

Multi-parameter Water Quality Analyzer **U-50 series**

Water Quality Monitoring for Dredging Operation

To measure multi-parameters in upstream and downstream of the dredging operation on each day.

Huntington Beach, California USA



1. About dredging

Dredging is an operation to excavate sands, mud and sediments from waterways such as rivers, lakes, marshes and harbors. It increases the water depth to prevent marine vessels from running aground, and allows navigation over a larger area. Dredging is also performed to collect sands and sediments to replenish eroded beaches and prepare for construction of bridges and piers.

In dredging, mud, sand and water are suctioned from the bottom of the dredging site. The water is separated from the mud and sand, and returned to the waterway. Dredging causes turbulence, affecting the turbidity and instability of the water, which may cause the pH and dissolved oxygen (DO) to change.

In the United States, water quality during dredging operations need to be monitored in order to prevent environmental pollution.

HORIBA U-50 series can measure up to 11 parameters with maximum 30m cable and provide the great experience to measure the environmental water characteristics.

U-50 employs salinity compensation for DO measurement and is fully suitable for the sea water monitoring.

2. Measurement: Huntington Beach, California USA

At Coral Cay Marina, a private marina in Huntington Beach, California, mud and sand have been cumulating for many years. As a result, a dredging operation was required to solve this problem.

In accordance with the Clean Water Act Section 401, as overseen by the Santa Ana Regional Water Quality Control Board, water-quality monitoring is required for dredging projects, and it has to be conducted daily for each dredging activity.

[1] The DO in the water affected by the dredging operation must be greater than 5 mg/L.

[2] The pH of the water affected by the dredging operation must not be lower than 7.0 or higher than 8.6.

[3] The turbidity of the affected water downstream caused by the dredging operation must be less than 20% greater than the turbidity of the water 100 feet upstream of the dredging operation.



3. Water-quality testing

The dredging operation was conducted from April 14th through May 15th, in 2009, and the impact of dredging on water quality was determined using HORIBA U-53 to measure pH, DO and turbidity in the water, both upstream and 100 feet downstream of the dredging operation on each day of the dredging activity.

The results are shown in Fig. 1 through Fig. 3 with all results within the regulatory limit.

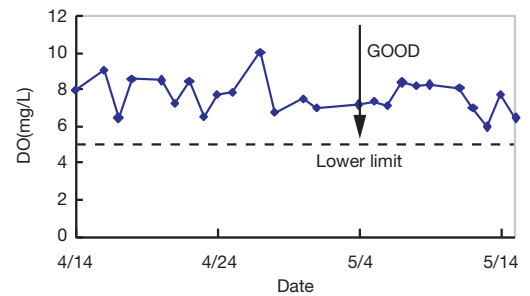


Fig. 1 Dissolved Oxygen (DO) Measurements

4. Conclusion

Based on the test results HORIBA U-53 meter is capable of measuring pH, DO and turbidity for subsequent dredging projects.

One U-53 meter is all you need to perform the testings with confidence. Especially, for the turbidity measurement, the result obtained is as accurate as an online turbidity meter.

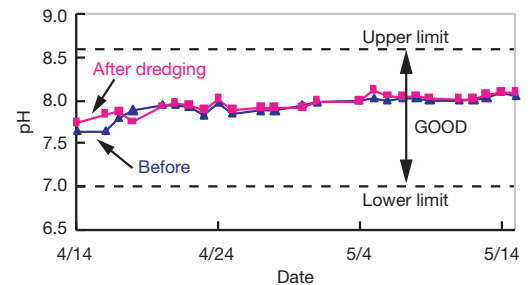


Fig. 2 pH Measurements

Key features of U-50 series

- One-Hand operation for control unit.
- Salinity compensation for DO measurement.
- Salinity and Seawater specific gravity parameters are available.
- All 11 parameters are displayed on the LCD screen.
- Simultaneous ONE-POINT calibration for multi-parameters. [pH, DO, conductivity, turbidity, and depth]
- Modular sensors can be easily replaced individually. [pH, ORP*, reference, DO]

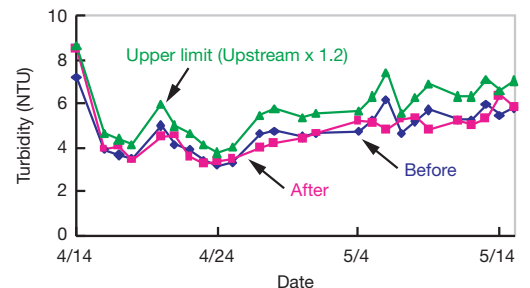
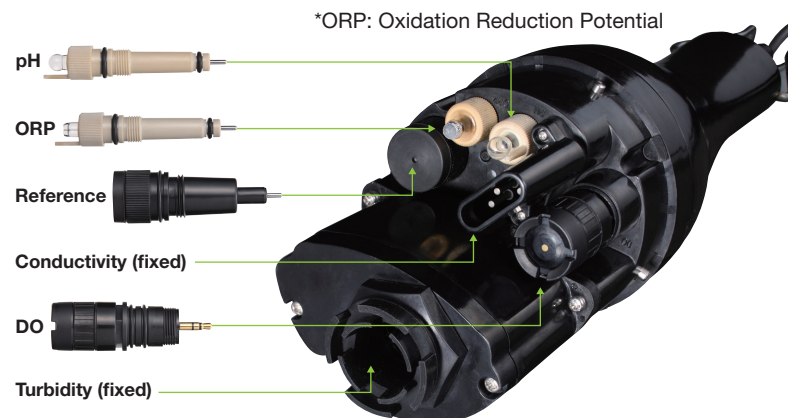
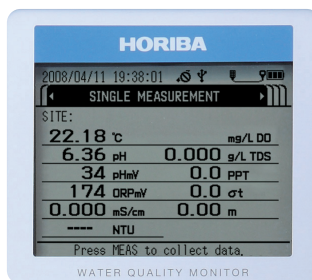


Fig. 3 Turbidity Measurements



*ORP: Oxidation Reduction Potential



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