

U.S. GEOLOGICAL SURVEY RESOURCES TO SUPPORT THE DEPARTMENT OF DEFENSE JOINT SERVICE AGENT WATER MONITOR PROGRAM AND NATIONAL WATER SECURITY

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The U.S. Geological Survey (USGS) is the principal Federal earth science and information agency in the Nation. The mission of the USGS includes providing information and data through research, monitoring, and assessments that contribute to our understanding of the Nation's land, water, and biological resources, and that help protect our quality of life. This mission allows the USGS to carry out impartial scientific studies on a national scale and to sustain long-term monitoring and assessment of natural resources. It also provides for a diversity of scientific expertise and multidisciplinary investigations, which can yield information that is critical to decision makers addressing current societal issues, including the protection of our Nation's water quality.

In 2002, the Department of Defense Joint Service Agent Water Monitor (JSAWM) Program requested technical support from the USGS in their efforts to develop advanced capabilities to detect, identify, and quantify chemical and biological contaminants in water. As part of a cooperative study between the USGS and the JSAWM Program, a number of existing resources to potentially support the JSAWM Program and its mission have been identified. These resources include the following:

EXPERTISE IN HYDROLOGIC DATA COLLECTION AND DATA MANAGEMENT

The USGS has extensive expertise in collecting and managing hydrologic data. These data are useful for characterizing natural waters, including surface water and ground water from various sources, and can help in determining appropriate criteria for assessment of field performance of candidate monitoring technologies in the JSAWM Program. Sources of hydrologic data that can be used to evaluate the characteristics of natural waters include:

- The USGS National Water-Quality Assessment (NAWQA) Program, which assesses status and trends in the quality of our Nation's water resources and identifies factors that affect water quality (<http://water.usgs.gov/nawqa/>);
- The National Water Information System (NWIS), which provides Internet access to historical water-resources data collected at approximately 1.5 million sites in all 50 States, the District of Columbia, and Puerto Rico (<http://waterdata.usgs.gov/nwis/>); and

- A near-real-time data network, which electronically transmits and displays current data on selected hydrologic conditions from over 5,000 surface-water, ground-water, and water-quality sites (<http://waterdata.usgs.gov/nwis/rt>).

EXPERTISE IN SAMPLE ANALYSIS

The USGS performs numerous hydrologic investigations that require analyses of water samples and sediment samples for a variety of parameters, including bulk properties, carbon and nutrients, major ions, trace metals, pesticides, volatile organic compounds, stable isotopes, radionuclides, and pathogens. The USGS also develops methods for analyzing samples for emerging contaminants that could threaten the quality of our Nation's ground water and surface water. The National Water Quality Laboratory (NWQL), one of the largest environmental water-testing laboratories in the United States, has developed custom methods to address current water-quality issues, such as the analysis of low-level occurrence (nanograms per liter) of hundreds of synthetic compounds, including pesticides, pesticide degradation products, pharmaceuticals, and ingredients found in personal care products.

The NWQL in Colorado and the Ocala Water Quality and Research Laboratory in Florida are the primary sources of analytical services for the hydrologic investigations conducted by the USGS. Additional analyses are provided by the Ohio District Microbiology Laboratory in Columbus, Ohio; the Reston Chlorofluorocarbon Laboratory in Reston, Virginia; the Organic Geochemistry Research Laboratory in Lawrence, Kansas; and USGS sediment laboratories in California, Washington, Hawaii, Iowa, Louisiana, Kentucky, Missouri, Montana, and Puerto Rico. More information about these laboratories is available through the USGS Office of Water Quality web pages, at <http://water.usgs.gov/owq/labs.html>.

EXPERTISE IN UNDERSTANDING CONTAMINANT FATE AND TRANSPORT

The USGS can provide expertise in scientific investigations to support the increased understanding of the fate and transport of contaminants in surface water and ground water. This expertise includes the Toxic Substances Hydrology Program (<http://toxics.usgs.gov/>), the National Research Program (<http://water.usgs.gov/nrp/>), and the Surface-Water Quality and Flow Modeling Interest Group. An understanding of contaminant fate and transport in water can help answer questions (real or hypothetical) about intentional or accidental releases of contaminants into streams, reservoirs, or ground water. Studies using tracer tests or hydrologic models to simulate contaminant fate and transport in water can be used to make inferences about the duration of a contamination event, the mass of contaminant released, probable time and location of the release, and the time required for the contaminant to be attenuated through dilution and/or degradation processes.

USGS PUBLICATIONS AND PRODUCTS

The USGS endeavors to make its data, findings, and expertise available to scientific audiences and the public through a wide variety of products, including datasets, maps, and publications. General access to USGS products and publications is available at <http://www.usgs.gov/pubprod/>. A searchable database, Publications of the U.S. Geological

Survey, which is a subset of the GeoRef database established by the American Geological Institute, is available at <http://usgs-georef.cos.com/>. Geospatial products are available through the USGS node of the National Geospatial Data Clearinghouse, which is a component of the National Spatial Data Infrastructure, at <http://nsdi.usgs.gov/>. This web site enables users to access geospatial datasets or obtain digital and printed maps. These datasets and maps are useful for planning emergency response to events that could impact water resources or infrastructure, and are maintained by the USGS in cooperation with the U.S. Federal Geographic Data Committee.

SUMMARY

The U.S. Geological Survey provides data and information through impartial research, monitoring, and scientific assessments that contribute to our understanding of the Nation's land, water, and biological resources, and that help protect our quality of life. These data and information are useful to decision makers addressing current societal issues, including the protection and security of civilian and military water supplies. Resources available from the U.S. Geological Survey include expertise in understanding the characteristics of natural waters, laboratory analytical services and methods, expertise in contaminant fate and transport, and a wide variety of data products and interpretive publications. In addition to these resources, the U.S. Geological Survey provides technical expertise and assistance to Federal, State, and local agencies, including the Department of Defense Joint Service Agent Water Monitor Program. Contact information for the U.S. Geological Survey offices, laboratories, and programs described in this report is available on the web sites listed, and through the U.S. Geological Survey directory, which is available at http://interactive2.usgs.gov/contact_us/index.asp.

REFERENCES

- Contact Us, most recently accessed on March 11, 2003, at URL http://interactive2.usgs.gov/contact_us/index.asp.
- National Research Program (NRP)—Welcome to the NRP Home Page, most recently accessed on March 11, 2003, at URL <http://water.usgs.gov/nrp/>.
- NWISWeb Data for the Nation, most recently accessed on March 11, 2003, at URL <http://waterdata.usgs.gov/nwis/>.
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- National Water-Quality Assessment (NAWQA) Program (home page), most recently accessed on March 11, 2003, at URL <http://water.usgs.gov/nawqa/>.
- Toxic Substances Hydrology Program—Home Page, most recently accessed on March 11, 2003, at URL <http://toxics.usgs.gov/>.
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