

## KAUAI SURFACE WATER PURIFICATION FACILITY

On Friday, September 23, 2005, Grove Farm Co. and the Kauai County Department of Water opened the new surface water purification system with a blessing held at the facility. It is anticipated that water from the new treatment facility will be served to area consumers by the end of the year. At that time, the Lihue and Puhi water systems will be regulated as a single, surface water system.



Many on Kauai eagerly anticipate the commencement of the operation of its first surface water treatment plant. The new 'Grove Farm Water Purification Facility' is set to provide approximately 3 million gallons of water per day to the communities of Hanamaulu, Lihue, and Puhi.

Lihue has been under a restrictive metering policy for the last decade due to the low yielding aquifers. This has put a restraint on residential developments in the vicinity. Developers were required to provide the water to support their new developments. Thus, Grove Farm Co.'s search to find a water source that could supply 1 million gallons a day to their intended developments.

While Grove Farm provided the initial funding for the \$8 million facility, the County of Kauai Department of Water is committed to purchasing 2 million gallons daily. In a fixed agreement, through the purchase of water at a higher rate, the Kauai Department of Water will acquire the water purification facility over an extended period of time. This successful private/public partnership has proved to be a prototype for future joint ventures.

Grove Farm sub-contracted Kauai based, Aqua Engineers, Inc. to design, build, operate and maintain the facility. The new water purification plant utilizes the ultrafiltration membrane process manufactured by Zenon Environmental Inc. Raw surface water from the Kapaia Reservoir is treated by pulling it through the porous walls of the hollow fibers by a partial vacuum applied within the membrane. The water being treated can pass through as clean permeate, while suspended matter, bacteria and pathogens remain on the shell, outside.

4,000 feet of 16-inch transmission line was constructed to connect the new facility to the Kauai Department of Water's existing transmission water line in Ma'alo Road. Final testing of the facility is expected to be completed later this month.

*Article provided courtesy of Aqua Engineers, Inc.*

### **On the Spot:**

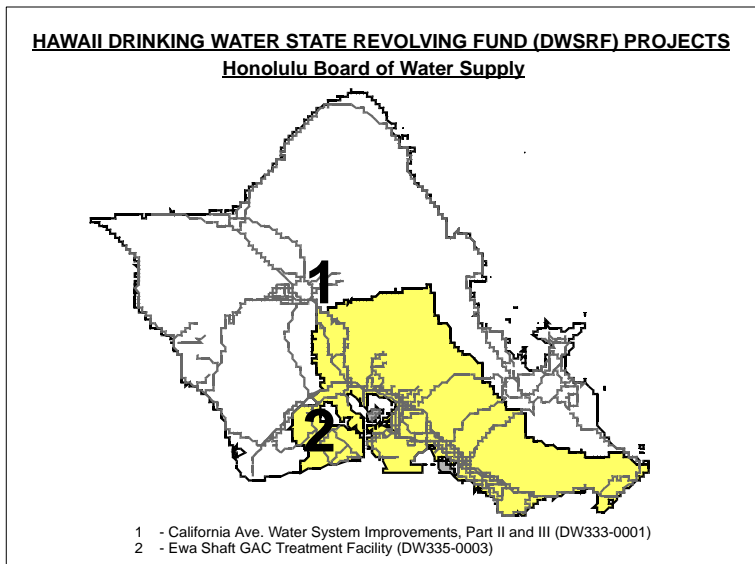
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## HONOLULU BOARD OF WATER SUPPLY SIGNS \$17M DWSRF LOAN AGREEMENTS

On September 15, 2005, the Honolulu Board of Water Supply signed two (2) Drinking Water State Revolving Fund (DWSRF) loan agreements with the Hawaii Department of Health. The two agreements are for the California Avenue Water System Improvement (for \$4.289M) and the Ewa Shaft GAC Treatment Facility (for \$13M). These projects will improve the Wahiawa (PWS #333) and Waipahu-Kunia-Waianae (PWS #335) Water Systems.

With the addition of these two projects, the Safe Drinking Water Branch has now loaned out \$46.8 million of Drinking Water State Revolving Fund monies to improve the water systems in the State of Hawaii.

Stay tuned for the next issue of "The Water Spot 2005", which will contain the request for updating and submittal of DWSRF Projects.



## UH - WRRC PROJECT - PESTICIDE LEACHING MODEL

### Rationale

Ground water is the primary source of drinking water for the population in Hawaii. Nearly 100% of Oahu's residential and visitor population relies on ground water. Good quality ground water is important for health and well being of the people as well as for the tourist economy of the state. In the past, ground water contamination has been detected from the label use of pesticides as well as from accidental spills. The state (Department of Agriculture - Pesticides Branch) has taken measures to reduce/prevent contamination of ground water from the label use of pesticides. One such approach is the screening of pesticides that will be used over large areas and to identify pesticides that exhibit high leaching potential. This is particularly important when the use areas are directly located on a potable water aquifer with shallow water table. If a chemical shows high leaching potential from preliminary screening evaluation, secondary reviews of the chemical are conducted using in-depth analysis of the soil and pesticide properties and a computer model of leaching using the attenuation factor (AF) approach of Rao et al. (1985). The model employs a geographic information system (GIS) to incorporate soil hydrologic information such as depth to water, recharge rate, field capacity water content, bulk density, porosity, and soil organic carbon. A pesticide property database is concurrently used with the GIS based soil properties database to predict the AF. While the model is a good starting point to show the vulnerability of the ground water island-wide from the use of a chemical, it needs periodic improvements in soil hydrologic and chemical databases for better prediction. The Department of Health - Safe Drinking Water Branch (in cooperation with the Department of Agriculture - Pesticides Branch) have jointed resources to make these improvements.

### Objectives

The objectives of the proposed study are to:

- (1) improve soil hydrologic database in the AF model using available data from the Natural Resource Conservation Service (NRCS), the U.S. Geological Survey (USGS) and other agencies,
- (2) improve the pesticide properties database based on selected studies conducted in Hawaii and those available from the U.S. Environmental Protection Agency (EPA),
- (3) compare against EPA methodology for the registration of new chemicals, and
- (4) develop a documentation for AF that is user friendly, easy to understand, and outline in simple language the methodologies involved in the calculations.



### Project Accomplishments

Beginning in January 2005 and concluding in September 2005, Dr. Chittaranjan Ray of the University of Hawaii at Manoa's Department of Civil Engineering and the Water Resources Research Center, along with Fredrik Stenemo (Soil Scientist from Sweden) completed the task of improving the soil hydrologic database, evaluated additional data for the pesticide properties database, and compared the model to EPA's methodologies for registering new pesticides (it was determined that neither the EPA screening models (SC.-GROW nor PETE) offered any distinct advantages over the Hawaii CLEARS models .

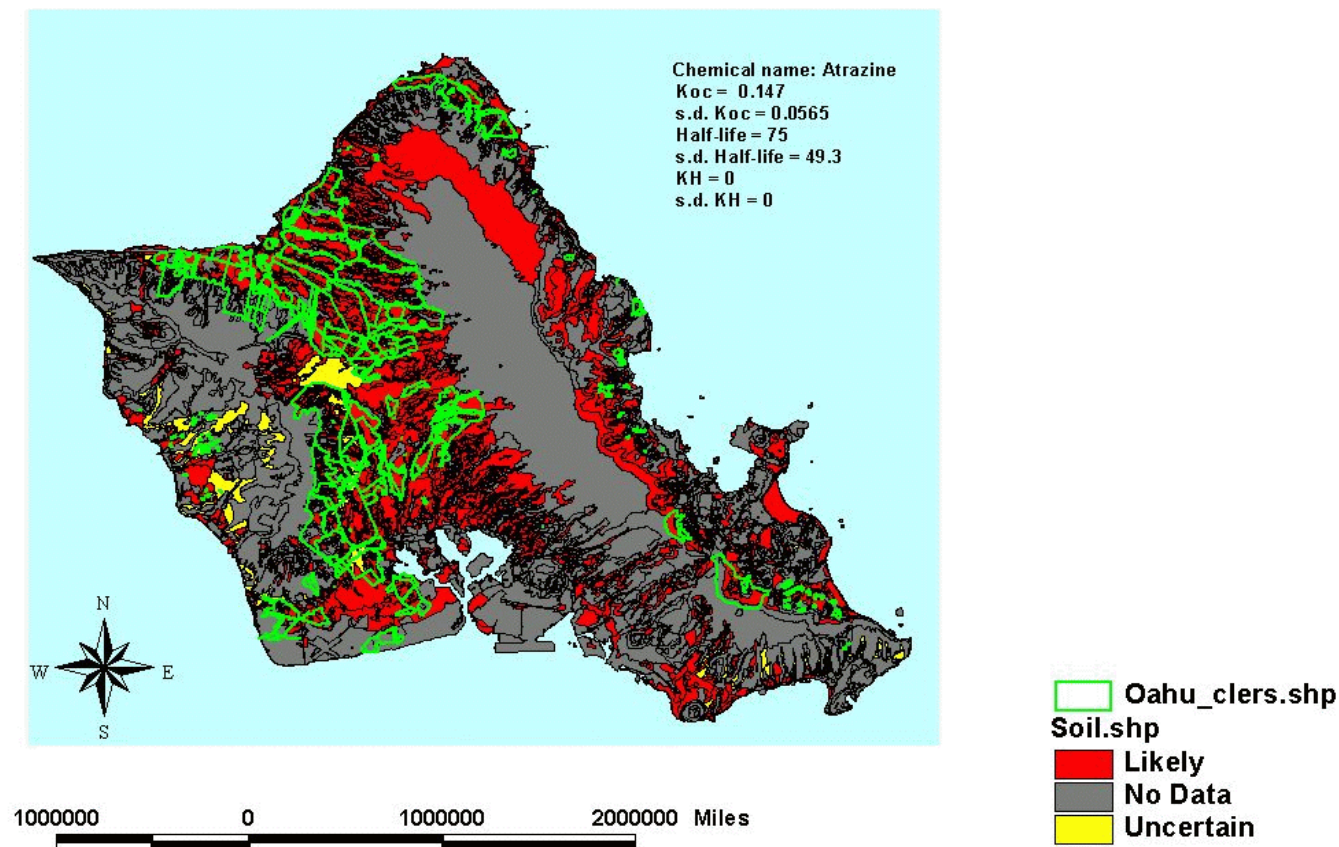
### Utilization of the Model

The model is used by the Hawaii Department of Agriculture, Pesticides Branch as a screening tool prior to the licensing of pesticides in the State of Hawaii.

The model also allows for mapping the use of pesticides in relationship to groundwater wells and surface water sources (stream, etc).

Screening using the model is usually done by DOA-Pesticides Branch staff with additional technical review performed by Dr. Chittaranjan Ray.

## Leaching Potential For Atrazine Overlaid With Certified Applicators



*This project was funded in part by program grant monies from the United States Environmental Protection Agency*



## IT HAPPENED AT THE HAWAII COUNTY FAIR

The Safe Drinking Water Branch continued its efforts to be involved with public outreach activities by having a display at this year's Hawaii County Fair. This year's Hawaii County Fair was held on September 15-18, 2005 at the Hilo Civic Center and was attended by 28,000 paying visitors (not to mention senior citizens, children under 5, and fair participants).

The Safe Drinking Water Branch's Hawaii County Fair display was manned by Theresa Takiue of the Hilo office and Kumar Bhagavan of the Honolulu office. The display included copies of the Hawaii Safe Drinking Water Branch, Groundwater and Source Water Protection Posters, and EPA's Drinking Water Posters. Copies of the Posters, Water Conservation Activities Booklet, Water for Kids-Science Fair and Waterspot newsletters, Water Cycle Bookmarks, and pencils were also given away. It was encouraging to see students ranging from elementary- through college-age stop by the booth to learn more about water. A number of teachers also stopped by and were provided with EPA Education disks.



Sanitation Branch also provided a display at the Fair.





**DOH NOTES - DOH ADVISES AT-RISK GROUPS AND CAREGIVERS TO GET A FLU SHOT EARLY**

The Hawaii Department of Health (DOH) is advising selected at-risk groups and caregivers to get their flu shot now. Almost anyone may benefit from getting the flu shot, but some people have a greater need for it than others. Following recommendations from the Centers for Disease Control and Prevention (CDC), the DOH advises that the following people get their flu shot before the end of October: persons 65 years of age and older; residents of long term care facilities or nursing homes; persons 2-64 years of age with high risk health conditions; pregnant women; children 6-23 months of age; health care workers who have direct patient contact; and persons who live with or take care of children than six months of age.

The DOH is cautiously optimistic about the vaccine supply this year and recommends that those at risk or those providing care seek their flu vaccination before the end of October. Some physicians have already received their supply of flu vaccine and over 100 flu vaccination clinics are planned statewide through November,” said Health Director Chiyome Fukino, M.D. Persons interested in getting a flu shot should talk to their doctor or call 2-1-1 to find a community flu shot clinic in their neighborhood. Beginning October 24, 2005, anyone, including those in the groups listed who have still not been vaccinated, are encouraged to receive a flu shot.

For additional information about flu, visit [www.vaxhawaii.com](http://www.vaxhawaii.com). **Fight the Flu: Make a Date to Vaccinate.**

*Please send your suggestions, ideas, questions or comments to:*

**THE WATER SPOT 2005**  
**Safe Drinking Water Branch**  
**State Department of Health**  
**919 Ala Moana Blvd., Room 308**  
**Honolulu, Hawaii 96814**

*Fax us at (808) 586-4351,*  
*Attn: “THE WATER SPOT 2005”*

**SDWB WEB SITE:**  
*<http://www.hawaii.gov/health/environmental/water/sdwb>*



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*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.*

**The Water Spot 2005 (October 2005)**  
**Safe Drinking Water Branch**  
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**Hawai`i Department of Health**  
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## **HURRICANE PREPARATIONS: LESSONS LEARNED FROM KATRINA**

**Lessons Learned from Hurricane Katrina will take weeks and months to compile, however the WaterSC has received the following suggestions for public water systems, wastewater facilities and states from a relief worker currently assessing damages in the affected areas of the Gulf Coast. Readers are encouraged to evaluate the suggestions for applicability by their particular utility's circumstances.**

**Since Rita is active in the Gulf Coast and there has been several hurricanes that formed in the Eastern Pacific, the following recommendations are being passed along (by a relief worker working with the Mississippi DOH helping to assess public water systems in the lower six (6) counties affected by Katrina) to public water systems in preparation of possible hurricane events.**

### **Suggestions for Water and Wastewater System**

1. Fill or top-off all water storage. This serves multiple purposes as:
  - a. It will assist in maintaining fully pressurized lines during a storm.
  - b. For gravity fed system, it could make available as much water as possible in the event of power outages to generators.
  - c. It will weigh down many elevated tanks and hydropneumatic tanks that may be affected by heavy winds and flooding damage.
  - d. If pressure can be maintained, hydropneumatic tanks that are normally 1/3rd to 1/2 full of air could be considered water logging the tanks to maximize weight and stability. (Keep in mind most will need to utilize compressors to re-establish tanks.)
2. Sand-bag well houses and treatment sheds. Sandbagging may help prevent flooding of the building provided the surge does not exceed the level of the bagging.
3. Cover and protect circuitry and control panels:
  - a. Many panels, even though they are considered waterproof, are not designed to handle torrential downpours or flooding. In Katrina, heavy winds often drove the rain at angles, or ripped panel doors off exposing inside wiring and switches.
  - b. At a minimum, wrapping plastic around a panel may help to minimize water damage: duct taping the plastic may help seal out excess rain. (Be sure to remove wrapping after the storm so moisture does not settle inside the panel due to condensation.)
4. Valve off areas more prone to high surge flooding just before the storm arrives. Many buildings and homes were destroyed which allowed for water loss until the valves could be cleared of debris to operate.
5. Stage vehicles and heavy equipment far away from the area affected by the storm. Some utilities lost all their equipment and vehicles. Moving them to higher ground or distant locations may protect them and make them available for immediate use after the storm.
6. Secure existing chlorine/disinfectant supplies and have access or plan for immediate re-supply.
  - a. Many chlorine gas cylinders were washed or blown away. **SAFETY NOTE:** Buildings housing gas cylinders should be entered with caution. Emergency personnel properly equipped with SCBA and/or proper training should be first to enter.
  - b. Mark gas cylinders for later tracking should they get washed or blown away in the storm. This will help emergency response teams during the clean-up in identifying whether cylinders are still missing.
  - c. Chlorine containers or other chemical mix-tanks may become flooded by surge water or even rain after roof-wind damage. Re-supply will help to get the system operating sooner.
  - d. For flooding from sewage or other unknown waters and debris materials, chlorine is normally the disinfectant of choice.

7. Bacteriological and disinfectant residual monitoring:
  - a. Have proper chlorine monitoring equipment available to check point of entry and distribution.
  - b. Have enough bacteriological sample collection containers for an adequate number of samples for boil water lifting determination. (I.e., a week's worth of sampling)

**Suggestions for States**

1. Make sure all water system operators know how and where you will be located in the area after the storm.
  - a. Expect any/all communications to be down for at least three (3) days after the storm.
  - b. This is a good opportunity to collect immediate needs from your water systems to forward to appropriate state and federal officials.
2. Ensure state drinking water staff know the plan of action after the storm.
  - a. How often they should communicate - (once or twice daily, as needed, etc.)
  - b. Satellite phones to the lower county located state personnel (engineers, environmental inspectors, etc.) may be the only means of communication.
3. Obtain mapping of the water systems and streets and ensure that they are up-to-date. G.P.S. with accurate latitude and longitude can be priceless. This holds true if persons unfamiliar with the area and PWS locations will be assisting during a disaster.
4. Stock supplies for deploying personnel:
  - a. Supplies may take days to get to the hardest hit areas. Make sure anyone that goes to the harder hit areas have adequate supplies and protection.
  - b. Bottled water, toilet paper, food, sleeping bags, laptops, battery, powered radios, to name a few.
  - c. RV's are always good to have in these areas after a storm.
  - d. Pack anti-diarrhea and pain relieving medication in your first aid supplies.
5. Ensure that all outside resources are aware of your needs:
  - a. Keep rural water, RAP, utility organizations abreast of how they can be best utilized in this situation.
  - b. Many chemical feed pumps were destroyed or damaged after Katrina.
  - c. Coordinate with the National Emergency Resource Registry and other resources for immediate use as needed.
6. Locate Military installations. These facilities were some of the best locations to rebound after Katrina. Most have a medical detachment or hospital with water laboratory capabilities as a plus. Some installations also have preventive medicine field units that are capable of testing bacteriological samples. Locating them before the storm as potential emergency assistance for testing may turn out to be useful.

**From: Water Security Channel, WATERSC Information: Hurricane Preparations – Lessons Learned from Katrina, Wed., 21 Sep 2005.**

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**ADDITIONAL SOURCE OF INFORMATION**

Get information on preparing for hurricanes from the U.S. Environmental Protection Agency website:

<http://www.epa/katrina/index.html>

This website has information on emergency disinfection of drinking water, locating safe drinking water, keeping food and drinking water safe, and suggested pre- and post-hurricane activities for water and wastewater facilities.