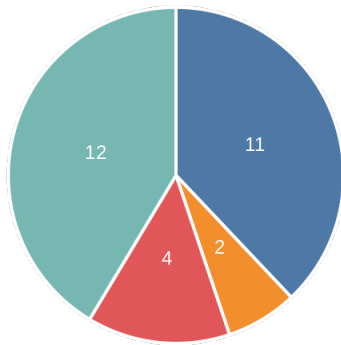
Agenda Name	Comments	Support	Oppose	Neutral
A G E N D A	16	7	1	3
BFED-1 PROPOSED FISCAL YEAR 2027 BUDGET FOR THE COUNTY OF MAUI (BFED-1)	13	4	1	1

**Sentiments for All Agenda Items**

The following graphs display sentiments for comments that have location data. Only locations of users who have commented will be shown.

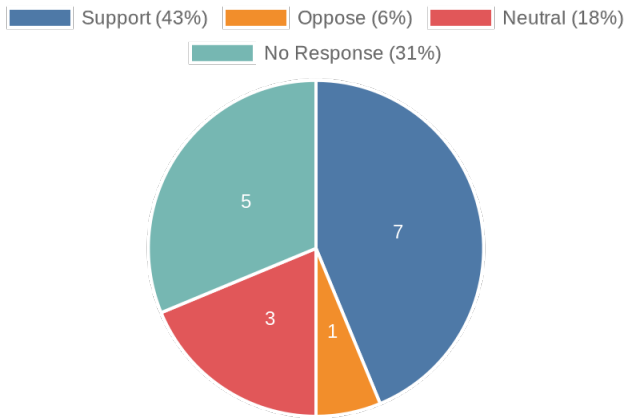
**Overall Sentiment**

Support (37%)   Oppose (6%)   Neutral (13%)  
No Response (41%)



Agenda Item: eComments for A G E N D A

Overall Sentiment



**Travis A. Liggett, M.S.**

Location:

Submitted At: 4:16pm 04-16-26

Aloha Chair and Budget Committee Members,

Attached please find REVISED testimony, replacing my earlier attachment, which had a residual dollar amount error (\$400,000) to de-appropriate from Lahaina WWRF NPDES litigation, which should have been consistently noted as \$250,000.

Mahalo for your consideration of this solution.

Sincerely,

Travis Liggett, M.S.

+1 (808) 291-9934

travis.liggett@gmail.com

**Guest User**

Location:

Submitted At: 1:41pm 04-16-26

Aloha Chair and Members of the Budget Committee,

My name is Katie Whiticar, and I am here in strong support of Adaptations Dance Theater's line item in the FY26 Mayor's Budget.

ADT has played a defining role in my career as a dancer, teacher, and choreographer. I grew up in Wailuku training at Maui Academy of Performing Arts, then pursued my degree and professional work in Los Angeles. In 2016, I returned home to perform in ADT's first Bring It Home production—an experience that completely shifted my path. It showed me that a professional dance career on Maui was possible.

Because of the consistency and support ADT provides, I moved home in 2018 and have continued to grow as an artist. Through Bring It Home, I have danced professionally in multiple works and was able to choreograph my

first professional piece—an opportunity that expanded my voice and deepened my connection to this community. This year, ADT expanded its impact by bringing back two Maui-born dancers and choreographers, Hiroki Ichinose and Madi McGain—both of whom I grew up training with at Maui Academy of Performing Arts and who left the island to pursue professional careers. Through ADT's programming, they were able to return to Maui as paid professional dancers and choreographers, sharing their experience and artistry with our community. Opportunities like this are a direct result of county support and represent a meaningful step toward creating a sustainable future for local artists.

Opportunities for paid, professional dance work on Maui are rare. ADT is one of the only organizations creating sustainable pathways for local artists—not just as performers, but as educators and choreographers.

This funding directly supports Maui's artists and strengthens our island's cultural ecosystem. Hiroki Ichinose, Madi McGain and Myself are examples of what is possible when local artists are invested in.

Please support this funding and help ensure that Maui artists can continue to live and work in the place we call home.

Mahalo for your time and consideration.

Katie Whiticar

Dancer, Choreographer with ADT

Teacher at Momentum Dance Maui

B.A. Dance, CSULB

### **Travis Liggett**

Location:

Submitted At: 1:08pm 04-16-26

Aloha Chair and Budget Committee Members,

I am writing with a new proposed amendment that advances a simple, integrated strategy to wastewater compliance: stop investing in litigation of the Lahaina WWRF NPDES matter by accepting a real nature-based compliance solution, accelerate County UV disinfection infrastructure, and reserve public funds for core municipal obligations.

First, it shifts the County from NPDES litigation to implementation at the Lahaina WWRF with a home-grown, native stream limu-based nutrient polishing solution. Rather than continuing to expend funds contesting the hard-won effluent quality improvements of the 2020 SCOTUS decision, the amendment supports a structured, performance-based compliance pathway that preserves all existing Total Nitrogen limits and achieves them through phased, verifiable deployment. A two-page filing accepts the plan if DOH does.

Second, it recognizes that the Ma'alaea Regional Wastewater Reclamation System is better suited to private philanthropic delivery rather than public capital allocation. Kai Action Institute 501(c)(3) is specifically structured to complete that project through non-taxpayer funding, allowing the County to prioritize immediate compliance infrastructure.

Third, it redirects those funds to accelerate CBS-1169, expanding Maui North Shore UV disinfection capacity at a municipal scale and advancing R-1 effluent standards that directly protect public health and nearshore waters.

In short, the amendment realigns wastewater spending to stop waste on litigation, invests in proven municipal disinfection, and enables philanthropic delivery of non-municipal projects, setting a path to compliance, cost control, human health and environmental protection in a single, defensible approach.

Respectfully submitted,

Travis A. Liggett, M.S.

+1 (808) 291-9934

travis.liggett@gmail.com

### **Guest User**

Location:

Submitted At: 12:12pm 04-16-26

Aloha,

I am a 2025 FAM graduate and I am not exaggerating when I say FAM changed my life. The value of this program for not only myself but the community, is something I can't quantify. The resources, knowledge, connections, and opportunities that this program creates are immeasurable. I am so grateful for its existence, for the leadership of it, and all of the participants—from mentors to students. It's truly one of the most enriching experiences I've had and has connected me to the land and people of Maui in a profound way. It is such a necessary program for our community and the fact that it is free makes it accessible to all. Learning about how to steward and care for the land is something that should be communal and available to everyone. My hope is that FAM is used as a model for other programs in the future on how we can come together and learn from one another for the betterment of our island. The \_ina needs sustainably focused caretakers now more than ever, and most of us didn't grow up learning these ways. It is vital to the perpetuation of this knowledge that it remain accessible without barriers like high costs or exclusivity. Farming is a labor of love, it's hard to get started and it's hard to stay motivated. In my experience, if you are going to work with/for the land your heart has to be in it . Often that passion requires ignition and inspiration, which is exactly what FAM does. It also provides a network of real-life growers to reach out to when that motivation wavers or you need guidance on next steps. Farming is an industry that thrives when we support one another and share collectively. I hope FAM receives even more funding than it has in the past so we can all continue to GROW.

Mahalo,  
Kelly Donnelly

### **Guest User**

Location:

Submitted At: 12:03pm 04-16-26

To Maui County Council Budget, Finance and Economic Development Committee

From Ha'iku Community Association

Request to include Ha'iku Stream Monitoring Program to FY 2027 Budget

Aloha BFED Chair Sugimura, Vice Chair Batangan and Committee Members

Ha'iku Community Association appreciates the Committee's consideration to include a \$40,000 line item to support our continuing Ha'iku-Huelo stream monitoring work in the 2027 budget. We also raise an additional \$20 to 25K in cash donations from community donors as well as over \$20,000 of "in-kind" donations to support this program. It provides a great level of service for a moderate county investment.

We are in our 3rd year of data gathering and our goal is to have at least 5 years of continuous data. FY 2027 would be the 4th year.

It is important to understand that our weekly testing program also supports other research efforts being conducted by UH Manoa Water Resources Research Center, Maui Nui Marine Resources Council and State DLNR Division of Aquatic Resources. ("DAR".) HCA provides the "boots on the ground" for others who only visit the Ha'iku-Huelo area infrequently.

Main reasons for continuing support of the program:

**WATER QUALITY UPDATES FOR RECREATIONAL STREAM USERS:** HCA program provides science based data to guide recreational users of popular Huelo streams, including Ho'olawa Stream ("twin falls") Maui's most visited natural stream recreation area (over 1,000 visitors a day in peak season). Regular updates and interactive map: <https://www.haikumai.org/haiku-water-quality/>

**COMMUNITY HEALTH & SAFETY:** HCA program provides lab facilities in Huelo to test for fecal bacterial contamination (E Coli and enterococcus). These types of tests require a lab. UH Maui lab only analyses fecal bacteria data 1 day a month and is a long drive from many east Maui communities. Samples need to be analyzed on the day they are collected- making testing in the east Maui communities very challenging. Much of Haiku and Huelo and beyond has no public water supply and depends upon stream water for domestic uses

**STRATEGIC PARTNERSHIPS:** HCA program provides important data and partnership opportunities to UH, Maui Nui Marine Resource Council and State agencies to help understand our east Maui watershed- source of most of Upcountry Maui's water supply. HCA is testing streams during and after storm events, which is difficult for other agencies to do.

**FLOOD MONITORING:** HCA stream program partnered with DAR and UH Manoa in 2025 to install a simple stream flow monitoring gauge and stream level measurement on Ho'olawa stream- the first flow gauge on that important stream in over 40 years. Hundreds of people live along Ho'olawa stream and early warning of rising water levels is a key public safety factor.

**BASELINE DATA FOR CWRM (State Water Commission) and EMCWA:** HCA's programs focus on testing streams in East Maui Lease area that the East Maui Community Water Authority is seeking to manage. HCA testing program is providing valuable base line data on stream health correlated to stream flow levels to help guide future EMCWA management decisions.

**SUPPORT FOR ADDITIONAL COMMUNITY MONITORING EFFORTS:** HCA produced a helpful guide to community water testing; "Know your Streams." HCA is partnering with County Sea Grant program and Paia Youth and Cultural Center to set up monitoring program for Pa'ia bay and Kailua Stream at popular Baldwin Beach park. First training on April 20, 2026. HCA is also offering testing opportunities to Honomanu stream kalo restoration efforts.

HCA has produced informative summaries of the first two years of stream data- in our "Stream Stories <https://drive.google.com/file/d/15YjrSEFjOXFzWJDsCClymDnwR5NVHooQ/view>

Mahalo for your consideration of our efforts.

Lucienne de Naie

President, Ha'iku Community Association  
PO Box 1036, Ha'iku, HI 96708

### **Guest User**

Location:

Submitted At: 7:16pm 04-14-26

Enough is enough.

Maui residents are watching their government struggle to perform its most basic responsibilities while millions of dollars continue to flow out through grants, subsidies, and handouts to nonprofits, organizations, and special interests. Meanwhile the people who actually fund this government—the residents and taxpayers of Maui County—are left dealing with rising costs, failing infrastructure, crime, slow permitting, and departments that can barely keep up with their core duties.

Ask a simple question: when was the last time you saw an ordinary resident stand in front of the council asking for taxpayer money to pay their bills, tax-free? It doesn't happen. Working families on Maui handle their responsibilities every day without subsidies or special treatment. Yet government seems far more comfortable writing checks to organizations than fixing the systems it directly controls.

The county's responsibility is not to function as a grant-distribution agency. Its responsibility is to run the government—public safety, roads, drainage, permitting, planning, infrastructure, and the departments residents rely on every single day. Those systems should be functioning at a high level before taxpayer money is dispersed elsewhere.

At the same time, residents are being asked to trust leadership despite a record that raises serious concerns. We have seen leadership failures, rising public safety questions, and a government structure that often appears more

focused on messaging and programs than on competence and results. Accountability matters, and public officials should always be prepared to answer for the outcomes under their watch.

If Maui residents want things to change, the first step is showing up, paying attention, and demanding accountability. Government should serve the people of this island first—not political priorities, not press releases, and not a network of organizations funded by public money.

Support the departments you are responsible for. Fix the systems that are failing residents. Focus on competence and results.

And if leaders cannot do that, they should step aside and allow people who will.

### **Noelani Hessler**

Location:

Submitted At: 6:03pm 04-14-26

I am in support of the proposed fiscal year 2027 budget for the County of Maui (BFED-1) for the \$47,500 that goes towards supporting the Ka Ipu Kukui Fellowship Program. I am a Fellow of this 2026 fiscal year and have been so grateful for the subsidized support the County gives to this program so far. Being a part of the program and fellowship for me has really expanded my knowledge of the governance and inner workings of our County of Maui. I believe this program has been a great extended educational experience for me and I believe any young Maui professional resident could prosper in being a part of this program. It really is an educational program that has the power to broaden perspectives for a young future leader in our County of Maui. If anything this program deserves more funding for all that they do and accomplish in one year. Mahalo for your support and consideration in supporting the Ka Ipu Kukui Fellowship program in the Mayors fiscal year 2027 budget.

### **Guest User**

Location:

Submitted At: 8:29pm 04-11-26

We need funding for a Haiku Deep Monitor well with full testing for contaminants and continued funding for community stream water testing in Haiku-Huelo. We need to make sure that the water people are swimming and interacting with is safe. We can only know how safe the water is after each storm, each flood, and even regular flow, when the research teams have access to the tools and resources necessary. You can make a true investment in the current future safety of our citizens. I know some of you are up for reelection, so this is an opportunity to look really good on your track record if you can manage to do this simple thing. Xoxo gossip girl

### **Guest User**

Location:

Submitted At: 8:36am 04-10-26

I support stream testing in Ha\_ik\_-Huelo, including a deep monitoring well to test for salt, pesticides, and pollutants. Mahalo!

### **Guest User**

Location:

Submitted At: 8:44pm 04-09-26

Support stream testing in Ha\_ik\_-Huelo  
We need a deep monitoring well  
The well should test for salt, pesticides, and pollutants

### **Lauren Lipcon**

Location:

Submitted At: 12:12pm 04-09-26

Aloha Chair and Committee Members,

Access to clean and safe water—for both drinking and agriculture—must be our highest priority. Without water, there is no life, no farming, and no future for Maui.

We must take responsibility for our water systems, including the privately controlled ditch infrastructure. Currently, these systems are not being managed in a way that prioritizes our communities, our farmers, or our environment. Water is being wasted while streams that should be flowing remain depleted. Restoring natural stream flow is critical—not only for ecological balance, but for cultural integrity and long-term sustainability.

At the same time, we must invest in infrastructure that protects our communities during major storm events. Flooding has become increasingly dangerous. Programs that support residents living along streams—such as assistance with stabilizing and reinforcing streambanks—could significantly reduce risk and protect both lives and property.

Environmental protection must also be a funding priority. Invasive species are a direct threat to Maui's ecosystems and agriculture. Coconut Rhinoceros Beetle (CRB) control efforts must be strengthened, and the Maui Invasive Species Committee (MISC) needs increased funding to effectively combat the spread of coqui frogs and other invasive threats.

We must also address the growing needs of our houseless population with expanded, effective programs that provide real pathways to stability and support.

Finally, public trust depends on accountability. We need strong oversight to ensure that public funds are used appropriately and that systems—including law enforcement—operate with integrity and transparency. Our community must be able to trust that resources are being used to protect residents, not enable harm.

Maui's future depends on the decisions we make now. Water security, environmental protection, infrastructure resilience, and accountable governance must be prioritized.

Mahalo for your time and consideration.

**Guest User**

Location:

Submitted At: 10:31am 04-09-26

Please support stream testing in Haiku/Huelo.

**Guest User**

Location:

Submitted At: 10:25am 04-09-26

I'm a Haiku Resident and I would like to voice my support of the county continuing to fund stream water quality monitoring, as this is an important community service that is not being taken care of any other way. The streams, waterfalls, and recreational areas of East Maui are an extremely important economic driver for the county and state and thus should be prioritized and cared for.

Additionally, I support a careful and transparent process for exploring the Haiku area aquifer, including identifying funding for hydrogeologic testing, water quality testing, and development and ongoing monitoring and maintenance for deep monitoring wells in the Haiku aquifer.

**Guest User**

Location:

Submitted At: 9:12am 04-09-26

Please support continued funding for stream water testing in Haiku! We need information in aquifer health.

**Guest User**

Location:

Submitted At: 7:23pm 04-08-26

Council needs to support continued county funding for stream water testing in Ha'iku-Huelo area. It was left out of Mayors budget.

Council needs to make sure that Ha'iku has a deep Monitoring well to get as much information about the aquifer

health as possible.

Well needs to be designed to test for salt levels, pesticides and other pollutants because Ha'iku has a long history of pineapple growing and has no sewer system.

Current well proposal does not specify a deep monitor well, yet Ha'iku aquifer is seen as Maui's next major water source.

### Scott Werden

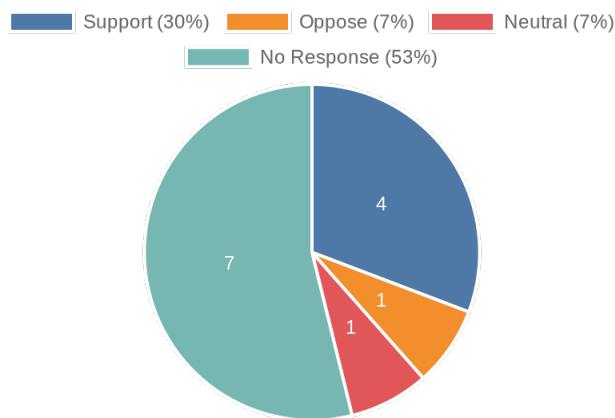
Location:

Submitted At: 6:23pm 04-08-26

Haiku is going to be a focus for potable water for central and south Maui but we need deep monitoring wells that tell us how thick the fresh water lens is. DWS needs to assess chlorides and lens thickness over time, Blindly drilling wells is a recipe for disaster. Also need to continue testing E Maui streams for water quality.

## Agenda Item: eComments for BFED-1 PROPOSED FISCAL YEAR 2027 BUDGET FOR THE COUNTY OF MAUI (BFED-1)

### Overall Sentiment



### BFED Committee

Location:

Submitted At: 5:48pm 04-16-26

Testimonies received from BFED Committee

### Guest User

Location:

Submitted At: 3:24pm 04-16-26

Aloha Council members,

My name is Mana Shaw-Rodriguez and I am the Director of Prevention and Education at Maui AIDS Foundation. I've been with MAF for the past 9 years. MAF serves all of Maui County through case management of our HIV positive clients, as well a preventative services

MAF is a one-stop-shop for health including STI testing, treatment, to harm reduction, syringe exchange, wound care, and housing assistance through our HOPWA program for our HIV+ clients.

I want to personally thank every one of you, for your continued support over the years. It's means so much to me, my agency and our clients. We are so grateful.

MAF provides free wrap around services to our Maui County community. Many clients may start in prevention services seeking free STI testing, then are referred to our insurance enrollment specialist for assistance for those uninsured, or while others are referred to client services with a warm hand off if clients are recently diagnosed, or already diagnosed with HIV for further support and care. Others may be referred to our provider on staff Dr. Chin, if clients are positive for STI's. All syringe exchange clients are referred to our testing department, as many are high risk for Hep-C and we can provide a gift card incentive for those that are high risk through our HERO program. We are all about keeping services accessible, free, and barrier-free.

MAF staff meets our clients where they are, make them feel comfortable, safe, supported and help individuals keep our communities healthy. I want to tell you about one of our most recent success stories in our syringe exchange program. For the last 8 months, a regular syringe exchange client who is unsheltered came to our office for clean needles, food and hygiene products. Since we built a rapport without judgment, they eventually came to us with one question we always hoped a client would ask: help getting into treatment. Within two days this individual was picked up from our office, and they were taken to treatment thanks to our amazing team. We made this person feel comfortable seeking our help, got them off the streets, and onto a path of recovery.

The work that we do is more critical than over. As of last Friday, MAF has been targeted in the federal budget proposed of a 529 million cut to eliminate HOPWA programs. Labeling our essential health services as "radical". This budget cut would negatively affect our clients living with HIV on our HOPWA program as more individuals would be homeless without funding.

Thank you for your time and your continued support for our agency. We couldn't have helped our Maui County community without your continued support.

Mahalo.

Mana Shaw-Rodriguez  
Director of Prevention

### **Guest User**

Location:

Submitted At: 12:24pm 04-16-26

Aloha Councilmembers,

I work as a nurse practitioner at Maui AIDS Foundation (MAF). I wanted to express my gratitude for, and speak in strong support of, continued County funding for our HIV and sexual health clinical services.

Thanks to your ongoing support, we are able to keep the one "free clinic" on island open and operating. We provide HIV prevention and care; STI treatment for syphilis, chlamydia and gonorrhea; and connections to other health and social services. Free PrEP (Pre-Exposure Prophylaxis) and free PEP (Post-Exposure Prophylaxis) have kept our agency's incidences of HIV at zero the past two years. Life-saving no-cost HIV medication samples have been in supply, which helped cover when patients experienced gaps in care or when they lost medications due to the fires and floods.

We serve individuals from all walks of life—but especially those who are non-insured, underinsured, and underserved. The people we serve often face multiple barriers to care, and your continued support helps break down those barriers. Including increasing capacity to add more clinical staff—earlier this year we were finally able to hire another nurse practitioner to join our team. Now we can develop new programs that target hepatitis treatment/vaccination, free women's health, wound care, and substance use disorder treatment.

Unfortunately, our agency recently learned that our federal housing funds for people living with HIV are in jeopardy—MAF was explicitly targeted in the White House's proposed fiscal year 2027 budget to lose this funding. Our housing program is a vital part of the wraparound services we offer to Maui County, along with case management, testing, needle exchange, outreach, food pantry, insurance navigation, and clinical services. Your support for our "free clinic" directly helps strengthen what we can do to keep Maui strong and healthy at a local level.

On behalf of our team at Maui AIDS Foundation, and the community members whose lives are directly impacted by this work, thank you for your partnership and trust. We are truly grateful.

-Bryan Chin, DNP, APRN, FNP-BC  
Wailuku, HI

**Guest User**

Location:

Submitted At: 12:41pm 04-15-26

Testimony Opposing Funding for the Ka Ipu Kukui Fellowship Program – FY2027 Budget (BFED-1)

I respectfully oppose the proposed \$47,500 allocation of County funds for the Ka Ipu Kukui Fellowship Program.

Maui County is currently facing serious and measurable problems that directly affect residents. Farmers are telling the Council they cannot even process the animals they raise because basic agricultural infrastructure is missing. Residents are struggling with housing where the median home price is roughly \$1.2 million while median household income is around \$100,000. The county continues to face major bottlenecks involving water infrastructure, permitting delays, and housing supply.

In that environment, every dollar of taxpayer funding should be focused on programs that produce direct, measurable benefits for the public. The Ka Ipu Kukui Fellowship Program is a selective leadership development initiative serving a small number of participants each year. While the experience may be valuable for fellows personally, the public has not been presented with clear evidence showing measurable improvements to housing supply, infrastructure capacity, agricultural production, or other core community needs.

There is also a reasonable question about public perception and transparency. The program's leadership includes individuals who have close relationships with current government leadership. When taxpayer funds are directed to a private fellowship program connected to people within the local political network, it raises legitimate questions about priorities and the appearance of favoritism, even if no rules are violated. Public funding decisions should be especially careful to avoid even the perception that insider networks benefit from taxpayer dollars.

Leadership development programs can and do exist across the country without taxpayer subsidy. If the fellowship program provides value to the private sector leaders and organizations involved, it should be able to sustain itself through private sponsorship, tuition, or philanthropic support rather than public funding.

At a time when the County of Maui is operating with a government budget approaching \$1.6 billion, residents reasonably expect public funds to be directed toward infrastructure, housing supply, agriculture, and essential services.

For these reasons I urge the Council to remove funding for the Ka Ipu Kukui Fellowship Program from the FY2027 budget and redirect those funds toward programs that deliver direct, measurable benefits to the people of Maui County.

Mahalo for the opportunity to testify.

Jolee Bindo, Waikapu Resident

**Guest User**

Location:

Submitted At: 2:03pm 04-13-26

Please add in Haiku Deep Monitor well with full testing for contaminants and continued funding for community stream water testing in Haiku-Huelo

**Guest User**

Location:

Submitted At: 5:22am 04-10-26

Please include a verification system to support ongoing stream testing in Ha\_ik\_-Huelo  
We need a deep monitoring well that should be tested for salt, pesticides, and pollutants and bacteria.

**Guest User**

Location:

Submitted At: 7:27pm 04-09-26

Please support the testing of streams in the Haiku-Huelo area with a deep monitoring well that tests for salt, pollutants and pesticides. Mahalo.

**Guest User**

Location:

Submitted At: 3:36pm 04-09-26

Support stream testing in Ha\_ik\_-Huelo  
We need a deep monitoring well  
The well should test for salt, pesticides, and pollutants

**Guest User**

Location:

Submitted At: 3:28pm 04-09-26

Support stream testing in Ha\_ik\_-Huelo  
We need a deep monitoring well  
The well should test for salt, pesticides, and pollutants

**Guest User**

Location:

Submitted At: 3:01pm 04-09-26

Haiku Community Plan requires water from Haiku be used first for all needs in Haiku. We need streams tested for the health of the streams and for Ag use. We need aquifer tested for the depth of lens. Do not assume rain soaks into the aquifer at this time...drought has hardened the land causing run off instead of absorption.

**Guest User**

Location:

Submitted At: 12:12pm 04-09-26

Support stream testing in Ha\_ik\_-Huelo  
We need a deep monitoring well  
The well should test for salt, pesticides, and pollutants

**Guest User**

Location:

Submitted At: 11:40am 04-09-26

Support stream testing in Ha\_ik\_-Huelo  
We need a deep monitoring well  
The well should test for salt, pesticides, and pollutants

**Guest User**

Location:

Submitted At: 7:49am 04-09-26

Regarding CBS 7885 it is essential to understand the amount of water that maybe available to the DWS from wells in east Maui. Stream testing should be restored to the Mayor's budget and any well that the DWS drills in the region must be deep enough to serve as a monitoring well. 150 years of intensive agriculture may have poisoned the fresh water aquifer. Before we can count on it the water potential must be understood on a volume and condition of the precious liquid

## WRITTEN TESTIMONY

April 16, 2026

Aloha Chair and Budget Committee Members,

I am writing with a proposed amendment that advances a simple, integrated strategy to wastewater compliance: stop investing in litigation of the Lahaina WWRF NPDES matter by accepting a real nature-based compliance solution, accelerate County UV disinfection infrastructure, and reserve public funds for core municipal obligations.

First, it shifts the County from NPDES litigation to implementation at the Lahaina WWRF with a home-grown, native stream limu-based nutrient polishing solution. Rather than continuing to expend funds contesting the hard-won effluent quality improvements of the 2020 SCOTUS decision, the amendment supports a structured, performance-based compliance pathway that preserves all existing Total Nitrogen limits and achieves them through phased, verifiable deployment. A two-page filing accepts the plan if DOH does.

Second, it recognizes that the Ma‘alaea Regional Wastewater Reclamation System is better suited to private philanthropic delivery rather than public capital allocation. Kai Action Institute 501(c)(3) is specifically structured to complete that project through non-taxpayer funding, allowing the County to prioritize immediate compliance infrastructure.

Third, it redirects those funds to accelerate CBS-1169, expanding Maui North Shore UV disinfection capacity at a municipal scale and advancing R-1 effluent standards that directly protect public health and nearshore waters.

In short, the amendment realigns wastewater spending to stop waste on litigation, invests in proven municipal disinfection, and enables philanthropic delivery of non-municipal projects, setting a path to compliance, cost control, human health and environmental protection in a single, defensible approach.

Respectfully submitted,

Travis A. Liggett, M.S.  
+1 (808) 291-9934  
travis.liggett@gmail.com

## **Proposed UV Disinfection Acceleration and Lahaina NPDES Resolution Amendment**

**De-appropriation.** All unencumbered and unexpended funds, estimated at \$250,000, previously budgeted or allocated for legal services and related costs for the Lahaina Wastewater Reclamation Facility NPDES contested case before the Hawai'i Department of Health are hereby de-appropriated and lapsed.

**Re-appropriation to CBS-1169.** The sum of \$1,500,000 is hereby appropriated to the Department of Environmental Management, Wastewater Reclamation Division's CBS-1169 (Kahului Wastewater Reclamation Facility UV Disinfection Expansion), consisting of: (i) \$250,000 from subsection (1); and (ii) \$1,250,000 re-appropriated from funds previously budgeted for the Ma'alaea Regional Wastewater Reclamation System (MRWRS) associated with Ma'alaea Village Association (MVA). Funds shall be used to accelerate design, permitting, and implementation necessary to achieve R-1 effluent standards.

**Funding Restriction.** No County funds shall be expended in FY2027 for continuation or support of the Lahaina WWRF contested case unless subsequently authorized by Council.

**Consistency with Resolution No. 25-121.** The Council reaffirms that special counsel was retained for matters arising from the permitting process and associated legal challenges. In light of the availability of a technically supported compliance pathway, continued expenditure of funds on contested litigation shall be evaluated against the Council's duty to minimize legal costs while achieving permit compliance.

**Lahaina Limu PRCAF Direction.** The Council finds that a Phased Regulatory Compliance Attainment Framework (PRCAF), utilizing limu-based algae nutrient polishing, provides a technically supported, performance-referenced compliance pathway based on phased validation, pilot demonstration, and measured performance verification that preserves the Total Nitrogen (TN) effluent limits established under NPDES Permit No. HI 0021848 while enabling phased implementation consistent with recognized compliance schedule mechanisms under 40 C.F.R. §122.47 and EPA NPDES Permit Writers' Manual guidance, and directs the Administration to pursue this approach, and to evaluate whether continuation of the contested case remains necessary given the availability of a technically plausible compliance pathway capable of achieving the permit's TN mass limits without modification of those limits, in coordination with the Hawai'i Department of Health, with appropriate action by the Maui County Department of the Corporation Counsel to foster innovation to enhance effluent quality before ocean discharge. The Council further recognizes that this phased compliance framework reflects technical evidence developed for the administrative record in DOH Docket No. 2025-NPDES-2, including milestone-based implementation, monitoring, and verification structures consistent with 40 C.F.R. §122.47. Nothing herein shall be construed as an admission regarding the validity, feasibility, or enforceability of the contested permit conditions, but rather as a policy direction to prioritize a compliance-based resolution pathway. The Department of the Corporation Counsel is authorized to take all actions necessary to implement this direction, including filings before the Department of Health consistent with this policy.

**County of Maui  
Fiscal Year 2026-2031 Capital Improvement Program**

CBS No: CBS-1169

Project Name: Wailuku-Kahului Wastewater Reclamation Facility (WWRF)  
Upgrade to R-1

Department: Department of Environmental Management

District: Wailuku-Kahului

Project Type: Sewer

Anticipated Life: 30 years



Prior Years	Appr	Ensuing	Subsequent Years					Total
Expend/Encb	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	6-Year
0	0	0	0	1,800,000	0	18,000,000	0	19,800,000

**PROJECT DESCRIPTION**

Design, permitting and construction to modify the Wailuku-Kahului Wastewater Reclamation Facility to produce a R-1 quality reclaimed water for the Wailuku-Kahului service area. This includes construction of ultraviolet disinfection basins, on-site storage, a pump station and all related piping and electrical to connect to the proposed force main.

**PROJECT JUSTIFICATION**

Use of reclaimed water will result in the conservation of potable water resources, preservation of brackish water resources and reduction of treated effluent discharged into injection wells.

**STRATEGIC PLAN ALIGNMENT**

Department's Strategic Plan

Countywide Priority Results

Sustain Reliable Wastewater Infrastructure  
Ensure Facilities Meet Future Needs  
Provide Reliable Wastewater Service

A Suitable Public Infrastructure  
A Strong, Diversified Economy  
An Efficient, Effective, and Responsive Government  
A Prepared, Safe, and Liveable County  
A Healthy and Sustainable Community

**Operating Impact Narrative**

Addition of this treatment capability will require an additional position to manage the system, and extra costs for electricity and materials to operate the disinfection system and pumps.

**FUNDING DETAILS**

Phase Description	Fund Code	Appr	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Design	OG	0	0	0	1,800,000	0	0	0
New Construction	GB	0	0	0	0	0	18,000,000	0

**Schedule of Activities**

Activity	Start	End	Amount
Design	09/01/2027	12/31/2030	1,800,000
New Construction	09/01/2029	12/31/2030	18,000,000
Total Capital Project Costs			19,800,000
Total O&M Costs			0
Total Capital & Operating Costs			19,800,000

**Methods of Financing (Ensuing + 5 Years)**

Funding Source	Amount
General Obligation Fund	18,000,000
Other Grant Fund	1,800,000
Total Funding Requirements	19,800,000

Submitted by Petitioner:  
DEPARTMENT OF THE CORPORATION COUNSEL  
County of Maui  
200 S. High Street  
Wailuku, Hawai'i 96793  
Attorneys for Petitioner  
COUNTY OF MAUI

DEPARTMENT OF HEALTH  
STATE OF HAWAI'I  
HEARINGS OFFICE

County of Maui et al.,	)	
Petitioners,	)	DOH Docket
	)	No. 2025-NPDES-2
v.	)	
	)	
Department of Health, State of Hawai'i,	)	
Respondent.	)	
_____	)	

**PETITIONER COUNTY OF MAUI'S NOTICE OF WITHDRAWAL**

Petitioner County of Maui, by and through its counsel, hereby provides notice of withdrawal of this contested case proceeding.

The County initiated this contested case to challenge the feasibility and implementation of Total Nitrogen ("TN") effluent limitations established under NPDES Permit No. HI 0021848. Those limitations require substantial reductions in nitrogen discharge, on the order of approximately ninety pounds per day relative to historical loading conditions.

Since initiation of this proceeding, the County has evaluated additional technical information regarding potential compliance pathways. That evaluation now includes consideration of a performance-referenced, phased implementation framework utilizing nutrient polishing technologies capable of achieving TN mass reduction through staged deployment, monitoring, and verification.

This type of phased compliance approach is consistent with established NPDES permitting practice, including the use of compliance schedules tied to

engineering, permitting, construction, and operational milestones where immediate attainment is not feasible.

Based on this updated posture, the County has determined that continued litigation regarding the TN limits is no longer necessary to preserve its interests, provided that a reasonable and technically grounded pathway to compliance has been identified and supported by evidence in the administrative record, subject to phased validation and performance verification.

Accordingly, the County hereby withdraws its request for contested case relief, without prejudice, and respectfully notifies the Hearings Officer that it intends to pursue compliance with the permit through administrative coordination and implementation planning rather than continued adjudication. This withdrawal shall take effect upon adoption and execution of the County of Maui Fiscal Year 2027 budget incorporating Council direction for a performance-referenced compliance pathway for the Lahaina WWRF NPDES matter, or on July 1, 2026, whichever occurs later, unless earlier accepted or acted upon by the Hearings Officer.

This withdrawal is made without admission as to the validity, feasibility, or enforceability of the contested permit conditions, and without waiver of any rights the County may have in future proceedings.

The County further notes that implementation of a phased compliance pathway will require coordination with the Department of Health and may involve subsequent permitting, approvals, or administrative actions consistent with applicable law.

DATED: \_\_\_\_\_

Respectfully submitted,

DEPARTMENT OF THE CORPORATION COUNSEL  
County of Maui

By: \_\_\_\_\_

Name:

Title: Deputy Corporation Counsel

Attorneys for Petitioner

COUNTY OF MAUI

Submitted by Movant:  
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DEPARTMENT OF HEALTH  
STATE OF HAWAI‘I  
HEARINGS OFFICE

County of Maui et al.,	)	
Petitioners,	)	DOH Docket No. 2025-NPDES-2
	)	
v.	)	Discovery complete and expert
	)	reports due:
	)	May 27, 2026
	)	
Department of Health, State of Hawai‘i,	)	Contested Case Hearing:
Respondent.	)	July 20 - 31, 2026
_____		

**MOTION TO ENTER TECHNICAL EVIDENCE REGARDING A PROPOSED NPDES PHASED REGULATORY COMPLIANCE ATTAINMENT FRAMEWORK (PRCAF)**

I. INTRODUCTION

The Lahaina Wastewater Reclamation Facility discharges treated effluent that travels through groundwater to Maui's nearshore coastal waters, which have experienced documented ecological degradation attributable in part to elevated nutrient loading. The current NPDES permit establishes Total Nitrogen ("TN") mass limits requiring reductions of approximately 87–92% relative to current operating conditions, reductions that cannot be achieved instantaneously through existing infrastructure.

Travis A. Liggett, M.S., President of Kai Action Institute ("Movant"), respectfully requests that the Hearings Officer incorporate into the record a proposed Phased Regulatory Compliance Attainment Framework (PRCAF) providing technical evidence relevant to potential compliance pathways for the Total Nitrogen ("TN") mass discharge limits imposed under the Lahaina Wastewater Reclamation Facility NPDES permit. Movant is not a named party to this contested case proceeding and submits this motion to provide technical evidence relevant to potential compliance pathways for the Hearings Officer's consideration under Hawai'i Administrative Rules §11-1-37. Movant submits this motion to enter technical evidence into the record and requests that the

Hearings Officer consider this filing as evidence concerning potential compliance mechanisms, consistent with Hawai'i Administrative Rules §11-1-37 and the Hearings Officer's procedural authority.

The current NPDES permit establishes Total Nitrogen (“TN”) mass limits of 8.25 lb/day (annual average) and 13.51 lb/day (daily maximum); compared to current TN loading on the order of 105 lb/day, attaining these limits requires on the order of 90–97 lb/day of TN mass reduction (approximately 87–92%, depending on the applicable averaging period) (Appendix A, items 3–4). Achieving these reductions using existing wastewater treatment infrastructure may present significant technical and implementation challenges.

However, a technically plausible pathway exists through the phased development and deployment of an Attached Algal Treatment System (“ATS”), also referred to herein as a limu nutrient polishing system, utilizing native Hawai'i freshwater benthic macroalgae (“limu”) cultivated in engineered streambed flowways (see Appendix A).

Accordingly, Movant requests that the Hearings Officer allow evidence regarding a structured seven-year Phased Regulatory Compliance Attainment Framework (PRCAF) to be entered into the administrative record and consider adoption of such a schedule as a potential compliance framework for achieving the permit's TN mass limits by developing emerging systems that harness native limu species to scale nature's existing solution to polishing excess nutrients from fresh surface waters in the local ecosystem.

## II. FACTUAL BACKGROUND

1. Recent operating data summarized in Appendix A indicate approximately 105 lb/day of total nitrogen (TN) discharge from the Lahaina Wastewater Reclamation Facility. (See Appendix A, item 4.) The referenced loading value reflects recent operating data summarized in Appendix A and will be confirmed through updated monitoring during the Year 1 validation phase.
2. The current NPDES permit establishes an annual average TN mass limit of 8.25 lb/day and a daily maximum TN mass limit of 13.51 lb/day. (See Appendix A, item 3.)

3. Based on the foregoing, the order-of-magnitude TN mass reduction required is approximately 90–97 lb/day, depending on whether the applicable compliance basis is the permit’s daily maximum (13.51 lb/day) or annual average (8.25 lb/day) mass limit. (See Appendix A, items 3–4.)
4. Attached Algal Treatment Systems (ATS) remove dissolved nitrogen primarily through assimilation into algal biomass during photosynthetic growth; periodic harvesting exports the assimilated nitrogen from the treatment system and can support beneficial reuse pathways for harvested biomass. (See Appendix A, items 8–9 and 20.)
5. Preliminary conceptual modeling suggests that an attached algal treatment system on the order of approximately ten acres may be capable of removing roughly 90 pounds of nitrogen per day under Maui climatic conditions through algal assimilation and biomass harvesting; actual performance and required footprint are site-specific and must be verified through pilot operation and measured productivity under Lahaina WWRF effluent conditions. (See Appendix A, items 15–17 and 23.)
6. Based on the operational precedent, pilot demonstration evidence, and preliminary modeling summarized in Appendix A, ATS nutrient polishing constitutes a technically plausible pathway to reduce Lahaina WWRF TN mass loading to within the permit's TN mass limits, subject to the phased verification steps and adaptive management measures described below. (See Appendix A, items 12–17 and 23.)

### III. LEGAL BASIS

Movant proposes the following structured seven-year Phased Regulatory Compliance Attainment Framework (PRCAF) for achieving the TN daily mass limit through staged implementation of an attached limu nutrient polishing system. For clarity, “TN mass load” in this proposal means TN concentration multiplied by daily effluent flow, expressed in lb/day, and calculated using the equation set forth in Milestone 3; “required TN mass reduction” means the difference between the confirmed baseline TN mass load (to be established using updated monitoring data in Year 1) and the applicable permit TN mass limit(s).

Hearings officers in administrative contested cases may consider procedural motions and supporting technical evidence relating to compliance mechanisms, and possess authority to consider phased compliance frameworks when immediate attainment of regulatory limits requires the construction of treatment infrastructure or the development of emerging technologies. These rules authorize motions practice in contested cases before the Department of Health, including requests for procedural relief and schedule adjustments. See Hawai‘i Administrative Rules §11-1-37 (Motions) and §11-1-28 (Filing of Documents).

Hawai‘i Administrative Rules §11-1-37(a) provides that motions (other than those made during a hearing) “shall be made in writing” and “shall state the relief sought”; Hawai‘i Administrative Rules §11-1-28(f) provides that “[a]ll documents filed afterwards shall contain a certification by the party filing the document that a copy was served on the opposing party.” This motion is submitted and served consistent with those requirements.

40 CFR §122.47 authorizes the inclusion of schedules of compliance in NPDES permits where appropriate. Such schedules must require compliance as soon as possible and, where they extend beyond one year, include interim requirements and reporting. The proposed seven-year staged structure is presented as consistent with these regulatory criteria, including the use of defined interim milestones and periodic reporting. See 40 CFR §122.47(a)(1), (a)(3)–(4).

Federal guidance and permit precedent recognize that such schedules may include project development phases, construction milestones, monitoring programs, and final compliance deadlines.

Within this contested case, the Hearings Officer retains authority to consider and admit structured compliance pathway evidence into the administrative record for purposes of evaluating compliance mechanisms and the evidentiary basis presented by the parties. These authorities permit the Hearings Officer to consider evidence describing technically feasible pathways for achieving permit limits when evaluating the adequacy of compliance mechanisms within the administrative record.

Administrative precedent under the National Pollutant Discharge Elimination System recognizes that where compliance requires the design, permitting, construction, and startup of treatment infrastructure, a Phased Regulatory Compliance Attainment Framework (PRCAF) tied to engineering and permitting milestones may be appropriately incorporated into permits, provided that the schedule represents the shortest reasonable time necessary to achieve compliance while maintaining measurable interim progress toward the final effluent limitation.

Guidance documents used by NPDES permit writers describe circumstances in which Phased Regulatory Compliance Attainment Frameworks may be incorporated into permits, and may include sequential milestones for planning, permitting, construction, and operational startup where immediate compliance is not feasible, provided that the schedule ensures steady progress toward attainment of the final effluent limitation. See U.S. Environmental Protection Agency, NPDES Permit Writers' Manual, EPA-833-K-10-001 (2010), Chapter 9. PRCAFs in NPDES permits are authorized under 40 CFR §122.47, which allows phased schedules where infrastructure development is required to meet final effluent limitations.

This principle is particularly relevant here, where the TN mass limits imposed by the permit represent a level of nutrient reduction not previously required at this facility and therefore necessitate the development, demonstration, and scaling of treatment approaches that have not previously been implemented under comparable operating conditions.

The proposed phased schedule reflects the practical timeline associated with permitting, engineering design, construction, and operational startup of wastewater treatment infrastructure. The schedule anticipates completion of the limu nutrient polishing system by approximately Year 6, with a final verification year to confirm sustained compliance with the TN mass limit.

This motion seeks admission of the attached phased schedule and supporting technical summary into the contested case record as evidence to inform the Hearings Officer's evaluation of potential compliance mechanisms; it requests that the Officer

consider a viable PRCAF as an alternative to any waiver or exemption from the applicable TN effluent limitations that may be requested by the County of Maui.

Admission of this evidence will not prejudice any party's due process rights, and all parties retain the opportunity to respond, submit contrary evidence, and cross-examine experts through the contested case process.

This motion seeks admission of technical evidence relevant to compliance feasibility; it does not seek to predetermine the outcome of the permit proceeding, relax the permit's numeric TN limits, or modify permit stringency in any respect.

#### IV. RESPONSE TO ANTICIPATED OBJECTIONS

The County or other parties may argue that emerging technologies cannot be considered absent demonstrated full-scale implementation, or that adoption of a phased implementation framework is premature at this stage of the proceeding. Neither objection withstands scrutiny.

First, this motion does not ask the Hearings Officer to find that ATS technology will achieve the permit's TN limits. The motion asks only that evidence describing a technically plausible Phased Regulatory Compliance Attainment Framework (PRCAF) be admitted into the record. Admission of evidence is not adoption of a result. The phased structure of the proposed milestone-based implementation program is specifically designed to require measured pilot performance before any expansion commitment is made, ensuring that full-scale deployment occurs only if and when site-specific validation supports it.

Second, NPDES phased implementation frameworks routinely incorporate technologies that have not yet been deployed at full scale at the specific facility in question. 40 CFR §122.47 authorizes staged attainment pathways precisely because meeting permit limits sometimes requires the design, permitting, construction, and startup of infrastructure that does not yet exist at the facility. Requiring prior full-scale demonstration as a precondition for considering any phased infrastructure deployment program would render the regulatory mechanism meaningless in the exact circumstances it was designed to address.

Third, the ATS technology proposed here is not experimental. Utility-scale ATS facilities have operated continuously for more than a decade in Indian River County, Florida, with documented nutrient removal performance. The technology has been reviewed and designated a Best Management Practice by the State of Maryland. The question before the Hearings Officer is not whether ATS works in principle, as operational data confirm that it does, but whether a phased, pilot-validated incremental attainment framework at this specific facility constitutes a reasonable evidentiary basis for evaluating compliance mechanisms. This motion provides exactly that foundation.

Fourth, the proposed phased implementation framework is not a request for leniency. It does not seek to modify, waive, or reduce the permit's numeric TN limits in any respect. It seeks only a structured timeline for achieving those limits through infrastructure that requires time to design, permit, and build, consistent with the framework Congress authorized in the Clean Water Act and that EPA implemented through 40 CFR §122.47.

Fifth, the Hearings Officer need not resolve the ultimate question of whether ATS will achieve full compliance in order to admit this evidence. The standard for admission is plausibility and relevance, not certainty. The operational record, pilot data, and preliminary engineering modeling submitted herewith satisfy that standard. All parties retain full due process rights to challenge, rebut, or present contrary evidence through the contested case process. Admission of this evidence prejudices no one and forecloses nothing.

## V. PROPOSED PHASED REGULATORY COMPLIANCE ATTAINMENT FRAMEWORK

This proposal is presented as a potential Phased Regulatory Compliance Attainment Framework (PRCAF) for evidentiary consideration and does not preclude evaluation of alternative treatment technologies; Movant further invites the Department of Health to consider adoption of the Phased Regulatory Compliance Attainment Framework (PRCAF) described herein as a potential administrative model or guidance approach for evaluating staged nutrient-reduction compliance pathways in comparable NPDES permitting contexts.

The schedule reflects the practical engineering and regulatory timeline associated with wastewater treatment infrastructure, including approximately eighteen (18) months of permitting and design review for major construction phases consistent with typical wastewater infrastructure timelines; to maintain alignment with 40 CFR §122.47(a)(3), the interim milestone dates below are structured on a one-year cadence, and where any interim requirement is not readily divisible into stages within a year, progress reporting will be provided during that interval. (See 40 CFR §122.47(a)(3)(ii)–(4).) Permitting and engineering for subsequent expansion phases proceed in parallel with construction and operation of earlier phases to ensure continuous progress toward compliance.

This motion and proposed schedule do not present capital cost, operating cost, lifecycle cost, or funding-pathway analyses; those economic elements will need to be developed and supported with sourceable documentation during the proposed phased program shown in Table 1, and prior to any final decision on full-scale implementation.

#### Year 1: System Validation and Preliminary Engineering

- Confirm the magnitude of the TN mass reduction gap using available monitoring data
- Develop conceptual engineering design for an attached macroalgal polishing system
- Initiate pilot system design and environmental review
- Begin permitting and regulatory consultation for pilot installation
- Define and document the baseline TN mass load period, data source(s), and analytical method(s) used for TN and flow measurements, so that all milestone calculations are reproducible and traceable to underlying data
- Identify the permitting and approval pathway for pilot installation and subsequent expansions (including any environmental review requirements and any NPDES permit modification or other authorizations needed to construct and operate the ATS modules)

**Table 1. Proposed Phased TN Compliance Schedule — Summary**

<b>Year</b>	<b>Primary Activities</b>	<b>Milestone</b>	<b>Performance Target</b>
Year 1	Confirm TN baseline; conceptual engineering design; initiate pilot permitting	Milestone 1: Preliminary engineering complete; formal permitting review initiated	Deliverable: Written engineering report demonstrating technically plausible compliance pathway
Year 2	Finalize pilot design; initiate pilot construction	Milestone 2: Pilot module installed; operational testing commenced	Deliverable: Certificate of pilot module installation
Year 3	Pilot operation; TN monitoring; begin Phase I permitting	Milestone 3: Measurable nitrogen mass reduction documented	Rolling 3-month average TN mass reduction demonstrated using EPA-approved methods
Year 4	Phase I expansion; biomass harvest procedures established	Milestone 4: 10% of required TN mass reduction sustained	10% of required reduction sustained for 6 consecutive months
Year 5	Phase II expansion; redundancy systems implemented	Milestone 5: 25% of required TN mass reduction sustained	25% of required reduction sustained for 6 consecutive months
Year 6	Major capacity expansion; monitoring automation	Milestone 6: 50% of required TN mass reduction sustained	50% of required reduction sustained for 6 consecutive months
Year 7	Full system completion; compliance verification	Milestone 7: Full permit compliance demonstrated	12 consecutive months of sustained compliance with TN daily mass limit

Milestone 1

Completion of a preliminary engineering report, submitted to the Department of Health, demonstrating a technically plausible pathway for closing the TN mass gap,

including identification of the proposed pilot installation site, estimated treatment footprint, and applicable permitting pathway.

### Year 2: Pilot Permitting and Construction Initiation

- Continue permitting and regulatory review for pilot deployment
- Finalize pilot engineering design and site integration
- Initiate construction of a pilot-scale limu polishing module
- Pilot module sized to treat approximately 1–5% of facility flow

### Milestone 2

Completion of pilot module installation, and commencement of operational testing with documented initiation of periodic TN influent and effluent monitoring.

### Year 3: Pilot Operation and Performance Verification

- Operate pilot polishing system using R-1 reuse water
- Conduct continuous periodic (daily or weekly) TN monitoring and performance reporting
- Begin engineering design and permitting for Phase I system expansion in parallel

### Milestone 3

Document measurable nitrogen mass reduction using rolling three-month averages. Pilot results will be used to evaluate scaling assumptions and to determine whether expansion phases remain technically justified. TN mass load (lb/day) shall be calculated using EPA-approved analytical methods as:

$$TN \text{ mass load (lb/day)} = TN \text{ concentration (mg/L)} \times flow \text{ (MGD)} \times 8.34$$

### Year 4: Expansion Phase I Deployment

- Construct initial expansion modules increasing macroalgal treatment surface area
- Establish biomass harvest and export procedures
- Continue monitoring and performance reporting

#### Milestone 4

Target achievement of approximately ten percent (10%) of the required TN mass reduction sustained for six consecutive months. Percentage reductions are measured relative to the “required TN mass reduction” defined above, using the baseline confirmed in Year 1 and the applicable permit TN mass limit(s).

#### Year 5: Expansion Phase II Deployment

- Expand polishing system capacity to a larger treatment footprint
- Implement redundancy and operational control systems
- Continue parallel permitting and engineering for full system build-out

#### Milestone 5

Target achievement of approximately twenty-five percent (25%) of required TN mass reduction sustained for six consecutive months. Percentage reductions are measured relative to the “required TN mass reduction” defined above, using the baseline confirmed in Year 1 and the applicable permit TN mass limit(s).

#### Year 6: Major Capacity Expansion

- Expand system capacity to a majority share of required nutrient removal
- Integrate monitoring automation and operational optimization

#### Milestone 6

Target achievement of approximately fifty percent (50%) of required TN mass reduction sustained for six consecutive months. Percentage reductions are measured relative to the “required TN mass reduction” defined above, using the baseline confirmed in Year 1 and the applicable permit TN mass limit(s).

#### Year 7: Compliance Verification and Operational Optimization

- Verify completion of full limu polishing system installation
- Provide engineer certification of installed treatment capacity
- Implement continuous periodic (daily or weekly) TN monitoring and verification of sustained compliance

## Milestone 7

Sustained demonstration of full compliance with the TN daily mass limit for twelve consecutive months following system completion. Target achievement and demonstration of compliance with the TN daily mass limit for twelve consecutive months, based on the permit's applicable averaging periods and using the TN mass-load calculation method stated above. (See Appendix A, item 3.)

## VI. INTERIM REPORTING STRUCTURE

The proposed schedule includes the following oversight mechanisms:

- Quarterly reporting to the Department of Health documenting (i) effluent TN concentration data, (ii) daily flow data, (iii) calculated TN mass loads (lb/day) with calculation shown, and (iv) rolling three-month averages used for milestone tracking;
- Written notice no later than 14 days following each annual milestone date stating compliance/noncompliance, consistent with 40 CFR §122.47(a)(4);
- Defined corrective-action triggers if milestone performance is not achieved, including identification of cause(s), proposed corrective actions, and a revised near-term workplan within sixty (60) days;
- Adaptive management authority allowing operational adjustments, modular reconfiguration, and design modifications, based on verified performance data (see Appendix A, items 17 and 19).

Movant acknowledges that ATS performance is sensitive to site-specific conditions, including flow, nutrient loading, solar irradiance, and operational management; pilot results may not scale linearly to full build-out. Accordingly, the phased schedule is structured to require measured performance verification before expansion and to maintain transparent reporting of both achievements and limitations. (See Appendix A, items 13, 16–17, and 23.)

## VII. BENEFITS OF THE PROPOSED APPROACH

Adoption of a Phased Regulatory Compliance Attainment Framework (PRCAF) will:

1. Establish a technically grounded pathway for achieving the Lahaina WWRF nitrogen mass limits through phased implementation of a limu nutrient polishing system. The proposed schedule anticipates achieving the required

nitrogen reduction by approximately Year 6, with the final year confirming sustained compliance under operational conditions.

2. Preserve the integrity of the TN limit while recognizing the engineering timeline for implementation.
3. Encourage evaluation of innovative nutrient-removal technologies aligned with Maui's ecological and cultural context.
4. Convert a portion of dissolved nitrogen pollution into harvestable algal biomass through assimilation and harvesting, with potential for beneficial reuse of biomass, while reducing TN discharge to nearshore waters. (See Appendix A, items 8, 20–21.)
5. Provide an enforceable, milestone-based framework for evaluating an emerging effluent nutrient-polishing technology as a potential compliance component, with performance verification and adaptive management before any full-scale build-out.
6. Provide an illustrative timeline for evaluating an emerging nutrient-polishing technology that has received research support from Sandia National Laboratories and other collaborators, with the potential to contribute constructively to the County of Maui's path to compliance with the applicable NPDES TN mass limits with a locally-tailored solution that leverages native limu species. This includes admitting into the record an expert-supported pathway for implementing emerging nutrient-removal technologies, currently under active research and evaluation by Kai Action Institute and collaborators.
7. The proposed framework provides an evidentiary pathway demonstrating a technically plausible method to achieve the permit's existing TN limits without modifying permit stringency. Nitrogen removal through biological assimilation and biomass harvesting permanently removes assimilated nitrogen mass from the treatment train, directly addressing mass-based permit limits. Admission of this pathway does not preclude consideration of alternative treatment technologies, but ensures the record contains at least one technically grounded compliance mechanism for the Hearings Officer's evaluation.

## VIII. REQUEST FOR RELIEF

For the foregoing reasons, Movant respectfully requests that the Hearings Officer:

1. Accept into the contested case record evidence describing the limu-based nutrient polishing framework and the associated proposed phased Total Nitrogen Phased Regulatory Compliance Attainment Framework (PRCAF) as potential compliance pathways for achieving the applicable TN discharge limits.
2. Permit the submission and inclusion of technical and expert evidence supporting the limu nutrient polishing framework and proposed Phased Regulatory Compliance Attainment Framework (PRCAF) as part of the evidentiary record in advance of the scheduled hearing.
3. Recognize the proposed Phased Regulatory Compliance Attainment Framework (PRCAF) as a technically plausible compliance pathway for purposes of evidentiary consideration within the administrative record.
4. Consider adoption of the proposed Phased Regulatory Compliance Attainment Framework (PRCAF) as a potential compliance pathway, without limiting the Hearings Officer's authority to evaluate alternative technologies, compliance mechanisms, or evidence presented in the record.

## REFERENCES

- [1] Wallerstein, Mike S. [Procedural Order \(Scheduling Order\), County of Maui et al. v. Department of Health, DOH Docket No. 2025-NPDES-2. Hawai'i Department of Health, Hearings Office.](#) October 31, 2025.
- [2] Wallerstein, Mike S. [Second Procedural Order, County of Maui et al. v. Department of Health, DOH Docket No. 2025-NPDES-2. Hawai'i Department of Health, Hearings Office.](#) February 4, 2026.
- [3] [Hawai'i Department of Health. Hawai'i Administrative Rules, Title 11, Chapter 1, §11-1-37 \(Motions\) and §11-1-28 \(Filing of Documents\).](#) Effective February 14, 2005.
- [4] Liggett, Travis A., M.S.; Calahan, Dean, PhD; Zivojnovich, Mark. [Proposal for a Lahaina Wastewater Reclamation Facility \(WWRF\) Native Limu Streambed Nutrient Polishing and Biomass Production System — 12-Month Collaborative Project. Prepared for Born and Raised Earth LLC.](#) October 8, 2025.
- [5] [A Proposed Application of Algal Turf Scrubbers to Polish Nutrient Pollution from R-1 Reuse Water in the Mā'alaea Regional Wastewater Reclamation System. Prepared for Sandia National Laboratories by Reef Power LLC, FY2024 Standard Purchase Order #2560924.](#) October 1, 2024.
- [6] [Attached Algal Treatment Systems as a Plausible Pathway for Total Nitrogen Compliance at the Lahaina Wastewater Reclamation Facility.](#) Zivojnovich, Mark, 2026.
- [7] [A Green Shield for Lahaina.](#) Calahan, Dean, PhD. 2026.
- [8] APPENDIX A - Technical Fact Sheet, Lahaina Wastewater Reclamation Facility NPDES Permit, Attached Algal Treatment System (ATS) Nutrient Polishing Solution, Phased Regulatory Compliance Attainment Framework (PRCAF)

## **APPENDIX A**

### Technical Fact Sheet

#### Lahaina Wastewater Reclamation Facility NPDES Permit Attached Algal Treatment System (ATS) Nutrient Polishing Solution Phased Regulatory Compliance Attainment Framework (PRCAF)

This fact sheet summarizes the regulatory requirements, engineering assumptions, and supporting evidence relevant to the proposed Attached Algal Treatment System (ATS) pathway for achieving Total Nitrogen compliance at the Lahaina Wastewater Reclamation Facility.

**Note on Modeling Uncertainty:** The nitrogen removal estimates presented herein, including the preliminary estimate of approximately 90 lb/day removal capacity from approximately ten acres of ATS treatment surface under Maui climatic conditions, represent conceptual engineering calculations based on operational data from comparable facilities. These estimates are not performance guarantees. The phased pilot structure described in this motion is specifically designed to verify performance under Lahaina-specific hydrologic, climatic, and operational conditions prior to any reliance on these estimates for compliance purposes.

#### **1. Facility:**

Lahaina Wastewater Reclamation Facility (Lahaina WWRF), Maui County, Hawai‘i

#### **2. Regulatory Framework:**

National Pollutant Discharge Elimination System (NPDES) permit issued by the Hawai‘i Department of Health, 2025

#### **3. Permit Total Nitrogen Daily Mass Discharge Limits:**

Annual Average TN Limit: 8.25 lb/day

Daily Maximum TN Limit: 13.51 lb/day

#### **4. Current Nitrogen Loading:**

Recent operating data indicate approximately 105 lb/day of total nitrogen discharge from the facility.

## **5. Required Nitrogen Reduction:**

Preliminary conceptual modeling suggests that an attached algal treatment system on the order of approximately ten acres may be capable of removing roughly 90 pounds of nitrogen per day under Maui climatic conditions.

## **6. Proposed Treatment Concept:**

Attached Algal Treatment System (ATS), also referred to as a limu nutrient polishing system, using native Hawai'i freshwater benthic macroalgae cultivated on engineered shallow flowways downstream of existing treatment processes.

## **7. Technology Classification:**

Attached Algal Treatment Systems are a form of nature-based wastewater polishing technology that removes nutrients through algal assimilation and biomass harvesting.

## **8. Nitrogen Removal Mechanism:**

Dissolved nitrogen is assimilated into algal biomass through photosynthetic growth. Periodic harvesting removes the biomass, permanently exporting the assimilated nitrogen from the treatment system.

## **9. System Configuration:**

Shallow engineered flowways supporting attached algal growth under continuous hydraulic loading and solar illumination. Hawai'i's high year-round solar irradiance supports continuous macroalgal productivity relative to temperate climates.

## **10. Typical Hydraulic Depth:**

Water depths of 1–3 inches flowing across gently sloped surfaces designed to promote algal attachment and growth

## **11. Primary Energy Source:**

Solar radiation drives algal photosynthesis, rather than mechanical aeration or high-pressure membrane processes.

**12. Operational Precedent:**

Utility-scale ATS facilities have operated for more than a decade in Indian River County, Florida. Published operational data from Indian River County ATS facilities include Egret Marsh ATS (approximately 10 MGD capacity, operating since 2010) and Osprey Marsh ATS (approximately 10 MGD capacity, operating since 2013).

**13. Observed Performance:**

Monitoring at the Osprey Marsh facility recorded mean effluent total nitrogen concentrations of approximately 0.775 mg/L during multi-year operation. Actual performance varied based on flow, nutrient loading, solar irradiance, and operational management.

**14. Pilot Demonstration Evidence:**

A recycle-mode ATS pilot operated from 2012–2014 achieved sustained effluent TN concentrations below 1 mg/L under continuous field conditions.

**15. Preliminary Lahaina System Modeling:**

Preliminary engineering modeling indicates that an ATS treatment surface of approximately ten acres under Maui climatic conditions could remove roughly 90 lb/day of nitrogen through algal assimilation and biomass harvesting. These modeling estimates represent conceptual engineering calculations and are not performance guarantees.

**16. Estimated Treatment Footprint:**

Approximately 10 acres of ATS treatment surface would be required for full-scale nitrogen removal. ATS systems are modular and scalable, allowing treatment surface area to expand incrementally as performance is verified.

**17. Implementation Strategy:**

Phased deployment will consist of pilot validation, initial modular installation, and expansion of treatment surface area based on verified performance.

**18. Phased Regulatory Compliance Attainment Framework (PRCAF):**

A seven-year Phased Regulatory Compliance Attainment Framework (PRCAF) is aligned with typical wastewater infrastructure timelines for engineering design, permitting, construction, and operational startup.

**19. Monitoring Method:**

Total nitrogen mass load is calculated as TN concentration multiplied by daily effluent flow using EPA-approved analytical methods, with performance tracking based on rolling three-month averages, per:

$$TN \text{ mass load (lb/day)} = TN \text{ concentration (mg/L)} \times \text{flow (MGD)} \times 8.34$$

**20. Biomass Management:**

Harvested algal biomass removed from the treatment system and available for beneficial reuses that may include, but are not limited to, compost, soil amendments, or other agricultural applications, or as a biomass stock for biofuel production. Periodic harvesting maintains algal growth rates and sustains nutrient uptake capacity.

**21. Environmental Benefit:**

Dissolved nutrient pollution in municipal effluent is converted into harvestable native freshwater stream limu biomass, while reducing nitrogen discharges into Maui nearshore waters.

**22. Engineering Rationale:**

ATS systems remove nutrients from effluent through direct biological assimilation and harvesting, rather than relying solely on microbial conversion pathways within conventional treatment reactors.

**23. Conclusion:**

Operational evidence from long-term ATS facilities and preliminary engineering modeling supports ATS nutrient polishing as a technically plausible pathway capable of addressing the ~90 lb/day nitrogen reduction required for NPDES permit compliance at the Lahaina WWRF in the context of a 7-year Phased Regulatory Compliance Attainment Framework (PRCAF). Actual performance will depend on site-

specific hydrologic, climatic, and operational conditions and may be verified through pilot testing and measured operational data.

### **CERTIFICATE OF SERVICE**

I certify that a true and correct copy of the foregoing Motion was served upon all parties of record in DOH Docket No. 2025-NPDES-2 by electronic mail on this date.

Service was made to the parties at the electronic service addresses designated in the applicable Procedural Order(s) for DOH Docket No. 2025-NPDES-2, and is intended to satisfy the certification requirements of Hawai'i Administrative Rules §11-1-28(f).

#### For the County of Maui

1. Brian A. Bilberry
2. Kristin Tarnstrom
3. Andrew Nelson
4. Parbatie Scott
5. Michele White

#### Courtesy counsel

1. Wendy Wang
2. Shawn Hagerty

#### For Sierra Club/Maui Tomorrow

1. David Henkin
2. Mahesh Cleveland
3. Julie Parks

#### For the Department of Health

1. Mike Wallerstein
2. Dale Sakata
3. Joanna Yeh

Respectfully submitted,

DATE: April 15, 2026

/s/ Travis A. Liggett, M.S.

Movant; President, Kai Action Institute 501(c)(3)

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**DEPARTMENT OF HEALTH**  
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**SECOND PROCEDURAL ORDER**

County of Maui et al., v. DOH

Docket No. 2025-NPDES-2

On February 2, 2026, I held a status conference to discuss changes to the schedule in this matter and to clarify discovery deadlines. Representatives from the County of Maui ("Maui"), Hawai'i Wildlife Fund, Sierra Club, Surfrider Foundation, and West Maui Preservation Association (together, "Community Complainants"), and the Department of Health attended. Maui, the Community Complainants, and the Department of Health are hereinafter referred to individually as "Party" and together as "the Parties." At the status conference, I was asked to move the hearing dates, and to clarify portions of the Procedural Order I issued on October 31, 2025 ("Procedural Order"). Based on these discussions, I set new dates and clarify the Procedural Order as follows.

**New Dates**

1. By stipulation of the Parties, the Hearing in this matter is rescheduled for July 20-31, 2026.
2. No later than May 27, 2026, each party shall serve on all other parties an expert report that complies with the Federal Rules of Civil Procedure Rule 26(a)(2) for each expert that the party intends to have testify in support of its case-in-chief.
3. Discovery, including all responses, shall be completed 60 days before the hearing begins, i.e., May 27, 2026.

**Clarifying the Procedural Order**

4. Numbered paragraph 3 of the Procedural Order states "Parties shall respond to document requests within 30 days after service of the request." To "respond" within the meaning of this paragraph, a party must either:
  - A. Produce the requested document(s) without objection;

B. Produce the requested documents(s) notwithstanding any stated objection(s); or

C. State clear and reasonable reasons for why the requested documents cannot be produced within the 30 day deadline, provide a specific date when the requested document(s) will be produced, with the last possible date being no later than 60 days before the hearing (i.e., May 27, 2026), and produce the requested document(s) by that specific date.

The only reasons the responding Party may refuse to produce the requested document(s) are: if the document(s) do(es) not exist; the responding party does not possess or control the requested document(s); or the objection to production asserts privilege. If the responding Party asserts privilege, it must provide a detailed privilege log that identifies each document withheld, briefly describes the contents of the document, states what privilege it falls under, including the legal basis for that privilege, and clearly explains why it is privileged from disclosure.

5. Numbered paragraph 10 of the Procedural Order states: “By stipulation of the parties, these dockets will be consolidated into a single contested case proceeding, which shall be docketed as 2025-NPDES-2.” The term “consolidation” in the preceding sentence means consolidation pursuant to Hawaii Administrative Rules (“HAR”) § 11-1-34.

Maui and the Community Complainants each separately sought a contested case proceeding related to NPDES Permit No. HI 0021848, that the Department of Health issued on August 29, 2025. I found that the issues in each proceeding to be closely related and consolidating those two proceedings into one will be conducive to the proper dispatch of business and to the ends of justice, and will not unduly delay or harm the proceedings. Upon that finding, and the Parties’ stipulation, I consolidated those two separate cases into one, pursuant to HAR § 11-1-34.

Once consolidated, the two individual cases ceased to exist. There is no need or possibility for the Community Complainants to intervene in Maui’s case challenging Permit, and vice versa. All claims challenging the Permit, -- both Maui’s and the Community Complainants’-- will be heard in the same consolidated proceeding, docketed as 2025-NPDES-2, County of Maui et al., v DOH. In this case there will be one record, one hearing, and one final order.

If this explanation affects any Party’s understanding of what factual and legal issues another Party intends to address, I encourage the Parties to work together to understand one another’s position, and make any stipulations they wish to help simplify the issues in this complex case.

//

In all other respects, the Procedural Order remains unchanged and in full effect.

DATED and SERVED: Honolulu, Hawaii, February 4, 2026.

A handwritten signature in black ink, appearing to read "Mike S. Wallerstein". The signature is fluid and cursive, with a long horizontal stroke at the end.

Mike S. Wallerstein  
Hearings Officer  
Department of Health  
State of Hawaii

## CERTIFICATE OF ELECTRONIC SERVICE

I certify that on February 4, 2026, I served a copy of the foregoing document, together with this Certificate of Electronic Service, by email, to all Parties to this proceeding, and to all other addresses as requested by the Parties, as follows:

### **For the County of Maui**

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### **For the Community Complainants**

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### **For the Department of Health**

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Joanna Yeh	<a href="mailto:joanna.yeh@hawaii.gov"><u>joanna.yeh@hawaii.gov</u></a>

DATED: Honolulu, Hawaii, February 4, 2026.



Mike S. Wallerstein  
Hearings Officer  
Department of Health  
State of Hawaii

## **Technical Brief**

### **Attached Algal Treatment Systems as a Plausible Pathway for Total Nitrogen Compliance at the Lahaina Wastewater Reclamation Facility**

#### **Prepared by:**

Mark Zivojnovich

HydroMentia Technologies, LLC

#### **1. Introduction**

The Lahaina Wastewater Reclamation Facility National Pollutant Discharge Elimination System (NPDES) permit establishes stringent Total Nitrogen (TN) discharge limits requiring substantial reductions relative to current loading conditions. Based on available information, the facility currently discharges approximately 105 pounds of nitrogen per day, while the permit establishes an annual average TN limit of 8.25 lb/day and a daily maximum of 13.51 lb/day at a design flow of 9.0 MGD.

Accordingly, compliance with the permit requires a reduction of approximately 90 lb/day of nitrogen mass loading.

HydroMentia Technologies and related development teams have been involved in the design, construction, and operation of attached algal treatment systems for more than three decades, including both pilot-scale and utility-scale facilities.

Achieving the Lahaina permit limits presents a significant technical challenge for conventional wastewater treatment technologies. Attached algal treatment systems or limu polishing system, commonly referred to as Algal Turf Scrubber (ATS) systems, represent an alternative biological nutrient removal approach with documented field application that removes nitrogen through algal assimilation and biomass harvesting.

The purpose of this brief is to summarize the technical basis for considering ATS-based nutrient polishing as a plausible engineering pathway for achieving substantial TN reductions at the Lahaina facility through a phased implementation approach.

#### **2. Overview of Attached Algal Treatment Systems**

Attached algal treatment systems cultivate naturally occurring benthic algae on engineered shallow flowways. Nutrient-rich water flows over these surfaces under controlled hydraulic conditions while algal communities assimilate dissolved nutrients—including nitrogen and phosphorus—into biomass through photosynthetic growth.

Periodic harvesting of the algal biomass permanently removes assimilated nitrogen from the treatment system when exported from the facility.

ATS typically operate as shallow flow systems with water depths of only a few inches, allowing treatment to occur with minimal hydraulic head and relatively low energy input. The primary energy source driving nutrient removal is solar radiation supporting algal growth rather than mechanical aeration or membrane pressure.

Because nutrients are removed through biological assimilation and harvesting rather than solely through microbial conversion pathways, ATS are well suited for use as nutrient polishing systems downstream of conventional wastewater treatment processes.

Because nitrogen discharged from the Lahaina facility is transported to nearshore waters through groundwater pathways, nitrogen mass removed prior to reuse or injection directly reduces loading to coastal receiving waters. Attached algal treatment systems therefore function as tertiary nutrient polishing infrastructure that reduces total nitrogen mass before subsurface transport occurs. This mass-reduction framing aligns ATS deployment with the permit's mass-based limits and places the technology within a compliance-oriented polishing step in the existing treatment train.

### 3. Operational History of ATS Systems

Attached algae treatment systems have been engineered and deployed for more than three decades in applications including agricultural runoff treatment, watershed restoration, industrial nutrient management, and wastewater polishing.

HydroMentia and related development teams have participated in the design and deployment of ATS systems since the early 1990s. Several systems have operated at substantial scale for extended periods.

Two systems provide examples of long-term operational performance of ATS infrastructure:

#### **Egret Marsh Algal Turf Scrubber – Indian River County, Florida**

- 10 MGD treatment capacity
- Operating since 2010

#### **Osprey Marsh Algal Turf Scrubber – Indian River County, Florida**

- Approximately 10 MGD treatment capacity
- Operating since 2013

These systems demonstrate that ATS can be constructed and operated as utility-scale treatment infrastructure capable of sustained long-term operation.

Operational monitoring data from the Osprey Marsh facility provide evidence of sustained low nutrient concentrations under continuous operation.

**Table 1. Osprey Marsh ATS – Nutrient Performance Summary**

<b>Monitoring Period</b>	<b>Mean Outflow TN</b>	<b>Mean Outflow TP</b>
Jan 2022 – Apr 2025	0.775 mg/L	0.079 mg/L

During this monitoring period, many total phosphorus measurements were undetected at the analytical detection limit of 0.070 mg/L, suggesting that the true mean TP outflow concentration may be lower.

Although watershed inflow conditions differ from municipal wastewater effluent, these results demonstrate the ability of large-scale ATS to sustain very low nutrient concentrations over extended operational periods.

### 4. Industrial Recycle ATS Pilot Demonstration

The closest operational analogue to the Lahaina challenge is a multi-year industrial recycle-mode ATS pilot conducted under controlled field conditions to evaluate low-concentration nutrient polishing. This pilot operated continuously over multiple years and provides insight into ATS performance under sustained hydraulic loading conditions beyond laboratory-scale testing. Additional supporting data from this pilot are available under appropriate confidentiality provisions.

In this pilot configuration, water was recirculated through the ATS in order to reduce effluent nutrient concentrations beyond what would typically be achieved in a single-pass configuration. Under sustained operation, the recycle-mode ATS achieved low effluent TN concentrations, as summarized below:

**Table 2. Recycle ATS Pilot Effluent TN Concentrations**

<b>Period</b>	<b>Mean Inflow TN</b>	<b>Mean Outflow TN</b>	<b>TN Reduction</b>
Full period of record	4.34 mg/L	1.45 mg/L	67%
Calendar Year 2014	4.87 mg/L	1.12 mg/L	77%
Final six months of operation	4.60 mg/L	0.85 mg/L	82%

These results indicate that recycle-mode ATS sustained low nitrogen concentrations under the observed operating conditions.

The recycle-mode pilot also illustrates an important engineering consideration. During repeated recirculation across algal flowways, dissolved inorganic carbon is consumed and system pH increases. To address this effect, the pilot incorporated carbon recovery ponds downstream of the ATS flowways to restore carbon chemistry and stabilize pH prior to recirculation.

Full-scale sizing projections from the pilot included both the ATS treatment surface and the associated carbon recovery ponds. Under the CY2014 sizing example, the ATS treatment surface represented approximately 1.6 acres per MGD, while the carbon recovery ponds represented a substantially larger portion of the total recycle-system footprint.

Importantly, analysis indicated that carbon recovery was achieved early within the recovery sequence, suggesting that future optimized designs may require significantly smaller carbon recovery footprints than those used in the conservative pilot configuration.

### **5. Implications for Lahaina TN Compliance**

Taken together, the operational history of ATS systems, the long-term performance of utility-scale facilities such as Egret and Osprey Marsh, and the recycle-mode industrial pilot demonstration provide a technical basis for evaluating that attached algae nutrient polishing represents a plausible pathway for achieving substantial TN reductions. Further site-specific validation would be required to confirm performance under Lahaina-specific operating conditions.

These performance observations are presented as feasibility evidence rather than guaranteed operational outcomes. Full-scale implementation would proceed through pilot validation, incremental expansion, and performance verification prior to reliance for compliance. This phased deployment structure aligns with regulatory expectations for emerging treatment technologies and supports evaluation of ATS as a measurable pathway toward achieving the permit's total nitrogen mass limits.

The industrial pilot results include sustained TN concentrations below 1 mg/L under controlled field conditions. Utility-scale systems demonstrate that ATS infrastructure can operate reliably at large scales for extended periods.

For the Lahaina facility, the primary design objective is to close an approximate 90 lb/day nitrogen mass gap while achieving effluent concentrations approaching natural background levels.

ATS are well suited for this type of application because they remove nutrients through direct biological assimilation and harvesting rather than relying solely on microbial conversion processes within treatment reactors.

Because the Lahaina TN limits are unusually stringent, a phased implementation approach would be appropriate. Such an approach could include:

1. Pilot-scale system validation
2. Initial modular deployment
3. Expansion of treatment surface area based on verified performance

This staged implementation framework is consistent with standard engineering practice when deploying new or site-specific treatment technologies.

These findings are presented to demonstrate technical plausibility and do not constitute a performance guarantee; full-scale applicability would require confirmation through pilot validation and phased performance verification under Lahaina-specific operating conditions.

## **6. Conclusion**

The available operational evidence indicates that attached algal treatment systems represent a technically credible and scalable option for nutrient polishing applications requiring substantial nitrogen reduction.

Decades of ATS engineering experience, long-term operation of utility-scale systems, and the demonstrated performance of recycle-mode ATS pilot systems collectively support the evaluation that a staged ATS-based nutrient polishing system could provide a technically plausible pathway for achieving the Lahaina TN discharge limits.

Accordingly, consideration of a phased compliance schedule incorporating ATS system development and deployment would be technically reasonable and consistent with established engineering practice for infrastructure projects requiring specialized treatment solutions.

This technical brief does not prescribe a compliance schedule, but instead provides engineering information relevant to evaluating whether a phased implementation pathway may constitute a technically plausible compliance mechanism. Any such pathway would require site-specific pilot validation, regulatory review, and performance verification prior to consideration of full-scale deployment, and does not modify or relax the final numeric TN limits established in the Lahaina WWRF NPDES permit.

# A Green Shield for Lahaina

## Algae Farming to Buffer Human Wastewater Impacts

by Dean Calahan, Ph.D.  
2026.04.07

Current regulatory conditions create an opportunity to establish a substantial improvement in municipal wastewater treatment in Lahaina, using ecological engineering methods (Kangas, 2003) to affordably reduce total nitrogen (TN) loading. Specifically, approximately 90 pounds of TN must eventually be removed per day from R-1 reuse water produced at the Lahaina Wastewater Reclamation Facility (WWRF). A specific technology for algae cultivation, known variously as Filamentous Algal Nutrient Scrubbers (Sutherland et al., 2020), Algal Floway Technologies (Bott et al., 2015), and Algal Turf Scrubbing (Adey, 2024) – distinct from algal raceway systems known as Oswald or high-rate ponds – is an established tertiary water treatment practice that can satisfy this requirement (Adey & Goertemiller, 1987; D’Aiuto et al., 2015). Floway systems cultivate captive, attached macroalgae on shallow (inches deep), linear, submerged sloped surfaces with gravity flow, whereas raceway systems cultivate dispersed, suspended microalgae in deeper (feet deep), usually oval channels, usually with paddle-wheel flow.

This process is essentially the farming of indigenous aquatic photosynthetic species (algae, a kind of limu) in “aquatic farm fields”, known as floways. Anyone familiar with aquatic environments knows that unwanted algae are often difficult or impossible to eradicate. This fecundity is an advantage if the algae are instead desired, as algal proliferation is easily facilitated by providing an algae-friendly environment. The fact that the algae cells will simply arrive naturally is a strength of ecologically engineered facilities like an algal floway. An inevitable consequence of rapid algal growth is rapid removal of nutrients from the water feeding the algae, which can be on the order of 1 ppt TN per day. The nutrients from the water, including CO<sub>2</sub>, become part of the algal “crop”. This crop is frequently harvested (*e.g.* weekly) to permanently remove nutrients from the system. Hydromentia LLC, a company that specializes in treatment of nutrient-rich water, has built several utility scale ATS facilities, with two of them currently operating in Florida. Floway facilities are built using familiar construction methods.

Hydromentia’s implementation procedure is standardized process. A pilot study is first performed to determine the viability of algae cultivation with effluent from the specific site, providing data needed to design a facility that will satisfy nutrient removal requirements. Upon completion of the pilot, a formal construction and operating proposal can then be arranged. The pilot system itself can be an asset beyond the required data collection, as stakeholders and community members would be able to see a floway in action, and familiarize themselves with how it works and with the bulk algal biomass that is the inevitable product of scrubbing excess nutrients from water using floway systems. Construction can be phased in over time, with each new floway adding treatment capacity and biomass production.

Maui's unwanted algae blooms are nature's response to the excess nutrients introduced by historical practices, including wastewater management. The freshwater stream algae in the captive floway ecosystem react the same way as their marine cousins do, consuming the excess nutrients, but before they reach the shore. All else being equal, a ton of limu biomass grown in floways on land is a ton of unwanted algal bloom avoided in Maui's waters.

The Lahaina WWRF could become the first facility on Maui to scrub its harmful nutrient rich water to ocean-equivalent standards using algal floways. If additional floway facilities were then built throughout Maui and the rest of Hawaii, a "green shield" of limu farms would dot each island, cleansing municipal reuse wastewater of remaining unwanted nutrients as gravity brings it from the island ridges, through watersheds both natural and artificial, to the ocean. Such a network of algal greenfields throughout the islands would act as a natural barrier to human nutrients reaching ocean waters, sparing them and Hawai'i's reefs further damage and allowing them to return to their previous pristine conditions.

Algal floway systems provide a way to systematically and reliably scale up to meet stringent nutrient loading limits, but they also provides a potential source of biomass-derived products of use to local agriculture, from commercial and non-commercial gardening, to farming, to composting or other existing or new business opportunities. This novel source of biomass could encourage sustainable agriculture and food security, further protecting and possibly enhancing watersheds.

Algae floway systems are basic and scalable, implemented with standard components and techniques. A pumping station services one or more floways, each essentially a shallow artificial streambed resembling a sloped concrete parking lot with a roughened, non-slip surface. There are one or more reservoirs for initial storage of influent (*i.e.* R-1 water) before it enters the floway, and another one or more reservoirs for stabilization of the treated effluent before final discharge. Nutrient-rich water is pumped in along the top of the floway and descends by gravity to the bottom, where it is collected and recirculated as needed to complete treatment. Frequent harvesting permanently removes the algal biomass, and thus the accumulated nutrients, from the system.

A floway system is typically self-inoculating, continuously sampling the local environment for new species, increasing in biodiversity over time. Indigenous algae cells settle into the water, blown in on leaves or dust, and brought in by insects or other animals attracted to the water. These cells attach to the floway's roughened concrete surface, growing into filaments that trap additional algal cells as well as other cells and particles in the water (Fig. 1). The algae cells proliferate, removing nutrients from the water and converting them into captive biomass. Once a turf matures, its thin lowest layer remains firmly attached to the concrete, while the bulk of the biomass is easily detached for harvest (Fig. 2). The water is recirculated until it satisfies nutrient removal requirements, spends some time in a stabilization reservoir to restore its CO<sub>2</sub> content from the atmosphere, and is then discharged. Each floway requires periodic harvesting, at most every 5 to 7 days, using simple methods, and the collected biomass is easily air dried. Depending on its composition, the harvested biomass could offer a wide range of beneficial uses, such as composting, pyrolysis, or biofuel production.

The algal turf is composed mainly of filamentous species attached to the flowway's roughened surface, woven together naturally and entrapping additional algal and microbial species as well as various small particles that find their way into the system. The exact algal species profile in a given flowway at a given time will be seasonal and specific to the local ecosystem, but in general, many algal species present in Maui will behave in similar ways. Harvesting is best performed when the algae are growing rapidly, removing the canopy before it maturity leads to slower growth and thus nutrient. Each acre of flowway will produce tons of dried algal biomass per year.

Sampling of water and biomass is straightforward and could be implemented transparently, with automated reporting to regulatory agencies and courts, giving the public easy access to see how the system is working. Local companies or organizations could incorporate harvested algal biomass into their efforts, producing finished compost or simply applying dried biomass as a soil amendment. Algal biomass is rich in the macro- and micro-nutrients needed for high productivity agriculture without importing fertilizers, a key consideration when planning for sustainability and food security on an island ecosystem.

In the 50 years since Dr. Adey invented this technology to control algal growth in a coral reef exhibit at the Smithsonian Institution, more than a hundred peer-reviewed studies of ATS have been performed, and the technology has been used in large-scale water treatment projects (mainly by Hydromentia) and in aquaria large and small around the world. Numerous pilot projects have been conducted using natural waters from rivers and estuaries as the nutrient source, as well as secondary treated municipal waste, agricultural runoff, effluent from confined animal feeding operations (CAFOs), and industrial waste. In almost every case, the flowways self-inoculate from algal cells available in the local environment and form a highly productive captive photosynthetic ecosystem. Rarely, interventions such as placing algae-bearing rocks from nearby streams or lakes have been needed to accelerate the inoculation process, but once inoculated a flowway tends to become more biodiverse as it continues to sample the local environment for new algal strains.

Five decades of experience implementing ATS systems can be brought to bear on this project, from running the pilot study to designing and building the production flowways. "Algal Floway Systems" have been designated a Best Management Practice (BMP) by the State of Maryland. As Lahaina's citizens and government recognize the simplicity and effectiveness of algal flowways, new uses for them may emerge, such as integration with ahupua'a, treatment of other industrial waters, or even hobbyist projects or K-12 educational programs.

By adopting practices that eliminate any issues regarding polluting its waters with excess nutrients, Maui County could position itself as an international leader in adopting filamentous algae nutrient scrubbing. Algal flowways represent a cost-competitive and ecologically aligned treatment option, producing both clean effluent and abundant biomass, relieving stresses on the ecological health of reefs and estuaries around the island, and increasing sustainability and food security.

## Figures

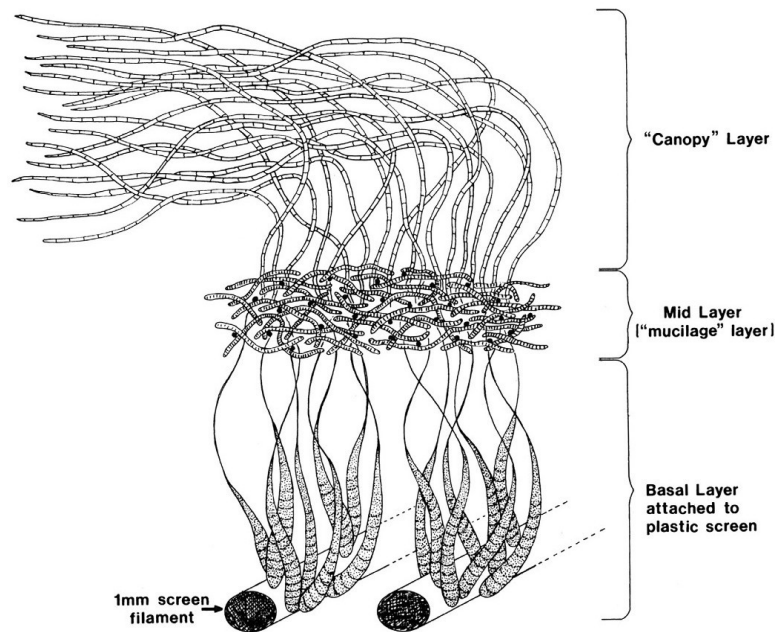


Figure 1. Typical cross-section of an algal turf attached to an algal floway. In this drawing, the filaments are attached to a high surface area screen.



Figure 2. Typical appearance of a mature algal turf within an algal floway.

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## WRITTEN TESTIMONY

April 16, 2026

Aloha Chair and Budget Committee Members,

I am writing with a proposed amendment that advances a simple, integrated strategy to wastewater compliance: stop investing in litigation of the Lahaina WWRF NPDES matter by accepting a real nature-based compliance solution, accelerate County UV disinfection infrastructure, and reserve public funds for core municipal obligations.

First, it shifts the County from NPDES litigation to implementation at the Lahaina WWRF with a home-grown, native stream limu-based nutrient polishing solution. Rather than continuing to expend funds contesting the hard-won effluent quality improvements of the 2020 SCOTUS decision, the amendment supports a structured, performance-based compliance pathway that preserves all existing Total Nitrogen limits and achieves them through phased, verifiable deployment. A two-page filing accepts the plan if DOH does.

Second, it recognizes that the Ma‘alaea Regional Wastewater Reclamation System is better suited to private philanthropic delivery rather than public capital allocation. Kai Action Institute 501(c)(3) is specifically structured to complete that project through non-taxpayer funding, allowing the County to prioritize immediate compliance infrastructure.

Third, it redirects those funds to accelerate CBS-1169, expanding Maui North Shore UV disinfection capacity at a municipal scale and advancing R-1 effluent standards that directly protect public health and nearshore waters.

In short, the amendment realigns wastewater spending to stop waste on litigation, invests in proven municipal disinfection, and enables philanthropic delivery of non-municipal projects, setting a path to compliance, cost control, human health and environmental protection in a single, defensible approach.

Respectfully submitted,

Travis A. Liggett, M.S.  
+1 (808) 291-9934  
travis.liggett@gmail.com

## **Proposed UV Disinfection Acceleration and Lahaina NPDES Resolution Amendment**

**De-appropriation.** All unencumbered and unexpended funds, estimated at \$400,000, previously budgeted or allocated for legal services and related costs for the Lahaina Wastewater Reclamation Facility NPDES contested case before the Hawai'i Department of Health are hereby de-appropriated and lapsed.

**Re-appropriation to CBS-1169.** The sum of \$1,500,000 is hereby appropriated to the Department of Environmental Management, Wastewater Reclamation Division's CBS-1169 (Kahului Wastewater Reclamation Facility UV Disinfection Expansion), consisting of: (i) \$250,000 from subsection (1); and (ii) \$1,250,000 re-appropriated from funds previously budgeted for the Ma'alaea Regional Wastewater Reclamation System (MRWRS) associated with Ma'alaea Village Association (MVA). Funds shall be used to accelerate design, permitting, and implementation necessary to achieve R-1 effluent standards.

**Funding Restriction.** No County funds shall be expended in FY2027 for continuation or support of the Lahaina WWRF contested case unless subsequently authorized by Council.

**Consistency with Resolution No. 25-121.** The Council reaffirms that special counsel was retained for matters arising from the permitting process and associated legal challenges. In light of the availability of a technically supported compliance pathway, continued expenditure of funds on contested litigation shall be evaluated against the Council's duty to minimize legal costs while achieving permit compliance.

**Lahaina Limu PRCAF Direction.** The Council finds that a Phased Regulatory Compliance Attainment Framework (PRCAF), utilizing limu-based algae nutrient polishing, provides a technically supported, performance-referenced compliance pathway based on phased validation, pilot demonstration, and measured performance verification that preserves the Total Nitrogen (TN) effluent limits established under NPDES Permit No. HI 0021848 while enabling phased implementation consistent with recognized compliance schedule mechanisms under 40 C.F.R. §122.47 and EPA NPDES Permit Writers' Manual guidance, and directs the Administration to pursue this approach, and to evaluate whether continuation of the contested case remains necessary given the availability of a technically plausible compliance pathway capable of achieving the permit's TN mass limits without modification of those limits, in coordination with the Hawai'i Department of Health, with appropriate action by the Maui County Department of the Corporation Counsel to foster innovation to enhance effluent quality before ocean discharge. The Council further recognizes that this phased compliance framework reflects technical evidence developed for the administrative record in DOH Docket No. 2025-NPDES-2, including milestone-based implementation, monitoring, and verification structures consistent with 40 C.F.R. §122.47. Nothing herein shall be construed as an admission regarding the validity, feasibility, or enforceability of the contested permit conditions, but rather as a policy direction to prioritize a compliance-based resolution pathway. The Department of the Corporation Counsel is authorized to take all actions necessary to implement this direction, including filings before the Department of Health consistent with this policy.

**County of Maui  
Fiscal Year 2026-2031 Capital Improvement Program**

CBS No: CBS-1169

Project Name: Wailuku-Kahului Wastewater Reclamation Facility (WWRF)  
Upgrade to R-1

Department: Department of Environmental Management

District: Wailuku-Kahului

Project Type: Sewer

Anticipated Life: 30 years



Prior Years	Appr	Ensuing	Subsequent Years					Total
Expend/Encb	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	6-Year
0	0	0	0	1,800,000	0	18,000,000	0	19,800,000

**PROJECT DESCRIPTION**

Design, permitting and construction to modify the Wailuku-Kahului Wastewater Reclamation Facility to produce a R-1 quality reclaimed water for the Wailuku-Kahului service area. This includes construction of ultraviolet disinfection basins, on-site storage, a pump station and all related piping and electrical to connect to the proposed force main.

**PROJECT JUSTIFICATION**

Use of reclaimed water will result in the conservation of potable water resources, preservation of brackish water resources and reduction of treated effluent discharged into injection wells.

**STRATEGIC PLAN ALIGNMENT**

Department's Strategic Plan

Countywide Priority Results

Sustain Reliable Wastewater Infrastructure  
Ensure Facilities Meet Future Needs  
Provide Reliable Wastewater Service

A Suitable Public Infrastructure  
A Strong, Diversified Economy  
An Efficient, Effective, and Responsive Government  
A Prepared, Safe, and Liveable County  
A Healthy and Sustainable Community

**Operating Impact Narrative**

Addition of this treatment capability will require an additional position to manage the system, and extra costs for electricity and materials to operate the disinfection system and pumps.

**FUNDING DETAILS**

Phase Description	Fund Code	Appr	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031
Design	OG	0	0	0	1,800,000	0	0	0
New Construction	GB	0	0	0	0	0	18,000,000	0

**Schedule of Activities**

Activity	Start	End	Amount
Design	09/01/2027	12/31/2030	1,800,000
New Construction	09/01/2029	12/31/2030	18,000,000
Total Capital Project Costs			19,800,000
Total O&M Costs			0
Total Capital & Operating Costs			19,800,000

**Methods of Financing (Ensuing + 5 Years)**

Funding Source	Amount
General Obligation Fund	18,000,000
Other Grant Fund	1,800,000
Total Funding Requirements	19,800,000

Submitted by Petitioner:  
DEPARTMENT OF THE CORPORATION COUNSEL  
County of Maui  
200 S. High Street  
Wailuku, Hawai'i 96793  
Attorneys for Petitioner  
COUNTY OF MAUI

DEPARTMENT OF HEALTH  
STATE OF HAWAI'I  
HEARINGS OFFICE

County of Maui et al.,	)	
Petitioners,	)	DOH Docket
	)	No. 2025-NPDES-2
v.	)	
	)	
Department of Health, State of Hawai'i,	)	
Respondent.	)	
_____	)	

**PETITIONER COUNTY OF MAUI'S NOTICE OF WITHDRAWAL**

Petitioner County of Maui, by and through its counsel, hereby provides notice of withdrawal of this contested case proceeding.

The County initiated this contested case to challenge the feasibility and implementation of Total Nitrogen ("TN") effluent limitations established under NPDES Permit No. HI 0021848. Those limitations require substantial reductions in nitrogen discharge, on the order of approximately ninety pounds per day relative to historical loading conditions.

Since initiation of this proceeding, the County has evaluated additional technical information regarding potential compliance pathways. That evaluation now includes consideration of a performance-referenced, phased implementation framework utilizing nutrient polishing technologies capable of achieving TN mass reduction through staged deployment, monitoring, and verification.

This type of phased compliance approach is consistent with established NPDES permitting practice, including the use of compliance schedules tied to

engineering, permitting, construction, and operational milestones where immediate attainment is not feasible.

Based on this updated posture, the County has determined that continued litigation regarding the TN limits is no longer necessary to preserve its interests, provided that a reasonable and technically grounded pathway to compliance has been identified and supported by evidence in the administrative record, subject to phased validation and performance verification.

Accordingly, the County hereby withdraws its request for contested case relief, without prejudice, and respectfully notifies the Hearings Officer that it intends to pursue compliance with the permit through administrative coordination and implementation planning rather than continued adjudication. This withdrawal shall take effect upon adoption and execution of the County of Maui Fiscal Year 2027 budget incorporating Council direction for a performance-referenced compliance pathway for the Lahaina WWRF NPDES matter, or on July 1, 2026, whichever occurs later, unless earlier accepted or acted upon by the Hearings Officer.

This withdrawal is made without admission as to the validity, feasibility, or enforceability of the contested permit conditions, and without waiver of any rights the County may have in future proceedings.

The County further notes that implementation of a phased compliance pathway will require coordination with the Department of Health and may involve subsequent permitting, approvals, or administrative actions consistent with applicable law.

DATED: \_\_\_\_\_

Respectfully submitted,

DEPARTMENT OF THE CORPORATION COUNSEL  
County of Maui

By: \_\_\_\_\_

Name:

Title: Deputy Corporation Counsel

Attorneys for Petitioner

COUNTY OF MAUI

Submitted by Movant:  
Travis A. Liggett, M.S.  
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DEPARTMENT OF HEALTH  
STATE OF HAWAI‘I  
HEARINGS OFFICE

County of Maui et al.,	)	
Petitioners,	)	DOH Docket No. 2025-NPDES-2
	)	
v.	)	Discovery complete and expert
	)	reports due:
	)	May 27, 2026
	)	
Department of Health, State of Hawai‘i,	)	Contested Case Hearing:
Respondent.	)	July 20 - 31, 2026
_____		

**MOTION TO ENTER TECHNICAL EVIDENCE REGARDING A PROPOSED NPDES PHASED REGULATORY COMPLIANCE ATTAINMENT FRAMEWORK (PRCAF)**

I. INTRODUCTION

The Lahaina Wastewater Reclamation Facility discharges treated effluent that travels through groundwater to Maui's nearshore coastal waters, which have experienced documented ecological degradation attributable in part to elevated nutrient loading. The current NPDES permit establishes Total Nitrogen ("TN") mass limits requiring reductions of approximately 87–92% relative to current operating conditions, reductions that cannot be achieved instantaneously through existing infrastructure.

Travis A. Liggett, M.S., President of Kai Action Institute ("Movant"), respectfully requests that the Hearings Officer incorporate into the record a proposed Phased Regulatory Compliance Attainment Framework (PRCAF) providing technical evidence relevant to potential compliance pathways for the Total Nitrogen ("TN") mass discharge limits imposed under the Lahaina Wastewater Reclamation Facility NPDES permit. Movant is not a named party to this contested case proceeding and submits this motion to provide technical evidence relevant to potential compliance pathways for the Hearings Officer's consideration under Hawai'i Administrative Rules §11-1-37. Movant submits this motion to enter technical evidence into the record and requests that the

Hearings Officer consider this filing as evidence concerning potential compliance mechanisms, consistent with Hawai'i Administrative Rules §11-1-37 and the Hearings Officer's procedural authority.

The current NPDES permit establishes Total Nitrogen (“TN”) mass limits of 8.25 lb/day (annual average) and 13.51 lb/day (daily maximum); compared to current TN loading on the order of 105 lb/day, attaining these limits requires on the order of 90–97 lb/day of TN mass reduction (approximately 87–92%, depending on the applicable averaging period) (Appendix A, items 3–4). Achieving these reductions using existing wastewater treatment infrastructure may present significant technical and implementation challenges.

However, a technically plausible pathway exists through the phased development and deployment of an Attached Algal Treatment System (“ATS”), also referred to herein as a limu nutrient polishing system, utilizing native Hawai'i freshwater benthic macroalgae (“limu”) cultivated in engineered streambed flowways (see Appendix A).

Accordingly, Movant requests that the Hearings Officer allow evidence regarding a structured seven-year Phased Regulatory Compliance Attainment Framework (PRCAF) to be entered into the administrative record and consider adoption of such a schedule as a potential compliance framework for achieving the permit's TN mass limits by developing emerging systems that harness native limu species to scale nature's existing solution to polishing excess nutrients from fresh surface waters in the local ecosystem.

## II. FACTUAL BACKGROUND

1. Recent operating data summarized in Appendix A indicate approximately 105 lb/day of total nitrogen (TN) discharge from the Lahaina Wastewater Reclamation Facility. (See Appendix A, item 4.) The referenced loading value reflects recent operating data summarized in Appendix A and will be confirmed through updated monitoring during the Year 1 validation phase.
2. The current NPDES permit establishes an annual average TN mass limit of 8.25 lb/day and a daily maximum TN mass limit of 13.51 lb/day. (See Appendix A, item 3.)

3. Based on the foregoing, the order-of-magnitude TN mass reduction required is approximately 90–97 lb/day, depending on whether the applicable compliance basis is the permit’s daily maximum (13.51 lb/day) or annual average (8.25 lb/day) mass limit. (See Appendix A, items 3–4.)
4. Attached Algal Treatment Systems (ATS) remove dissolved nitrogen primarily through assimilation into algal biomass during photosynthetic growth; periodic harvesting exports the assimilated nitrogen from the treatment system and can support beneficial reuse pathways for harvested biomass. (See Appendix A, items 8–9 and 20.)
5. Preliminary conceptual modeling suggests that an attached algal treatment system on the order of approximately ten acres may be capable of removing roughly 90 pounds of nitrogen per day under Maui climatic conditions through algal assimilation and biomass harvesting; actual performance and required footprint are site-specific and must be verified through pilot operation and measured productivity under Lahaina WWRF effluent conditions. (See Appendix A, items 15–17 and 23.)
6. Based on the operational precedent, pilot demonstration evidence, and preliminary modeling summarized in Appendix A, ATS nutrient polishing constitutes a technically plausible pathway to reduce Lahaina WWRF TN mass loading to within the permit's TN mass limits, subject to the phased verification steps and adaptive management measures described below. (See Appendix A, items 12–17 and 23.)

### III. LEGAL BASIS

Movant proposes the following structured seven-year Phased Regulatory Compliance Attainment Framework (PRCAF) for achieving the TN daily mass limit through staged implementation of an attached limu nutrient polishing system. For clarity, “TN mass load” in this proposal means TN concentration multiplied by daily effluent flow, expressed in lb/day, and calculated using the equation set forth in Milestone 3; “required TN mass reduction” means the difference between the confirmed baseline TN mass load (to be established using updated monitoring data in Year 1) and the applicable permit TN mass limit(s).

Hearings officers in administrative contested cases may consider procedural motions and supporting technical evidence relating to compliance mechanisms, and possess authority to consider phased compliance frameworks when immediate attainment of regulatory limits requires the construction of treatment infrastructure or the development of emerging technologies. These rules authorize motions practice in contested cases before the Department of Health, including requests for procedural relief and schedule adjustments. See Hawai‘i Administrative Rules §11-1-37 (Motions) and §11-1-28 (Filing of Documents).

Hawai‘i Administrative Rules §11-1-37(a) provides that motions (other than those made during a hearing) “shall be made in writing” and “shall state the relief sought”; Hawai‘i Administrative Rules §11-1-28(f) provides that “[a]ll documents filed afterwards shall contain a certification by the party filing the document that a copy was served on the opposing party.” This motion is submitted and served consistent with those requirements.

40 CFR §122.47 authorizes the inclusion of schedules of compliance in NPDES permits where appropriate. Such schedules must require compliance as soon as possible and, where they extend beyond one year, include interim requirements and reporting. The proposed seven-year staged structure is presented as consistent with these regulatory criteria, including the use of defined interim milestones and periodic reporting. See 40 CFR §122.47(a)(1), (a)(3)–(4).

Federal guidance and permit precedent recognize that such schedules may include project development phases, construction milestones, monitoring programs, and final compliance deadlines.

Within this contested case, the Hearings Officer retains authority to consider and admit structured compliance pathway evidence into the administrative record for purposes of evaluating compliance mechanisms and the evidentiary basis presented by the parties. These authorities permit the Hearings Officer to consider evidence describing technically feasible pathways for achieving permit limits when evaluating the adequacy of compliance mechanisms within the administrative record.

Administrative precedent under the National Pollutant Discharge Elimination System recognizes that where compliance requires the design, permitting, construction, and startup of treatment infrastructure, a Phased Regulatory Compliance Attainment Framework (PRCAF) tied to engineering and permitting milestones may be appropriately incorporated into permits, provided that the schedule represents the shortest reasonable time necessary to achieve compliance while maintaining measurable interim progress toward the final effluent limitation.

Guidance documents used by NPDES permit writers describe circumstances in which Phased Regulatory Compliance Attainment Frameworks may be incorporated into permits, and may include sequential milestones for planning, permitting, construction, and operational startup where immediate compliance is not feasible, provided that the schedule ensures steady progress toward attainment of the final effluent limitation. See U.S. Environmental Protection Agency, NPDES Permit Writers' Manual, EPA-833-K-10-001 (2010), Chapter 9. PRCAFs in NPDES permits are authorized under 40 CFR §122.47, which allows phased schedules where infrastructure development is required to meet final effluent limitations.

This principle is particularly relevant here, where the TN mass limits imposed by the permit represent a level of nutrient reduction not previously required at this facility and therefore necessitate the development, demonstration, and scaling of treatment approaches that have not previously been implemented under comparable operating conditions.

The proposed phased schedule reflects the practical timeline associated with permitting, engineering design, construction, and operational startup of wastewater treatment infrastructure. The schedule anticipates completion of the limu nutrient polishing system by approximately Year 6, with a final verification year to confirm sustained compliance with the TN mass limit.

This motion seeks admission of the attached phased schedule and supporting technical summary into the contested case record as evidence to inform the Hearings Officer's evaluation of potential compliance mechanisms; it requests that the Officer

consider a viable PRCAF as an alternative to any waiver or exemption from the applicable TN effluent limitations that may be requested by the County of Maui.

Admission of this evidence will not prejudice any party's due process rights, and all parties retain the opportunity to respond, submit contrary evidence, and cross-examine experts through the contested case process.

This motion seeks admission of technical evidence relevant to compliance feasibility; it does not seek to predetermine the outcome of the permit proceeding, relax the permit's numeric TN limits, or modify permit stringency in any respect.

#### IV. RESPONSE TO ANTICIPATED OBJECTIONS

The County or other parties may argue that emerging technologies cannot be considered absent demonstrated full-scale implementation, or that adoption of a phased implementation framework is premature at this stage of the proceeding. Neither objection withstands scrutiny.

First, this motion does not ask the Hearings Officer to find that ATS technology will achieve the permit's TN limits. The motion asks only that evidence describing a technically plausible Phased Regulatory Compliance Attainment Framework (PRCAF) be admitted into the record. Admission of evidence is not adoption of a result. The phased structure of the proposed milestone-based implementation program is specifically designed to require measured pilot performance before any expansion commitment is made, ensuring that full-scale deployment occurs only if and when site-specific validation supports it.

Second, NPDES phased implementation frameworks routinely incorporate technologies that have not yet been deployed at full scale at the specific facility in question. 40 CFR §122.47 authorizes staged attainment pathways precisely because meeting permit limits sometimes requires the design, permitting, construction, and startup of infrastructure that does not yet exist at the facility. Requiring prior full-scale demonstration as a precondition for considering any phased infrastructure deployment program would render the regulatory mechanism meaningless in the exact circumstances it was designed to address.

Third, the ATS technology proposed here is not experimental. Utility-scale ATS facilities have operated continuously for more than a decade in Indian River County, Florida, with documented nutrient removal performance. The technology has been reviewed and designated a Best Management Practice by the State of Maryland. The question before the Hearings Officer is not whether ATS works in principle, as operational data confirm that it does, but whether a phased, pilot-validated incremental attainment framework at this specific facility constitutes a reasonable evidentiary basis for evaluating compliance mechanisms. This motion provides exactly that foundation.

Fourth, the proposed phased implementation framework is not a request for leniency. It does not seek to modify, waive, or reduce the permit's numeric TN limits in any respect. It seeks only a structured timeline for achieving those limits through infrastructure that requires time to design, permit, and build, consistent with the framework Congress authorized in the Clean Water Act and that EPA implemented through 40 CFR §122.47.

Fifth, the Hearings Officer need not resolve the ultimate question of whether ATS will achieve full compliance in order to admit this evidence. The standard for admission is plausibility and relevance, not certainty. The operational record, pilot data, and preliminary engineering modeling submitted herewith satisfy that standard. All parties retain full due process rights to challenge, rebut, or present contrary evidence through the contested case process. Admission of this evidence prejudices no one and forecloses nothing.

## V. PROPOSED PHASED REGULATORY COMPLIANCE ATTAINMENT FRAMEWORK

This proposal is presented as a potential Phased Regulatory Compliance Attainment Framework (PRCAF) for evidentiary consideration and does not preclude evaluation of alternative treatment technologies; Movant further invites the Department of Health to consider adoption of the Phased Regulatory Compliance Attainment Framework (PRCAF) described herein as a potential administrative model or guidance approach for evaluating staged nutrient-reduction compliance pathways in comparable NPDES permitting contexts.

The schedule reflects the practical engineering and regulatory timeline associated with wastewater treatment infrastructure, including approximately eighteen (18) months of permitting and design review for major construction phases consistent with typical wastewater infrastructure timelines; to maintain alignment with 40 CFR §122.47(a)(3), the interim milestone dates below are structured on a one-year cadence, and where any interim requirement is not readily divisible into stages within a year, progress reporting will be provided during that interval. (See 40 CFR §122.47(a)(3)(ii)–(4).) Permitting and engineering for subsequent expansion phases proceed in parallel with construction and operation of earlier phases to ensure continuous progress toward compliance.

This motion and proposed schedule do not present capital cost, operating cost, lifecycle cost, or funding-pathway analyses; those economic elements will need to be developed and supported with sourceable documentation during the proposed phased program shown in Table 1, and prior to any final decision on full-scale implementation.

#### Year 1: System Validation and Preliminary Engineering

- Confirm the magnitude of the TN mass reduction gap using available monitoring data
- Develop conceptual engineering design for an attached macroalgal polishing system
- Initiate pilot system design and environmental review
- Begin permitting and regulatory consultation for pilot installation
- Define and document the baseline TN mass load period, data source(s), and analytical method(s) used for TN and flow measurements, so that all milestone calculations are reproducible and traceable to underlying data
- Identify the permitting and approval pathway for pilot installation and subsequent expansions (including any environmental review requirements and any NPDES permit modification or other authorizations needed to construct and operate the ATS modules)

**Table 1. Proposed Phased TN Compliance Schedule — Summary**

<b>Year</b>	<b>Primary Activities</b>	<b>Milestone</b>	<b>Performance Target</b>
Year 1	Confirm TN baseline; conceptual engineering design; initiate pilot permitting	Milestone 1: Preliminary engineering complete; formal permitting review initiated	Deliverable: Written engineering report demonstrating technically plausible compliance pathway
Year 2	Finalize pilot design; initiate pilot construction	Milestone 2: Pilot module installed; operational testing commenced	Deliverable: Certificate of pilot module installation
Year 3	Pilot operation; TN monitoring; begin Phase I permitting	Milestone 3: Measurable nitrogen mass reduction documented	Rolling 3-month average TN mass reduction demonstrated using EPA-approved methods
Year 4	Phase I expansion; biomass harvest procedures established	Milestone 4: 10% of required TN mass reduction sustained	10% of required reduction sustained for 6 consecutive months
Year 5	Phase II expansion; redundancy systems implemented	Milestone 5: 25% of required TN mass reduction sustained	25% of required reduction sustained for 6 consecutive months
Year 6	Major capacity expansion; monitoring automation	Milestone 6: 50% of required TN mass reduction sustained	50% of required reduction sustained for 6 consecutive months
Year 7	Full system completion; compliance verification	Milestone 7: Full permit compliance demonstrated	12 consecutive months of sustained compliance with TN daily mass limit

Milestone 1

Completion of a preliminary engineering report, submitted to the Department of Health, demonstrating a technically plausible pathway for closing the TN mass gap,

including identification of the proposed pilot installation site, estimated treatment footprint, and applicable permitting pathway.

### Year 2: Pilot Permitting and Construction Initiation

- Continue permitting and regulatory review for pilot deployment
- Finalize pilot engineering design and site integration
- Initiate construction of a pilot-scale limu polishing module
- Pilot module sized to treat approximately 1–5% of facility flow

### Milestone 2

Completion of pilot module installation, and commencement of operational testing with documented initiation of periodic TN influent and effluent monitoring.

### Year 3: Pilot Operation and Performance Verification

- Operate pilot polishing system using R-1 reuse water
- Conduct continuous periodic (daily or weekly) TN monitoring and performance reporting
- Begin engineering design and permitting for Phase I system expansion in parallel

### Milestone 3

Document measurable nitrogen mass reduction using rolling three-month averages. Pilot results will be used to evaluate scaling assumptions and to determine whether expansion phases remain technically justified. TN mass load (lb/day) shall be calculated using EPA-approved analytical methods as:

$$TN \text{ mass load (lb/day)} = TN \text{ concentration (mg/L)} \times \text{flow (MGD)} \times 8.34$$

### Year 4: Expansion Phase I Deployment

- Construct initial expansion modules increasing macroalgal treatment surface area
- Establish biomass harvest and export procedures
- Continue monitoring and performance reporting

#### Milestone 4

Target achievement of approximately ten percent (10%) of the required TN mass reduction sustained for six consecutive months. Percentage reductions are measured relative to the “required TN mass reduction” defined above, using the baseline confirmed in Year 1 and the applicable permit TN mass limit(s).

#### Year 5: Expansion Phase II Deployment

- Expand polishing system capacity to a larger treatment footprint
- Implement redundancy and operational control systems
- Continue parallel permitting and engineering for full system build-out

#### Milestone 5

Target achievement of approximately twenty-five percent (25%) of required TN mass reduction sustained for six consecutive months. Percentage reductions are measured relative to the “required TN mass reduction” defined above, using the baseline confirmed in Year 1 and the applicable permit TN mass limit(s).

#### Year 6: Major Capacity Expansion

- Expand system capacity to a majority share of required nutrient removal
- Integrate monitoring automation and operational optimization

#### Milestone 6

Target achievement of approximately fifty percent (50%) of required TN mass reduction sustained for six consecutive months. Percentage reductions are measured relative to the “required TN mass reduction” defined above, using the baseline confirmed in Year 1 and the applicable permit TN mass limit(s).

#### Year 7: Compliance Verification and Operational Optimization

- Verify completion of full limu polishing system installation
- Provide engineer certification of installed treatment capacity
- Implement continuous periodic (daily or weekly) TN monitoring and verification of sustained compliance

## Milestone 7

Sustained demonstration of full compliance with the TN daily mass limit for twelve consecutive months following system completion. Target achievement and demonstration of compliance with the TN daily mass limit for twelve consecutive months, based on the permit's applicable averaging periods and using the TN mass-load calculation method stated above. (See Appendix A, item 3.)

## VI. INTERIM REPORTING STRUCTURE

The proposed schedule includes the following oversight mechanisms:

- Quarterly reporting to the Department of Health documenting (i) effluent TN concentration data, (ii) daily flow data, (iii) calculated TN mass loads (lb/day) with calculation shown, and (iv) rolling three-month averages used for milestone tracking;
- Written notice no later than 14 days following each annual milestone date stating compliance/noncompliance, consistent with 40 CFR §122.47(a)(4);
- Defined corrective-action triggers if milestone performance is not achieved, including identification of cause(s), proposed corrective actions, and a revised near-term workplan within sixty (60) days;
- Adaptive management authority allowing operational adjustments, modular reconfiguration, and design modifications, based on verified performance data (see Appendix A, items 17 and 19).

Movant acknowledges that ATS performance is sensitive to site-specific conditions, including flow, nutrient loading, solar irradiance, and operational management; pilot results may not scale linearly to full build-out. Accordingly, the phased schedule is structured to require measured performance verification before expansion and to maintain transparent reporting of both achievements and limitations. (See Appendix A, items 13, 16–17, and 23.)

## VII. BENEFITS OF THE PROPOSED APPROACH

Adoption of a Phased Regulatory Compliance Attainment Framework (PRCAF) will:

1. Establish a technically grounded pathway for achieving the Lahaina WWRF nitrogen mass limits through phased implementation of a limu nutrient polishing system. The proposed schedule anticipates achieving the required

nitrogen reduction by approximately Year 6, with the final year confirming sustained compliance under operational conditions.

2. Preserve the integrity of the TN limit while recognizing the engineering timeline for implementation.
3. Encourage evaluation of innovative nutrient-removal technologies aligned with Maui's ecological and cultural context.
4. Convert a portion of dissolved nitrogen pollution into harvestable algal biomass through assimilation and harvesting, with potential for beneficial reuse of biomass, while reducing TN discharge to nearshore waters. (See Appendix A, items 8, 20–21.)
5. Provide an enforceable, milestone-based framework for evaluating an emerging effluent nutrient-polishing technology as a potential compliance component, with performance verification and adaptive management before any full-scale build-out.
6. Provide an illustrative timeline for evaluating an emerging nutrient-polishing technology that has received research support from Sandia National Laboratories and other collaborators, with the potential to contribute constructively to the County of Maui's path to compliance with the applicable NPDES TN mass limits with a locally-tailored solution that leverages native limu species. This includes admitting into the record an expert-supported pathway for implementing emerging nutrient-removal technologies, currently under active research and evaluation by Kai Action Institute and collaborators.
7. The proposed framework provides an evidentiary pathway demonstrating a technically plausible method to achieve the permit's existing TN limits without modifying permit stringency. Nitrogen removal through biological assimilation and biomass harvesting permanently removes assimilated nitrogen mass from the treatment train, directly addressing mass-based permit limits. Admission of this pathway does not preclude consideration of alternative treatment technologies, but ensures the record contains at least one technically grounded compliance mechanism for the Hearings Officer's evaluation.

## VIII. REQUEST FOR RELIEF

For the foregoing reasons, Movant respectfully requests that the Hearings Officer:

1. Accept into the contested case record evidence describing the limu-based nutrient polishing framework and the associated proposed phased Total Nitrogen Phased Regulatory Compliance Attainment Framework (PRCAF) as potential compliance pathways for achieving the applicable TN discharge limits.
2. Permit the submission and inclusion of technical and expert evidence supporting the limu nutrient polishing framework and proposed Phased Regulatory Compliance Attainment Framework (PRCAF) as part of the evidentiary record in advance of the scheduled hearing.
3. Recognize the proposed Phased Regulatory Compliance Attainment Framework (PRCAF) as a technically plausible compliance pathway for purposes of evidentiary consideration within the administrative record.
4. Consider adoption of the proposed Phased Regulatory Compliance Attainment Framework (PRCAF) as a potential compliance pathway, without limiting the Hearings Officer's authority to evaluate alternative technologies, compliance mechanisms, or evidence presented in the record.

## REFERENCES

- [1] Wallerstein, Mike S. [Procedural Order \(Scheduling Order\), County of Maui et al. v. Department of Health, DOH Docket No. 2025-NPDES-2. Hawai'i Department of Health, Hearings Office.](#) October 31, 2025.
- [2] Wallerstein, Mike S. [Second Procedural Order, County of Maui et al. v. Department of Health, DOH Docket No. 2025-NPDES-2. Hawai'i Department of Health, Hearings Office.](#) February 4, 2026.
- [3] [Hawai'i Department of Health. Hawai'i Administrative Rules, Title 11, Chapter 1, §11-1-37 \(Motions\) and §11-1-28 \(Filing of Documents\).](#) Effective February 14, 2005.
- [4] Liggett, Travis A., M.S.; Calahan, Dean, PhD; Zivojnovich, Mark. [Proposal for a Lahaina Wastewater Reclamation Facility \(WWRF\) Native Limu Streambed Nutrient Polishing and Biomass Production System — 12-Month Collaborative Project. Prepared for Born and Raised Earth LLC.](#) October 8, 2025.
- [5] [A Proposed Application of Algal Turf Scrubbers to Polish Nutrient Pollution from R-1 Reuse Water in the Mā'alaea Regional Wastewater Reclamation System. Prepared for Sandia National Laboratories by Reef Power LLC, FY2024 Standard Purchase Order #2560924.](#) October 1, 2024.
- [6] [Attached Algal Treatment Systems as a Plausible Pathway for Total Nitrogen Compliance at the Lahaina Wastewater Reclamation Facility.](#) Zivojnovich, Mark, 2026.
- [7] [A Green Shield for Lahaina.](#) Calahan, Dean, PhD. 2026.
- [8] APPENDIX A - Technical Fact Sheet, Lahaina Wastewater Reclamation Facility NPDES Permit, Attached Algal Treatment System (ATS) Nutrient Polishing Solution, Phased Regulatory Compliance Attainment Framework (PRCAF)

## **APPENDIX A**

### Technical Fact Sheet

#### Lahaina Wastewater Reclamation Facility NPDES Permit Attached Algal Treatment System (ATS) Nutrient Polishing Solution Phased Regulatory Compliance Attainment Framework (PRCAF)

This fact sheet summarizes the regulatory requirements, engineering assumptions, and supporting evidence relevant to the proposed Attached Algal Treatment System (ATS) pathway for achieving Total Nitrogen compliance at the Lahaina Wastewater Reclamation Facility.

**Note on Modeling Uncertainty:** The nitrogen removal estimates presented herein, including the preliminary estimate of approximately 90 lb/day removal capacity from approximately ten acres of ATS treatment surface under Maui climatic conditions, represent conceptual engineering calculations based on operational data from comparable facilities. These estimates are not performance guarantees. The phased pilot structure described in this motion is specifically designed to verify performance under Lahaina-specific hydrologic, climatic, and operational conditions prior to any reliance on these estimates for compliance purposes.

#### **1. Facility:**

Lahaina Wastewater Reclamation Facility (Lahaina WWRF), Maui County, Hawai'i

#### **2. Regulatory Framework:**

National Pollutant Discharge Elimination System (NPDES) permit issued by the Hawai'i Department of Health, 2025

#### **3. Permit Total Nitrogen Daily Mass Discharge Limits:**

Annual Average TN Limit: 8.25 lb/day

Daily Maximum TN Limit: 13.51 lb/day

#### **4. Current Nitrogen Loading:**

Recent operating data indicate approximately 105 lb/day of total nitrogen discharge from the facility.

## **5. Required Nitrogen Reduction:**

Preliminary conceptual modeling suggests that an attached algal treatment system on the order of approximately ten acres may be capable of removing roughly 90 pounds of nitrogen per day under Maui climatic conditions.

## **6. Proposed Treatment Concept:**

Attached Algal Treatment System (ATS), also referred to as a limu nutrient polishing system, using native Hawai'i freshwater benthic macroalgae cultivated on engineered shallow flowways downstream of existing treatment processes.

## **7. Technology Classification:**

Attached Algal Treatment Systems are a form of nature-based wastewater polishing technology that removes nutrients through algal assimilation and biomass harvesting.

## **8. Nitrogen Removal Mechanism:**

Dissolved nitrogen is assimilated into algal biomass through photosynthetic growth. Periodic harvesting removes the biomass, permanently exporting the assimilated nitrogen from the treatment system.

## **9. System Configuration:**

Shallow engineered flowways supporting attached algal growth under continuous hydraulic loading and solar illumination. Hawai'i's high year-round solar irradiance supports continuous macroalgal productivity relative to temperate climates.

## **10. Typical Hydraulic Depth:**

Water depths of 1–3 inches flowing across gently sloped surfaces designed to promote algal attachment and growth

## **11. Primary Energy Source:**

Solar radiation drives algal photosynthesis, rather than mechanical aeration or high-pressure membrane processes.

**12. Operational Precedent:**

Utility-scale ATS facilities have operated for more than a decade in Indian River County, Florida. Published operational data from Indian River County ATS facilities include Egret Marsh ATS (approximately 10 MGD capacity, operating since 2010) and Osprey Marsh ATS (approximately 10 MGD capacity, operating since 2013).

**13. Observed Performance:**

Monitoring at the Osprey Marsh facility recorded mean effluent total nitrogen concentrations of approximately 0.775 mg/L during multi-year operation. Actual performance varied based on flow, nutrient loading, solar irradiance, and operational management.

**14. Pilot Demonstration Evidence:**

A recycle-mode ATS pilot operated from 2012–2014 achieved sustained effluent TN concentrations below 1 mg/L under continuous field conditions.

**15. Preliminary Lahaina System Modeling:**

Preliminary engineering modeling indicates that an ATS treatment surface of approximately ten acres under Maui climatic conditions could remove roughly 90 lb/day of nitrogen through algal assimilation and biomass harvesting. These modeling estimates represent conceptual engineering calculations and are not performance guarantees.

**16. Estimated Treatment Footprint:**

Approximately 10 acres of ATS treatment surface would be required for full-scale nitrogen removal. ATS systems are modular and scalable, allowing treatment surface area to expand incrementally as performance is verified.

**17. Implementation Strategy:**

Phased deployment will consist of pilot validation, initial modular installation, and expansion of treatment surface area based on verified performance.

**18. Phased Regulatory Compliance Attainment Framework (PRCAF):**

A seven-year Phased Regulatory Compliance Attainment Framework (PRCAF) is aligned with typical wastewater infrastructure timelines for engineering design, permitting, construction, and operational startup.

**19. Monitoring Method:**

Total nitrogen mass load is calculated as TN concentration multiplied by daily effluent flow using EPA-approved analytical methods, with performance tracking based on rolling three-month averages, per:

$$TN \text{ mass load (lb/day)} = TN \text{ concentration (mg/L)} \times \text{flow (MGD)} \times 8.34$$

**20. Biomass Management:**

Harvested algal biomass removed from the treatment system and available for beneficial reuses that may include, but are not limited to, compost, soil amendments, or other agricultural applications, or as a biomass stock for biofuel production. Periodic harvesting maintains algal growth rates and sustains nutrient uptake capacity.

**21. Environmental Benefit:**

Dissolved nutrient pollution in municipal effluent is converted into harvestable native freshwater stream limu biomass, while reducing nitrogen discharges into Maui nearshore waters.

**22. Engineering Rationale:**

ATS systems remove nutrients from effluent through direct biological assimilation and harvesting, rather than relying solely on microbial conversion pathways within conventional treatment reactors.

**23. Conclusion:**

Operational evidence from long-term ATS facilities and preliminary engineering modeling supports ATS nutrient polishing as a technically plausible pathway capable of addressing the ~90 lb/day nitrogen reduction required for NPDES permit compliance at the Lahaina WWRF in the context of a 7-year Phased Regulatory Compliance Attainment Framework (PRCAF). Actual performance will depend on site-

specific hydrologic, climatic, and operational conditions and may be verified through pilot testing and measured operational data.

### **CERTIFICATE OF SERVICE**

I certify that a true and correct copy of the foregoing Motion was served upon all parties of record in DOH Docket No. 2025-NPDES-2 by electronic mail on this date.

Service was made to the parties at the electronic service addresses designated in the applicable Procedural Order(s) for DOH Docket No. 2025-NPDES-2, and is intended to satisfy the certification requirements of Hawai'i Administrative Rules §11-1-28(f).

#### For the County of Maui

1. Brian A. Bilberry
2. Kristin Tarnstrom
3. Andrew Nelson
4. Parbatie Scott
5. Michele White

#### Courtesy counsel

1. Wendy Wang
2. Shawn Hagerty

#### For Sierra Club/Maui Tomorrow

1. David Henkin
2. Mahesh Cleveland
3. Julie Parks

#### For the Department of Health

1. Mike Wallerstein
2. Dale Sakata
3. Joanna Yeh

Respectfully submitted,

DATE: April 15, 2026

/s/ Travis A. Liggett, M.S.

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**DEPARTMENT OF HEALTH**  
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**SECOND PROCEDURAL ORDER**

County of Maui et al., v. DOH

Docket No. 2025-NPDES-2

On February 2, 2026, I held a status conference to discuss changes to the schedule in this matter and to clarify discovery deadlines. Representatives from the County of Maui ("Maui"), Hawai'i Wildlife Fund, Sierra Club, Surfrider Foundation, and West Maui Preservation Association (together, "Community Complainants"), and the Department of Health attended. Maui, the Community Complainants, and the Department of Health are hereinafter referred to individually as "Party" and together as "the Parties." At the status conference, I was asked to move the hearing dates, and to clarify portions of the Procedural Order I issued on October 31, 2025 ("Procedural Order"). Based on these discussions, I set new dates and clarify the Procedural Order as follows.

**New Dates**

1. By stipulation of the Parties, the Hearing in this matter is rescheduled for July 20-31, 2026.
2. No later than May 27, 2026, each party shall serve on all other parties an expert report that complies with the Federal Rules of Civil Procedure Rule 26(a)(2) for each expert that the party intends to have testify in support of its case-in-chief.
3. Discovery, including all responses, shall be completed 60 days before the hearing begins, i.e., May 27, 2026.

**Clarifying the Procedural Order**

4. Numbered paragraph 3 of the Procedural Order states "Parties shall respond to document requests within 30 days after service of the request." To "respond" within the meaning of this paragraph, a party must either:
  - A. Produce the requested document(s) without objection;

B. Produce the requested documents(s) notwithstanding any stated objection(s); or

C. State clear and reasonable reasons for why the requested documents cannot be produced within the 30 day deadline, provide a specific date when the requested document(s) will be produced, with the last possible date being no later than 60 days before the hearing (i.e., May 27, 2026), and produce the requested document(s) by that specific date.

The only reasons the responding Party may refuse to produce the requested document(s) are: if the document(s) do(es) not exist; the responding party does not possess or control the requested document(s); or the objection to production asserts privilege. If the responding Party asserts privilege, it must provide a detailed privilege log that identifies each document withheld, briefly describes the contents of the document, states what privilege it falls under, including the legal basis for that privilege, and clearly explains why it is privileged from disclosure.

5. Numbered paragraph 10 of the Procedural Order states: “By stipulation of the parties, these dockets will be consolidated into a single contested case proceeding, which shall be docketed as 2025-NPDES-2.” The term “consolidation” in the preceding sentence means consolidation pursuant to Hawaii Administrative Rules (“HAR”) § 11-1-34.

Maui and the Community Complainants each separately sought a contested case proceeding related to NPDES Permit No. HI 0021848, that the Department of Health issued on August 29, 2025. I found that the issues in each proceeding to be closely related and consolidating those two proceedings into one will be conducive to the proper dispatch of business and to the ends of justice, and will not unduly delay or harm the proceedings. Upon that finding, and the Parties’ stipulation, I consolidated those two separate cases into one, pursuant to HAR § 11-1-34.

Once consolidated, the two individual cases ceased to exist. There is no need or possibility for the Community Complainants to intervene in Maui’s case challenging Permit, and vice versa. All claims challenging the Permit, -- both Maui’s and the Community Complainants’-- will be heard in the same consolidated proceeding, docketed as 2025-NPDES-2, County of Maui et al., v DOH. In this case there will be one record, one hearing, and one final order.

If this explanation affects any Party’s understanding of what factual and legal issues another Party intends to address, I encourage the Parties to work together to understand one another’s position, and make any stipulations they wish to help simplify the issues in this complex case.

//

In all other respects, the Procedural Order remains unchanged and in full effect.

DATED and SERVED: Honolulu, Hawaii, February 4, 2026.

A handwritten signature in black ink, appearing to read "Mike S. Wallerstein", with a long horizontal flourish extending to the right.

Mike S. Wallerstein  
Hearings Officer  
Department of Health  
State of Hawaii

## CERTIFICATE OF ELECTRONIC SERVICE

I certify that on February 4, 2026, I served a copy of the foregoing document, together with this Certificate of Electronic Service, by email, to all Parties to this proceeding, and to all other addresses as requested by the Parties, as follows:

### **For the County of Maui**

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### **For the Community Complainants**

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### **For the Department of Health**

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DATED: Honolulu, Hawaii, February 4, 2026.



Mike S. Wallerstein  
Hearings Officer  
Department of Health  
State of Hawaii

## **Technical Brief**

### **Attached Algal Treatment Systems as a Plausible Pathway for Total Nitrogen Compliance at the Lahaina Wastewater Reclamation Facility**

#### **Prepared by:**

Mark Zivojnovich

HydroMentia Technologies, LLC

#### **1. Introduction**

The Lahaina Wastewater Reclamation Facility National Pollutant Discharge Elimination System (NPDES) permit establishes stringent Total Nitrogen (TN) discharge limits requiring substantial reductions relative to current loading conditions. Based on available information, the facility currently discharges approximately 105 pounds of nitrogen per day, while the permit establishes an annual average TN limit of 8.25 lb/day and a daily maximum of 13.51 lb/day at a design flow of 9.0 MGD.

Accordingly, compliance with the permit requires a reduction of approximately 90 lb/day of nitrogen mass loading.

HydroMentia Technologies and related development teams have been involved in the design, construction, and operation of attached algal treatment systems for more than three decades, including both pilot-scale and utility-scale facilities.

Achieving the Lahaina permit limits presents a significant technical challenge for conventional wastewater treatment technologies. Attached algal treatment systems or limu polishing system, commonly referred to as Algal Turf Scrubber (ATS) systems, represent an alternative biological nutrient removal approach with documented field application that removes nitrogen through algal assimilation and biomass harvesting.

The purpose of this brief is to summarize the technical basis for considering ATS-based nutrient polishing as a plausible engineering pathway for achieving substantial TN reductions at the Lahaina facility through a phased implementation approach.

#### **2. Overview of Attached Algal Treatment Systems**

Attached algal treatment systems cultivate naturally occurring benthic algae on engineered shallow flowways. Nutrient-rich water flows over these surfaces under controlled hydraulic conditions while algal communities assimilate dissolved nutrients—including nitrogen and phosphorus—into biomass through photosynthetic growth.

Periodic harvesting of the algal biomass permanently removes assimilated nitrogen from the treatment system when exported from the facility.

ATS typically operate as shallow flow systems with water depths of only a few inches, allowing treatment to occur with minimal hydraulic head and relatively low energy input. The primary energy source driving nutrient removal is solar radiation supporting algal growth rather than mechanical aeration or membrane pressure.

Because nutrients are removed through biological assimilation and harvesting rather than solely through microbial conversion pathways, ATS are well suited for use as nutrient polishing systems downstream of conventional wastewater treatment processes.

Because nitrogen discharged from the Lahaina facility is transported to nearshore waters through groundwater pathways, nitrogen mass removed prior to reuse or injection directly reduces loading to coastal receiving waters. Attached algal treatment systems therefore function as tertiary nutrient polishing infrastructure that reduces total nitrogen mass before subsurface transport occurs. This mass-reduction framing aligns ATS deployment with the permit's mass-based limits and places the technology within a compliance-oriented polishing step in the existing treatment train.

### 3. Operational History of ATS Systems

Attached algae treatment systems have been engineered and deployed for more than three decades in applications including agricultural runoff treatment, watershed restoration, industrial nutrient management, and wastewater polishing.

HydroMentia and related development teams have participated in the design and deployment of ATS systems since the early 1990s. Several systems have operated at substantial scale for extended periods.

Two systems provide examples of long-term operational performance of ATS infrastructure:

#### **Egret Marsh Algal Turf Scrubber – Indian River County, Florida**

- 10 MGD treatment capacity
- Operating since 2010

#### **Osprey Marsh Algal Turf Scrubber – Indian River County, Florida**

- Approximately 10 MGD treatment capacity
- Operating since 2013

These systems demonstrate that ATS can be constructed and operated as utility-scale treatment infrastructure capable of sustained long-term operation.

Operational monitoring data from the Osprey Marsh facility provide evidence of sustained low nutrient concentrations under continuous operation.

**Table 1. Osprey Marsh ATS – Nutrient Performance Summary**

<b>Monitoring Period</b>	<b>Mean Outflow TN</b>	<b>Mean Outflow TP</b>
Jan 2022 – Apr 2025	0.775 mg/L	0.079 mg/L

During this monitoring period, many total phosphorus measurements were undetected at the analytical detection limit of 0.070 mg/L, suggesting that the true mean TP outflow concentration may be lower.

Although watershed inflow conditions differ from municipal wastewater effluent, these results demonstrate the ability of large-scale ATS to sustain very low nutrient concentrations over extended operational periods.

### 4. Industrial Recycle ATS Pilot Demonstration

The closest operational analogue to the Lahaina challenge is a multi-year industrial recycle-mode ATS pilot conducted under controlled field conditions to evaluate low-concentration nutrient polishing. This pilot operated continuously over multiple years and provides insight into ATS performance under sustained hydraulic loading conditions beyond laboratory-scale testing. Additional supporting data from this pilot are available under appropriate confidentiality provisions.

In this pilot configuration, water was recirculated through the ATS in order to reduce effluent nutrient concentrations beyond what would typically be achieved in a single-pass configuration. Under sustained operation, the recycle-mode ATS achieved low effluent TN concentrations, as summarized below:

**Table 2. Recycle ATS Pilot Effluent TN Concentrations**

<b>Period</b>	<b>Mean Inflow TN</b>	<b>Mean Outflow TN</b>	<b>TN Reduction</b>
Full period of record	4.34 mg/L	1.45 mg/L	67%
Calendar Year 2014	4.87 mg/L	1.12 mg/L	77%
Final six months of operation	4.60 mg/L	0.85 mg/L	82%

These results indicate that recycle-mode ATS sustained low nitrogen concentrations under the observed operating conditions.

The recycle-mode pilot also illustrates an important engineering consideration. During repeated recirculation across algal flowways, dissolved inorganic carbon is consumed and system pH increases. To address this effect, the pilot incorporated carbon recovery ponds downstream of the ATS flowways to restore carbon chemistry and stabilize pH prior to recirculation.

Full-scale sizing projections from the pilot included both the ATS treatment surface and the associated carbon recovery ponds. Under the CY2014 sizing example, the ATS treatment surface represented approximately 1.6 acres per MGD, while the carbon recovery ponds represented a substantially larger portion of the total recycle-system footprint.

Importantly, analysis indicated that carbon recovery was achieved early within the recovery sequence, suggesting that future optimized designs may require significantly smaller carbon recovery footprints than those used in the conservative pilot configuration.

### **5. Implications for Lahaina TN Compliance**

Taken together, the operational history of ATS systems, the long-term performance of utility-scale facilities such as Egret and Osprey Marsh, and the recycle-mode industrial pilot demonstration provide a technical basis for evaluating that attached algae nutrient polishing represents a plausible pathway for achieving substantial TN reductions. Further site-specific validation would be required to confirm performance under Lahaina-specific operating conditions.

These performance observations are presented as feasibility evidence rather than guaranteed operational outcomes. Full-scale implementation would proceed through pilot validation, incremental expansion, and performance verification prior to reliance for compliance. This phased deployment structure aligns with regulatory expectations for emerging treatment technologies and supports evaluation of ATS as a measurable pathway toward achieving the permit's total nitrogen mass limits.

The industrial pilot results include sustained TN concentrations below 1 mg/L under controlled field conditions. Utility-scale systems demonstrate that ATS infrastructure can operate reliably at large scales for extended periods.

For the Lahaina facility, the primary design objective is to close an approximate 90 lb/day nitrogen mass gap while achieving effluent concentrations approaching natural background levels.

ATS are well suited for this type of application because they remove nutrients through direct biological assimilation and harvesting rather than relying solely on microbial conversion processes within treatment reactors.

Because the Lahaina TN limits are unusually stringent, a phased implementation approach would be appropriate. Such an approach could include:

1. Pilot-scale system validation
2. Initial modular deployment
3. Expansion of treatment surface area based on verified performance

This staged implementation framework is consistent with standard engineering practice when deploying new or site-specific treatment technologies.

These findings are presented to demonstrate technical plausibility and do not constitute a performance guarantee; full-scale applicability would require confirmation through pilot validation and phased performance verification under Lahaina-specific operating conditions.

## **6. Conclusion**

The available operational evidence indicates that attached algal treatment systems represent a technically credible and scalable option for nutrient polishing applications requiring substantial nitrogen reduction.

Decades of ATS engineering experience, long-term operation of utility-scale systems, and the demonstrated performance of recycle-mode ATS pilot systems collectively support the evaluation that a staged ATS-based nutrient polishing system could provide a technically plausible pathway for achieving the Lahaina TN discharge limits.

Accordingly, consideration of a phased compliance schedule incorporating ATS system development and deployment would be technically reasonable and consistent with established engineering practice for infrastructure projects requiring specialized treatment solutions.

This technical brief does not prescribe a compliance schedule, but instead provides engineering information relevant to evaluating whether a phased implementation pathway may constitute a technically plausible compliance mechanism. Any such pathway would require site-specific pilot validation, regulatory review, and performance verification prior to consideration of full-scale deployment, and does not modify or relax the final numeric TN limits established in the Lahaina WWRF NPDES permit.

# A Green Shield for Lahaina

## Algae Farming to Buffer Human Wastewater Impacts

by Dean Calahan, Ph.D.  
2026.04.07

Current regulatory conditions create an opportunity to establish a substantial improvement in municipal wastewater treatment in Lahaina, using ecological engineering methods (Kangas, 2003) to affordably reduce total nitrogen (TN) loading. Specifically, approximately 90 pounds of TN must eventually be removed per day from R-1 reuse water produced at the Lahaina Wastewater Reclamation Facility (WWRF). A specific technology for algae cultivation, known variously as Filamentous Algal Nutrient Scrubbers (Sutherland et al., 2020), Algal Floway Technologies (Bott et al., 2015), and Algal Turf Scrubbing (Adey, 2024) – distinct from algal raceway systems known as Oswald or high-rate ponds – is an established tertiary water treatment practice that can satisfy this requirement (Adey & Goertemiller, 1987; D’Aiuto et al., 2015). Floway systems cultivate captive, attached macroalgae on shallow (inches deep), linear, submerged sloped surfaces with gravity flow, whereas raceway systems cultivate dispersed, suspended microalgae in deeper (feet deep), usually oval channels, usually with paddle-wheel flow.

This process is essentially the farming of indigenous aquatic photosynthetic species (algae, a kind of limu) in “aquatic farm fields”, known as floways. Anyone familiar with aquatic environments knows that unwanted algae are often difficult or impossible to eradicate. This fecundity is an advantage if the algae are instead desired, as algal proliferation is easily facilitated by providing an algae-friendly environment. The fact that the algae cells will simply arrive naturally is a strength of ecologically engineered facilities like an algal floway. An inevitable consequence of rapid algal growth is rapid removal of nutrients from the water feeding the algae, which can be on the order of 1 ppt TN per day. The nutrients from the water, including CO<sub>2</sub>, become part of the algal “crop”. This crop is frequently harvested (*e.g.* weekly) to permanently remove nutrients from the system. Hydromentia LLC, a company that specializes in treatment of nutrient-rich water, has built several utility scale ATS facilities, with two of them currently operating in Florida. Floway facilities are built using familiar construction methods.

Hydromentia’s implementation procedure is standardized process. A pilot study is first performed to determine the viability of algae cultivation with effluent from the specific site, providing data needed to design a facility that will satisfy nutrient removal requirements. Upon completion of the pilot, a formal construction and operating proposal can then be arranged. The pilot system itself can be an asset beyond the required data collection, as stakeholders and community members would be able to see a floway in action, and familiarize themselves with how it works and with the bulk algal biomass that is the inevitable product of scrubbing excess nutrients from water using floway systems. Construction can be phased in over time, with each new floway adding treatment capacity and biomass production.

Maui's unwanted algae blooms are nature's response to the excess nutrients introduced by historical practices, including wastewater management. The freshwater stream algae in the captive floway ecosystem react the same way as their marine cousins do, consuming the excess nutrients, but before they reach the shore. All else being equal, a ton of limu biomass grown in floways on land is a ton of unwanted algal bloom avoided in Maui's waters.

The Lahaina WWRF could become the first facility on Maui to scrub its harmful nutrient rich water to ocean-equivalent standards using algal floways. If additional floway facilities were then built throughout Maui and the rest of Hawaii, a "green shield" of limu farms would dot each island, cleansing municipal reuse wastewater of remaining unwanted nutrients as gravity brings it from the island ridges, through watersheds both natural and artificial, to the ocean. Such a network of algal greenfields throughout the islands would act as a natural barrier to human nutrients reaching ocean waters, sparing them and Hawai'i's reefs further damage and allowing them to return to their previous pristine conditions.

Algal floway systems provide a way to systematically and reliably scale up to meet stringent nutrient loading limits, but they also provides a potential source of biomass-derived products of use to local agriculture, from commercial and non-commercial gardening, to farming, to composting or other existing or new business opportunities. This novel source of biomass could encourage sustainable agriculture and food security, further protecting and possibly enhancing watersheds.

Algae floway systems are basic and scalable, implemented with standard components and techniques. A pumping station services one or more floways, each essentially a shallow artificial streambed resembling a sloped concrete parking lot with a roughened, non-slip surface. There are one or more reservoirs for initial storage of influent (*i.e.* R-1 water) before it enters the floway, and another one or more reservoirs for stabilization of the treated effluent before final discharge. Nutrient-rich water is pumped in along the top of the floway and descends by gravity to the bottom, where it is collected and recirculated as needed to complete treatment. Frequent harvesting permanently removes the algal biomass, and thus the accumulated nutrients, from the system.

A floway system is typically self-inoculating, continuously sampling the local environment for new species, increasing in biodiversity over time. Indigenous algae cells settle into the water, blown in on leaves or dust, and brought in by insects or other animals attracted to the water. These cells attach to the floway's roughened concrete surface, growing into filaments that trap additional algal cells as well as other cells and particles in the water (Fig. 1). The algae cells proliferate, removing nutrients from the water and converting them into captive biomass. Once a turf matures, its thin lowest layer remains firmly attached to the concrete, while the bulk of the biomass is easily detached for harvest (Fig. 2). The water is recirculated until it satisfies nutrient removal requirements, spends some time in a stabilization reservoir to restore its CO<sub>2</sub> content from the atmosphere, and is then discharged. Each floway requires periodic harvesting, at most every 5 to 7 days, using simple methods, and the collected biomass is easily air dried. Depending on its composition, the harvested biomass could offer a wide range of beneficial uses, such as composting, pyrolysis, or biofuel production.

The algal turf is composed mainly of filamentous species attached to the flowway's roughened surface, woven together naturally and entrapping additional algal and microbial species as well as various small particles that find their way into the system. The exact algal species profile in a given flowway at a given time will be seasonal and specific to the local ecosystem, but in general, many algal species present in Maui will behave in similar ways. Harvesting is best performed when the algae are growing rapidly, removing the canopy before it maturity leads to slower growth and thus nutrient. Each acre of flowway will produce tons of dried algal biomass per year.

Sampling of water and biomass is straightforward and could be implemented transparently, with automated reporting to regulatory agencies and courts, giving the public easy access to see how the system is working. Local companies or organizations could incorporate harvested algal biomass into their efforts, producing finished compost or simply applying dried biomass as a soil amendment. Algal biomass is rich in the macro- and micro-nutrients needed for high productivity agriculture without importing fertilizers, a key consideration when planning for sustainability and food security on an island ecosystem.

In the 50 years since Dr. Adey invented this technology to control algal growth in a coral reef exhibit at the Smithsonian Institution, more than a hundred peer-reviewed studies of ATS have been performed, and the technology has been used in large-scale water treatment projects (mainly by Hydromentia) and in aquaria large and small around the world. Numerous pilot projects have been conducted using natural waters from rivers and estuaries as the nutrient source, as well as secondary treated municipal waste, agricultural runoff, effluent from confined animal feeding operations (CAFOs), and industrial waste. In almost every case, the flowways self-inoculate from algal cells available in the local environment and form a highly productive captive photosynthetic ecosystem. Rarely, interventions such as placing algae-bearing rocks from nearby streams or lakes have been needed to accelerate the inoculation process, but once inoculated a flowway tends to become more biodiverse as it continues to sample the local environment for new algal strains.

Five decades of experience implementing ATS systems can be brought to bear on this project, from running the pilot study to designing and building the production flowways. "Algal Floway Systems" have been designated a Best Management Practice (BMP) by the State of Maryland. As Lahaina's citizens and government recognize the simplicity and effectiveness of algal flowways, new uses for them may emerge, such as integration with ahupua'a, treatment of other industrial waters, or even hobbyist projects or K-12 educational programs.

By adopting practices that eliminate any issues regarding polluting its waters with excess nutrients, Maui County could position itself as an international leader in adopting filamentous algae nutrient scrubbing. Algal flowways represent a cost-competitive and ecologically aligned treatment option, producing both clean effluent and abundant biomass, relieving stresses on the ecological health of reefs and estuaries around the island, and increasing sustainability and food security.

## Figures

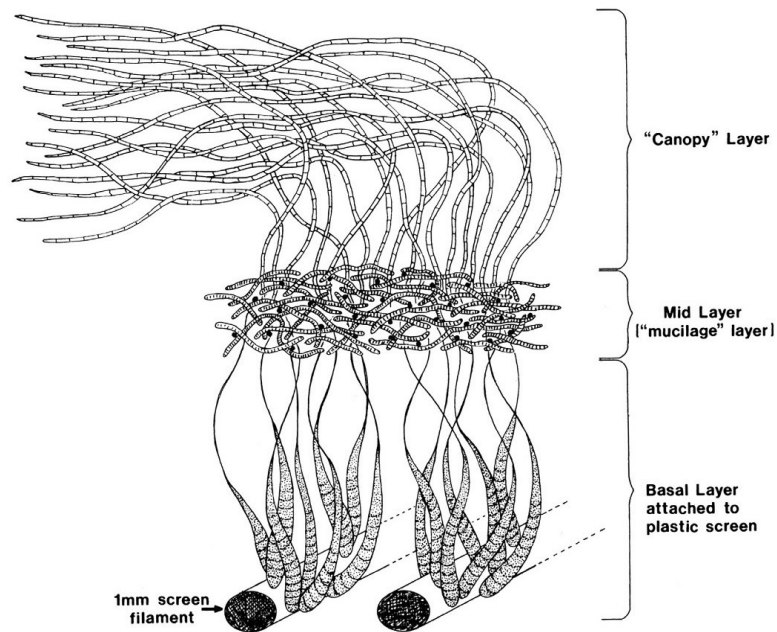


Figure 1. Typical cross-section of an algal turf attached to an algal floway. In this drawing, the filaments are attached to a high surface area screen.



Figure 2. Typical appearance of a mature algal turf within an algal floway.

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## BFED Committee

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**From:** Christina Kaea-Medley <christina.kaea.medley@gmail.com>  
**Sent:** Wednesday, April 15, 2026 12:27 AM  
**To:** BFED Committee; County Clerk  
**Cc:** Kaea-Medley, Ronald  
**Subject:** Strong Support for Continued Funding of the Farmers Apprenticeship Mentoring (FAM) Program – Maui County Budget FY2027

You don't often get email from christina.kaea.medley@gmail.com. [Learn why this is important](#)

### **Subject: Strong Support for Continued Funding of the Farmers Apprenticeship Mentoring (FAM) Program – Maui County Budget FY2027**

Aloha Chair and Members of the Maui County Council,

I am writing in strong support of continued funding for the Farmers Apprenticeship Mentoring (FAM) Program through the Hawai'i Farmers Union. I am currently a participant in FAM Cohort 11 with Maui County.

Participating in the FAM program has been a truly foundational experience in my family's journey to build a small, regenerative farm here on Maui. As new farmers, there is no substitute for guidance, mentorship, and education that is both practical and rooted in local knowledge...and FAM provides exactly that!!

One of the most impactful aspects of this program is its structure. FAM combines a classroom-style learning environment where we gain a strong foundation in agricultural principles as well as hands-on training at real farm operations. This approach allows us to immediately apply what we are learning in real-world settings, building both skill and confidence.

The farmer mentors are truly exceptional. They share their knowledge generously and lead with passion, creating an environment where we feel supported and inspired. Their genuine investment in our success makes a lasting impact and helps ensure that new farmers like us have a real chance to succeed.

Through this program, we have gained not only technical skills, but also the confidence to take meaningful steps forward: planting with intention, restoring our land, and working toward a future that contributes to local food resilience and community well-being. From managing invasive species to understanding soil health and crop planning, the lessons we are learning directly shape the success and sustainability of our farm.

For six years, my husband and I talked about starting a small farm on our property. The FAM program gave us the knowledge, skills, and confidence to finally begin that journey. Thanks to FAM, we are now finally, actively working to establish a diverse orchard, support native plant restoration, and create opportunities for cultural education through farming. None of this progress would be possible without the support and structure that the FAM program provides.

Programs like FAM are critical to the future of agriculture on Maui. They empower new farmers, strengthen local food systems, and help ensure that knowledge is passed on in a way that is accessible and community-centered. Investing in FAM is an investment in the next generation of farmers and in the long-term resilience of our island.

As a mother of three raising the next generation on this land, this program is not just education, it is shaping our family's future and our ability to steward this 'āina responsibly. My children have helped plant every fruit tree at our family farm including bananas, avocados, mango, guava, 'ulu, and more—along with nearly a dozen native Hawaiian plants, with the hope of one day helping restore native Hawaiian ecosystems.

I respectfully urge the Maui County Council to continue funding the FAM program for FY2027.

Mahalo for your time, consideration, and continued support of Maui's farming community.

With gratitude,  
Christina Kaea-Medley

FAM Cohort 11  
Maui, Hawai'i

E mālama i ka 'āina, a e mālama ka 'āina iā kākou.  
*Care for the land, and the land will care for us.*

## BFED Committee

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**From:** Ronald Kaea-Medley <ronald.kaea.medley@gmail.com>  
**Sent:** Wednesday, April 15, 2026 12:33 AM  
**To:** BFED Committee; County Clerk  
**Cc:** Christina Kaea-Medley  
**Subject:** Re: Strong Support for Continued Funding of the Farmers Apprenticeship Mentoring (FAM) Program – Maui County Budget FY2027

You don't often get email from ronald.kaea.medley@gmail.com. [Learn why this is important](#)

Aloha Chair and Members of the Maui County Council,

I echo my wife Christina's testimony (*below*) in strong support of continued funding for the Farmers Apprenticeship Mentoring (FAM) Program. I am also part of FAM Cohort 11. This program has been a huge part of helping our family go from talking about farming to actually getting started. The mix of classroom learning, hands-on farm days, and support from the mentors has made a real difference for us. FAM is helping grow the next generation of farmers, and we're grateful to be part of it. I respectfully ask for your continued support and funding for this program.

Mahalo for your time and consideration,  
Ronald Kaea-Medley, Cohort 11

On Wed, Apr 15, 2026 at 12:26 AM Christina Kaea-Medley <[christina.kaea.medley@gmail.com](mailto:christina.kaea.medley@gmail.com)> wrote:

**Subject: Strong Support for Continued Funding of the Farmers Apprenticeship Mentoring (FAM) Program – Maui County Budget FY2027**

Aloha Chair and Members of the Maui County Council,

I am writing in strong support of continued funding for the Farmers Apprenticeship Mentoring (FAM) Program through the Hawai'i Farmers Union. I am currently a participant in FAM Cohort 11 with Maui County.

Participating in the FAM program has been a truly foundational experience in my family's journey to build a small, regenerative farm here on Maui. As new farmers, there is no substitute for guidance, mentorship, and education that is both practical and rooted in local knowledge...and FAM provides exactly that!!

One of the most impactful aspects of this program is its structure. FAM combines a classroom-style learning environment where we gain a strong foundation in agricultural principles as well as hands-on training at real farm operations. This approach allows us to immediately apply what we are learning in real-world settings, building both skill and confidence.

The farmer mentors are truly exceptional. They share their knowledge generously and lead with passion, creating an environment where we feel supported and inspired. Their genuine investment in our success makes a lasting impact and helps ensure that new farmers like us have a real chance to succeed.

Through this program, we have gained not only technical skills, but also the confidence to take meaningful steps forward: planting with intention, restoring our land, and working toward a future that contributes to local food resilience and community well-being. From managing invasive species to understanding soil health and crop planning, the lessons we are learning directly shape the success and sustainability of our farm.

For six years, my husband and I talked about starting a small farm on our property. The FAM program gave us the knowledge, skills, and confidence to finally begin that journey. Thanks to FAM, we are now finally, actively working to establish a diverse orchard, support native plant restoration, and create opportunities for cultural education through farming. None of this progress would be possible without the support and structure that the FAM program provides.

Programs like FAM are critical to the future of agriculture on Maui. They empower new farmers, strengthen local food systems, and help ensure that knowledge is passed on in a way that is accessible and community-centered. Investing in FAM is an investment in the next generation of farmers and in the long-term resilience of our island.

As a mother of three raising the next generation on this land, this program is not just education, it is shaping our family's future and our ability to steward this 'āina responsibly. My children have helped plant every fruit tree at our family farm including bananas, avocados, mango, guava, 'ulu, and more—along with nearly a dozen native Hawaiian plants, with the hope of one day helping restore native Hawaiian ecosystems.

I respectfully urge the Maui County Council to continue funding the FAM program for FY2027.

Mahalo for your time, consideration, and continued support of Maui's farming community.

With gratitude,  
Christina Kaea-Medley

FAM Cohort 11  
Maui, Hawai'i

E mālama i ka 'āina, a e mālama ka 'āina iā kākou.  
*Care for the land, and the land will care for us.*

## BFED Committee

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**From:** Dominique Linden <linden.dominique@yahoo.com>  
**Sent:** Wednesday, April 15, 2026 10:19 AM  
**To:** County Clerk; BFED Committee  
**Subject:** Farm Apprenticeship Mentorship - FAM program - written testimony

You don't often get email from linden.dominique@yahoo.com. [Learn why this is important](#)

Aloha,

To whom it may concern, I would like to share my sincere testimony of how much I have gotten out of the FAM program. The materials, hands on learning, and community in action activities have been truly wonderful and enriching.

I will be able to grow food to feed myself, family and community. I have made connections for being able to give my compost to a farm mentor's pigs, mentor with a permaculture designer and move to a farmer's property to help create even more food to share.

I feel with the state of the world this program is critical, and am sending this in the hopes the program will continue.

Thank you,

Dominique Linden

[Sent from Yahoo Mail for iPhone](#)

## BFED Committee

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**From:** Malia Davidson <malia@kumukahikealoha.org>  
**Sent:** Wednesday, April 15, 2026 12:12 PM  
**To:** BFED Committee; County Clerk  
**Cc:** Sara Gilligan; Paulo Faleafine  
**Subject:** Budget Testimony Support for FAM program

You don't often get email from malia@kumukahikealoha.org. [Learn why this is important](#)

Aloha Chair Sugimura and Members of the Maui County Council,

I am writing in strong support of the Farmer Apprentice Mentoring (FAM) Program offered by the Hawaii Farmers Union United. As a participant in the 11th cohort, I can say with confidence that this program provides one of the most comprehensive and grounded pathways for individuals committed to building successful and sustainable small farms in Hawai'i.

The FAM Program delivers practical, real-world education that extends far beyond theory. From soil development to harvest, and from navigating wind, rain, and sun to managing weeds, animals, and insects, we are trained to work within the full reality of our island environment. This program does not romanticize farming—it prepares us for it with honesty, depth, and care.

What makes this cohort especially powerful is the diversity of its participants. Approximately half of our cohort are new to farming. Many come with a love for gardening, a desire to care for animals, or simply a deep internal calling to this work—often with little to no prior experience. The other half bring years of experience, generational knowledge, established relationships with land, and in some cases, access to land itself.

This range creates a highly dynamic and effective learning environment. We actively support one another. Each gathering reveals who carries specific expertise, who asks the questions shaped by lived experience, and who introduces new ways of thinking. There are questions asked in this space that some of us would not yet know to ask on our own. This is where real growth happens.

Our cohort reflects the broader fabric of Maui. It includes individuals who have lived here their entire lives and those who have come from away and now call Maui home. There are those who have traveled globally and those deeply rooted in place-based knowledge who are working to sustain and expand their farms. Together, we form a network grounded in shared purpose, mutual respect, and collective responsibility.

This experience directly informs and strengthens the work my ohana is building in Waiohuli Homestead through *Malama Nā Pua program* an agricultural and wellness initiative under the nonprofit Kumukahi Ke Aloha. Our focus is not only on food production, but on cultivating relationships—between people, land, and community. The FAM Program reinforces this approach by connecting us with experienced farmers and area experts whose mentorship is essential. These relationships are not supplemental—they are foundational to success.

Farming is a labor of love and service. It requires resilience, adaptability, and long-term commitment. The early years are particularly challenging, and the likelihood of success without proper guidance is low. Programs like FAM significantly increase the chances of success by providing access to mentorship, shared knowledge, and a supportive network that helps farmers think critically, solve problems effectively, and remain inspired.

We must also acknowledge the environmental realities of farming in Hawai'i. The conditions we face—shifting weather patterns, strong winds, variable rainfall, pests, and regional microclimates—require constant observation and adaptation. The ability to share insights across districts, to understand what others are experiencing, and to learn collectively is essential to our long-term viability.

This program benefits far beyond the individual participant. It strengthens families, builds community resilience, and contributes directly to local food security. It is a critical piece of ensuring that Hawai'i can sustain itself.

We must also consider our geographic limitations. There are only so many barges that can reach our shores, yet we live in one of the most fertile and abundant environments in the world. Investing in local agriculture is not optional—it is necessary.

We are all in this together. I respectfully ask for the Council's support in nurturing this work—not only for current participants, but as part of a broader succession plan for future generations. Only through hands-on experience—working the land, caring for animals, and engaging in holistic, place-based practices—will we be able to navigate the challenges ahead.

Programs like FAM are essential to building that future. They cultivate knowledge, strengthen networks, and empower individuals to contribute meaningfully to our communities.

I strongly urge continued and increased support for the FAM Program. Supporting our farmers is an investment in the health, resilience, and sustainability of Hawai'i.

Mahalo for the opportunity to testify.

O wau me ka ha'aha'a,  
Malia Davidson-Faleafine

## BFED Committee

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**From:** Kelly Donnelly <kellydonnelly27@gmail.com>  
**Sent:** Wednesday, April 15, 2026 9:38 PM  
**To:** BFED Committee; Sara Gilligan  
**Subject:** FAM testimony for 4/16 budget meeting

[You don't often get email from kellydonnelly27@gmail.com. Learn why this is important at <https://aka.ms/LearnAboutSenderIdentification> ]

Aloha,

I am a 2025 FAM graduate and I am not exaggerating when I say FAM changed my life. The value of this program for not only myself but the community, is something I can't quantify. The resources, knowledge, connections, and opportunities that this program creates are immeasurable. I am so grateful for its existence, for the leadership of it, and all of the participants—from mentors to students. It's truly one of the most enriching experiences I've had and has connected me to the land and people of Maui in a profound way. It is such a necessary program for our community and the fact that it is free makes it accessible to all. Learning about how to steward and care for the land is something that should be communal and available to everyone. My hope is that FAM is used as a model for other programs in the future on how we can come together and learn from one another for the betterment of our island. The āina needs sustainably focused caretakers now more than ever, and most of us didn't grow up learning these ways. It is vital to the perpetuation of this knowledge that it remain accessible without barriers like high costs or exclusivity. Farming is a labor of love, it's hard to get started and it's hard to stay motivated. In my experience, if you are going to work with/for the land your heart has to be in it . Often that passion requires ignition and inspiration, which is exactly what FAM does. It also provides a network of real-life growers to reach out to when that motivation wavers or you need guidance on next steps. Farming is an industry that thrives when we support one another and share collectively. I hope FAM receives even more funding than it has in the past so we can all continue to GROW.

Mahalo,  
Kelly Donnelly

## BFED Committee

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**From:** Linn Nishikawa <linn@lnamaui.com>  
**Sent:** Thursday, April 16, 2026 4:52 PM  
**To:** BFED Committee  
**Subject:** Support for Lights for Lahaina – April 17, 2026

You don't often get email from linn@lnamaui.com. [Learn why this is important](#)

Aloha Chair and Members of the Maui County Council,

My name is Linn Nishikawa, Vice President of Aloha Amplified, Inc., a Maui-based nonprofit organization, and I respectfully ask for your support of our 2026 Lights for Lahaina event.

Lights for Lahaina was created as a heartfelt response to what our island has been experiencing – to offer a space in Lahaina where people can come together in a way that feels meaningful, supportive, and grounded. While it was inspired by the need to support Lahaina following the August 8, 2023 wildfire, its purpose has continued to evolve as many navigate ongoing challenges, including the recent Kona storms.

In 2025, more than 850 people participated in Lights for Lahaina through both in-person attendance and outreach activities. In the months leading up to the event, we reached out to schools, organizations, and community groups in West Maui, providing over 1,000 lantern-making kits so they could create their own activities within classrooms and community spaces. These efforts encouraged children and families to reflect on their own stories, memories, and messages of hope, offering a meaningful way to take part in the experience – whether or not they attended the event. View our event video at <https://www.youtube.com/watch?v=tWmwKKQKnIw>

For many, the September 6, 2025 event marked their first time returning to Lahaina. What we witnessed was powerful – people reconnecting with place, with one another, and with their own memories. It was emotional, but it also created a sense of comfort and belonging.

In 2026, we will build on this foundation by expanding Lights for Lahaina into a two-day experience. The first evening, “Our Lahaina Story,” will take place at Maria Lanakila Catholic Church and will feature live local entertainment, favorite local foods, cultural practitioners, keiki activities, talk story reflections, and interactive creative experiences. The second evening will include the Light March beginning at Pu‘unoa Beach, moving through Lahaina Town in a respectful procession, and concluding at Maria Lanakila Catholic Church, where participants carry light in reflection, unity, and hope.

Building on last year’s outreach efforts, we will again connect with schools, organizations, and community groups in West Maui – expanding opportunities to include creative activities rooted in aloha and ways to heal through art. These activities will provide additional ways for individuals and families to reflect, express, and process their experiences, while strengthening connections beyond the event itself.

The rebuilding of Lahaina will happen – homes will be built, businesses will return, and physical spaces will be restored. Alongside that, however, is a longer and more personal journey of healing for individuals, families, and the community as a whole. That process often extends well beyond physical rebuilding, as each person continues to navigate their own path forward.

Creating opportunities for people to come together during this time is essential. Events like Lights for Lahaina provide a space to reconnect, share stories, and simply be in the presence of one another. These moments remind people they are not alone, and that sense of connection plays a meaningful role in healing – not just individually, but collectively.

Aloha Amplified, Inc. respectfully requests \$40,000 in FY 2026–2027 County funding to support Lights for Lahaina, taking place September 11-12, 2026.

With your support, this free event will continue to provide a safe and welcoming space for our island, while inviting others to stand with Lahaina in a respectful and meaningful way.

Mahalo for your thoughtful consideration.

Linn Nishikawa  
Vice President  
Aloha Amplified, Inc.

569 Kulaiwi Drive  
Wailuku, HI 96793  
808-281-0810

## **BFED Committee**

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**From:** Kamaunu Kahaialii <kamaunu@gmail.com>  
**Sent:** Thursday, April 16, 2026 4:56 PM  
**To:** BFED Committee  
**Subject:** LIGHTS FOR LĀHAINA 2026

You don't often get email from kamaunu@gmail.com. [Learn why this is important](#)

Aloha Chair and Members of the Maui County Council,

My name is Wilmont Kamaunu Kahaiali'i, Board President of Aloha Amplified, Inc., a Maui-based nonprofit organization, and I respectfully ask for your support of our 2026 Lights for Lahaina event.

Lahaina is not just where I am from – it is home. It is where my family's roots are grounded, where generations before me have lived, and where our stories will continue. In the August 8, 2023 wildfire, my 'ohana lost our home. Like many in our community, we continue to navigate that loss while finding ways to move forward with strength and purpose.

Through Aloha Amplified, our 'ohana has remained committed to creating spaces where our community can come together – to talk story, to reconnect, and to continue healing in ways that feel natural and rooted in who we are.

Lights for Lahaina was created from that need. In 2025, we saw firsthand the impact of bringing people together and returning to Lahaina. For many, it was their first time back. It was emotional, but also meaningful—a step forward.

In 2026, we are expanding the event into a two-day experience to deepen that connection. The first evening, "Our Lahaina Story," will take place at Maria Lanakila Catholic Church, bringing together music, food, storytelling, and creative, interactive activities that reflect the connections that shape our community. The second evening will feature the Light March beginning at Pu'unoa Beach, moving through Lahaina Town in a respectful procession, and concluding at Maria Lanakila Catholic Church, where participants carry light in reflection, unity, and hope.

Aloha Amplified, Inc. respectfully requests \$40,000 in FY 2026–2027 County funding to support Lights for Lahaina, taking place September 11-12, 2026.

With your support, this free event will provide a safe and welcoming space for our community, while inviting others to stand with Lahaina in a respectful and meaningful way.

Mahalo for your thoughtful consideration.

**Wilmont Kamaunu Kahaiali'i**

Board President  
Aloha Amplified, Inc.

808-283-9655  
P.O. Box 12862  
Lahaina, HI 96762

