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HAWAI'I COUNTY COUNCIL

25 Aupuni Street, Hilo, Hawai'i 96720

2022 SEP 16 AM 11:40
COUNTY CLERK
COUNTY OF HAWAII

MEMORANDUM

DATE: September 16, 2022

TO: Maile David, Council Chair; and
Members of the Hawai'i County Council

FROM: Susan L.K. Lee Loy, Council Member

SUBJECT: Project Genki Hou PowerPoint Presentation

I am requesting approximately 45 minutes for a presentation and discussion with project coordination team members Hiromichi Nago, Tim Lloyd, and Susan Osborne regarding Project Genki Hou. Their presentation will address the environmental benefits of "genki balls," its success on the Ala Wai Canal in Honolulu, and an upcoming project at the Lili'uokalani Waihonu Pond.

I kindly request that this matter be placed on the October 4, 2022, Committee on Regenerative Agriculture, Water, Energy & Environmental Management agenda.

SLL:jv

Comm. No. 1008
Ref. To: RAWEEMC
Ref. Date SEP 20 2022

Genki Ala Wai Project

Hiromichi Nago, Technical Advisor

County of Hawaii Regenerative Agriculture, Water, Energy, and Environmental Management Committee

Project update

October 4, 2022

Hawaii Exemplary State Foundation

- A **systemic approach** that empowers all stakeholders in the ahupua‘a to be involved in solution strategies will be used to address ecosystem restoration and flood mitigation in the watershed.
- Academic institutions (K-12) will develop meaningful **place-based STEM education**.
- **Students, teachers, community and other stakeholders** must work together to accomplish the project goal.

Leadership:

- Dr. Kenneth Kaneshiro, Principal Investigator, Pres. of the (HESF), Dir. of Center for Conservation Research & Training, U.H.
- Ian Pelayo, Project Manager
- Mary Ann Kobayashi, Educational Coordinator
- Hiromichi Nago, Technical Advisor
- Chikako Nago, Business Liaison and Social Media Coordinator
- Fumiko Sato-Chun, Community and Media Liaison

The Genki Ala Wai Project

Students, teachers, and the community working together.

The purpose of the project:

"The Genki Ala Wai Project aims to use bioremediation technology to make the Ala Wai Canal fishable and swimmable within seven years."

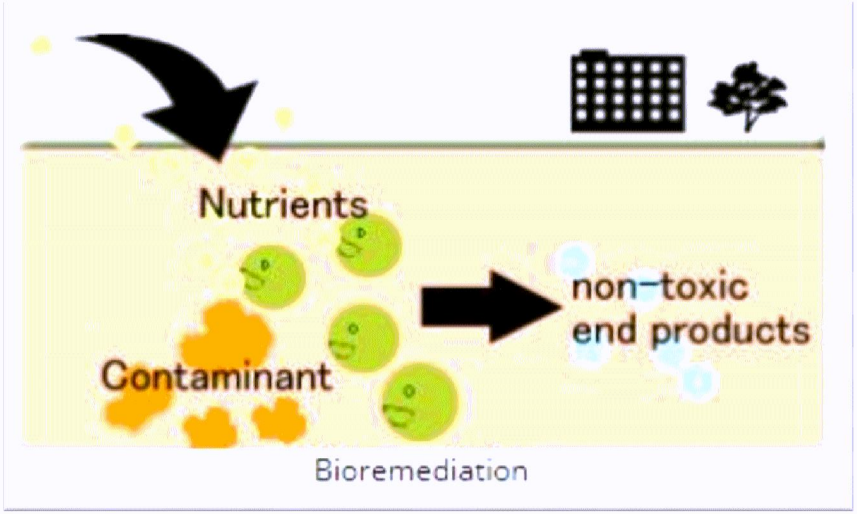
How will we measure the project's effectiveness?

We need baseline data and end goal measurements for these parameters:

- Water quality
- Bacteria levels
- Sludge levels
- Toxicity levels in fish tissue samples

Bio-Remediation:

The use of living organisms (e.g. bacteria) to remove pollutants from soil, water, and wastewater.



USE OF EM® MUDBALLS: Aka "Genki Balls" by the Osaka Fisherman Cooperative

"Genki" means Healthy or Vital in Japanese

- To digest sludge, EM® must reach the bottom of the canal. This is accomplished by throwing tennis-ball sized, dried mud balls that contain a mixture of EM•1®, clay soil, molasses, rice bran and water into the canal.

- According to the USDA, one teaspoon of healthy soil contains up to one billion individual bacteria. Soil provides a "home" for EM®. Once embedded in the surface of the sludge, the fermentative bacteria digest and oxygenate the sludge. At the same time, phototrophic bacteria will consume the harmful gases so foul odors would be contained

State Department of Health Clean Water Branch

Permit No. HI 0021938 effective November 25, 2019

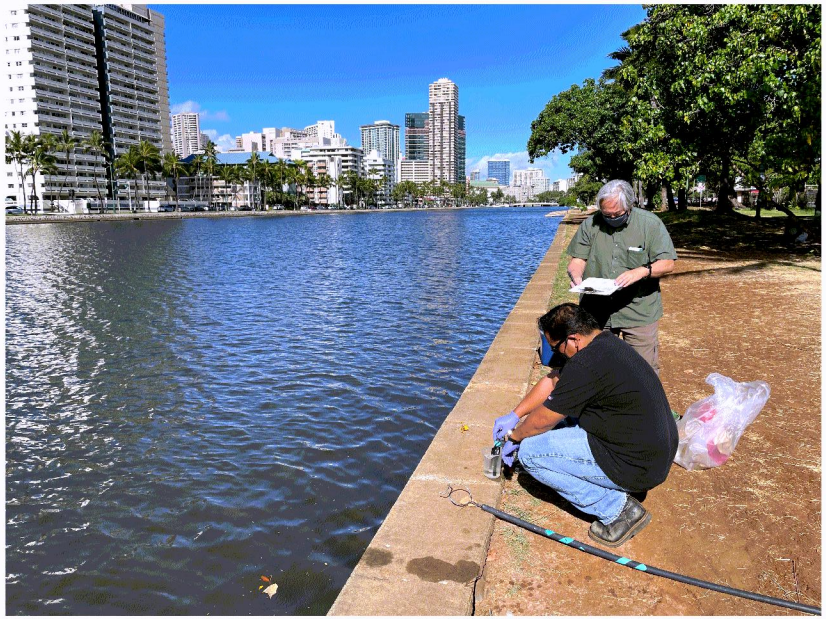
Jefferson Elementary school site at stagnant end of the canal

Ala Wai Elementary School site in front Community Gardens

City & County of Honolulu
Water Quality Laboratory assisting with independent water quality tests

Jefferson Elementary school site at stagnant end of the canal

Ala Wai Elementary School site in front Community Gardens



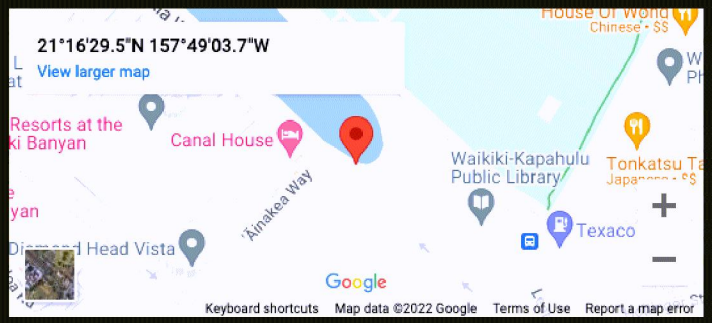
December 7th, 2021

Ala Wai Canal brown after 10-year rain.

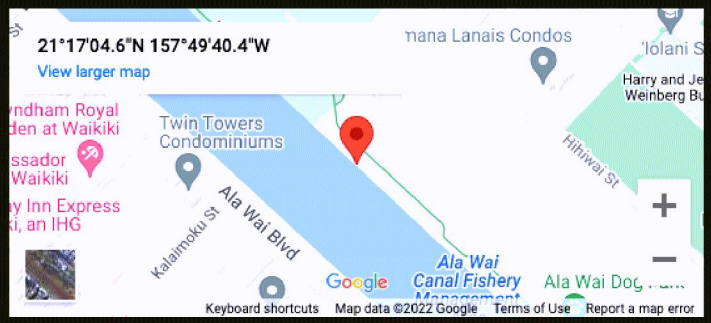
Data is being collected at two test sites by Genki Ala Wai Project participants, as well as by the Hawaii State Department of Health and the City and County of Honolulu's Water Quality lab.

The Jefferson Elementary School test site is located at 21°16'29.5"N, 157°49'03.7"W, near the Waikiki-Kapahulu Public Library. Students from Jefferson elementary school first introduced Genki Balls on November 27th, 2019 and December 6th, 2019.

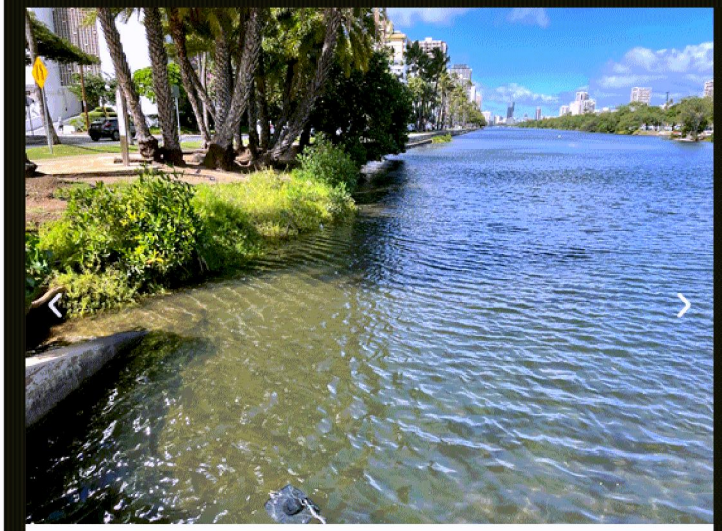
The Ala Wai Elementary School test site is located at 21°17'04.6"N, 157°49'40.4"W, near the Ala Wai Neighborhood Park. Students from Ala Wai elementary school first introduced Genki Balls on November 27th, 2019.



Jefferson Elementary School Test Site Location



Ala Wai Elementary School Test Site Location



December 12th, 2021

Ala Wai returns to normal in 5 days after brown water.

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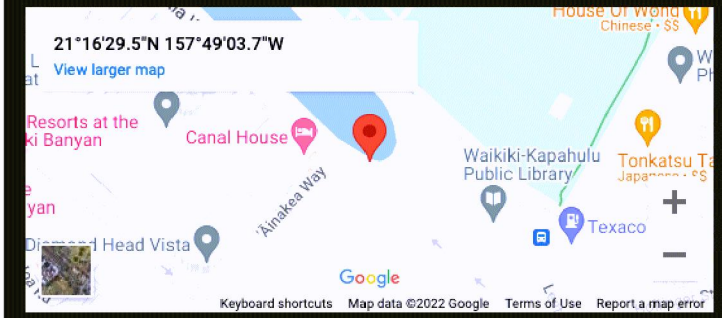
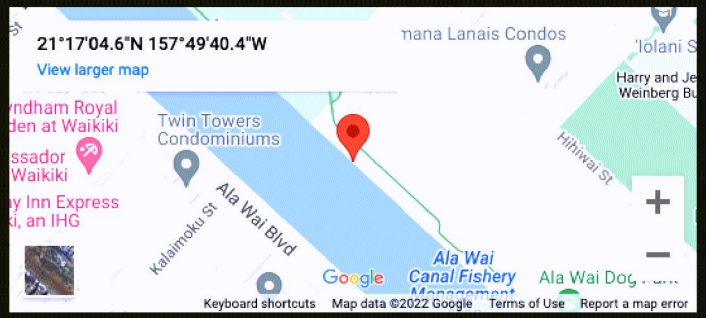


Jefferson Elementary School Test Site Location



Ala Wai Elementary School Test Site Location

Why test for enterococci?

Enterococci are bacterial indicators to test for the presence of fecal material in water. Higher colony-forming units (cfu) indicate possible water contamination of disease-causing organisms.

Site	11.25.19	01.28.20	02.08.21	07.07.21	11.22.21	02.09.22
Jefferson Elementary Deployment	697 cfu	192 cfu	1298 cfu	53 cfu	340 cfu	46 cfu
Jefferson Elementary Downstream	-	-	-	-	104 cfu	46 cfu
Ala Wai Elementary Deployment	31 cfu	111 cfu	1013 cfu	124 cfu	110 cfu	43 cfu
Ala Wai Elementary Downstream	-	-	-	-	40 cfu	29 cfu

Why test for oxygen saturation?

Dissolved oxygen is an indicator of water productivity. Higher dissolved oxygen levels indicate healthier water systems, while lower dissolved oxygen levels can indicate a degree of water pollution.

Site	11.25.19	01.28.20	02.08.21	07.07.21	11.22.21	02.09.22
Jefferson Elementary Deployment	52.5%	65.1%	67.0%	144.3%	n/a	69.80%
Jefferson Elementary Downstream	-	-	-	-	n/a	86.00%
Ala Wai Elementary Deployment	81.5%	60.7%	90.5%	88.7%	n/a	135%
Ala Wai Elementary Downstream	-	-	-	-	n/a	146%

Why test for salinity?

Salinity is a measurement of the amount of salt in water, in parts per thousand (ppt). Lower salinity levels can indicate fresh water intrusion, which can be caused by heavy rain.

Site	11.25.19	01.28.20	02.08.21	07.07.21	11.22.21	02.09.22
Jefferson Elementary Deployment	24.67 ppt	14.45 ppt	10.55 ppt	24.8 ppt	32.44 ppt	22.3 ppt
Jefferson Elementary Downstream	-	-	-	-	32.87 ppt	22.4 ppt
Ala Wai Elementary Deployment	25.64 ppt	17.23 ppt	3.04 ppt	18.83 ppt	32.39 ppt	28.0 ppt
Ala Wai Elementary Downstream	-	-	-	-	31.98 ppt	27.9 ppt

Why test for Clostridium?

Although Clostridium perfringens (cp) is not an Environmental Protection Agency (EPA) recommended indicator, the Department of Health has been using a geometric mean of greater than 50 to indicate a potential high human fecal contamination source.

Site	11.25.19	01.28.20	02.08.21	07.07.21	11.22.21	02.09.22
Jefferson Elementary Deployment	29 cfu	41 cfu	7 cfu	5 cfu	n/a	46 cfu
Jefferson Elementary Downstream	-	-	-	-	n/a	26 cfu
Ala Wai Elementary Deployment	14 cfu	50 cfu	31 cfu	46 cfu	n/a	12 cfu
Ala Wai Elementary Downstream	-	-	-	-	n/a	12 cfu

Ala Wai Elementary Area 2			
04.06.21	05.21.21	07.07.21	11.02.21
10.0"	8.0"	6.0"	6.0"
Ala Wai Elementary Student Data, Area 1			
11.25.19		12.29.19	2.21.20
3.75"		2.25"	0.5"
Ala Wai Elementary Student Data, Area 2			
11.25.19		12.29.19	2.21.20
13.5"		5.5"	3.5"
Ala Wai Elementary Student Data, Area 3			
11.25.19		12.29.19	2.21.20
13.5"		3.5"	2.0"

Why test for sludge depth?

Sludge represents organic waste that accumulates from biological processes. Normally sludge is digested and broken down into non-toxic compounds, but when the environment is not healthy, sludge can build up to harmful levels.

Jefferson Elementary Test Site				
07.09.21	07.25.21	04.01.22	04.17.22	05.29.22
23.0"	21.0"	11.0"	8.5"	5.0"

Ala Wai Elementary Test Site			
07.09.21	01.13.22	02.03.22	06.01.22
6.0"	5.0"	5.0"	5.0"

Hands-on

Outdoor

Fun

Easy to do –if organized

Learning Activity

Jefferson Elementary making 1500 Genki Balls to help restore the Ala Wai canal

Photo’s & video’s of Honu seen in the Ala Wai canal

Nov. 18, 2021

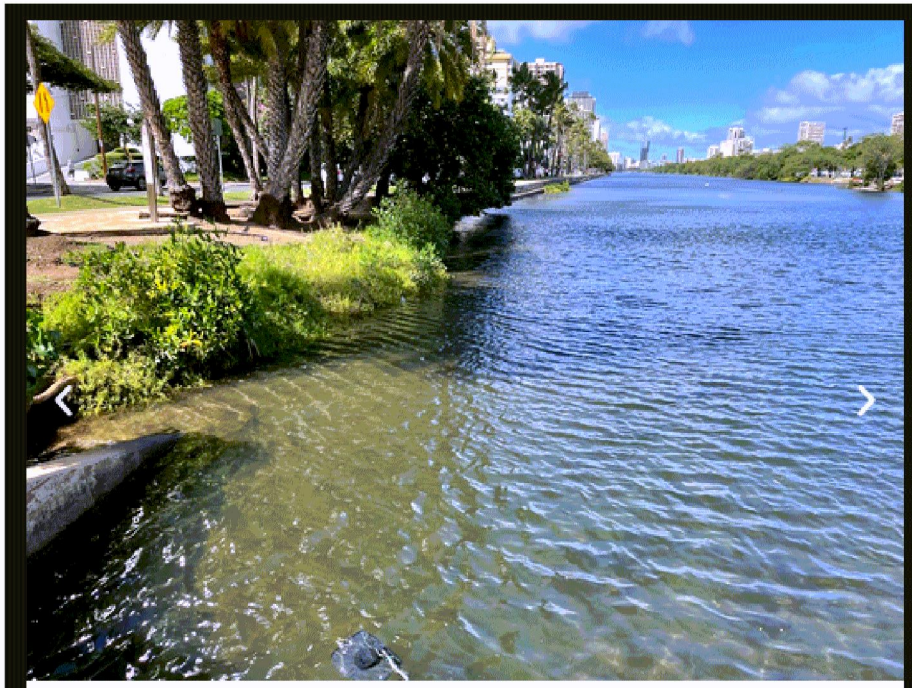
July 23, 2021

December 7th, 2021

Ala Wai Canal brown after 10-year rain.

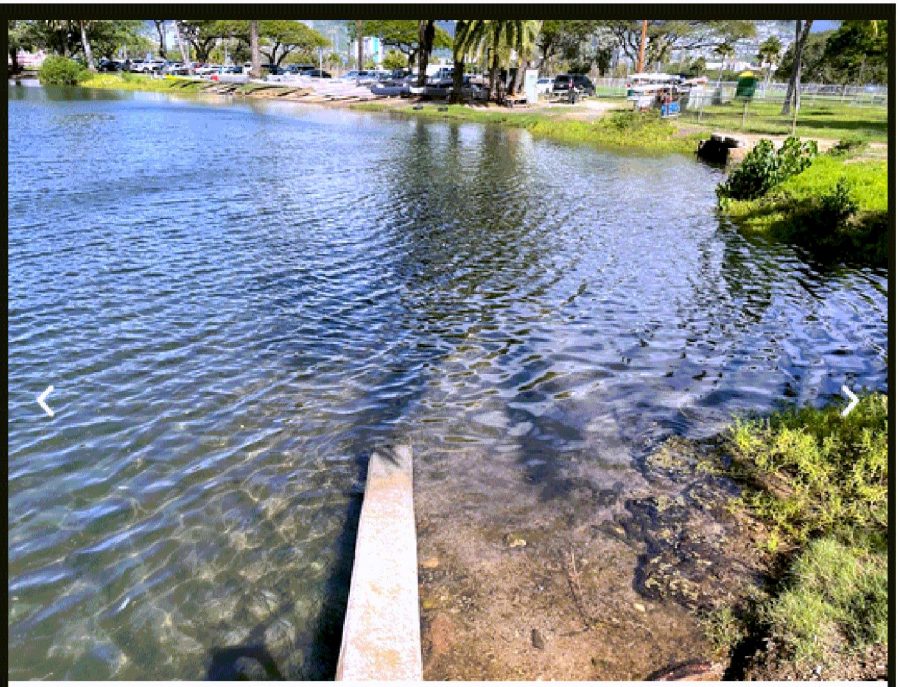
December 7th, 2021

Ala Wai Canal brown after 10-year rain.



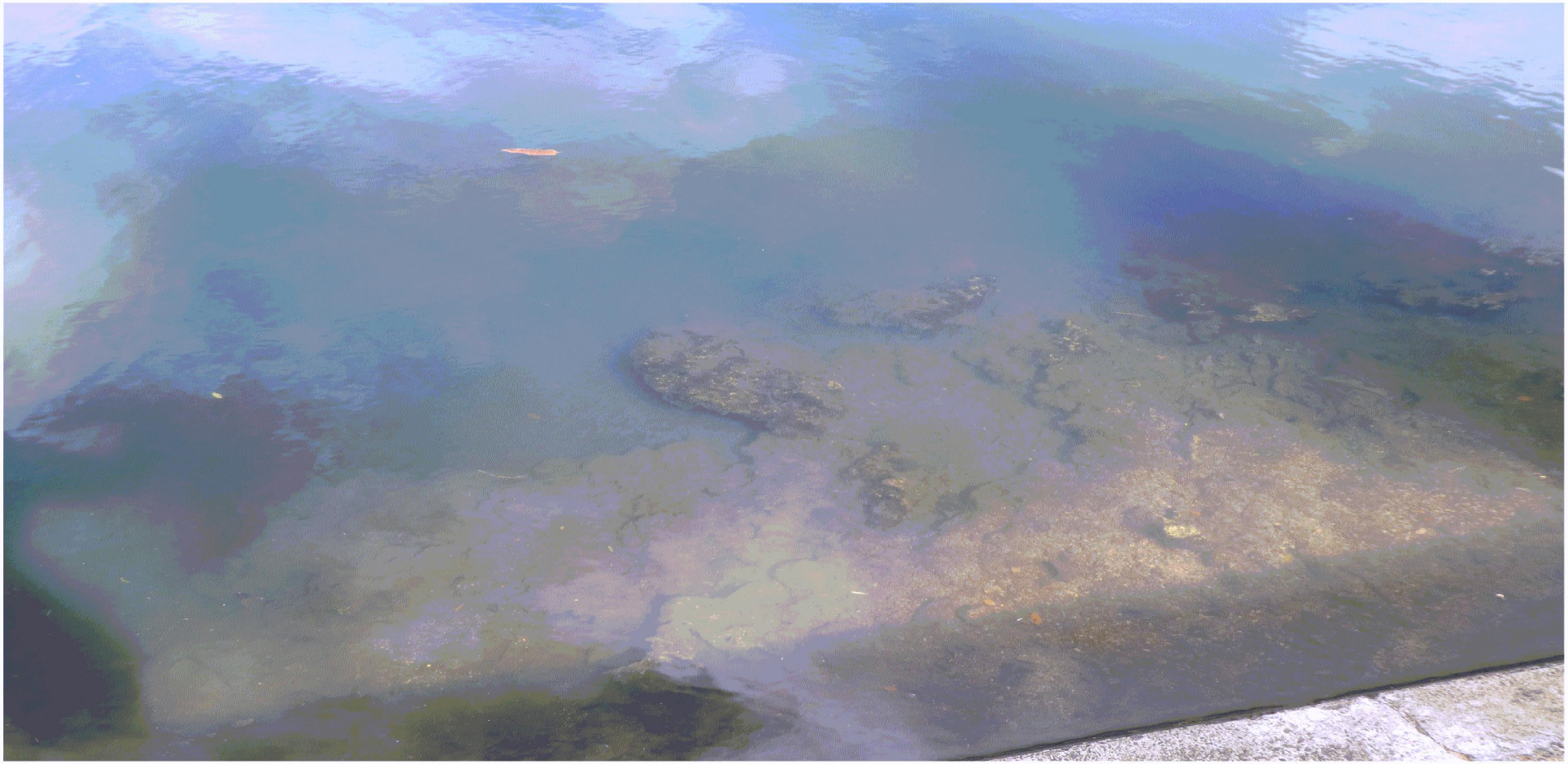
December 12th, 2021

Ala Wai returns to normal in 5 days after brown water.



December 12th, 2021

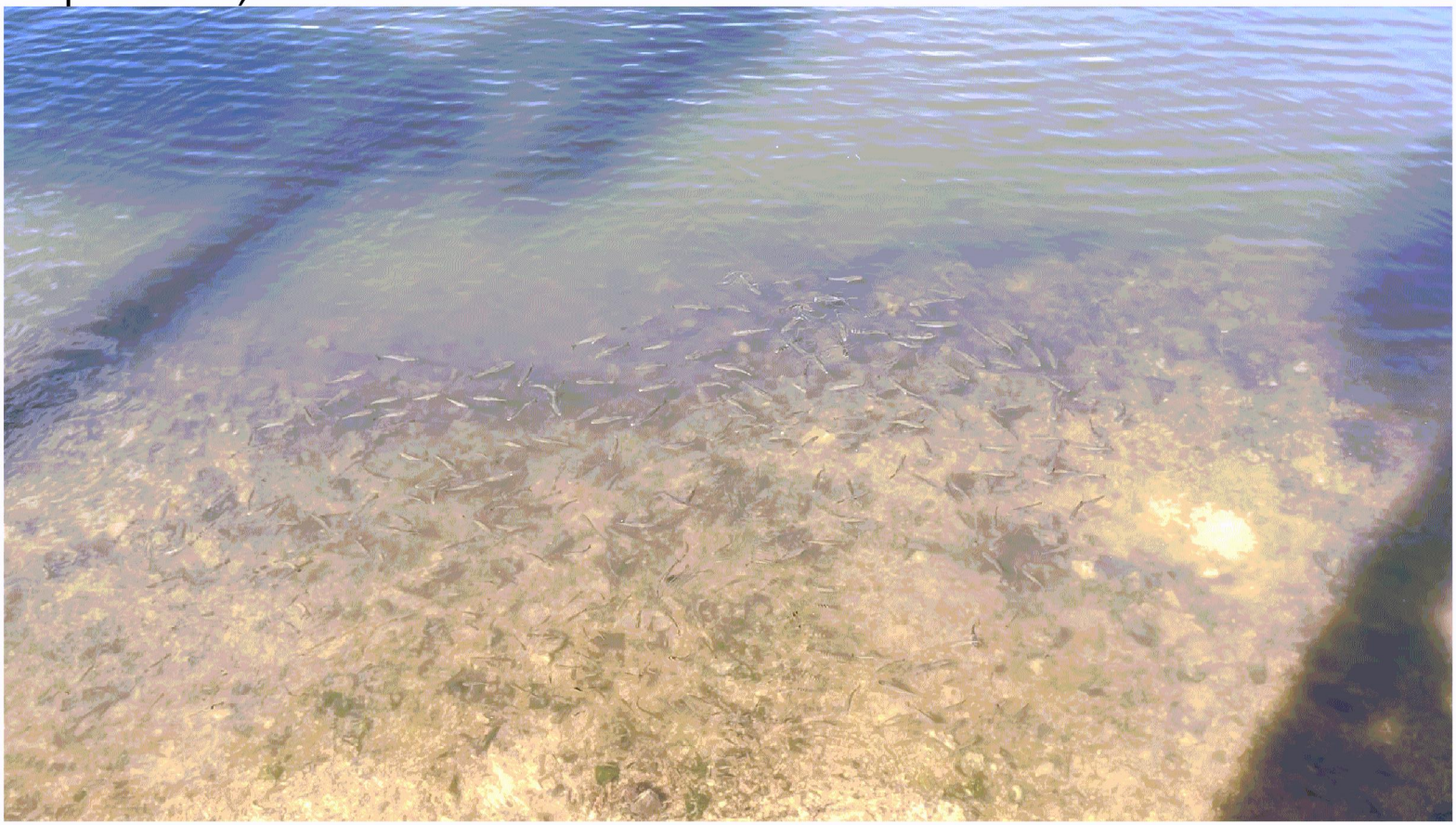
Ala Wai returns to normal in 5 days with help from November toss.



Ala Wai Blvd. walking path. Bioremediation can improve water quality
Dec. 6, 2019 sludge covered reef- 9 days after Genki ball toss, exposing some sand

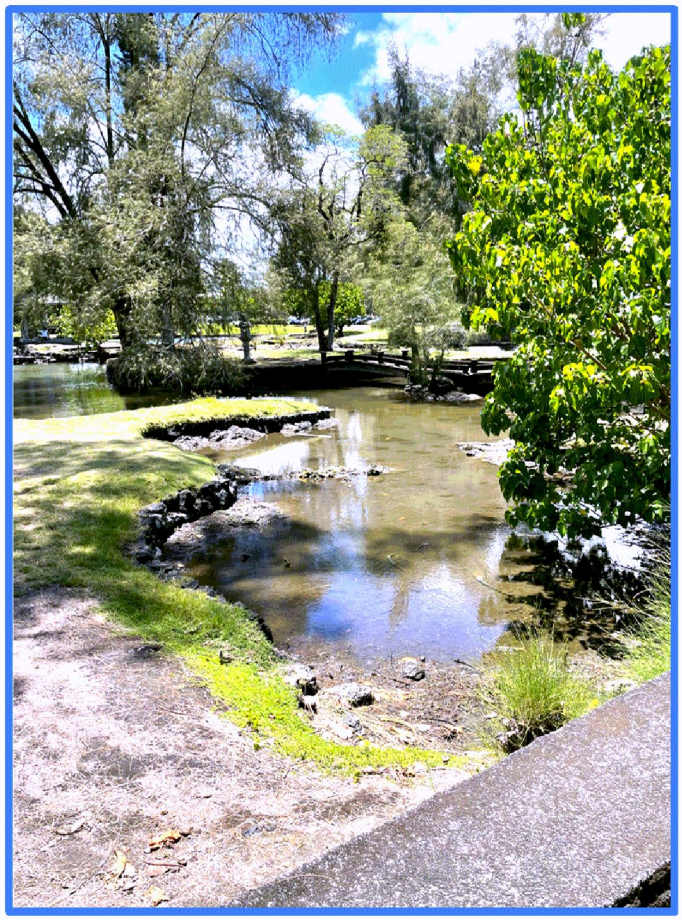
Ala Wai Blvd. walking path. Bioremediation can improve water quality after 15 days from Genki ball toss Dec.12, 2019 fine sludge digested, teaming with small fishes

11 days after Rotary Genki ball toss Kapahulu site
April 13, 2022



www.genkialawai.org

emhawaii.com



Rotary
Clubs of East Hawai`i

Upcoming

Project Genki Hou

To Thrive Again!

Lili`uokalani Waihonu Pond

Utilizing Effective Microorganisms to Clean the Pond!

Genki Hou: To Thrive Again!

Help Clean Up Waihonu Pond of the Lili`uokalani Gardens!

Project Coordinators

- Rotary Club of Pāhoa Sunset
- Rotary Club of South Hilo
- Rotary Club of Hilo

In collaboration with:

- Friends of Liliu`okalani Gardens
- Eco Rotary Club of Kaka`ako
- Rotary Club of Hiroshima
- Ho`oulu Lāhui (501c3)
- Kua O Ka Lā Charter School
- County of Hawai`i

Genki Hou Outreach while celebrating our Queen Lili`uokalani‘s birthday

GENKI HOU: TO THRIVE AGAIN! **Our beloved 5 acre traditional fish pond with surrounding park** (21 acres) **is enjoyed by all residents and visitors alike! 250,000 users annually!**

Top Priority of Friends of Lili`uokalani Gardens:

CLEAN WAIHONU POND!

- UH Hilo has been collecting water samples for the past several years.
- Bi-monthly groups have been coming to remove sludge with no end in sight while the putrid smells impact all park users.
- The presence of dye in Waihonu suggests that there could be leaks from the sewer system, either from the feeder system or the main sewer line on Banyan Drive. (7/2020 report Dye Tracer Test, UH Hilo)

Lance Niimi, Jennifer Ho, and Rep. and Mrs. Chris Todd

Helping to remove mud from the corner near the“new”makaha.

Professor
Alton Okinaka

Associate
Professor of
Sociology at
UH Hilo

K.T.

President of Friends of Lili`uokalani Gardens

GENKI BALLS

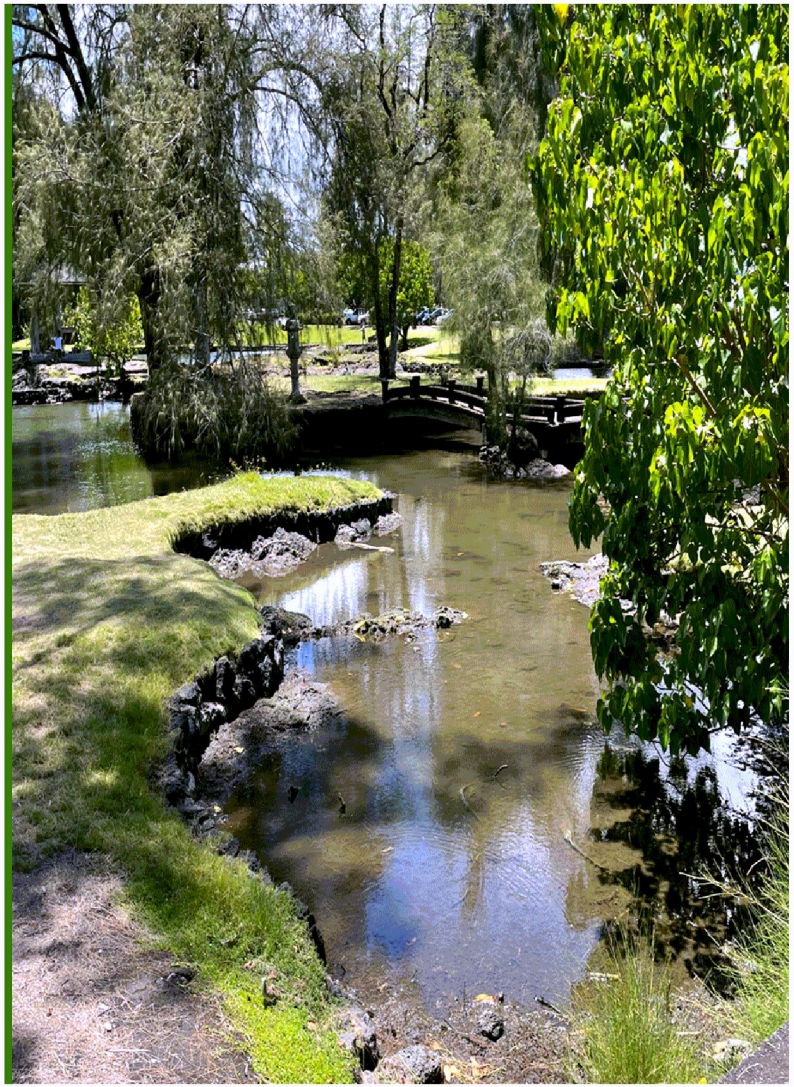
- **GENKI BALLS** utilize effective microorganisms to remediate sludge, which forms and accumulates due to oxygen deficiency.
- In the sludge, putrefactive bacteria decompose organic matter, but also produce harmful gases such as methane, ammonia and hydrogen sulfide.
- These compounds produce a toxic putrid environment of sludge (rotten, organic material) forms and accumulates.

Over 1,000 balls to be tossed in 3 sessions! With every ball tossed we shout~ GENKI HOU!

Utilizing **native wisdom of the Hawaiian moon** calendar, we will make the Geniki balls on the new Hilo moon to inoculate for one month prior to the first ball toss (Dec 3rd, 2022).

Second toss will take place in March and the third toss will occur in May during the Statewide Rotary District Conference, with 200 persons expected to attend (May 2023).

The participating Rotary clubs will seek media attention and demonstrate the project success in our efforts to lay the foundation for long term project planning and sustainability beyond the initial 3 ball tosses.



Location Map For The First 3 Ball Tosses

Initial 3 tosses target HALF the pond to demonstrate proof of concept, effectiveness and impact by comparison, to facilitate development of long term strategic plan for continued restoration and management.

Educational Components

Hiro Nago, of the Genki Ala Wai Project, and Hawai`i Island EM Distributor, Tim Lloyd, will provide education on the Effective Microorganisms (EM) process to participants during the genki ball making sessions to Rotary club members, Kua O Ka Lā Kumu (teachers), `ohana and haumana (students).

Tim Lloyd will provide the Kumu of Kua O Ka Lā with 21 Professional Development hours, earning them 3 credits (of 15) towards a ‘step up‘ increase in salary and important knowledge will be gained to share with future students.

Kua O Ka Lā haumana in the Agriculture and Science classes will also receive Effective Microorganism and bio-remediation education.

Project Cost & Council Contingency Request

The 501c3 non-profit Ho`oulu Lāhui is submitting the request for funding for this project. Ho`oulu Lāhui, a 25 year educational entity has managed over 13 million in grant funding and is the fiscal sponsor for Kua O Ka Lā Charter School.

Kua O Ka Lā has been formally adopted by the Rotary Club of Pāhoa Sunset as a long term project and the Charter school is also a corporate member of the Club.

Kua O Ka Lā will be one of the key collaborator in the project, with teachers, students and `ohana learning about Effective Microorganisms, making genki balls and drying the balls in the schools large greenhouse and participating in the ball toss events!

Our request for $6,000.00 includes funding for supplies, instruction, travel, food and banners. A detailed budget with in-kind donations of over $3,000.00 is available.

LONG TERM PROJECT PLANNING

As we work through the initial project planning and process, we will begin to envision the long-term strategic plan necessary for project sustainability, including new locations throughout Hilo to clean, rehabilitate and enjoy!

FUTURE PROJECTS:

Determine other sites: Pohoiki Ponds, Wailoa River, Keaukaha Ponds

Engage additional organizations and schools for project management and execution.

Invite hotels to develop a financial per guest $ contribution towards genki balls. (ie. $2.00)

Encourage the cruise ships to develop a financial per visitor $ contribution towards genki balls and develop a staple program for departing guests to toss a ball into our polluted Hilo Bay as a MAHALO to Hawai`i, while they shout: Genki Hou!!

Let‘s clean our coastal waters and ponds!