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Office of Water Quality Water-Quality Information Note 2008.07

Subject: Field Methods -- NFM Section 6.8, Use of Multiparameter Instruments for Routine Field Measurements

A new section has been added to the *National Field Manual for the Collection of Water-Quality Data* (NFM). Section 6.8, "Use of Multiparameter Instruments for Routine Field Measurements," is part of Chapter 6 of the NFM and is available online at http://water.usgs.gov/owq/FieldManual/Chapter6/6.8_contents.html (or, go directly to the pdf file at http://water.usgs.gov/owq/FieldManual/Chapter6/6.8.pdf).

This section describes guidelines for the calibration and use of sensors that commonly are bundled in the sonde of multiparameter instruments, including sensors for measuring temperature, specific electrical conductance, pH, dissolved-oxygen concentration (Clarke-cell and optical-sensor technologies), oxygen-reduction potential, and turbidity. Technical departments from three manufacturers of multiparameter instruments—YSI, In-Situ, and Hach—provided advice and review for this section of the NFM.

Some of the sensors used in multiparameter instruments—notably the optical sensor for determining dissolved-oxygen concentrations and specific electrical conductance (SC) sensors—reflect **advances in sensor technology, resulting in changes to some of the traditional calibration and (or) measurement protocols previously established for USGS field work**. For example, the SC sensor currently used in most multiparameter instruments is designed to operate linearly within the usual range of SC for environmental waters. Since such sensors are calibrated using only one conductivity standard, there is no longer a need (and often no option) for a multipoint calibration. Standards that reflect an anticipated range of conductivity may be used to **check** sensor accuracy without performing the calibration function. Water-quality field personnel who use multiparameter instruments to determine field-measurement properties should become familiar with the protocols described in the new Section 6.8 and note differences in the protocols described in the corresponding sections of Chapter 6 that pertain to a specific field measurement.

Updates to each of the field-measurement sections of Chapter 6, as well as to all chapters of the NFM, is an ongoing and continuous process. To check the revision status of any chapter of the NFM, go to the NFM homepage at http://water.usgs.gov/owq/FieldManual/ and click on the link to its Comments and Errata page (http://water.usgs.gov/owq/FieldManual/mastererrata.html). Please refer any questions, corrections, or comments to nfm-owq@usgs.gov or to fwilde@usgs.gov.

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