

DODEC support group assists all four regions with hydrologic investigations

The Laboratory Support Group for the U.S. Department of Defense Environmental Contamination (DODEC) Hydrology Program has recently been consolidated under the Quality Management Program at the National Water Quality Laboratory. The group consists of Dorothy Walker, Bob Brock, Carol Gerlitz, and Eva Morrell.

The primary responsibilities of this group are to provide technical guidance and analytical services support through contract laboratories and to act as a liaison between the Branch of Analytical Services and the Water Resources Division (WRD) district offices for their cooperative programs with the DOD.

Walker and Brock's duties include analytical and quality-control data review to ensure that the data meet agency and regulatory requirements. They help district personnel prepare quality-assurance project plans and other technical documents that meet DOD specifications; they also co-ordinate laboratory activities for the cooperative programs. Gerlitz and Morrell's duties include development and support of the DODEC data base, providing quality control on the digital transfer of analytical data from the contract laboratories as well as district user support of the data base.

In addition to providing data-handling capabilities, the DODEC data base is used to assist analytical and quality-control data review, to prepare data-summary tables for technical reports according to DOD specifications, and to provide direct access to software that is commonly used by district personnel in support of these cooperative programs. Cooperative programs with the DOD have increased substantially in recent years and are now in place with all branches of the DOD. Twenty districts in all four regions of the WRD currently are conducting these multi-discipline hydrologic investigations.

New methods published

The following new methods were published recently by the U.S. Geological Survey:

Damrau, D.L., 1993, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of low-level silver by graphite furnace atomic absorption spectrophotometry: U.S. Geological Survey Open-File Report 93-416, 14 p.

McLain, B.J., 1993, Methods of analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of chromium in water by graphite furnace atomic absorption spectrophotometry: U.S. Geological Survey Open-File Report 93-449, 16 p.

The following report also is available from the National Water Quality Laboratory:

Fishman, M.J., and Friedman, L.S., eds., 1989, Methods for determination of inorganic substances in water and fluvial sediments: U.S. Geological Survey Techniques of Water- Resources Investigations, book 5, chap. A1, 545 p.

Copies of methods of analysis available to readers on request

The Fall 1993 issue of the *National Water Quality Laboratory Newsletter* listed USGS methods of analysis that have been published recently as Open-File Reports (OFRs) by Laboratory personnel. These reports have been distributed through normal channels. If Water Resources Division offices, cooperators, or others wish to obtain additional copies or be added to the distribution list, please contact Karlin Allen (FTS 303/467-8006 or EDOC KIALLEN).

There is no immediate plan to combine the OFRs and publish the methods as Techniques of Water-Resources Investigations (TWRI). The lead time for a TWRI is lengthy, and methods may be obsolete by the time a TWRI is published.

On the other hand, these individual OFRs are up-to-date methods of analysis that can be referenced in other publications. Moreover, all new OFRs on methods of analysis will be listed in this *Newsletter*. Be sure to check the listing in the Fall issue to collect a complete set for your library, and read future issues for the publication of new methods.

NAWQA coordinator collects samples and "builds bridges" on South Platte River

Dennis J. Markovchick, NWQL physical science technician and coordinator for the South Platte Study Unit of the National Water-Quality Assessment (NAWQA) Program, reports that three recent field trips to the South Platte River emphasize the care, skill, effort, and professionalism of district personnel in the collection of water and fish samples.

The first trip was to downtown Denver for biological sampling August 17. Markovchick and Tammy Thompson, also from the Laboratory, spent a day with Kathy Tate, NAWQA biologist, collecting fish samples for organic and inorganic analysis at the NWQL. An electric shocking technique was used to stun the fish and bring them to the surface for collection in nets. The fish were identified, counted, weighed, measured, and described. The team was assisted by the U.S. Fish and Wildlife Service, which also provided the electric shock apparatus.

The second field trip, September 2, also took Dennis to downtown Denver, this time to assist in the collection of surface-water samples. He accompanied Bob Kimbrough, Dave Litke, and Dennis Smits, Colorado District. They collected depth- and width- integrated samples, filtered some of the water in the field, and measured flow, discharge, and stage along the South Platte.

Groundwater samples were collected on the third trip, September 29, near Gilcrest, Colorado, north of Denver. Markovchick was joined by Jeff Steward, also from NWQL, Pete McMahon and Bret Bruce, Colorado District, and Johnkarl Bohlke, Regional Research, Reston. They sampled ground water by pounding a pipe into the ground in the river channel until it reached water that was determined to be inflow from ground water. The water was collected for organic and inorganic analyses at NWQL.

They also sampled for dissolved gases for analysis in Reston.



Low Tide on the South Platte – NAWQA team members collected ground-water samples September 28 on the South Platte River near Gilcrest, Colorado. Shown (left to right) are Dave Litke and Pete McMahon, Colorado District, and Jeff Stewart, physical science technician from NWQL.

Markovchick reports that he had many meaningful discussions with his district colleagues that proved to be of mutual benefit. "I can't emphasize enough the value of lab people going to the field to learn what takes place out there, and the importance of district staff coming to the NWQL to discover what we do here," said the NAWQA coordinator. "These exchanges help to develop lines of communication and to build bridges between the Laboratory and the districts so that we can all do a better job," said Markovchick.

Recent Seminars at NWQL

Bob Broshears, Colorado District, USGS, "The Gasherbrum II Expedition," Oct. 20, 1993; Phil Kammerer, Jr., Wisconsin District, USGS, "Identification of Interagency Differences in Monitoring Results in Wisconsin Caused by Differences in Sample-Collection Methods," Nov. 5, 1993. Michelle M. Lorah-Devereux, USGS hydrologist, Maryland-Deleware District, "Ground-Water Contamination at Hazardous Waste Site, Aberdeen Proving Ground, Maryland, February 9, 1994.

Survey traces fuel spill on Indian Ocean atoll

Duane Wydoski, NWQL chemist, returned to Diego Garcia this past summer to assist in a study to monitor the chemical and physical characteristics of a fuel spill on the small British Territory in the middle of the Indian Ocean. He joined two colleagues from the Hawaii District, Gordon Tribble, project chief, and Jill Torikai, hydrologist. It was their second trip in the past year. Wydoski's participation in the project was funded by the Hawaii District and by the U.S. Navy.

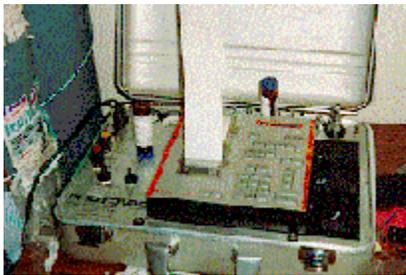
The chemical screening included use of portable gas chromatographs (photoionization and thermal conductivity detectors) for dissolved and gas-phase organic compounds. Data will be analyzed to help monitor and map the dissolved hydrocarbon plume.

The USGS involvement in the project has two main goals: (1) To evaluate the extent of the dissolved plume of fuel products and advise on possible remediation, and (2) to model and study the physical and chemical characteristics of the atoll's unique environment.

The U.S. Navy leases the atoll for a logistical base. Advantages of the remote location include reduced interference from populated areas for the operation of satellite-tracking and astronomical-research stations.



Pump Installation – Duane Wydoski, NWQL chemist, installs a mobile packing pump used for sampling water in a monitoring well. The USGS installed about 30 monitoring wells on the airport tarmac. Wydoski plans to return to Diego Garcia this year to continue work on the project.



Baggage Handling – This suitcase – not a typical two-suiter – holds the photoionization gas chromatograph used to determine volatile organic compounds in water samples. Chemist Duane Wydoski said that his work on Diego Garcia, a horseshow-shaped coral atoll in the Indian Ocean, was carried out 7 days a week, leaving little time for snorkeling or exploration of the island.

Biological Quality Assurance/Quality Control Unit created at National Water Quality Laboratory

Bioassessment is a valuable component of the National Water Quality Assessment (NAWQA) Program, contributing data on the species composition and relative abundance of aquatic organisms present in the Program's study units. Information on algal, benthic macro invertebrate, and fish communities will be integrated with physical and chemical data to define the status of the aquatic environment, to identify any trends in water quality, and to provide a comprehensive, national examination of the factors controlling observed water quality.

A biological Quality Assurance/Quality Control Unit was established within the U.S. Geological Survey's Quality Management Program at the National Water Quality Laboratory to oversee the use of commercial laboratories to process the samples collected by the NAWQA study-unit biologists. Staff activities will include establishing and administering the contracts with these laboratories; reviewing their performance; supervising quality assurance/quality control (QA/QC) programs to ensure both accuracy and national consistency in identification, curation, and QA/QC procedures;

contributing to maintenance of National Oceanographic Data Center taxonomic authority checklist; entering data into the National Water Information System-II database; creating and maintaining reference collections of specimens; depositing voucher specimens in research/museum collections; and interacting with taxonomic experts within and outside the Survey.

Allison Brigham arrived November 28, 1993, to establish this new unit and prepare for analysis of the first series of biological samples from the NAWQA study units. Brigham came from the Illinois Natural History Survey where she conducted research on water-quality issues with regard to streams and wetlands of Illinois, and systematic ecological investigations of aquatic moths (Lepidoptera: Pyralidae: Argyractini) in the southwestern United States.

Items of immediate importance in preparing the new facility for operation include hiring of additional staff with expertise in database management, phycology, and benthic macro invertebrates; contracting for sample analyses; and completing the remodeling and equipping of the laboratory.

Laboratory hazardous waste management challenges safety officer

The NWQL Safety Management Program handles hazardous waste produced by the Laboratory. Carlos Arozarena oversees the operation as the regional safety officer, and he is assisted by Roger Smith and Kathleen Galloway. Joe Santillanes is the waste control officer, and he is assisted by Clarence Nichols and Mike Werito.

Several Federal regulations deal with the management of hazardous waste. The Resource Conservation and Recovery Act of 1976 gives the U.S. Environmental Protection Agency (USEPA) authority to regulate hazardous waste, and the Federal Facility Compliance Act of 1992 waives any immunity of Federal facilities. Moreover, Superfund Amendments and Reauthorization Act Title III regulate emergency planning and notification, Material Safety Data Sheet and inventory reporting, and toxic chemical release reporting. No longer can hazardous materials be poured down the drain. In addition, the Clean Air Act soon will regulate emissions from fume hoods.

Hazardous waste includes chemical solutions used in laboratory instruments, as well as sediment materials, fish tissues, extraction solutions, Kjeldahl scrubber waste, and unused water samples (some containing mercuric chloride or potassium dichromate). Perhaps the simplest way of explaining how all of these materials are disposed of is to list the material types and basic disposal method in the following table.

<u>MATERIAL TYPE</u>	<u>DISPOSAL METHOD</u>
1. Unused acidified water samples.	The pH is adjusted manually to 7.0 with sodium hydroxide and then is poured down the drain.
2. Unused water samples containing chromium or mercury.	Treated in the ion-exchange system and poured down the drain (explained above).
3. Instrument line waste.	Treated in the ion-exchange system and poured down the drain.
4. Kjeldahl scrubber waste	Treated in the ion-exchange system and poured down the drain.
5. Nonchlorinated solvent waste.	Consolidated into a 55-gallon drum, labeled and documented, and sent to a waste disposal facility to be burned.
6. Chlorinated solvent waste.	Separately consolidated into a 55-gallon drum, labeled and documented, and sent to a waste disposal facility to be burned.
7. Sediment materials.	Burned in an oven at the NWQL.
8. Fish tissues that have been treated with solvents.	Lab-packed and sent to a waste disposal facility (explained above).
9. Unused reagent chemicals.	Lab-packed and sent to a waste disposal facility.
10. Radiochemistry waste.	Lab-packed separately and sent to a waste disposal facility.

Ion-Exchange System: The pH of a waste solution is first tested and adjusted manually with either a 50 percent sodium hydroxide or 50 percent sulfuric acid solution to 7.0. Next, in the following order, the solution goes through a carbon filter to remove solvents and other organics, passes through an ion-exchange column to remove metals, then another ion-exchange column, and one more carbon filter as a final cleanup. The solution then goes into a holding tank, where the pH

again is measured and manually adjusted as needed to 7.0. If it looks clean to the naked eye, it is poured down the drain, but a sample also is taken at this point and sent out for analysis. The solution can be rerun through the ion-exchange system if it does not pass visible inspection.

Lab-Packing: Basically, materials having the same hazard classification (there are about 10 classes) are packed in barrels with vermiculite (similar to cat litter), labeled, documented, and shipped to a USEPA-approved facility for incineration. Vermiculite is both a cushion and an absorbent.

Arozarena said the challenge of managing hazardous waste is increasing as new regulations for fume hoods go into effect. Said Arozarena, "As a member of the Safety Management Program, I want the people working with these chemicals to avoid exposure to potential hazards."



by Kathleen Galloway

Letters, suggestions from Newsletter readers invited

Letters to the Editor of the *NWQL Newsletter* are welcome. Comments on published news items, suggestions for news coverage, and articles for publication are encouraged. Comments and articles should be concise, however, because of the space limitations in a four-page newsletter. We invite your participation. Hope to hear from you soon.

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Jon Raese, Editor

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