

NATIONAL WATER QUALITY LABORATORY NEWSLETTER

U.S. DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

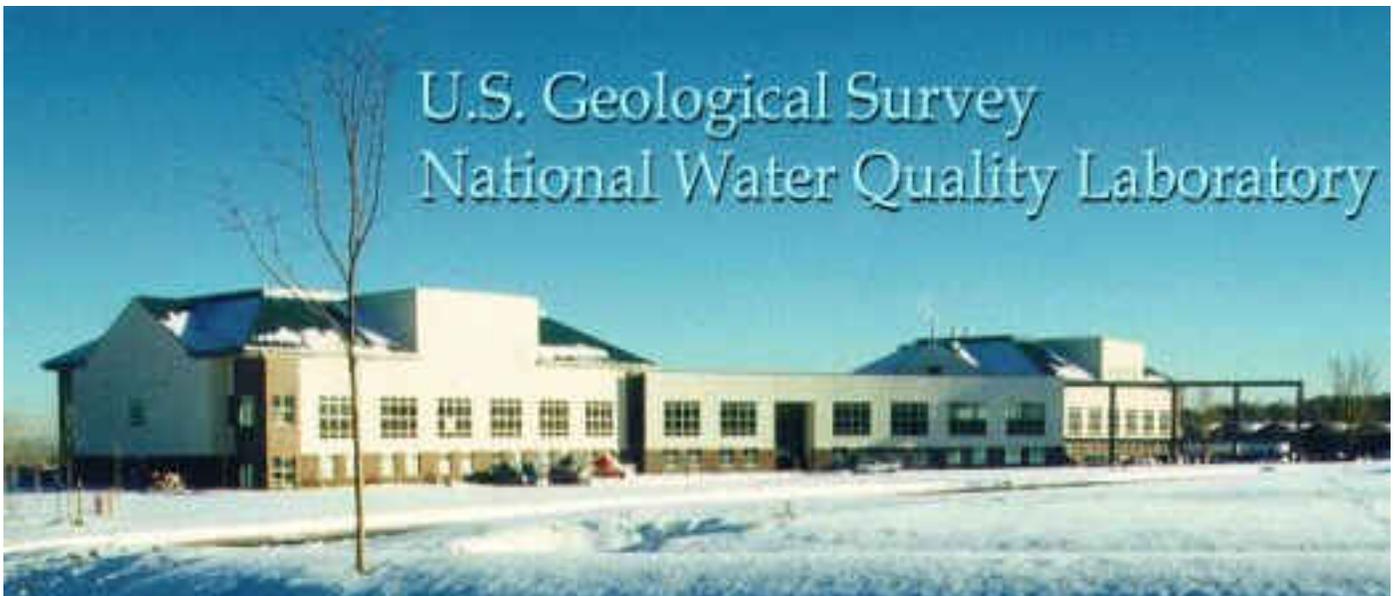
Volume 7

Number 2

April 1999

Lab relocated to Federal Center Staff excited about working in state-of-the-art building

After many months of planning, final preparations started the week of March 8 for moving the National Water Quality Laboratory to the Denver Federal Center. At the time that the Newsletter went to press in mid-March, plans called for backing up computer servers and shutting down the computers to prepare for relocation. The move was expected to be completed in four weeks. Movers were scheduled to relocate the Chief's office first, along with administrative offices and computer operations. The computers were scheduled to be back in service with new internet connections in time for business March 15. The Quality Management and Methods Research and Development Programs moved next, followed by the National Research Program, Biology, and Analytical Contracting Unit. The last phase of the move involved the Quality Assurance Unit and production instruments, offices, and water samples. The Production Program worked diligently to reduce the sample backlog so that instruments could be moved, recalibrated and be operational to allow for sample completion within normal turnaround times. All operations were expected to return to normal by mid-April.



New address (all nonanalytical):
National Water Quality Laboratory
U.S. Geological Survey
P.O. Box 25046
Federal Center, Bldg 95, Ent E3, MS 407
Denver, CO 80225-0046

New address (samples only):
National Water Quality Laboratory
U.S. Geological Survey
P.O. Box 25608
Federal Center, Bldg 95, Ent E3, MS 407
Denver, CO 80225-0608

New telephone numbers have been posted on the NWQL Home Page on the Worldwide Web.
Our WWW address remains the same: wwwnwql.cr.usgs.gov/USGS

◆ Sandy Turner

New staff, transfers named

Helen Wharry, assistant safety officer, has been hired to replace Roger Smith. Stacy Steyer is the new secretary to the Lab Chief, and Cathryn (Cat) Martin is the new secretary for the Quality Management Program (QMP). Paula Leshinski is the new secretary for Laboratory Operations, replacing Pat Timme, who resigned.

Kim Pirkey, chemist, is the new acting supervisor of the Computer Programming and Development Unit, and Sandy Turner is the new acting supervisor of the Computer Support Unit. Mary Cast, chemist, has transferred from Inorganic Chemistry to QMP; Jim Madsen, chemist, has been detailed from Organic Chemistry to QMP to help out with the blind sample project in the Quality Assurance Unit; and Sherry Oman transferred from QMP to the Computer Services Unit. Andrita Scofield was hired by the Inorganic Chemistry Program under a term appointment.

Contract employees, including new hires and transfers within program units, are as follows: Delicia Beaty, QMP; Mason Bowman, Chris Kanagy, Christine May, Brian Timmins, and Michelle Wood, Organic Chemistry Program; Dolly Chally and Tiffani Shockey, Computer Services Unit; Collin Chambers, Gwen Conley, Jeffrey Gillio, and Susan Phillips, Inorganic Chemistry Program; Barbara Porter, Log-In; Joel Lusby, Ray Lejuan, and Chris Vlot, Biological Unit.

Biological Unit: Bugs - are - us

The National Water Quality Laboratory's Biological Unit (BU) is available to process benthic invertebrate samples collected for U.S. Geological Survey studies. Although this unit was set up to process samples collected by the National Water-Quality Assessment Program, the BU has completed other Survey projects in Alaska, Ohio, and Washington.

Benthic invertebrates (worms, snails, crayfish, insects) are routinely collected in bioassessment studies of water quality because their presence or absence in an aquatic ecosystem can provide biological insight into the health of the system. This information is often linked with hydrological and chemical data to provide an integrated approach to monitoring water quality.

The BU invertebrate staff at present consists of 15 individuals (10 Federal, 5 contract) who have more than 100 years of collective experience processing benthic invertebrate samples. These individuals have joined the BU from across the United States, thereby creating a centralized expertise in North American invertebrate identification.

The BU currently offers a variety of subsampling methods for quantitative and qualitative benthic invertebrate samples, as well as three different levels of resolution for organism identification. Custom sample processing and organism identification are also available. The BU maintains a rigorous quality-control program to ensure that samples are processed in accordance with recently developed laboratory methods. Additionally, identifications are verified for accuracy and consistency using an ever-growing literature resource and reference collection of organisms. Although draft standard operating procedures have been written, a manuscript describing the new methods is currently being prepared for publication as an Open-File Report. Benthic invertebrate data are generally delivered in a computer file within 6 months of sample log-in. Laboratory codes and current prices for benthic invertebrate sample processing services are listed in the NWQL SPiN data base at <http://wwwnwql.cr.usgs.gov/USGS/>.

For more information regarding benthic invertebrate sample-processing services available at the BU, refer to NWQL Technical Memorandum 98.10 or contact Steve Moulton (smoulto@usgs.gov; 303-236-3493).

 Steve Moulton



DECISIONS, DECISIONS-Merilee Bennett (left), financial specialist, and Karin Schellenburg, administrative operations assistant, sort through and pack files in preparation for moving to the new laboratory building.

Switch to persulfate digestion method for phosphorus meets with success

The NWQL appreciates the outstanding cooperation from Districts in January and February as we brought the new, more rugged, low-level phosphorus determination method (NWQL lab codes 2331, FCC bottle type; 2332, FCA bottle type; and 2333, WCA bottle type) into routine production.

The new method, validated at the NWQL last year, follows U.S. Environmental Protection Agency (USEPA) method 365.1 digestion reagent protocols and has a colorimetric measurement step adapted for operation in the concentration range of 0.002 to 0.200 mg-P/L (milligram-phosphorus per liter). It is suitable for determining phosphorus in samples of water, wastewater, brines, and water-suspended sediment.

We recommend this method for applications that require lower reporting levels and better precision than can be achieved by the Kjeldahl digestion phosphorus method, provided that maximum phosphorus concentrations at sample-collection sites do not exceed 0.2 mg-P/L. During the past 2 months, we had to transfer about 15 percent of samples with requests for the new low-level phosphorus method to the more range appropriate Kjeldahl digestion phosphorus method because their concentrations exceeded 0.2 mg-P/L. Customers can help NWQL by reviewing historical data from their study areas and submitting requests for the new low-level methods only for those samples that will likely have phosphorus concentrations below this level.

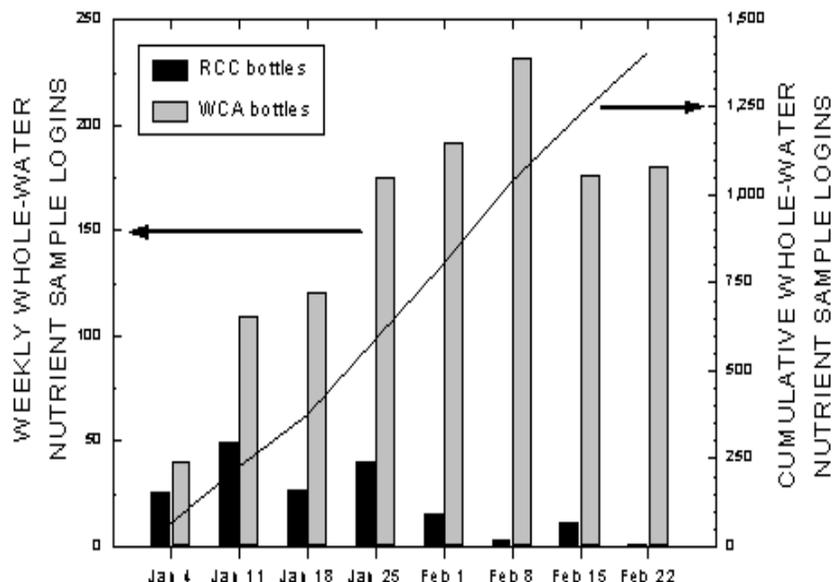
Direct comments or requests for additional information to Juan Vasquez (jvasquez@usgs.gov, 303-236-3170) or Charles Patton (cjpatton@usgs.gov, 303-236-3956).

 Juan Vasquez

Acidification and bottle type change for whole-water nutrient samples progressing smoothly in the District offices

Replacement of the RCC bottle type (125-milliliter, brown polyethylene) with the WCA bottle type (125-mL, clear polyethylene, sulfuric acid amendment) for collection, shipment, and storage of whole-water nutrient samples began January 1 in accordance with Office of Water Quality (OWQ) Technical Memorandum 99.04. During the 2-month transition period that followed, all RCC samples received at the NWQL were acidified at no charge.

Thanks to outstanding teamwork among Districts, the OWQ, the Quality of Water Service Unit (QWSU, Ocala, Fla.), and the NWQL, the transition has been successful. One measure of this success is the steady decrease in RCC samples received at the NWQL during January and February, as shown in the accompanying graph. The grace period during which the NWQL accepted and acidified RCC nutrient samples ended on March 1, 1999. In addition to District sample collectors, water-quality specialists, and project chiefs, many other USGS personnel working behind the scenes deserve credit for this success. John McKenzie at the QWSU procured the sulfuric acid preservation solution in easy-to-use, polypropylene, screw-cap vials.



FAQs for collection and processing WAC samples, a direct link to OWQ Technical Memo 99.04, and the USGS Nutrient Preservation Experiment-WRIR 98-4118 (Patton and Gilroy, 1999)-in Adobe Acrobat portable document format are available from the NWQL home page. Contact Juan Vasquez (jvasquez@usgs.gov, 303-236-3170) or Charles Patton (cjpatton@usgs.gov, 303-236-3956) with comments or requests for additional information.

 Charles Patton

QA/QC guidelines being prepared for organic chemistry analyses

An in-house policy manual is being written to establish acceptance criteria and corrective actions for Organic Chemistry Program analyses. The manual is being prepared by representatives from the Organic Chemistry, Quality Management, and Method Research and Development Programs and by the Chief Chemist of the Water Resources Division.

The Organic Chemistry QA/QC Guidance Manual will standardize internal NWQL policy for establishing and applying acceptance criteria and corrective action. It will also fulfill requirements of auditing organizations by identifying processes and corrective-action policies. Although written for analysts in the Organic Chemistry Program, the manual addresses concepts and limitations of specific quality-assurance/quality-control (QA/QC) data that might prove valuable to users of environmental data.

The first version of the manual addresses fundamental QA/QC data types, such as calibration verification standards, surrogate standards, reagent spikes, and blanks. The manual provides a more detailed treatment of these QA/QC concepts than is found in most method manuals or standard operating procedures. In addition, workshops have been set up to train analysts to use acceptance criteria and corrective-action protocols to evaluate analytical data.

Customers should see more consistent QA/QC data as well as more uniform data interpretation, particularly as the associated data qualifiers and Web sites become available to convey the information. This first draft of the manual is just the beginning of an on-going process to evaluate and document QA/QC concepts for analyzing organic chemistry samples.

 Mike Schroeder



UNIQUE SAMPLE EXTRACTORS-Continuous liquid-liquid extraction is one of many techniques for extracting a broad range of organic compounds from water samples. These unique extractors were designed by NWQL chemists to make use of a porous glass frit for dispersing microdroplets of methylene chloride solvent at the head of a water-sample column. A fine mist of methylene chloride "rains" down through the sample and is continuously recycled through the water column, resulting in an improved efficiency when compared to commercially available designs. Steve Zaugg, NWQL chemist, is shown removing a sample from the apparatus.

New titles in print

Burkhardt, M.R., Brenton, R.W., Kammer, J.A., Jha., V.K., and O'Mara-Lopez, P.G., 1999, Improved method for the determination of nonpurgeable suspended organic carbon in natural water by silver filter filtration, wet chemical oxidation, and infrared spectrometry: *Water Resources Research*, v. 35, no. 1, p. 329-334.

Burkhardt, M.R., Soliven, P.P., Werner, S.L., and Vaught, D.G., 1999, Determination of submicrogram-per-liter concentrations of caffeine in surface water and groundwater samples by solid-phase extraction and liquid chromatography: *Journal of AOAC International*, v. 82, no. 1, p. 161-166.

Jones, S.R., and Garbarino, J.R., 1999, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory-Determination of arsenic and selenium in water and sediment by graphite furnace-atomic absorption spectrometry: U.S. Geological Survey Open-File Report 98-639, 39 p.

Patton, C.J., and Gilroy, E.J., 1999, U.S. Geological Survey nutrient preservation experiment-Experimental design, statistical analysis, and interpretation of analytical results: U.S. Geological Survey Water-Resources Investigations Report 98-4118, 73 p.

Copies of these publications are available from NWQL by contacting Cathryn (Cat) Martin by electronic mail (clmartin@usgs.gov) or by telephone (303-236-3459).

Newsletter Staff

Jon Raese, Editor

Cathryn (Cat) Martin, Production Assistant

The National Water Quality Laboratory Newsletter, is published quarterly by the National Water Quality Laboratory, U.S. Geological Survey, Box 25046, MS-407, Denver Federal Center, Denver, CO 80225-0046. For copies, call Cathryn (Cat) Martin (303) 236-3502.

The purpose of the *National Water Quality Laboratory Newsletter* is to improve communications on water-quality issues in the U.S. Geological Survey. The Newsletter is for administrative use only. It should not be quoted or cited as a publication. The use of trade, product, or firms names in this publication is for descriptive purposes only and does not imply endorsement by the U.S. Geological Survey. Visit the NWQL Home Page Web site at <http://wwwnwql.cr.usgs.gov/USGS>.