Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:07 AM -----

From: [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/06/2008 02:39 PM
Subject: EPA Hearing for injection well permit...Lahaina Civic Center, West Maui

Aloha,
I am concerned for the quality of our ocean water and how it is affected by near shore injection wells. Studies have shown a rapid decline in the reefs and water quality near areas where there are injection wells at the shore. As an ocean enthusiast who spends hours a day in the water for work and fun I would like to see this waste water used constructively and kept away from harming our ocean environment. There are many uses for waste water that can keep it from contaminating the ocean: watering greenbelts or bio-fuel crops, fighting fires or for construction? This resource must be used wisely through out the whole Island, not just in Lahaina but in all the population areas that use injection wells near shore.
Mahalo for listening,
Aaron Longshore
kayaker/diver/surfer
Longshorephotography.com
808-283-8773

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
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--- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:21 AM ---

From: [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/06/2008 11:36 AM
Subject: DIRE

Aloha Nancy,
Just wanted to add my voice to the throng of those concerned about the injection well project threatening Maui's ocean and reef's, not to mention the loss of valuable and usable water. I hope you take to heart DIRE's message and are able to work together to "re-direct", and find a suitable alternative that fosters a healthier Hawaii.
Thanks for the time,
zachary klaja

Color coding for safety: Windows Live Hotmail alerts you to suspicious email. Sign up today.

[redacted] Yvette Broyles
[redacted]
09/23/2008 01:32 AM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Intent to re-issue permit for UIC

Hello Nancy Rumill

I am writing as a concerned resident of this beautiful island of Maui. I am an active volunteer, a marine science student, a future educator, and a voice for the reefs in our oceans, in particular, the Pacific Ocean. I am writing to address the intent tore-issue an Underground injection control permit for the Lahaina Wastewater Reclamation Facility in the Lahaina area. The residents here are impacted by the horrible thoughts that our shorelines will be stressed out due to possible leaks that injection wells can create. We are concerned that the Underground injection control will only increase problems that are presently being addressed.

Maui is a small island that thrives on the security of its beaches and reefs. If an injection well continues to be used on Maui, especially in Lahaina, we are sure that the reef at Kahekili will decrease in richness and life. Many reefs will be impacted in the Lahaina area and that spells trouble for the fish and marine life that call these reefs home.

Also,bacteria and viruses are sure to make an appearance in our oceans as well as our drinking water if injection wells stay in the Lahaina area as well as other areas on the island. We need to have an ongoing supply of drinking water on Maui as well as other islands. Bacteria will cause a shortage in fountain water that is provided at schools, homes, and businesses. We will be forced to purchase bottled water, which will only cause problems if people chose not to recycle.

I have lived here for 5 years and I refer to this place as my home. Like anyone who loves where they live, I am making my peers and myself more aware of the catastrophic impacts we have on the oceans as well as the reefs. We invite you to come to this beautiful place many of us call home so that you may assess the areas of concern. After all, it is our responsibility to make our oceans safe for our marine life as well as present and future generations.

Thank you for your time,

Yvette Broyles

See how Windows connects the people, information, and fun that are part of your life. See Now

"wayne cochran" [redacted]

09/17/2008 05:31 PM

To Nancy Rumrill/R9/USEPA/US@EPA

cc [redacted]

bcc

Subject injection wells

History: This message has been forwarded.

Having grown up on Maui I have watched the reefs and sea life disappear. Injection wells might have seemed like a good idea 30 years ago, but have proved disastrous to our ocean. A public hearing with the EPA about needs of island sewage treatment is necessary. It could protect what sea life we have left, Federal aid might be the only thing that will save our the reef. Water is our most precious resource and must be recycled and reclaimed instead of pouring it away and creating algae blooms. Private sewage treatment systems have had the worst impact of all. But first things first, let's fix Honokowai, then Kahului, and Kihei treatment facilities up with holding tanks and pump stations for treated water. All this Nitrogen rich R2 water must be used for Agriculture and clean stream water can be restored.

Wayne Cochran Honolua 2642648

45A Welina Place, Makawao, HI 96768

November 6, 2008

Nancy Rumrill
U.S. Environmental Protection Agency
Ground Water Office (WTR-9)

Submitted via email: rumrill.nancy@epa.gov

Subject: DRAFT UNDERGROUND INJECTION CONTROL (UIC) PERMIT
FOR THE LAHAINA WASTEWATER RECLAMATION FACILITY, MAUI, HAWAII

Dear Ms. Rumrill:

1. Coral reef ecosystems on Maui are threatened by land-based pollution, overfishing, invasive algae, climate change, and other factors.

2. The decline of coral reefs on Maui is reflective of a broader crisis unfolding in Hawaii, in other subtropical waters of the U.S., and indeed world wide, as coastal areas become more developed, and as global warming results in a host of adverse impacts on these ecosystems.

3. The National Oceanic and Atmospheric Administration (NOAA 2008*) recently warned: *Despite the investments made to date in managing and monitoring U.S. coral reef ecosystems and increasing management capacity at all levels, coral reef ecosystem resources have continued to decline over the short- and long-term….Significant actions and bold protective measures are required if reef conditions are expected to improve in the future* (my emphasis).

4. Coral reefs of Maui and elsewhere in Hawaii's have exceptionally high biodiversity value. A large proportion of their species are found nowhere else on Earth. Over 60 species of coral, 400 reef fishes, and the imperiled Hawaiian Monk Seal, Green Sea Turtle, and Hawksbill Sea Turtle are part of Maui's coral reef ecosystem.

5. Hawaii's coral reefs, valued at billions of dollars annually, are a key aspect of the State's economy and an important part of Hawaiian culture. Island reefs provide commercial, recreational and subsistence fishing opportunities, create world famous surfing and diving locations, and are essential to Hawaii's marine tourism industry (NOAA 2008).

6. <u>The plight of Hawaii's coral ecosystems underscores one of the greatest challenges facing resource conservation today: reversing the current inability or reluctance of government to protect treasured natural ecosystems.</u>

7. Nearly 25% of all living coral has been lost during the past 8-14 years, adding further to damage recorded in previous decades (Hawaii Division of Aquatic Resources 2007). One of the best coral reefs on the Maui, Maalaea, has seen astounding degradation with up to 67% coral lost since 1993.

8. Coral reefs near areas of development have suffered the greatest. Research indicates that elevated nutrients from sewage wastewater are fueling profuse growth of marine algae thereby smothering living corals. Other factors contributing to the problem include fertilizer runoff from agricultural fields, lawns, and golf courses, and runoff of soil and debris from construction sites and urbanized areas.

9. In a recent report, scientists with the Hawaii Division of Aquatic Resources warned that *"The goal of those charged with the protection and restoration of Hawaii's natural resources must be to prevent such severe degradation from further affecting Maui's reefs…If steps are not taken to return conditions to those in which corals can thrive, it is nearly certain that additional reefs will reach the state of Maalaea."*

10. The report links the decline of coral reefs on Maui with locations of waste water injection wells, including those at the Lahaina Wastewater Reclamation Facility.

11. The EPA's draft permit would continue to authorize the underground injection of secondary treated municipal wastewater into four existing Class V injection wells at the facility.

12. In your reply to this letter, please address the following questions:

a) Does EPA believe that the wastewater injection wells on Maui, including those at the Lahaina Faculty, are a factor in coral reef degradation? Please provide a technical analysis in support of your response

b) What is EPA's responsibility and role in protecting Maui's coral reefs, in terms of controlling both point and non-point sources of land-based pollution?

c) Are the injection fluid standards in the Lahaina Draft Permit designed to safeguard coral reefs against harmful pollutants emanating from the injection wells? If so, please explain the technical basis for these standards.

13. Prudence demands that pollution of coral reef ecosystems is quickly curtailed. The status quo is not acceptable. The U.S. Coral Reef Task Force (2008) notes cause for hope but urges swift action: *Science has demonstrated that reef communities can recover when they are protected and stressors are removed. Urgent action is needed to reduce greenhouse gas emissions. In the meantime, precious time for coral reef ecosystems can be secured through increased protection from land and marine pollution, unsustainable fishing, development, and other stressors, all of which we know can damage coral health. The time to act is now* (My emphasis).

14. Please indicate how your agency's handling of permitting issues at the Lahaina Wastewater Reclamation Facility will ensure timely action to protect West Maui's coral reefs.

15. We ask that the EPA fulfill its obligation to safeguard the biological integrity of the Nation's waters, in this case the coastal waters of Maui, Hawaii. Your agency must ensure that pollution of coral reef ecosystems from wastewater facilities such as those at Lahaina is curtailed, and that alternative treatments for wastewater receive EPA's full support.

Thank you for this opportunity to comment.

Sincerely,

Tony Povilitis, Ph.D.

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*Text references available upon request

To: Nancy Rumill
EPA San Francisco

Subject: Lahaina Wastewater Reclamation Facility
Injection Well Permit

Dear Nancy,

Please do not issue a reuse permit for the Lahaina injection wells before holding a public hearing on Maui, where alternatives can be discussed. We have heard from Dave Taylor that there is no money to reuse the effluent. We have heard from Steve Parabicoli that we reusing the waste water is a "Best Practice."

Let's practice what is best and reuse the waste water. Let's find a way together.

Yours truly,

Toni

Toni Hebda
50 Ano Ano Place
Lahaina HI 96761

"Tom Savidge"
[redacted]
09/17/2008 07:28 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject West Maui/Lahaina Injection Wells

History: This message has been forwarded.

Dear Ms Rumrill,

Prior to any decision on the Lahaina injection wells, I ask that the EPA hold a public meeting in west Maui. That is important!
The injection well permits need to have specific conditions placed on any approval or positive action. You likely have received specific suggestions for conditions so I won't repeat them. But, using wastewater like this without specific conditions would make this water a wasted resource.

We live on an island and water usage is important. Sometimes on this island, things are slow to change. But, now is a key time to avoid further waste and make some positive change for the betterment of all concerned.

Please hold a public meeting in west Maui.
Thank you,
Tom Savidge
4955 Makena Rd #D301
Kihei, HI 96753

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
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San Francisco, CA 94105
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----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:18 AM -----

From: [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/06/2008 11:21 AM
Subject: injection well permits

Aloha, Nancy.

I am a teacher on the west side of Maui. My students and I share a love of the ocean, and we recently took a field trip where we got to go snorkeling and take pictures of the beautiful fish in Kapalua Bay. We learned a lot about the coral that lives there and also about the symbiotic relationship it has with algae. The kids all agree that it is the best field trip we've ever taken.

In addition to this hands-on experience, I took an ocean awareness class and learned even more information that I got to share with my students. For example, half of the US coral reefs are in fair or poor condition. Hawaii has 85% of all US reefs. 75% of the main Hawaiian reef fishes are depleted or in critical condition due to the condition of the reefs. We need these organisms. Did you know that 50% of the cancer medications we have today are derived from reef organisms? That's huge.

As you can imagine, they were disturbed when I told them about the possibility of the injection well permit being renewed. I told them that we have an opportunity to e-mail you about our concerns, and each of my 6 children wanted to contribute. The following statements were written by them:

Cassidy: I don't like the extra nitrogen from the injection wells to flow into the lovely ocean. I want North America to be as pretty as possible. I don't want any kind of fish to die and be killed in North America.

Akiva: I say stop because you're killing the coral and hurting the reef and making fish

sick.

Danielle: I say stop because you are killing the coral. I think you must not know that you're killing fish, coral, and sea creatures.

Erin: Stop! You are hurting the fish. Please stop.

Dante: I don't like the stuff that you put in the ocean because it's killing the coral.

Griffin: I don't like the injection sites because they have too much nitrogen and it makes the algae grow like CRAZY! And everything dies and gets sick. Even us! So please, NO! NO! NO! No more!

I appreciate you taking the time to read our concerns. Please make the right decision for our oceans, our kids, and our future.

Tina Webster

3rd grade teacher

Maui Preparatory Academy

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
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----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:17 AM ---

From: —Suzanne Jensen [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/06/2008 12:38 PM
Subject: Injection Wells on Maui/Hawaii

Aloha,
I am speaking out against the use of injection wells in Hawaii. Injection wells put our precious reefs at risk. Please support redirection and reuse of our water.

Mahalo,
Robert Jensen
77 Kamila Place
Kula, HI 96790
808 263 2824

LINDA LINGLE
GOVERNOR OF HAWAII

LAURA H. THIELEN
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RUSSELL Y. TSUJI
FIRST DEPUTY

KEN C. KAWAHARA
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
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HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES
1151 PUNCHBOWL STREET, ROOM 330
HONOLULU, HAWAII 96813

September 22, 2008

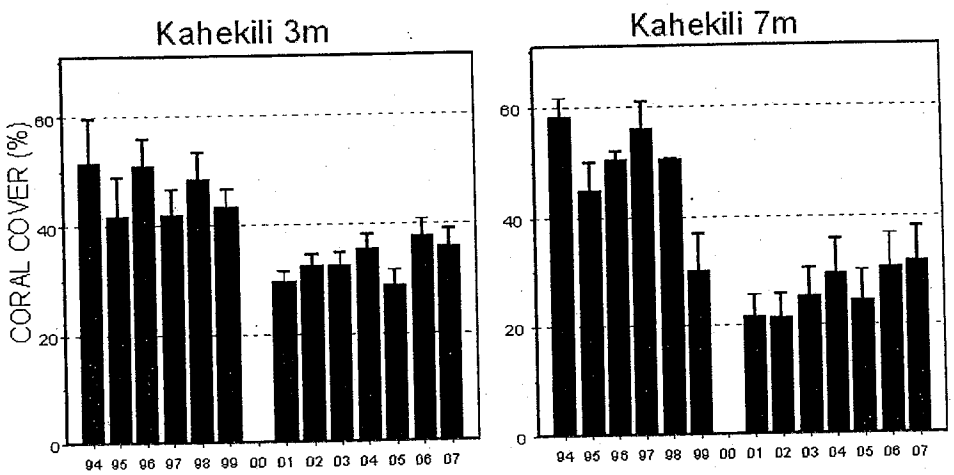
Ms. Nancy Rumrill
U.S. Environmental Protection Agency
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

Dear Ms. Rumrill:

These comments are submitted on behalf of the State of Hawaii's, Department of Land and Natural Resources (DLNR), Division of Aquatic Resources (DAR), and are in regards to the Draft UIC permit renewal application for the County of Maui's wastewater injection wells at their Lahaina Wastewater Reclamation Facility (LWRF).

The Hawaii DAR is responsible for managing the living marine resources within Hawaii's coastal waters. As part of this responsibility, we are actively involved in monitoring the health of Hawaii's coral reef ecosystems and implementing management efforts to help protect and/or restore these ecosystems as required. Various forms of anthropogenic impacts are causing declines in the health of coral reef ecosystems throughout the world. Hawaii is certainly not immune to these problems, with many of our reefs showing substantial declines in the percentage of living coral reef cover over the past several decades. Of particular importance to this permit is the evidence we have collected that indicates reefs immediately offshore of the LWRF are experiencing substantial degradation. Over a little more than a decade, nearly half of the coral cover on these reefs has disappeared (see "Changes in coral cover" graphs below). Along with the evidence of coral reef declines, we are also finding periodic problems with invasive algal blooms, and increased bio-erosion from filter feeding invertebrates. All of these factors suggest that this reef is being impacted by chronic exposure to elevated nutrients. Furthermore, recent scientific studies have provided evidence that the injection well plumes are percolating up into the near-shore waters where the reef degradation is occurring (personal communication with researchers from the University of Hawaii, Botany Department).

Over all, our agency has very serious concerns over the potential impacts of wastewater injection wells on the health of Hawaii's coral reefs. The attached document "Status of Maui's Coral Reefs" was produced based on several years of coral reef monitoring data. These data clearly



Changes in coral cover (%) at two sites offshore of the Kahekili Beach Park, North Ka'anapli, Maui

show that a correlation exist between wastewater injection, decreasing coral reef cover, and increased problems with invasive algae. We recognize the fact that there are numerous causes for coral reef declines, and that other land-based nutrient sources (i.e. intensive agriculture, coastal resort landscaping and urban runoff) are likely to be contributing to these recorded coral reef declines as well, but we also feel very strongly that reduction and/or elimination of wastewater injection would greatly reduce the total nutrient loads on our coral reefs.

Maui must move forward with more responsible water conservation measures, including programs in wastewater re-use. The Maui County Wastewater Reclamation Division currently leads the state in wastewater re-use, but we believe that more can still be accomplished. Nutrient-rich treated wastewater can be used in agricultural and landscape irrigation, and could facilitate reduced use of chemical fertilizers. Most of Maui's treated wastewater is acceptable for re-use, but Maui lacks the infrastructure to distribute this water to potential users. As a result, only a quarter of this water is utilized. The rest is disposed of, thereby wasting a valuable resource and creating a major contribution to total coastal nutrient loads.

With these concerns in mind we would like to offer the following comments:

1. We would strongly suggest that the EPA change the standards by which they review and approve of ground water injection permits to include the consideration of environmental impacts under the Clean Water Act in addition to the currently considered issues with the Safe Drinking Water Act.

2. We respectfully ask for a public hearing to be held in Lahaina, Maui. This hearing will be necessary for the general public to have a chance to comment on the draft permit, as well as allow for various scientific researchers to present their findings regarding the impacts of these injection wells on the reefs offshore of the LWRF.

3. The County of Maui currently injects between 3 to 5 MGD of R2 treated wastewater, and the total nitrogen levels within that water average around 7mg/l. With these current volume and nitrogen levels in mind, we suggest the conditions be changed to at the very least prevent any additional impacts. We suggest daily volume limits not to exceed 5 MGD and total nitrogen limits at 7 mg/l. Furthermore, we strongly suggest all treated wastewater be treated to R1 levels whether it is re-used or injected.

4. We would like to see permit conditions set in such a way to encourage less wastewater injection and more re-use.

5. We do not feel it is appropriate for the County of Maui to shoulder the entire burden of building adequate wastewater re-use infrastructure, and therefore encourage our federal partners to implement programs that can help fund necessary infrastructure improvements, thereby helping Maui County move towards full wastewater re-use.

Thank you for the opportunity to comment on this matter.

Sincerely,

DAN POLHEMUS
Administrator

c: Wayne Nastri
Wendy Wiltse

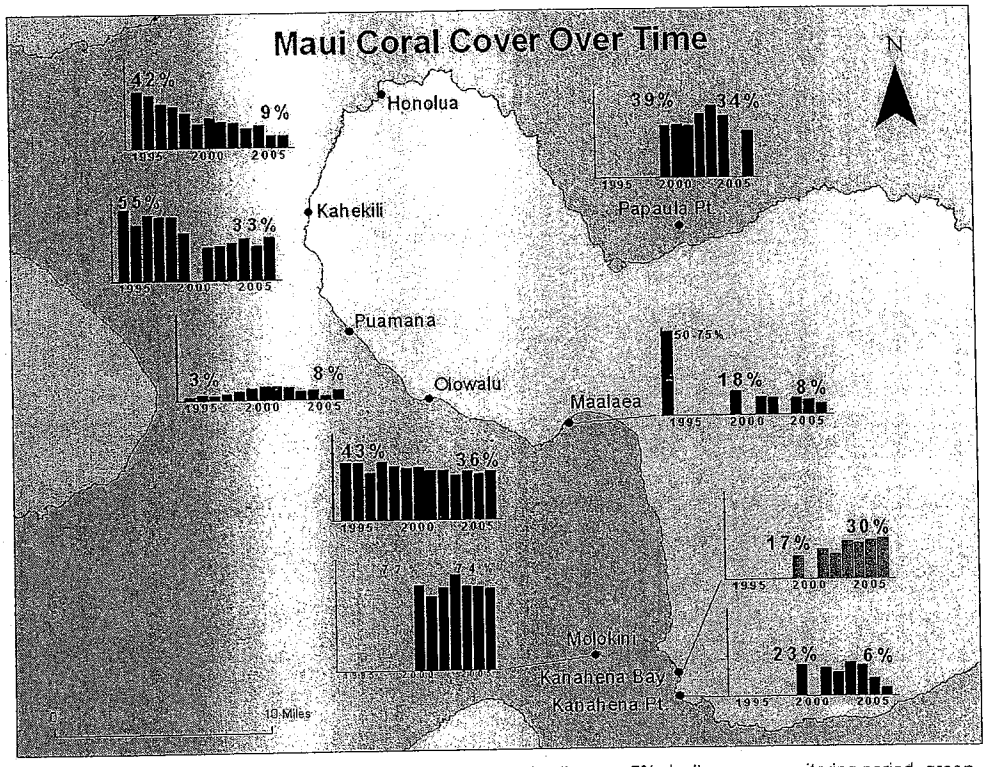
Status of Maui's Coral Reefs

In 1999, The Hawaii Division of Aquatic Resources (DAR) in partnership with the Coral Reef Assessment and Monitoring Program began annual surveys of coral condition at 9 reef areas in Maui County (see map ↓). The 4 West Maui stations had been previously monitored by the Pacific Whale Foundation since 1994. Those long-term monitoring programs provide an opportunity to assess the status and trends of Maui's coral reefs over the last 7 to 13 years.

Coral Status and Trends:

- Coral cover in 2006 ranged from 74% at Molokini to <10% at 4 sites: Honolua (9%), Puamana (8%), Maalaea (8%), and Kanahena Pt (6%).
- Coral cover increased at only 1 reef (Kanahena Bay, 17% to 30%), remained stable (<5% change), at 3 reefs (Molokini, Papaula Point, and Puamana), and declined at 5 reefs, most dramatically at Honolua (42% to 9%) and at Kahekili (55% to 33%).
- Mean coral cover of the 9 reefs declined from 35% when sites were first surveyed (1994 for West Maui, 1999 elsewhere) to 27% in 2006. Thus, nearly ¼ of all living coral was lost over that period.

Given the strong likelihood that several of the sites were already somewhat degraded when monitoring began, recent trends almost certainly underestimate declines over longer timeframes. For example, coral cover at the Maalaea site declined from 18% to 8% between 1999 and 2006, but a 1993 Fish & Wildlife Service study estimated coral cover there as being between 50% and 75%.



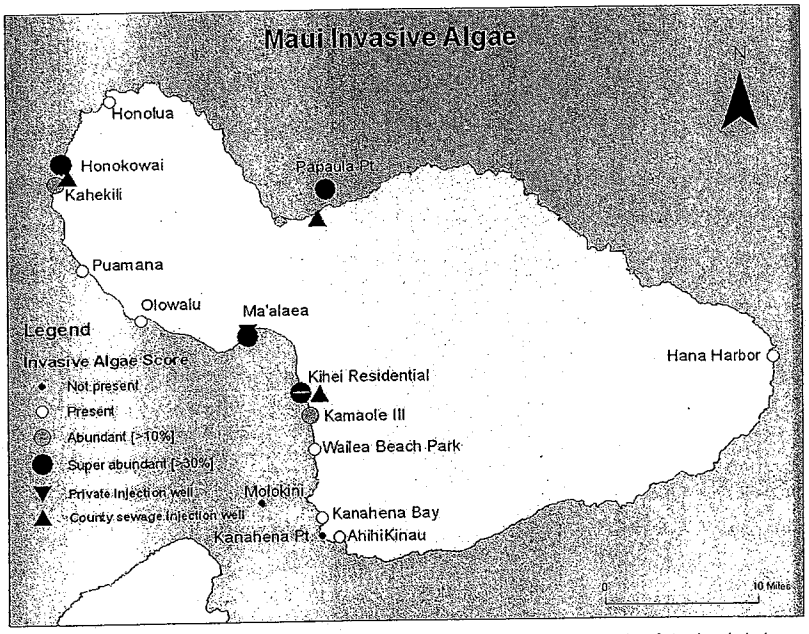
Trends in coral cover at 9 long-term monitoring stations. **Red** indicates >5% decline over monitoring period, green indicates >5% increase, **black** = no change (<5%)

The causes of coral reef decline around Maui are complex and vary among locations, but there are strong indications that human impacts have been very important. Notably, cover has declined at several West Maui sites: Honolua Bay, Kahekili, shallow reefs of Olowalu, and at Maalaea, where anthropogenic impacts from shoreline development and human use are likely greatest. Conversely, sites which have experienced increases or sustained high coral cover are remote or offshore (Kanahena Bay and Molokini). The one observed decline on a relatively remote reef (at Kanahena Point since 2004) was due to a local outbreak of the coral-eating crown-of-thorns starfish.

The Growing Problem of Invasive Algae

A significant and growing concern is the increasing overgrowth of reefs by invasive seaweeds, particularly *Acanthophora spicifera*, *Hypnea musciformis and Ulva* spp.. Shallow reefs in Kihei and Maalaea are now almost totally overgrown by those species and *A. spicifera* has become much more abundant in recent years at other locations including Honokowai/Kahekili and Papaula Point. Algal blooms are indicative of a loss of balance between factors which promote algal growth (e.g. nutrient availability) and those which control algal abundance (e.g. grazing). It is likely that both high nutrients & low grazing have been important:

- Studies by researchers from University of Hawaii (UH, next page), together with the evident correspondence between reefs with severe algal blooms and coastal areas with high human population density (see →), strongly suggest that elevated nutrients from wastewater or fertilizers are fueling accelerated algal growth.
- Reefs with abundant herbivorous fishes, such as those in the Honolua and Molokini MLCDs, have little or no invasive algae present, whereas reefs with depleted herbivore populations (e.g. Maalaea) are severely overgrown by algae.



Distribution of invasive algae around Maui: 'present' means invasive species found only in low abundance & in limited habitats, 'abundant' indicates cover of 10-30% on extensive portions of reef; 'super-abundant' means >30% algal cover in multiple reef zones

Invasive algae are by no means the only problems affecting Maui's coral reefs, In fact the greatest decline in coral cover observed on any surveyed reef was at Honolua Bay, where invasive algae are scarce, It is, therefore, important not to discount other potential factors such as increased sedimentation, chemical run-off and other pollution. However, the causes and consequences of invasive algal blooms are relatively well understood and therefore worth considering in some detail.

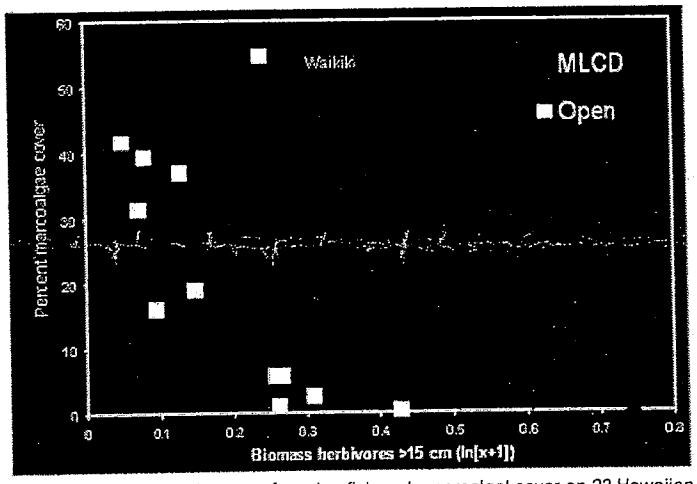
Sources and Consequences of Elevated Nutrients in Maui's Nearshore Waters

Recent research by UH scientists which has focused on shallow Kihei reefs which are currently overgrown by *Hypnea* and *Ulva*, strongly suggests that terrestrial, likely anthropogenic, nutrients are driving algal blooms there:

- Concentrations of nutrients (Nitrogen and Phosphorus) are highly elevated in nearshore areas where algal blooms are found.
- Stable isotope ratios (δ15N ‰) in algal tissue are indicative of animal waste (presumably sewage) being their primary source.
- Growth rates of algae on shallow reefs are extraordinarily high (*Hypnea* is able to double its biomass in just 2 days). Such growth rates are so high that the estimated productivity of shallow Kihei reefs is among the highest ever recorded for any ecosystem on the planet.

The Role of Grazing Fishes in Controlling Invasive Algae

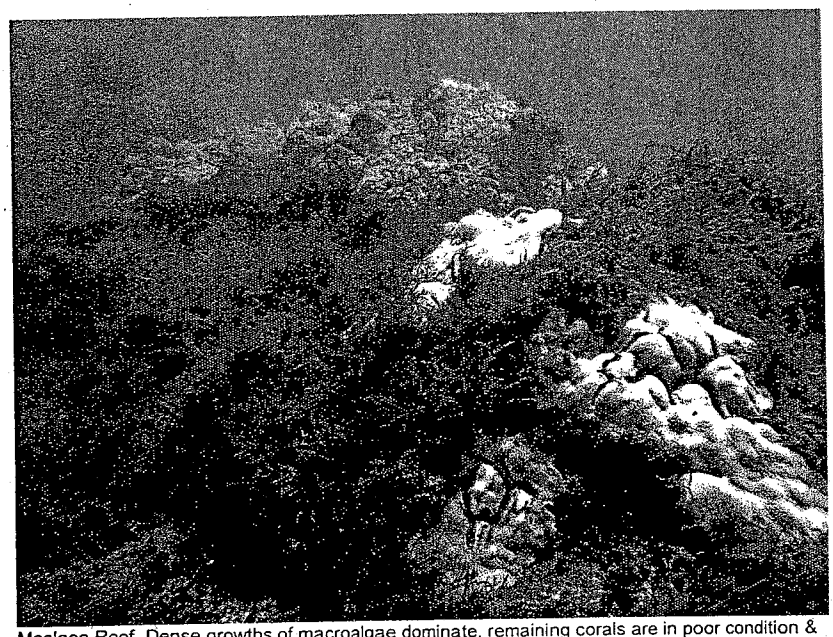
Clear evidence of the ability of grazing fishes (parrotfishes and surgeonfishes) to control the abundance of problem algae comes from the "Fish Habitat Utilization Study", a cooperative study by the National Oceanographic and Atmospheric Administration and Hawaii DAR. For that study, fish and habitat were surveyed in all of Hawaii's MLCDs plus comparable 'control' areas open to fishing. Among the findings were that, statewide, reefs with large stocks of herbivorous fishes had very little, if any, macroalgae, whereas nearly all reefs with low stocks of grazing fishes had abundant macroalgae (see →). Supporting evidence for the capacity of grazing fishes to control the invasive seaweeds which are currently abundant on several Maui reefs comes from diet preference studies. Both *Acanthophora* and *Hypnea* are highly preferred foods for grazing fishes. In fact, *Acanthophora* has repeatedly been found to be among the most preferred foods for grazing fishes in studies both in Hawaii and elsewhere in the world. Therefore increases in stocks of grazing fishes would almost certainly lead to reductions in the spread and prevalence of invasive algae.



Relationship between biomass of grazing fish and macroalgal cover on 22 Hawaiian coral reefs

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.


Maalaea Reef. Dense growths of macroalgae dominate, remaining corals are in poor condition & reef physical structure is deteriorating as coral growth does not keep pace with the rate of erosion

Summary

It is very important to recognize that the kind of degradation which has occurred at Maalaea and elsewhere is not just a matter of loss of coral cover. Reductions in associated habitat quality and topographical complexity mean that once degradation is well established, affected reefs will have lower recreational and commercial value, and will support limited fish stocks, to the detriment of all resource users. The goal of those charged with the protection and restoration of Hawaii's natural resources must be to prevent such severe degradation from further affecting Maui's reefs. Given the trajectories of decline over the last 7-13 years, it is evident that substantial deterioration can occur rapidly. If steps are not taken to return conditions to those in which corals can thrive, it is nearly certain that additional reefs will reach the state of Maalaea. Recovery of herbivore stocks may be part of the solution at some locations, but without other steps to reduce land-based impacts there is unlikely to be substantial recovery across the island's reefs.

For more information, please contact:
Ivor Williams, Hawaii DAR & Hawaii Coral Reef Initiative Research Program at (808) 327 6226 or ivor@hawaii.edu
Russell Sparks, Hawaii DAR, Maui Office at (808) 243 5294 or russell.t.sparks@hawaii.gov
Celia Smith, UH Manoa, Dept of Botany at (808) 956 6947 or celia@hawaii.edu

Sabrina Mahuna
[redacted]
10/13/2008 05:01 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc [redacted]
bcc
Subject UIC permit for the Lahaina Wastewater Reclamation Facility

Dear Nancy Rumrill,

I was fortunate enough to be born and raised on the Westside of Maui. This side of the island is covered with beautiful beaches and awesome diving spots. When I was little, about 10 years ago, the place I remember always snorkeling at was Airport Beach, the Kahekili area. It was a beautiful area, had a wonderful reef and the water was nice and clean. There was a gap in my life where I didn't go snorkeling as much but in this past year I began diving and snorkeling again. One of the places that I was eager to go to because of my childhood memories was Kahekili. I went there probably about six months ago and couldn't believe the change. The reef is covered in algae, it looked nothing like what I remembered and was a much less desirable place for me to dive. I recently learned that this is due to the over growth of invasive algal blooms. I also learned this is a result of the increasing nutrients causing over growth that is reaching the reef from injection wells right around that area. To save Maui's reefs, especially Kahekili, there has to be a solution. We first need to reduce or eliminate the amount of wastewater pumped into injections wells and/or at least have the wastewater treated. Also instead of wasting the water and putting it in the ocean where it kills the reef, we can reuse the wastewater to irrigate a green belt in dry areas. We can also build a holding tank for storage of wastewater. Those are just a few solutions and there are many more. Personally I don't see why it hasn't happened yet. It is quite obvious that it needs to happen, soon. There is no negative that can come out of it, we can save our reefs and use the water for irrigated dry areas that actually need the water. Fertilize the fields because they need it, not the algae because they don't! Thank you for your time and concern.

Sincerely,
Sabrina Mahuna

728A Kupulau Drive
Kihei Hi 968753

October 6, 2008

U.S. Environmental Protection Agency
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

ATTN: Nancy Rumrill

RE: Public Comments on Lahaina, HI WWRF UIC Permit Number HI50710003

Dear Ms Rumrill:

1. **The public comment period for this permit should be extended to allow the public a full 30 days to review the materials including the permit application.** The permit application was not made widely available to the public. While the public notice, statement of basis, and draft permit were made available via internet in electronic format, only one copy of the permit application was provided. This copy was not available to some members of the public when they requested it. There is no way the public can tell if the permit is adequate if they did not have the opportunity to see application data on geology, potentially impacted water resources and the physical, chemical, biological, and radiological characteristics of the injected water.
2. **The permit does not adequately protect underground sources of water supply.** The UIC program is designed to protect underground sources of water supply, which is defined as waters less than 10,000 parts per million of total dissolved solids. However projects approved in the area (for instance Starwood Lot # 3) plan to use shallow sources of groundwater with concentrations as high as 34,000 parts per million as a drinking water source to be treated with reverse osmosis. The shallow groundwater sources are in the vicinity of the sewage injection wells. Will this water supply be protected by the Safe Drinking Water Act and the UIC permit? Will users incur additional treatment costs to remove pollutants associated with sewage? Will the reverse osmosis rejectate (waste stream) be concentrating pollutants from sewage contaminated groundwater and then reinjecting it into the groundwater?
3. **The permit does not adequately protect aquatic life, wildlife and recreational users.** The UIC permit program does not address impacts to these protected uses of the coastal waters that are receptors for the pollutants in the injected sewage effluent. The concentrations allowed to be injected may exceed state water quality criteria protecting these uses. The injected effluent presents a reasonable potential to cause or contribute to documented exceedances of the state water quality criteria and impairment of uses.
4. **NPDES permit should be required in addition to a UIC permit** Underground Injection Control permits are issued under the authority of the Safe Drinking Water Act. The shallow groundwaters into which the wastes are injected are connected to surface water, therefore the discharge of pollutants from a point source to waters of the US is occurring and requires regulation under the Clean Water Act. Detrimental environmental impacts to surface waters including exceedance of state water quality standards, and presence of invasive algal blooms that are fed by materials linked to the injected sewage effluent have been observed and documented with scientific evidence. A National Pollutant Discharge Elimination System permit under the Clean Water Act should be required in addition to the UIC permit. If the effluent were regulated under a Clean Water Act permit it would be required to include limits to prevent impacts to receiving waters (water quality-based limits). The SDWA and UIC permit do not include these requirements that are necessary to protect water quality.

5. **The pollutant load (lbs /day) from the treatment plant should not exceed levels allocated in the Total Maximum Daily Load (TMDL) calculations for coastal waters in the vicinity of the treatment plant.** The Hawaii Department of Health has reported to EPA in the 2006 State of Hawaii Water Quality Monitoring and Assessment report: Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress Pursuant to Sections §303(D) and §305(B), Clean Water Act (P.L. 97-117) that water quality in several coastal segments in the vicinity of the treatment plant, injection wells, and injectate plume are not meeting state water quality standards. The impairments listed include not meeting standards for Total Nitrogen (Honokowai Point to Kaanapali), Total P and turbidity (Honokowai Beach Park), and turbidity at Kahekili Park. TMDLS are currently required for these segments and are listed as a medium priority in the state TMDL program. The UIC permit and/or NPDES permit should include reopener clauses to include these allocations and water quality-based limitations when the TMDLs are completed EPA should raise the priority of the TMDLs for these segments and provide adequate funding for TMDL studies.
6. **EPA should hold both a public information meeting and a public hearing on the UIC permit to address these issues.** The public hearing should address the conditions of the UIC permit. The information meeting should provide opportunity for EPA to explain how it will address the water quality issues through UIC permits or other regulatory and management actions such as Clean Water Act programs.

Sincerely,

Robin S. Knox

November 6, 2008

U.S. Environmental Protection Agency
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

ATTN: Nancy Rumrill

RE: Comments on Lahaina, HI WWRF UIC Permit Number HI50710003

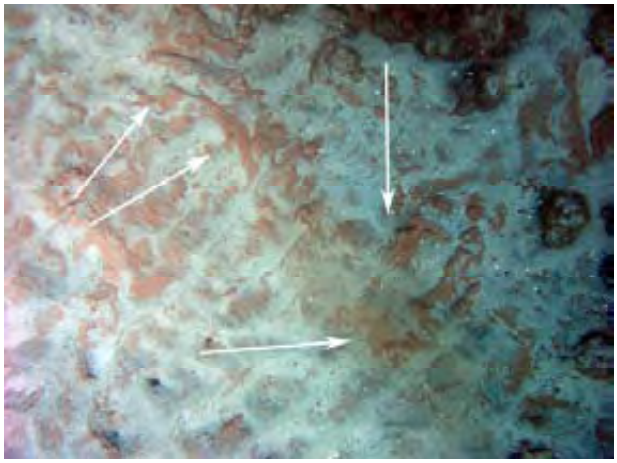
Dear Ms Rumrill:

I am providing comments herein regarding the referenced Underground Injection Control (UIC) Permit that U.S. Environmental Protection Agency (EPA) has proposed issuing to the applicant, County of Maui for the Lahaina Wastewater Reclamation Facility (WWRF). My overall comment is that neither the EPA nor the County of Maui have provided sufficient information to the public to demonstrate that the permit as written is protective of the environment and in compliance with applicable state and federal laws and regulations including the Safe Drinking Water Act, Coastal Zone Management Act, Clean Water Act, Hawaii State Constitution and Hawaii Revised Statutes.

Comment 1 – Groundwater and coastal ocean waters are hydrologically connected.

Groundwater in the coastal areas of West Maui is connected to the ocean waters via submarine groundwater discharges. This type of hydrologic connection is common in Hawaii, and has been well documented in the area of the Lahaina injection wells.

Figure 1 – Submarine groundwater discharge near Honokowai November 2006 (8-10 meters depth) photos provided by Mark Vermeij, University of Hawaii



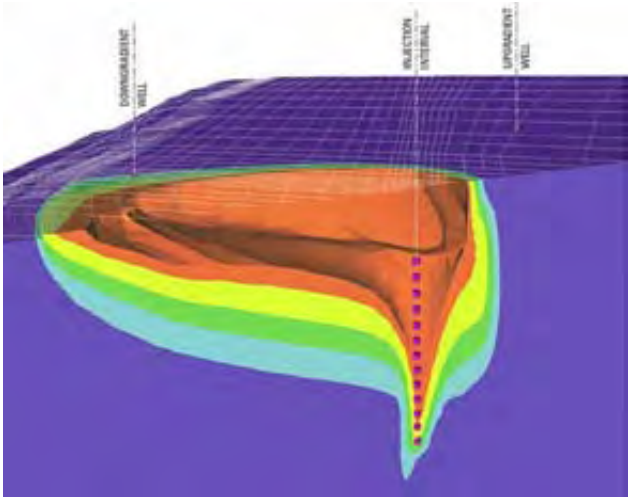
A 2007 study of submarine groundwater discharges in the Honokowai area of West Maui found that, "Tracer abundances were elevated in the unconfined coastal aquifer and the nearshore zone, decreasing to low levels offshore, indicative of groundwater discharge (near-fresh, brackish, or saline) at all locations" and "Groundwater nutrient fluxes of 0.04–40 mmol N m^{-2} d^{-1} and 0.01–1.6 mmol P m^{-2} d^{-1} represent a major source of new nutrients to coastal ecosystems along these coasts. Nutrient additions were typically greatest at locations with a substantial meteoric component in groundwater, but the recirculation of seawater through the aquifer may provide a means of transferring terrestrially-derived nutrients to the coastal zone at several sites." "Submarine Groundwater Discharge and Nutrient Addition to the Coastal Zone and Coral Reefs of Leeward HawaiI" *Marine Chemistry, Volume 109, Issues 3-4, 16 April 2008, Pages 355-376* Joseph H. Street, Karen L. Knee, Eric E. Grossman and Adina Paytan.

The water that is currently subterranean is both connected to surface water and may have been surface water in the past or may discharge to surface water in the future. The Starwood Lot # 3 project proposes using ocean water as a source of cooling water. They plan to withdraw the ocean water via the groundwater connection by placing a well in the coastal zone at 300 feet depth.

Comment 2 - Material from injection wells can be transported to coastal waters via the hydrologic connection of groundwater to ocean.

This hydrologic connection of groundwater to ocean waters allows the transport of waste materials injected into the groundwater to sensitive coastal ecosystems including coral reef ecosystems. A modeling study of an injection well disposal system operated by the applicant in Kihei, HI found that "Wastewater injected beneath the brackish ground-water lens rises buoyantly and spreads out at the top of the lens, diverting and mixing with ambient ground water." "Ground water discharging from the core of the injection plume is less than 5 years old and is about 60 percent effluent at the shore, according to the model." The nutrient fluxes for nitrogen and phosphorus were 3.5 and 3.4 times higher than background. Stable isotope signatures and chemical constituents such as pharmaceuticals and organic wastewater were detected in the monitoring well down gradient of the injection well. "Ground-Water Nutrient Flux to Coastal Waters and Numerical Simulation of Wastewater Injection at Kihei, Maui, Hawaii" Charles D. Hunt, Jr. U.S. Geological Survey Scientific Investigations Report 2006-5283 version 1.0 (2007). http://pubs.usgs.gov/sir/2006/5283

Figure 2 Cutaway block diagram of simulated wastewater injection plume at Kihei, HI. Colored bands represent gradation in effluent concentration. (From Hunt, 2007)



Comment 3 – Both the ocean water and groundwater are "Waters of the U.S." and "State Waters"

According to the Code of Federal Regulations (CFR) at 40 CFR Part 122.2, *Waters of the United States or waters of the U.S.* means:

(a) **All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide** (emphasis added);

(b) All interstate waters, including interstate "wetlands;"

(c) **All other waters** such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds **the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters** (emphasis added):

(1) Which are or could be used by interstate or foreign travelers for recreational or other purposes (emphasis added)**;**

(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce (emphasis added); or

(3) Which are used or could be used for industrial purposes by industries in interstate commerce (emphasis added);

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) **Tributaries of waters identified in paragraphs (a) through (d) of this definition** (emphasis added);

(f) The territorial sea; and (g) "Wetlands" adjacent to waters (other than waters that are

themselves wetlands) identified in paragraphs (a) through (f) of this definition.

"State waters", as defined by section 342D-1, Hawaiian Revised Statute (HRS), means "all waters, fresh, brackish, or salt around and within the State, including, but not limited to, **coastal waters**, streams, rivers, drainage ditches, ponds, reservoirs, canals, **ground waters**, and lakes; provided that drainage ditches, ponds, and reservoirs required as part of a water pollution control system are excluded." (emphasis added).

"Coastal waters," means "all waters surrounding the islands of the State from the coast of any island to a point three miles seaward from the coast, and, in the case of streams, rivers, and drainage ditches, to a point three miles seaward from their point of discharge into the sea and includes those brackish waters, fresh waters and salt waters that are subject to the ebb and flow of the tide" (section 342D-1, HRS).

The groundwater into which the waste is injected is a mixture of ocean water and freshwater. The groundwaters in the coastal areas of West Maui are hydrologically connected to coastal ocean waters. The water that is currently subterranean may have been on the surface in the past and used for interstate commerce. The groundwater fluctuates with tidal influence (subject to the ebb and flow of the tides) as well as freshwater input. The coastal groundwater is tributary to the coastal ocean waters. The groundwater, by virtue of its hydrologic connection to the ocean, and ability to transport waste materials to the ocean waters, is clearly a water that the "use, degradation, or destruction of which would affect or could affect interstate or foreign commerce" including recreational use by foreign or interstate travelers. Coastal groundwater and coastal ocean waters are considered to be both Waters of the US and state waters.

The US Supreme Court recently reviewed Clean Water Act jurisdictional issues pertaining to the definition of Waters of the US (SUPREME COURT OF THE UNITED STATES RAPANOS et ux., et al. v. UNITED STATES). According to information provided by Cornell University Law School (http://www.law.cornell.edu/supct/html/04-1034.ZS.html), "Justice Kennedy concluded that the Sixth Circuit correctly recognized that a water or wetland constitutes "navigable waters" under the Act if it possesses a "significant nexus" to waters that are navigable in fact or that could reasonably be so made, The nexus required must be assessed in terms of the Act's goals and purposes. Congress enacted the law to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," 33 U. S. C. §1251(a)". According to the Pacific Legal Foundation (http://rapanos.typepad.com/)

"First, *Rapinos* says *nothing* about navigability---the test for whether a waterbody qualifies as a traditional navigable waterway (for Commerce Clause purposes, and thus for Clean Water Act purposes) has remained essentially unchanged for more than half a century. *See United States Appalachian Elec. Power Co.*, 311 U.S. 377 (1940). What *Rapanos* changed was the test for determining whether a *nonnavigable waterbody* is sufficiently connected to a navigable waterway to allow for regulation of the former.

Second, whether or not part of a waterbody is considered navigable has no direct effect on whether the nonnavigable portions of the waterbody are covered under the CWA." "Under the *Rapanos* Kennedy test, if the waterbody substantially affects the physical, chemical, and biological integrity of the navigable waterbody, then it's jurisdictional."

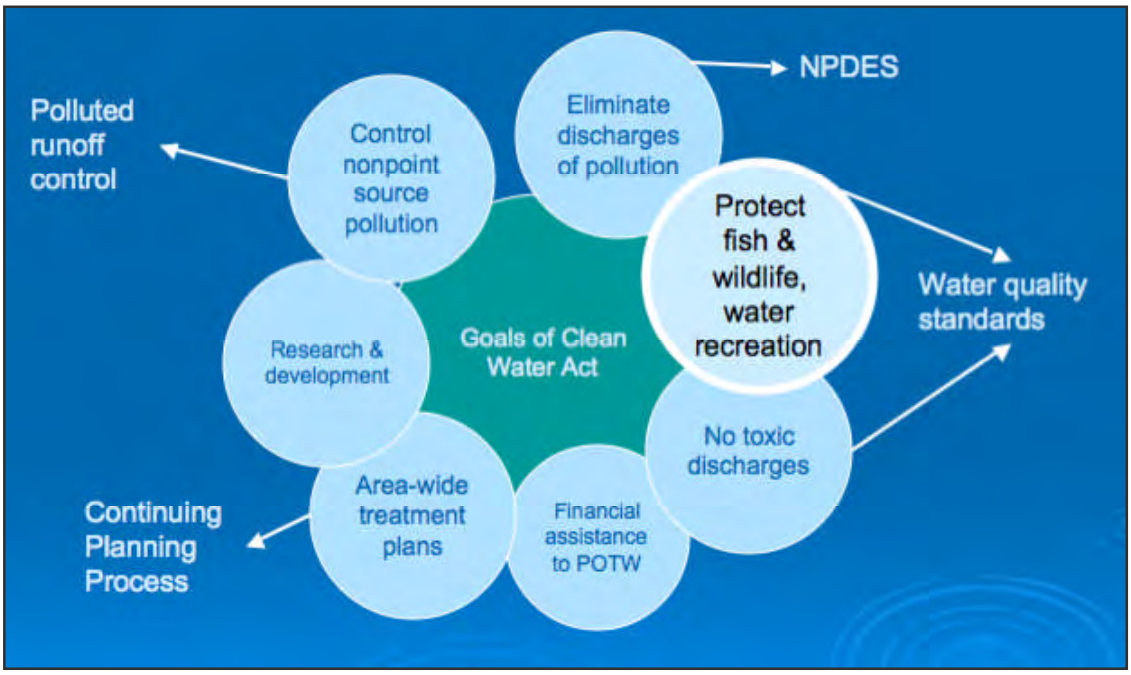
Thus it can be seen that the groundwater into which the Lahaina WWRF are injected are "Waters of the US"

Comment 4. Clean Water Act requirements applicable to Waters of the US

The Clean Water Act (CWA) or Federal Water Pollution Control Amendments of 1972 (codified at 33 U.S.C. § 1251) is the primary federal law regulating water quality of Waters of the US. EPA is the federal agencytasked with administering the Clean Water Act. EPA delegates to states the authority and/or responsibility for implementing certain aspects of the CWA programs. In Hawaii, the state Department Of Health (DOH)is responsible for water quality management programs (including planning, monitoring and reporting), the National Pollutant Discharge Elimination System permits and control of nonpoint source [pollution. The following discussion of Clean Water Act requirements is taken from information presented to the Hawaii Department Of Health (DOH) Integrated Water Quality Reporting workgroup during the Summer of 2008.

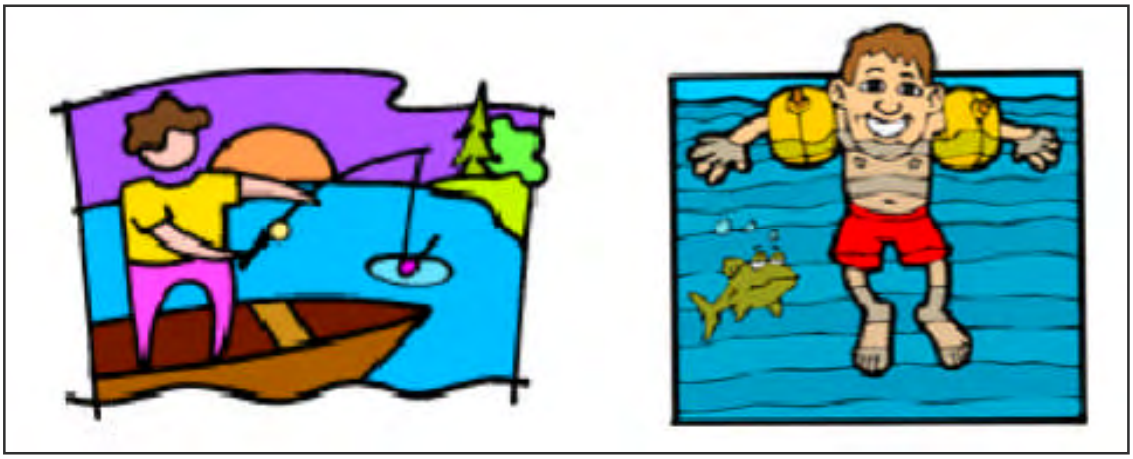
The objective of the Clean Water Act (CWA) is to "restore and maintain the physical, chemical, and biological integrity of the Nation's waters." The CWA establishes as a national goal "water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, wherever attainable." To achieve these objectives and goals, EPA requires states to adopt water quality standards (WQS) including designated uses, narrative and numeric criteria to protect those uses, and antidegradation policies to prevent deterioration of high-quality waters. The CWA requires WQS to protect the public health and welfare and enhance the quality of water. The State of Hawaii has adopted such standards at Hawaii Administrative Rule (HAR) Chapter 11-54.

Figure 3. Goals of Clean Water Act



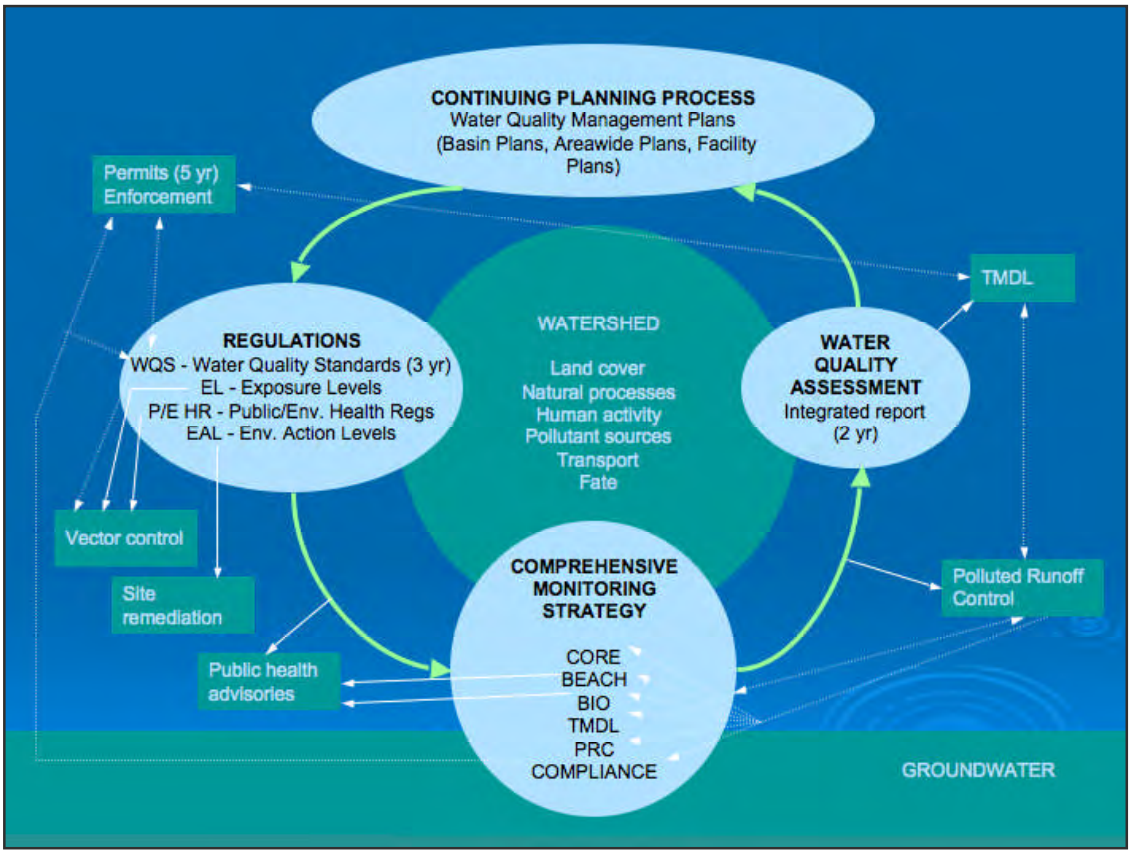
EPA's regulations require that State WQS provide at a minimum for the "fishable/swimmable" uses unless those beneficial uses have been shown to be unattainable. In designating waters, states consider the beneficial use and value of water for public water supplies; protection and propagation of fish, shellfish and wildlife; recreation in and on the water; consumption of fish and shellfish by humans; and agricultural, industrial, and other purposes including navigation. In no case may waste transport or assimilation be adopted as a designated beneficial use for any waters of the United States.

Figure 4. Clean Water Act Goals: Fishable / Swimmable



States implement monitoring programs that allow them to report on attainment of WQS and to identify and prioritize waters not attaining standards. In even numbered years states are required to submit to EPA a water quality inventory report (305(b) report) that includes a description of the water quality of all waters of the state (including, rivers/stream, lakes, estuaries/oceans and wetlands). States may also a description of the nature and extent of ground water pollution and recommendations of state plans or programs needed to maintain or improve ground water quality. Figure 5 illustrates the relationship of the water quality planning, assessment, monitoring, and regulatory programs implemented under authority of the CWA by the DOH.

Figure 5. Continuing Planning Process



States are also required to report in even numbered years a list of impaired and threatened waters requiring Total Maximum Daily Loads (TMDLs) (303(d) List); identification of the impairing pollutant(s); and priority ranking of these waters, including waters targeted for TMDL development within the next two years. These impairment decisions are compiled using a set of criteria to evaluate whether the State surface waters are attaining their designated uses, water quality criteria, and the antidegradation policy as stated in the HAR Chapter 11-54. EPA strongly encourages states to submit a single report (the Integrated Report) that satisfies

these reporting requirements of CWA sections 303(d), 305(b) and 314. (See Table 1). The State of Hawaii uses an integrated report to satisfy these requirements. The most recent integrated report 2006 State of Hawaii Water Quality Monitoring and Assessment Report: Integrated Report to Congress Pursuant to Sections 303(d) and 305(b) Clean Water Act (P.L. 97-117) is available online at http://hawaii.gov/health/environmental/env-planning/wqm/wqm.html/

Table 1 Clean Water Act Requirements and Authority

Authority	Requirement
Section 303(c)(2)	Adopt WQS including designated uses, narrative and numeric criteria and antidegradation policies
Section 106(e)	Implement monitoring programs, report on attainment of WQS, identify and prioritize waters not attaining standards.
Section 101(a)(2)	Provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water, wherever attainable
Section 303(c)(2)(A)	Requires WQS to protect the public health and welfare, enhance the quality of water, and serve the purposes of the Act.
Sections 101(a); 303(c)(2)(A); 40 CFR 131	Provide at a minimum for the "fishable/swimmable" uses unless those uses have been shown to be unattainable
Section 303(d); 40 CFR130.7	By April 1 of all even numbered years states must submit to EPA: • A list of water quality-limited (impaired and threatened) waters still requiring TMDLs; identification of the impairing pollutant(s); and priority ranking for TMDL development, including waters targeted for TMDL development within the next two years • A description of the methodology used to develop the list. • A description of the data and information used to identify waters, including a description of the existing and readily available data and information used. • A rationale for any decision to not use any existing and readily available data and information. • Any other reasonable information requested by EPA, such as demonstrating good cause for not including a water or waters on the list CWA section 305(b);
Section 305(b); 40 CFR 130.8	By April 1 of all even numbered years, states must submit to EPA the following information: • A description of the water quality of all waters of the state (including, rivers/stream, lakes, estuaries/oceans and wetlands) and the extent to which the quality of waters provides for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreational activities in and on the water. • A description of the nature and extent of ground water pollution and recommendations of state plans or programs needed to maintain or improve ground water quality (optional reporting). • An estimate of the extent to which CWA control programs have improved water quality or will improve water quality, and recommendations for future actions necessary and identifications of waters needing action. • An estimate of the environmental, economic and social costs and benefits needed to achieve the objectives of the CWA and an estimate of the date of such achievement. • A description of the nature and extent of nonpoint source pollution and recommendations of programs needed to control each category of nonpoint sources, including an estimate of implementation costs. • An assessment of the water quality of all publicly owned lakes, including the status and trends of such water quality as specified in section 314(a)(1) of the CWA.
Section 314	In each section 305(b) submittal, an assessment of status and trends of significant publicly owned lakes including extent of point source and nonpoint source impacts due to toxics, conventional pollutants, and acidification is required.

Comment 5. Applicable State Water Quality Standards

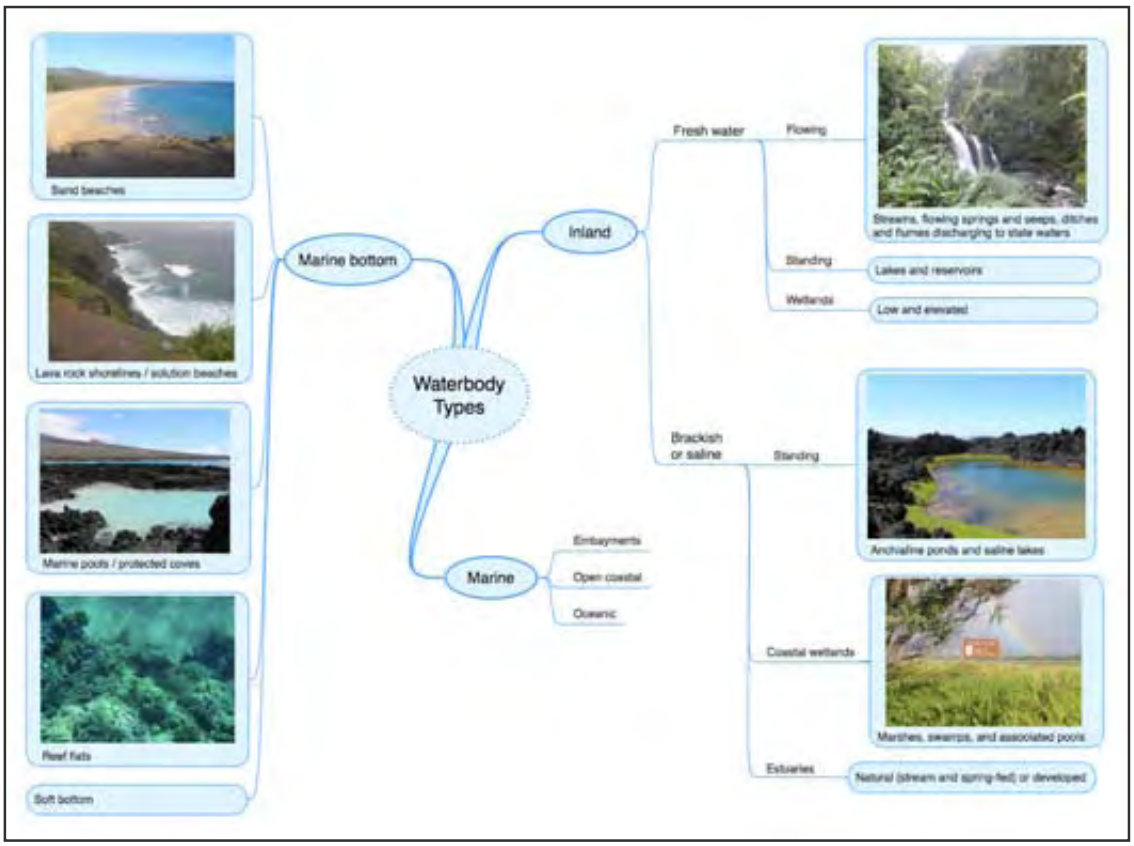
Neither EPA nor the State of Hawaii has established water quality standards that are directly applicable to groundwater. However at the Lahaina WWRF, the shallow groundwaters into which the wastes are injected are hydrologically connected to coastal waters where state and federal surface water quality standards are applicable. These surface water quality standards, while not directly applicable to groundwater, should be applied in the development of the subject permit to include water quality-based effluent limits in order to support water quality standards attainment and legally protected beneficial uses in the coastal waters that are the ultimate receptors of the effluent.

Water quality standards consist of designated beneficial uses, criteria to support attainment of uses, and an anti-degradation policy. The anti-degradation policy specifies that existing uses shall be protected and maintained. Where the quality of water exceeds that required to support propagation of fish, shellfish, and wildlife and support recreation in and on the water, the policy requires that high quality to be maintained unless allowing lower water quality is necessary to accommodate important economic or social development. Where high quality waters constitute an outstanding natural resource (e.g. state or national parks, or waters of exceptional recreational or ecological significance), that water quality must be maintained.

<u>Waterbody Types and Classes</u>

All waters within the state of Hawaii are classified as inland, marine, or marine bottom ecosystems. (HAR§ 11-54-2) These ecosystem types are further categorized into waterbody types as shown in Figure 6.

Figure 6– Waterbody Types



The ecosystems most likely to be impacted by the Lahaina WRF include the open coastal waters in the near shore and the associated marine bottom ecosystems (including coral reef flats) that receive submarine discharges of groundwater containing sewage constituents.

HAR §11-54-3(c) classifies water uses first by waterbody types, then by a tiered system, defining two classes of marine waters (Class AA and Class A). Open coastal waters are also classified according to types of marine bottoms. Two classes of marine bottom ecosystems (Class I and Class II) are defined.

The open coastal waters that receive submarine groundwater discharges in the vicinity of the Lahaina WWRF are classified as "AA". (2006 State of Hawaii Water Quality Monitoring and Assessment Report. Chapter 1, Figure 4, page 22). Pursuant to §11-54-7, marine bottom ecosystems in these areas are classified as Class I due to the inclusion of these waters in a marine sanctuary (in this case the Hawaiian Islands Humpback Whale National Marine Sanctuary)

<u>Waterbody Objectives and Designated Beneficial Uses</u>

HAR §11-54-3(c) (1) states "It is the objective of class AA waters that these waters remain in their natural pristine state as nearly as possible with an absolute minimum of pollution or alteration of water quality from any human-caused source or actions. To the extent practicable,

the wilderness character of these areas shall be protected." Zones of mixing (areas of effluent and ambient water mixing) are not permitted in certain areas of Class AA waters including:

- Within a defined reef area, in waters of a depth less than 18 meters (ten fathoms); or
- In waters up to a distance of 300 meters (one thousand feet) off shore if there is no defined reef area and if the depth is greater than 18 meters (ten fathoms).

The uses to be protected in Class AA waters are:

- oceanographic research,
- the support and propagation of shellfish and other marine life,
- conservation of coral reefs;
- wilderness areas,
- compatible recreation, and
- aesthetic enjoyment.

The classification of any water area as Class AA shall not preclude other uses of the waters compatible with these uses, objectives and in conformance with the criteria applicable to them.

It is the objective of class I marine bottom ecosystems that they remain as nearly as possible in their natural pristine state with an absolute minimum of pollution from any human-induced source. Uses of marine bottom ecosystems in this class are passive human uses without intervention or alteration, allowing the perpetuation and preservation of the marine bottom in a most natural state, such as for nonconsumptive scientific research (demonstration, observation or monitoring only), nonconsumptive education, aesthetic enjoyment, passive activities, and preservation.

<u>Basic Criteria applicable to all waters</u>

There are basic narrative criteria that apply to all waters (HAR §11-54-4). These criteria include:

(a) All waters shall be free of substances attributable to domestic, industrial, or other controllable sources of pollutants, including (emphasis added):

> (1) Materials that will settle to form **objectionable sludge or bottom deposits**;
>
> (2) Floating debris, oil, grease, scum, or **other floating materials**;
>
> (3) Substances in amounts sufficient to produce taste in the water or detectable off-flavor in the flesh of fish, or i**n amounts sufficient to produce objectionable color, turbidity or other conditions in the receiving waters**; (4) High or low temperatures; biocides; pathogenic **organisms; toxic, radioactive, corrosive, or other deleterious substances** at levels or in combinations sufficient to be **toxic or harmful to human,**

animal, plant, or aquatic life, or in amounts sufficient to **interfere with any beneficial use** of the water;

(5) **Substances or conditions or combinations thereof in concentrations which produce undesirable aquatic life;**

The narrative criteria for toxic substances is implemented by the requirement that all waters be free from pollutants in concentrations which exceeding acute and chronic toxicity and human health standards. There are also provisions translating the narrative criteria in terms of toxicity testing (aquatic bioassay) results.

Specific Criteria Applicable to Waters Receiving Lahaina WWRF Effluent

For open coastal waters and marine bottom ecosystems receiving discharges from the Lahaina WWRF there are specific narrative and numeric criteria. "Open coastal waters" means marine waters bounded by the 183 meter or 600 foot (100 fathom) depth contour and the shoreline, excluding bays named

Numeric criteria for open coastal waters at HAR §11-54-6 include concentrations for nutrients and turbidity, expressed as wet and dry criteria and as values not to be exceeded by the geometric mean, more than ten percent of the time, and more than two percent of the time.

Table 2
Specific Marine Criteria

	Hawaii State Water Quality Standards					
	GEOMEAN (Not-to exceed)		Not to Exceed > 10% of time		Not to Exceed > 2% of time	
Pollutants	**Wet**	**dry**	**wet**	**dry**	**wet**	**dry**
Ammonia (as N) (µg/L)	**3.50**	**2.00**	**8.50**	**5.00**	**15.00**	**9.00**
Nitrate+Nitrite (as N) (µg/L)	**5.00**	**3.50**	**14.00**	**10.00**	**25.00**	**20.00**
Nitrogen, Total (ug/L)	**150.00**	**110.00**	**250.00**	**180.00**	**350.00**	**250.00**
Phosphorus (as P), Total (7723-14-0) (µg/L)	**20.00**	**16.00**	**40.00**	**30.00**	**60.00**	**45.00**
Turbidity (NTU)	**0.50**	**0.20**	**1.25**	**0.50**	**2.00**	**1.00**

NOTE: Total Nitrogen is the sum of TKN and Nitrate + Nitrite

Numerical criteria are provided at §11-54-8 for enterococcus bacteria for waters classified for recreational use. In marine recreational waters: (1) Within 300 meters (one thousand feet) of the shoreline, including natural public bathing or wading areas, enterococcus content shall not

exceed a geometric mean of seven per one hundred milliliters in not less than five samples which shall be spaced to cover a period between twenty-five and thirty days. No single sample shall exceed the single sample maximum of 100 CFU per 100 milliliters or the site-specific one-sided 75 per cent confidence limit. Marine recreational waters along sections of coastline where enterococcus content does not exceed the standard, as shown by the geometric mean test described above, shall not be lowered in quality. (2) At locations where sampling is less frequent than five samples per twenty-five to thirty days, no single sample shall exceed the single sample maximum nor shall the geometric mean of these samples taken during the thirty-day period exceed 7 CFU per 100 milliliters. (3) Raw or inadequately treated sewage, sewage for which the degree of treatment is unknown, or other pollutants of public health significance, as determined by the director of health, shall not be present in natural public swimming, bathing or wading areas.

Specific criteria at §11-54-7 to be applied to " all reef flats and reef communities" include that "No action shall be undertaken which would substantially risk damage, impairment, or alteration of the biological characteristics of the areas named herein."

Comment 5 Lahaina WWRF receiving waters are not meeting state water quality standards.

The Hawaii Department of Health has reported to EPA in the *2006 State of Hawaii Water Quality Monitoring and Assessment report: Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress Pursuant to Sections §303(D) and §305(B), Clean Water Act (P.L. 97-117)* that water quality in several coastal segments in the vicinity of the treatment plant, injection wells, and injectate plume are not meeting state water quality standards. The impairments listed include not meeting standards for Total Nitrogen (Honokowai Point to Kaanapali), Total P and turbidity (Honokowai Beach Park), and turbidity at Kahekili Park.

""The shallow reefs of south Maui have been experiencing large-scale blooms of the invasive red alga Hypnea musciformis and the native green alga Ulva fasciata for over a decade. . . . Our results suggest that nutrient subsidies are fueling this bloom and if nutrient inputs were reduced algal production would decrease." C.M. Smith, "The Algal Blooms on South Maui: Do Nutrients Matter?" (abstract 2006) – USGS-National Park Service-NOAA, Ocean Science Meeting, Environmental Change and Its Impact on Coral Reefs IV. -- http://www.agu.org/meetings/os06/os06-sessions/os06_OS54J.html

"Recent research by UH scientists which has focused on shallow Kihei reefs which are currently overgrown by Hypnea and Ulva, strongly suggests that terrestrial, likely anthropogenic, nutrients are driving algal blooms there: Concentrations of nutrients (Nitrogen and Phosphorus) are highly elevated in nearshore areas where algal blooms are found. Stable isotope ratios (δ15N ‰) in algal tissue are indicative of animal waste (presumably sewage) being their primary source." Hawaii Department of Aquatic Resources, State of Maui's Reefs (2008), p. 2. -- http://hawaii.gov/dlnr/dar/pubs/MauiReefDeclines.pdf

A significant and growing concern is the increasing overgrowth of reefs by invasive seaweeds, particularly Acanthophora spicifera, Hypnea musciformis and Ulva spp. Shallow reefs in Kihei and Maalaea are now almost totally overgrown by those species and A. spicifera has

become much more abundant in recent years at other locations including Honokowai/Kahekili and Papaula Point. Algal blooms are indicative of a loss of balance between factors which promote algal growth (e.g. nutrient availability) and those which control algal abundance (e.g. grazing). It is likely that both high nutrients & low grazing have been important" Hawaii Dept. of Aquatic Resources, Status of Maui's Coral Reefs, 2008 -- http://hawaii.gov/dlnr/dar/pubs/MauiReefDeclines.pdf

Comment 6 - The Lahaina WWRF effluent concentrations represent reasonable potential to cause or contribute to exceedances of applicable state water quality standards.

The application did not provide a concise summary of effluent (injectate) quality. However a cursory review of the data shows that the effluent concentrations are well in excess of the numerical state surface water quality criteria applicable to open coastal waters. The analysis is Table 2 looks at just one quarter of monitoring results from Exhibit P-4 of the application.

Table 2
Specific Marine Criteria

	Application Data 4th Qtr 2003				Hawaii State Water Quality Standards					
					GEOMEAN (Not-to exceed)		Not to Exceed > 10% of time		Not to Exceed > 2% of time	
Pollutants	**min**	**max**	**AVG**	**geomean**	**wet**	**dry**	**wet**	**dry**	**wet**	**dry**
Ammonia (as N) (µg/L)	40	249		?	3.50	2.00	8.50	5.00	15.00	9.00
Nitrate+Nitrite (as N) (µg/L)	213	564		?	5.00	3.50	14.00	10.00	25.00	20.00
Nitrogen, Total	505	781		?	150.00	110.00	250.00	180.00	350.00	250.00

It can be seen that even the minimum effluent concentration values reported exceed the highest water quality criteria concentration. The effluent pollutant concentration is higher than water quality criteria concentrations, therefore the effluent represents a reasonable potential to cause or contribute to water quality standards violations. Further evidence of this reasonable potential is shown by examination of the basic criteria applicable to all waters which include:

> **"Substances or conditions or combinations thereof in concentrations which produce undesirable aquatic life;"**

Unpublished work by Meaghan Dailer and Dr. Celia Smith (University of Hawaii, Botany Department) has documented the presence of nitrogen with a stable isotope signature indicative of sewage in the open coastal waters receiving injection well effluents. These areas are also noted to have invasive algae blooms and declining coral cover. (personal communication Meaghan Dailer to Robin Knox 11/05/08). Observations of the physiological response of macroalgae to wastewater additions from the Lahaina Treatment Plant have

shown that algal blooms are fueled by nitrogen and other nutrients contained in the sewage effluent.

- " However, natural stable isotopes of nitrogen (^{15}N:^{14}N, expressed as $\delta^{15}N$) have been used to detect anthropogenic nitrogen loading because different nitrogen sources have $\delta^{15}N$ signatures (Umezawa et al. 2002, Lin et al. 2007, Gartner et al. 2002). For example, sewage derived wastewater $\delta^{15}N$ signatures range from 11to 25‰, and can be as high as 38‰ (Savage and Elmgren 2004). The $\delta^{15}N$ values of macroalgae growing directly in front of sewage outfalls are often highly enriched with values ranging from 9 to 15‰ (Lin et al. 2007, Gartner et al. 2002, and Costanzo et al. 2001). Because macroalgae continuously utilize new nitrogen from their environment their $\delta^{15}N$ values are an integration of all nitrogen sources available to them. It has been suggested that since these sources are integrated over time, the $\delta^{15}N$ values of macroalgae are more useful in detecting anthropogenic sources of enrichment than monitoring nitrogen levels in the water column (Umezawa et al. 2002, Gartner et al. 2002). "
- "This survey shows that average macroalgal $\delta^{15}N$ values generally reflect the areas exposure to anthropogenic impact. The $\delta^{15}N$ value of samples from Olowalu, an area of low anthropogenic impact, was 2.35 ± 0.05 ‰. The $\delta^{15}N$ values of samples from La Perouse and Haleakala National Park, also areas of very low anthropogenic impact, were 2.03 ± 0.22 ‰ and 1.28 ± 0.11 ‰ respectively. To the north of the Lahaina Wastewater Treatment Plant (LWTP), the $\delta^{15}N$ values decreased moving north from 6.77 ± 0.10 ‰ to 5.63 ± 0.17 ‰. In marked contrast to those low values north of LWTP, the $\delta^{15}N$ values of samples collected from the north end of Kahekili Beach Park, slightly south of the Lahaina Wastewater Treatment Plant decreased from 43.26 ± 0.24 ‰ to 34.66 ± 0.13 ‰ moving to the south away from the LWTP. The values to the south of the treatment plant markedly exceed those reported for other sewage affected areas elsewhere in the world. The highest $\delta^{15}N$ values in the literature thus far are approximately 38 ‰ for secondarily-treated sewage and 25.7‰ ± 3.8 ‰ for macroalgae in an estuary due to anthropogenic nitrogen loading from the Scheldt River (Savage and Elmgren 2004 and Riera et al. 2000, respectively). The values near the Kihei and Kahului Wastewater Treatment plants were 17.6 ± 0.01 and 22.2 ± 2.92, respectively.

Comment 7 -A NPDES permit is required in addition to a UIC permit

The Clean Water Act prohibits discharge of pollutant to Water of the US except in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES program requires permits for the discharge of **"pollutants**" from any **"point source"** into **"waters of the United States."** The terms "pollutant", "point source" and "waters of the US are found at 40 CFR Part 122.2

Point source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff. (See §122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Waters of the US was previously defined and applicability discussed in Comment 3 of this document. The open coastal waters and marine bottom ecosystems in the proximity of the injection wells and injectate plume are " Waters of the US".

The injection wells meet the definition of a point source. The permit application shows the presence of pollutants in the effluent (injectate) including nitrogen, biochemical oxygen demand, total residual chlorine, Total suspended solids, turbidity, total dissolved solids, fecal coliform, oil and grease, Otrtho phosphate, Total Phosphorus, nitrate-nitrogen, and toxic substances. The shallow groundwaters into which the wastes are injected are connected to surface water, therefore the discharge of pollutants from a point source to waters of the US is occurring and requires regulation under the NPDES program.

The requirement to limit discharges to support attainment of state water quality standards applies whether or not an NPDES permit is required. Hawaii Revised Statutes, Subsection 342D-50(a) requires that [n]o person, including any public body, shall discharge any water pollutants into state waters, or cause or allow any water pollutant to enter state waters except in compliance with this chapter, rules adopted pursuant to this chapter, or a permit or variance issued by the director.

Comment 8 -Water quality-based permit limits are necessary where a reasonable potential to cause or contribute to an exceedance of water quality standards exists.
40 CFR § 122.44(d) provides that *Water quality standards and State requirements:* any requirements in addition to or more stringent than promulgated effluent limitations guidelines or standards under sections 301, 304, 306, 307, 318 and 405 of CWA necessary to:

(1) Achieve water quality standards established under section 303 of the CWA, including State narrative criteria for water quality.

(i) Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or

contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.

(ii) When determining whether a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative or numeric criteria within a State water quality standard, the permitting authority shall use procedures which account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water.

Comment 9 - The pollutant load (lbs /day) from the treatment plant should comply with allocations in the Total Maximum Daily Load (TMDL) for coastal waters in the vicinity of the treatment plant. The pollutant load (lbs /day) from the treatment plant should not exceed levels allocated in the Total Maximum Daily Load (TMDL) calculations for coastal waters in the vicinity of the treatment plant. The Hawaii Department of Health has reported to EPA in the 2006 State of Hawaii Water Quality Monitoring and Assessment report: Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress Pursuant to Sections §303(D) and §305(B), Clean Water Act (P.L. 97-117) that water quality in several coastal segments in the vicinity of the treatment plant, injection wells, and injectate plume are not meeting state water quality standards. The impairments listed include not meeting standards for Total Nitrogen (Honokowai Point to Kaanapali), Total P and turbidity (Honokowai Beach Park), and turbidity at Kahekili Park. TMDLS are currently required for these segments and are listed as a medium priority in the state TMDL program. The UIC permit and/or NPDES permit should include reopener clauses to include these allocations and water quality-based limitations when the TMDLs are completed EPA should raise the priority of the TMDLs for these segments and provide adequate funding for TMDL studies.

Comment 10 - The permit does not adequately protect underground sources of drinking water. The UIC program is designed to protect underground sources of drinking water. *The definition of Underground source of drinking water (USDW) includes* " an aquifer or its portion …which contains a sufficient quantity of ground water to supply a public water system; and currently supplies drinking water for human consumption…" (40 CFR Part 144.3). The applicant, County of Maui, recently approved a project at Starwood Lot # 3 that will use coastal groundwater as a drinking water source to be treated with reverse osmosis. The Starwood project has identified an underground source of water supply within the general proximity of the sewage injection wells. Comparison of maps provided to the County of Maui Planning Commission by Starwood (Attachment 1) to the map provided to EPA by County of Maui (Exhibit B-1 of the December 1, 2004 UIC Permit Application) indicate that this underground source of drinking water maybe within the area of review required by the UIC regulations. The applicant, County of Maui did not identify these drinking water wells in Attachment C, other wells in the general proximity.

It is requested that EPA require County of Maui to update the permit application to include location and depth of any currently approved projects or proposed drinking water supply wells using underground sources of drinking water that are within the area of review or in the general proximity of the sewage treatment plant. EPA should consider the locations of such wells or proposed wells either within the area of review or the general proximity and determine the need for monitoring wells or corrective action plans. It is requested that EPA consider the effects of drinking water and cooling water well pumping in the general proximity on the fate and transport of sewage effluent in the groundwater that is being used as a source of drinking water supply.

Comment 11 -The permitte has not complied with Coastal Zone Management (CZM) Act enforceable policy to protect aquatic life, wildlife and recreational uses. Underground Injection Control permits are issued under the authority of the Safe Drinking Water Act. The UIC regulations at 40 CFR Part 144.4 states, " *The Coastal Zone Management Act,* 16 U.S.C. 1451 *et seq.* Section 307(c) of the Act and implementing regulations (15 CFR part 930) prohibit EPA from issuing a permit for an activity affecting land or water use in the coastal zone until the applicant certifies that the proposed activity complies with the State CZM program, and the State or its designated agency concurs with the certification (or the Secretary of Commerce overrides the States nonconcurrence). Applicant failed to show that the required certifications and concurrence were obtained. A letter to EPA from the state CZM program (August 18, 2008) stated that the UIC permit did not require consistency review because it is not on the list of permits requiring review. This letter did not provide certification or concurrence that the permit complies with the CZM. Federal license or permit activities and federal financial assistance activities that have reasonably foreseeable coastal effects must be fully consistent with the enforceable policies of state coastal management programs. (Federal license or permit activities are activities proposed by a non-federal applicant requiring federal authorization, and federal financial assistance activities are proposed by state agencies or local governments applying for federal funds for activities with coastal effects.)

Actual enforcement of the CZM Hawaii enforceable policies is the responsibility of the respective administering State and County agencies. (from Evaluation Findings for the Hawaii Coastal Zone Management Program From November 2001 through August 2004 (November 2005). In this case, the applicant, County of Maui is also the county agency responsible for CZM policy enforcement.

According to the website of the Hawaii CZM PROGRAM (http://coastalmanagement.noaa.gov/consistency/welcome.html), Federal Consistency Assessment Form, enforceable policies include:

- Adopting water quality standards and regulating point and non-point sources of pollution to protect and where feasible, restore the recreational value of coastal waters;
- Promote water quantity and quality planning and management practices, which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses, which violate State, water quality standards.

Comment 12 – The Statement of Basis does not provide a rationale for the permit limits.

The limits proposed represent lower quality effluent than that actually produced. Flow limits are higher than actual discharges. Resultant mass of pollutant discharge allowed is much greater than permittee reports discharging. Water quality is impaired and state water quality standards are being violated by current pollutant loads. There is no justification provided for allowing pollutant discharge mass to be so much greater than actual plant performance. Provide rational for technology-based limits. Provide evaluation of whether there is reasonable potential for the permitted discharge to cause or contribute to exceedance of state water quality standards. Provide water quality-based effluent limits if there is such reasonable potential for standards violations.

Comment 13 – The applicant has provide insufficient information in the application

Require a demonstration that the discharge can be allowed in compliance with Safe Drinking Water Act, Clean Water Act and Coastal Zone Management Act. The current information is not sufficient for the permitting authority to make an assessment which considers the variability of the pollutant or pollutant parameter in the effluent, the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity), and where appropriate, the dilution of the effluent in the receiving water.

Require data for a reasonable potential analysis, screening effluent concentrations against state water quality criteria, including those for toxic substances;

Data for toxic substances shall be analyzed using methods capable of detecting pollutant concentrations at water quality criteria levels. Current application data uses methods with detection limits above water quality criteria levels. Many toxic chemicals reported as not detected may actually be present at levels of concern.

Require a geologic cross section showing the location of the injectate plume

Require summary of at least 12 months of effluent data not more than two years old to adequately characterize effluent. Provide minimum, maximum and geometric mean of effluent constituent concentrations.

Comment 14 - Specific Permit conditions requested

Effluent limits at least as stringent as those in the state injection well permit issued by the Department of Health, reflecting at a minimum secondary treatment standards of 30 mg/L average and 45 mg/L daily maximum for Biochemical oxygen demand (BOD) and Total Suspended Solids (TSS).

Include mass and concentration limits for BOD, TSS, and Total Nitrogen (TN)

Limit injectate flow to levels more representative of actual treatment capacity and discharge level as reported by the permittee. i.e 11 MGD daily maximum; 5 MGD daily average.

Limiting Daily maximum injection rate to 11 MGD reduces the permitted nitrogen load significantly from an estimated 1501 lbs/day (assuming 10 mg/L at 18 Million gallons/day (MGD) to 917 lbs/day (assuming 10 mg/L at 11 MGD)

Effluent quality – Require an action level of 7 mg/L TN, and daily maximum effluent limit of 10 mg/ L TN.

Monitoring frequency of three times per week for BOD, TSS and Total Nitrogen (TN).

Increased monitoring frequency to 1/day for TN when action level is exceeded.

Daily effluent monitoring for fecal coliform and recreational bacterial criteria.

Effluent limit for bacteria that does not exceed state water quality criteria for recreational waters.

Require effluent toxicity testing (aquatic bioassays).

Require monitoring wells to determine effect of injectate on groundwater quality. Wells should be located to define the injectate plume and provide information on the fate and transport of effluent constituents in the environment.

Include reopener clause to allow incorporation of allocations resulting from TMDL

Require permittee to conduct a microbial characterization of effluent to include identification of pathogens, indicator organisms, and antibiotic resistant organisms. Study should include a demonstration that effluent does not contain levels of microorganisms that are harmful to human health. This characterization should be done for effluents for any method of disposal considered (injection or reuse).

Require monitoring of the receiving waters to determine environmental and ecological impacts of injectate. This monitoring program shall be developed in cooperation with the DOH, DLNR-DAR, and be subject to public review and comment. Data should be acceptable for use in the state 305(b) and 303(d) Integrated Water Quality Reporting

All effluent and receiving water monitoring data shall be made available online to the public.

Comment 15 - Emerging issues of concern

Substances such as pharmaceutical drugs, cleaning products, and antibiotic resistant pathogens have been identified nationally as emerging issues of concern for wastewater disposal. These substances may also be causing harm to fragile coastal ecosystems. EPA's permitting and water quality management efforts should recognize and address these emerging issues as well. These potential environmental impacts should be evaluated for injection, reuse or other means of disposal.

Conclusions

- Groundwater and coastal ocean waters are hydrologically connected.
- Material from injection wells can be transported to coastal waters via the hydrologic connection of groundwater to ocean.
- Both the ocean water and groundwater are "Waters of the U.S." and "State Waters". Clean Water Act requirements are applicable to Waters of the US.
- State water quality standards are applicable to Waters of the US and State waters including the open coastal waters and marine bottom ecosystems receiving discharges from the Lahaina WWRF.
- These waters are not meeting state water quality standards.
- The Lahaina WWRF effluent concentrations represent reasonable potential to cause or contribute to exceedances of applicable state water quality standards.
- A NPDES permit is required in addition to a UIC permit.
- Water quality-based permit limits are necessary where a reasonable potential to cause or contribute to an exceedance of water quality standards exists.
- The pollutant load (lbs /day) from the treatment plant should comply with allocations in the Total Maximum Daily Load (TMDL) for coastal waters in the vicinity of the treatment plant.
- The permit does not adequately protect underground sources of drinking water.
- The permitte has not complied with Coastal Zone Management (CZM) Act enforceable policyto protect aquatic life, wildlife and recreational uses.
- The Statement of Basis does not provide a rationale for the permit limits.
- The applicant has provided insufficient information in the application to assess environmental impacts.
- The permit should include conditions specifically to address existing water quality concerns and emerging issues of concern.

In closing, I respectfully ask that the County of Maui and EPA act responsibly in this matter to fully disclose the nature of the effluent and to fully assess the real and potential impacts of the permitted wasteload. The permit should include limits that support attainment of state water quality standards, and protect the designated beneficial uses of state waters and waters of the US.

Sincerely,

Robin S. Knox, President

Water Quality Consulting, Inc.

728A Kupulau Dr.

Kihei, Hi 96753

Exhibit 1

Starwood Lot 3 Location of proposed project to include

Cooling and Drinking Water Wells in Vicinity of County of Maui WWRF Injection Wells

Honokowai
Lower Honoapiilani
Honoapiilani
Lot 3
Halawai
Aalii
Puukolii
Puu Hale
Puu Anoano
Kolepa
Kahoe
Iwa
Piki
Hakui
Maiuli
Pihaa
Kalaihi
Uukoa
Haloko
Akia
Kekaa
Kaanapali Landing
Kā'anapali
Kaanapali Golf Course
Nohea Kai
Halelo
30

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:15 AM -----

From:	"Robert Knourek" [redacted]
To:	Nancy Rumrill/R9/USEPA/US@EPA
Date:	11/05/2008 08:06 PM
Subject:	maui injection well permit

i believe that injection wells are often harmful to the local ecosystem. i would like to see a full review of the envirnmental impacts of these wells on maui before any new or renewed permits are granted.

thanks,

robert knourek
kaanapali alii
lahaina, hi.
96761

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
---- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:14 AM ----

From: Richard Bennett <[redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Cc: Surfrider Foundation <[redacted], Rick Wilson <[redacted]
Date: 11/06/2008 04:56 PM
Subject: Lahina Maui Waste Water UIC Permit

Nov. 6, 2008

To. Nancy Rumrill
EPA Reg. 9

From. Dr. Rick Bennett PhD
President, Applied Life Sciences LLC
Chairman, Kona Kai Ea Surfrider

Re. Waste Water Injection

The issue before you now is the permit for the Lahina Hawaii UIC permit. However, it is now prudent if not critical that all sources of waste and storm water flows in the state of Hawaii, be reviewed before permits of any type are approved for waste and storm waters.

Unfortunately, ground water in Hawaii is seen as similar and regulated as for most ground waters in the mainland. Hawaii is very unlike the mainland. Yet the Hawaii Department of health continues to disconnect ground water from sea water as a matter of policy that attempts to defy gravity . " As a matte of policy. DOH has chosen to have all underground injection discharges regulated under our UIC program and not under the NPDES permit program", L. Lua, Deputy Dir DOH 4-20-2005.

The Clean Water Act provides strong regulatory guidance for point source and hydrological connections to the waters of the US. Thus in Hawaii the UIC is not appropriate given the hydrologic facts. It is appropriate to apply the NPDES process to all injection wells and sumps in Hawaii.

Even a casual read of Hydrology of the Hawaiian Islands by Lau and Mink, 2006 Univ of Hawaii Press, shows very clearly that sea water permeates the land masses of the island and rain events percolate to sea level under the island and float on sea water. The hydrologic head creates a seaward flow of ground water. The USGS estimates of ground water flow to the sea reach 3 MGD per mile of coastline. These waters are already nutrient rich and the impact of marginal additions are becoming perilous to the near shore waters. Even in the most remote non urban areas we measure nitrates at 10 PPM and above in the very near shore brackish waters

Any and all waters added to the water shed, be it storm water, waste waters injected or waste waters eventually migrate to the sea. Lau and Mink state, ".. the coastal waters surrounding the islands will continue to be the ultimate sink for waste waters, directly or indirectly."

The work by Charles Hunt of the USGS in Honolulu on the Kihei Injection well clear shows the distinct hydrologic connection that in effect is an underground diffuser delivering nutrient, chemical and pharmaceutical wastes to the near shore waters. The out sight out of mind de facto policy, threatens the ecology and economy of the islands.

As detailed the the most recent NRC report
http://www8.nationalacademies.org/onpinews/newsitem.aspx?RecordID=12465
EPA policies are not adequate to address the control of water pollution from storm water run off. This is critically true for the very The effects of this water contamination and nutrient enrichment add to the waste water flows from any permitted and non permitted waste waters. The additive effects need to be accounted and the marginal impacts estimated. We appear to have already tipped the ecological resilience of near shore ecology as nutrient loads nourish invasive species.

All efforts should now focus on nutrient and pollutant diversion and capture in the watershed! This is the focus of Coastal Zone Management Act. Thus all waste waters should be treated for maximum nutrient removal and recycled via carefully managed irrigation programs.

There are hundreds if not thousands of injection wells in the state of Hawaii. A large proportion have expired permits and the composition of the injected wastes is largely unknown and is clearly the case for Hawaii island as revealed by my research.

We urge that no long term permits for underground injection be issued pending review of the regional and statewide UIC and NPS pollution threats to our near shore waters. The single focus, permit by permit review process is no longer adequate to protect the coastal resource and the life blood of Hawai'i nei.

Sincerely

RH Bennett PhD

[redacted]

09/19/2008 11:40 AM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Public comment on Permit #HI50710003

History: This message has been forwarded.

Re: Lahaina, HI WWRF UIC Permit # HI5071003

Dear Ms. Rumrill:

I am writing to request that a public information meeting and a public hearing be held on the Lahaina, HI UIC permit #HI5071003.

The permit as written does not protect one of Maui's primary natural resources - its coral reefs. Coral reefs did not evolve with urban pollution, but today they find themselves living right next to major sources of chemicals and nutrients. One particular reef, Kahekili, has shown a decline in coral cover and an increase in both native and invasive algae. It is very close to some of the Lahaina Sewage Treatment Plant injection wells. The nutrients from injection wells have been shown in recent scientific studies to increase algae growth, which has long been known to threaten coral reef health.

I believe that the nitrogen concentrations that are currently allowed at Lahaina are too high and require amendment. I also believe that there should be a reduction in the amount of water injected, by piping to areas such as Kaanapali for irrigation.

I ask that the EPA come to Maui and hear testimony on these issues, as the continued existence of our reefs depends on changing our current water management practices.

Thank you for your time.

Pauline Fiene
Kihei, Maui

Nancy Rumrill, EPA
Lahaina Waste Water Facility Permit
Sept 18, 2008

We all know Maui is summertime all year long. With the heat of summer comes dry grasses and weeds in empty fields that were once green with sugar cane.

The enclosed news articles show the recent fires on Maui - all from dry brush fires.

Let's reuse the treated waste water to prevent fires by irrigating the thousands of acres of empty ag lands in West Maui owned by the former sugar company, AmFac Corp.

Please hold a public meeting in West Maui.

Sincerely

Pat S. Brown
1116 Ainakea Pl.
Lahaina HI 9761

Stubborn Fire Homes in Maui Meadows are threatened — again

By MELISSA TANJI, Staff Writer

POSTED: August 28, 2008

County spokeswoman Mahina Martin said the fire Wednesday resulted from a flare-up in the area burned by a wildfire that broke out Saturday afternoon in the Keonekai area below Piilani Highway. The Keonekai fire, spread by gusty afternoon winds, moved up the slopes next to Maui Meadows, scorching an estimated 155 acres of grass and kiawe brush.

While the Keonekai wildfire was contained by Sunday, hot spots continued to smolder through Tuesday as fire personnel monitored the burn, she said.

Police said the Keonekai fire was accidentally started by teenagers who had been playing with a lighter in the open field behind the homes off Keonekai Road and Kauhale Street. With tinder-dry brush and winds blowing up to 20 mph Saturday afternoon, the fire spread through the field, damaging several firefighters' vehicles parked near the Wailea Fire Station while wind-blown embers scorched a home on Puu Holai Street.

An unrelated brush fire on Monday afternoon burned about 5 acres and damaged equipment and landscaping plants at a Betsill Brothers Construction site.

The rekindled Maui Meadows wildfire was reported at about 3 p.m. when the onshore winds in South Maui were swirling up the slopes. As the flames spread up the slopes, police closed Mapu Place where firetrucks were moving in and out of Maui Meadows.

Martin said at least seven fire engine companies, along with tankers, the wild-land unit and the department's Air One helicopter were involved in battling the fire. Goodfellow Brothers provided tankers and heavy equipment, while Valley Isle Equipment Rental sent a water tanker to spray the flames.

While the firefighters and tankers were able to block the threat to Maui Meadows homes, Martin said the crews were still battling to contain the blaze. It was estimated to have burned 500 acres as it continued up the slopes with a line of smoke marking its spread as the sun set.

Firefighter crews and Air One - dipping water out of home swimming pools - were attempting to head it off while other firefighters continued to mop up near Maui Meadows early Wednesday evening.

* Maui News writer Melissa Tanji can be reached at mtanji@mauinews.com.

Fire threatens homes

POSTED: September 13, 2008

The Maui News / AMANDA COWAN

WAILUKU - A brush fire between two homes in the Wailuku Country Estates on Friday afternoon alarmed residents when they saw flames towering over rooftops while the fire blazed precariously close to the residences.

The fire broke out at around 1 p.m. Friday in the trees between two residences on Maika Street and near Hewahewa Drive in the Puuohala Camp. The Air One helicopter made numerous water drops on the burn area, which nearby residents said was the biggest factor in keeping the fire from spreading.

"The flames were so high and higher than the house. Oh my goodness," Flores said as she watched fire crews spraying hot spots.

"The fire was over the homes, easy," said neighbor Mason Gomes as he and other neighbors watched the Air One helicopter douse the fire.

Gomes said the flames soared 30 to 40 feet high - as high as the pine trees in the area of Maika Street, one of the primary roadways through the agricultural subdivision.

His wife, Tammy, said they were first alerted to the fire when they saw black smoke, then they noticed the fire downhill from their home.

"All we saw was the macadamia nut trees go up in flames," she said.

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:14 AM -----

From: Pam Daoust <[redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/04/2008 04:22 PM
Subject: Testimony

Dear Ms. Rumrill,

I am writing to urge that conditions be placed on the Underground Injection Control (UIC) permit to the County of Maui for the Lahaina Wastewater Reclamation Facility which would require increased use of wastewater for reclamation purposes instead of pumping it into the ocean via injection wells. It is vitally important to the preservation of our already stressed reefs that the amount of wastewater injected into the ocean be drastically reduced or eliminated altogether. This water should be used for reclamation purposes on our water-needy island. Algae blooms are fueled by nitrogen-rich effluent and our reefs are rapidly deteriorating due to our past and present practices of injecting effluent into our surrounding ocean.

Having done reef surveys at Kahekili Beach (Airport Beach) in past years, I myself have observed the steady deterioration taking place at that once beautiful and abundant reef as more and more algae has begun to smother it. The time to put a stop to this is NOW, before we lose all of our offshore reefs altogether.

I live in Ma'alaea where the coral reef has been heavily impacted by effluent from our own injection wells on my street. In the last ten years, we have gone from 76% coral coverage to a mere 8%, according to the July 2007 reef study. (See Attached.) My own street--Hanoli Street--pumps 295 thousand gallons of effluent into our ocean. This is a drop in the bucket compared to the billions of gallons produced by the Lahaina plant. How can our reefs survive under such a steady, unremitting onslaught? In Ma'alaea, the reef has NOT survived and West Maui is in danger of suffering the same devastation and loss.

As algae blooms die off, they consume dissolved oxygen, increase turbidity, deprive other species of light and oxygen and cause massive loss of reef life. Every study done on this topic shows that there is a clear relationship between algae blooms and injection wells, resulting in loss of reef life.

Please make it a tough requirement that wastewater be diverted from injection wells to land based uses. We really cannot afford to continue doing what we have been doing in the past if we want to preserve life on our nearshore reefs.

Thank you for the opportunity to offer this testimony.

Pam Daoust
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Ma'alaea, HI 96793
dcaust@hawaii.rr.com

[attachment "MauiReefDeclines.pdf" deleted by Nancy Rumrill/R9/USEPA/US]

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----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:13 AM -----

From:	Nam Le Viet [redacted]
To:	Nancy Rumrill/R9/USEPA/US@EPA
Date:	11/07/2008 10:55 AM
Subject:	Injection Wells on West Maui

Dear Mrs Rumrill,

My understanding is that injection wells have been studied and implemented for a long time. However there are some criterias that must be met for a successful implementation. One of them is that the wells must be in a stable geological zone and thousand feet underground according to a EPA study: http://www.epa.gov/safewater/uic/pdfs/study_uic-class1_study_risks_class1.pdf. It seems to me that having the wells on Maui at 100 to 150 ft in a earthquake zone is clearly not appropriate. The risk that our drinking water is tainted is not small.

Furthermore, the entire system on West Maui seems clearly not being able to cope with the wastewater load. Living nearby we are constantly subjected to a horrible smell. The government made clearly a mistake by authorizing the development of Westin and Honoua Kai on Kaanapali Beach before enhancing the existing infrastructure. We live in USA, the most modern country in the world and we use wastewater plan that are completely outdated.

Thank you,

Nam L. Le Viet

[redacted]

09/17/2008 04:12 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Please hold a public hearing on injection wells

History: This message has been forwarded.

Aloha MS. Rumrill;

I am writing to you today from Maui concerning injection wells on our island. As one who has worked diligently for the past several years to halt sewage from being dumped into our ocean waters, I have been learning about the disposal of our wastewater into injection wells in various locations here. While I live in Kihei, a location of one plant using this system, my biggest concern is the Lahaina location at this time, and request a public meeting in that west Maui area.

Maui's population is increasing at an extreme rate, & obviously more people equals more consumption of potable water while creating more waste of all kinds, including wastewater going into injection wells for disposal. It's a no brainer to reuse some of this wastewater for irrigation for commercial, public (parks & schools, etc.) & residential uses, fire fighting, vehicle washing, and probably even household uses, such as flushing toilets. While much of our island is considered a desert climate normally, the past several years have shown even less rainfall, so now is the time for action.

Mahalo,

Mike Moran
Kihei, HI 96753
(808) 891-9176

Psssst...Have you heard the news? There's a new fashion blog, plus the latest fall trends and hair styles at StyleList.com.

Meghan L Dailer
[redacted]
09/23/2008 06:27 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Lahaina Underground Injection Permit

History: This message has been replied to.

Nancy,

We are preparing a comment for submission regarding the Lahaina Underground Injection Permit but we need more time to complete it.

For the record, I want to add, from the data that we have to date we are concerned about the injected effluent reaching and affecting the near shore marine environment in North Kaanapali Beach.

Thank you,
Meghan Dailer
Jr. Researcher
University of Hawaii
Department of Botany &
Hawaii Coral Reef Initiative
808 221 2942

UNIVERSITY OF HAWAI'I AT MĀNOA

Department of Botany
St. John Plant Science Laboratory

November 5, 2008

To: Ms. Nancy Rumrill
U.S. Environmental Protection Agency
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

From: Meghan Dailer, Junior Researcher
Celia M. Smith, Professor

Re: Public Comments on Lahaina, HI WWRF UIC
Permit Number HI50710003

Thank you for the opportunity to comment on the permit request.

Based on summary information presented below, we ask that the UIC permit for the Lahaina Wastewater Treatment Plant be revised to decrease the total allowable daily nutrient load, including but not limited to: Total Nitrogen, Total Phosphorous, Manganese, and Iron for the reason that these components are macronutrients and micronutrients apparently stimulating algal growth in coastal regions around the Lahaina Wastewater Treatment Plant.

Background: Algal blooms and decline of the reef at Kahekili Maui.

Nuisance algal blooms of the red alga *Hypnea musciformis* and the green alga *Ulva fasciata* are problematic in shallow coastal waters around urbanized regions of Maui. Currently the South Maui blooms span from North Kihei (near the NOAA Sanctuary office buildings) to Charley Young Beach and then from Keawekapu through Wailea. Central Maui blooms occur in Maalaea to the south and from Kahului to Paia in the north. Research on these algae blooms thus far have included laboratory and field experiments as well as sampling bloom and non-bloom areas for nutrients in water column and pore water of sediments , algal tissue carbon, nitrogen, phosphorus and stable isotopes of nitrogen (^{15}N:^{14}N, expressed as $\delta^{15}N$). We collected these data in two ways - as 'on-shore / off-shore gradients' and spatially along the coastline from La Perouse to Waipuilani.

The North Kaanapali Beach (also called Kahekili) area is in the review process to become a Fisheries Management Replenishment Area (FMRA) through the State of Hawaii, Department of Land and Natural Resources, Division of Aquatic Resources to increase herbivore pressure on algal growth. This area was chosen for the FMRA because of the significant decline in coral cover and accompanying abundance of algae over the past decade. In the summers, when large north swells no longer persist and the south swells are fewer and farther between, the shallow fore reef (approximately 5 to 30 feet offshore) becomes dominated with algae blooms, primarily comprised

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of *Ulva fasciata,* but historically *Hypnea musciformis* and *Cladophora sericea* as well. This area also frequently has bubbles flowing from the benthos and warmer-than-ambient-water fresh water seeps. The seeps are consistently present and are surrounded by rocks and coral rubble with black precipitates. The black precipitate is currently being analyzed, but is likely iron oxide which could arise from anoxic conditions in the groundwater.

Examining $\delta^{15}N$ values of tissue nitrogen in intertidal macroalgae on Maui to identify locations and potential sources of nutrient enrichment

Overview: Because nitrogen is often present in low concentrations in tropical marine waters but is an essential macronutrient for plant growth, macroalgae can acquire nitrogen from many sources such as land based fertilizers and sewage effluent when present in coastal waters. These sources of additional nitrogen entering the ocean are often difficult to detect with many water quality assessment tools (ambient nutrient and salinity measurements) because coastal currents, wave action and general mixing events dilute potentially elevated nutrient levels quickly. However, natural stable isotopes of nitrogen (^{15}N:^{14}N, expressed as $\delta^{15}N$) enable researchers to detect anthropogenic nitrogen loading because nitrogen sources can differ in their $\delta^{15}N$ signatures (Umezawa et al. 2002, Lin et al. 2007, Gartner et al. 2002). For example, $\delta^{15}N$ signatures of sewage derived wastewater range from 11to 25‰, and can be as high as 38‰ (Savage and Elmgren 2004). The $\delta^{15}N$ values of macroalgae growing directly in front of sewage outfalls are often highly enriched with values ranging from 9 to 15‰ (Lin et al. 2007, Gartner et al. 2002, and Costanzo et al. 2001), well above background values for ocean waters. Because macroalgae continuously acquire nitrogen from their surrounding waters, the $\delta^{15}N$ values of algal tissues are an integration of all nitrogen sources available to them. Because these sources are integrated over time by the algal physiology, the $\delta^{15}N$ values of macroalgae are more useful in detecting anthropogenic sources of enrichment than monitoring dissolved inorganic nitrogen levels in the water (Umezawa et al. 2002, Gartner et al. 2002).

Summary of Methods: In the summer of 2007, a survey of intertidal macroalgal $\delta^{15}N$ values from all accessible coastlines on Maui was conducted to locate areas and potential sources of anthropogenic enrichment. A total of 130 sites (over 600 samples) were sampled around the island and at each site attached macroalgae samples were collected in triplicate from the intertidal zone. Samples were prepared for laboratory analysis and sent to the University of Hawaii Manoa, Isotope Biogeochemical Laboratory for analysis. Stable isotope composition (^{15}N:^{14}N) was determined using the following instrumentation: the Carla Erba NC2500 Elemental Analyzer via Finnigan MAT ConFloII system and the Finnigan MAT DeltaS.

Summary of findings: Average macroalgal $\delta^{15}N$ values generally reflect the areas' exposure to anthropogenic impact (Figure1). The $\delta^{15}N$ value of samples from Olowalu, La Perouse and Haleakala National Park, areas of low anthropogenic impact were low (blue circles). The $\delta^{15}N$ values to the north of the Lahaina Wastewater Treatment Plant (LWTP) decreased from 6 to 5 ‰ moving north. In marked contrast to those low values north of LWTP, the $\delta^{15}N$ values of samples collected from the north end of Kahekili Beach Park, slightly south of the LWTP decreased from 43.26 ± 0.24 ‰ to 34.66 ± 0.13 ‰ as plant collections were made to the south away from the LWTP. The $\delta^{15}N$ values of samples to the south of the treatment plant markedly exceed those reported for other sewage affected areas elsewhere in the literature. The highest $\delta^{15}N$ values

reported thus far are approximately 38 ‰ for secondarily-treated sewage and 25.7‰ ± 3.8 ‰ for macroalgae in an estuary due to anthropogenic nitrogen loading from the Scheldt River (Savage and Elmgren 2004 and Riera et al. 2000, respectively).

The use of $\delta^{15}N$ values in algal tissues to detect, monitor, and map anthropogenic sources of nitrogen is a new and growing field of research which may limit our ability to find comparably enriched values to those found at Kahekili. However, many studies have linked enriched signals in macroalgae to the presence of sewage effluent with values two to three times lower than Kahekili. The most recent research by Lin et al. (2007) in Taiwan, Gartner et al. (2002) in Western Australia and Costanzo et al. (2001) in Eastern Australia reports highly enriched macroalgae values ranging from 9.30 to 14.9 ‰ directly in front of sewage outfalls (Note: the volume and concentrations of nutrients at that site remain unknown, limiting the ability to compare absolute values of $\delta^{15}N$ from tissues samples).

Investigating the physiological response of *Hypnea musciformis* to additions of reagent grade Nitrogen and Phosphorous

A nutrient enrichment experiment was conducted to explore the effects of Nitrogen (N) and Phosphorus (P) independently and in combination on the growth and photosynthetic properties of *Hypnea musciformis*. In this experiment, separate samples (n=9, per treatment) of *H. musciformis* were grown in an outdoor aquarium system in individual aerated 1.0L beakers under one of the following nutrient treatments for seven days: (1) No Addition, (2) Mid Phosphorus (MP: 0.5μMPO_4), (3) Mid Nitrogen (MN: 40.0μMNH_4), (4) MNMP (40.0μMNH_4 and 0.5μMPO_4)(5) High Phosphorus (HP: 1.0μMPO_4), (6) High Nitrogen (HN: 80.0μMNH_4), and (7) HNHP (80.0μMNH_4, 1.0μMPO_4). On Days 0 and 7 samples were weighed (wet weight) and assessed for (1) photosynthetic status, Relative Maximum Electron Transport Rate ($RETR_{MAX}$) and (2) Photosynthetic Saturation Irradiance (E_K) with a Pulse Amplitude Modulated (PAM) fluorometer (Diving PAM, Waltz). The water in each 1.0L beaker was changed every day of the experiment to maintain the desired nutrient concentrations.

The response of *Hypnea musciformis* on Day 7 to the abovementioned treatments is visually displayed in Figure 2 where the coloration of plants given any combination of N is clearly distinct from those lacking N addition. In fact this change in color from dark purple to tan is nearly complete by Day 4. The fact that *H. musciformis* maintains phycobilin pigmentation (dark purple color) only when given nitrogen allows for the potential to use this plant as an indicator species of elevated nitrogen levels. Surprisingly, there were no significant differences of growth between the No Addition treatment and any other treatment. The highest sustained $RETR_{MAX}$ and E_K values were observed in the MNMP and HNHP treatments on Day 7. The E_K values of samples in the MNMP and HNHP treatments were significantly higher than all other treatments on Day 7.

This study documented how rapidly *H. musciformis* responded to elevated combined N and P conditions with increases in pigmentation leading to increased photosynthetic capabilities. These findings confirmed the expected requirement of both N and P to sustain increases in photosynthesis. The surprising lack of significant differences among growth rates between the No Addition and other treatments initiated many additional nutrient enrichment experiments with N,

P, and Iron (Fe) in every combination as well as different light treatments. None of those experiments produced the growth rates observed in the field supporting nuisance algae blooms.

Investigating the response of *Hypnea musciformis*, *Ulva fasciata*, *Acanthophora spicifera*, and *Dictyota acutiloba* to secondarily-treated sewage effluent

Overview: The abovementioned Maui coastline survey of intertidal macroalgae successfully detected elevated $\delta^{15}N$ values of samples that were likely influenced by sewage effluent percolating into the near shore marine environment in certain areas. Yet we were unable to reproduce observed growth rates of plants in the field while conducting laboratory nutrient enrichments. For this reason, we pursued the response of bloom species and non-bloom species to secondarily treated sewage effluent. *Hypnea musciformis* (invasive, bloom forming), *Ulva fasciata* (native, bloom forming), *Acanthophora spicifera* (invasive, bloom forming), and *Dictyota acutiloba* (native, common but not bloom forming).

All species were separately subjected to a series dilution experiment to determine their response to sewage effluent in terms of growth, photosynthetic status, $\delta^{15}N$ values, and nutrient uptake rates. In addition, we planned to determine if the tissue composition (C:N:P) of the plants are representative of the surrounding available nutrient concentrations, and what micro-nutrients (Zinc, Iron, Molybdenum, Manganese, Magnesium, and Copper) limit photosynthesis and growth in these species.

Summary of Methods: The following processes were repeated for each species. Samples were subjected to the following 7 treatments (n = 6 per treatment): (1) No Addition, (2) 25ml, (3) 50ml, (4) 75ml, (5) 100ml, (6) 150ml, and (7) 200ml of sewage effluent. Treatments for each sample were refreshed every day with (1) water from Olowalu (area of low anthropogenic impact), (2) the corresponding sewage effluent addition (obtained from the Lahaina Wastewater Treatment Plant) and (3) the appropriate addition of natural sea salt to return the salinity to oceanic levels (32 ‰, confirmed with a Mettler Toledo Seven Multi meter (calibrated with Mettler Toledo conductivity standards).

Trials lasted for 9 days with the following sampling and measuring design. On Days 0 and 9 samples were first measured with Pulse Amplitude Modulated (PAM) fluorometry for photosynthetic parameters (1) Relative Electron Transport ($RETR_{MAX}$), (2) Photosynthetic Saturation Irradiance (E_K), and (3) Photosynthetic Efficiency (Alpha) then weighed. Samples were prepared in triplicate per treatment for $\delta^{15}N$ and tissue nutrient analysis on Days 0 and Day 9. To determine that the sewage effluent additions remained consistent during the study samples for water chemistry analysis were collected in triplicate per treatment on Days 0 and 8 for analysis of the following macro and micro nutrients: Total Organic Carbon (TOC), Total Nitrogen (TN), Total Phosphorous (TP), Nitrate (NO3), Iron (Fe), Molybdenum (Mo), Manganese (Mn), and Copper (Cu). Nutrient uptake rates were determined in triplicate per treatment over a 24 hour time period by collecting water samples on Days 8 and 9 from the same samples at the same time.

Summary of Results: Samples of *Hypnea musciformis*, *Acanthophora spicifera* and *Ulva fasciata* visibly change with distinct increases in pigment in only six days (Figures 3 -6). Highly significant differences in the Relative Growth Rates (RGR) (Figure 7A) between Days 0 and 9

were found between the No Addition and all treatments above 25 and 50 ml for *H. musciformis* and *U. fasciata*, respectively, while no significant difference was found among any treatment for *A. spicifera* or *D. acutiloba*. In addition, the RGRs of *H. musciformis* and *U. fasciata* from the 50 ml through the 200 ml additions were significantly higher than those of *A. spicifera* and *D. acutiloba*. This shows that in terms of growth, *H. musciformis* and *U. fasciata* similarly respond to excess nutrients more positively and faster than *A. spicifera* and *D. acutiloba*.

Relative Maximum Electron Transport Rates ($RETR_{MAX}$) (Figure 7B) of *U. fasciata* and *H. musciformis in* the 200 ml addition were significantly accelerated from their No Addition treatment, while *A. spicifera* $RETR_{MAX}$ values in treatments 75 to 200 ml were significantly higher than the No Addition treatment. No significant differences were found between the No Addition and any treatment for *D. acutiloba*. *U. fasciata* had significantly higher $RETR_{MAX}$ values than all other species in treatments of elevated nutrients (25, 50, and 200 ml). *H. musciformis* and *D. acutiloba* $RETR_{MAX}$ values were not significantly different in any treatment. These results indicate that (1) *U. fasciata* increases photosynthetic performance with fewer nutrients than what is required for both *H. musciformis* and *A. spicifera*, (2) from the No Addition to the 150 ml treatment, $RETR_{MAX}$ values of *H. musciformis* and *D. acutiloba* were similarly unaffected by increased nutrients, and (3) $RETR_{MAX}$ values of *A. spicifera* increased similarly to those of *U. fasciata* in treatments of 75 ml and above.

The Photosynthetic Saturation Irradiance (E_K) (Figure 7C) in the 200 ml addition was significantly higher than the No Addition treatment for all species except *D. acutiloba*. In addition, all species had significantly higher E_K values than *D. acutiloba* in the 200 ml treatment. The highest E_K values were found in *U. fasciata* in the 200 ml treatment. In the 75 ml treatment, *A. spicifera* E_K values were significantly higher than those of *D. acutiloba* and the No Addition treatment. This shows that all species, except for *D. acutiloba*, positively respond to excess nutrients in terms of building photosynthetic capacity and *U. fasciata* is the most responsive.

No difference between treatments was found in the Alpha values (Figure 7D) of *D. acutiloba*, *H. musciformis*, or *A. spicifera U. fasciata*, however, had significantly lower values between the No Addition and all other treatments. *D. acutiloba* had significantly higher Alpha values than *H. musciformis* regardless of treatment. This shows that (1) *U. fasciata* is more sensitive to decreased nutrient conditions in terms of photosynthetic efficiency than all other species and (2) *D. acutiloba*, the native, high light environment (reef flat) macroalgae, has higher photosynthetic efficiency than the bloom forming algae.

The water chemistry results from the *Hypnea musciformis* component of this study (Figures 8 and 9) found no significant difference was found between Treatment or Treatment and Day for Total Organic Carbon (TOC, Fig. 8A), Total Phosphorous (TP, Fig. 8B), Copper (Cu, Fig. 9B), and Molybdenum (Mo, Fig. 9D). Significant differences were found between Treatment (same day comparisons only) and Days 8 and Day 9 (same treatment comparisons only) in Total Nitrogen (TN, Fig. 8C), Nitrate (NO_3, Fig. 8D) and Iron (Fe, Fig. 9A). The Manganese (Mn, Fig. 9C) concentrations significantly increased with Treatment on Days 0 and 8. The TN concentrations on Days 0 and 8 in the No Addition, 25 ml, and 50ml treatments were significantly lower than the additions of 75 ml and above. In addition, the TN significantly decreased in treatments of 75ml and above from Day 8 to Day 9. NO_3 concentrations on Days 0 and 8 significantly increased with

treatment and on Day 9 were significantly decreased from those on Day 8 in all treatments from 50 ml and above. Fe concentrations were significantly increased from the No Addition treatment in the 150 and 200 ml treatments. A significant decrease in Fe from Day 8 to 9 was found in the 200 ml treatment. These results show that *H. musciformis* is capable of utilizing substantial amounts of N, P, Fe, and Mo over a 24 hour time period. These results also suggest that micronutrients such as Mn play a previously overlooked key role in the growth and photosynthetic properties of the invasive bloom forming macroalga, *H. musciformis*.

Overall Summary

Nuisance algal blooms of the red alga *Hypnea musciformis* and the green alga *Ulva fasciata* are problematic in shallow coastal waters around urbanized regions of Maui. The Kahekili area is an area of problematic algal growth and substantial reef decline. Kahekili has the highest macroalgal $\delta^{15}N$ values on Maui, which strongly indicates the presence of sewage effluent in the near shore marine environment. Sewage effluent contains elevated levels of many nutrients, some of which are important for algal growth and photosynthetic needs. From laboratory studies with reagent grade nutrient enrichment, we see that Nitrogen and Phosphorous play important roles in the photosynthetic needs of *Hypnea musciformis*, but are unable to promote excessive growth by themselves. Our sewage effluent addition experiments resulted in growth rates similar to those observed in bloom situations for both *H. musciformis* and *Ulva fasciata*, which were significantly higher with increasing levels of sewage effluent, whereas no significant difference was found between treatment for *Acanthophora spicifera* and *Dictyota acutiloba*. Therefore, in terms of growth, *H. musciformis* and *U. fasciata* similarly respond to excess nutrients more positively and faster than *A. spicifera* and *D. acutiloba*. Additional results from the sewage effluent addition experiments were that (1) *U. fasciata* requires fewer nutrients to increase photosynthetic performance ($RETR_{MAX}$) than what is required for both *H. musciformis* and *A. spicifera*, (2) *U. fasciata* is more sensitive to decreased nutrient conditions in terms of photosynthetic efficiency (Alpha) than all other species tested, (3) all species, except for *D. acutiloba*, positively respond to excess nutrients in terms of building photosynthetic capacity (E_K) and *U. fasciata* is the most responsive, and (4) the native, non-bloom forming reef plant *D. acutiloba* does not enhance photosynthetic properties in the presence of elevated nutrients, and naturally has higher photosynthetic efficiency than bloom forming algae. Substantial decreases in Nitrogen, Phosphorous, Iron, and Molybdenum were found over a 24hr time period in the *H. musciformis* experiment, which displays the ability of this species to utilize substaintial levels of these nutrients in a short amount of time. In addition, these experiments present the importance of considering more stringent limits on the total allowable daily loads of algal growth promoting macro and micro nutrients, such as Manganese.

References

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Gartner A, Lavery P, Smit AJ (2002) Use of $\delta^{15}N$ signatures of different functional forms of macroalgae and filter feeders to reveal temporal and spatial patterns in sewage dispersal. Mar Ecol Prog Ser 235: 63-73

Lin HJ, Wu CY, Kao SJ, Meng PJ (2007) Mapping anthropagenic nitrogen through point sources in coral reefs using $\delta^{15}N$ in macroalgae. Mar Ecol Prog Ser 335: 95-109

Savage C, Elmgren R (2004) Macroalgal (*Fucus vesiculosus*) $\delta^{15}N$ values trace decrease in sewage influence. Ecol App 14(2): 517-526

Umezawa Y, Miyahima T, Yamamuro M, Kayanne H, Koike I (2002) Fine scale mapping of land derived nitrogen in coral reefs by $\delta^{15}N$ in macroalgae. Limnol Oceanogr 47: 1405-1416

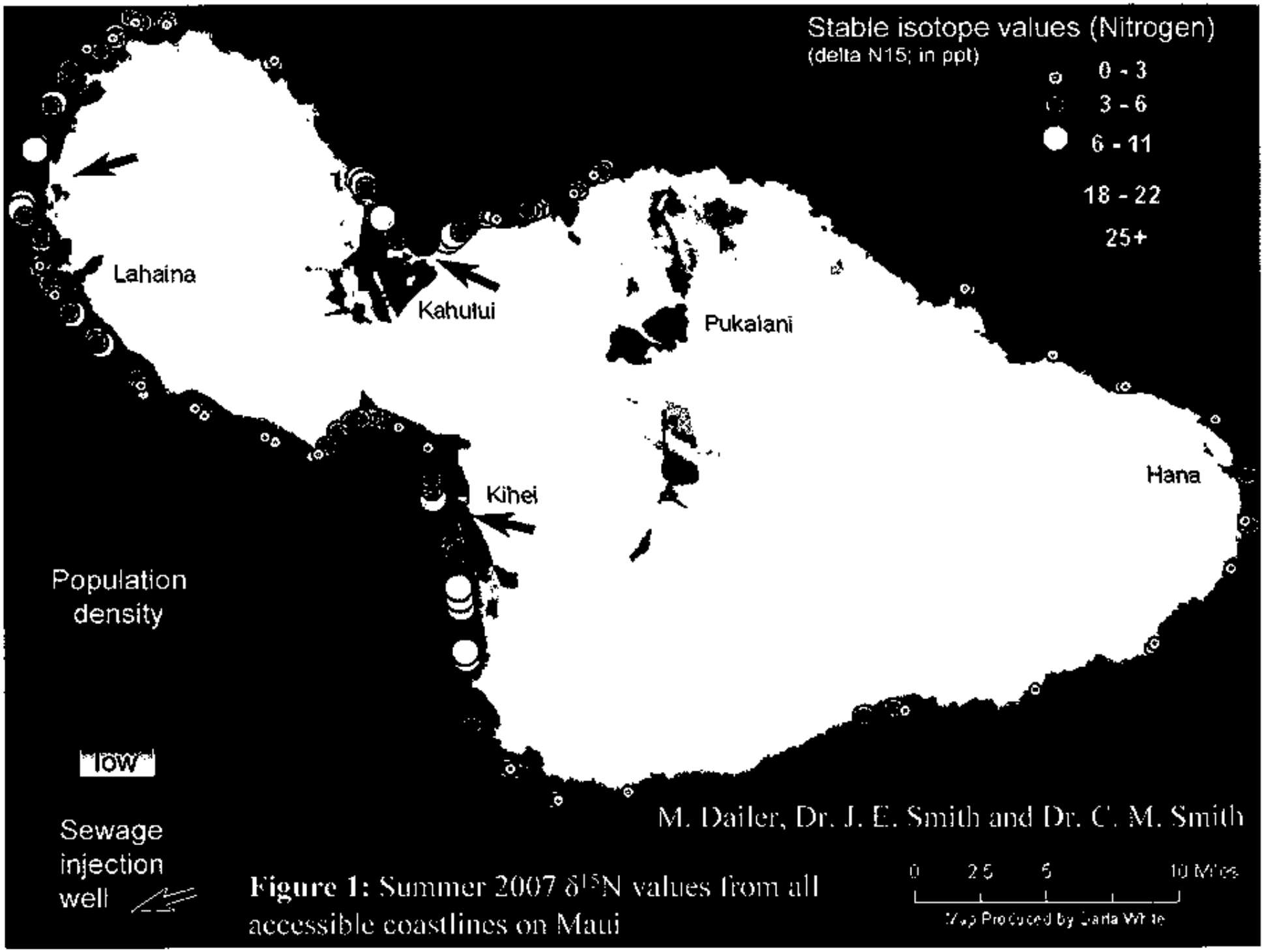


Figure 1: Summer 2007 $\delta^{15}N$ values from all accessible coastlines on Maui

Figure 2: Visual response of *Hypnea musciformis* to the presence or absence of Nitrogen on Day 7 of a reagent grade nutrient enrichment experiment

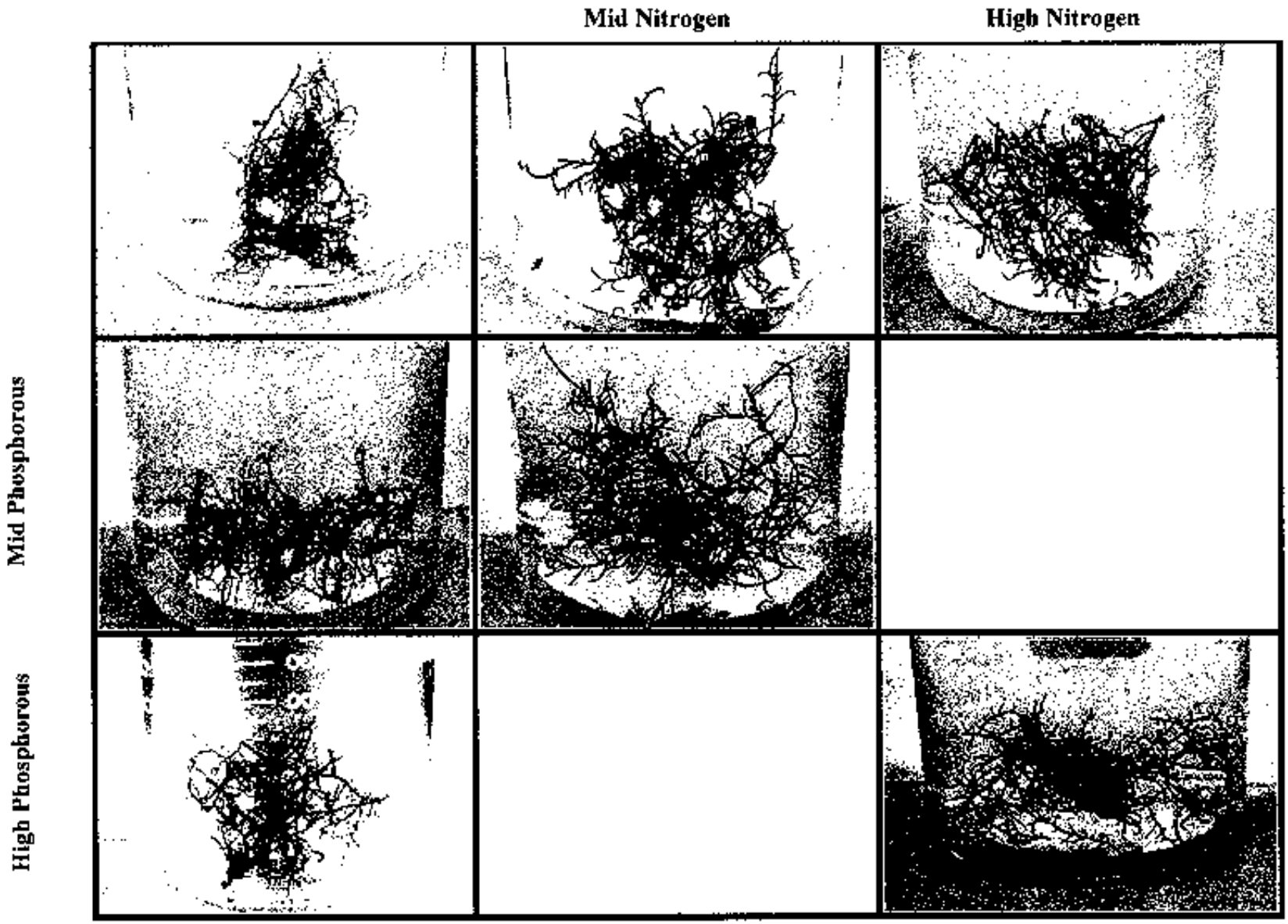


Figure 3: Sequential photographs of individual samples of *Hypnea musciformis* in response to additions of sewage effluent over a period of 9 days

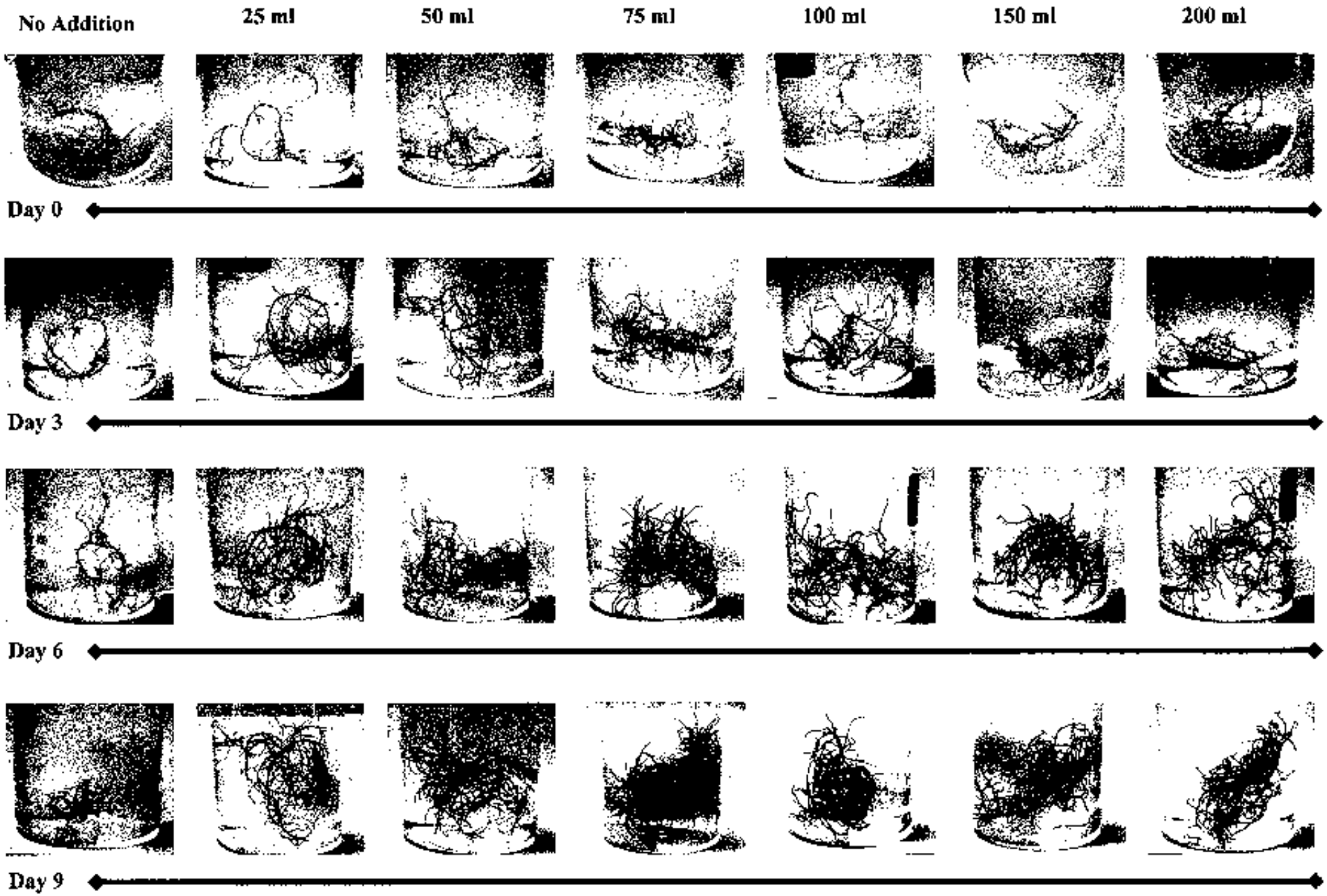


Figure 4: Sequential photographs of individual samples of *Ulva fasciata* in response to additions of sewage effluent over a period of 9 days

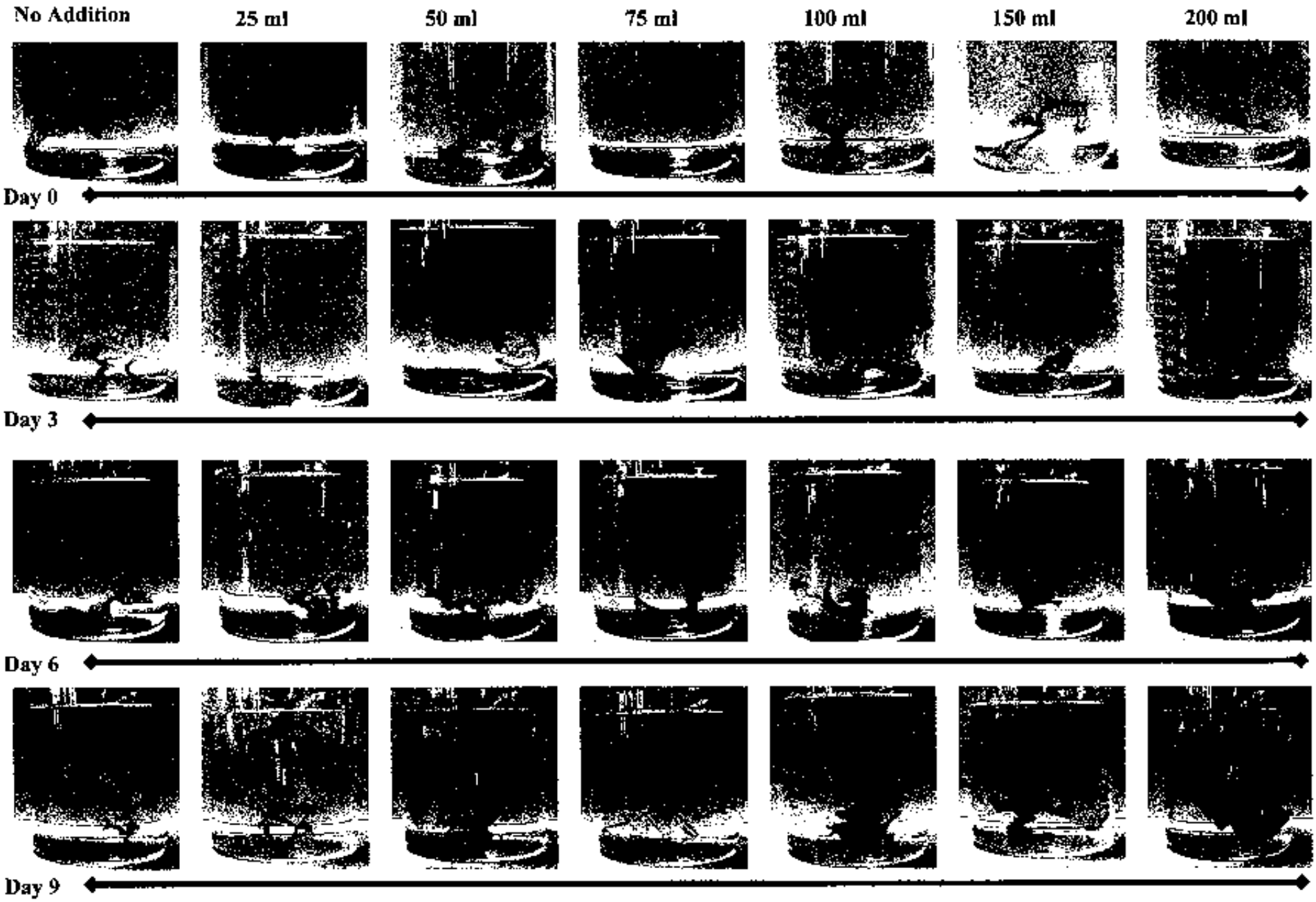


Figure 5: Sequential photographs of individual samples of *Acanthophora spicifera* in response to additions of sewage effluent over 9 days

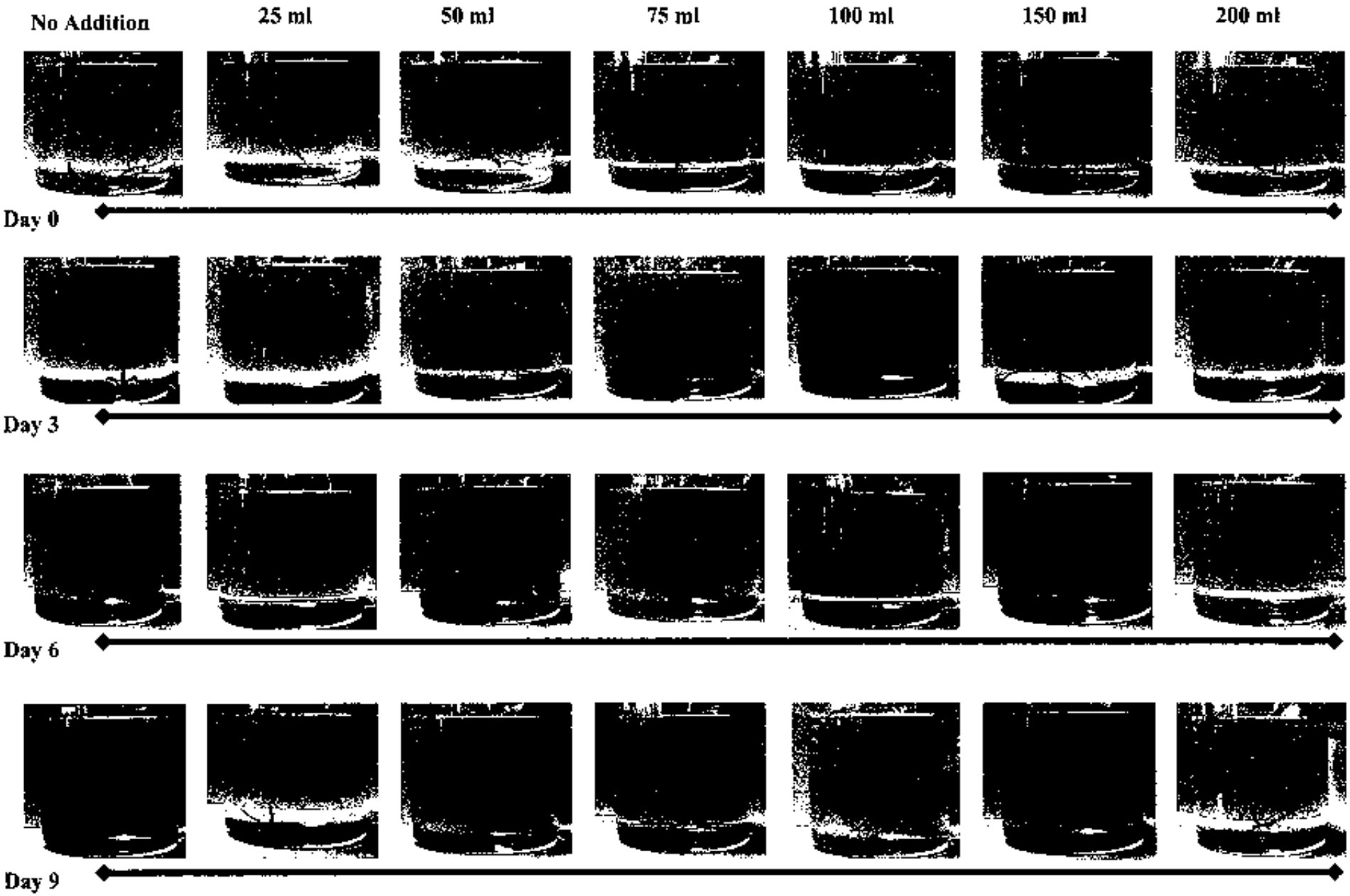


Figure 6: Sequential photographs of individual samples of *Dictyota acutiloba* in response to additions of sewage effluent over a period of 9 days

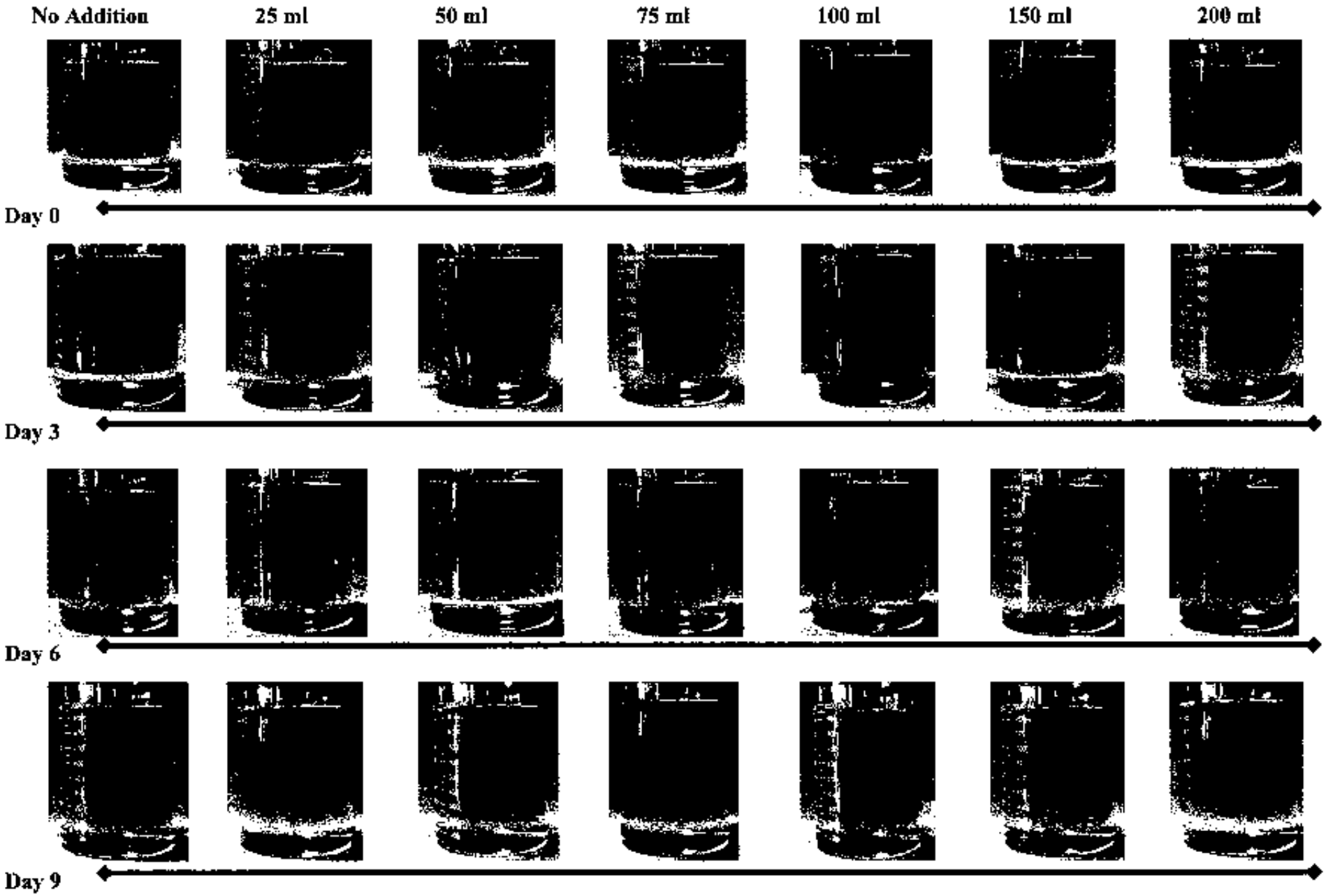


Figure 7A: Relative Growth Rates (RGR) of *Hypnea musciformis*, *Ulva fasciata*, *Acanthophora spicifera*, and *Dictyota acutiloba* in response to additions of sewage effluent for 9 days

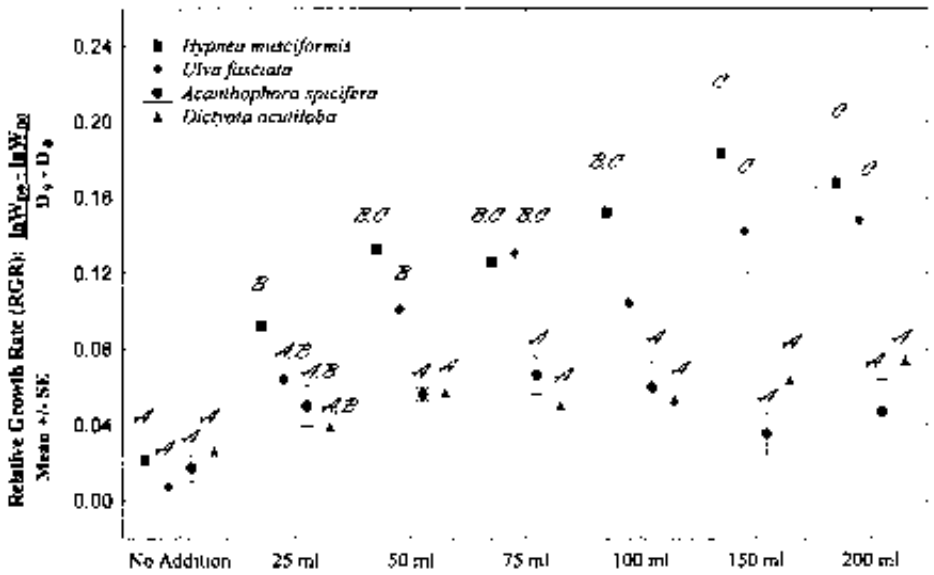


Figure 7B: Day 9 Relative Maximum Electron Transport Rates ($RETR_{MAX}$) of *H. musciformis*, *U. fasciata*, *A. spicifera*, and *D. acutiloba* in response to additions of sewage effluent

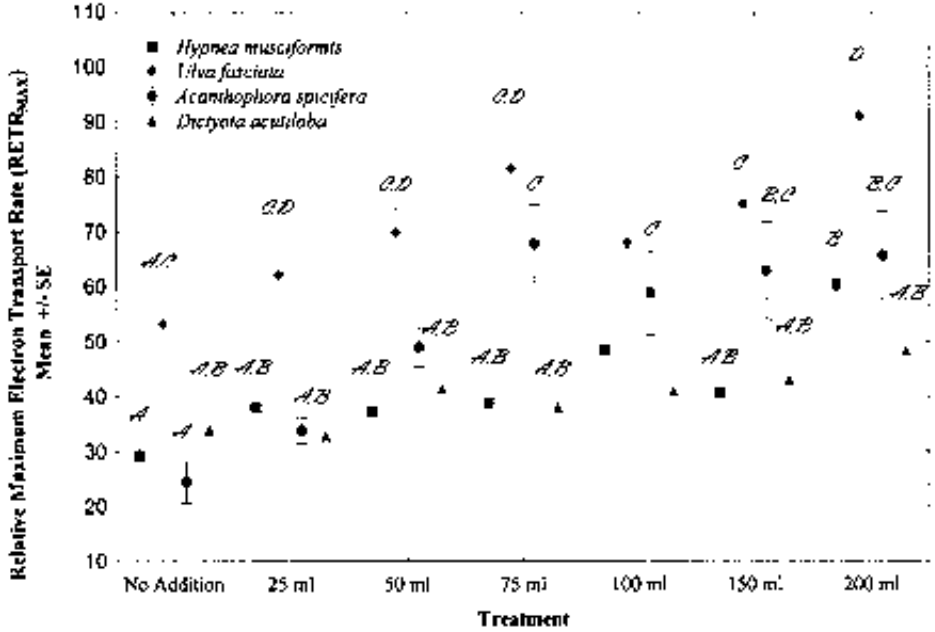


Figure 7C: Day 9 Photosynthetic Saturation Irradiance (E_K) of *H. musciformis*, *U. fasciata*, *A. spicifera*, and *D. acutiloba* in response to additions of sewage effluent

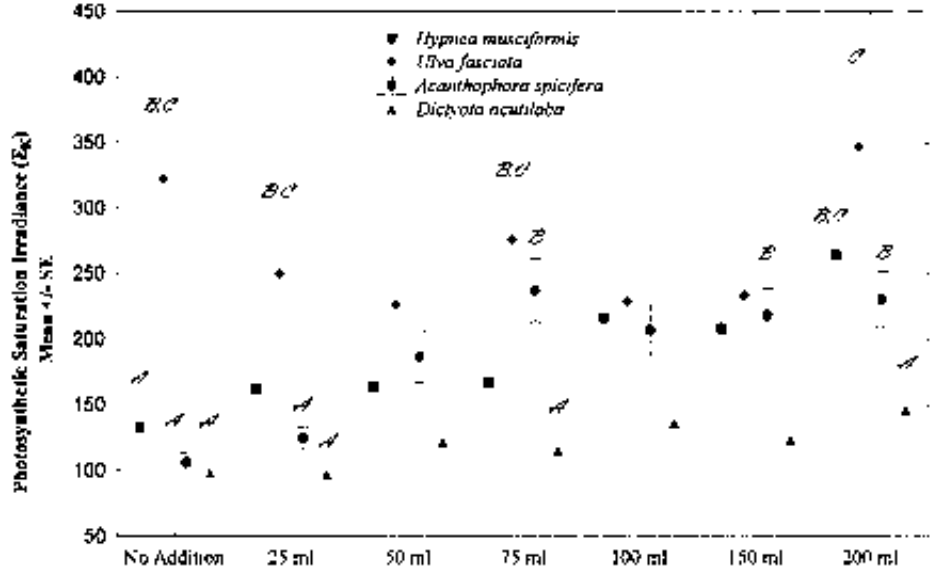
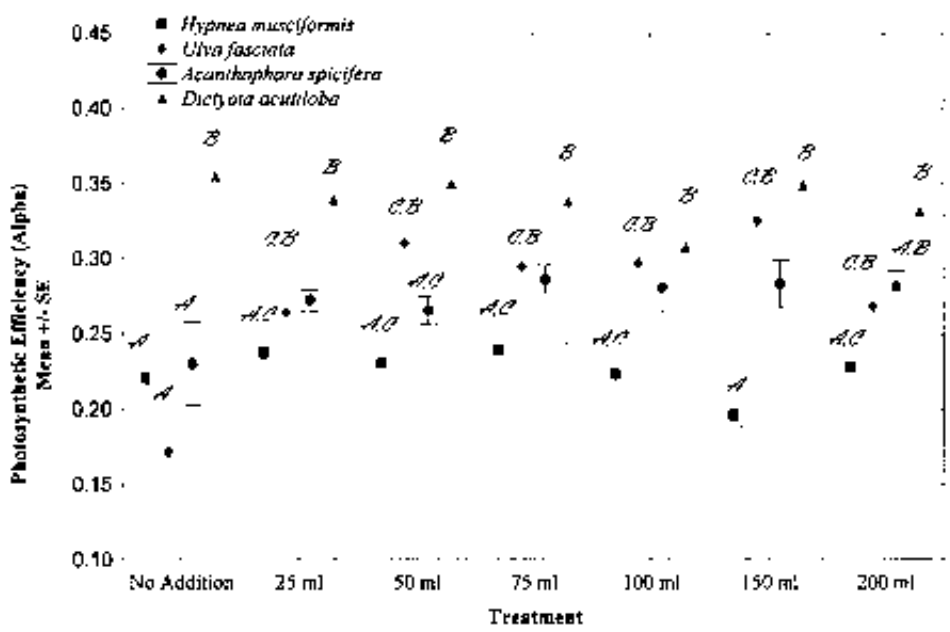


Figure 7D: Day 9 Photosynthetic Efficiency (Alpha) of *H. musciformis*, *U. fasciata*, *A. spicifera*, and *D. acutiloba* in response to additions of sewage effluent



Statistical differences are represented by different letters and comparisons between species are only presented within the same treatment

Figure 8: Water chemistry results from the *Hypnea musciformis* component of the sewage effluent study (A= TOC, B= TP, C= TN, and D= NO_3) Significant differences are represented by different letters. Comparisons between treatments are represented within Day only and comparisons between Days 8 and 9 are represented within treatments only

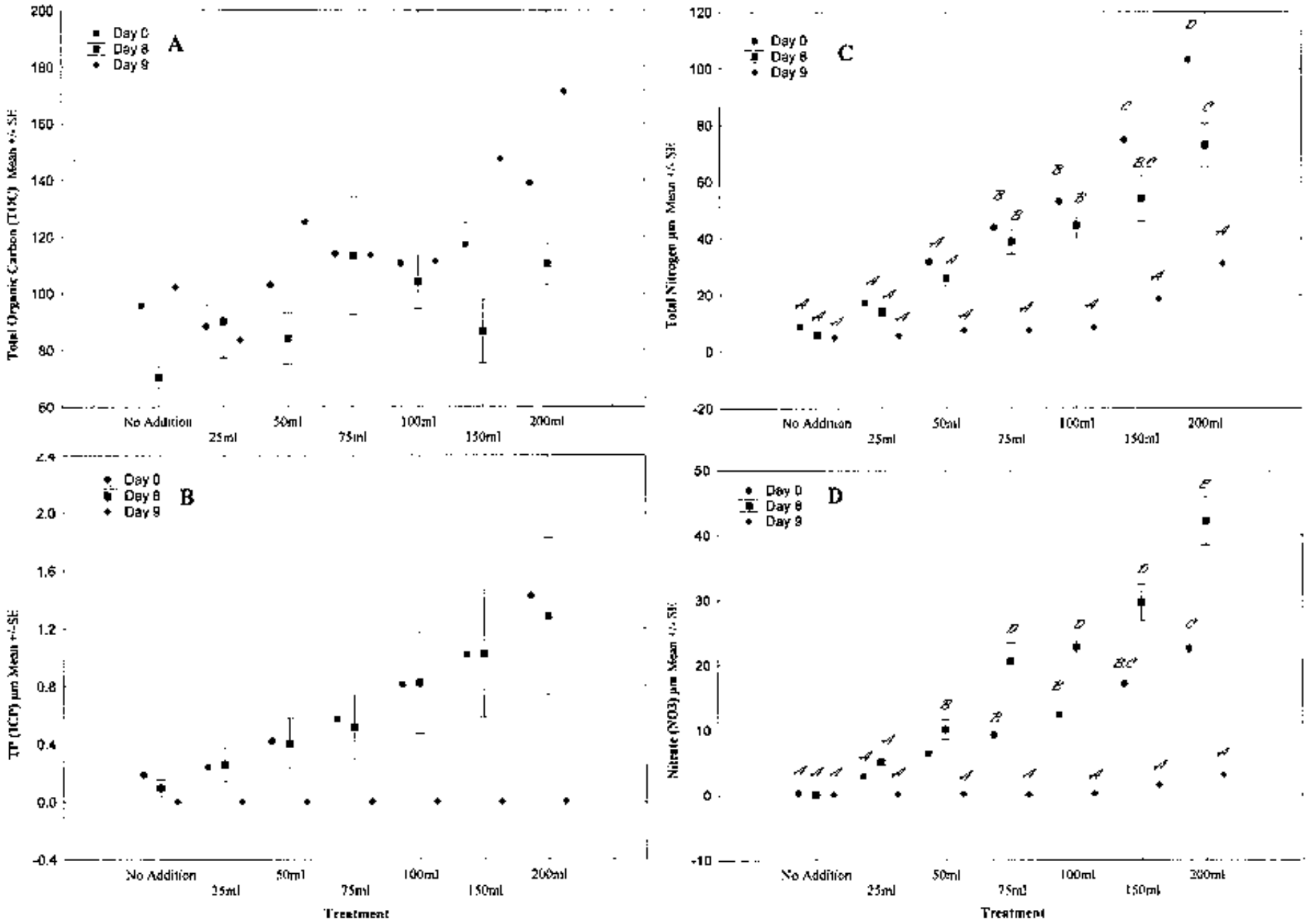
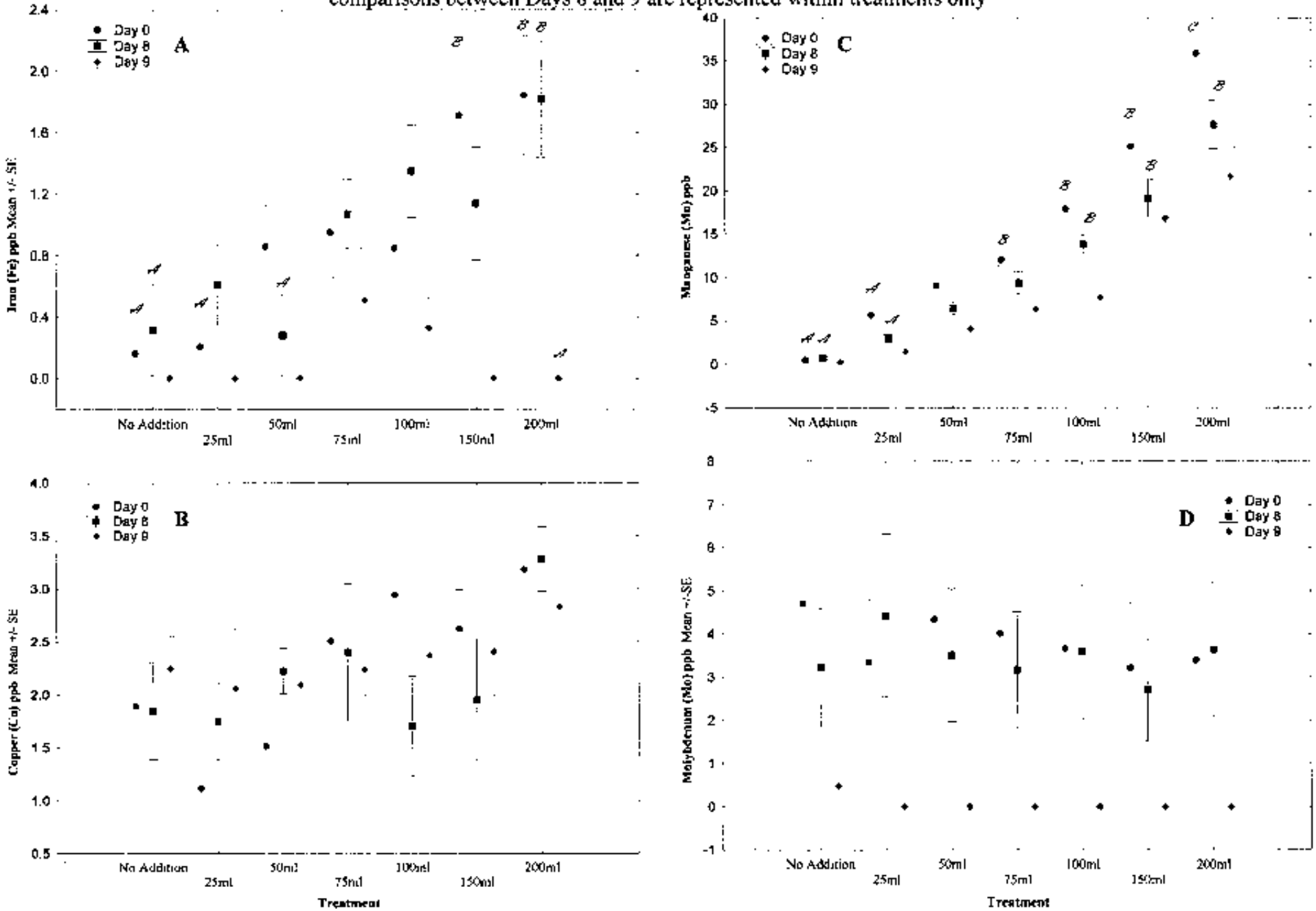


Figure 9: Water chemistry results from the *Hypnea musciformis* component of the sewage effluent study (A= Fe, B= Cu, C= Mn, and D= Mo) Significant differences are represented by different letters. Comparisons between treatments are represented within Day only and comparisons between Days 8 and 9 are represented within treatments only



Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
---- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:13 AM ----

From: "Max Steenackers" <[redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Cc: <jan@surfrider.org>
Date: 11/06/2008 02:28 PM
Subject: injection wells

Dear Nancy,
I am horrified learning about these so called injection wells. What a lack of common sense and responsibility!
Polluting the sea and destroying coral reef and fish habitat should be a punishable crime.
The ones responsible for this should be made accountable.
There are so many other ways to take care of waste water, I sincerely hope that under the new administration
starting next year these urgent matters will be addressed.
Sincerely,

Max Steenackers

Intent to issue an UIC permit, Lahaina, Maui

Mark Sheehan [redacted]
To: rumrill.nancy@epa.gov

Fri, Sep 19, 2008 at 11:07 AM

Ms. Nancy Rumrill
EPA region 9 office
Ground Water Office (WTR-9)
75 Hawthorne St
San Francisco, CA 94105

Subject: Intent to issue UIC permit for the Lahaina Wastewater Treatment Facility, Lahaina, Maui

Dear Ms. Rumrill,

We need to have an EPA hearing on this matter before a permit can be issued. This hearing should be held on Maui where numerous injection wells have been installed over the past 20 years. The environmental consequences have been horrendous: most notably the degredation of our reefs, the high degree of bacteria and virues in our ocean and many other consequences.

If such a permit were to be issued, certainly strict conditions should be placed on the facility operations: e.g. UV treatment for injected wastewater. It would be better if the water were to be reused to irrigate a greenbelt in dry grass areas or to build a holding tank for storage of waste water for irrigation and fire fighting.

Please have your department schedule a hearing on Maui. Before the hearing they should tour the area of concern.

Thank you for your atttention to this matter.

Aloha,

Mark Sheehan
Maui resident,
Environmentally concerned real estate broker

--
Mark Sheehan | REALTOR Broker
Direct:808-283-2158
Home: 808-573-0111
www.MarkSheehan.com

Equity One Real Estate, Inc.

"Mark Sheehan"
[redacted]
Sent by:
[redacted]

09/19/2008 02:07 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Intent to issue an UIC permit, Lahaina, Maui

Ms. Nancy Rumrill
EPA region 9 office
Ground Water Office (WTR-9)
75 Hawthorne St
San Francisco, CA 94105

Subject: Intent to issue UIC permit for the Lahaina Wastewater Treatment Facility, Lahaina, Maui

Dear Ms. Rumrill,

We need to have an EPA hearing on this matter before a permit can be issued. This hearing should be held on Maui where numerous injection wells have been installed over the past 20 years. The environmental consequences have been horrendous: most notably the degredation of our reefs, the high degree of bacteria and virues in our ocean and many other consequences.

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Please have your department schedule a hearing on Maui. Before the hearing they should tour the area of concern.

Thank you for your atttention to this matter.

Aloha,

Mark Sheehan
Maui resident,
Environmentally concerned real estate broker

--
Mark Sheehan | REALTOR Broker
Direct:808-283-2158

Home: 808-573-0111
www.MarkSheehan.com

Equity One Real Estate, Inc.

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
---- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:12 AM -----

From: "Mark Hyde" [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/02/2008 11:41 AM
Subject: Lahaina Injection Wells

I am writing to you to urge the EPA take all appropriate action to discontinue the practice of discharging treated waste water into injection wells in the Lahaina area, and in Kihei for that matter. Environmental impact studies have extensively documented that the Lahaina and Kihei injection wells are introducing nutrient rich water to adjacent coastal waters, thereby feeding the growth of algae and seaweed to the detriment of coral reefs and water clarity, with consequent negative impact on our precious natural resources and beauty, not to mention on the tourist business which is essential to Maui's economic viability.

In addition, if this water could be recycled and used for irrigation purposes. we could reduce the drag on the Iao and other aquifers that are being over-pumped, which has also been well documented and I assume is well-known to the EPA.

I suggest that a solution be ordered that would require the development of means to use this treated wastewater so that it can serve two useful purposes: (1) stop ruination of nearby coastal waters while reducing the draw upon over-committed pure water sources. Please do not renew the injection well permits without a plan of action and timeline to correct this unfortunate practice.

Thank you for listening.

Mark Hyde
4320 E. Waiola Loop
Wailea, Hawaii 96753
hydem001@hawaii.rr.com
(808) 874-3839 (home)
(808) 344-3358 (cell)

Sierra Club, Maui Group
PO Box 791180, Paia, HI 96779

Nov 5, 2008

To; U.S. Environmental Protection Agency,
Ground Water Office (WTR-9),
75 Hawthorne Street, San Francisco, CA 94105,
Attn: Nancy Rumrill

Subject: **Intent to issue an Underground injection control (UIC) permit for the Lahaina Wastewater Reclamation Facility, Lahaina, Maui**

We thank you for the opportunity to offer these comments on behalf of Sierra Club Maui Group, and its 800 members in Maui County, on the upcoming permit review for the Lahaina Wastewater Reclamation Facility in Lahaina, Maui, Hawaii.

We are grateful that the EPA has chosen to hold a public hearing on November 6th in Maui for this permit application. Sierra Club Maui has had a long history of offering suggestions to improve the wastewater disposal process at this specific facility, and our parent organization, Sierra Club Hawaii Chapter has also been involved in a number of efforts to ensure better compliance with state and federal regulations at wastewater treatment plants statewide.

For over a decade, our members have expressed concern about the continued degradation of the nearby reefs, their marine life habitat and marine water quality in this popular West Maui recreational area (referred to locally as “North Beach.”)

During this time, our members have reported a decrease in native fish species, degradation of living coral formations by mats of algae and a general loss of water clarity in the area. Members who regularly recreate in those waters have also reported an increase in infections over the last number of years. They attribute these to exposure to potentially high bacterial levels in the ocean directly down gradient of the Lahaina Wastewater facility and its injection wells.

Testimony has been offered by Sierra Club volunteers over the years to specifically express the need for a better solution for treated wastewater discharge in the West Maui Region. We strongly support land-based reuse of this reclaimed water, rather than disposal through underground injection wells.

In the early 1990’s the EPA issued a permit for this same facility that asked the County to reduce nitrogen levels in wastewater and to begin using the wastewater for irrigation rather than for injection. Sierra Club representatives who testified at that time, opined that there was a connection between the injected effluent and algae growth on the nearby reefs, but were told that studies proved that his was untrue.

More recent studies in Maui (USGS Kihei studies) have shown that there is a relationship between what we inject into the highly permeable ground in our coastal areas and the health of nearby marine waters, reefs and marine life. It is past time to take action to fulfill the intent of the earlier permit conditions.

For more than15 years, progress in redirecting more of the treated effluent has been hampered by lack of political will to find the funding for necessary pipelines, storage areas and distribution infrastructure.

For example, Sierra Club members testified a few years ago to both the State Land Use Commission and the County Planning Commission, advocating that these bodies should impose conditions on a large proposed luxury development in Kapalua. These conditions would have required the development to extend reclaimed water lines when it installed its sewage hook up lines to the Lahaina treatment plant. This would have allowed the use of several mgd or more of R-1 effluent from Lahaina Wastewater Facility for the resort's extensive golf courses and lush landscaping.

This expansion of Kapalua resort development proposed over 600 new multimillion-dollar residences, but could not find funding for the one-time cost of extending the reclaimed water lines to serve their project. Instead, natural stream flows from the traditional taro growing area of Honokohau Valley, located several miles away, continue to be diverted and sent to water golf courses and resort landscapes at Kapalua, depriving that stream of life-giving waters protected under Hawaii's State Constitution. Meanwhile, sewage effluent from current Kapalua residents and hotels is sent to the Lahaina facility, treated, and then injected into the marine waters of North Beach.

In water-hungry West Maui, this is a situation that does not make ecological sense. West Maui rainfall has seen record lows over the past decade. Several major wild fires in the dry, abandoned sugar cane fields have threatened life and property. Community plans call for green belts and parks, but there is no extra potable water in West Maui to sustain this 'green infrastructure." We cannot afford to let another 15 years pass without specific solutions to put all our potentially valuable reclaimed water resources to use for irrigation of the lands of West Maui, rather than further impairing our ocean waters.

The ocean waters of North Beach, Ka'anapali are part of a multi-million dollar resort recreation industry; provide habitat for federally listed threatened species such as green sea turtles, and are protected by clean water standards set by both the state and federal government. Local residents have commented on need to increase wastewater recycling and the lack of infrastructure needed by the Lahaina Wastewater Treatment Facility for many years. Specific and detailed comments were submitted to Congress by UH professor Ching five years ago.

We are asking this agency to put conditions on this permit which will result in a timetable for a federal-local partnership to provide infrastucture solutions for redistribution of all of the reclaimed water from Lahaina Treatment Facility to land-based uses. We also request the EPA to ensure compliance with its own Clean Water Act standards by phasing out the use of Lahaina Wastewater facility injection wells, except in emergency situations. It is time we find a way to work together and protect the health of our people, our economy and our marine environment.

Submitted on behalf of Sierra Club, Maui Group

By Lucienne de Naie
Chairperson, Sierra Club, Hawaii Chapter

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:12 AM -----

From: Liz Foote [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/06/2008 03:54 PM
Subject: Public comment, Permit #HI50710003

Nancy Rumrill
EPA Region 9 Office
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

Subject: Public comment, Permit #HI50710003

November 4, 2008

Dear Ms. Rumrill,

I was happy to learn that a public hearing was scheduled for Maui to address the permit renewal for the Lahaina underground wastewater injection system. Many community members on Maui have become aware and concerned about this issue in recent years, as more and more empirical as well as anecdotal data have emerged that demonstrate the damaging impact of injection wells upon Maui's reefs. As a marine educator and conservationist, I share those concerns.

This issue goes well beyond ecological concerns, since as we all know, "the environment IS the economy," especially here in Hawaii where our natural resources drive tourism. In addition, the concern over public safety has been raised, in terms of both waterborne pathogens and fire hazards.

As Maui's population continues to grow, water resources will become more and more overtaxed, and the current method of dealing with "wastewater" is really a waste of water that could be redirected for other purposes.

I hope the EPA can assist our community in marshalling the immense amount of financial resources, institutional capacity, and political will that is needed to address this issue and ensure the ecological and economic sustainability of Maui well into the future.

Thank you for your consideration,

Liz Foote

Wailuku, Maui

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:11 AM -----

From: Kurt Pfister II [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Cc: maui@surfrider.org
Date: 11/06/2008 08:27 AM
Subject: Maui Injection wells

To whom it SHOULD concern:

I just got a note from my one source on Maui, Hawaii about the situation with Injection Wells, and I am VERY Upset.

I am sending you this note from my home in MICHIGAN! I am a former resident, I am a business traveler back to Hawaii about every 18 mos., AND I am expecting to be a retiree living in Hawaii in the next few years.!!

I want to add my concern to the Injection Well situation and say that it is very uneconomical to 'throw' away a resource that can be RE cycled! With the lack of annual rain fall, and the drought that happens on a cyclical basis, there MUST be care in recycling the waste water. I was on Maui several yrs. ago as the wind farm foundations were being poured in the uplands of the Wailuki and W. Maui Mtns. I was back a yr. later to see them up and running.

I am amazed that it took this long to get wind farms up an running, as I had always felt that somewhere on O'ahu, in the Pali pass, they could have constructed a wind farm. I was a resident in the late 60's and early 70's!

This earth is all too fragile to waste more resources, and NOT try to re-cycle some of them. Being an avid scuba diver, and a student at Univ. Hawaii in marine biology, I DO know all to well as to the problem with algae build up and the death of the coral reefs that are home to the teaming sea life!

With respect, let's get some movement to stop this injection process and re-cycle the waste in a much better and safer way(s).

Mahalo,

Kurt Pfister

Kaanapali Land Management Corp.

275 Lahainaluna Road • Lahaina, Maui, HI 96761 • t: (808) 661-9652 • f: (808) 667-9658 • www.KaanapaliLand.c

Honoring our roots.
Preserving our spirit.

September 15, 20008
Ms. Nancy Rumill
EPA Region 9 Office
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

SUBJECT: Intent to Issue an Underground Injection Control (UIC) permit for the Lahaina Wastewater Reclamation Facility, Lahaina, Maui

Dear Ms. Rumill:

Thank you for the opportunity to comment on the UIC permit for the Lahaina Wastewater Treatment Reclamation Facility, Lahaina, Maui.

There has been increased public concern about that the nutrients contained in UIC wastewater may be contributing to rampant growth of non-native seaweeds in near shore waters. Being that Maui's beaches are a resource of tremendous importance to the tourist industry as well as for local recreational use, there needs to be assurance that UIC waters do not create negative impacts to the near shore waters.

Maui's farmers, businesses and residents have been concerned and impacted by drought. The reuse of sanitary water that has been treated to the R-1 standard would help to alleviate the demand for potable water. However the County does not currently have the capacity to increase the UV treatment of wastewater. There should possibly be a schedule to increase the treatment capacity at the plant, while reducing the need to inject the excess water into the ground.

Again, thank you for considering these comments.

Very truly yours,

Howard Hanzawa,
Vice President

"Kecia Joy"
[redacted]
09/19/2008 05:53 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Permit for Lahaina Wastewater Center

Aloha Nancy,
My name is Kecia Joy I am writing on behalf of myself as a marine biologist to address the conditions that I feel should be placed on the permit for the underground injection control issue. I am very concerned about the health of our reefs here in Hawaii and a great deal of research has uncovered some major problems associated with injections wells that are damaging the vital coral reef ecosystem This water needs to be better filtered and cleaned. For example, there is no UV treatment leading to a high degree of bacteria and viruses in the ocean I would like to respectfully request that conditions be placed on this up coming permit such as a requirement to reuse waste water in a more productive and positive way like irrigating much needed dry(fire hazard) belt ways and providing a large unit for water storage for when there is a major fire. This would help reduce the amount of wastewater that is pumped into the injection wells as well. I also request that the EPA visit Maui for a public hearing so that you can know how many are concerned and for you to look at the areas of concern I realize these things would be costly, but as a tax payer, I request that funds be allocated to deal with this very important matter. Thank you for your time and consideration.

Kecia Joy

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
---- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:11 AM ---

From: Karen Chun [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/06/2008 08:38 AM
Subject: Testimony on Injection Well

Injection Well Public Hearing
Thursday, Nov. 6, 2008
Lahaina Civic, 6:15-9 p.m.

Injection wells flow out to sea and are implicated in algae blooms.

Maui has a water shortage with our main aquifer salt water lense rising almost 1 foot per year.

We have wanted to redirect treated wastewater to irrigation for years but have lacked the money for the infrastructure.

President elect Obama has said that he will be kick starting the economy with infrastructure projects.

It is quite likely that we will be able to get the infrastructure money in the next year or so.

So it would be a waste of money to build or approve any new injection wells.

Thank you

Karen Chun
87 Lae St
Paia HI 96779
808 283-3049

justin kanakaole
[redacted]
09/18/2008 11:37 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject INTENT TO ISSUE AN UNDERGROUND INJECTION CONTROL PERMIT FOR LAHAINA WASTEWATER RECLAMATION

History: This message has been forwarded.

I AM A CONCERN ABOUT THE STATES INTENT TO USE THIS UNDERGROUND INJECTION CONTROL FOR WASTE WATER IN THE TOWN OF LAHANA, MAUI. THERE IS A PROPOSAL TO DISPOSE OF THIS WASTE WATER UNDERGROUND WHICH CAN POSSIBLY LEAK INTO ANCIENT CAVES AND SEEP THROUGH PORES WHICH WILL LEAK INTO THE OCEAN AND POLLUTE AND KILL OFF REEF AND FEED FISH WHICH WILL EAT POLLUTED FOOD. WHO WANTS TO EAT FISH THAT CONSUMED RAW HUMAN WASTE? IT CAN CREATE VIRUSES IN THE OCEAN AND CAN BE REAL DEVASTATAING TO THE LAHAINA COAST. I HOPE THIS DOESN'T GO THROUGH AND BE APPROVED FOR USAGE IT IS WRONG, IMMORAL, AND DANGEROUS. I SUGGEST THAT RAW SEWAGE BE KEPT IN A TANK BUILT BY THE STATE TO SUSTAIN IT THEN LET THE SEWAGE BE TREATED PROPERLY FOR POSSIBLE USE AGAIN SAY FOR LIKE WATERING OF GOLF COURSES,OR DIVERTED TO MAUIS' LARGE SUGARCANE FIELDS FOR USAGE. THERE MUST BE A WAY TO REUSING THESE WASTEWATERS INSTEAD OF DUMPING IT INTO OUR OCEAN WHERE OUR FOOD COMES FROM. MAHALO AND ALOHA FROM HAWAII
KELI'I KANAKAOLE

Get more out of the Web. Learn 10 hidden secrets of Windows Live. Learn Now

Attention: Nancy Rumrill
Date: Sept. 16, 2008
From: Joy Hill
P O Box 11274
Lahaina HI 967161

Regarding the permitting of the Underground injection control permit for the Lahaina Wastewater Reclamation Facility, I ask that you hold a public meeting on West Maui.

The biggest issue for me is that the waste water can be used to prevent the fires instead of injecting it into the ocean. Injection wells waste water that can be used to nourish the dry lands. Since sugar cane went out of production in 2006, the 3,000 acres are dry and filled with brown grass and weeds. A BIG fire is waiting to happen.

Sparks from the electric lines have ignited small fires in the dry weeded area near houses. I live 300 feet away from an electric pole where a dry brush fire occurred. We were lucky the fire was spotted immediately and the fire was put out before it spread over the 1,000 acres of fallow weeded sugar cane fields near the 700 homes on Kaanapali Hillside.

Please add the "reuse condition" to the Permit and hold a public hearing on W. Maui.

Joy Hill

John H. Seebart
5095 Napilihau St., Ste. 109 B, PMB 178
Lahaina Hi, 96761
September 21, 2008

Nancy Rumil
EPA region 9 office (WTR-9)
75 Hawthorne Street, San Francisco, Ca 94105

Dear Ms. Rumil:

I am writing concerning the intent to issue an Underground injection control (UIC) permit for the Lahaina Waste Water Reclamation Facility, Lahaina Maui.

The purpose of my comment is to pass along to you information which has recently been discovered regarding the injection of treated wastewater here on Maui. The nitrates and phosphates contained in the water injected by this well, and others, have been shown to cause algae blooms which are smothering the coral on nearby reefs, specifically at Kahekili. These reef habitats are threatened world wide. We are lucky to have identified this specific threat before this reef has been destroyed as the reef at Maalaea Bay has been, and apparently by the same cause. We must act now to stop this known threat to such an important eco-system.

I would like to request that the renewal of this permit be conditional upon the removal of the nitrates and phosphates or that the water not be injected. We are short of water here on Maui and this water could possibly replace or augment irrigation water. Other solutions may be available, but it is imperative that we stop destroying the reefs by feeding the algae with our wastewater through injection wells. The state of the reef is dire.

Further, I would like to request that the EPA come to Maui and talk to the scientists working in this area. The State of Hawaii Department of Land and Natural Resources (DLNR) Division of Aquatic Resources (DAR) have done substantial work with regard to this problem, and have shown the plume from the Lahaina injection well is delivering nutrient rich fresh water to the reef at Kahekili which is killing, smothering, the reef. The County of Maui will not act on its own, the reef is continuing to be destroyed, and we know about it.

This is an urgent issue for a disappearing eco-system and I hope you can help find a remedy.

Thank you,

John Seebart

Sept 20, 2008

To Nancy Rumnill

I am a student at Lahaina Intermediate School. We had a fire last week near the school. We ~~need to~~ use all our water - not throw it down sewer wells.

Please come to Maui and ~~talk to~~ listen us about our waste water.

Your friend
Zoe Perez

Saturday, September 13, 2008 **The Maui News**

Maui police investigating fire by Lahaina school

LAHAINA - A brush fire burned about a quarter acre near Princess Nahienaena Elementary and Lahaina Intermediate Schools on Thursday, The Maui News reported today

She said the fire was a "real threat" to an MEO preschool, with flames approaching within 30 feet of the intermediate school cafeteria and several portable classrooms.

The fire came within 10 feet of a building on the elementary school campus, fire officials said.

The fire broke out around 2:10 p.m. Thursday, according to fire officials, just after students were released for the day.

Koyama said a crew with Goodfellow Bros. working on a sewage line on Lahainaluna Road "zoomed over" with their water tanker and put themselves between the preschool and the fire. She said Goodfellow equipment operators also cut a firebreak between the intermediate school and the fire.

Faculty from the school used garden hoses to wet down areas near their schools before fire crews arrived, while others were keeping students away from the fire.

Trade winds pick up; fire threat increases

By EDWIN TANJI, City Editor Maui News
POSTED: August 6, 2008

KAHULUI - The return of the trade winds should temper the temperature extremes that occurred around the state over the weekend, but it will be increasing the wildfire threat, Maui weather analyst Glenn James said Tuesday.

Even as a brush fire broke out at Pulehu on Tuesday a fire-weather watch was issued giving notice of an increased fire hazard.

"The National Weather Service issued a watch, which means we all have to be very, very careful about not lighting any fires right now," he said.

A National Weather Service forecast notice said a fire-weather red-flag warning is based on the strength of the winds, a high drought index and relative humidity below 45 percent. The winds and drought index already are at levels to warrant a warning, and if the humidity falls, a fire warning could be issued later this week.

Cloud cover and showers eased the drought conditions in Maui County on Sunday.

"Jennifer McMahon"
[redacted]
09/18/2008 11:53 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject lahaina Wastewater Reclamation Facility

It has come to my attention that the Lahaina Wastewater Reclamation Facility is being granted a renewal of their permit without conditions and without a public hearing. The water flows through the facility into our ocean. I personally know 2 people who have become ill from staff infections because the water is not purified well enough. Also, all of us eat the fish from those waters, and are consequently becoming ill from the bad water that the fish are swimming in. The fish also eat the contaminated algae in the area.

I request the EPA comes to Maui for a public hearing and a tour of the areas of concern. I'm given to understand that there are other ways to reuse the wastewater than dumping it in our ocean and poisoning the citizens of Maui.

Thank you,

Jennifer A. McMahon
45 Kamila Stet
Kula, HI 96790

808 878-3430
kalamalama@hawaii.rr.com

September 18, 2008

To: Nancy Rumill
EPA region 9 office
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

It has come to my attention that the Lahaina Wastewater Reclamation Facility is being granted a renewal of their permit without conditions and without a public hearing. The water flows through the facility into our ocean. I personally know 2 people who have become ill from staff infections because the water is not purified well enough. Also, all of us eat the fish from those waters, and are consequently becoming ill from the bad water that the fish are swimming in. The fish also eat the contaminated algae in the area.

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Jennifer A. McMahon
45 Kamila Street
Kula, HI 96790

808 878-3430
kalamalama@hawaii.rr.com

"Surfrider Maui" [redacted]

09/19/2008 04:15 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Hold Maui Hearing on injection wells

Aloha Ms. Rumrill
The Surfrider Foundation Maui Chapter supports the need for a public hearing on Maui regarding the permit for new injection wells at Lahaina, Maui, Hawaii. Surfrider's mission is to safeguard the world's oceans, waves and beaches for the enjoyment of all...this includes the quality of near-shore marine and reef systems. There is enough evidence to support the premise that injection of R2 water adversely impacts the near-shore waters by adding nutrients that promote algae growth, which, in turn, negatively impacts marine life and the reef ecosystem.
Surfrider supports sewage treatment to the point R1 point so that waste water can be reused for irrigation. It's the only option that makes sense in these ecologically imperiled times.

Mahalo
Jan Roberson, President
Maui Chapter Executive Committee
The Surfrider Foundation
(808) 298-8254
maui@surfrider.org

Nancy Rumrill
EPA
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

Sept 19, 2008

Aloha Nancy Rumrill,

I am asking that you and the EPA staff hold a public hearing on West Maui regarding the renewal permit for the Lahaina Wastewater Reclamation Facility.

The Clean Water Act allows EPA to limit the discharges of effluent into the ocean [33 U.S.C. § 1251(a)] whenever a direct discharge of water pollutants is directed into the ocean [33 U.S.C. § 1362 (6).] Clearly EPA and the Lahaina Wastewater Reclamation Facility staff knows that their mix of R-1 and R-2 treated wastewater includes pollutants that enter the ocean at unknown areas. We do not know the proportion of R-1 and R-2 in the treated wastewater mix.

We do know that the EPA has a duty to minimize the pollutants entering the ocean. To do that means reusing R-1 treated wastewater for irrigation, farming and fire prevention and protection. Maui County needs federal funds for distribution pipes and additional UV channels at the Lahaina facility.

I look forward to meeting you at the public hearing.

Janice Lovett
P O Box 624
Lahaina HI 96761

[redacted] "Irene Bowie" [redacted]

09/19/2008 09:14 PM [redacted]

To Nancy Rumrill/R9/USEPA/US@EPA

cc

bcc

Subject RE: Public Comments on Lahaina, HI WWRF UIC Permit Number HI50710003

Aloha Ms. Rumrill,
I'm attaching and pasting below a letter to your office requesting a public hearing for the permit review of Lahaina Wastewater Reclamation Facility. If you have any questions I can be reached at this e-mail address or at 808.268.0303.
Thank you,
Irene Bowie

Irene Bowie
Executive Director
Maui Tomorrow Foundation, Inc.
P.O. Box 299, Makawao, HI 96768
Phone: 808-268-0303

Nancy Rumrill
EPA Region 9 Office; Ground Water Office (WTR-9)
75 Hawthorne Street, San Francisco, CA 94105

Sept 19. 2008

Subject: **Intent to issue an Underground injection control (UIC) permit for the Lahaina Wastewater Reclamation Facility**

On behalf of Maui Tomorrow Foundation, Inc. and its many supporters, I would like to comment on the upcoming permit review for the Lahaina Wastewater Reclamation Facility in Lahaina, Maui, Hawaii.

Maui Tomorrow requests that your agency hold a public hearing in Maui for this permit. Members of the West Maui community and citizen groups regularly write letters to the editor, testify at public hearings, and discuss the need to improve the ability of this facility to bring the majority of it effluent up to a level that meets health and safety standards for reuse.

We hope that your staff could tour the area and offer your expertise to help solve the water quality issues facing West Maui today. Our citizens deserve a chance to be heard in person, and the EPA deserves a chance to incorporate more community input into their decision making.

The problems in West Maui wastewater treatment have become very obvious in recent years. Our supporters have long advocated for the need to protect the nearby reefs along Kahekili beach (directly seaward from the wastewater treatment facility) from an excess of nutrient rich water.

Sadly, there were no studies ten years ago linking reef health and the nutrient levels of waters discharged from the Lahaina wastewater plant through their injection wells. But now studies have been done and the reefs at Kahekili undeniably show the negative effects of not finding

solutions for this problem.

High degrees of bacteria and viruses have been found in waters immediately surrounding the Lahaina wastewater plant's injection wells. Ironically, the same reclaimed effluent causing severe problems off-shore is desperately needed to irrigate the dry lands of Lahaina during times of prolonged drought, such as we are experiencing now.

We respectfully ask that any treatment plant permit include conditions which will result in a substantial reduction of wastewater pumped into injection wells and an increase in the amount of reclaimed water as well as distribution systems to utilize this reclaimed water to irrigate existing landscape areas and/or create protective greenbelts to lessen the threat of fires in West Maui.

Thank you for your consideration,

Irene Bowie
Executive Director

[redacted]

MAUI TOMORROW FOUNDATION, INC.

Protecting Maui's Future

Judith Michaels *President*

Rob Parsons *Vice President*

Trip Lynch *Treasurer*

Maury King *Secretary*

Lance Holter

Mark Sheehan

Ed Lindsey

Richard Michaels

Michael Howden

Elle Cochran

Irene Bowie *Executive Director*

U.S. Environmental Protection Agency
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

ATTN: Nancy Rumrill

September 19, 2008

RE: Public Comments on Lahaina, HI WWRF UIC Permit Number HI50710003

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Sadly, there were no studies ten years ago linking reef health and the nutrient levels of waters discharged from the Lahaina wastewater plant through their injection wells. But now studies have been done and the reefs at Kahekili undeniably show the negative effects of not finding solutions for this problem.

High degrees of bacteria and viruses have been found in waters immediately surrounding the Lahaina wastewater plant's injection wells. Ironically, the same reclaimed effluent causing severe problems off-shore is desperately needed to irrigate the dry lands of Lahaina during times of prolonged drought, such as we are experiencing now.

P.O. Box 299 • Makawao, HI 96768 • Phone: 579-9802 • Fax: 572-9802 • aina@maui-tomorrow.org • www.maui-tomorrow.org

MAUI TOMORROW FOUNDATION, INC.

"Protecting Maui's Future"

RE: Public Comments on Lahaina, HI WWRF UIC Permit Number HI50710003

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Thank you for your consideration,

Irene Bowie

Irene Bowie
Executive Director

P.O. Box 299 • Makawao, HI 96768 • Phone: 579-9802 • Fax: 572-9802 • aina@maui-tomorrow.org • www.maui-tomorrow.org

MAUI TOMORROW

Protecting Maui's Future

U.S. Environmental Protection Agency
Attn: Nancy Rumrill

Nov. 6, 2008

Public Testimony on Lahaina, HI WWRF UIC Permit Number HI50710003

Anyone with knowledge of Hawaiian hydrology knows that coastal groundwater is connected to ocean water yet there seems to be a disconnect between Maui County's stated plans and responsibilities under our Water Use Plan and the County's decision to continue to inject these waters instead of conserving and reusing them. This is not the kind of "public stewardship" of County waters that is required by both the Hawaii Constitution and the County's own policy.

Maui County recognized that it has a responsibility to manage the County's waters when it developed its 2007 Water Use Development Plan.

That plan "finds and declares [that] water is a valuable natural resource that should always be used wisely and be managed as a public trust." The 2007 plan also states that ""The County's policy is to promote water conservation."

Yet Maui County's wastewater permit application does not mention this 2007 Water Use Development Plan, and is inconsistent with this plan as the County's permit application to inject (discard) these wastewaters doesn't consider the possibility of conserving the wastewaters through recycling and reuse; nor does it recognize, let alone satisfy, the County's duty to treat these waters as "a public trust."

For these reasons Maui Tomorrow Foundation asks that the EPA not renew the injection well permits without a plan of action and timeline to correct this harmful practice.

Maui Tomorrow Foundation has taken this position because we fear that not all of the injected wastewater stays in the well, but instead migrates, leaks, or seeps into the groundwater and may eventually be entering Maui's streams and ocean waters.

It is clear from scientific reports that underground injection of treated wastewaters is not a foolproof way to ensure that no leaks occur. A recent EPA report indicated that tracer studies in Florida's keys showed the release and migration of effluent into area surface waters as soon as 8 hours after introduction of the viral tracers.

The problems in West Maui's wastewater treatment have become very obvious in recent years. Our supporters have long advocated for the need to protect the nearby reefs along Kahekili beach (directly seaward from the wastewater treatment facility) from an excess of nutrient rich water.

Sadly, there were no studies in 1996, when this permit was first issued, linking reef health and the nutrient levels of waters discharged from the Lahaina wastewater plant through their injection wells. But now studies have been done and the reefs at Kahekili undeniably show the negative effects of not finding other solutions for this problem.

High degrees of bacteria and viruses have been found in the waters immediately surrounding the Lahaina wastewater plant's injection wells. Ironically, the same reclaimed effluent causing severe problems off-shore is desperately needed to irrigate the dry lands of Lahaina during times of prolonged drought, such as we are experiencing now.

Maui Tomorrow Foundation supports redirecting treated R-1 effluent to non-potable water uses. We believe public and private funding should be found to create additional treatment, storage capacity and delivery lines to transport the treated water, not only for fire prevention, but also for irrigation of parks, community gardens, greenbelts and other uses. In addition, graywater could be used for residential yard irrigation and toilet flushing thereby freeing up clean water now being used for those purposes.

It is imperative to use this effluent for irrigation and other non potable uses in order to keep our reefs healthy and protect them from nutrient rich wastewaters increasing algae blooms. Waste water reclamation is the best solution. Existing reclamation facilities should be upgraded and enlarged and water and sewage lines laid as funds become available.

We respectfully ask that any treatment plant permit include conditions which will result in a substantial reduction of wastewater pumped into injection wells and an increase in the amount of reclaimed water as well as distribution systems to utilize this reclaimed water.

Thank you,
Irene Bowie
Executive Director

P.O. Box 299, Makawao, HI 96768 Phone: 808.268.0303

Hannah Bernard
[redacted]
09/23/2008 03:39 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject (UIC) permit for the Lahaina Wastewater

<http://wildhawaii.org/>

Hawai'i Wildlife Fund

September 22, 2008

Nancy Rumrill
EPA Region 9 Office
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

Re: Intent to issue an Underground injection control (UIC) permit for the Lahaina Wastewater Reclamation Facility, Lahaina, Maui

Dear Dr. Rumrill,

I am writing on behalf of Hawai'i Wildlife Fund to thank you in advance for holding a public hearing here on Maui next month regarding the injection well permit for Lahaina; I have heard that you intend to do so. During the last several years, several of our community groups (Maui Reef Fund, Maui Nui Marine Resource Council) have been participating in educational forums where the degradation of our nearshore reef ecosystem is the focus. Many of us are alarmed to see that there is a correlation between injection wells for treated wastewater and superabundant algae blooms (Status of Maui's Coral Reefs, DLNR/DAR and CRAMP long-term research project).

In addition, we are concerned that the Lahaina treated wastewater is not fully irradiated with UV and that nearshore waters have the highest stable isotope ratios (d15N‰) in algal tissues recorded in the scientific literature (unpubl. data, Meghan Dailer, Celia Smith, UH). As you know, this is indicative of animal waste (presumably sewage) as a primary source. This information, coupled with the significant rise in human hospitalizations due to staph. infections during the last decade is alarming. Not only are the nearshore waters of Maui being polluted with excess nutrients which cause invasive algae blooms, they are also likely receiving and incubating such human pathogens as Staphyloccocus spp. and viruses from the treated wastewater.

We look forward to the opportunity to meet with yourself and other EPA officials to discuss ways in which we can re-use the treated wastewater instead of injecting it (for irrigation of agriculture, to create greenbelts for fire prevention/retardation, etc.); your involvement and assistance to the County of Maui in obtaining funding (such as low interest loans, etc.) to modify our current wastewater treatment systems; and your assistance in ensuring that if wastewater is injected that it be UV irradiated and that it be de-nitrified and that the wells terminate thousands of feet deeper, if possible.

These conditions and concerns likely require the modification of the UIC permit for Lahaina's Wastewater Reclamation Facility. If so, we urge the EPA to do so to fulfill its jurisdiction and responsibility to ..."maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a) under the Clean Water Act.

Sincerely,

Hannah Bernard
Hannah Bernard
President
Hawai'i Wildlife Fund

Hawai'i Wildlife Fund
November 6, 2008

U.S. Environmental Protection Agency,
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105
Attn: Nancy Rumrill

Dear Dr. Rumrill:

Thank you for hosting this hearing on Maui and providing us the opportunity to present testimony on the Lahaina POTW Wastewater Underground Injection Permit Application.

As the EPA knows, we have suspected that the injection wells somehow released or leached wastewater into the ground water and then into nearshore waters since the early '90's, when your office allowed Dr. Wendy Wiltse to relocate here and launch an investigation into the pernicious algae bloom. Despite the lack of definitive scientific evidence that would have assisted the EPA and the County in more stringent requirements we appreciate the EPA's application of the precautionary principle to the management of these injection wells in several ways, e.g., limiting the amount of effluent allowed into these wells, re-use of some water and reduction of nitrogen in the wastewater. But it's more than a decade later now and still more than 1 billion gal/year of of reusable, nutrient-rich water is discarded in these injection wells. New research findings from the USGS, UH and DAR/DLNR/HCRI – some that have not been published yet - link wastewater from injection wells with degradation of our nearshore waters and reef decline. While we acknowledge that there are other land-based sources of pollution that impact nearshore waters, we understand that this hearing is focused on addressing whether the injection of treated wastewaters into wells in Lahaina should continue unabated.

In light of the legal, moral and ethical mandates of the Public Trust Doctrine and the Precautionary Principle, interpreted by Hawai'i's Supreme Court to be embedded in our State Constitution; the State's policies on water recycling and reuse of treated wastewaters; state and federal pollution laws; the County's own Community Plan, and the steep decline of our reefs, we must act swiftly to stop the flow of wastewater into the ocean.

We oppose an unlimited and unconditional renewal of the wastewater injection permit for this system and respectfully request that the EPA denies this permit on the current record. Instead, we ask that the EPA, Maui County and the community engage in a meaningful conversation and **plan of action** about how to best stop or phase out the wasteful practice of injection of these waters and instead re-direct treated R-1 waters for beneficial uses as is the state's policy. We urge you to consider the seriousness of this dialogue in the face of:

- **Drought**: rainfall in April-June 2008 was "31 percent below . . . average" with mandatory water restrictions by the County and an agricultural irrigation resource deficit in 2008: "90 percent below normal".

- In August, "ongoing dry conditions led to the designation of Maui County, and the rest of the state as federal disaster areas by US Agriculture Secretary Edward Schafer".

- Estimated Costs of New Reservoir on Maui to Deal with Drought: $15 million.

- **Annual wild fires**: more than 10,000 acres of land burned partly from drought – nearly half of that in W. Maui.

- **Reef degradation**: significant algae overgrowth of Maui reefs is correlated with the three county wastewater injection well systems. Although the county incorporated biological nutrient removal systems that reduced nitrogen discharges by 60%, sewage wastewater continues to contribute to the harmful algal and bacteria blooms that smother our coral reefs, adversely affecting marine life.

- Coral cover loss is also correlated with county (and private) injection wells: "over 90% since 1995 [for Maalaea]," and a nearly 25% average decline in coral cover over 9 Maui reefs studied between 1994/1999-2006.

- **Stream diversion**: for drinking water and irrigation will be reduced and could be stopped. This September, the State Water Commission decreed that it will implement East Maui stream flow standards for 27 streams. This decision, which rightfully returns millions of gallons of water to the streams, could result in increased water costs for agricultural irrigation and will have ramifications for West Maui as well. Currently, large scale agricultural farms are not motivated to use wastewater for irrigation because they divert stream water and pay <$0.15/gal for it.

- **Increased waterborne infections**: in Florida, human pathogens that serve as markers for sewage are detected in corals nearshore (human enteric bacteria and viruses) and up to 7 miles offshore (viruses). Since 1995 there has been a sharp increase of hospitalization due to staph infection. In 2007 the number of hospitalizations in Maui was 188 people per 100,000. The national average is 89 people per 100,000.

- **Harm to our economy**: estimated value of coral reefs for Hawaii's economy = $10 billion/year. Estimated annual cost of algal damage in Maui = more than $20 million/year. Add the loss of habitat for marinelife, the loss of esthetic and cultural value and the loss of storm wave protection and the cost soars beyond calculation.

This is why we call our coaltion DIRE – Don't Inject, RE-direct – because the situation is dire and requires a change of direction starting now.

Maui's water is too precious to waste. (Even the wastewater) – so are our coral reefs. If we lose them, we lose not only our livelihood, but our way of life and quality of life.

This permit must be denied based on three compelling arguments:

1. Both the County of Maui (as the public trustee of the County's water resources) and the State of Hawai'i are mandated by the State Constitution and Supreme Court decisions to seek the best uses of all county waters including wastewaters. Because the County has not conducted the necessary exploration of possible beneficial uses for these wastewaters and has not concluded that such beneficial uses do not exist, this permit should be denied.

2. The County has failed to bear its burden of proof of entitlement to the requested permit. Under applicable federal and state court decisions, it means that with respect to all material of issues of fact, the permit applicant has the burden of persuasion. The precautionary principle applies to the County in its role as "public trustee" of all the state's water. Therefore, the County must proactively seek the highest and best use for Maui's waters and ensure protection of ocean waters and coral reef ecology, even in the face of considerable uncertainty. The County has failed to bear that burden of persuasion with respect to all the facts necessary for entitlement to the permit under applicable principles of law. Accordingly, the permit should be denied.

3. We offer specific information, data, and studies that together demonstrate that the permit should not be issued. Even if permit opponents have the burden of proof (which we do not), this block of information when considered together clearly is more persuasive than the information provided by the applicant to the contrary. In addition, the County may not claim that currently available information is "uncertain" or "equivocal," for it is up to the County as "public trustee" of these waters to develop the information needed to resolve any crucial uncertainties. Accordingly, the permit application should be denied.

If EPA concludes that it cannot deny the permit application altogether, then at the very least EPA should impose the "special conditions" necessary to ensure that "best management practices" are used and "pollution prevention" goals are met and that any necessary studies are carried out. In this case, it means requiring the Lahaina POTW to employ water beneficial reuse strategies for the wastewater in preference to disposal underground that results in pollution of oceans, harm to coral reefs, adverse effects on fish, and harm to recreational uses (such as diving, snorkeling) so important to Maui's economy. It also means phasing out the use of injection wells in a coordinated way with the implementation of water reuse alternatives.

Reusable water discarded by injection wells: county-wide over 11.5 million gallons of waste water a day is pumped into injection wells; 4.4 million gallons/day at Lahaina alone - 1.6 billion gallons/year

During this time of recurrent drought, stream flow recovery, and reef decline, we cannot afford to waste even 1 gallon of water, let alone 5 – 6 million gallons of water per day. By redirecting and re-using this wasted wastewater we can:

- help alleviate water shortages during years of recurrent drought,
- reduce the risks of fire,
- grow agriculture AND replenish and restore stream flows that have been previously diverted,
- protect our precious coral reefs and the economic benefits they bring to Maui,
- restore or create wetlands, and
- help make Maui green again.

We look forward to working together with you, the County of Maui and our communities to begin the process of finding the highest and best use of our water while maintaining the vitality of our natural environment.

Please do not hesitate to contact me at: (808)575-2046.

Sincerely,

Hannah J. Bernard

Hawai'i Wildlife Fund, Maui Reef Fund, DIRE (Attachments)

Gordon Clay
[redacted]
09/02/2008 11:50 AM

To Nancy Rumrill/R9/USEPA/US@EPA
cc [redacted]
bcc
Subject Lahaina sewage injection well permit

History: This message has been replied to.

U. S. Environmental Protection Agency
Ground Water Office (WTR-9)
75 Hawthorne St.
San Francisco CA 94105

Dear Ms. Rumrill,

It is my belief that the scientific research and/or evidence used by Maui County, the EPA and others, to justify the issuance of permits for sewage injection well permits, is flawed. In other words, to issue such permits, renew or reconfirm them is wrong. I demand, as a concerned citizen and a resident of Maui, that the EPA immediately implement a moratorium on the issuance of any form of permit that allows any form of sewage to be injected ito the ground or released into marine waters in the County of Maui. This moratorium would allow the EPA, Maui County and citizens time to review scientific evidence, that is very recent and post-dates previous decisions by the EPA to allow sewage injection to occur in Maui County and other places in the state of Hawaii.
There is not time at this late date (given the September 23, 2008 deadline for the reconfirmation of a sewage injection permit at the Lahaina plant) to have a sufficient discussion about past and or/present decisions and the science or social values they are based on. Much of the data that proves sewage injection is a direct threat to the marine environment is still being disseminated to citizens and stakeholders in Maui County. Were they to have this data, it is my belief, many objections to the current permit applications would be lodged. Therefor, it is imperative that the EPA enact a moratorium, to allow the public to 'catch up' with the administrative process. I believe it is my duty to demand this moratorium on behalf of all concerned residents who are, as yet, unaquainted with the scientific evidence that proves that Maui County must stop using sewage injection as the preferred technology and, as quickly as possibly convert to a re-use, irrigation, and other methods of managing treated sewage and waste water. Because, I believe, I speak for many who would share my convictions if more time was for public information, I notify you, in advance, that if the EPA does not delay the granting of any permits for sewage injection in the County of Maui until a full review process can be conducted, I will most certainly excercise my rights as provided in the EPA's legal acts, to appeal the issuance of any permits.
I request that you notify me of your reciept of this email and will forward to you a copy by mail.
Thank you very much for your attention. I wish that I could have contacted you and other officials sooner.

Yours Truly,
Gordon Clay
Lahaina, Maui

Be the filmmaker you always wanted to be—learn how to burn a DVD with Windows®. Make your smash hit

Gordon Clay
[redacted]
10/14/2008 08:02 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject RE: Notice of Public hearing concerning draft Lahaina UIC draft

Dear Madame Rumrill,

I must thank you for the decision to hold this Public Hearing. I believe it will be of lasting value to all. I hope that the information and concerns expressed will open many people's eyes to the inevitability of a collective decision being made to stop sewage injection and commence redirecting treated waste to valuable usage in irrigation. I say inevitable because I think any reasonable person would concede that it becomes more and more the irrefutable choice, given the planned growth of Maui, coupled with increasing fresh water shortages.
The utilization of treated wastewater has been proven time and again in other locales, domestically and internationally, to be of profound benefit to both the ecology and economy of those communities who choose it as a solution to near identical problems that Maui faces.
The reefs of Maui cannot be viewed as anything other than the most vital of resources, because of their value, not only as marine habitat, but, of course, because of their role in the economy of Maui's attraction to visitors. Because of the amplified jeopardy to all that any loss of reefs entails, I urge you take an approach to these hearings that truly embodies the principle of "Better Safe Than Sorry".
I, for one, among what I know to be many, many concerned citizens could not live with a legacy that came one day to seen as having missed the opportunity to do what can readily be done and be remembered for not doing it soon enough to avoid consequences that would echo negatively for generations. The window to protect Hawaii's reefs is still open. You are fully aware that in other jurisdictions the damage is done and no mitigation possible, only slow, painful hopes for recovery. Please help prevent this eventuality here.
Thank you greatly for your decisions and actions. It is my hope to offer you a brief at the hearing.
Aloha,
Gordon Clay

> To: [redacted]
> CC: Albright.David@epamail.epa.gov
> Subject: Notice of Public hearing concerning draft Lahaina UIC draft
> From: Rumrill.Nancy@epamail.epa.gov
> Date: Fri, 26 Sep 2008 16:51:37 -0700
>
>
> Dear Mr. Clay,
>
> Please see attached Notice of Public Hearing concerning the draft Lahaina UIC permit. This public notice will be appearing in the Maui News legal classifieds on September 28, 2008 and posted to the EPA website on September 29, 2008.
>
> Thank you for all your comments.
>
> Sincerely, Nancy Rumrill
>

>
>
> <><><><><><><><><><><><><><><><><><><><><><><><>
> Nancy Rumrill
> U.S. Environmental Protection Agency, Region 9
> Ground Water Office, WTR-9
> 75 Hawthorne Street
> San Francisco, CA 94105
> 415-972-3293
> 415-947-3545 (FAX)

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Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:10 AM -----

From: Gordon Clay [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 10/14/2008 08:02 PM
Subject: RE: Notice of Public hearing concerning draft Lahaina UIC draft

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I must thank you for the decision to hold this Public Hearing. I believe it will be of lasting value to all. I hope that the information and concerns expressed will open many people's eyes to the inevitability of a collective decision being made to stop sewage injection and commence redirecting treated waste to valuable usage in irrigation. I say inevitable because I think any reasonable person would concede that it becomes more and more the irrefutable choice, given the planned growth of Maui, coupled with increasing fresh water shortages.
The utilization of treated wastewater has been proven time and again in other locales, domestically and internationally, to be of profound benefit to both the ecology and economy of those communities who choose it as a solution to near identical problems that Maui faces.
The reefs of Maui cannot be viewed as anything other than the most vital of resources, because of their value, not only as marine habitat, but, of course, because of their role in the economy of Maui's attraction to visitors. Because of the amplified jeopardy to all that any loss of reefs entails, I urge you take an approach to these hearings that truly embodies the principle of "Better Safe Than Sorry".
I, for one, among what I know to be many, many concerned citizens could not live with a legacy that came one day to seen as having missed the opportunity to do what can readily be done and be remembered for not doing it soon enough to avoid consequences that would echo negatively for generations. The window to protect Hawaii's reefs is still open. You are fully aware that in other jurisdictions the damage is done and no mitigation possible, only slow, painful hopes for recovery. Please help prevent this eventuality here.
Thank you greatly for your decisions and actions. It is my hope to offer you a brief at the hearing.
Aloha,
Gordon Clay

> To: gordoclay@hotmail.com
> CC: Albright.David@epamail.epa.gov
> Subject: Notice of Public hearing concerning draft Lahaina UIC draft
> From: Rumrill.Nancy@epamail.epa.gov
> Date: Fri, 26 Sep 2008 16:51:37 -0700
>
>
> Dear Mr. Clay,
>
> Please see attached Notice of Public Hearing concerning the draft Lahaina

UIC permit. This public notice will be appearing in the Maui News legal classifieds on September 28, 2008 and posted to the EPA website on September 29, 2008.
>
> Thank you for all your comments.
>
> Sincerely, Nancy Rumrill
>
>
>
> <><><><><><><><><><><><><><><><><><><><><><><><>
> Nancy Rumrill
> U.S. Environmental Protection Agency, Region 9
> Ground Water Office, WTR-9
> 75 Hawthorne Street
> San Francisco, CA 94105
> 415-972-3293
> 415-947-3545 (FAX)

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Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:06 AM -----

From: dad [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Cc: gerald durkan [redacted]
Date: 11/05/2008 04:07 PM
Subject: Injection wells

Hello Nancy,
I have witnessed personally the destruction of the North shore coral reefs related to the injection wells at Kanaha. The algae growth has blossomed form Kanaha and has gradually spread to and beyond Hookipa over the past 10 years. From what I have read, this has been happening at injection sites throughout the island and definitely follows the flow from the injection wells. I have taken a tour at the Kanaha sewage treatment plant and talked with the supervisor. He has confirmed that the well discharge is generally clean but the nitrogen content remains significant. I have also seen many people with furuncles and boils following wind-surfing and swimming in the waters off Kanaha, including myself.
I am curious if there has been any attempt to document where the injected water actually ends up. Hydrodynamically, it has to be going somewhere and I suspect it is simply discharging closely off-shore. I don't think there is an aquifer under Kanaha!
Sincerely,
Gerald Durkan MD

GEORGE S. LAVENSON, JR., M.D., R.V.T.
50 PUU ANOANO #2801
LAHAINA, HAWAII 96761
TELEPHONE (808) 667-9300
FAX (808) 661-0040
E-MAIL: glavenson@aol.com

Diplomate American Board of Surgery

Fellow American College of Surgeons

September 22, 2008

Nancy Rumrill
EPA Region 9 office
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco
CA 94105

Dear Ms. Rumrill:

The renewal of the Injection wells at Lahaina Waste Water Facility needs added conditions to assure safety to humans and to the ocean environment. These considerations need to be addressed at the forth coming meeting on this matter.

Sincerely:

George S. Lavenson, Jr., M.D.
50 Puu Anoano # 2801
Lahaina, HI 96761
808-667-9300

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
---- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:08 AM -----

From: [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Cc: mauigirl555@hotmail.com
Date: 11/03/2008 11:25 PM
Subject: LAHAINA INJECTION WELLS

Nancy:

There are a great number of us here in West Maui who greatly favor the use of recycled waste water for irrigation purposes both to reduce the use of potable water that is now going for these purposes, and to reduce the present disposal of the excess waste water by injection into wells.

What potable water we have is sorely needed for human consumption here in West Maui since it is often inadequate and at a premium because of low rainfall,increasing population usage due to extensive development which is continuing, and use of potable water for irrigation purposes.

Obtaining water for irrigation of crops and landscaping by recycling waste water would obviously leave more of the potable water for the increasing human consumption need.

In addition, this would provide a much better way of dealing with the waste water than the present practice of injecting the excess into wells with the unavoidable seepage of it into the coastal areas with resultant damage to our priceless and dwindling pristine oceanic treasure.

Thank you for considering this very strong recommendation to add infrastructure to increase our recycling of our waste water and to deliver it to the areas of utilization for irrigation.

Sincerely:

George S. Lavenson, Jr., MD
50 Puu Anoano # 2801
Lahaina, HI 96761
808-667-9300

Dr. George R. Harker
PO Box 1137
Kihei, HI 96753
DrLeisure.com
808-298-5399

U.S. Environmental Protection Agency,
Ground Water Office (WTR-9), 75 Hawthorne Street, San Francisco, CA 94105,
Attn: Nancy Rumrill; phone (415) 972-3293; fax (415) 947-3549;
or e-mail rumrill.nancy@epa.gov.

November 6, 2008

Reference: Proposed permit renewal for the County of Maui to operate four injection wells at their Lahaina Watewater Reclamation Facility.

The permit should not be renewed. It is well established that the nutrient load from this reclaimed water is impacting the coral reefs around Maui.

The change in the reef structure is having an adverse effect on the Hawaiian Humpback Whale Marine Sanctuary.

The critically endangered Hawksbill Turtle utilizes these coral reefs for food and shelter.

The Maui economy is dependant on the revenue derived from Tourism for its well being. The loss of this resource will have a profound effect on the County of Maui.

Other methods of disposal of the reclaimed water should be used. Specifically drinking water used for irrigation in much of Maui should be replaced with the reclaimed water.

Thank you for an opportunity to testify.

Sincerely,

Dr. George R. Harker

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
---- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:11 AM ----

From: [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/06/2008 09:26 AM
Subject: injection wells Maui

We are unable to attend the meeting in Lahaina but am opposed to continued injection wells on Maui. Reef damage, ocean water quality and loss of use of water that could be recycled are the major reasons.

Gary & Pam Elster
12 Malihini Place,
Wailuku, HI 96793

Nancy Rumill
EPA region 9 office
Ground Water Office (WTR-9)
75 Hawthorne Street,
San Francisco, CA 94105

Hi Nancy

I have enclosed news photos of the dry areas on Maui and about the brush fires that have occurred recently.

Hopefully this will help in finding money to buy the needed CV channels that the Lahaina Wastewater facility needs to treat more effluent. The R-1 treated water is needed to irrigate the extensive dry grass and weeded acreages to prevent fires.

See you at the public hearing on Maui.

Yours truly

Eve Clute

September 16, 2007

U.S. EPA
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

RE: Public Comments on Lahaina, HI WWRF UIC Permit Number HI50710003

Nancy Rumrill

This is a continuation of my emailed testimony. Again, please hold a public meeting in West Maui to address the Lahaina Injection Well permit.

A National Pollutant Discharge Elimination System permit under the Clean Water Act should be required in addition to the UIC permit. Wastewater injected in the Lahaina injection wells are not UV treated, but treated with chlorine which does not kill a significant number of viruses and bacteria.

Low levels of chlorine, normally used to disinfect water, are not an effective treatment for giardia cysts. A chlorine level of more than 10 milligrams per liter must be maintained for at least 30 minutes to kill giardia cysts. Chlorination is less effective in cloudy (turbid) water. Our ocean water is turbid during the winter rainy season when run-off turns the ocean muddy brown.

According to the University of Missouri Extension, < http://extension.missouri.edu/xplor/envqual/wq0102.htm > the free chlorine residual level needed for .05 residuals at 8pH levels is 30 minutes. There are no monitoring wells to determine of the chlorine levels are maintained for 30 minutes, the time needed to kill the viruses and bacteria. Hawaii's MRSA Staph infection is 2 times that of the mainland. Maui County has 188 staph hospitalization cases per 100,000 people. [HSDOH, 2008.] UV treatment is more effective than chlorine to kill viruses and bacteria, and should be a condition for the permit.

Because what takes place regarding the Lahaina facility will effect the Kahului, Kihei and Molokai Wastewater facilities, a copy of the EPA notice for the Lahaina Permit should have been placed in each regional library in Maui County on Kihei Kahului and Molokai.

Sincerely

Eve Clute [Doctor of Public Health]

P O Box 11634

Lahaina HI 96761

The Maui News

Maui's Newspaper Since 1900

MONDAY, August 25, 2008

50 CENTS

Blaze blackens South Maui

Cause still under investigation; fire chars 155 acres

By CLAUDINE SAN NICOLAS
Staff Writer

KIHEI — The cause of this weekend's brush fire in Kihei remained under investigation Sunday as firefighters worked to contain the blaze off Piilani Highway. After 24 hours, the fire's extent had grown to 155 acres, but it no longer was a threat to structures.

The wind-blown wildfire sparked up around 4:24 p.m. Saturday in an open lot. Acres and acres of blackened brush and kiawe could be seen from Piilani Highway on Sunday morning, and the smell of smoke remained strong between the streets off Keonekai Road and Kilohana Drive where the Wailea Fire Station is located.

The fire was considered "active" as of 4 p.m. Sunday, but by 7 p.m. it was "95 percent contained," county spokeswoman Mahina Martin said. "They're still monitoring flareups."

It had covered about 10 acres at sundown Saturday but grew slowly during the night, despite being bombed with water from three helicopters.

Winds estimated Sunday at 10 to 15 mph were pushing the hot spots.

"All these things are not making putting out the fire simple," Martin said.

The same number of fire companies that responded to the fire on Saturday — about a dozen with 38 firefighters — was working the scene still Sunday. Just one helicopter, Air One, was being used on Sunday.

Sunday, firefighters with help from Department of Public Works bulldozers and Goodfellow Brothers Inc. heavy equipment operators

See BLAZE on Page A5

The Maui News / AMANDA COWAN pho

Oreo the dog hangs out poolside with friends Lucia Simon (from left 12, Chelsea Calvert, 15, Kainoa Habib, 10, Monica Badois, 15, her si ter Taylor Badois, 13, and Lucia's sister Sophia Simon, 10, on Sunda morning in Kihei. Firefighters were able to use the small Simon fam pool as a source of water to battle the blaze Saturday. The Wailea Fi Station and the charred brush can be seen in the background.

Blaze

Continued from Page A1

built a 20-foot perimeter around the smoldering area and were using heavy equipment to keep the fire in check.

On Saturday, it was a dozen fire companies and three helicopters responding to the scene where residents from at least seven homes were evacuated when the fire threatened their neighborhood on Makamae Place in Maui Meadows.

The American Red Cross stood ready to provide temporary shelter to the evacuees. "Their offer was not necessary," Martin said Sunday.

The evacuated families returned to their homes by early Sunday, and a few of the neighboring roads that closed as a precaution were reopened as well.

One firefighter suffered first-degree burns to his cheeks and chin and was treated and released at the scene on Saturday. The front end of a vehicle belonging to one of the firefighters at the Wailea Fire Station was melted by heat from the blaze.

Marina Batham, a resident on Ohina Place, got her 12-year-old daughter, Lucia Simon, to call 911 Saturday as soon as they saw the flames out their window about 20 feet away.

Simon said she rounded up the family's four birds, a dog and two laptop computers in response to her mom's suggestion that they leave their home. "I was afraid," Simon said.

"We were really close to the fire," Batham said, adding that she wanted to take the precaution of leaving sooner rather than later.

She and another neighbor immediately started hosing down their homes when they saw the "huge flames," but then the smoke overwhelmed them. "The flames were about 20 feet high, I would say," Batham recalled Sunday. "We couldn't breathe. We just had to drop our hoses and go."

Batham said she ran into police at the bottom of her street and reported to them that she had seen neighborhood boys hanging out in the area of the fire prior to seeing the flames.

Authorities have not pinpointed the cause of the fire.

"It's too soon to speculate. I'm hoping it wasn't set maliciously," Martin said.

Batham said she was "thankful" that firefighters picked up about a dozen big buckets of water out of her 4,000-gallon swimming pool. She described the response to the fire as "unbelievable. . . . They got right on it."

Claudine San Nicolas can be reached at claudine@mauinews.com.

The Maui News / AMANDA COWAN photos

Above: Vanessa Munoz, 13, of Kihei talks with a friend while looking over damage from the brush fire Sunday.

Top: A helicopter drops water on the mauka side of Piilani Highway as crews continue to battle the fire Sunday morning.

The Maui News / MATTHEW THAYER photo

Fires litter Maui landscape

Crews battle three blazes consecutively

By LILA FUJIMOTO
Staff Writer

After extinguishing a 30-acre brush fire that burned overnight near the Jaws surfing spot at Peahi, firefighters put out two smaller brush fires reported within minutes Tuesday afternoon in Central Maui.

One fire, reported at 12:52 p.m., burned a 40-by-50-foot area of brush near an old nursery on the Baldwin High School campus, said Battalion Chief Frank Tam. He said the fire was brought under control at 1:05 p.m., with Wailuku and Kahului engine companies joined by a Kahului tanker and a Lahaina engine company that was training in Central Maui.

As a precaution, school officials evacuated students from school buildings.

While Kahului firefighters remained at the fire scene to extinguish the Baldwin brush fire, Wailuku and Lahaina firefighters responded to a 1:12 p.m. call of another brush fire nearby on Kahului Beach Road near the Harbor Lights Condominium, Tam said. He said about 1 acre burned in the open area of low grass and some discarded material.

A Makawao engine company that was in Central Maui while work was being done on its truck and a Maui County Public Works 4,000-gallon tanker also aided in the firefighting effort. That fire was brought under control within minutes of firefighters' arrival, Tam said.

The brush fire near Jaws, which was reported at 5:51 p.m. Monday, burned about 30 acres on the makai side of Hana Highway before it was brought under control at 9:45 p.m. Monday. The fire was extinguished at 9:30 a.m. Tuesday, after rain showers moving through the area helped dampen the ground, officials said. Fire crews were assisted yesterday by two helicopters, five engine companies and a county Public Works water tanker.

The cause of all three brush fires was undetermined.

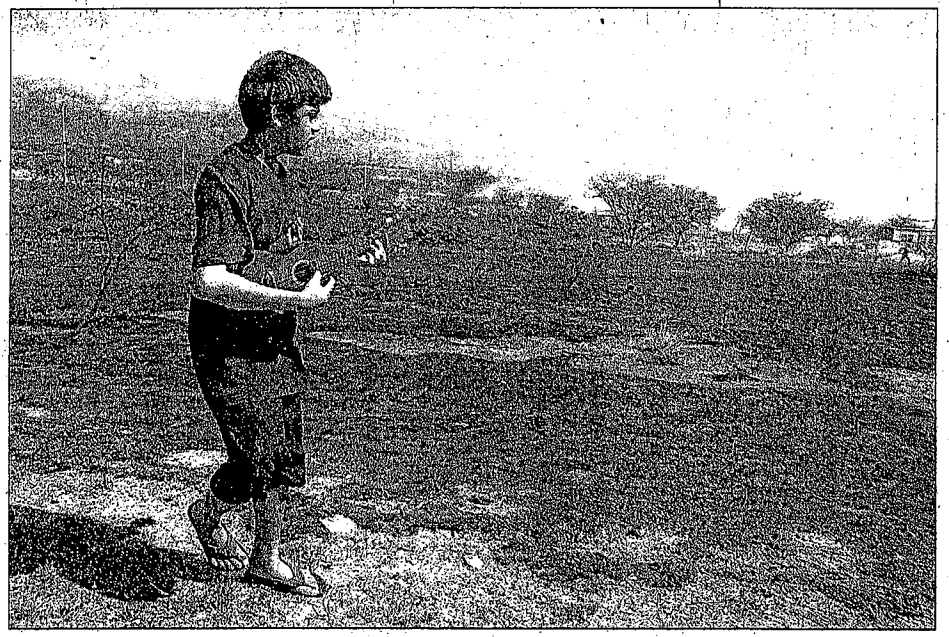
Lila Fujimoto can be reached at lfujimoto@mauinews.com.

The Maui News / CHRIS HAMILTON photo

Maui firefighters mop up Tuesday afternoon after a brush fire burned dry grass in an area next to the Harbor Lights condominium in Kahului. The fire, reported shortly after another one nearby at Baldwin High School, burned about an acre of low grass and some discarded material.

The Maui News

Maui's Newspaper Since 1900 TUESDAY, August 26, 2008 50 CENTS



Jesse Abarca, 13, of Kihei plays his ukulele as he looks over the burned lot at the intersection of Piilani Highway and Kaonoulu Street on Monday afternoon. The fire burned between 4 and 5 acres.

The Maui News AMANDA COWAN photo

New blaze ties up fire crews, traffic

Workers evacuate threatened offices

By LILA FUJIMOTO
Staff Writer

KIHEI – Another wind-whipped brush fire kept firefighters busy in South Maui on Monday.

Piilani Highway was closed for about two hours between Kaonoulu Road and Kulanihakoi Street after the fire was reported at 2:27 p.m. By 4:30 p.m., the fire was 90 percent contained with an estimated 4 to 5 acres burned, said Maui County spokeswoman Mahina Martin. But with 25 mph to 30 mph winds, she said fire personnel were closely monitoring the area.

The fire came within approximately 150 yards of the nearest homes, Martin said. She said no evacuations of residents were ordered, although some left the area

See FIRE on Page A4

The Maui News / AMANDA COWAN photo

A firefighter works near the corner of Kenolio Road and Kaonoulu Street as structures stand nearby Monday

Fire

Continued from Page A1

voluntarily because of heavy smoke. As a precaution, police instructed construction workers at a nearby site to evacuate.

The closure of Piilani Highway led to bumper-to-bumper traffic for at least a couple of hours in north Kihei.

Monday's fire came on the heels of a fire that burned 155 acres in Kihei over the weekend.

Police said the origin of that fire was suspicious, starting in a nearby field and damaging a chain-link fence and six vehicles parked at the Wailea Fire Station.

Juveniles were probably involved, but investigators hadn't determined Monday whether the fire was intentional or accidental, said Lt. Don Simpson of the Criminal Investigation Division.

An investigation was continuing, Simpson said.

Spread by strong winds, the fire that started at 4:24 p.m. Saturday was estimated to be 95 percent contained by 7 p.m. Sunday. On Monday, a fire crew was monitoring the burned area of brush and trees for hot spots, said acting fire Battalion Chief Jack Williams.

Simpson said damage was estimated at about $20,000 to a chain-link fence at the fire station and the six vehicles owned by firefighters. As flames neared the vehicles, heat melted plastic on cars, damaging paint, headlights, taillights and grills, Simpson said.

He said investigators determined the point of origin for the fire was in a field behind the fire station toward the makai side.

Some residents said a group of teenagers had frequented the field where the fire started.

Monday's fire broke out in brush near Piilani Highway and Kaonoulu Road, an area close to a baseyard used by Betsill Brothers Construction Inc., said Dwayne Betsill, company president and chief executive officer.

The blaze threatened four Betsill offices on the property, coming within 20 feet, he said. Then, "this fire water truck showed up just in time."

Firefighters were able to stop the fire before it damaged the offices, and about 30 company employees were evacuated from the area, he said. There were no injuries.

"The police were very kind. They got us out really quickly," Betsill said.

But with winds fanning the blaze, it moved elsewhere in the company's baseyard, scorching lumber and about eight containers used for storage, he said.

"It just kept on going," he said. "It was really fast moving."

Betsill said that around 3:30 p.m. the fire was moving toward the Piilani Village I housing complex, but firefighters were positioned between the blaze and homes.

Five fire companies, two tankers and the Air One helicopter were on scene, helped by additional water tankers and bulldozers provided by Goodfellow Bros. construction company.

The helicopter dipped into the swimming pool at nearby The Villas at Kenolio condominium complex to get water to douse the fire, said Dave Heard, a resident of the complex. By 5 p.m., he said flames were no longer visible, "just smoke."

The cause of the fire remains under investigation.

Fire officials said Monday's fire is not connected with the fire that occurred over the weekend.

■ *Lila Fujimoto can be reached at lfujimoto@mauinews.com.*

Traffic is at a standstill as it approaches Kaonoulu Street in Kihei on Monday afternoon. Police closed the southbound lane of Piilani Highway, forcing drivers onto Kaonoulu.

The Maui News
Maui's Newspaper Since 1900
SUNDAY, August 24, 2008
$2.00

Kihei homes evacuated in brush fire

Flames threaten Keonekai area and Wailea Fire Station

By **CHRIS HAMILTON,** Staff Writer

KIHEI – Maui County firefighters battled a wind-blown wildfire that threatened the Wailea Fire Station and scores of homes in the vicinity of Kauhale and Keonekai streets Saturday afternoon.

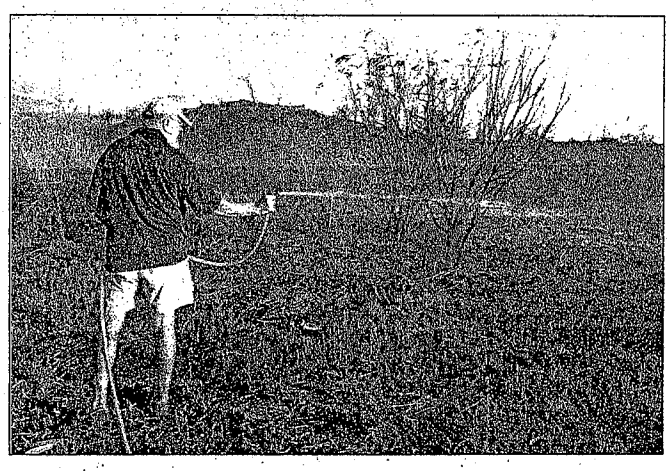
A dozen fire companies and two fire-rescue helicopters responded to the alarm, while residents from at least seven homes were evacuated as winds estimated at 20 mph, with stronger gusts, scattered embers and smoke through the neighborhood.

Residents reported that the blaze stopped short of their homes because of a firebreak cut around the boundary of the large open lot where the fire appeared to have started. There was no information Saturday night on the possible cause of the fire.

"Thank goodness they keep clear those firebreaks," said Ohina Place homeowner Lori Hazen. "Because if they hadn't, who knows?"

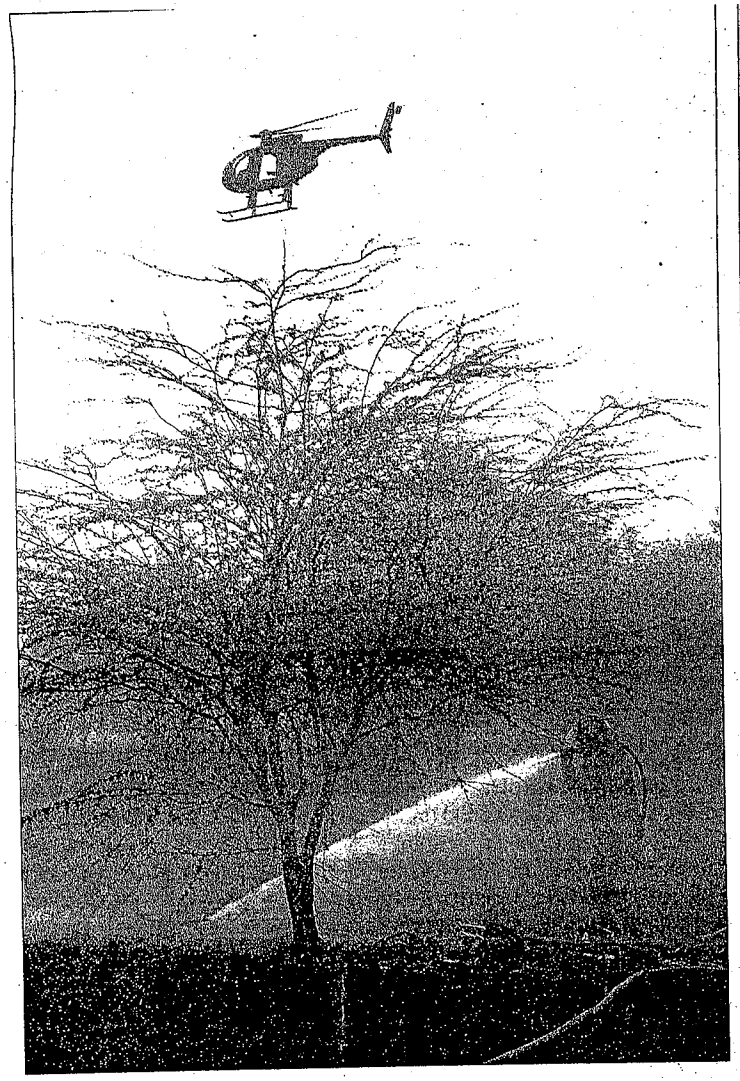
The fire was reported at about 4:24 p.m. in the open lot reportedly proposed for an affordable housing project by A&B Properties.

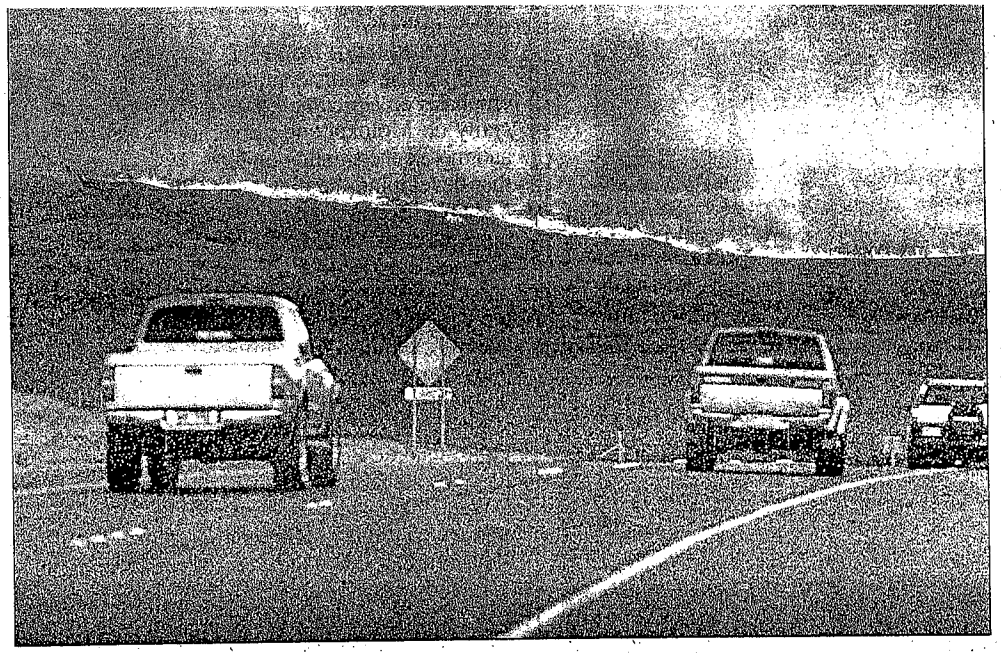
See **BLAZE** on Page A7



Homeowner John Fairbank helps to cool off the blackened grass where a brush fire burned close to homes Saturday afternoon. "Those guys are going a hell of a good job," he said of the fire crews protecting homes as they battled the blaze.

The Maui News
AMANDA COWAN photo





Drivers on the Piilani Highway can see the wall of flames spreading mauka along the slopes of Haleakala after a brush fire jumped the highway Saturday evening.

Spectators take in a view of the fire from their roof in Kihei on Saturday afternoon. Firefighter Clement Enomoto (photo, far left) battles the blaze along the makai side of Piilani Highway as a fire helicopter hovers overhead. The highway was closed in the vicinity of Keonekai Road, near where the fire first broke out at 4:24 p.m.

The Maui News / AMANDA COWAN photos

Blaze

Continued from Page A1

The lot is along Kilohana Drive, Piilani Highway and Ohina Place – and abuts backyards of a row of homes along Kauhale Street.

With steady afternoon winds in South Maui gusting up to 29 mph, the fire spread across the open field to within 40 feet of the Wailea Fire Station and to the edge of the firebreak within 30 feet of a number of homes.

When firefighters were able to keep the flames from the homes, the gusting winds spread the fire across Piilani Highway into the pastures and up the slopes along the north side of Maui Meadows.

In a statement released at 7 p.m., Maui County spokeswoman Mahina Martin said police evacuated residents from seven homes on Makamae Place and fire officials reported that flying embers may have scorched a home on Puu Hoolai Street that was initially reported to be on fire.

At the scene, Fire Battalion Chief Allen Duarte said homeowners were allowing the two fire helicopters to haul water out of their swimming pools to conduct water drops on the blaze. At least three swimming pools served as water sources, with fire tankers refilling the pools, allowing the helicopters to continue operating into the early evening.

Another homeowner, John Fairbank, credited the efforts of the fire crews with keeping the homes safe from the flames.

"Those guys are doing a hell of a good job," he said.

Piilani Highway was closed between Keonekai Road and Mapu Place, with South Kihei Road reported jammed to a near standstill at 7 p.m.

Several tankers and bulldozer operators with Goodfellow Brothers Construction were assisting with the firefighting effort, with the bulldozers cutting firebreaks to protect the Maui Meadows homes as fire crews attempted to contain the flames moving upslope. The county Public Works Department also sent a bulldozer and tanker to assist.

The spread of the flames slowed after sunset as the wind dropped. At 6:30 p.m., smoke from the fire mauka of the highway could be seen rising straight up rather than blowing up the slope, but fire crews had not contained the blaze at 8 p.m.

■ *Chris Hamilton can be reached at chamilton@mauinews.com.*

Eve Clute
[redacted]
09/18/2008 12:33 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Testimony Underground injection control (UIC) permit Lahaina Wastewater Reclamation Facility,

To: Nancy Rumrill
EPA region 9 office
Ground Water Office (WTR-9)
75 Hawthorne Street,
San Francisco, CA 94105

Subject: Intent to issue an Underground injection control (UIC) permit for the Lahaina Wastewater Reclamation Facility, Lahaina, Maui

The purpose of this letter is three-fold. First to comment on the permit for the Lahaina Wastewater Reclamation Facility; second to request conditions be placed on the permit and third to request that EPA comes to Maui for a] a public hearing and b] to tour the areas of concern and c] and discuss ways the EPA can assist in reusing injected wastewater.

Comments: From the EPA permit "EPA believes the injection of treated wastewater allowed under the proposed permit is protective...."

Please review with the Lahaina Waste Water staff that not all injected wastewater is treated to R-1 levels. The approximate 2 mgd of R-1 water is UV treated and used for landscaping irrigation etc., but the 3 mgd remaining injected effluent is a mix of R-2 and R-1. We do not know the proportions of each.
Condition: Only effluent treated to R-1 standard can be injected. This will assist in the decrease of the number of MRSA cases of hospitalizations of untreatable staph infections. Maui County has

188 staph cases per 100,000 people. This is 2 times the nation average [89 out of 100,000 persons.] As stated in Steve Parabicoli's email [exhibit xx] "The recycled water that is discharged to the injection wells is a mixture of R-1 and filtered R-2 water. All has undergone nutrient removal..."
However R-2 wastewater is treated with low levels of chorine - not enough to kill viruses. Without UV radiation, the waste water still contains viruses and bacteria associated with staph infections.
Condition: Request that the County Planning Dept and County Council consider that all new building permits require that builders use R-1 water. This will allow potable water to be used on ag and irrigation and save potable water for human use. At present time portable water is used for ag because there are no transmission lines for R-1 water into ag lands. The Lahaina injection wells pump about 1.2 million gallons a day of treated R-1 sewage water into the Kaanapali golf course pond which is then used for irrigation. An addition 200,000 to 300,000 gallons of R-1 water is used at the treatment plant for cooling, onsite landscaping irrigation and to water the grass in detention basins. The remaining R-1 water is injected about 300 feet into the ground and mixes with ground water and flows into the ocean.

Condition: Request that the County Planning Dept and County Council place excess treated R-1 waste water into irrigation basins to create a green belt in the 1,000's acres of West Maui's fallow sugar cane land that is filled with flammable dry grasses and weeds. Without green belts - there is no attraction of rain and the area gets dyer and dryer and the temperature goes higher.
Condition: Request that the County Planning Dept and County Council place excess treated R-1 wastewater into water stands [as they do in Kihei] to use as fire hydrants to store R-1 for fire fighting. The flammable acres of dry grasses and weeds are a fire hazard. We have had days of uncontrollable fires in nearby Kihei and Maalaea due to dry grass fires on fallow ag lands. The electrical utility poles are in the dry grass areas and electrical

sparks have set off fires in the dry grass in Lahaina.
Request: Please hold a public hearing in West Maui, so you can better determine the impacts of injection wells on our environment. Please also search for federal money to assist Maui in reusing R-1 water for fire prevention; which includes irrigation for green belts on the 1,000's of acres of fallow sugar cane fields. Since sugar went out of production in 2006, the fields are dry with dead grass and weeds which create a fire hazard.

Sincerely,

Eve Clute [Doctor of Public Health
P O Box 11634
Lahaina, Maui, Hawaii

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Re: Lahaina WWRF UIC Permit Renewal
HI5 0710003

Dear Nancy Rumrill Sept 20, 2008

The following is a notice of funds for reclaimed waste water. I hope federal money is available to assist the Lahana Wastewater facility to reuse the 3 million gallons a day of effluent that goes down injection wells.

Please request this study so we can review the various remedies the study provides. I need a copy!

Sincerely,

Eve Clute

INOUYE AND AKAKA SAY OMNIBUS FUNDING BILL PROVIDES $845 MILLION FOR HAWAII-RELATED PROJECTS

Thursday, December 20, 2007

http://inouye.senate.gov/07pr/20071220pr01.html

BUREAU OF RECLAMATION

Hawaii Reclaim and Reuse Study $492,000
Water is one of Hawaii's most crucial issues. The appropriation will be used to continue activities initiated in 2004.

Testimony opposing the Lahaina POTW Wastewater Underground Injection Permit Renewal

Nov 6, 2008

This testimony points out that Maui County is not merely the permit applicant. Under Hawaii's Constitution and recent state Supreme Court decisions, Maui County is also the public trustee of the County's water resources. As such, the County has an affirmative legal and moral duty to seek the highest and best uses for all waters of the county, including wastewaters from the Lahaina sewage treatment plant. In fact, the County has not conducted the necessary exploration of possible beneficial uses for these wastewaters and has not concluded that such beneficial uses do not exist. Accordingly, the permit should be denied. Instead of injecting waste water, it would be cleaned to R-1 standards and restore stream flows that have been previously diverted. See Kelly v. 1250 Oceanside Partners, NO. 26813 (HI Supreme Court, 2006), where it is held that counties as well as the State are bound by Art. XI, section 1 of the Hawaii State Constitution, and where the Court makes clear that this provision imposes on the State and counties the affirmative duty to "to assure that the waters of our land are put to reasonable and beneficial uses" and "to ensure the continued availability and existence of its water resources for present and future generations. It is imperative that water be returned to the streams for use of future generations. The Maui News article, Fri Sept 26, 2008 (front page) "Panel orders waters into streams" sets a precedent for all of Maui. This landmark decision requires that water be restored to 8 East Maui streams. The same is needed in West Maui for taro farmers and restoration projects.

By asking for conditions to reuse more of the wastewater and less injected , it is hoped that there will be EPA' and the County support for a community-wide collaborative conversation about what Maui County should do with these precious water resources. We believe the best course for all concerned would be to stop or phase out the harmful and wasteful disposal by injection of these waters and instead re-direct them for beneficial uses such as irrigation of dry fallow sugar cane fields.

I urge a community exploration of whether beneficial uses for present and future generations are (or soon could be) available for this important water resource – uses that would help us alleviate water shortages during years of recurrent drought. Given Maui's recurrent multi-year drought periods, we must see our way clear to phase out the wasteful and harmful disposal of these waters in injection wells and instead redirect these waters to a variety of important beneficial uses – agricultural and ornamental irrigation, landscaping and golf course irrigation, restoration of wetlands, among others. See The *2004 Hawaii Water Reuse Survey and Report – Final Report*, prepared for DNLR by the Limtiaco Consulting (2005), p.7, which concludes "*Water reuse should be viewed as a key component of sustainable water resource management.* Recycled water can be a drought-proof and reliable supply of water. It can replace potable water that is currently used for non-potable purposes..

The endangering of the health of our reefs without abatement should be considered.

Hawaii DNLR, 2004 Hawaii Water Reuse Survey and Report – Final, (2005), p. 7 that states "water reuse is recognized as an environmentally preferred method of disposing treated wastewater (effluent), when compared to the traditional disposal methods through outfalls and injection wells." It is our intent to protect our precious coral reefs and the economic benefits they bring to Maui. In this case, it means requiring the Lahaina POTW to employ water beneficial reuse strategies for the water in preference to waste-water disposal underground that results in pollution of oceans, harm to coral reefs, adverse effects on fish, and harm to recreational uses (such as diving, snorkeling) so important to Maui's economy. Our coral reefs are central to our ocean ecosystem and prevent beach erosion. Long, clean, beautiful, beaches are one of the main selling points of the Hawaii Tourism Authority. Maui's environment is a key part of its economy, and effluent is a threat to our coral reefs endangers our economic lifeblood.

This testimony cites the mounting evidence that Maui's coral reefs are at serious risk – not just from the nitrogen pollution and resultant algal growth resulting from the wastewater injectate that makes its way into near shore ocean waters, but also from other nonpoint pollution sources and other contributing factors. In this hearing, however, the question is whether one important source of this threat to Maui's reefs – the injection of treated sewage wastewaters into wells at Lahaina – can and should be allowed to continue unabated. In answering no, we do not mean to suggest that this set of wastewater treatment injection wells is the sole cause of harm to Maui's reefs. We do mean to suggest, however, that protection and preservation of our coral reefs must include, among other strategies, the abatement of nitrogen contamination from these wells. We also mean to suggest that Maui's waters are too precious to waste in this way, when they could be recycled and reused beneficially and safely.

There can be little doubt that Maui's coral reefs are in serious jeopardy. The harm done so far is not the result of one substance, activity, or causal agent, but of many. Algal blooms from the increasing amount of nitrogen in coastal waters represent serious risks to our coral reefs. Nor do the increasing levels of nitrogen in coastal waters come from a single source or activity. Fertilizers, pesticides, human waste runoff from septic fields and cesspools, and many other non-point sources of nitrogen pollution are contributing to this increasing burden on coastal waters for Maui County.

In this hearing, however, the question is whether one important source of this threat to Maui's reefs – the injection of treated sewage wastewaters into wells at Lahaina – can and should be allowed to continue unabated. In answering no, we do not mean to suggest that this set of wastewater treatment injection wells is the sole cause of harm to Maui's reefs. We do mean to suggest, however, that protection and preservation of our coral reefs must include, among other strategies, the abatement of nitrogen contamination from these wells. We also mean to suggest that Maui's waters are too precious to waste in this way, when they could be reused and recycled.

Kamehameha Schools/Bishop Estate, 990 F.2d 458 (9th Cir. 1993).

In the current permit application (and supporting materials) the County has failed to sustain its burden of proof that continued injection of waste water at Lahaina:

- Will not result in releases of nitrogen-bearing nutrients, harmful pathogens, and other water pollutants to the near ocean environment;
- Will not contribute significantly to algae blooms, harm to coral reefs, increased risk of infectious water-borne disease, or other impairment of recreational uses of Maui's coastal waters;
- Is the only feasible alternative for managing of these wastewaters;
- Is necessary because water reuse options do not exceed;
- Will yield significantly lower costs and higher benefits for the citizens of the county than phasing out such injection in favor of waste water reuse for agricultural and ornamental irrigation, fire prevention, stream flow restoration and replenishment, and other purposes; and
- Is in the public interest.

The nitrogen-laden wastewater effluent discharged to the underground well in Lahaina does not stay underground. Maui's lava-originated geology results in the ground being porous. These wastewaters seep from the wells onto the surface, enter sub-surface ground water flows, and in other ways leak into near shore ocean environments. The wells are hydrologically (if indirectly) connected to the ocean receiving waters. Consequently, the discharge of wastewater effluents into deep wells is effectively a discharge of water pollutants into the ocean, and subject to the permitting requirements of the Federal Clean Water Act and State Water Pollution Control Laws.

Without providing persuasive evidence to carry its burden of proof on each of the foregoing points, the County cannot demonstrate that issuance of the requested injection permit is in the "public interest" – as required by §342D-6 (c) of Hawaii's Water Pollution Control Law and Article XI of the Hawaii State Constitution. Nor can the County show that the permit would be consistent with all applicable water quality criteria and standards and would meet the conditions for granting a permit under the UIC rules.

In considering whether the permit applicant has met its burden of proof in Hawaii, EPA must consider the Constitutional protections of Article XI, section 1 to be part of the applicable water quality standards and criteria.

- Under section 510 of the Clean Water Act, "States may develop water quality standards more stringent than required by the Water Quality Standards Regulation." EPA, NPDES Permit Writers' Guide (1996), p. 88 –

- See also EPA, NPDES Permit Writers Guide (1996), p. 13 – http://www.mcelroylaw.com/US%20EPA%20NPDES%20Permit%20Writers%20Guide%201996.pdf

- Id at p. 87: "Permit writers must consider the impact of every proposed surface water discharge on the quality of the receiving water. Water quality goals for a water body are defined by State water quality standards. A permit writer may find, by analyzing the effect of a discharge on the receiving water, that technology-based permit limits are not sufficiently stringent to meet these water

quality standards. In such cases, the CWA and EPA regulations require development of more stringent, water quality-based effluent limits (WQBEL) designed to ensure that water quality standards are met."

Maui's water is too precious to waste, it can and should be cleaned to R-1 standards and reused and recycled. Given Maui's recurrent multi-year drought periods, we must see our way clear to phase out the wasteful and harmful disposal of these waters in injection wells and instead redirect these waters to a variety of important beneficial uses – agricultural and ornamental irrigation, fire prevention, and landscaping and golf course irrigation, restoration of wetlands, among others. EPA, *NPDES Permit Writers Guide* (1996), p. 13 –

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Eve Clute [Doctor of Public Health]
P O Box 11634
Lahaina HI 96761

Hawaii has four 'bad guy' algae

Ka Mo'olelo Moana
by Pam Daoust

In last month's column (Oct. 5, Page C6), I discussed how the ability of our oceans to produce both food and life-supporting oxygen depends on "balance." When there is just enough of a good thing, such as algae, everything flourishes. When there is too much of a good thing, such as algae, the balance is tipped, and other things begin to die. Algae blooms can be "too much of a good thing," leading to potentially disastrous results.

Algae blooms fall into three categories.

In the first, the "blooming" species is a generally harmless one that has overproduced itself. As the bloom dies, it consumes dissolved oxygen at an alarming pace, alters the pH of the water, blocks sunlight that other species need to survive and increases turbidity. These conditions cause fish and invertebrates to die.

The second category involves toxic species that are already capable of killing herbivorous fish and the species that consume them.

The third consists of nontoxic algae species equipped with spines or other attributes that damage the delicate tissues of fish and other marine life.

Algae blooms occur naturally in nature and provide food for many ocean inhabitants. They are a necessary component in maintaining the balance of life in our oceans.

It is "unnatural" algae blooms, usually involving non-native species and set off by "unnatural" circumstances, that exact the highest toll in killing off fish, shellfish and slower-growing algae species. Such blooms are the worst offenders in depleting our oceans of oxygen, fouling beaches and smothering reefs.

They are sending us a message that the ocean is in trouble and cannot maintain its balance of life. Typically occurring near coastal areas, they have been linked to increased nutrient availability caused by nitrogen-rich effluent from injection wells and land-based runoff containing fertilizers and pesticides. Contributing factors include the disappearance of herbivores, reduced freshwater-stream flows into the ocean and changes in water temperature.

In Hawaii, four "bad guy" alien invasive species of algae pose a clear threat to our reefs, marine life and native species of algae.

Hypnea musciformis — Maui's most problematical species — arrived in Hawaii in 1974, when it was introduced to Oahu's Kaneohe Bay as part of an unsuccessful aquaculture project. It is believed to have spread to other islands via boat traffic.

ALLEGRA DISTEFANO photo

A green sea turtle makes its way along a once pristine beach that is now covered with algae.

Hypnea grows in clumps and has intertwining branches with flattened tips and distinctive hooks at the end of them. When a clump is removed, the hooks remain behind to regrow, making it a difficult species to eradicate. Yellow-colored in sunlight and dark red in shade, Hypnea attaches to flat rocks on the ocean bottom.

In the bloom stage it forms massive, free-floating, smelly mats. Thousands of pounds of it wash up on Maui beaches, particularly in the winter months.

Hypnea has become a major food source for green sea turtles, but no one yet knows if it will prove to be a good diet for them. Its nutritional value has yet to be studied in comparison to that of disappearing native species once favored by our turtles.

Two other alien algae were introduced to Hawaii for experimental aquaculture in the mid-1970s. They are Kappaphycus spp. and Gracilaria salicornia.

Kappaphycus spp. is another fast-growing species found on the windward side of Oahu in Kaneohe Bay but not yet on Maui or the other islands. It grows by fragmentation of its thick, spiny branches and has the capacity to turn a life-filled diverse reef into a seaweed-dominated habitat with far fewer life forms. It can appear green, red or yellowish-orange, depending on lighting.

Gracilaria salicornia can be yellow to brownish green in color with cylindrical, but often flattened, branches. Currently found only in Hilo Bay of the Big Island and in Kaneohe Bay, this species shows a preference for calm, protected waters and forms large mats that effectively outcompete native species.

The fourth alien species is Acanthopora spicifera. It arrived in the islands in 1950 via a barge from Guam. It invaded Oahu first then spread to all of the islands. This species thrives on the high nutrient content in our coastal waters and reproduces rapidly.

Controlling damaging, alien species of algae is a constant, costly battle. A sure way to win the battle and begin restoring the balance of life in our oceans is to stop doing the things that cause algae blooms. Locally, this means protecting herbivores, reclaiming and reusing wastewater instead of pumping it out into the ocean, restoring the freshwater stream inflows and reducing our reliance on land-based chemical pollutants.

All of this will take educa-

See ALGAE
on the next page

Algae

Continued from Page C6

tion, money and the will to change.

Our best incentive is to re-

in abundance. Still [illegible] can not.

Pam Daoust [illegible] and volunteer marine naturalist at Maui Ocean Center. "Ka Mo'olelo Moana," or "The Ocean Story," is a monthly

Water's scarcity shows on its surface

The parched surface of an irrigation ditch in Puunene [illegible] irrigation water. Continuing dry conditions around Maui [illegible] pushed the Central Maui area into an extreme [illegible] drought last week.

The Maui News MATTHEW [illegible]

Vol. 28 • #39 September 25th • October 1st, 2008

LAHAINA NEWS

Visit us on the web at www.lahainanews.com

Environmental Protection Agency considering county injection well permit

BY EVE CLUTE

HONOKOWAI — The U.S. Environmental Protection Agency (EPA) seeks public comments before it issues a renewal permit to the Lahaina Wastewater Reclamation Facility.

The Underground Injection Control (UIC) permit allows millions of gallons of treated wastewater to be discharged into the ground through injection wells each day.

At the sewage treatment plant in Honokowai, steel case injection wells go 300 feet into the earth. The excess wastewater from treated sewage is discharged into the wells, where it mixes with ground water.

The mixture of ground water and wastewater eventually flows into the ocean.

Monitoring wastewater is the job of the state Department of Health's Safe Drinking Water Branch (SDWB).

Morris Uehara, a geologist with SDWB on Oahu, said many monitoring wells would be needed to check where the wastewater enters the ocean, which could damage reefs.

Gordon Muraoka, the SDWB water specialist on Maui, checks to see that each of the four Maui County injection well systems — Molokai, Kihei, Lahaina and Kahului — are sampled correctly according to each permit. Each permit only requires sampling about once a year.

The Lahaina plant's injection wells each day pump about 1.2 million gallons of treated R-1 wastewater into the Kaanapali Golf Resort pond, which is then used for irrigation.

In addition, 200,000 to 300,000 gallons of R-1 water is used at the treatment plant for cooling, onsite landscaping irrigation and to water the grass in detention basins, said Steve Parabicoli, county Water

SEE PERMIT ON PAGE 22

PERMIT, FROM PAGE 1

Recycling Program coordinator.

He said, "R-1 wastewater is treated by oxidation, clarification, sand filtration, and disinfected with UV radiation. After treatment, the R-1 water can be used on ag lands and for putting out fires. Increased use of recycled R-1 water is an efficient way to protect our water resources, especially during times of drought. Recycled R-1 water can be used for landscaping, irrigation and construction projects, instead of drinking water. To do that requires long-term financial commitment to build infrastructure to produce R-1 water and support from the public and other government agencies.

"The recycled water that is discharged into the injection wells is a mixture of R-1 and filtered R-2 water. All has undergone nutrient removal through our denitrification system."

Not all nitrogen is removed during the treatment process. Nitrogen feeds the algae that grows on reefs. An overgrowth of algae can kill reefs, as occurred during the West Maui algae blooms of 1989 and 1991.

Dave Taylor, chief of the county Wastewater Reclamation Division, commented, "Our current priorities in the wastewater division are to replace the aging system and to provide ongoing reliability and minimize sewage spills."

Both Taylor and Parabicoli agree that millions of dollars will be needed to set up a structure where additional wastewater can be UV treated to R-1 standard and reused on land.

The two county officials spoke at the Aug. 11 meeting of the Maui Nui Marine Resources Council (MNMRC).

Members of the council commented on the large amount of nitrogen in the ocean and studies that showed an association between injection wells and an overload of nitrogen, which feeds algae that smothers and damages reefs.

The 3,000,000 gallons of wastewater discharged into the Lahaina injection wells per day is disinfected with chlorine that leaves a residual of 0.5 percent, stated Parabicoli.

Russell Sparks, education specialist for the state Department of Land & Natural Resources' Division of Aquatic Resources, commented that "drinking water is being used for agriculture, and water that should be used for ag is being pumped into injection wells."

The Hawaii Wildlife Fund headed by Hannah Bernard has established a steering committee to prepare a strategic plan to reuse treated wastewater.

The committee suggested that the treated wastewater could be used to create a green belt within the fallow sugar cane fields to facilitate rain and create a cooler micro-climate.

Nancy Rumrill of EPA stated by phone that she and her staff are willing to hold a public meeting on Maui if she receives enough letters requesting the public hearing.

A Maui public hearing would include receiving public testimony and a question and answer session. Several members of the EPA, including the staff attorney, would attend this Maui hearing.

All letters will be answered and will help EPA understand the impacts of injected wastewater, and the urgent need to reuse injected wastewater.

A short letter to request a public hearing and comment on conditions for the injection well permit renewal can be e-mailed to RUMRILL.NANCY@EPA.GOV or mailed to Nancy Rumrill, EPA, Ground Water Office (WTR-9), 75 Hawthorne Street, San Francisco, CA 94105.

Letters with comments on renewing the Lahaina UIC permit are needed by Oct. 23.

Copies of the proposed permit, the Statement of Basis, the public notice and the County of Maui's application are available for review at Lahaina Public Library and online at http://www.epa.gov/region09/water/groundwater/uic-permits.html.

Huelo resident Lucienne DeNaie toured the Lahaina Wastewater Reclamation Facility earlier this year. She said the employees were dedicated and well-trained, and the monitoring systems were well-maintained. However, the facility has high energy costs because the pumps are old-style and inefficient, she commented.

DeNaie

DeNaie is interested in the best use of all water. Between 2002 and '04, she researched Maui's water resources, including the use of wastewater. She released a report in 2005 detailing water resources in West, Central, Upcountry and South Maui.

What became clear to DeNaie is that there is no realistic understanding of the demands of future developments on wastewater capacity. A proposed solution to future growth is to add more private sewage treatment facilities with injection wells as back-up.

DeNaie sees the benefits in having small treatment plants close to new developments to lessen the potential for sewage spills and lower energy costs due to pumping.

However, the private sewer systems are costly and raise the price of the housing development, which increases the price of affordable homes. These homeowners will pay higher sewage bills than in the county's system.

DeNaie admits that the use of injection wells is a complicated issue.

"Yet it doesn't make sense to face perennial droughts while using good, clean drinking water to keep resort and condo landscaping watered. Our county reclaimed water branch is working hard to secure the investment that will let more of our treated wastewater be put to use for irrigation. The EPA can support this effort by including conditions in renewal permit," stated DeNaie. ■

"Ericka K. Gaastra"
[redacted]

10/01/2008 01:06 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc "Heather T. Berliner" [redacted]
bcc
Subject wastewater management on west maui

Aloha Ms. Rumrill,

It is of utmost importance that the West Maui community have a state of the art waste management due to our natural beauty. We need to make sure that the reefs are not damaged by untreated waste going into the ocean. Our local lifestyle and tourism based economy rely on the beauty and health of our surroundings. The use of treated water on the Ag fields and fallow fields would be a positive thing if in fact the runoff soil (from rain storms) would NOT contain nitrogen or too much chlorine. The county of Maui has been lacked of maintaining an infrastructure that keeps up with development; therefore, it is so critical that a new functional system be put in place with the strict guidelines to protect our environment for future generations. Our local economy needs tourism which requires smart planning for our natural resources.

A local hearing or town meeting with the EPA would be beneficial to all.
We appreciate your time and concern on this matter.

Sincerely,
Ericka Gaastra
Activity Concierge
Expedia Local Expert Team

"Cochran, Elle"
[redacted]
09/17/2008 04:52 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Asking for a Public Hearing

History: This message has been forwarded.

Aloha Nancy,
I'm told that if enough people write in for a Public Hearing on the Lahaina Wastewater Treatment Facility Injection Well Permit then we may get it. I believe getting this information out to the public would bring awareness to a subject of concern that many people are not aware of. Most of all having the public involvement is of utmost importance!
Being a lifelong resident of Lahaina, I believe we need to tighten up standards on the Injection Wells now before it's too late to turn our environmental disasters around. Our marine, reef and human health depend on it!
I am a strong advocate for water recycling for agriculture uses, thus feel we need to upgrade our systems to accommodate this. I am also in the process of restoring Lo'i's in Honolua Valley where I live and need the streams restored to have fruitful Taro fields. If the agriculture companies in the area would utilize recycled water then we would have our streams flowing again!
Mahalo for your time,
Elle Cochran
President
MauiUnite!
808-281-7709

U.S. Environmental Protection Agency
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

ATTN: Nancy Rumrill

RE: Public Comments on Lahaina, HI WWRF UIC Permit Number HI50710003

Dear Ms Rumrill:

Thank you for the opportunity to comment on the proposed permit to inject wastewater from the Lahaina Wastewater Reclamation facility. The Maui Nui Marine Resource Council (MNMRC) is a broad-based community group working to apply ecological principles to education, research, and agency management like this, so that our nearshore waters will be restored with an abundance of sea life.

Our members and participants include fishermen, scientists, Hawaiian cultural practitioners, business people and residents who love Maui's coastal environment. Traditional Hawaiian belief honors our reefs. The *Kumulipo*, or creation chant, reveals our origin in the sea, and teaches that coral and other sea life is our family. The Council therefore asks that in considering the referenced permit, the EPA will include conditions to protect aquatic life and balanced aquatic ecosystems.

Our shallow coastal groundwater's effect on near shore marine waters is clearly evident—we can see groundwater (freshwater) seeping into the near shore environment. This visible seepage is typical of Hawaiian Islands hydrology. Given this interface between groundwater and marine, we maintain that any waste injection into groundwater must avoid any compromise of coastal water quality.

We understand the primary focus of the Underground Injection Control permit: to protect drinking water, as authorized by the Safe Drinking Water Act. We cannot ignore our marine ecosystems. We therefore respectfully oppose a permit that may comply with one federal law but is not compliant with another federal law. We ask that any permit issuance recognize the visible and intimate connection of these waters, and the potential for injected waste to negatively impact coastal waters—that would negatively impact our economy, our Hawaiian culture, our health and well being. We ask that EPA protect our ocean waters from degradation and comply with state water quality standards and the Clean Water Act.

It is increasingly evident that injected waste is damaging our near shore ecosystems. Resource managers at the Hawaii Department of Land and Natural Resources, Division of Aquatic Resources have reported to our Council on significant and dramatic decline of coral within the proximity of the county's three injection wells. It is our understanding that the Hawaii Department of Health has reported to EPA and to Congress, that coastal waters in the vicinity of the wells are impaired by pollutants known to be associated with sewage effluent. Researchers from the University of Hawaii Botany Department have reported to our Council that a direct connection can be made between the injected sewage and the invasive algae blooms in nearshore waters in the vicinity of the injection well plumes.

We ask that your permit include conditions to protect our groundwater sources for drinking water use, and all aquatic ecosystems that support cultural, fishing, and recreation.

We ask that you specifically include water-quality-based permit limits designed to achieve compliance with surface water quality standards in the coastal waters.

We ask that the permit be required to comply with any Total Maximum Daily Loads established to support attaining water quality standards.

We ask that EPA address comprehensive watershed planning to ensure that this and all decisions support clean and healthy near shore waters that we and our visitors can fish or swim in with no concern for health hazards: it is paramount that solutions are beneficial to all concerned.

Sincerely,

Ed Lindsey
Chair, MNMRC

Dylan Covington-Walker
[redacted]
09/18/2008 10:40 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Lahaina injection well

Aloha! i am writing this e-mail in regards to the plan to renew the permit for the injection well. I feel the water quality parallel to the injection site is more than questionable. studies have shown that the water parallel to the injection sites all around Maui, test high in PH and ecoli levels witch is destroying our reefs. if we were to pump this water to the 1,000 acres stretching from Honokawai to Kaanaplii witch is considered fire hazard then we could solve both issues.

I request that we reduce the amount of water being pumped in to the injection wells and the water that is pumped be treated to grade 1 quality water. Also a storage of waste water for irrigation and in case of fire.

i also request that EPA comes to Maui for a public hearing and to tour the areas of concern and discuss ways the EPA can work together and help reduce the pollution of the injection wells, Thank you for your time, Sincerely Dylan Covington-Walker

Donna L L I Brown
[redacted]
09/23/2008 01:38 AM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Lahaina Injection wells

Nancy Rumrill
I would like to request public hearings in the Lahaina area on Maui for the permit renewal of the Lahaina injection wells.
I am a longtime resident of Lahaina area and have worked with various reef monitoring programs in Hawai'i for the past 17 years. I have done hundreds of dives in the area near the injection wells and have witnessed the ongoing degradation of the reefs nearby. Besides the likely percolation of groundwater into the nearshore environment, putting all that water into a hole in the ground is just plain wasteful. We are in drought conditions and have been for years. There used to be sugarcane fields directly above where the sewage treatment plant is now. The whole area is now fallow and a great , dry fire hazard. Instead of injecting the water, it could be used to irrigate the land for farming, landscaping, golf courses and creating a green way that could help prevent fires. This would leave the more pure water for drinking. Our population is growing and the lack of drinking water will only continue to get worse if we don't use measures to conserve water.
Thank you for your consideration.
Aloha, Donna Brown

donnabro.vcf

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:07 AM -----

From: Darla J White <[redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/07/2008 01:21 AM
Subject: Maui Injection Well testimony

U.S. Environmental Protection Agency.

Ground Water Office (WTR-9)

75 Hawthorne Street

San Francisco, CA 94105

Attn: Nancy Rumril

rumrill.nancy@epa.gov

Dear Dr. Rumrill:

Thank you for the opportunity to give public testimony in the permit renewal process for the Lahaina Was wells.
I would like to echo the data and testimony of Meghan Dailer and Robin Knox, as well as Dan Polhemus' few.
While there are many facets of this subject to address, my time is unfortunately limited and so I will brief coral reef habitat, recommendations for treatment improvements. and a reminder that we stand in the face
Coral Reefs
I am a marine scientist and research diver with the Division of Aquatic Resources on Maui, collaborating work currently focuses on the reef at Kahekili Beach Park, and I spend a lot of time on the reef there. As whole of the Hawaiian Archipelago (I am currently aboard a NOAA research vessel now) and is familiar certainty that Maui's reefs are in a fragile and stressed state, even without data. The reef at Kahekili show algal blooms, areas of the reef are crumbling, and freshwater seeps emerge at many areas on the reef. Me that algae on the reef are passively uptaking nutrients with a sewage signal. Invasive algae blooms are loc As an example from the past: when the Kapalua injection wells closed, the algae problem in that area sub Program (CRAMP) data show clear declines in coral cover in the areas in proximity to injection wells, as

Maui's coral reefs are in a state of rapid decline. Ecosystems that have been evolving and flourishing for collapsing in mere decades due to anthropogenic impacts. We acknowledge that there are many stressors injection wells are a major contributor (unpublished data).

Advanced Wastewater Treatment

I highly recommend that we not settle for the next minimum as is so frequently done, by putting our effor does not meet health standards, but ensure better water quality through advanced wastewater treatment op wastewater to the 'fifth degree' wherein the product is drinkable water. For an island community such as water is greater than the supply, we should plan for future growth and put the appropriate measures and te Federal assistance to make the necessary improvements to the wastewater facility, and infrastructure for w in attaining these resources.

Climate Change

With committed global warming and committed ocean acidification, it is imperative to remove anthropog they may have the energy to grow and reproduce instead of spending energy fighting off stressors. The In the US Coral Reef Task Force Meeting this year have produced one message: *we only have ten years* . "E are not" was the message from USCRTF EPA member Stephen L. Johnson, directed to Hawaii's Planning We have an opportunity here to make significant changes to the way we are impacting our reefs, and it sh requires Federal assistance.

When I say 'we', I speak for all of the people I talk with in the community who are concerned about the in supply, and our health and well being. This constitutes a lot of folks, so if they were not able to comment The current standards and regulations for R-1 water are insufficient for public health; as I am sure you hav Knox. Please recommend that advanced treatment be the new policy for our island community. Unlike th harder to come by out here.

I sincerely appreciate this opportunity to give my input on this issue.

Best regards,

Darla J White

Field Coordinator

Kahekili Herbivore Enhancement Area (HEA), Maui

University of Hawai'i, Botany Department &

Hawai'i Division of Aquatic Resources

130 Mahalani Street, Wailuku HI 96793

Cell: 808-345-2312; Fax 888-570-2641

onareef@yahoo.com

darla.j.white@hawaii.gov

EPA_Letter.docx

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
---- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:04 AM ----

From: "Charles Villalon" [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/06/2008 12:05 PM
Subject: Waste water injection wells on Maui.

I would like to introduce myself, my name is Charles Villalon I am a descendant of two 100% Native Hawaiian grandparents, my genealogy can be traced 300 years in Hawaii prior to this date. I am not a scientist, but I am an avid gatherer/fisher for most of my life as a Keiki O Ka Aina. I was a former Div. of Conservation & Resource Enforcement Officer for 15 years. At present I am a Coastal Zone Management Inspector for 13 years, with the Maui County's Zoning Administration & Enforcement Division.

I would elect myself as one of few individuals who actually know the coastal areas of Maui Nui, like the back of my literal hand. I can also attest to the rapid decline of quality of near ocean waters and it's resources within the Islands of Maui Nui, to have accelerated in the past decade with extreme impacts on our coastal environment never experienced in the history of Hawaii Nei. The decline of habitat, ocean species, and water quality can only be reported by one who is caring for the resource on a daily basis. And I believe I am but a few of individuals who have dedicated my Kuleana as a Steward and Eyes of the Land (A True Maka A'inana) for the betterment of our future generations. These inject wells should cease immediately until a more efficient filtering process can be developed or a diversion of gray water can be implemented.

Enclosing I would like to extend a Mahalo Nui to the individuals responsible for setting up this email comment process towards such an important issue, there should be a process liken unto this one for every Public Commentary process dealing with all resources w/in our state.

- -

County of Maui.

IT Security measures will reject attachments

larger than 12 MB, and will block or quarantine

high-risk file types in attachments.

CarlosCharlie Noa
[redacted]

09/19/2008 01:21 PM

Please respond to [redacted]

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject permit Lahaina

To: Nancy Rumrill; EPA region 9 office ; Ground Water Office (WTR-9)
75 Hawthorne Street, San Francisco, CA 94105
Dear Nancy Rumrill,
Lahaina residents such as myself would like that there would be a meeting in Lahaina in regard to the permit mentioned below.
Too many actions take place on this island the folks are not aware of, and many have created terrible consequences. It is time to 'open' the books so to speak and let us all know what is best for this abused island. Water is a big concern.
Thank you for your time.
Carlos J. Noa
PO Box 936
Lahaina, Maui, HI
96767
808-280-5533
Aloha.
Subject: Intent to issue an Underground injection control (UIC) permit for the Lahaina Wastewater Reclamation Facility, Lahaina, Maui

Purpose: 1] comment on the permit for the Lahaina Wastewater Reclamation Facility
Select an issue [degradation of reef at Kahekili, lack of UV treatment for injected wastewater, high degree of bacteria/viruses in ocean, fire hazard for 1,000's of acres of ag land are now dry grass/weeds from Honokawai to Kaanaplii. climate change due to loss of mauka green areas, etc.]

2] to request conditions be placed on the permit
select a relevant reason to make a change [reduce amount of wastewater pumped into injection wells; all injected wastewater must be treated; reuse wastewater to irrigate a green belt in dry grass areas, build a holding tank for storage of waste water for irrigation and fire fighting etc].

3] request that EPA comes to Maui for a public hearing and [to tour the areas of concern; discuss ways the EPA can assist in reusing injected wastewater. etc]

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:04 AM ---

From: "Byron Doan" [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 10/28/2008 11:09 AM
Subject:

Maui Preparatory Academy
www.mauiprep.org

Dear Nancy Rumrill,

My name is Byron Doan. I am fourteen years old and I read you're your newspaper article about two weeks ago. My class and I from Maui Preparatory Academy agree with your view concerning about how the water company is sending waste water to the ocean. We think that we need the ocean to look beautiful and we need the reefs to live. If we don't fix this, Maui won't look beautiful and there will be no more beach for people who love going to the beach. I care about the county of Maui and I hope we can do something to help this concern.

PACIFIC WHALE FOUNDATION

November 6, 2008

U.S. Environmental Protection Agency
Ground Water Office (WTR-9)
75 Hawthorne Street
San Francisco, CA 94105

ATTN: Nancy Rumrill

RE: Public Comments on Lahaina, HI WWRF UIC Permit Number HI50710003

Dear Ms. Rumrill:

Thank you for the opportunity to comment on the proposed permit to inject wastewater from the Lahaina Wastewater Reclamation facility. I am providing comments and discussion on behalf of the Pacific Whale Foundation, a Maui-based non-profit organization dedicated to marine conservation, education and research.

We are opposing the permit application to continue injecting nitrogen-laden wastewaters into the near-shore environment off Lahaina due to reasons discussed in this letter.

According to a NOAA study, Hawaii's reef-related tourism and fishery activities generate $360 million annually for the state's economy. Covering 410,000 acres, Hawaii's reefs are valued at an estimated $10 billion. The degradation of the coral reefs and near shore waters around Maui threatens to impact not only tourism commerce, but also our local ways of life. Maui's coral reefs provide a destination to visitors, a barrier against the elements, they provide residents with recreational activities and allow others to practice sustenance gathering.

Studies show that in some areas around Maui our coral cover has diminished by 90% over the past decade. Russell Sparks with Maui's DLNR presented scientific evidence of the decimation of Maui's near shore reefs to both a public audience at Pacific Whale Foundation on June 19, 2008 and to the Maui New Marine Resource Council on August 14, 2008. His presentations depicted an abnormal and rapid shift from a dominant coral cover to a dominant algal cover in areas near injection wells. Though not the only contributing factor to coral loss, these areas show significant correlation to injection well sites.

The hydraulic conductivity coupled with the differences in salinity between the injectate and the groundwater causes leaching of effluent into surrounding aquifers and coastal waters resulting in a buoyant plume that displaces other shoreward flowing ground water. According to a 2006 USGS model, groundwater discharging from the core of an injection plume is nearly 60% effluent at shore (Hunt, 2006). The high levels of nitrogen bearing nutrients found in effluent trigger algal blooms and adversely affect coral reefs.

Meghan Dailer & Celia Smith of University of Hawaii have documented the highest ever ratios of Nitrogen isotopes in algal tissues resultant from Lahaina POTW's injection wells. Dailer & Smith's research, among others demonstrates the polluting effects of the Lahaina injectate on near shore environment. It is prudent that the Lahaina injection permit also meet permitting requirements defined under the Federal Clean Water Act and State Water Pollution Control Laws.

As a marine-centric organization, Pacific Whale Foundation's goal is to protect the valuable coral reefs and their dependent organisms and ecosystems. We ask that a proactive approach be taken and that "water reuse is recognized as an environmentally preferred method of disposing treated wastewater (effluent), when compared to the traditional disposal methods through outfalls and injection wells," as stated in the 2004 Hawaii Water Reuse Survey and Report prepared for Hawaii DNLR,– Final Draft, (2005), p. 7.

To date the County has failed to bear the necessary burden of proof required by the permit application that the continued injection of wastewater:

- Will not result in releases of nitrogen-bearing nutrients and other water pollutants, harm coral reefs, or impair commerce and tourism
- Will yield significantly lower costs and higher benefits for the citizens of the county when compared to phasing out injection in favor of wastewater reuse for agricultural and ornamental irrigation, fire prevention, stream flow restoration and replenishment, and other purposes.

Simply stated, the County has not adequately explored all the possible uses of wastewater effluent, and if for that reason alone the permit should be denied. Maui County must take initiative and address water as the valuable resource it is.

Knowing that wastewater injection wells pose serious threat to near shore waters and coral reefs, we ask that the permit application be denied and that the EPA requires wastewater to be treated to an R-1 level and water reuse strategies are prioritized over the dated method of injection wells.

Sincerely,

Brooke Porter, M.Ed.
Director of Conservation
Pacific Whale Foundation
300 Maalaea Road, Suite 211
Wailuku, HI 96793
www.pacificwhale.org

References:

Cesar, H., Van Beukering, P., Pintz, S. & Dierking, J. 2002. Economic valuation of the coral reefs in Hawaii. NOAA - Cesar Environmental Economics Consulting.

Hawaii DNLR. 2005. 2004 Hawaii Water Reuse Survey and Report –p. 7.

Hunt, C.D. 2006. Ground-Water Nutrient Flux to Coastal Waters and Numerical Simulation of Wastewater Injection at Kihei, Maui, Hawaii. Island of Maui, Hawaii: U.S. Geological Survey Scientific Investigations Report 2006-5283, 69 p.

Testimony Opposing the Lahaina POTW Wastewater Underground Injection Permit Renewal

November 6, 2008

Good evening, my name is Brooke Porter and I am speaking on behalf of Pacific Whale Foundation a Maui-based non-profit organization. We are opposing the permit application to continue injecting nitrogen-laden wastewaters into the near-shore environment off Lahaina.

According to a NOAA study, Hawaii's reef-related tourism and fishery activities generate $360 million annually for the state's economy. Covering 410,000 acres, Hawaii's reefs are valued at an estimated $10 billion. The degradation of the coral reefs and near shore waters around Maui threatens to impact not only tourism commerce, but also our local ways of life. Maui's coral reefs provide a destination to visitors, a barrier against the elements, they provide residents with recreational activities and allow others to practice sustenance gathering.

Studies show that in some areas around Maui our coral cover has diminished by 90% over the past decade. Resource Managers from Maui's DLNR presented scientific evidence of the decimation of Maui's near shore reefs to Maui audiences on June 19, 2008 and August 14, 2008. The presentations depicted an abnormal and rapid shift from a dominant coral cover to a dominant algal cover in areas near injection wells. Though not the only contributing factor to coral loss, these areas show significant correlation to injection well sites.

The hydraulic conductivity coupled with the differences in salinity between the injectate and the groundwater causes leaching of effluent into surrounding aquifers and coastal waters resulting in a buoyant plume that displaces other shoreward flowing ground water. According to a 2006 USGS model, groundwater discharging from the core of an injection plume is nearly 60% effluent at shore (Hunt, 2006). The high levels of nitrogen bearing nutrients found in effluent are pollutants and trigger algal blooms adversely affecting coral reefs. It is prudent that the Lahaina injection permit also meet permitting requirements defined under the Federal Clean Water Act and State Water Pollution Control Laws.

As a marine-centric organization, Pacific Whale Foundation's goal is to protect the valuable coral reefs and their dependent organisms and ecosystems. We ask that a proactive approach be taken and that "water reuse is recognized as an environmentally preferred method of disposing treated wastewater (effluent), when compared to the traditional disposal methods through outfalls and injection wells," as stated in the 2004 Hawaii Water Reuse Survey and Report prepared for Hawaii DNLR,– Final Draft, (2005), p. 7.

To date the County has failed to bear the necessary burden of proof required by the permit application that the continued injection of wastewater will not result in releases of

nitrogen-bearing nutrients and other water pollutants, harm coral reefs, or impair commerce and tourism. The County has also failed to demonstrate that the continued injection will yield significantly lower costs and higher benefits for the citizens of the county when compared to phasing out injection in favor of wastewater reuse for agricultural and ornamental irrigation, fire prevention, stream flow restoration and replenishment, and other purposes.

Simply stated, the County has not adequately explored all the possible uses of wastewater effluent. Knowing that wastewater injection wells pose serious threat to near shore waters and coral reefs, we ask that the permit application be denied and that the EPA requires wastewater to be treated to an R-1 level and water reuse strategies are prioritized over the dated method of injection wells.
References:

Cesar, H., Van Beukering, P., Pintz, S. & Dierking, J. 2002. Economic valuation of the coral reefs in Hawaii. NOAA - Cesar Environmental Economics Consulting.

Hawaii DNLR. 2005. 2004 Hawaii Water Reuse Survey and Report –p. 7.

Hunt, C.D. 2006. Ground-Water Nutrient Flux to Coastal Waters and Numerical Simulation of Wastewater Injection at Kihei, Maui, Hawaii. Island of Maui, Hawaii: U.S. Geological Survey Scientific Investigations Report 2006-5283, 69 p.

Anne Clarke
150 Puukolii Rd
Lahaina HI 96761
Sept 14, 2008

Nancy Rumrill

Much has changed since the 1998 renewal of the EPA UIC Permit for the Lahaina Wastewater Reclamation Facility. There is a substantial increase of housing developments, which has increased the amount of injected waste water to 3mgd.

The waste water should be reused. Federal funds are needed to add additional pipes that go to the nearby resorts. The resorts can use RI water that is being injected, instead of drinking water.

We are in a drought and have restricted water use while usable RI water is being wasted.

I ask that you hold a public meeting on West Maui to hear the issues first hand.

Thank you

Anne Clarke

"angelika hofmann"
[redacted]
09/20/2008 01:39 PM

To Nancy Rumrill/R9/USEPA/US@EPA
cc
bcc
Subject Lahaina Wastewater Reclamation Facility, Lahaina, Maui

To: Nancy Rumrill; EPA region 9 office ; Ground Water Office (WTR-9)
75 Hawthorne Street, San Francisco, CA 94105

Subject: Intent to issue an Underground injection control (UIC) permit for the Lahaina Wastewater Reclamation Facility, Lahaina, Maui

Aloha, I am writing to comment on the permit for the Lahaina Wastewater Reclamation Facility here on Maui.
Injection wells are causing a high amount of degradation of our reefs. A good example is the reef at Kahekili in West Maui near Lahaina. There is a Hawaii Division of Aquatic Resources study that shows the abundant algal bloom over reefs in the areas that injection reefs are present. They cause a high degree of bacteria/viruses in the ocean that Maui residents use recreationally everyday.
I request that stringent conditions be placed on the permit. It should be mandated that all injected wastewater must be treated to be very sanitary before being pumped out to the ocean. We could reuse wastewater to irrigate a green belt in dry grass areas so therefore we must build a holding tank for storage of waste water for irrigation and fire fighting.

I request that EPA comes to Maui for a public hearing and to tour the
areas of concern. We hope that the EPA can assist Maui in reusing wastewater that is normally injected into the sea!
Mahalo, Angie

--
Angie Hofmann
[redacted]

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
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75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:03 AM -----

From: "angelika hofmann" [redacted]
To: Nancy Rumrill/R9/USEPA/US@EPA
Date: 11/05/2008 12:41 PM
Subject: Injection Wells on Maui

Intent to issue an Underground injection control (UIC) permit for the Lahaina Waste water Reclamation Facility, Lahaina, Maui

Aloha, I am writing to comment on the permit for the Lahaina Waste water Reclamation Facility here on Maui. I hope this permit is turned down or held to very tight restrictions.
I am 29 years old and grew up on Maui. The degradation of the reef I have seen in my lifetime is phenomenal. Please help Maui get off this injection well systems. For my future and the future of the next seven generations.
Injection wells are causing a high amount of degradation of our reefs. A good example is the reef at Kahekili in West Maui near Lahaina. There is a Hawaii Division of Aquatic Resources study that shows the abundant algal bloom over reefs in the areas that injection reefs are present. They cause a high degree of bacteria/viruses in the ocean that Maui residents use recreationally everyday.
I request that the permit be turned down or stringent conditions be placed on the permit. It should be mandated that all injected wastewater must be treated to be very sanitary before being pumped out to the ocean. Furthermore we could reuse wastewater to irrigate a green belt in dry grass areas so therefore we must build a holding tank for storage of waste water for irrigation and fire fighting.

We desperately need to be filtering and reusing all of our water and not wasting it by pumping it out to the ocean.

I thank the EPA for coming to Maui to hold a public hearing. I request that this permit is rejected or held to very tight conditions. I am hopeful that the EPA can assist Maui in reusing waste water that is normally injected into the sea!
Mahalo, Angie

--
Angie Hofmann
Save Makena Community and Youth Organizer
808 357-3134
www.myspace.com/savemakena -"view blog"
www.savemakena.org

Nancy Rumrill
U.S. Environmental Protection Agency, Region 9
Ground Water Office, WTR-9
75 Hawthorne Street
San Francisco, CA 94105
415-972-3293
415-947-3545 (FAX)
----- Forwarded by Nancy Rumrill/R9/USEPA/US on 05/12/2009 10:20 AM ----

From: [redacted]>
To: Nancy Rumrill/R9/USEPA/US@EPA
Cc: Shawneen Schweitzer <shawneen@hawaii.rr.com>, jkatsis@mauiprep.org
Date: 10/28/2008 12:36 PM
Subject: Aloha Nancy

Aloha Nancy,

My name is Zane Kekoa Schweitzer and I was born and raised on the island of Maui. I am a freshman at Maui Preparatory Academy. I have read your article in Maui News on october 1st and my class and I agree with your case and point
concerning the underground wastewater problem that may be flowing into the ocean and killing the reef and fish. I am dedicated to helping Maui in any way I can to keep it paradise and a beautiful place to live.

I am a surfer so I understand the problems with the reef and that the
water is being contaminated with fertilizers from golf courses and even simpler things such as erosion from new structures being built then all the loose dirt flows right into the ocean.
I support you and others such as Save Honolua and Restore Hawaii water flow.

Aloha and Mahalo,
Zane Kekoa Schweitzer