THE WATER SPOT

HAWAII STATE DEPARTMENT OF HEALTH ♦ SAFE DRINKING WATER BRANCH

LAHAINA GROUNDWATER TRACER STUDY

The Lahaina Wastewater Reclamation Facility (LWRF) is located approximately 0.5 miles from the shoreline at the resort community of Kaanapali, Maui, Hawaii. This facility currently discharges approximately 2 to 4 million gallons per day of treated wastewater into four injection wells. Included in the injectate are nutrients that in sufficient quantities may cause degradation to the nearshore water quality and to the coral reef ecosystems. A joint effort between the University of Hawaii (UH), Maui County, and Department of Health (DOH) quantified the nutrient load to the nearshore waters from wastewater injection at the LWRF.

Estimating the nutrient load required: 1) identifying the locations of submarine wastewater discharge, 2) quantifying the rate of submarine wastewater discharge, and 3) measuring concentrations of the nutrients in the submarine wastewater discharge. This study met these requirements by conducting a tracer test, surveying the coastal zone for chemical indicators of groundwater discharge, and instituting a long-term nutrient sampling program.

The tracer dye test identified points where the injected wastewater was entrained in the submarine groundwater discharge (SGD) and established the groundwater travel time between the injection wells and the coastal submarine springs. To initiate the tracer test, the UH led by Dr. Craig Glenn of the Dept. of Geology and Geophysics added 1,700 gallons of yellow-green dye into the two primary injection wells at the LWRF on July 28, 2011. Maui County and the staff of the Wastewater Reclamation Division provided space for mixing of the dye, optimized the wastewater injection for the tracer test, and provided the critical logistical support needed for a successful tracer test. The tracer dye was detected at a set of coastal submarine springs 84 days after the dye addition by the UH monitoring team led by Meghan Dailer. The tracer dye concentration peaked in late spring of 2012, approximately 10 months after initiation of the tracer test. It will remain above analytical detections for at least two more years. In addition to being temporally persistent, the

The UH Study Team adds tracer dye to the wastewater injection stream.

SEE LAHAINA TRACER STUDY, PAGE 2

VOLUME 18, ISSUE 3 JULY 2014

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LAHAINA GROUNDWATER TRACER STUDY

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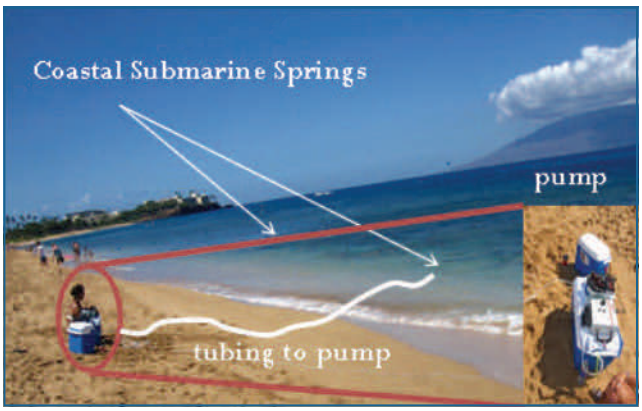
tracer dye plume was also spatially expansive, being more than 800 meters wide at the shoreline.

The rate of groundwater discharge into the marine environment (i.e. SGD) was evaluated using radon, a naturally occurring radioactive gas. Dr. Henrietta Dulaiova and Christine Waters of the UH Geology and Geophysics Department conducted a coastal radon survey. Radon is an inert radioactive gas that is nearly absent in marine water but is enriched in groundwater. Since this gas is short-lived due to having a half-life of only 3.8 days, marine water with radon concentrations greater than ambient levels indicate nearby points of SGD. Areas with elevated radon and detectable concentrations of the tracer facilitated the quantification of the coastal wastewater discharge.

The nutrient concentrations in the SGD were measured by a team from DOH's Clean Water Branch headed by Watson Okubo. This team conducted monthly sampling at the submarine springs from January 2012 through the present. For the calendar year 2012, the average nitrogen concentration was about 0.15 milligrams per liter while the average phosphorus concentration was about 0.4 milligrams per liter.

The Groundwater Protection Program of the Safe Drinking Water Branch led by Daniel Chang combined the tracer, SGD, and nutrient data to estimate the coastal nutrient load. The results of this analysis were presented at the 2014 Hawaii Water Conference by Robert Whittier, the lead project analyst. This study estimated that about 950 and 2,500 pounds of nitrogen and phosphorus respectfully are discharged each year to the nearshore waters due to wastewater injection. This is in sharp contrast to the assumed 150,000 and 130,000 pounds per year of nitrogen and phosphorus respectively that had been estimated in the early 1990s. The reduction is due to the implementation of advanced nutrient removal at the LWRF, more wastewater being diverted to reuse, and that the previous studies did not account for the large amount of nitrogen reduction that occurs between the time of injection at the wells and the discharge at the submarine springs.

The Lahaina Groundwater Tracer Study was a complex undertaking that was made possible by a partnership between county, state, and federal agencies. Using a broad range of scientific techniques, the agencies collaborated to solve the question regarding the magnitude of the coastal nutrient load resulting from wastewater injection. The results of this study give wastewater utilities and regulatory agencies the tools needed to make sound management decisions.



Sampling the SGD at the coastal submarine springs.

NOTICES

PREVENTION OF WELL CONTAMINATION

The Safe Drinking Water Branch (SDWB) periodically inspects drinking water facilities, including drinking water wells for actual and potential contamination. During recent inspections, SDWB staff have noticed drinking water wells under construction or repair, which are not adequately protected from contamination, using measures, such as weighted or bolted pieces of plywood. The plywood covers are easily damaged by vandals.

In accordance with the Department of Land and Natural Resources, Commission on Water Resource Management (CWRM) Well Construction & Pump Installation Standards, Section 2.10 Well Completion, "Wells must be adequately protected at all times during and after construction to prevent the entrance of surface water runoff, pollutants, and contaminants; unauthorized access; and damage to the well." The section goes on to detail measures like extending the casing two (2) feet above the ground surface, installation of lockable covers, welded casing cap and a 4" thick concrete base that may or may not apply to the case of temporarily out-of-service wells.

The SDWB requires the following for drinking water wells under construction and repair:

- For flanged base plates, a blind flange is required.
- For non-flanged pieces, an adapter or extra fitting to a blind flange or welded cap per the Well Construction & Pump Installation Standards is required.

Please note CWRM may update the Well Construction & Pump Installation Standards to include a definition of a sanitary well seal in the future.

The SDWB notified active well drillers of these requirements on April 2, 2014. As water purveyors, you are responsible to ensure that the wellhead is protected from contamination, including when the well is under construction or repair.

If there are any questions, please call Mr. Michael Miyahira, Supervisor of the SDWB Engineering Section at 586-4258.

USDA FUNDING

USDA and Hawaii Rural Water Association will be offering a workshop focusing on the practical program information of USDA's water and wastewater financing program. Training on preparing a Preliminary Engineering Report and an Environmental Report will also be given. Information and registration forms may be found here and on page 4.

RAINWATER FAQS

Although the SDWB does not regulate rainwater catchment systems for individual homes, comments and precautions have been published on our website at http://health.hawaii.gov/sdwb/raincatchment/ to help make a system safe for domestic use. In addition, a set of Frequently Asked Questions on the SDWB's Rainwater Catchment Policy may be found here.

United States Department of Agriculture

Preliminary Engineering and Environmental Report Training

USDA Rural Development and the Hawaii Rural Water Association will be conducting a series of workshops that will focus on presenting an overview of USDA Rural Development's Rural Utilities Service (RUS) water and wastewater financing programs.

Workshop attendees will learn, "in-depth", practical program information including: assistance and eligibility requirements, funding uses, financing conditions, and how to meet USDA RUS priority goals. Attendees will receive comprehensive training on the required preliminary engineer report (PER). Attendees will also gain knowledge and skills to prepare USDA's Environmental Report (ER) to assist with compliance of federal requirements for review under the National Environmental Policy Act (NEPA).

Classes are limited to an attendance of 30 people and will run from 8:30 am to 12:30 pm, with sign-in at 8:00 am. Please complete the second page of the registration form with names of attendees from your company. **A limit of 5 attendees per company.** There is no cost for this training.

Registration Forms must be submitted no later then two weeks prior to the class.
Complete Registration on Page 2.

Island	Date and Time
Kauai Kauai County Civil Defense EOC 3990 Kaana Street, #100 Lihue, Hawai'i 96766	July 29, 2014 8:30 AM—12:30PM
Oahu State Drinking Water Branch, Department of Health 919 Ala Moana Blvd., 5th Floor Conference Room Honolulu, Hawai'i 96814	July 30, 2014 8:30 AM—12:30PM
Maui St. Theresa Church Cafeteria/Main Hall 25 West Lipoa Street Kihei, Hawai'i 96753	September 3, 2014 8:30 AM—12:30PM
West Hawaii West Hawaii Civic Center Conference Room G 74-5044 Ane Keohokalole Highway Kailua-Kona, Hawai'i 96740	September 15, 2014 8:30 AM—12:30PM
East Hawaii USDA—Pacific Basin Agricultural Research Center 64 Nowelo Street Hilo, Hawai'i 96720	September 18, 2014 8:30 AM—12:30PM

Email Registration to: hrwaoffice@hawaiirwa.org
Mail registration to:
Hawai'i Rural Water Association 1325 S. Kihei Rd., Suite 200 Kihei, HI 96753

Contact our office at **808-495-0264** for further information.

Quarterly Calendar

- **7/1 Operations & Emergency Plan Due**
  Surface Water Systems
- **7/10 CT Report Due**
  Surface Water Systems
- **7/10 MRDL Report Due**
  Disinfection Systems
- **7/10 TCR Report Due**
  Systems who complete their own tests
- **7/10 Enhanced Coagulation Report Due**
  Conventional Treatment Systems
- **7/10 Chemical Quarterly Monitoring Report Due**
  Systems with quarterly monitoring requirements
- **7/21-23 WTPO Exam**
  Kauai, Kona, Maui, Hilo, & Oahu
- **7/28 DSO Applications Due**
  October 2014 Examinees
- **8/8 CT Report Due**
  Surface Water Systems
- **8/8 TCR Report Due**
  Systems who complete their own tests
- **8/26 Board of Certification Meeting**
  SDWB Honolulu, 10:00 am
- **8/28 DSO Exam Registration Due**
  October 2014 Examinees
- **9/10 CT Report Due**
  Surface Water Systems
- **9/10 TCR Report Due**
  Systems who complete their own tests
- **9/30 CCR Certification Form Due**
  Community Systems
- **9/30 Lead & Copper Monitoring Period Ends**
  Selected Systems

July 2014

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1 O&E Plan Due	2	3	4 HOLIDAY	5
6	7	8	9	10 CT Report Due MRDL Report Due TCR Report Due Enhanced Coagulation Report Due Chemical Quarterly Monitoring Report Due	11	12
13	14	15	16	17	18	19
20	21 Kauai & Kona WTPO Exam	22 Maui & Hilo WTPO Exam	23 Oahu WTPO Exam	24	25	26
27	28 DSO Applications Due	29	30	31		

August 2014

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	4	5	6	7	8 CT Report Due TCR Report Due	9
10	11	12	13	14	15 HOLIDAY	16
17	18	19	20	21	22	23
24	25	26 Board of Certification Meeting	27	28 DSO Exam Registration Due	29	30
31						

September 2014

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1 HOLIDAY	2	3	4	5	6
7	8	9	10 CT Report Due TCR Report Due	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30 CCR Certification Form Due Lead & Copper Monitoring Period Ends				

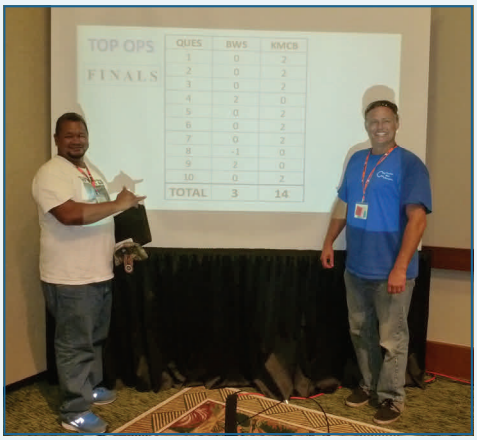
HAWAII WATER CONFERENCE

1ST ANNUAL HAWAII WATER CONFERENCE

Joining together, the Hawaii Section of the American Water Works Association (AWWA HI) and the Hawaii Water Environment Association (HWEA) presented the 1st Annual Hawaii Water Conference. The conference was held at the Hawaii Convention Center on May 6-9, 2014. The theme, Uniting Hawaii's Water Resources, stressed the importance of partnering between the two organizations in order to provide for the sustainability of our communities.

Mike Street, Ivan Nakatsuka, Kevin Ihu, Gary Byrd, & Joanna Seto officiate the Top Ops Competition.

Approximately 800 water and wastewater professionals and operators gathered for the first conference of its kind in Hawaii. The conference was prefaced with Pre-Conference workshops for both the water and wastewater sectors including a presentation by Joanna Seto, SDWB's branch chief, on the Collaboration Between Water Agencies and Organizations. The official conference featured about 100 technical sessions and speakers to choose from with topics from each sector, including the SDWB's own Robert Whittier who presented The Lahaina Groundwater Tracer Study. Water operators showcased their talents at the Pipe Tapping competition, and the Department of Water Supply, County of Hawaii Men's Team took the honors. The Top Ops Competition was highlighted by a decisive victory by Marine Corp Base Hawaii. On the wastewater side, the Operations Challenge featured four events, Process Control, Laboratory, Collections Systems, and Safety. Besides the technical sessions and competitions, about 100 vendor exhibits were displayed. The joint conference was packed with exciting events as well as networking breaks.



Joe Pascua and Robert Pagliai from Marine Corp Base Hawaii win the Top Ops Competition.

Congratulations to AWWA HI and HWEA on a successful collaboration!

The Department of Water Supply, County of Hawaii Men's Team wins the Pipe Tapping Competition with a time of 1:26:22 minutes.

DSO PASSING RATE INCREASES

On April 21-23, the Distribution System Operator (DSO) examination was held at five locations: Maui, Oahu, Kona, Hilo, and Kauai. Out of the 35 that sat for the exam, 20 passed, raising the passing rate to 57%. The passing rate increased over the 44% passing rate achieved last October.

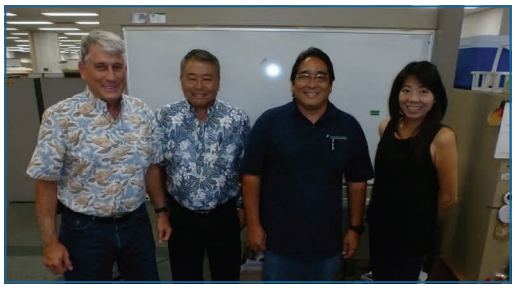
Grade	Passed	Examinees	Passing Rate
1	9	11	82%
2	6	13	46%
3	4	6	67%
4	1	5	20%
Total	20	35	57%

Congratulations to all who passed the exam!

Prior to the exam, Texas A&M Engineering Extension Service provided free exam preparation training for the categories in most need of improvement on Oahu, Maui, and Kona. The overall pass rate for those attending the training was also 57%.

If you would like to re-take the DSO exam, please contact Jodi Yamami at 808 586-4263. The next DSO exam will be held the week of October 27, 2014. There will be no supplementary DSO exam during the summer this year.

MAHALO GUY



Board Members: Robert Spetich, Lan Yoneda, Guy Moriguchi, and Jodi Yamami at Guy's last meeting

Guy Moriguchi has completed his service of two consecutive terms as a member and chairman of the Board of Certification of Public Water System Operators from July 1, 2006 to June 30, 2014. Holding both operator certifications and working in the private sector, Guy provided valuable insight from an operator's point of view.

His willingness to volunteer as a Board member was commendable. Thank you, Guy, for eight years of service! We truly appreciate your efforts.

WELCOME ERIC

Eric Okazaki was nominated by the Governor and confirmed by the Senate Committee on Health on February 24, 2014 to serve on the Board of Certification of Public Water System Operators. His term will start July 1, 2014 and expire June 30, 2017.

Eric understands the value of a certification program, holding both certifications, and his extensive public and private potable water experience will help the Board make crucial decisions. Welcome on board, Eric!

CEU Training Program
for
Water System Operators

See next page for Course Listing

HRWA
808-495-0264

Hawai'i Rural Water Association

hrwaoffice@hawaiirwa.org

Hawai'i Rural Water Association

Continuing Education Training Program for Water System Operators
Course Listing
July 2014 through October 8, 2014

Course	CEU's	Date & Time	Location	Tuition Fee		
		8:30am to 3:30pm (1 hr. lunch break)		Public Water System Employee	HRWA Member (non-water system employee)	Non-member
Personal Protective Equipment and Safety	0.6	8/5/2014	Oahu	$125	$240	$490
Personal Protective Equipment and Safety	0.6	8/6/2014	Kauai	$125	$240	$490
Personal Protective Equipment and Safety	0.6	8/12/2014	Molokai	$125	$240	$490
Personal Protective Equipment and Safety	0.6	8/13/2014	Maui	$125	$240	$490
Personal Protective Equipment and Safety	0.6	8/19/2014	Waimea	$125	$240	$490
Chemical Feed Pumps O&M & Troubleshooting	0.6	9/9/2014	Waimea	$125	$240	$490
Chemical Feed Pumps O&M & Troubleshooting	0.6	9/10/2014	Oahu	$125	$240	$490
Chemical Feed Pumps O&M & Troubleshooting	0.6	9/23/2014	Maui	$125	$240	$490
Chemical Feed Pumps O&M & Troubleshooting	0.6	9/25/2014	Kauai	$125	$240	$490

REGISTRATION FORM

Registration forms must be received two weeks in advance of class scheduled date.

Name _____ Public Water System (PWS)_____

Public Water System (PWS) # _____

Address _____

City _____ State _____ Zip _____ County _____

Telephone _____ Position _____

E-mail _____ Certification # _____

Session/Date/Location_____ Class Fee $_____

Email registration to: hrwaoffice@hawaiirwa.org

Mail registration and payment to: Hawai'i Rural Water Association, 1325 S. Kihei Rd., Suite 200, Kihei, HI 96753

Payment by Visa and MasterCard: Contact our office @ 808-495-0264 or hrwaoffice@hawaiirwa.org for further information.

Note: This program is partially funded by the United States Environmental Protection Agency and the State of Hawaii, Department of Health using Federal Drinking Water State Revolving Fund monies.

Participants must attend *entire* class to qualify for Hawai'i Water Operator Board of Certification approved CEUs!! HRWA does not guarantee the attendee CEUs, but only offers CEUs that have been approved by the Hawai'i Water Operators Board of Certification.

1325 South Kihei Road, Suite 200
Kihei, Hawai'i 96753
808-495-0264
www.hawaiirwa.org

HAWAII STATE DEPARTMENT OF HEALTH SAFE DRINKING WATER BRANCH

919 Ala Moana Blvd.
Room 308
Honolulu, HI
96814-4920

Tel: 808 586-4258
Fax: 808 586-4351
E-mail: SDWB@doh.hawaii.gov

NEIL ABERCROMBIE
Governor of Hawaii

LINDA ROSEN, M.D., M.P.H.
Director of Health

GARY GILL
Deputy Director for Environmental Health

The mission of the Safe Drinking Water Branch of the Department of Health is to safeguard public health by protecting Hawaii's drinking water sources (surface water and groundwater) from contamination and assure that owners and operators of public water systems provide safe drinking water to the community. This mission is accomplished through the administration of the Safe Drinking Water Program, Underground Injection Control Program (UIC), Groundwater Protection Program (GWPP), and the Drinking Water State Revolving Fund (DWSRF).

We're on the Web!

http://health.hawaii.gov/sdwb/

We provide access to our activities without regard to race, color, national origin (including language), age, sex, religion, or disability. Write or call our Affirmative Action Officer at Box 3378, Honolulu, HI 96801-3378 or at 808 586-4616 (voice) within 180 days of a problem.

SDWB DIRECTORY

Joanna Seto	**Branch Chief**
Doug Nguyen	IT
Michael Miyahira	**Engineering Section Supervisor**
Alain Carey	Drinking Water State Revolving Fund, Backflow & Cross Connection Control
Jennifer Nikaido	Lead & Copper Rule, Capacity, Circuit Rider & Sanitary Survey Contracts
Craig Watanabe	Surface Water Treatment Rule, Disinfection Byproducts Rule, Plan for Emergency Provisions
Joan Corrigan	Drinking Water State Revolving Fund
Ann Zane	**Compliance Section Supervisor**, Total Coliform Rule
Melvin Hamano	Radionuclides Rule
Zhaohui Wang	Chemical Monitoring (External Labs), Consumer Confidence Reports
Jodi Yamami	Public Water Systems Operator Certification
Daniel Chang	**Monitoring Section Supervisor**
Melvin Tokuda	Lanai & Molokai Site Monitoring
David Kawahara	Kauai & Big Island Site Monitoring
Steven Matsuda	Oahu & Maui Site Monitoring
Theresa McGeehan-Takiue	Big Island Site Monitoring
Robert Whittier	Groundwater Protection
Norris Uehara	**UIC Section Supervisor**
Jaime Rimando	Geologist
Mark Frazier	Geologist