Handheld Meter Maintenance Schedule

Overview:
Horizons currently utilize In-situ AquaTROLL 400 multi-parameter handheld meters for Discrete Water Quality spot measurements**.**

1. Sensor/Part Replacement

Replacement Schedule:

Meter	Sensor	Replacement Frequency
In-situ AquaTROLL 400	Dissolved Oxygen Sensor Cap	Annually*
	pH/ORP Bulb	Annually *‡
	Conductivity/Temperature Sensor	N/A Integral to Sonde unit
	Baro/Battery Pack	As required

*unless instrument failure/damage warrants replacement contrary to schedule
†RDO sensor cap has a typical one-year life from first reading
‡ NEMS states that most pH sensors typically have a 12-month life cycle

Replacement Process:
The Discrete Data portfolio holder is responsible for making sure sensors are replaced according to their allocated schedule as detailed in the Environmental Data (ED) Asset database. Following replacement Asset shall be updated. Sensors are only to be replaced by an ED Special Projects staff member.

Only the portfolio holder may order new sensors. Replacement sensors/membranes are stored at regional house. Replacement sensors are to be installed as per the manufacturer's manual(s).

2. Maintenance - End of Month Checks

Schedule:
Monthly maintenance checks are made to the fleet of In-situ AquaTROLL 400's used by Horizons Discrete Water Quality programmes. Typically, this occurs on the 'off-week' of the sampling month. This ensures the instruments are checked prior to the next month's sampling regimen and coincides with all instruments being returned to the WQ Lab due to there being no scheduled fieldwork.

In Lab Checks:
Checks are to be completed by an ED Special Projects staff member. The following details the end of month checks that are undertaken on the handheld meters (AquaTROLL) which are used for SOE monitoring:

1. Print the End of Months Checks form (attached below) and record the date and meter/s that are to be checked.

2. Connect each instrument in turn to the VuSitu (AquaTROLL) app.

3. Visually inspect and if necessary clean the Sonde, probes, cable and Baro/battery unit. Follow manufacturer's instructions.

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4. **Date/Time:** Go to the Instrument Settings, and select instrument time to check the date and time is correct to NZST.

5. **RDO:** The dissolved oxygen sensor cap is replaced in the Aquatroll devices on an annual basis as defined by ED Asset – refer to manufacturer's instructions on how to do this.

6. **Battery Status**: AquaTROLL: check the battery percentage on the VuSitu home screen, ensure all the battery units are put back on charge and charging post check.

7. **Depth Sensor**: Check whether depth will calibrate and record as a pass or fail.

8. **pH Sensor**: The PH/ORP probe is replaced in the Aquatroll devices on an annual basis as defined by ED Asset – refer to manufacturer's instructions on how to do this.

For the monthly check, check the pH 7 millivolts by doing a 1-point calibration using pH 7 buffer and record the result. If the millivolts are more than +/-20 (or close to +/-20), replace the electrolyte solution. Refer to manufacturer's instructions on how to do this. Carry out a post pH 7mV check by doing another 1-point calibration using pH 7 buffer and record the result. If the millivolts do not decrease to less than +/-10, then try replacing the electrolyte solution again, if it is still out the pH/ORP junction needs replacement. If the issue is still not resolved, the pH/ORP probe may need replacement. Again, refer to manufacturer's instructions on how to do this.

9. To finish, spray the cable ends with electrical cleaner (avoiding contact with the blue Baro units as it melts the plastic), replace all dust caps.

10. **Updating the Ops Manual**: Once the checks are complete, the recorded information is entered into the Handheld Instrument Maintenance Log in the Operations Manual.

Monthly Checks

Date:

Meter ID:	AQ2	AQ3	AQ4	AQ5	AQ6	AQ8	AQ10	AQ11	AQ13	AQ14	AQ15	AQ16	AQ17
pH 7mV check	-18.6	-17.6	-21.7	-44.6	-22.9	With Steve	With Env Educator	-15.0	-27.7	With DS for Lake run	-23.1	-14.7	-19.2
Electrolyte replaced Y/N	Yes	Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes	Yes
Post mV check	-3.7	-2.7	-7.5	-9.1	-3.2			-1.7	-6.1		-7.9	-2.4	-6.3
Depth calibration	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓
Date/time check	✓	✓	✓	✓	✓			✓	✓		✓	✓	✓
Notes										To be done another day.			

Figure 1: Example of a completed end of months check form

Handheld Meter Maintenance Schedule

Date:

Monthly Checks

Meter ID:	pH 7mV check	Electrolyte replaced Y/N	Post mV check	Depth calibration	Date/time check	Notes
AQ2						
AQ3						
AQ4						
AQ5						
AQ6						
AQ8						
AQ10						
AQ11						
AQ13						
AQ14						
AQ15						
AQ16						
AQ17						