



IN REPLY REFER TO:

United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Box 25046 M.S. 407

Denver Federal Center

Denver, Colorado 80225

NATIONAL WATER QUALITY LABORATORY TECHNICAL MEMORANDUM 1997.12

August 8, 1997

To: Chief, Office of Water Quality
Assistant Chief, Office of Water Quality
Assistant Chief Hydrologist for Technical Support
Regional Hydrologists
Chief, NAWQA
Chief, Office of Ground Water
Assistant Chief, Office of Ground Water
Chief, National Water Information System
Chief, Office of Hydrologic Research
Chiefs, Branches of Regional Research
District Chiefs
Regional Water Quality Specialists
Assistant Regional Hydrologists for NAWQA
District Water Quality Specialists
Chiefs, NAWQA Study Units
Chiefs, NAWQA National Synthesis Teams
Chief, Quality Water Service Unit, Ocala
Chief, Yucca Mountain Project
QA Manager, Yucca Mountain Project
Chief, Branch of Technical Development & Quality Systems
Employees, National Water Quality Laboratory

From: Peter F. Rogerson, Chief
National Water Quality Laboratory
Branch of Analytical Services

Subject: Implementation of Method-O-7100-96 Determination of Nonpurgeable Suspended Organic Carbon by Wet-chemical Oxidation and Infrared Spectrometry

Authors: Ronald W. Brenton, Organic Program, (303)467-8215 (RBRENTON)

Revision: None

BACKGROUND

The National Water Quality Laboratory (NWQL) analyzes Suspended Organic Carbon (SOC) in water samples by Method O-7100-83 as described in "U.S. Geological Survey Techniques of Water Resources Investigations," Wershaw and others, 1987*. A method review by the NWQL demonstrated that the analysis was averaging 81 percent recovery of the SOC with a standard deviation of 18 percent recovery.

SCOPE

As a result of this review, improvements to the SOC method were designed and evaluated. The improved method is published in Open-file Report 97-380, "Methods of Analyses by the U.S. Geological Survey National Water Quality Laboratory - Determination of Nonpurgeable Suspended Organic Carbon by Wet Oxidation and Infrared Spectrometry." This report describes not only the precision and bias of the improved method, it also describes a comparison of the two methods when used to analyze duplicate samples. The improved method was implemented by NWQL beginning July 1, 1997.

Recovery of the improved method ranged from 0 to 50 percent higher than the recovery of the traditional method. Overall, the improved method averaged 97 percent recovery with a standard deviation of 11 percent recovery in the sediments tested. Comparable improvements in data quality will probably be observed in field samples. Past data should not be adjusted to reflect equivalency to the data that will be generated by the improved method.

* Wershaw, R.L., Fishman, M.J., Grabbe, R.R., and Lowe, L.E., eds., Methods for the Determination of Organic Substances in Water and Fluvial Sediments: U.S. Geological Survey Techniques of Water Resources Investigations (TWRI), Book 5, Chap. A3, p. 16-27.

Effect on Data Base: The improved recovery will probably produce significant changes in both short- and long-term data. Data users should be cautious as "apparent" trends may appear as a result of better recoveries.

Supersedes: None

Key Words: Suspended organic carbon, spectrometry

Distribution: See above plus the Netnews usgs.labnews & .water.quality, WRD Secretaries; Field and Project Offices; Hydrologic Technicians; and <http://wwwnwql.cr.usgs.gov/>