



# MONITORING WASTEWATER FLOW IN HAWAII

Study ensures discharge moves away from Pearl Harbor waters

**OAHU, HAWAI** -- Mixing and dilution of effluents discharged into the ocean is an important aspect of health of ocean users and the ecology of the denizens. In an effort to monitor the path of wastewater making its way in to the Pacific water off of Oahu, the [EMM2000 Buoy](#) has been selected as a measuring tool for the discharge of pipe effluent (sewage water) 800ft off shore to ensure that the wastewater discharge was in fact moving away from shore to avoid affecting local beaches.

With the use of temperature nodes within Thermistor strings, water columns were measured to detect the quality of the water along with downward-looking SonTek [Acoustic Doppler Profilers](#) (ADP'S) used to check the water's current profile.

The [Oceanit Center](#) in Honolulu was selected to lead this project. According to Technical Director, Dayananda Vithanage, the group will investigate a wastewater outfall extension from 200 ft to 300 ft depth on the south shore of Oahu. The deeper of the two locations is west of the entrance to Peal Harbor. The maximum currents in the area are expected to be about 2 knots and summer swells can be as high as 3 meters.

Equipment and systems used this application include:

## **EMM2000 Buoy Configuration:**

- Line of Sight Communications; 900MHz
- Campbell Scientific CR1000 data logger with customer written firmware
- Custom fabricated Stainless Steel frame to hold Acoustic Doppler Profiler in a downward looking position.



- Closed cell Ionomer Foam hull, galvanized frame, and aluminum super structure

## **Thermistor Strings:**

- Thermally sensitive resistor either with Negative Temperature Coefficient of resistance (NTC) or Positive Temperature Coefficient of resistance (PTC)
- Advantages including sensitivity, interchangeability, two-wire connections, ruggedness, hermetic seal, and flexibility
- Capabilities ranging from custom profiles, special testing, Institute of Standards and Technology (NIST) traceability, and Standard Platinum resistance thermometers (SPRT's)

## SonTek Acoustic Doppler Profiler:

- Profiling ranges up to 180m with proven SonTek reliability
- Side-looking configuration used for horizontal profiling
- Bottom Tracking and GPS inputs for moving boat applications and Compass with 2-Axis Tilt sensor
- Temperature sensor and low power consumptions



The SonTek ADP (Acoustic Doppler Profiler) is a high-performance, 3-axis (3D) water current profiler that is accurate, reliable, and easy to use. The ADP uses state-of-the-art transducers and electronics designed to reduce side-lobe interference problems that plague other current profilers. This allows the ADP to make the very near-boundary (surface or bottom) current measurements critical to shallow water applications. The 1.5-MHz profiler is available as a Mini-ADP featuring a compact transducer head designed for applications where small size is critical.



Thank you to Oceanit for providing us photos and additional information on this project. Visit [www.oceanit.com](http://www.oceanit.com) for more information on this study and other services provided.

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Let's Solve Water



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