Budget, Finance, and Economic Development Committee on 2022-04-14 9:00 AM

Meeting Time: 04-14-22 09:00

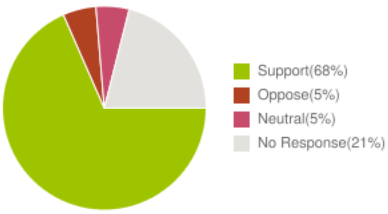
eComments Report

Meetings	Meeting Time	Agenda Items	Comments	Support	Oppose	Neutral
Budget, Finance, and Economic Development Committee on 2022-04-14 9:00 AM	04-14-22 09:00	2	19	13	1	1

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



Budget, Finance, and Economic Development Committee on 2022-04-14 9:00 AM

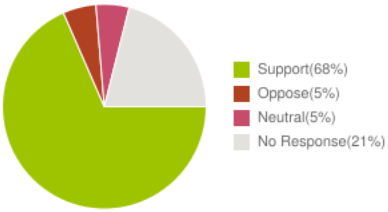
04-14-22 09:00

Agenda Name	Comments	Support	Oppose	Neutral
A G E N D A	10	7	1	1
BFED-1 Reso 22-80 PROPOSED FISCAL YEAR 2023 BUDGET FOR THE COUNTY OF MAUI (BFED-1)	9	6	0	0

Sentiments for All Agenda Items

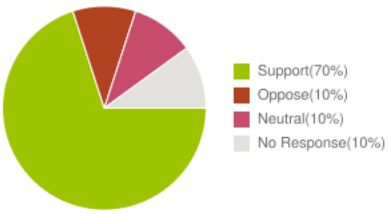
The following graphs display sentiments for comments that have location data. Only locations of users who have commented will be shown.

Overall Sentiment



Agenda Item: eComments for A G E N D A

Overall Sentiment



Guest User
Location:
Submitted At: 8:54am 04-14-22

WHERE IS THE COUNTY'S $49,523,295 IN REMAINING ARPA FUNDS REPORTED IN THE FY 2023 BUDGET?

In response to a letter sent by the BFED Chair on 4.5.22, on 4.8.22, Finance Director Teruya confirmed in writing that the County has expended only $3,000,000 of its ARPA funds.

As you know, for FY 22, the Council appropriated $52,523,395 in ARPA funds to the Finance Department Budget via Appendix A Part I - Grant Revenues. What has happened to the remaining $49,523,295 in ARPA funds? Assuming the County does not plan to spend the remaining $49 million over the next ten weeks, it appears the overwhelming majority of this money is being carried over to FY 2023. But where is the money reported in the FY 23 Budget?

In response to a direct question from you at the Budget hearing last week, Finance Director Teruya confirmed the Finance Department is not reporting any carryover savings from FY 22 for FY 23. Currently, for FY 22, Appendix A, Part I - Grant Revenues reports $52,253,295 in appropriations in ARPA funds for the Finance Department - $35,000,000 was approved by the Council in June 2021 as part of the FY 2022 budget. The remaining $17,523,295 was approved by the Council in September 2021 as a supplemental appropriation to the FY 22 budget.

The Council and the Mayor appear to have knowingly violated Charter Section 9-9.1 in the approval of the September 2021 supplemental appropriation of $17,523,295 in ARPA-NEU funds. As you know, Charter Section 9-9.1 requires, prior to Council approval of any supplemental appropriation to the FY Budget, that the Mayor provide and the Council receive a Certification of the Availability of Funds requested in the appropriation. For the September 2021 ARPA-NEU supplemental appropriation, it appears no such Mayoral Certification was provided or received. Nor could it have been provided given that County officials knew that only half of the County's ARPA-NEU allocation would be received in FY 2022.

Per the U.S. Treasury guidelines, Counties receive their ARPA and ARPA-NEU allocations in two tranches, at least 12 months apart. Maui County officials did not receive the first tranche of ARPA-NEU funds until 8.12.2021 so clearly the second tranche of $8,761,648 would not be distributed or received until FY 2023 and was absolutely not available for FY 2022.

Due to the failure to provide and receive the Charter required Certification of Availability of Funds, it appears the Mayor requested and the Council approved $17,523,295 as a supplemental appropriation to the FY 2022 even though County officials knew that only half that amount would be available for FY 2022.

Fast forward eight months. Now the Finance Director is reporting that even though the Finance Department has only spent $3,000,000 of its $52,000,000 in ARPA funds for FY 2022, it is not reporting any Carryover Savings for FY 2023.

If the Finance Department is not reporting any carryover savings from FY 22, then where did the remaining $49,523,295 in ARPA money go? For the FY23 Appendix A Part I - Grant Revenues - there is $0 in ARPA funds reported.

Where is the remaining $49,523,295 in ARPA funds reported in the proposed FY 23 Budget. The first page of the FY Budget summarizes all estimated revenue sources, where is the ARPA money?

The residents deserve an explanation and full accounting of the County's $52,523,295 in ARPA funds.

Guest User
Location:
Submitted At: 7:53am 04-14-22

Aloha,
I am writing in support of MEDB. Three of my children have benefitted greatly from their after school STEMworks program at Pukalani School. Some of the classes they took included robotics, coding, and movie-making. The opportunities offered through MEDB STEMworks spark curiosity in topics they may not have been exposed to otherwise. In addition, I believe this has helped to foster a growth mindset and problem-solving attitude within them. As a teacher, I see those same qualities and zeal for learning in many of my students who have participated in the classes. As these classes are available to all students with a variety of different interests and learning styles, it's wonderful to see how students come together and work toward common goals. I hope this program will continue to be supported for years to come.
Mahalo,
Sherry Enriquez

Guest User
Location:
Submitted At: 9:56pm 04-13-22

Aloha -

I am writing to support reef protection and education measures both in and amended to the Mayor's Proposed Budget.

I support funding the M__alaea Wastewater Reclamation System (as an amendment to the proposed budget).

I also support the proposed budget allocations for the Maui Nui Marine Resource Council's Visitor Education Programs and Environmental Protection Programs to fund ocean water quality monitoring, reef friendly landscaping outreach, oyster bioremediation project, projects to prevent sediment runoff from Pohakea Watershed and more.

Mahalo nui loa,
Kirstin Weeks

Grover Hatcher
Location:
Submitted At: 3:06pm 04-13-22

Aloha Committee Chair Rawlins-Fernandez and Committee Members,

I would like to submit testimony in reference to the Mayor's Proposed Budget FY23.

1. I support the funding needs to help replace M_'alaea's 24 outdated injection wells with a new system that will improve the ecosystem on our reefs and and allow the coral reefs and all the marine inhabitants to become healthy again.
The Membrane Bioreactors (MBR) proposed to replace the existing system will meet today's water quality standards, cost effective, flexible to scale up and allows new emerging technology to be added cost effectively. Also it is exciting to know that the effluent from an MBR is rated R-1 which is suited for irrigation and agriculture which helps conserve our precious clean water resources for the future. This solution can sustain us for the next 50+ years.

2. Visitor Education Programs - Maui Nui Marine Resource Council ($100,000).
It is critically important to educate visitors about protecting the coral reefs and the quality of the waters in our Maui Nui through social media, online and at our airports.

3. Environmental Protection Programs - Maui Nui Marine Resource Council ($250,000).
It is important to fund ocean water quality monitoring, reef friendly landscaping education, ouster bioremediation projects and projects in general that prevent sediment runoff from Pohakea Watershed and others as they are identified.
Mahalo for the opportunity to contribute to the discussion.

Guest User
Location:
Submitted At: 2:36pm 04-13-22

Mike and Judi Nicholson. 231 Nalani St. Makawao, HI 96768
We are in support of replacing Ma'alaea's outdated injection wells with the new MBR technology and consider it much needed to improve the water quality in the harbor, preserve and bring back marine life and protect our fragile environment...already so overstressed by climate change and overuse. We support the research, wisdom and recommendations put forth by Maui Nui Marine Resource Council.
Sincerely, Judi Nicholson
mikeandjudi@prodigy.net
cell: (916) 207-2645

Travis Liggett
Location:
Submitted At: 1:40pm 04-13-22

Aloha Committee Chair Rawlins-Fernandez and Committee Members,

I am writing again to encourage you to fund two strategic investments to make huge progress toward fixing injection wells in Maui.

The first is a $9.5 mil investment in a Ma'alaea Regional Wastewater Reclamation System (MRWRS). By installing a cutting-edge Membrane Bioreactor treatment plant and regenerative reuse irrigation, 11 out of the 14 Underground Injection Control Program permittees in Maui Island that use injection wells as their primary disposal method, or 79% or permittees, will no longer use injection wells.

Second, and even more critical, is the need to invest $6 mil as cited by DEM to install ultraviolet light disinfection capability at the Kahului municipal Wastewater Reclamation Facility, where presently over 5,000,000 gallons per day of infected secondary effluent discharges into the ocean via nearshore injection wells at Kanaha Beach Park on the North Shore of Central Maui. With this investment, coupled with pending UV upgrades in Kihei, we can achieve 100% municipal wastewater disinfection in Maui. Right now, only Lahaina has UV disinfection.

Please see a re-post of two background documents supporting the case for UV disinfection in Kahului. I have also included a table summarizing the discharges from Maui's 14 UIC Program injection well permittees. For only $15.5 mil, or around 1% of the projected FY2023 budget, we can eliminate 79% of all injection well permittees, and achieve 100% municipal wastewater disinfection, without delay.

Please vote for Kelly King's amendment to fund the MRWRS, and I implore any Council Member, with Member Kama preferred as she represents Kahului, to make a motion in the Budget Committee to fund a new UV disinfection channel in Kahului, which DEM states will cost $6M. See included .pdf for their FOIA response citing this cost.

Thank you for all your hard work! The endless hours you spend in meetings does not go un-noticed, and is appreciated by the entire community.

Aloha, and thank you for receiving my testimony.

Call (808) 757-5984 to discuss.

Sincerely,

Travis Liggett
President, Reef Power LLC

reefpowermaui.com
Instagram.com/reefpowermaui

flushaware.com
Instagram.com/flushaware

Guest User
Location:
Submitted At: 11:05am 04-13-22

Eddie Rodriguez, speaking in support of Maui Economic Opportunity Community Services programs:

After being incarcerated for a few years, I was set to parole as of April 2021. But it wasn't going to be that easy for me to do. You see, my original plans were to go directly to Florida where I am from, where my kids are, my family. I was going to start my life over from there.

But then a terrible pandemic hit us, "CORONA VIRUS". And certain states weren't allowing transfers and unfortunately, Florida was one of them. And so, I had to change my plans. Being forced to stay here in Hawaii, I had no address to parole to.

And that's where, you guys, MEO stepped in. Because of you, I was able to parole to Ka Hale A Ke Ola, the

shelter, where you had some units available.

On May 5th, 2021, almost a year ago, I was released and brought to your office. And there I would meet the staff from MEO, who would help me in my transition to society. They would eventually help me to gather my necessities: my ID, bus pass. They gave me a cellphone, some clothes to put on my back. They would help me update my resume, pointed me in directions to look for employment, in which I was able to get hired full time.

They kept in touch with me on a weekly basis. I met them in person a number of times and always kept them updated and informed them if there was any changes. They were kind of like counselors I was able to talk to them and even vent to them about issues back home. They were there. They helped me stay focused and was always there if I had any questions or concerns.

I was part of the BEST program, the CARES Act program and the Employment program. And while in the program, I was able to put money in my savings account. I sent money to my kids whenever I can. And I still have money in my account. I was given a head start through the help I was provided through MEO.

Let me add that I hate asking for help. I don't like being helped. Normally, I do things on my own my whole life. But I learned to be humble and just accept the help. Take it while I can. It's there for a reason.

And so I did! I took the help. I met some good people with good intentions. And I am GRATEFUL for that!

The help is there. The programs work. But the only way it works is if you yourself is trying. It works but you have to work with it.

Bishop Pahia, Jan Cerizo and Anslem Yazaki were the main ones I dealt with. But I know a lot more people are involved behind the scenes that I don't know. And I didn't forget about you Cassi Yamashita. I want to thank you guys for everything you have personally done for me. I'm doing good for myself. I will keep in touch.

Alexis Kahue
Location:
Submitted At: 10:56am 04-13-22

I am Isaiah Mathin and I am a senior at Baldwin High. I support funding for Maui economic development board because they helped provide automotive class which has allowed me to find my passion and something I really enjoy doing. Automotive class is allowing me to gain experience for real jobs in real shops. This class didn't exist when I was a junior transferring from Maui High so when I heard it was starting my senior year I jumped on the opportunity to take the class and I am so glad this school finally opened up the auto program because this class is helping me build my resume and experience. Our teacher Ms. Kahue is really good at teaching me how to do things in the shop, she's both hands-on and hands-off which allows me to find my rhythm and how to do things on my own and room to learn from my small mistakes. This class has helped me find and receive different job offers just from the experience I am gaining from this program. This class is a must have and It would not have been possible for us to have a knowledgeable teacher without the help of MEDB.

Lyndon Ibele
Location:
Submitted At: 9:02am 04-13-22

Ma’alaea Village Association (MVA) wishes to identify one critical omission from the Mayor’s proposed budget for FY-2023. That omission is $9.5 million in funding for a long-overdue and critically needed, modern, regional wastewater facility for Ma’alaea.
The Ma’alaea community has no regional wastewater treatment facility. Ma’alaea condominiums, businesses, and the state harbor each operate their own treating facilities and injection wells for effluent disposal. None of the existing facilities provides more than primary treatment, resulting in high nutrient loads in injection well effluent and contributing to the impaired status of Ma’alaea Bay.
As the County knows firsthand, effluent disposal through injection wells is drawing increased scrutiny and the practice will someday soon be phased out. A regional treatment facility for Ma’alaea would replace all the private wastewater treatment systems, improve wastewater treatment, eliminate the use of injection wells for disposal, provide recycled water for community landscaping needs and/or agriculture, and thereby reduce consumption of Maui’s precious fresh water supplies.

This need is a critical piece of the mauka-to-makai efforts within the Pohakea Watershed to improve the health of Ma'alaea Bay which is listed by the EPA as an impaired body of water and suffering from severe coral loss. The outdated, private waste-treating systems and injection well effluent, along with agricultural runoff and sedimentation from the Pohakea watershed, have contributed to the severe degradation of reef cover in nearshore ecosystems.
A small, dedicated volunteer committee has been in pursuit of an eco-friendly, state-of-the-art wastewater gathering, treatment and disposal system to serve the needs of the entire Ma'alaea community. The technology exists, with several providers ready to implement a project, and Mahi Pono committing to donate land for siting. However, the funding is lacking.
Over the past three years, the committee (with the support of MVA) has approached County, state, federal and private philanthropic organizations in effort to secure support and funding for this critical infrastructure need. The County however has turned a deaf ear to the community's pleas, while the Mayor himself proclaims that "Water and Wastewater are critical infrastructure for our County" (March 24, 2022, letter to Honorable Alice L. Lee, Chair and Members of the Maui County Council). Also in a February 11, 2022 article in the Pacific Business News, the mayor is quoted as stating "It's time for government to return to its obligation to build infrastructure…"
It is indeed past time for the County to provide the capital investment for this critical infrastructure need, which will benefit all the people of Maui for future generations due to the positive impact it will have on the health of Ma'alaea Bay. Maui County Council funding will make this a reality.

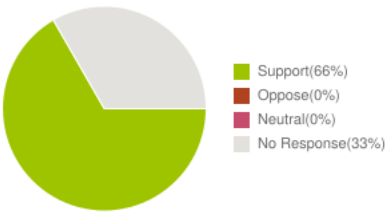
Charmaine Gallagher
Location:
Submitted At: 7:30am 04-06-22

I support seeking funding to address wastewater solutions for Maui County.

Bill 73 (2022), entitled "A BILL FOR AN ORDINANCE AUTHORIZING THE MAYOR OF THE COUNTY OF MAUI TO ENTER INTO AN INTERGOVERNMENTAL AGREEMENT FOR A LOAN FROM THE

Agenda Item: eComments for BFED-1 Reso 22-80 PROPOSED FISCAL YEAR 2023 BUDGET FOR THE COUNTY OF MAUI (BFED-1)

Overall Sentiment



Wehner Ohana
Location:
Submitted At: 7:52am 04-14-22

Aloha Maui County Council.

Thank you for the funds that you have provided to MEDB and STEM education for our islands keiki.

We are so fortunate to have had both our children attend and benefit from STEM classes at Pukalani Elementary School. The classes that our children have been able to attend range from graphic design, movie making, to robotics and coding. There is a high demand and waiting list to get into these classes and it is no wonder.

The education that our children have received from the STEM program is invaluable to our family and the islands future. They have gained technical knowledge but more importantly teamwork, community service, and skills that

will follow them for the rest of their lives.

I have seen my children's confidence in themselves sky rocket, their ability to set goals and advancement with speaking to adults is amazing. This program provides an education far beyond what we ever expected possible, not to mention the positive friends and relationships that they have made along the way.

Thank you for your consideration. Please continue to fund this incredible program for our Islands future.

Aloha,
Jason and Christina Wehner

Dennis Barger
Location:
Submitted At: 9:13pm 04-13-22

Aloha Committee member and Council members,
I am a 10 year resident of Kihei, a surfer, a snorkeler, and a boater. I cherish our ocean and its reef systems. We MUST do all we can to insure the health of our coral reefs and restore the vibrant health of a once pristine coral reef. The health of the ocean and our health depend upon it. I am also in favor of regaining control of the sediment runoff of the watershed up slope of the harbor. We need to stop killing the coral.
I strongly support the retrofitting of waste water treatment facilities at Ma'alaea harbor area that Councilmember King proposed. The time is right for this project and it will be feasible and timely to implement. Please give the $9M+ plan your immediate and FULL support.

Carolee Jones
Location:
Submitted At: 4:53pm 04-13-22

Please replace M__alaea_s 24 outdated injection wells with a smarter ocean-friendly solution. Thanks Ralph and Carolee Jones

Sulara James
Location:
Submitted At: 3:47pm 04-13-22

Aloha Honorable Council Members, I am a strong supporter of the proposed Ma'alaea Wastewater Reclamation System! This is an opportunity to help reverse the pollution due to the injection wells along that coast and restore the coral there.
Mahalo nui loa, Sulara James (Kihei).

Guest User
Location:
Submitted At: 1:22pm 04-13-22

Good evening honorable council members,

My name is Aaron Omuro. I am an eighth-grader at Maui Waena Intermediate School, and I am testifying on BFED-1 in support of Maui Economic Development Board_s Economic Development Grant under the Maui County Office of Economic Development. STEMworks is very important to me. For the past two years, I have been a part of this program, including last year, when it was virtual the whole year. But that did not stop me from learning so much over the past two years. Because of this program, I have learned how to shoot video with a Canon camera and with a Lumix video. I learned how to use Adobe software, and how to program and build robots through our robotics program. Because of this program, I, along with many others have found what their passion is. This program has allowed me to learn so much that the public schools don't teach in class. I have created so many friendships with people that I probably wouldn't be friends with unless I had the program.

This year was our program trying to find its groove again, and continue to be successful. But along with us trying to keep a good media and robotics program, our STEMWorks program merged with our school's Uplinks program. This in turn added 17 new clubs. We would not be able to continue this work without funding from our council. But adding 17 clubs did not stop our progress in the two biggest clubs: media and robotics. With those

two clubs, we won numerous awards, and competed in various competitions, all leading in some success. For example, in our robotics competition, one of our teams finished 2nd overall. In one of the biggest competitions for our program, the STN (Student Television Network) national convention, we got 2 first places, one second, one third, and one honorable mention for our work. Instead of travelling to Long Beach, the location of this year's competition, we had our own staycation in the beautiful Haiku House. We all believe that being able to compete at that house allowed us to bring home our awards.

In my first full in person year with this program, I did more than I could've hoped for. I attended the STN National Hybrid Convention, where, as stated earlier, we won 5 awards in 9 competitions. Overall, we were the best middle school in the state. Along with this, I took part in creating the yearbook. With all the changes with our school, one of them was having our program do the yearbook. That took so much time and effort to complete, and was the most time consuming of all the things I did this year. I also was a part of all three Hiki No challenges, where we took home first and second place, with the third challenge awaiting results. Our program also took part in the STN Fall Challenge, where we got an award in every category we entered. Along with this, we submitted videos to the Olelo 808 Digital Storytellers competition, and got 3 first places. Lastly, we submitted videos for the STN Fall Nationals, and were awarded a first and third for feature story, and a first for show open. All of this success was more than any of us could've hoped for.

Even though I will not be a part of this program in the coming years, I would want all of the 7th and 6th graders, who still get to have this wonderful program, to be able to do more and learn more than I did in my three years. Next year, our program is already planning on going to Long Beach to experience their first fully in person STN National Convention. But, that, along with many more video competitions we enter in, and our robotics program, which we can hopefully go to states with, all need money. The next generation of young minds will be rooted in the STEM field. The best way, I think, is to have this wonderful program become even more, and teach even more people than in my time with it. Hopefully, you will take into consideration the importance of this program, and put us in your funding.

Thank You For Your Time and Consideration

Aaron Omuro, 8th grader

Guest User
Location:
Submitted At: 1:21pm 04-13-22

Good morning honorable council members. My name is Capriana Nozaki and I am testifying on BFED-1 in support of Maui Economic Development Board_s Economic Development Grant under the Maui County Office of Economic Development.

I am now a 7th grader at Maui Waena Intermediate School and this is my second year in the STEMworks program. This program introduced me to many opportunities and still teaches me different skills as well as giving me a chance to make lots of friends. Now that we're face to face, we won many awards like the second place and first place awards in Hiki n_ and the first place news magazine, second place in anchoring, third place in music video, and an honerable mention in feature story for STN, but we wouldn't be accomplish all of that without the help of MEDB.

Since MEDB has funded us throughout the year, I was able to learn even more about storytelling, creating feature stories and I was even given an opportunity to teach children about this process. I was able to do all those things while having the support of my friends and my advisor by my side. Right now with covid, I was unsure of what was ahead but with the funding of MEDB, I didn't need to worry. I know that MEDB will help the STEMworks program survive and it can allow future students to get involved in this program and have the same experiences that I did. I can strongly say these moments were the best times I've ever had and I hope I can share it with others.

We have shown that whatever situation we're in, we still come out strong and present our best work, and that's all thanks to MEDB.

Please support MEDB for me, my club, and future generations to come.

Guest User
Location:
Submitted At: 1:09pm 04-13-22

Good morning honorable council members. My name is Jennifer Suzuki and I am testifying on BFED-1 in support of Maui Economic Development Board_s Economic Development Grant under the Maui County Office of Economic Development. I am the media teacher and coordinator of the STEMworks AFTERschool Program at Maui Waena Intermediate school.

MEDB has given so much to my students and to my program. We have been fortunate to have been partnered with MEDB and the WIT team for over 10 years. When we started, there were less than 20 students involved in media and robotics after school, now we have over 100 students enrolled, who attend regularly, and they are all able to participate in real life STEM activities on a daily basis. They run a weekly 20 minute show that airs on our school's closed circuit, create the daily broadcast, make the school's yearbook, create computer games, animations, commercials, build robots and drones, and rebuilt the school garden.

None of this would be possible without the support of Maui Economic Development Board. But really the most important things that MEDB does for my students is give them confidence to compete on a national level, the opportunity to learn from industry experts, and exposure to industry standard programs and equipment.

Over the years I have witnessed my former students go on to become doctors, engineers, computer programmers, teachers, but mostly I have seen them become confident, competent young adults who come back and give back to the program. MEDB helps us to facilitate a program that becomes a family and encourages mentorship and creates a pipeline that leads them successfully to high school and beyond.

My students are capable, brilliant, hardworking, and amazing, and because of MEDB, they are given the chance to show it.

Please support MEDB for me, my club and the students of Maui.

Jennifer Suzuki

shannon rowe
Location:
Submitted At: 12:58pm 04-13-22

Testimony on BFED-1 in support of Maui Economic Development Board_s Economic Development Grant under the Maui County Office of Economic Development.

To Whom it may concern,

My name is Shannon Rowe and I am an Automotive Technology teacher at Maui High School. I am writing to you today to ask that you please continue to support Automotive High school programs in Maui County through Maui Economic Development Board. This grant has been a catalyst for maintaining strong high school Auto programs at not only Maui High School, but also Baldwin High, King Kekaulike and Lahainaluna High Schools. Most recently this grant has helped to obtain a new teacher at Baldwin High School. (Baldwin was in danger of losing their program due to not having a qualified Auto Teacher). As high schools across the state continue to see declines in their Industrial Arts classes, with the help of this grant and MEDB Maui schools have been able to not only maintain, but also improve our Auto programs.

Thank you very much for your consideration.
Sincerely,
Shannon Rowe
Maui High School

Alexis Kahue
Location:
Submitted At: 10:25am 04-13-22

Hi My name is Kaeo Oshiro and I am a student at Baldwin High school. Maui Economic board has helped us a lot. They helped us get back Automotive at our school. They helped us get tools which helps me as a student. I am unsure how long our program was down but thanks to MEDB we have it back. Thank you MEDB!!

Maui Island Underground Injection Control Program Permittee Summary

Injection Well UIC Permiteee	Injected flow/day (gallons/day)	Injected TN concentration (mg/L)	Injected TP concentration (mg/L)	Total injected nutrients / year (lbs/year)	Injected *coliform* cell counts (MPN/100mL)
Lahaina WWRF	2,948,000	6.28	0.216	58,295	< 1
Kihei WWRF	1,817,000	11.55	2.41	77,215	248.9
Kahului WWRF	5,692,000	10.47	1.17	201,686	> 2419.6
Hono Kai	7,500	24.4	2.95	624	≦ 1600
Island Sands	11,000	12.9	4.9	596	2
Ka Nai A Nalu	18,000	24.6	4.58	1,599	< 2
Lauloa	10,000	21.6	3.98	779	17
Ma'alaea Banyans	7,485	25.5	5.28	701	< 20
Ma'alaea Kai	6,500	11.9	1.82	271	16000
Ma'alaea Mermaid	4,200	26.9	3.7	391	< 2
Ma'alaea Triangle	15,000	16.5	0.925	796	< 1
Ma'alaea Yacht	9,500	34.5	3.78	1,107	4
Makani A Kai	6,000	10.59	1.4	219	≧ 1600
Milowai	8,500	40.8	9.75	1,308	17
TOTAL:	10,560,685			345,588	

Lahaina has enjoyed 100% UV disinfection of injection well and reuse discharges since 2015

Maui County DEM states 100% UV for Kihei injection well and reuse discharges finished Summer 2022

$9.5 mil for Ma'alaea Regional Wastewater Reclamation System eliminates 79% of UIC permitees

$6 mil for UV disinfection of 5+ MGD discharging in Kahului would bring Maui County to 100% disinfection

Reef Power LLC
Travis Liggett
President

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FlushAware.com

Appeal for County of Maui Fiscal Year 2023 Investment
Kahului Wastewater Reclamation System Ultraviolet Light Disinfection Installation

April 5, 2022

Summary

This document comprises a formal request by the people of Maui to the County of Maui for FY2023 funding of approximately $6.0 million to install ultraviolet light wastewater disinfection capability to treat all of the secondary effluent discharging into nearshore injection wells next to Kanaha Beach Park from the Kahului-Wailuku Wastewater Reclamation Facility, to mitigate the risk of infected wastewater currently flowing into nearshore recreation areas during a present or future global pandemic.

Kahului is the largest population center in Maui and is located on the island's north shore. As one of the last places to find affordable housing, Maui's largest town is known to be a place of many working class locals, whose closest beach is at **Kanaha Beach Park**, which is directly adjacent to the injection well plume mapped in a **2016 publication by Dr. Amato et al** from UH Manoa. In 2018, the County of Maui Department of Environmental Management ceased chlorine disinfection of injected secondary wastewater at the Kahului-Wailuku municipal Wastewater Reclamation Facility. Since 2018, the approximately 5,000,000 gallons per day of effluent discharged into nearshore injection wells near Kanaha Park has routinely been measured to have fecal *coliform* counts of colony forming units to exist at levels above the detection limit for the test, or greater than 2419.6 Most Probable Number of colony forming units with the ability to infect per 100 mL of water. See Appendix C for detailed injected fecal *coliform* data, which indicates that the over 30 disease forming pathogens associated with wastewater **identified by the U.S. National Institutes of Health** may be present in the effluent. High bacteria levels are routinely measured in bodies of water near the injection well plume, such as **Kahului Harbor** and **Kanaha Beach Park**. In the publication by Dr. Early, **Risk Factors for Community-Associated Staphylococcus aureus Skin Infection in Children of Maui**, the authors noted that, "Children and Pacific Islanders are particularly vulnerable to CA-MRSA infection." Councilmember Kelly King has developed draft legislation Bill 52 shown in Appendix A that would require disinfection of all municipal wastewater discharged. A FY2023 budgetary allocation by the County of Maui to install UV at Kahului WWRF to mitigate the biohazard risk of infected wastewater would pair nicely with new County legislation Bill 52 requiring 100% disinfection.

The people of Maui would like to see 100% disinfection of municipal wastewater discharged into nearshore recreation areas via injection wells and ground water. The County FY2023 budget is the appropriate mechanism to pay for this upgrade.

The general target population to be served is the population of individuals who spend time swimming or surfing, exposed to infected effluent near Kanaha, and all the beneficiaries of a healthy, sustainable and thriving 'Aina and Kai.

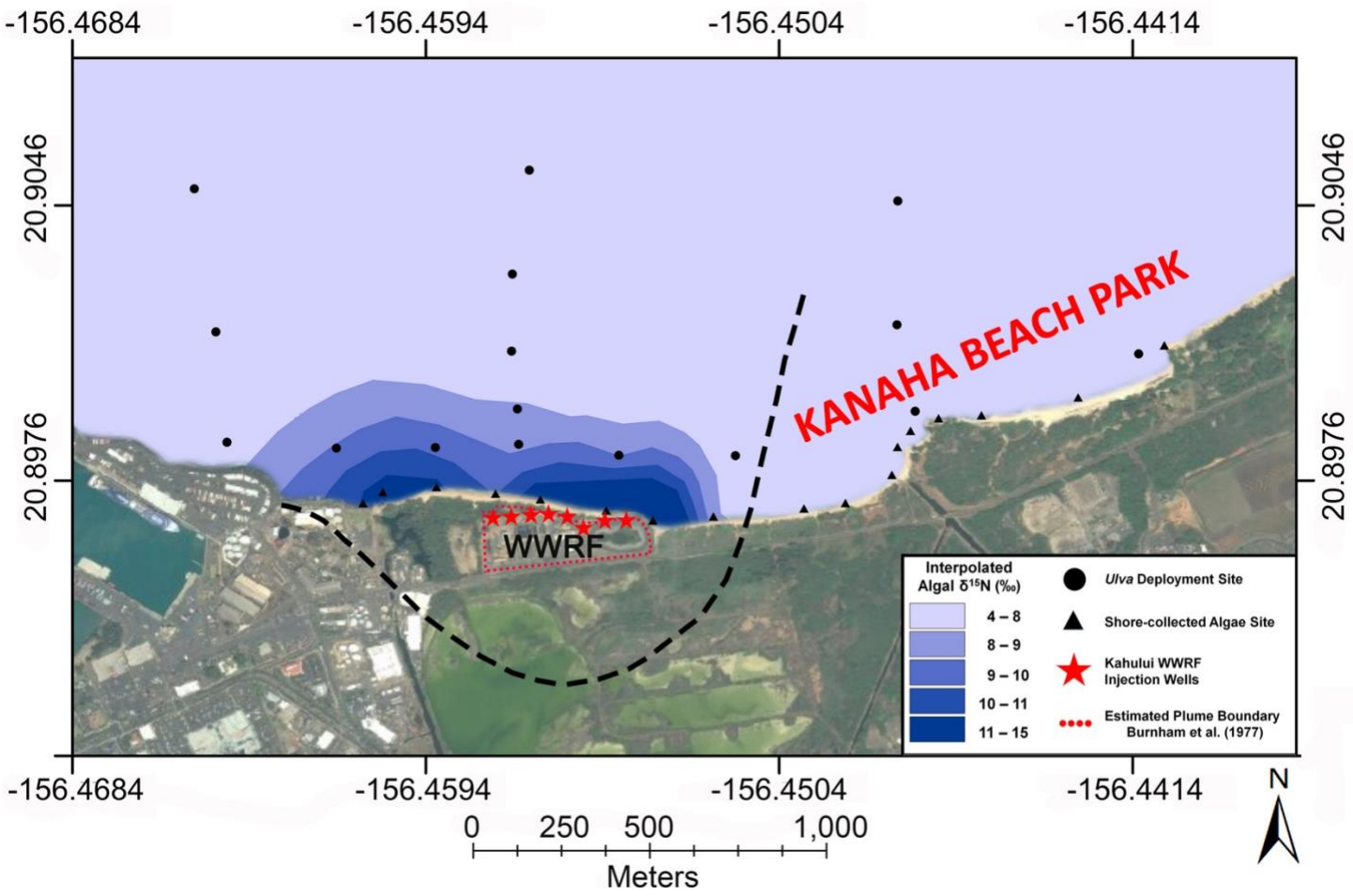
Background

Wastewater flowing from the Maui County municipal wastewater reclamation facility in Kahului does not undergo a disinfection treatment step before discharge into nearshore injection wells that flow into recreation areas like Kanaha Beach Park. The County stopped disinfection of injected wastewater from Kahului in 2018.

Without any treatment step like UV disinfection, injected wastewater flowing into nearshore recreation areas like Kanaha Beach Park in Kahului places swimmers directly in harm's way. Bacterial monitoring at nearby sites proves this risk. Conditions that make a person more susceptible to contracting a water borne illness from infected wastewater include eczema or any condition that gives rise to breaks in the skin, HIV/AIDS, lymphedema, prednisone treatment, chemotherapy, pregnancy and old age, to name a few.

Geographic Coverage

The geographic location and extent of the Kahului-Wailuku WWRF infected injection well plume in close proximity to Kanaha Beach Park and the Kahului Harbor nearshore recreation areas, is shown in plots of marine macroalgae $\delta^{15}N$ associated with wastewater treatment shown in Figure 5 from **Amato 2016**, below.



Scope of Work

The funding request, if approved, will task the County of Maui Department of Environmental Management to install UV disinfection capability for injection well discharges at the Kahului WWRF as described in the **2015 Brown & Caldwell report**. Table 6-3 from the report shows the specification for a 55% UVT treatment capability system that DEM will be responsible to install. The County of Maui Department of Environmental Management has estimated the cost of UV disinfection installation in Kahului at $6 million, shown in their FOIA response in Appendix B.

This biohazard needs mitigation funding now and cannot wait any longer as the effluent is downright dangerous (see Appendix C).

Project Stakeholders

Maui Island community members are the beneficiaries in this project. They will enjoy the benefits of 100% municipal wastewater disinfection with fewer infections and associated medical treatments or death.

We need to recognize that our **North Maui nearshore environment** has rights and honor them.

Native Hawaiian Community indigenous rights have to be recognized and respected as a part of any planning and use discussions for any geographic area in Hawaii Nei. A diverse set of other stakeholders also include beach users, fishermen, snorkelers, wind surfers, boaters, local businesses, etc. All depend on the health and future sustainability of the nearshore waters of Maui's North Shore.

The County of Maui **Department of Environmental Management** has a sacred duty to uphold the public trust by actively working to prevent any instance in which a swimmer or surfer interacts with municipal wastewater in the nearshore environment, without first treating that effluent with a reef-safe disinfection step like ultraviolet light wastewater disinfection.

Measure of Effectiveness

The measure of effectiveness of the program will be quantified progress in reducing the current quantity of the estimated **448 *BILLION*** fecal *coliform* indicator bacteria injected per day into nearshore municipal injection wells in Kahului. The Key Performance Indicator that will enable us to determine that the project is a "success" will be the decreasing numerical quantity of fecal *coliform* colony forming units discharged.

Preliminary Cost Estimate

Freedom of Information Act request responses from the County of Maui Department of Environmental Management shown in Appendix B state an estimated cost to install ultraviolet light wastewater disinfection capability for 100% of the injected secondary wastewater effluent in Kahului is approximately $6,000,000. Presently, the County of Maui DEM does not plan to invest in UV disinfection in Kahului **until FY2026**. County of Maui FY2023 budget allocation funding is needed to immediately initiate the process to install UV disinfection in Kahului.

Appendix A Draft municipal wastewater disinfection legislation Bill 52 from Council Member Kelly King

Anticipated Bill 52 CD1 language:

"Municipal wastewater effluent discharged or reused by the County must meet Hawaii state R-1 reuse standards for fecal coliform bacteria; the County must allocate sufficient funding for the implementation of this subsection so that its implementation does not cause any increases in sewage rates for residents."

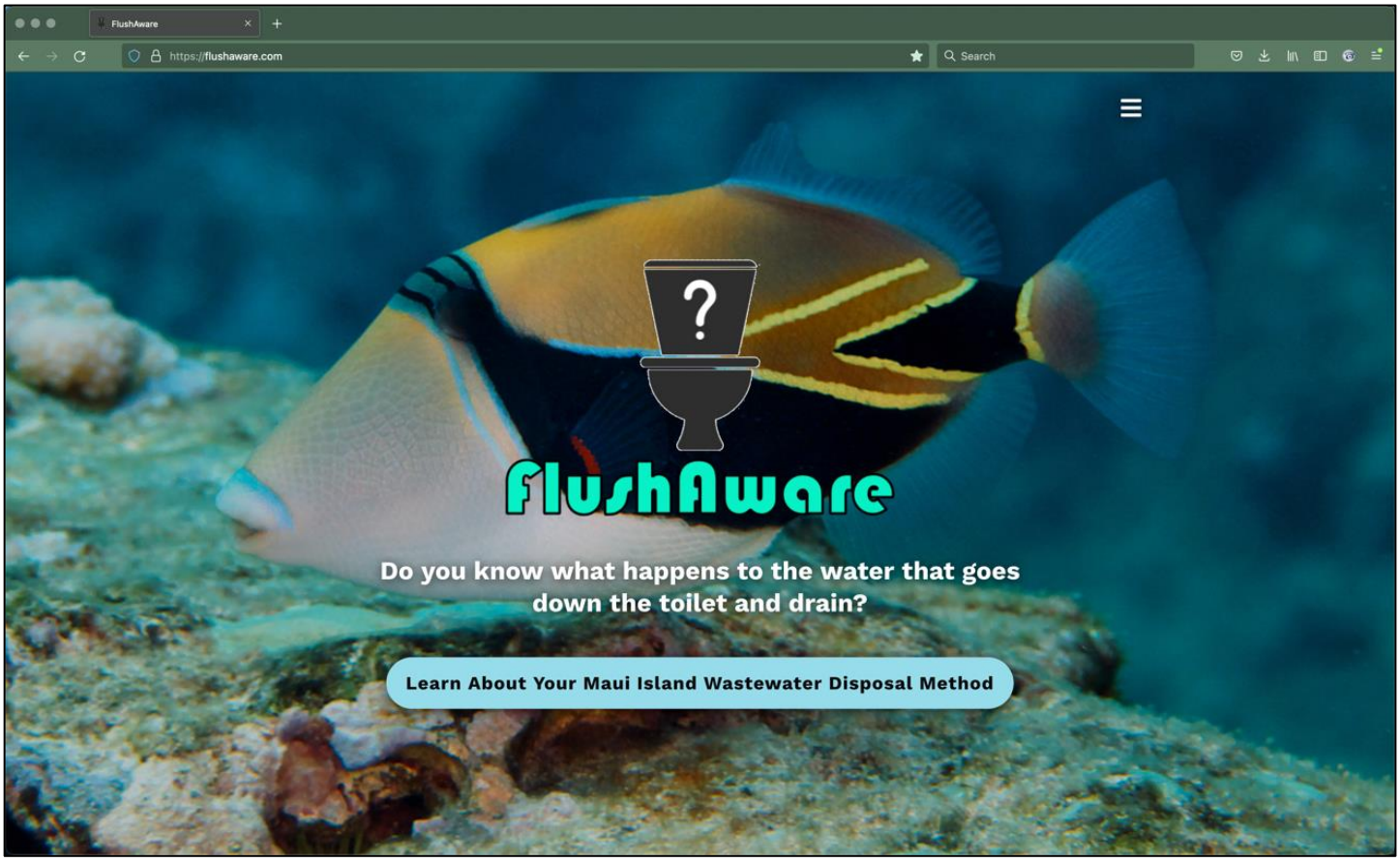
Appendix B County of Maui DEM FOIA request response citing UV disinfection cost in Kahului

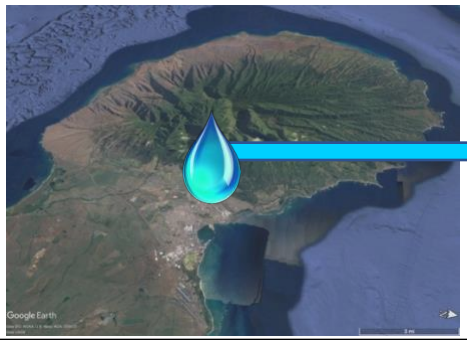
Wailuku-Kahului Wastewater Reclamation Facility (WWRF) Upgrade to R-1 (CBS-1169)

The plan to upgrade the Kahului/Wailuku WWRF to R-1 is only in the preliminary planning stages. We do not have any preliminary plans, or formal cost estimates at this time. The preliminary estimate in the six year CIP was based on the one channel expansion in Lahaina that cost approximately $6 million. An actual cost estimate will be prepared once we get closer to design contracts.

We have listed it as a potential project on our six year Capital Improvement Program. At this point in time it is not required until the recycled water force main (CBS-1171) and pump station (CBS-5034) projects are constructed to transfer water to the central valley and the water could be used by customers. These other projects are also on the six year schedule and have design contracts issued and the EIS is in process. The current time line is our best estimate, it is not required to be completed by FY2028. It is dependent on other projects as well as other approvals (mayor's office, County Council, etc.) Note that funding for projects is only approved on a year to year basis during the County Budget process.

Appendix C Excerpt from the new online education system FlushAware.com describing Kahului discharges



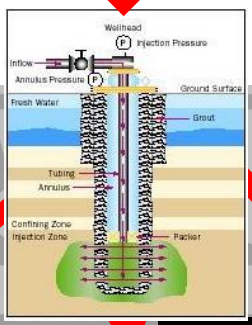


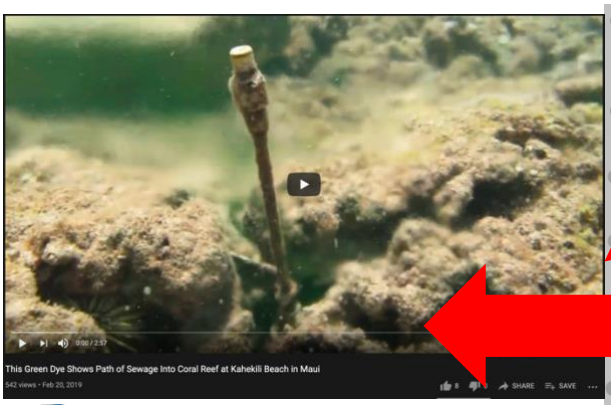
1. Drinking water is transported from the rivers and groundwaters of Na Wai Eha, Maui's Four Great Waters of West Maui, to Kahului and Wailuku, where it enters the resident's home and is used for household activities and flushed down the toilet or drain.

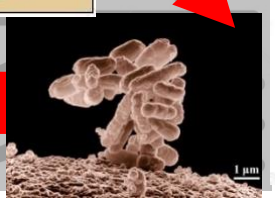
2. Untreated wastewater is conveyed through sewer mains to the Kahului-Wailuku Wastewater Reclamation Facility, then the water is treated to "**secondary**" standards.

3. A small portion (10%) is **chlorine disinfected** and is pumped to in-plant irrigation and industrial uses within the facility, the vast majority (90%) remains **infected** with pathogens and discharges as **R-3** into nearshore injection wells.

4. The **infected** injected wastewater flows through groundwater toward the Pacific Ocean, where it emerges often through the reef itself, via openings that present as direct pathways from the wastewater treatment plant to the reef, similar to the flow shown with green dye in the video below.







fecal coliform

LIST OF PATHOGENIC (ILLNESS-CAUSING) LIFE FORMS COMMONLY FOUND IN INFECTED WASTEWATER, SUCH AS R-3 INJECTED IN KIHEI AND KAHULUI

The list of pathogenic microbial species commonly found in non-disinfected wastewater is long and alarming, shown in the **U.S. NIH list** below.

Respiratory infections such as COVID-19 and **skin infections** can be caused by water borne pathogens.

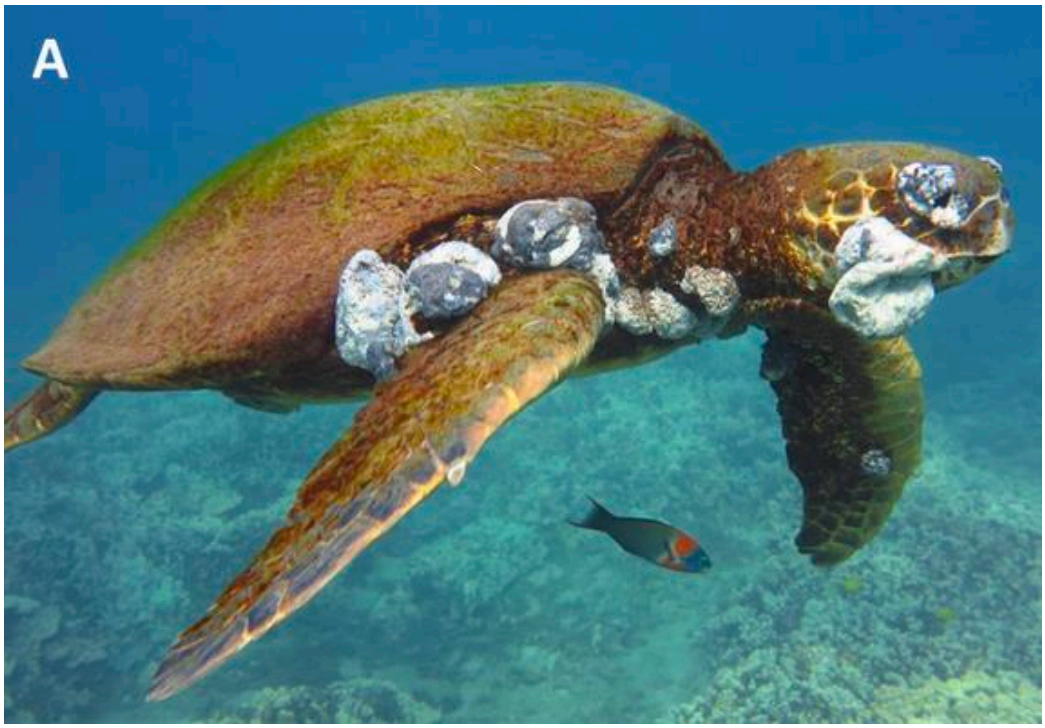
The major pathogens of concern in municipal wastewater and diseases or illness associated with them:

Name of pathogen	Major disease or symptoms
Bacteria	
Campylobacter jejuni	Gastroenteritis
Escherichia coli	Gastroenteritis
Salmonella spp.	Salmonellosis, typhoid, paratyphoid
Shigella spp.	Bacillary dysentery
Staphylococcus	Skin Infections, bacteremia, toxic shock syndrome, septic arthritis
Streptococcus	Cellulitis, Pink eye, meningitis, pneumonia, endocarditis, necrotizing fasciitis
Vibrio cholerae	Cholera
Yersinia spp.	Gastroenteritis
Viruses	
Adenovirus	Upper respiratory infection and gastroenteritis
Astrovirus	Gastroenteritis
Coxsackie virus	Meningitis, pneumonia, fever
Echovirus	Meningitis, paralysis, encephalitis, fever
Hepatitis virus	Infectious hepatitis, miscarriage, and death
Human calicivirus	Epidemic gastroenteritis with severe diarrhea
Polio virus	Poliomyelitis
Reovirus	Respiratory infections, gastroenteritis
Rotavirus	Acute gastroenteritis with severe diarrhea
TT hepatitis	Hepatitis
COVID-19	Acute respiratory illness
Protozoa	
Balantidium coli	Balantidiasis
Cryptosporidium spp.	Cryptosporidiosis
Entamoeba histolytica	Acute amoebic dysentery
Giardia duodenalis	Giardiasis
Toxoplasma gondii	Toxoplasmosis
Helminths	
Ascaris lumbricoides	Ascariosis
Ascaris suum	Coughing and chest pain
Hymenolepis nana	Hymenolepiasis
Necator americanus	Hookworm disease
Taenia saginata	Insomnia, anorexia
Taenia solium	Insomnia, anorexia
Toxocara canis	Fever, abdominal pain, muscle ache
Trichuris trichiura	Diarrhea, anemia, weight loss

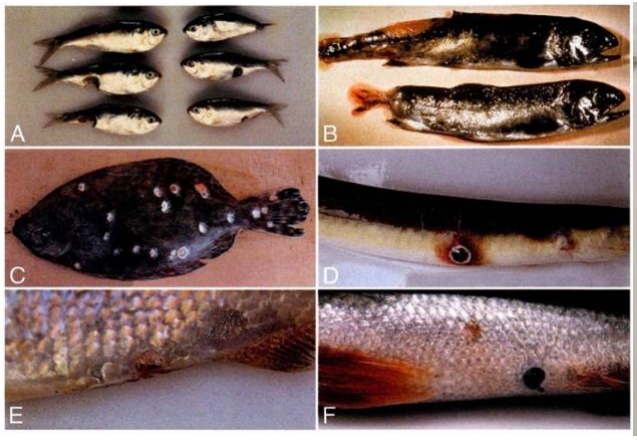
WASTEWATER CONTAINS PATHOGENS THAT CAUSE DISEASE IN MARINE LIFE

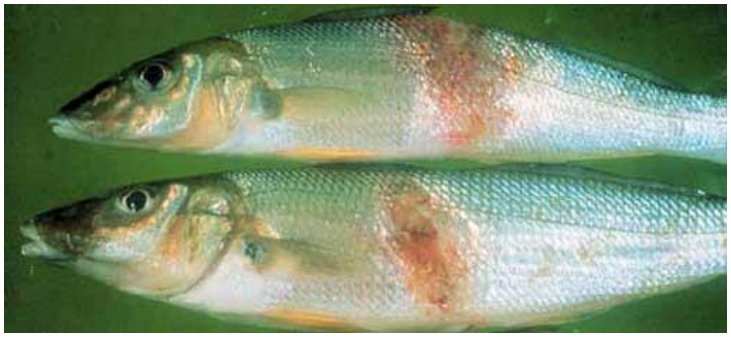
Land-based pollution is a contributor to reef degradation, show here in Ma'alaea, Maui

Kihei, Maui, has been called a "ground zero" for fibropapillomatosis, a disease that is caused by a herpes virus and manifests as tumors in turtles. The virus is injected into the environment, and green sea turtles ingest invasive ocean algae, fed by excess nitrogen found in injected wastewater in Kihei, causing the growth of the tumors, a leading cause of death of the endangered species.

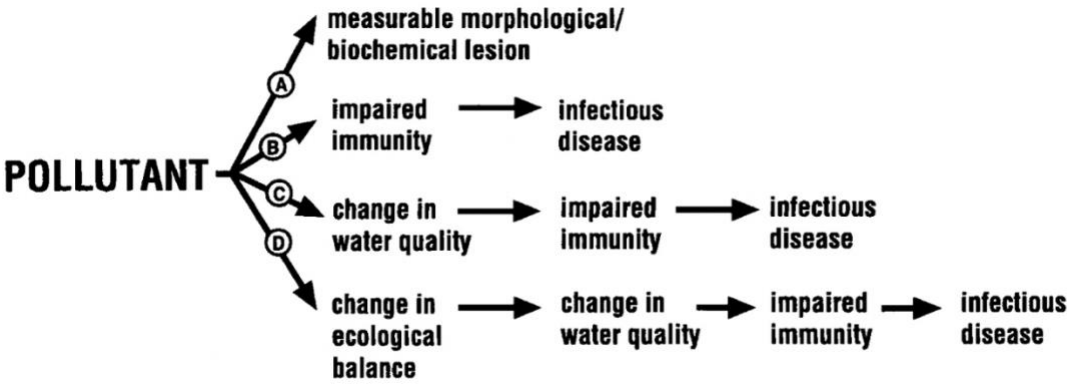


Infectious fish ulcers are a global phenomenon that can be traced to pollution sources like infected wastewater.





Pollution loading leads to infectious fish ulcers by way of several vectors.



The coral itself is affected by land-based pollution.

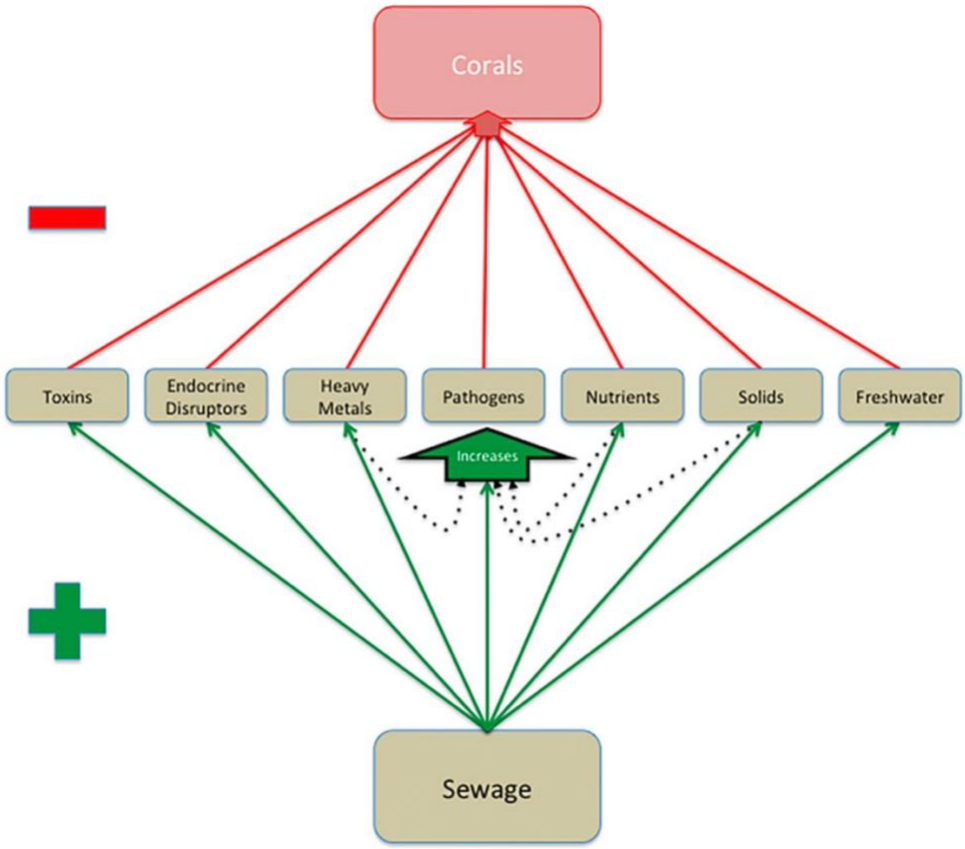
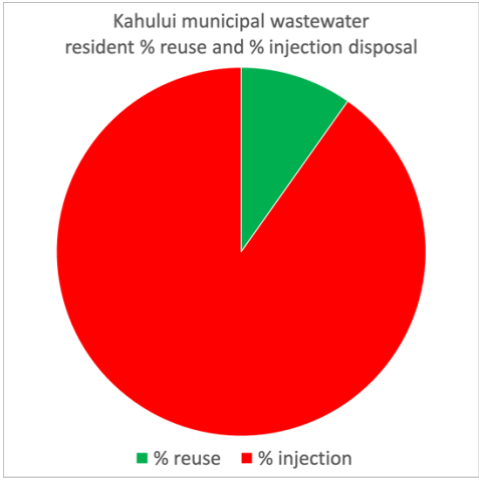


Figure 1. Interaction diamond illustrating impacts of sewage on concentrations of known stressors to corals and the positive feedbacks those stressors can have.



On average, about 90% of resident wastewater is discharged into nearshore injection wells at the Kahului Wastewater Reclamation Facility, while about 10% is used for in-plant recycling. Detailed County of Maui plant flow reports **here**.

Ave. 2020 total flow	Ave. 2020 reuse flow	Ave. 2020 injection flow	2020 injected TN	2020 injected TP
(MGD)	(MGD)	(MGD)	(mg/L)	(mg/L)
5.37	0.53	4.85	10.27	3.03

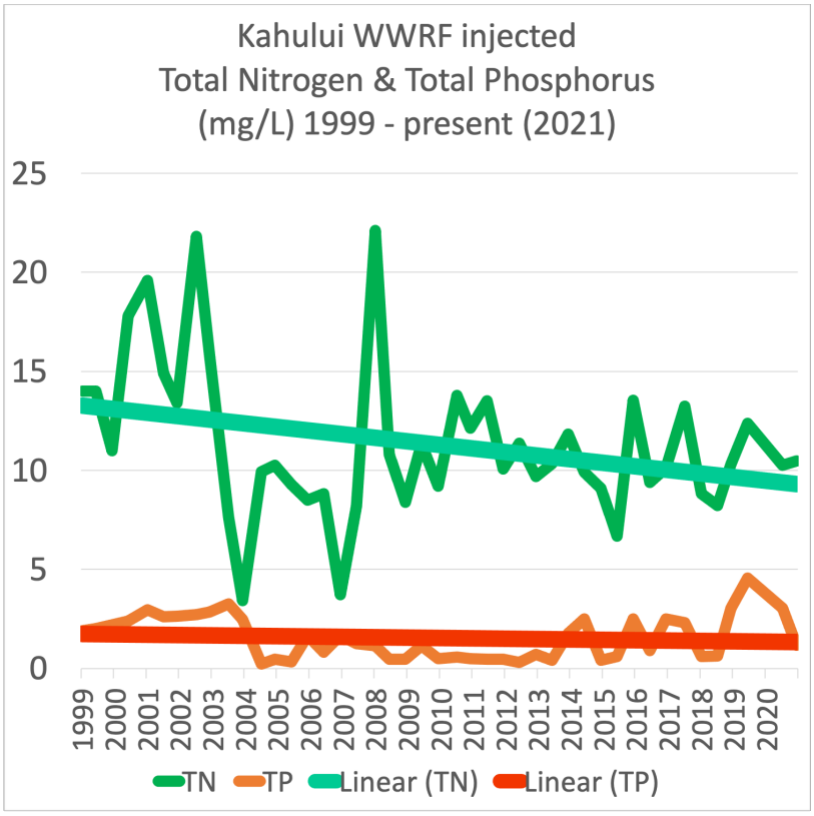
The average daily plant flow at the Kahului Wastewater Reclamation Facility in 2020 was over 5 MGD, reuse was about 0.5 MGD, and average injection over 4.8 MGD. Total Nitrogen in the same period was over 10 mg/L and Total Phosphorous was over 3 mg/L. Detailed UIC water quality and County of Maui plant flow reports **here**.

inj. nutrients / census resident / year	inj. wastewater / census resident / year	inj. wastewater / census resident / day
(lbs/year)	(gallons/year)	(gallons/day)
4.0	36,389	100

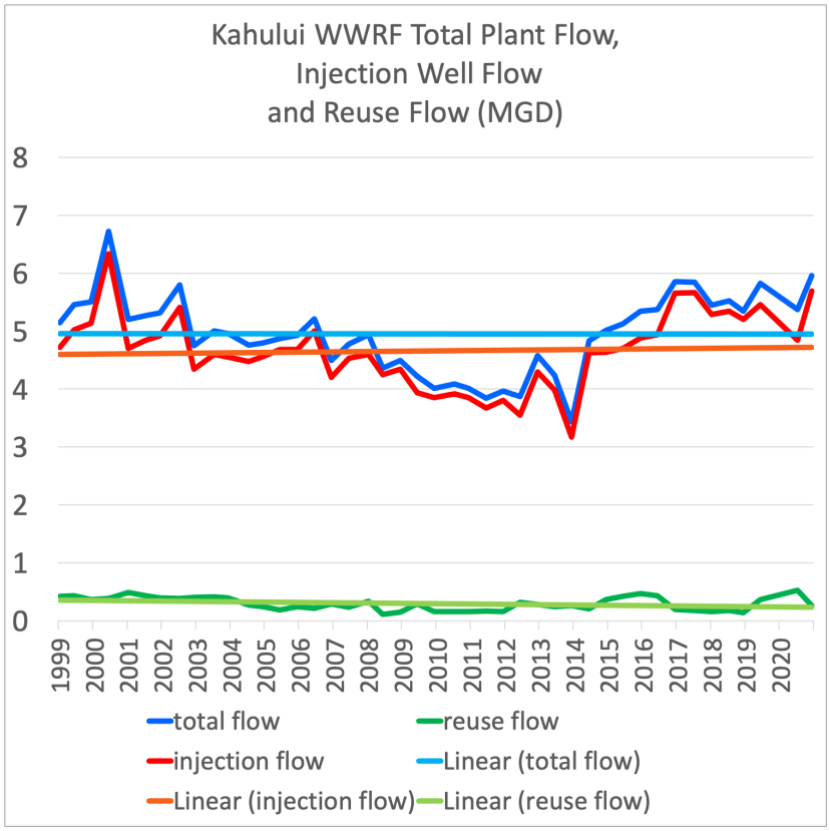
The total estimated nutrient mass injected per census resident per year at the Kahului Wastewater Reclamation Facility is about 4 pounds of dissolved nutrients per year. Each resident contributes about 36K gallons to injection per year in Kahului, averaging about 100 gallons per resident per day. Detailed UIC water quality and County of Maui plant flow reports **here**.

	injected *coliform* cell counts		total inj. *coliform* cell counts / resident
	(MPN/100mL)		(MPN/year)
>	2419.6	>	3,332,923,119

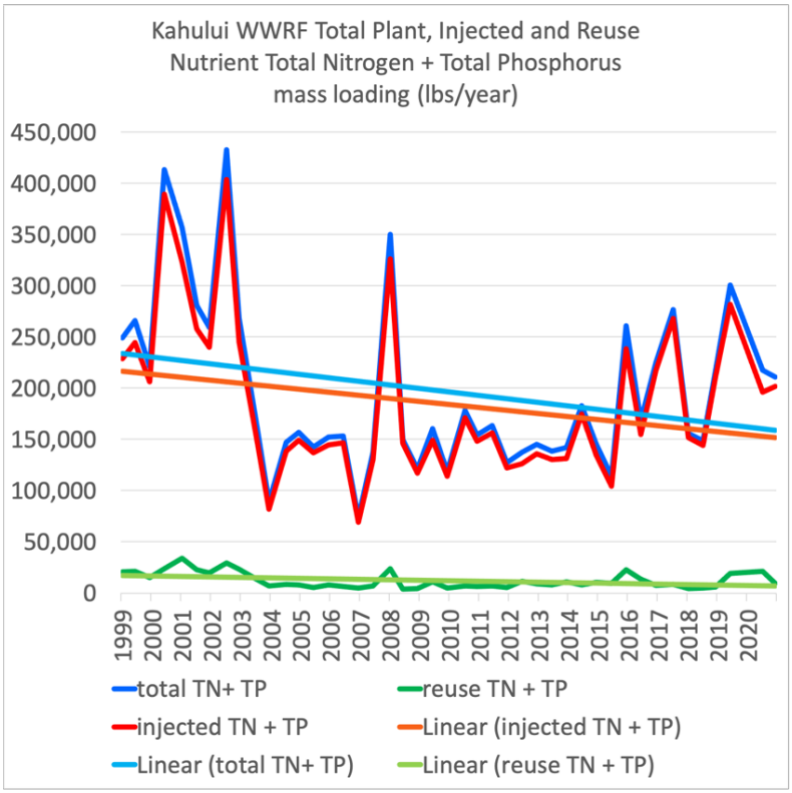
Injected fecal *coliform* Most Probable Number of colony forming (infection forming) units is recently measured at above 2419.6 per 100 mL, which is above the detection limits for the test used. Total injected fecal *coliform* colony forming units per census resident is over 3 Billion cells per year. Detailed UIC water quality and County of Maui plant flow reports **here**.



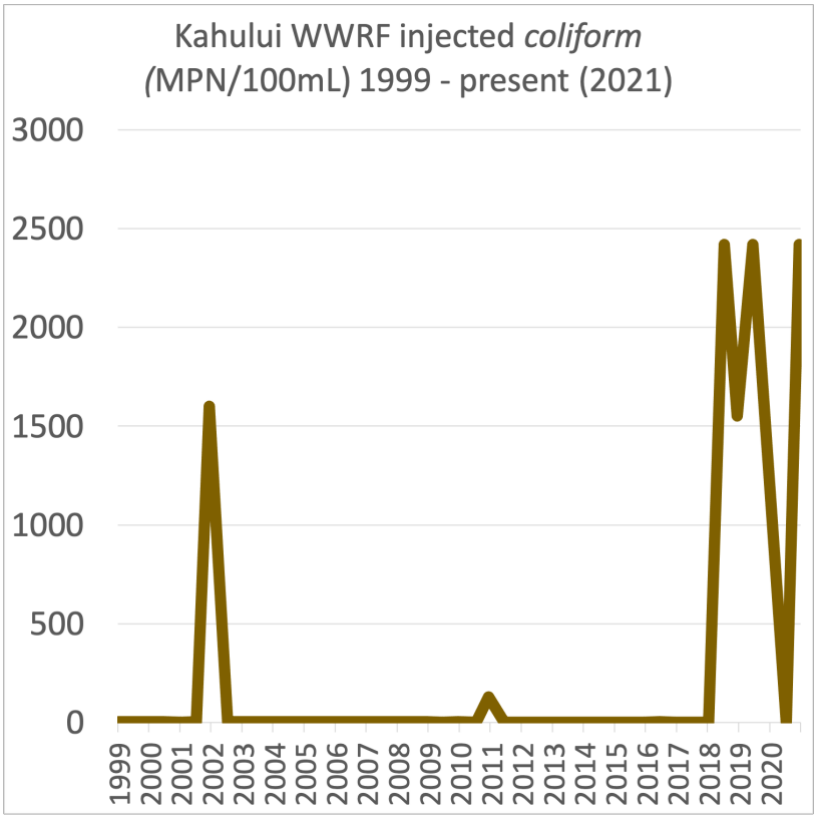
Injected nutrient concentrations in Kahului from 1999-2021 showed a slight downward trend in Total Nitrogen ending up around 10 mg/L. Total Phosphorus trends are steady over the years around 2 mg/L. Detailed UIC water quality and County of Maui plant flow reports **here**.



Injected flowrates in Kahului from 1999-2021 shows an average plant flow of about 5 MGD. and < 0.5 MGD reuse, with over 4.5 MGD of infected wastewater going to nearshore injection wells. Detailed UIC water quality and County of Maui plant flow reports **here**.



From 1999-2021 the Kahului Wastewater Reclamation Facility showed an overall decline in total plant nutrient mass discharged and nutrient mass injected, down to about 150,000 lbs. or about 75 tons of dissolved nutrients per year as Nitrogen and Phosphorus. Detailed UIC water quality and County of Maui plant flow reports **here**.



Fecal *coliform* cell counts from 1999-2021 shows injected municipal wastewater in Kahului appears to have been consistently disinfected until around 2018, after which fecal *coliform* cell counts are routinely measured above the testing detection limit of 2419.6 Most Probable Number of colony-forming (or infection forming) units per 100mL of wastewater. Detailed UIC water quality and County of Maui plant flow reports **here**.

Kahului-Wailuku Municipal Wastewater Reclamation Facility							
Underground Injection Control compliance monitoring report summary							
1999-2021 data set							
drive.google.com/drive/folders/1B3p6fc8rnKl0NtzuUfMXsxQaXj17-CIT							
	total flow	*reuse flow*	*injection flow*	Total Nitrogen	Total Phosphorus		*coliform*
date	MGD	MGD	MGD	mg/L	mg/L		MPN/100mL
6/14/99	*5.147*	*0.424*	*4.723*	14	1.9	<	*2*
11/17/99	*5.458*	*0.437*	*5.021*	14	2	<	*2*
5/17/00	*5.507*	*0.37*	*5.137*	10.99	2.2	<	*2*
11/27/00	*6.725*	*0.385*	*6.34*	17.8	2.38	<	*2*
6/7/01	*5.2*	*0.493*	*4.707*	19.6	2.95		*no data*
12/11/01	*5.274*	*0.431*	*4.843*	14.9	2.6		*2*
5/23/02	*5.317*	*0.4*	*4.917*	13.4	2.63	>	*1600*
12/27/02	*5.799*	*0.39*	*5.409*	21.8	2.72	<	*2*
5/28/03	*4.752*	*0.407*	*4.345*	15.7	2.84	<	*2*
12/17/03	*5.009*	*0.413*	*4.596*	7.62	3.26	<	*2*
5/7/04	*4.954*	*0.399*	*4.555*	3.41	2.48	<	*2*
12/7/04	*4.756*	*0.277*	*4.479*	9.93	0.22	<	*2*
5/26/05	*4.802*	*0.24*	*4.562*	10.27	0.46	<	*2*
11/15/05	*4.875*	*0.189*	*4.686*	9.29	0.327	<	*2*
5/15/06	*4.933*	*0.249*	*4.684*	8.49	1.65		*2*
11/27/06	*5.217*	*0.213*	*5.004*	8.83	0.81	<	*2*
5/11/07	*4.495*	*0.289*	*4.206*	3.71	1.67	<	*2*
11/9/07	*4.776*	*0.238*	*4.538*	8.19	1.25	<	*2*
6/13/08	*4.939*	*0.338*	*4.601*	22.12	1.15		*2*
11/13/08	*4.364*	*0.111*	*4.253*	10.81	0.47	<	*2*
5/27/09	*4.496*	*0.154*	*4.342*	8.38	0.46	<	*2*
11/25/09	*4.225*	*0.291*	*3.934*	11.34	1.13	<	*1.8*
05/10/10	4.016	0.162	*3.854*	9.2	0.5		2
12/03/10	4.085	0.161	*3.924*	13.77	0.56	<	1.8
05/26/11	4.016	0.162	*3.854*	12.14	0.5		130
11/30/11	3.842	0.167	*3.675*	13.52	0.47	<	1.8
05/24/12	3.964	0.161	*3.803*	10.06	0.47	<	1.8
11/30/12	3.868	0.317	*3.551*	11.38	0.3	<	1.8
05/14/13	4.581	0.281	*4.3*	9.69	0.7	<	1.8
11/14/13	4.237	0.249	*3.988*	10.33	0.41	<	1.8
05/22/14	3.441	0.266	*3.175*	11.82	1.76	<	1.8
11/14/14	4.839	0.21	*4.629*	9.9	2.5	<	1.8
05/08/15	5.011	0.37	*4.641*	9.1	0.42	<	1.8
11/16/15	5.127	0.423	*4.704*	6.69	0.6	<	1
05/26/16	5.348	0.467	*4.881*	13.53	2.5	<	1
11/18/16	5.376	0.433	*4.943*	9.4	0.9		4.1
05/30/17	5.856	0.194	*5.662*	10.12	2.5		no data
12/27/17	5.85	0.179	*5.671*	13.23	2.3		no data
06/06/18	5.447	0.155	*5.292*	8.81	0.6	<	1
12/03/18	5.523	0.178	*5.345*	8.23	0.62	>	2419.6
05/23/19	5.345	0.145	*5.2*	10.31	3.05		1553.1
11/08/19	5.828	0.367	*5.461*	12.38	4.56	>	2419.6
12/09/20	5.373	0.526	*4.847*	10.27	3.03		no data
05/13/21	5.956	0.264	*5.692*	10.47	1.17	>	2419.6

This data summary table shows nutrient concentrations, fecal *coliform* cell counts, and flowrates for the total plant, reuse and injection for the Kahului-Wailuku Wastewater Reclamation Facility, during the biannual months when the Underground Injection Control Program with the Safe Drinking Water Branch requires testing. Detailed UIC water quality and County of Maui plant flow reports **here**.

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REEF POWER

Reef Power LLC

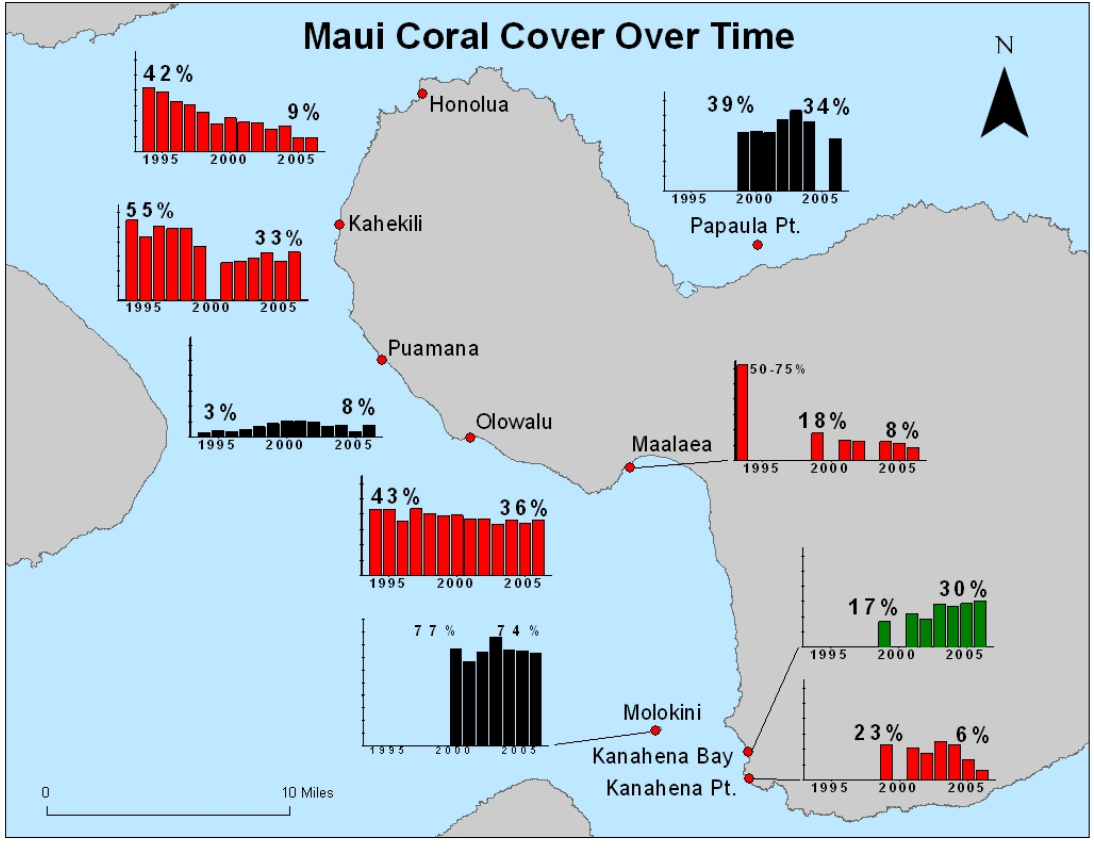
a Maui small business, presents:

"Bill 52 – a proposed Maui County law that enhances municipal wastewater disinfection standards for both injection well and irrigation reuse discharges."

Climate Action, Resilience, and Environment Committee
Maui County Council
1:30 p.m. March 16, 2022


Maui’s reefs are in trouble!

Status of Maui's Coral Reefs



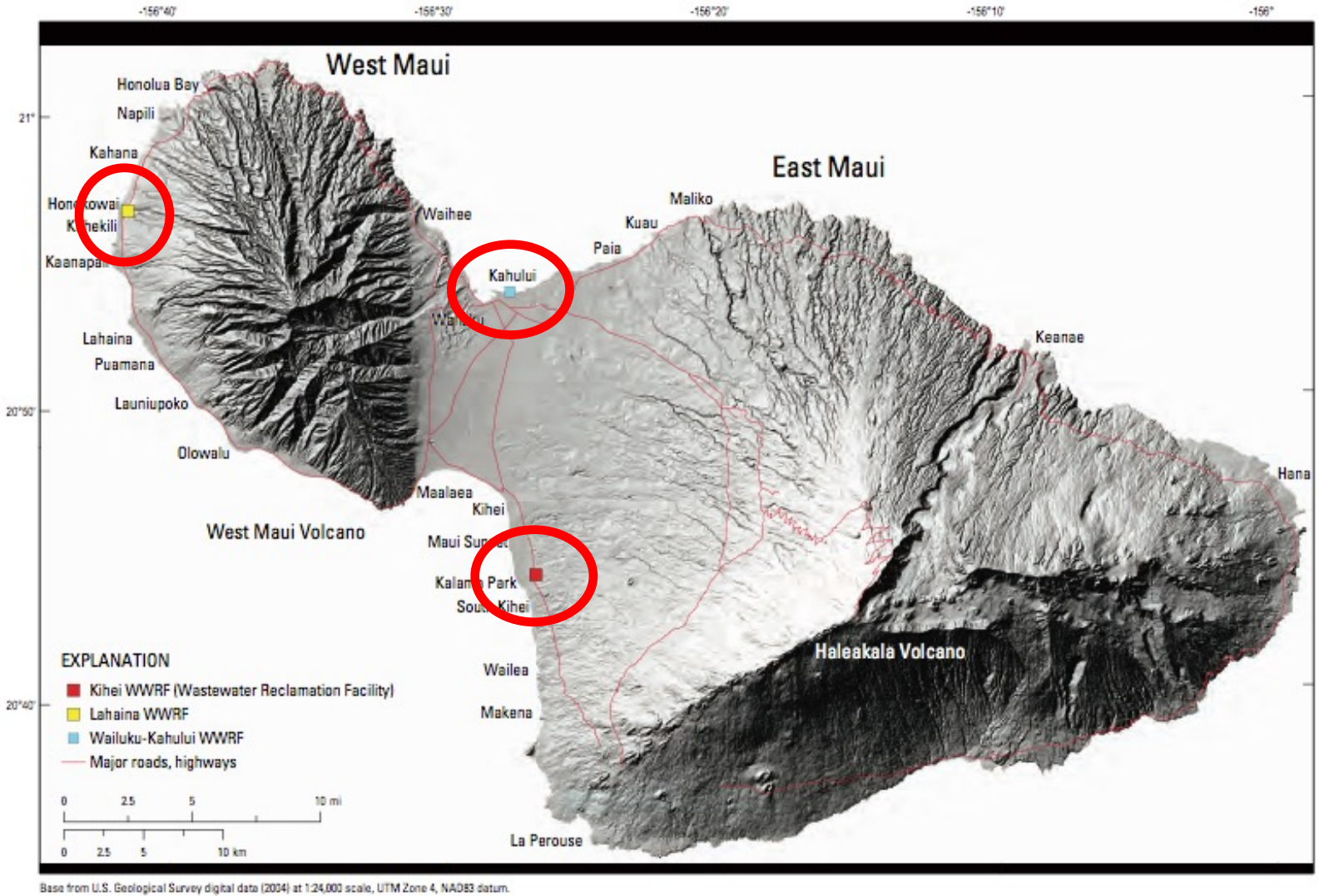
Trends in coral cover at 9 long-term monitoring stations. **Red** indicates >5% decline over monitoring period, **green** indicates >5% increase, **black** = no change (<5%)

Case Study: Total System Collapse at Maalaea

The end result of reef degradation is evident at Maalaea Bay. In 1972, Maalaea coral reefs were described as being 'striking in their diversity and in the presence of rare corals species'. As late as 1993, estimated coral cover was 50-75% close to the site where cover is now 8%. Therefore, in just a few decades, the Maalaea reef has transformed from a healthy and diverse ecosystem into a badly degraded habitat overgrown by algae and with little surviving coral. One consequence of severe loss of living coral is that degrading reefs change from being actively-growing and structurally-complex habitats, into eroding and relatively flat areas which do not support abundant marine life. That process is well advanced at Maalaea, where fish stocks are now in very poor condition, being dominated by small wrasse, triggerfish and puffers. Given that the Maalaea reef is now a poor habitat for most grazing fishes, and that existing blooms of algae will continue to inhibit new coral growth, even in the best of circumstances (without water quality or fishing impacts), recovery of Maalaea would likely take many years.

DLNR report link

Three municipal wastewater reclamation facilities in Maui inject 10+ millions of gallons per day.



Base from U.S. Geological Survey digital data (2004) at 1:24,000 scale, UTM Zone 4, NAD83 datum.

Kihei Wastewater Reclamation Facility – injection wells


This Green Dye Shows Path of Sewage Into Coral Reef at Kahekili Beach in Maui
Video Link
Pause (k)
0:12 / 2:57
Scroll for details

Syllabus

NOTE: Where it is feasible, a syllabus (headnote) will be released, as is being done in connection with this case, at the time the opinion is issued. The syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader. See *United States* v. *Detroit Timber & Lumber Co.,* 200 U. S. 321, 337.

SUPREME COURT OF THE UNITED STATES

Syllabus

COUNTY OF MAUI, HAWAII *v.* HAWAII WILDLIFE FUND ET AL.

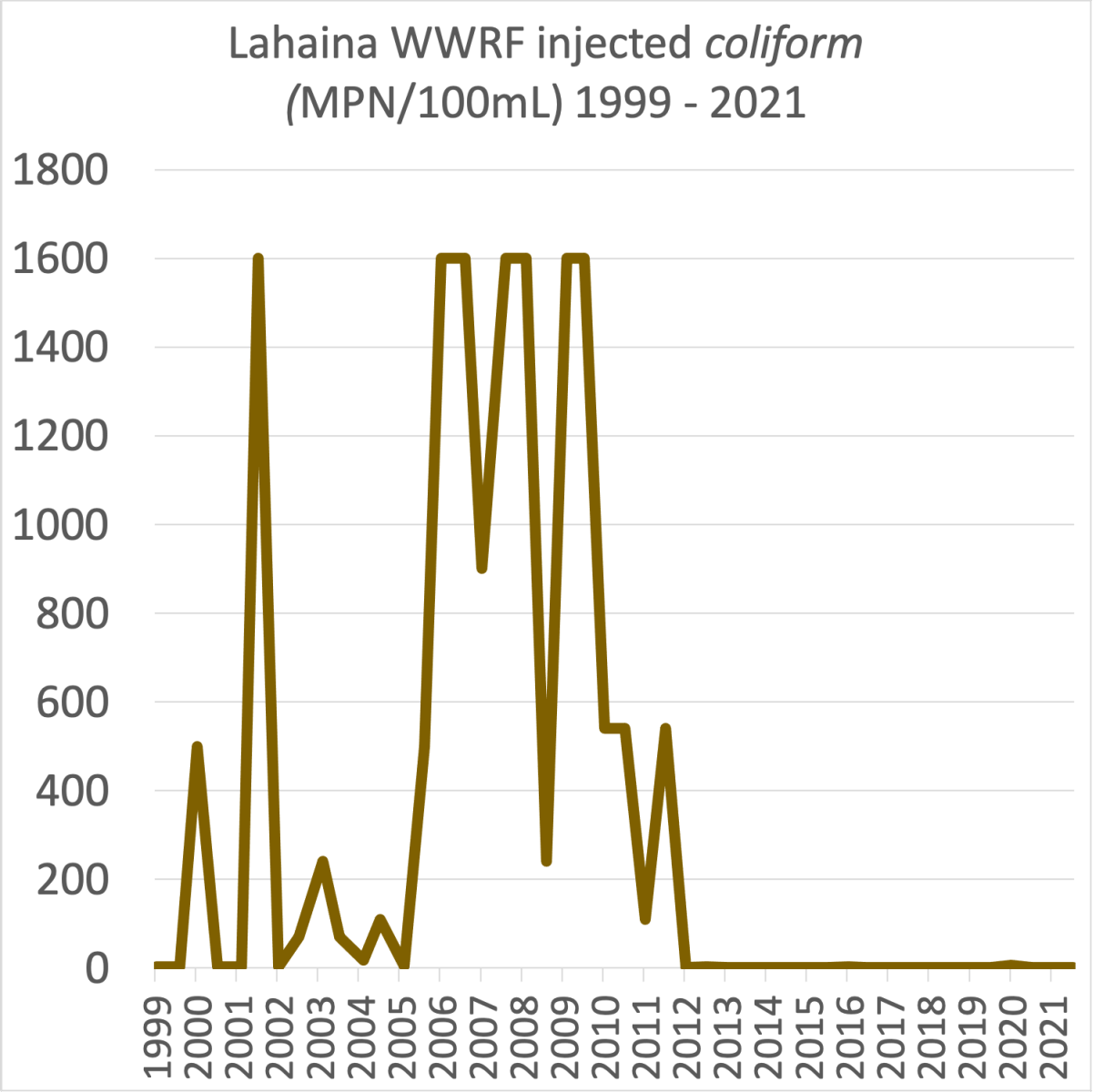
CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

No. 18–260. Argued November 6, 2019—Decided April 23, 2020

The Clean Water Act forbids "any addition" of any pollutant from "any point source" to "navigable waters" without an appropriate permit from the Environmental Protection Agency (EPA). §§ 301(a), 502(12), 86 Stat. 844, 886. The Act defines "pollutant" broadly, §502(6); defines a "point source" as "'any discernible, confined and discrete conveyance . . . from which pollutants are or may be discharged,'" including, *e.g.,* any "'container,'" "'pipe, ditch, channel, tunnel, conduit,'" or "'well,'" §502(14); and defines the term "discharge of a pollutant" as "'any addition of any pollutant to navigable waters [including navigable streams, rivers, the ocean, or coastal waters] from any point source,'" §502(12). It then uses those terms in making "unlawful" "'the discharge of any pollutant by any person'" without an appropriate permit. §301.

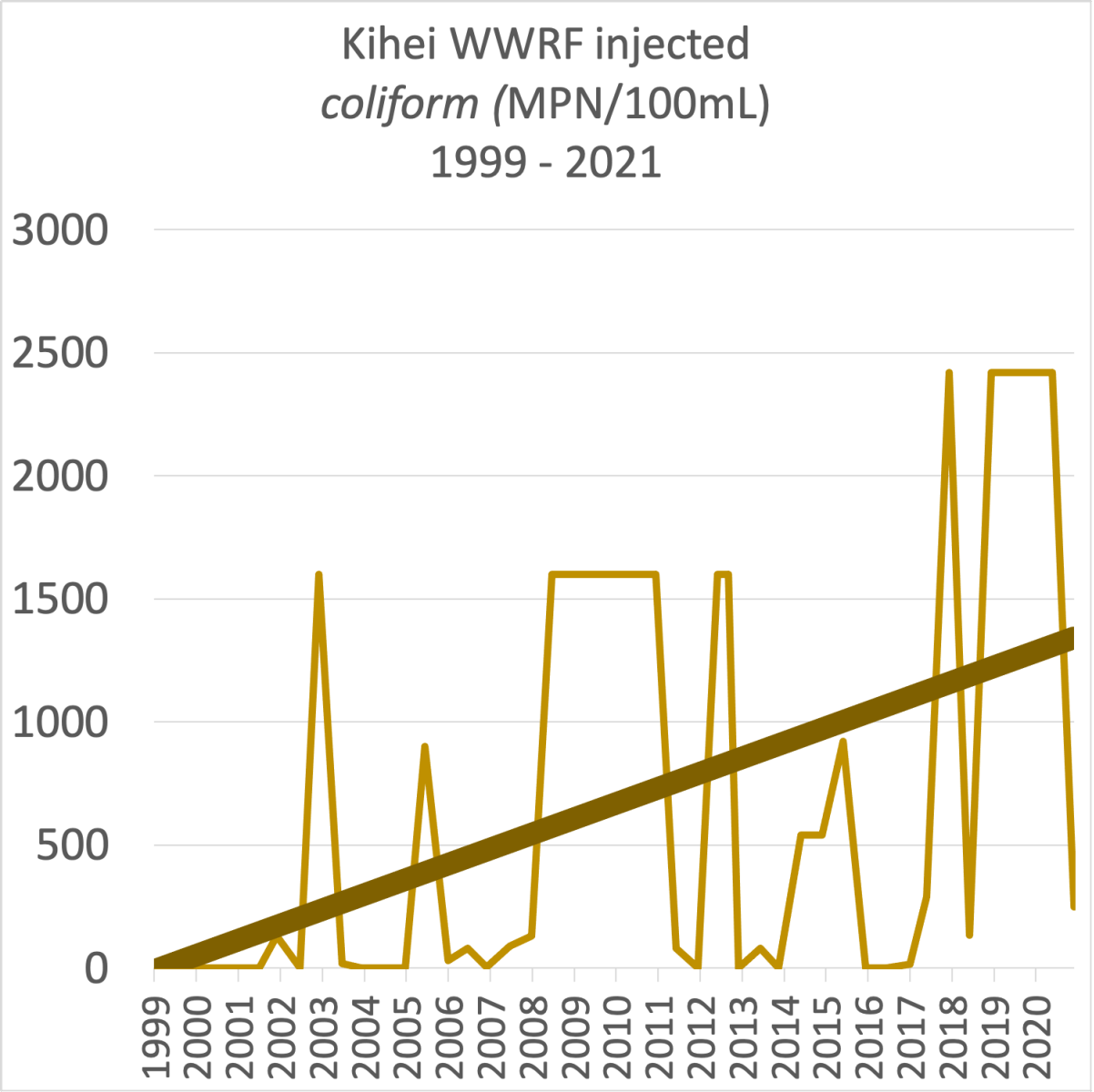
Petitioner County of Maui's wastewater reclamation facility collects sewage from the surrounding area, partially treats it, and each day pumps around 4 million gallons of treated water into the ground through four wells. This effluent then travels about a half mile, through groundwater, to the Pacific Ocean. Respondent environmental groups brought a citizens' Clean Water Act suit, alleging that Maui was "discharg[ing]" a "pollutant" to "navigable waters" without the required permit. The District Court found that the discharge from Maui's wells into the nearby groundwater was "functionally one into navigable water," 24 F. Supp. 3d 980, 998, and granted summary judgment to the environmental groups. The Ninth Circuit affirmed, stating that a permit is required when "pollutants are fairly traceable from the point source to a navigable water." 886 F. 3d 737, 749.


FlushAware
Do you know what happens to the water that goes down the toilet and drain?
Learn About Your Maui Island Wastewater Disposal Method
FlushAware.com



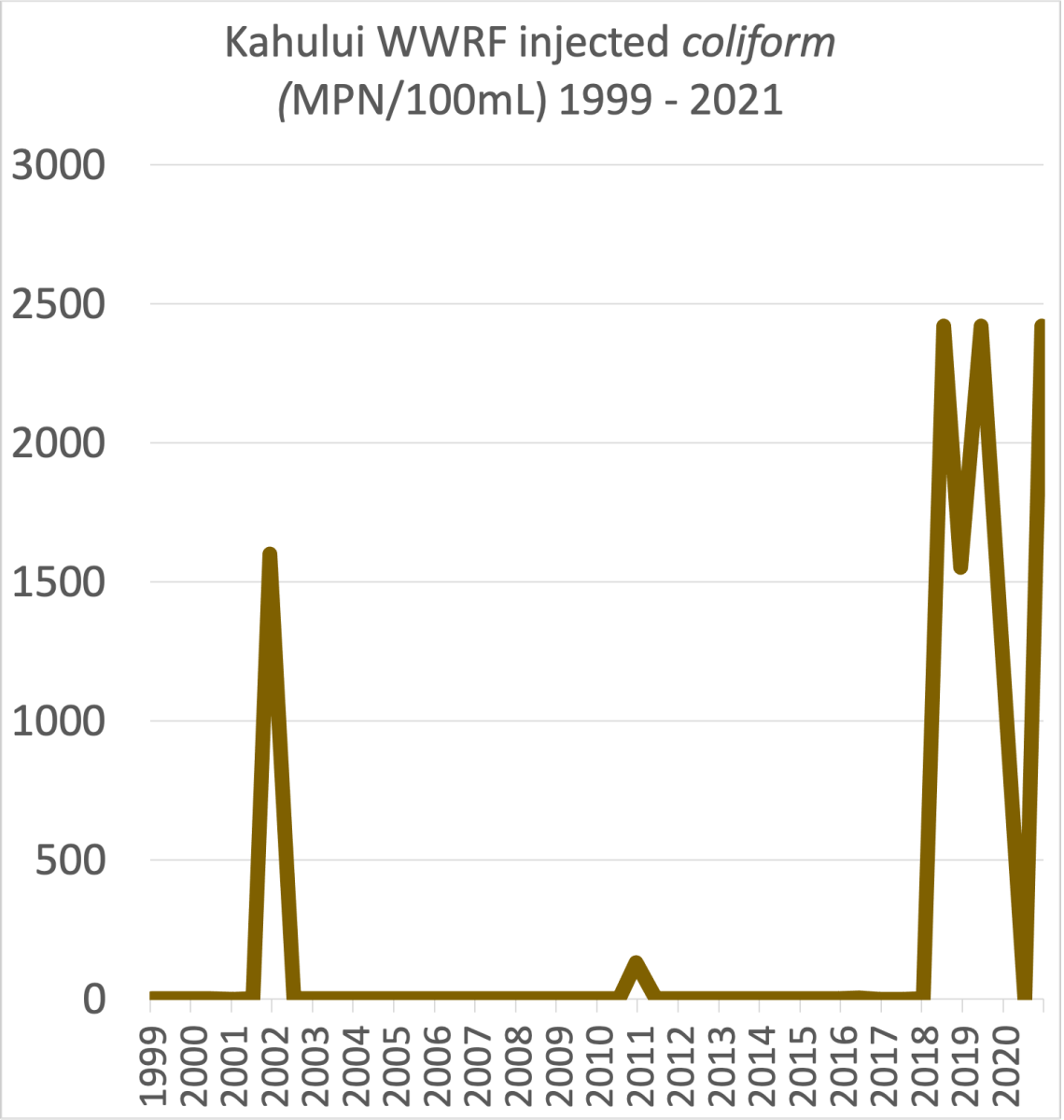
Lahaina WWRF Injection Wells

- No disinfection pre-2012
- Chlorine disinfection in 2012
- UV disinfection in 2015
- Frequent measurements of <1.0 MPN CFU/100mL fecal *coliform*
- *We need all municipal facilities to have UV disinfection performing at a high level as in Lahaina.*



Kihei WWRF Injection Wells

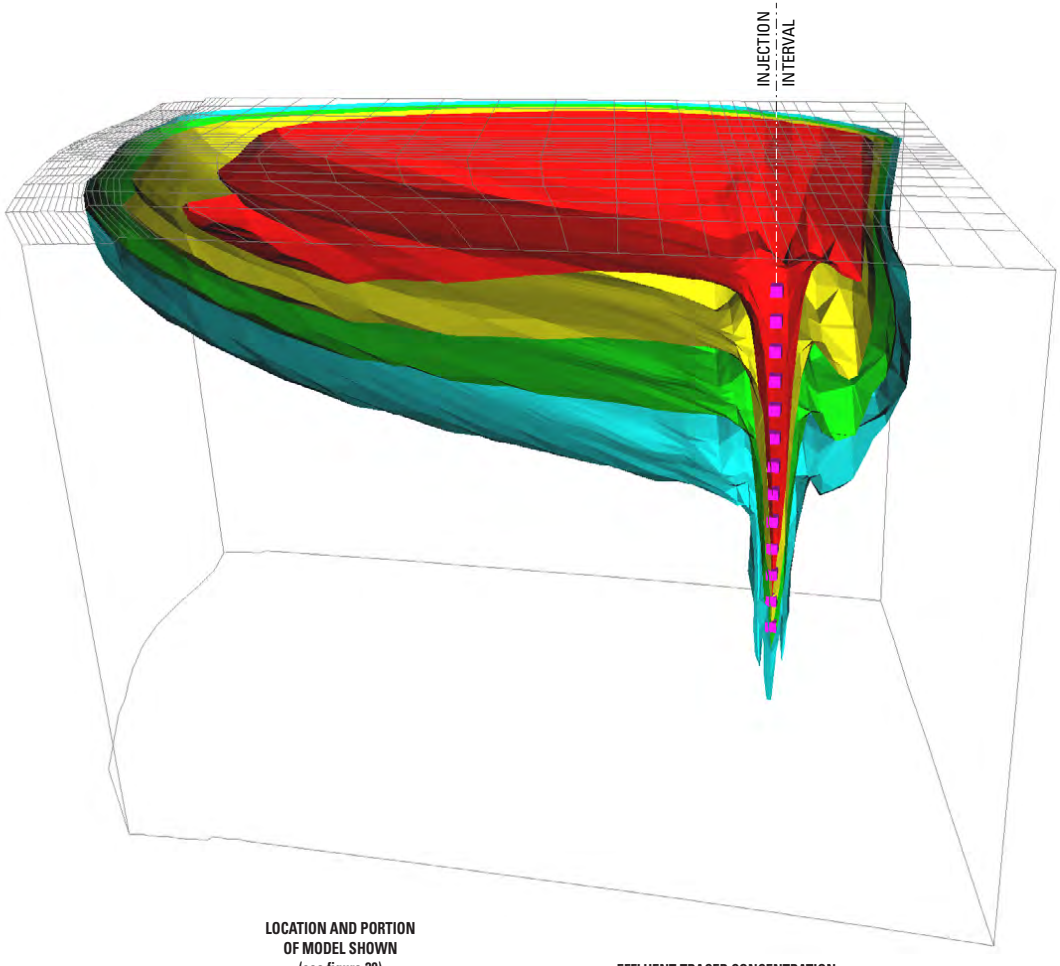
- No disinfection pre-2016
- UV disinfection in 2016
  Steve Parabicoli Report link
- UV disinfection ceased in 2017
- No disinfection since 2017
- County DEM: UV in FY2023
- Frequent measurements of >2419.6 MPN CFU/100mL fecal *coliform*
- 2 out of 18 most recent HI-DOH tests for *enterococcus* exceed the Beach Action Value at Cove Park, inside injection well plume



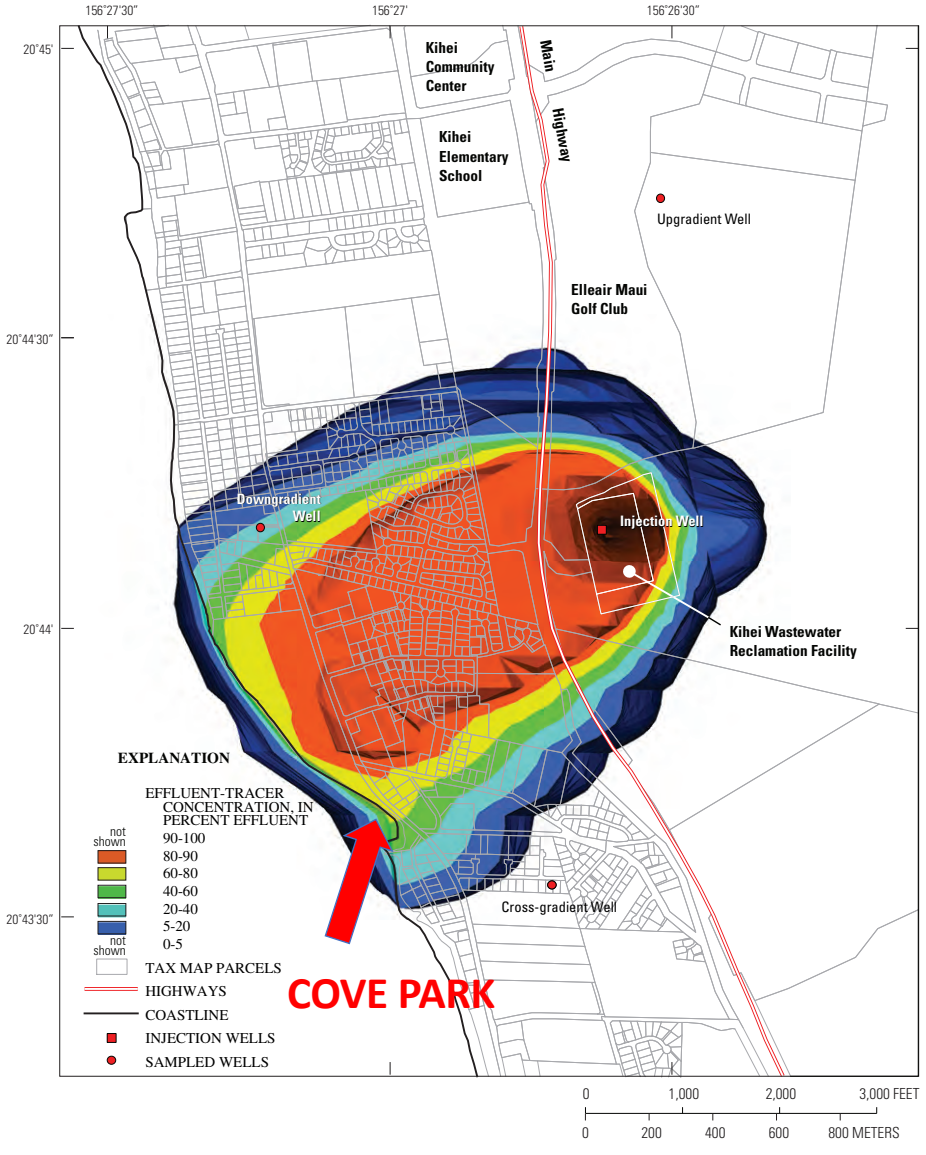
Kahului WWRF Injection Wells

- Chlorine disinfection until 2018
- No disinfection since 2018
- Frequent measurements of >2419.6 MPN CFU/100mL fecal *coliform*
- Occasional Beach Action Value exceedances for *enterococcus* at Kanaha Beach Park and Kahului Harbor

KIHEI SEWER SERVICE AREA



[Hunt 2007 link]



[Hunt 2007 link]

MAUINOW

Maui News

High Bacteria Count at Cove Park, Maui

September 9, 2021, 5:16 PM HST

Article link

PC: file photo by Wendy Osher

The public is advised of a water quality exceedance of enterococci at Cove Park, Maui. Levels of 137 per 100 mL have been detected during routine beach monitoring.

The Department of Health Clean Water Branch provides beach monitoring and notification through its beach program.

The advisory for this beach is posted because testing for enterococci indicate that potentially harmful microorganisms such as bacteria, viruses, protozoa, or parasites may be present in the water. The department advises that wimming at beaches with pollution in the water may make you ill.

State of Hawaii | Department of Health

State of Hawaii, Department of Health
Clean Water Branch

COVE PARK *enterococcus* MEASUREMENTS BY HI DOH RECENTLY SHOW FREQUENT SPIKES NEAR OR ABOVE THE "BEACH ACTION VALUE" OF 130 MPN/100mL

2 out of 18 measurements since September 2021 have exceeded the BAV

Cove Park

Location Identifier	000703
Location Name	Cove Park
Island	Maui
Latitude Decimal Degrees	20.727503
Longitude Decimal Degrees	-156.449739

Sample No	MD12152102
Clostridium Qualifier	
Clostridium Results	0008
Enterococci Qualifier	
Enterococci Results	137

Date	12/15/2021
Time	9:30 AM
Temperature	25.40
Salinity	32.63
Dissolved Oxygen	05.65
Dissolved Oxygen Saturation	083.00
pH	08.06
Turbidity	0011.20
Comments	Sunny, calm, 1 ft shore break, 100 surfers, many homeless people

December 15, 2021 **137 MPN** **100 surfers**

Location Identifier	000703
Location Name	Cove Park
Island	Maui
Latitude Decimal Degrees	20.727503
Longitude Decimal Degrees	-156.449739

Sample No	MD09082102
Clostridium Qualifier	
Clostridium Results	0005
Enterococci Qualifier	
Enterococci Results	137

Date	9/8/2021
Time	9:30 AM
Temperature	27.00
Salinity	31.35
Dissolved Oxygen	06.30
Dissolved Oxygen Saturation	093.90
pH	08.14
Turbidity	0003.84
Comments	Sunny, calm, 2 ft shore break, 50 people, 100 surfers, many homeless people

September 8, 2021 **137 MPN** **100 surfers**

Location Identifier	000703
Location Name	Cove Park
Island	Maui
Latitude Decimal Degrees	20.727503
Longitude Decimal Degrees	-156.449739

Sample No	MD09012102
Clostridium Qualifier	
Clostridium Results	0002
Enterococci Qualifier	
Enterococci Results	124

Date	9/1/2021
Time	10:00 AM
Temperature	27.20
Salinity	32.57
Dissolved Oxygen	06.26
Dissolved Oxygen Saturation	096.00
pH	08.09
Turbidity	0005.08
Comments	Sunny, calm, 3 ft shore break, 200 surfers, many homeless people

September 1, 2021 **124 MPN** **200 surfers**

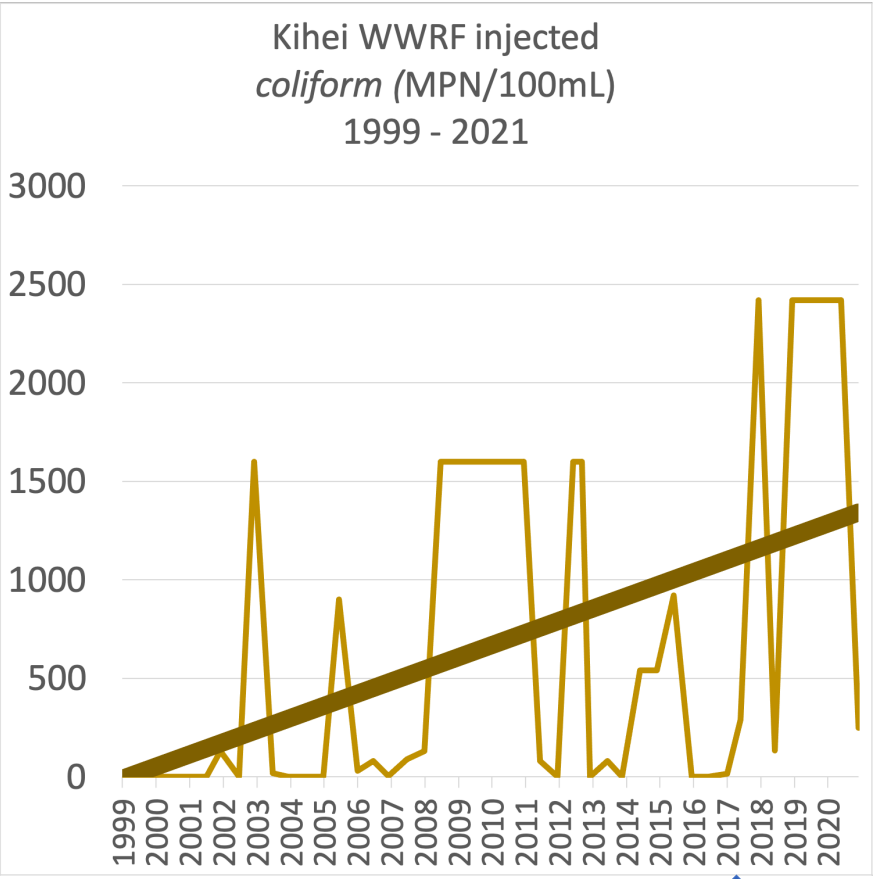
Location Identifier	000703
Location Name	Cove Park
Island	Maui
Latitude Decimal Degrees	20.727503
Longitude Decimal Degrees	-156.449739

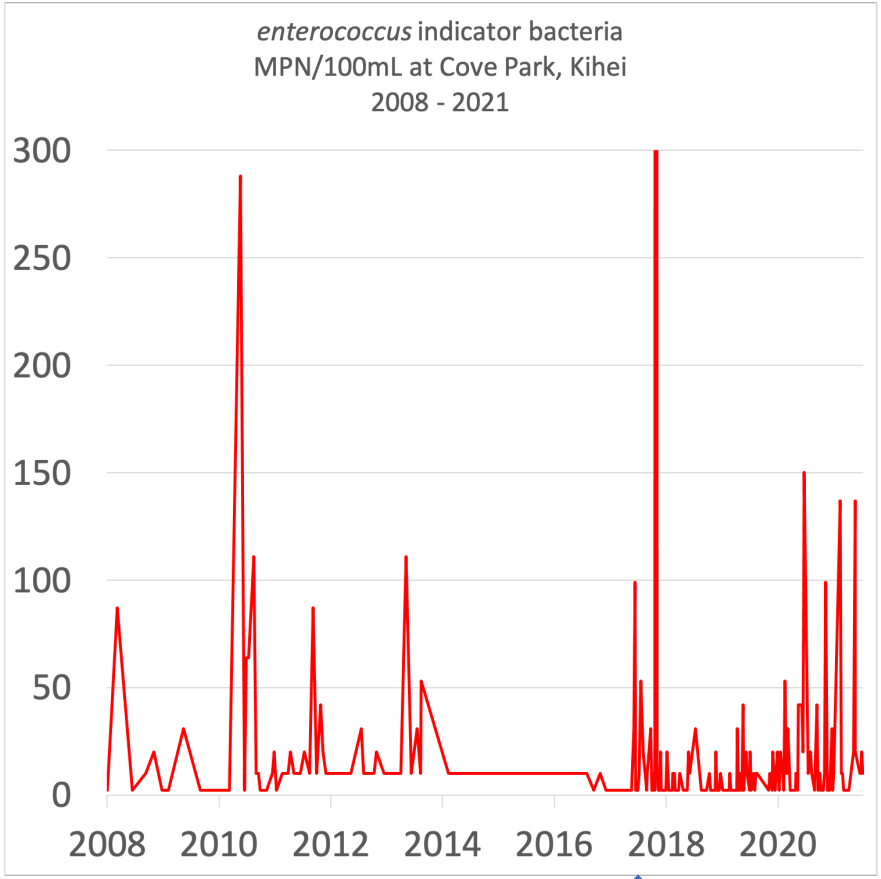
Sample No	MD05231802
Clostridium Qualifier	
Clostridium Results	0006
Enterococci Qualifier	>
Enterococci Results	2005

Date	5/23/2018
Time	9:20 AM
Temperature	26.00
Salinity	31.19
Dissolved Oxygen	06.36
Dissolved Oxygen Saturation	093.40
pH	07.92
Turbidity	0003.67
Comments	Calm, sunny, 1-2 ft shore break, 100 people, rising tide

May 5, 2018 **>2005 MPN** **100 people**

There is a marked shift in effluent *coliform* measurements and Cove Park *enterococcus* readings that correlates with the 2017 cessation of Ultraviolet Disinfection of injected effluent from the Kihei municipal Wastewater Reclamation Facility





LIST OF PATHOGENIC (ILLNESS-CAUSING) LIFE FORMS COMMONLY FOUND IN INFECTED WASTEWATER, SUCH AS R-3 INJECTED IN KIHEI AND KAHULUI

The list of pathogenic microbial species commonly found in non-disinfected wastewater is long and alarming, shown in the **U.S. NIH list** below.

Respiratory infections such as COVID-19 and **skin infections** can be caused by water borne pathogens.

The major pathogens of concern in municipal wastewater and diseases or illness associated with them:

Name of pathogen	Major disease or symptoms
Bacteria	
Campylobacter jejuni	Gastroenteritis
Escherichia coli	Gastroenteritis
Salmonella spp.	Salmonellosis, typhoid, paratyphoid
Shigella spp.	Bacillary dysentery
Staphylococcus	Skin Infections, bacteremia, toxic shock syndrome, septic arthritis
Streptococcus	Cellulitis, Pink eye, meningitis, pneumonia, endocarditis, necrotizing fasciitis
Vibrio cholerae	Cholera
Yersinia spp.	Gastroenteritis
Viruses	
Adenovirus	Upper respiratory infection and gastroenteritis
Astrovirus	Gastroenteritis
Coxsackie virus	Meningitis, pneumonia, fever
Echovirus	Meningitis, paralysis, encephalitis, fever
Hepatitis virus	Infectious hepatitis, miscarriage, and death
Human calicivirus	Epidemic gastroenteritis with severe diarrhea
Polio virus	Poliomyelitis
Reovirus	Respiratory infections, gastroenteritis
Rotavirus	Acute gastroenteritis with severe diarrhea
TT hepatitis	Hepatitis
COVID-19	Acute respiratory illness
Protozoa	
Balantidium coli	Balantidiasis
Cryptosporidium spp.	Cryptosporidiosis
Entamoeba histolytica	Acute amoebic dysentery
Giardia duodenalis	Giardiasis
Toxoplasma gondii	Toxoplasmosis

› Hawaii J Med Public Health. 2012 Aug;71(8):218-23.

Risk factors for community-associated Staphylococcus aureus skin infection in children of Maui

Gayle J Early [1], Steven E Seifried

Affiliations + expand

PMID: 22900237 PMCID: PMC3419822

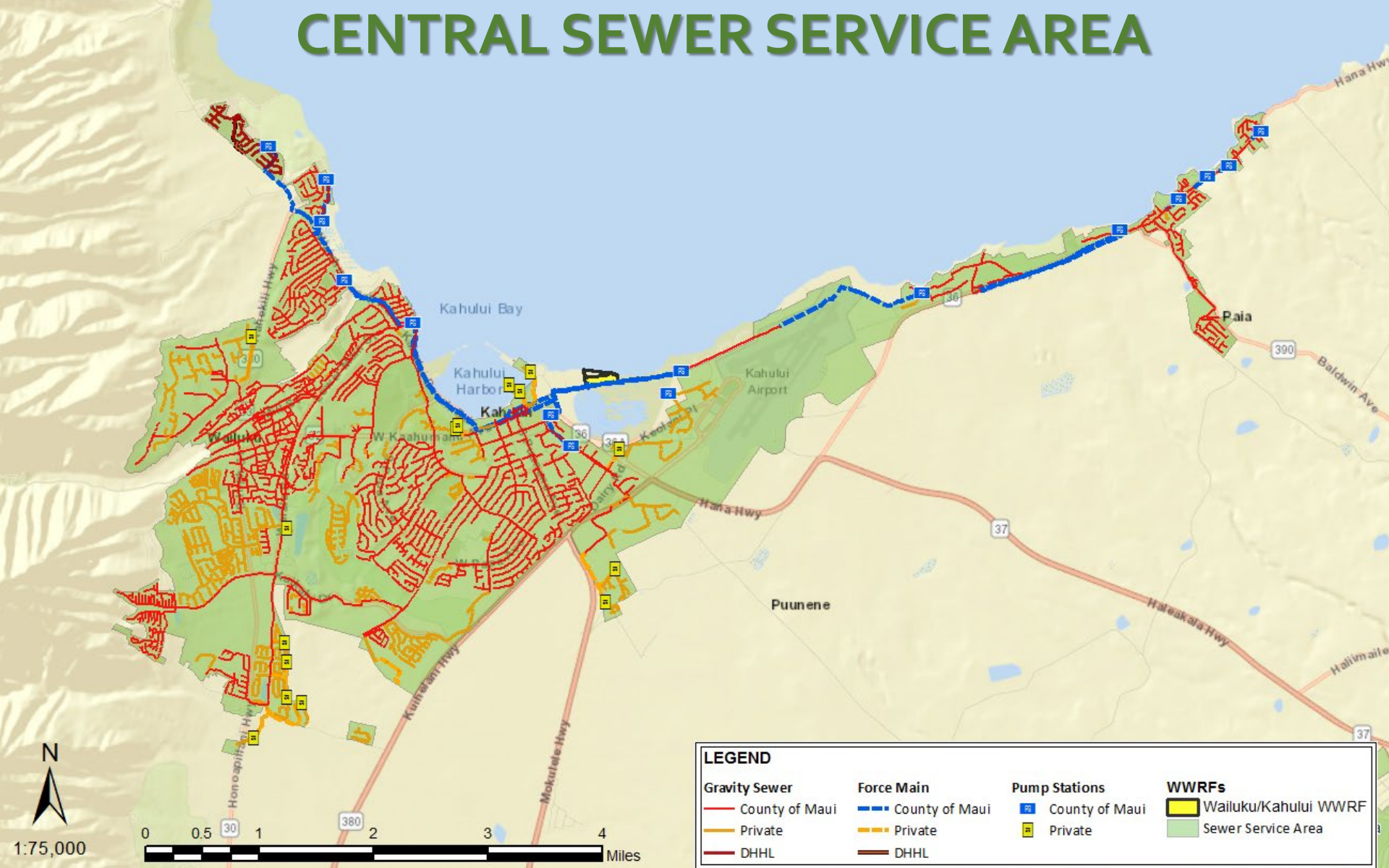
Free PMC article

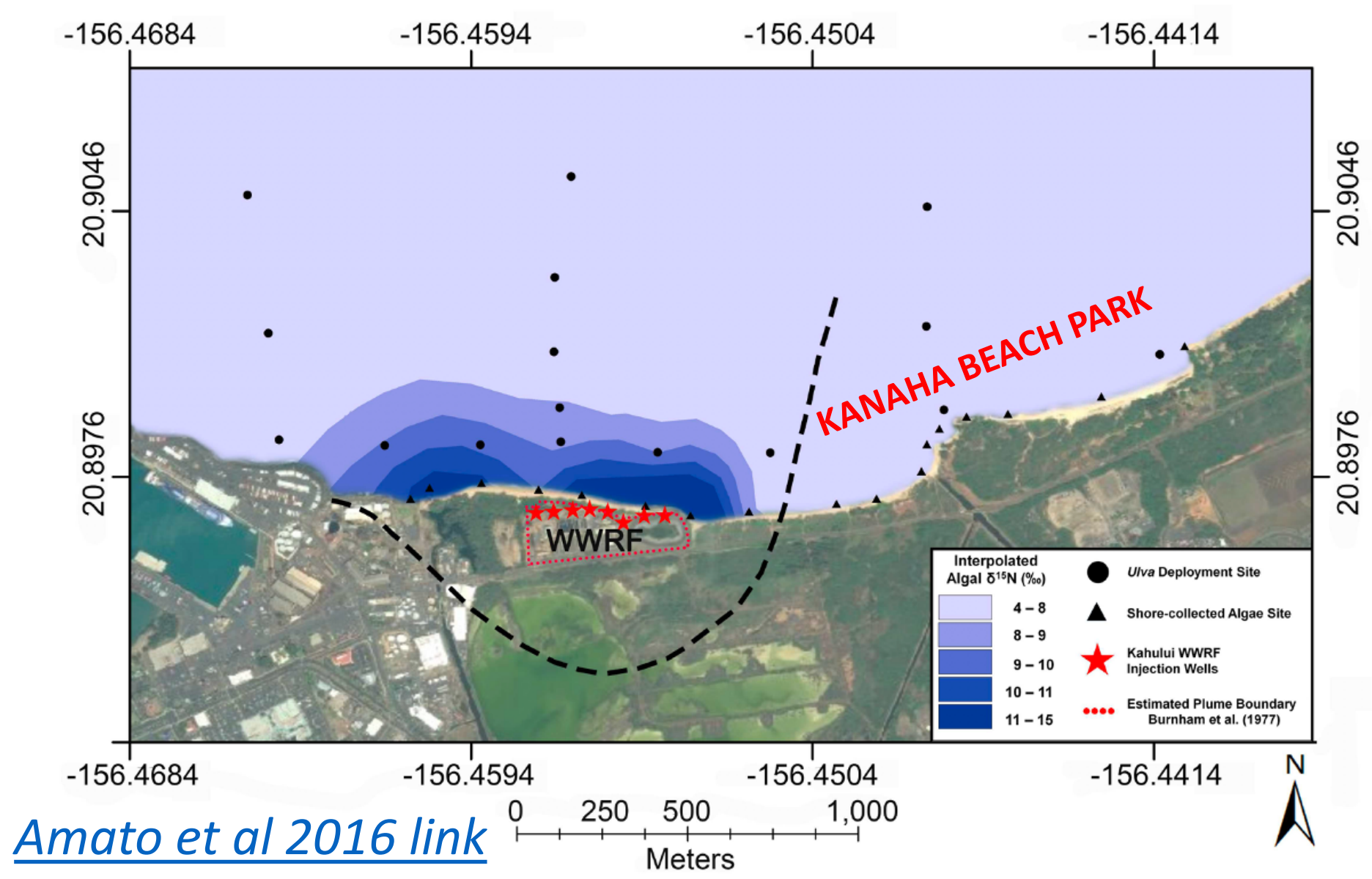
Article link

Abstract

The prevalence of community-associated methicillin-resistant Staphylococcus aureus (CA-MRSA) infection, and Staphylococcus aureus (S. aureus) infection overall, has dramatically increased in the past 10 years. Children and Native Hawaiians and Pacific Islanders (NHPI) are disproportionately affected by CA-MRSA infection. The purpose of this case-control study was to identify risk factors for CA-S. aureus skin infections in children of Maui, Hawai'i, as a foundation for reducing the transmission of these infections. Survey data were obtained from patients in pediatric

CENTRAL SEWER SERVICE AREA





[Amato et al 2016 link]

High bacteria count posted at Kanaha Beach

LOCAL NEWS

NOV 9, 2019

The Maui News

SHARE TWEET

High levels of bacteria have been detected at Kanaha Beach, the state Department of Health announced Friday morning.

During routine beach monitoring, the department's Clean Water Branch detected enterococci levels of 364 per 100 milliliters, indicating that potentially harmful microorganism such as bacteria, viruses, protozoa or parasites may be present in the water.

The advisory will remain in effect until water sample results no longer exceed the threshold level of 130 enterococci per 100 ml.

Swimming at beaches with pollution in the water may lead to illness, the department said.

Children, the elderly and people with weakened immune systems are the most likely to develop illnesses or infections after coming into contact with polluted water, usually while swimming. The department said that while swimming-related illnesses can be unpleasant, they are usually not very serious, requiring little or no treatment or improving quickly upon treatment, and they have no long-term health effects.

The most common illness associated with swimming in water polluted by fecal pathogens is gastroenteritis. It occurs in a variety of forms that can have one or more of the following symptoms: nausea, vomiting, stomachache, diarrhea, headache or fever. Other minor illnesses associated with swimming include ear, eye, nose and throat infections. In highly polluted water, swimmers may occasionally be exposed to more serious diseases.

Article link

Maui News

High Bacteria Count Notification East of Hoaloha Park in Kahului, Maui

December 4, 2020, 5:00 AM HST

Article link

The Hawai‘i State Department of Health has issued a high bacteria count notification and is retesting water at Kahului Harbor east of Hoaloha Park.

The department reports that bacteria levels of 1625 per 100 mL were detected during routine beach monitoring, but is uncertain about the representativeness of the first sample.

“This beach has historically met the acceptable beach threshold level, and there is no known source of fecal contamination. Therefore, DOH has collected another sample and is retesting the site,” according to a department notification.

Sewage spill closes Southern California beaches

A section of the Los Angeles County-run system "collapsed," sending untreated wastewater to already overwhelmed storm drains that lead to sea, officials said.

The release of millions of gallons of untreated sewage into the Dominguez Channel in Carson, Calif., closed some beaches Friday

Dean Musgrove / AP

Article link

Jan. 2, 2022, 6:09 PM HST / Updated Jan. 2, 2022, 7:17 PM HST

By Dennis Romero

Southern California beaches from Orange to Los Angeles counties were closed over the holiday weekend after as many as 7 million gallons of untreated wastewater spilled into the Pacific Ocean, officials said Sunday.

The spill happened after a series of late December storms brought heavy rainfall to the area. A section of Los Angeles County-run sewage system "collapsed," sending untreated wastewater to already overwhelmed storm drains that lead to sea, some blocked by debris, the Los Angeles County Sanitation Districts said in a series of statements.

The collapse was reported Friday night in the city of Carson, and an emergency contractor quickly set up pumps to bypass the problem, but sewage continued to make it to sea the next day, according to the districts.

By New Year's Day additional bypass pumps and the last drops of rain had combined to help end the spill overnight, the sanitation officials said.

County of Maui not planning to invest in disinfection of injected effluent in Kahului until FY2026. Estimated cost of UV disinfection install in Kahului $6M

Wailuku-Kahului Wastewater Reclamation Facility (WWRF) Upgrade to R-1 (CBS-1169)

The plan to upgrade the Kahului/Wailuku WWRF to R-1 is only in the preliminary planning stages. We do not have any preliminary plans, or formal cost estimates at this time. The preliminary estimate in the six year CIP was based on the one channel expansion in Lahaina that cost approximately $6 million. An actual cost estimate will be prepared once we get closer to design contracts.

We have listed it as a potential project on our six year Capital Improvement Program. At this point in time it is not required until the recycled water force main (CBS-1171) and pump station (CBS-5034) projects are constructed to transfer water to the central valley and the water could be used by customers. These other projects are also on the six year schedule and have design contracts issued and the EIS is in process. The current time line is our best estimate, it is not required to be completed by FY2028. It is dependent on other projects as well as other approvals (mayor's office, County Council, etc.) Note that funding for projects is only approved on a year to year basis during the County Budget process.

County of Maui
Fiscal Year 2022-2027 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 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	6-Year
0	0	0	0	0	0	1,800,000	0	1,800,000

PROJECT DESCRIPTION

The primary objective for this project is 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 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.

Wailuku-Kahului WWRF
R-1 Recycled Water Study

Prepared for
County of Maui, Wastewater Reclamation Division, Wailuku, HI
August 2015

2015 Reuse study #1 link

2015 Reuse study #2 link

Table 5-6. DOH Reuse Guidelines - Disinfection Requirements

Item	Requirement
General Disinfection	
Inactivation of F-specific bacteriophage MS2 or poliovirus	5-log or 99.99% removal
Fecal coliform bacteria concentration	<2.2 colony forming units (CFU)/100 mL 7-day median, and >23 CFU/100 mL in no more than one sample in 30 days, and <200 CFU/mL at all times
Disinfection via UV	
UV dose	100,000 µWs/cm^2 (for non-membrane filtration)
Minimum UV transmittance	55 percent
Post-filtration turbidity	Automatic diversion from reuse if >2 NTU
Measurements for flow rate, UV intensity, UV transmittance, turbidity, operational UV dose	Continuous
UV System Redundancy	Required such that PWWF can be handled when one bank of lamps (in each channel) is offline

Table 6-3. UV Disinfection Design Criteria	
Description	**Value**
Filtered water UV transmittance	55 percent minimum [a]
Minimum UV dose	100,000 µWs/cm^2
UV technology	Trojan UV3000+
Lamp type	Low pressure high output, in quartz sleeves
End of lamp life factor	0.98
Lamp fouling factor	0.95
Lamp cleaning system	Automatic
Number of channels	3
Number of banks per channel	5 (1 redundant bank per channel)
Total number of banks	15 (12 duty, 3 redundant)
Number of modules per bank	18 [a]
Number of lamps per module	8
Total number of UV lamps	2,160 [a]
Lamp power draw	254 watts/lamp
Maximum power draw	540 kW [a]
Water level control	Fixed weirs
Instrumentation	Continuous UV intensity monitoring Continuous UV transmissivity monitoring
Energy conservation	Automatic lamp dimming

UV costs for parts & power in the $100K's per year

		FY2021	Estimated FY2022	Estimated FY2023
POWER COST:	(per 2 MGD)			
Lahaina WWRF	UV System	$ 112,958.36	$ 137,875.65	$ 144,037.99
Kihei WWRF	UV System	$ 68,107.25	$ 85,134.06	$ 140,608.51
Electrical Cost per KWH	HECO	$ 0.31	$ 0.31	$ 0.32
	S POWER (PV)	$ 0.21	$ 0.21	$ 0.21
Estimated Annual UV Power Cost		$ 181,065.61	$ 223,009.71	$ 284,646.50
MATERIALS/SUPPLIES:				
Lahaina WWRF	UV lamps, sleeves, modules, parts	$ 127,217	$ 132,340	$ 135,000
Kihei WWRF	UV lamps, replacement modules, parts	$ 51,538	$ 121,400	$ 128,000
Estimated Annual UV Equipment Cost		$ 178,756	$ 253,741	$ 263,000

CARE-88

March 16, 2022, Committee meeting

CLIMATE ACTION, RESILIENCE, AND ENVIRONMENT COMMITTEE
Amendment Summary Form

Legislation: Bill 52 (2022) entitled "A BILL FOR AN ORDINANCE AMENDING SECTION 14.21A.015, MAUI COUNTY CODE, RELATING TO PROHIBITED DISCHARGE STANDARDS."

Proposer: Kelly Takaya King, Chair Kelly T. King
Climate Action, Resilience, and Environment Committee.

Description: Amend Bill 52 to clarify that municipal wastewater effluent reused by the County must only meet EPA drinking water standards for fecal coliform bacteria, not all EPA drinking water standards.

Motion: Move to amend Section 1 to insert the words "for fecal coliform bacteria" so that it reads as follows:

"A. General prohibitions. No user **[**shall**]** can introduce or cause to be introduced into the POTW any pollutant or wastewater that causes pass through or interference. These general prohibitions apply to all users of the POW whether or not they are subject to categorical pretreatment standards or any other governmental pretreatment standards or requirements. Municipal wastewater effluent discharged by the County must meet Hawaii state R-1 reuse water standards; municipal wastewater effluent reused by the County must meet EPA drinking water standards for fecal coliform bacteria; the County must allocate sufficient funding for the implementation of this subsection so that its implementation does not cause a significant increases in sewage rates for residents."

Attachment: Proposed CD1 version of Bill 52.

care:misc:088aasf01:brs

REUSE GUIDELINES

Volume 1: Recycled Water Facilities

Prepared by
Hawai'i State Department of Health
Wastewater Branch

January 2016
(Replaces May 15, 2002 Version)

D. R-1 Recycled Water

In order to be classified as R-1 recycled water, wastewater must be oxidized, filtered and disinfected as follows:

3. Disinfection

The disinfection process, when combined with filtration, must have demonstrated inactivation and/or removal of 99.999 percent of the plaque-forming units of F-specific bacteriophage MS2, or polio virus in the wastewater. A virus that is at least resistant to disinfection as the polio virus may be used for purposes of demonstration.

b. UV Disinfection

1) When using media filtration:

a) The design UV dose shall be 100 mJ/cm^2 or greater under maximum daily flow; and

b) The filtered UV transmittance shall be 55 percent or greater at 254 nanometers (nm).

2) When using membrane filtration:

a) The design UV dose shall be 80 mJ/cm^2 or greater under maximum daily flow; and

b) The filtered UV transmittance shall be 65 percent or greater at 254 nanometers (nm).

3) The minimum acceptable design requirements and commissioning of new UV disinfection systems shall comply with the *NWRI UV Guidelines*.

4) A UV system that is Title 22 certified by California is acceptable to the DOH.

4. Fecal Coliform

a. The median density measured in the disinfected effluent shall not exceed 2.2/100 milliliters using the bacteriological results of the last seven days for which analyses have been completed;

b. The density shall not exceed 23/100 milliliters in more than one sample in any 30-day period; and

c. No sample shall exceed 200/100 milliliters.

d. Frequency of sampling and analysis:

1) Sampling and analysis shall be done daily for fecal coliform when R-1 is being used as allowed (i.e. not directly disposed).

2) If approved by the Director, sampling frequency may be reduced to weekly sampling based on:

a) Use of R-1 when a lower class of recycled water is allowed;
b) Volume of R-1 used;
c) Disinfection or filtration method used;
d) Demonstrated disinfection quality and reliability;
e) Sampling location; and
f) Other factors as determined by the DOH.

Hawaii DOH 2016 Reuse Guidelines link

Environmental Protection Agency

40 CFR Parts 141 and 142
National Primary Drinking Water Regulations: Revisions to the Total Coliform Rule; Final Rule

Part II

FEDERAL REGISTER

Vol. 78 Wednesday,
No. 30 February 13, 2013

EPA drinking water *coliform* rule link

§ 141.52 Maximum contaminant level goals for microbiological contaminants.

(a) MCLGs for the following contaminants are as indicated:

Contaminant	MCLG
(1) *Giardia lamblia*	zero
(2) Viruses	zero
(3) *Legionella*	zero
(4) Total coliforms (including fecal coliforms and *Escherichia coli*.	zero
(5) *Cryptosporidium*	zero
(6) *Escherichia coli (E. coli)*	zero


FlushAware
Do you know what happens to the water that goes down the toilet and drain?
Learn About Your Maui Island Wastewater Disposal Method
FlushAware.com

REEF POWER

reefpowermaui.com

@flushaware

@reefpowermaui

info@reefpowermaui.com

MAUI NUI

MARINE RESOURCE COUNCIL

Special Thanks

B.a.R.E.
Born and Raised Earth

Tax-deductible contributions toward our vision are welcome through our project fiscal sponsor, Maui Nui Marine Resource Council. bit.ly/ReefPower2020