ACWI
Advisory Committee on Water Information

Methods and Data Comparability Board

Aquatic Sensor Workgroup

The **Aquatic Sensor Workgroup** is a collaboration of experts from government, academia, and industry working to produce tools that will be of value to sensors users at all levels, from local watershed-level groups to national programs.

The first tools produced by this group include:

- QA Matrix – checklist of actions to ensure sensor data are of known and documented quality
- Field Deployment Guide – enhance the representativeness and reliability of sensor deployments
- Sensors Data Elements – currently in beta release (see Web site)
- Glossary of terms

Photo by Dale M. Robertson, USGS

The ASW is currently seeking members for a new effort to address sensors data management.
If you are interested in joining our team on this important initiative please leave your contact information with someone at the booth.

Greenspan Analytical

http://watersensors.org/

NEMI
National Environmental Methods Index

In 2010, the National Environmental Methods Index (NEMI, *http://www.nemi.gov/*) celebrates its tenth year as an online resource of laboratory methods and field protocols, including more than 1,100 methods from over 30 different sources.

The Board continues to improve NEMI, adding methods for contaminants of emerging concern, field methods, and methods that are being developed with new technologies.

Current Highlights:

- **Sensors –** NEMI is partnering with the Alliance for Coastal Technologies to bring the most complete compilation of methods and sensors available in a common format
- Collaboration is ongoing with EPA's Forum on Environmental Measurements to leverage comparability among methods and laboratory services across the Nation
- **MethodML –** an XML-exchange standard for methods to make data comparability and sharing easier than ever

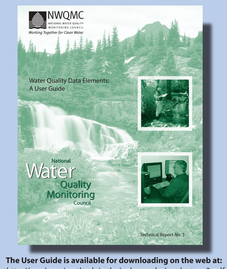
http://www.nemi.gov

Water Quality Data Elements

Problem: Inconsistent data documentation standards make drawing comparisons and discerning trends among monitoring data collected by various groups difficult.

Solution: A common, minimum list of metadata elements necessary to facilitate exchange and comparison of disparate datasets.

- Chemical, Microbiological, Population/community, and toxicity data elements published in Council Tech Report No. 3
- Physical habitat data elements accepted by ACWI in February, 2008
- Sensors data elements beta list



The User Guide is available for downloading on the web at:
http://acwi.gov/methods/pubs/wdqe_pubs/wqde_trno3.pdf

For More Information on Water Quality Data Elements See: http://acwi.gov/methods/

Statistics and Assessments

A collaboration between the Water Information Strategies and the Methods Board workgroups has formed to:

- **Collect and organize info on available statistical techniques and software appropriate for use with water-quality;**
- **Collect and organize information and guidance on water-quality assessment methods; and**
- **Present this information in an online, searchable format**

For More Information on Water Quality Statistics and Assessments workgroup: Contact Doug McLaughlin (douglas.mclaughlin@wmich.edu)

http://acwi.gov/methods

For more information on Methods Board activities contact:
Dan Sullivan, USGS co-chair
djsulliv@usgs.gov

National Water Quality Monitoring Network for U.S. Coastal Waters and Tributaries ("Network")

Since 2007, Network design concepts have been piloted in San Francisco Bay, Lake Michigan, and Delaware Estuary.

- New technologies, such as real-time monitoring with sensors and autonomous underwater vehicles (AUVs), have been implemented, along with more traditional monitoring.
- Findings from the land-to-sea assessments suggest different responses among estuarine and coastal waters to contaminants and other natural and anthropogenic factors, including in magnitude, timing, and source. The information informs key management issues — such as related to nutrient enrichment, oxygen depletion, sediment, toxic contaminants, and beaches — in these and other U.S. waters.
- Continued monitoring and tracking of nutrients, sediment, dissolved oxygen, phytoplankton abundance, and other parameters are needed in these dynamically changing ecosystems to help forecast future effects of climatic change on water quality and biological communities in our Nation's coastal zones.
- Partners are Key to Success: This "network of networks" includes federal agencies, the Integrated Ocean Observing System (IOOS) (*http://ioos.gov/*), and regional associations representing a broad community of users, including coastal and inland states, tribes, researchers, and non-governmental organizations (*http://usnfra.org/*).

For more information, access *http://acwi.gov/monitoring/network*

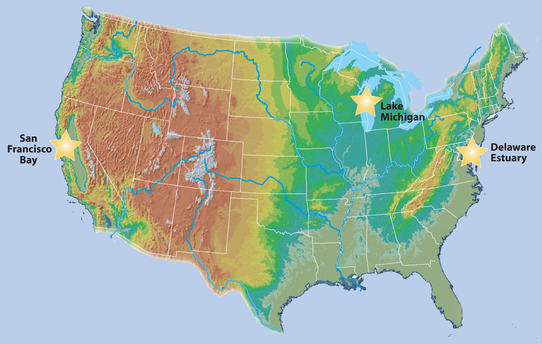


Photo by: Chris Burns, CHA, Inc.

San Francisco Bay drains nearly 70,000 square miles and receives nearly 50 percent of California's runoff. The Bay has historically been resilient to degradation from nutrient enrichment and not known for hypoxia as found in other areas, despite elevated nutrient loadings. Resilience may be changing, however; concentrations of chlorophyll a (an indicator of phytoplankton biomass) have been increasing steadily since 1999 because of:
(1) decadal climatic shifts;
(2) increasing phytoplankton from the Pacific Ocean;
(3) decreasing turbidity from dams and flood control; and
(4) decreasing clam populations (major phytoplankton consumers).

Photo by: Chris Burns, CHA, Inc.

Lake Michigan is the sixth largest lake in the world with a developing watershed projected to increase 40 percent by 2030. Management actions in the1970s and 1980s helped to reduce nutrient inputs — particularly phosphorus — which reduced eutrophication in the open lake. Eutrophication issues, however, such as related to nuisance growth of cladophora, now occur in some nearshore areas and embayments.

Photo by: Chris Burns, CHA, Inc.

Delaware Estuary drains more than 13,000 square miles. Up until the late 1970s, low dissolved oxygen was prevalent in parts of the estuary, creating anoxic dead zones that affected local aquatic species and migratory fish, such as shad. Water quality regulations since the 1970s have improved water quality. Real-time monitoring, however, shows low sags in dissolved oxygen during certain times of the year, such as in the summer. Specific causes are not known, however, ammonia may be a lead factor in reducing dissolved oxygen in the estuary.

For More Information, Access http://acwi.gov/monitoring/network

Subcommittee on Ground Water

The overall goal of the SOGW is to develop and encourage implementation of a nationwide, long term ground-water quantity and quality monitoring framework that would provide information necessary for the planning, management, and development of ground-water supplies to meet current and future water needs, and ecosystem requirements.

Scope: ***This national framework for ground-water monitoring and collaboration will be developed to assist in assessments of the quantity of U.S. ground-water reserves, as constrained by ground-water quality.***

- **January 2007:** The Advisory Committee on Water Information establishes the Subcommittee on Groundwater (SOGW) for the purpose of developing a nationwide ground-water monitoring framework.
- **February 2009:** SOGW presents the report "Framework for a National GW Monitoring Network", and the report is approved by the ACWI with limited changes.
- **June 2009:** The Framework for a National GW Monitoring Network report is final.
- **September 2009:** SOGW issues a nationwide "Request for Statements of Interest" to states for Pilot Studies to test the concepts in the Framework for a National GW Monitoring Network.
- **December 2009:** More than 30 states express interest in piloting. Twelve states participate in 9 "Statements of Interest" submitted to SOGW. Five pilot projects are selected.
- **January 2010:** The initial "Kickoff" Conference call is held for Pilot Projects to initiate 5 one-year pilot studies.

The National Ground Water Monitoring Network Pilot Projects Principal Aquifers of the United States

Montana Pilot Project –
Statewide Principal/Major aquifers:
Unconsolidated and semiconsolidated sand and gravel aquifers
Upper Tertiary aquifers
Lower Tertiary aquifers
Northern Rocky Mountains Intermontane Basins aquifer system
Pacific Northwest basaltic-rock aquifers
Upper Cretaceous aquifers
Lower Cretaceous aquifers
Paleozoic aquifer systems

Minnesota Pilot Project
Principal/Major aquifer:
Cambrian-Ordovician aquifer system
- Upper Ordovician aquifers
- Prarie du Chien-Jordan aquifers
- Tunnel City/Wonewoc aquifers
- Mt. Simon aquifer

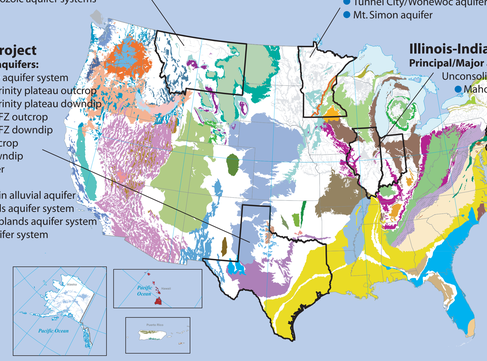
Texas Pilot Project
Principal/Major aquifers:
Edwards-Trinity aquifer system
- Edwards-Trinity plateau outcrop
- Edwards-Trinity plateau downdip
- Edwards BFZ outcrop
- Edwards BFZ downdip
- Trinity outcrop
- Trinity downdip

Seymour aquifer
Blaine aquifer
Pecos River Basin alluvial aquifer
Coastal lowlands aquifer system
Texas Coastal uplands aquifer system
Rio Grande aquifer system

Illinois-Indiana Pilot Project
Principal/Major aquifer:
Unconsolidated and semiconsolidated sand and gravel aquifers
- Mahomet-Teays aquifer system

New Jersey Pilot Project
Statewide Principal/Major aquifers:
Northern Atlantic Coastal Plain aquifer system
- Kirkwood-Cohansey aquifer system
- Atlantic City 800-foot sand
- Wenonah-Mount Laurel aquifer
- Englishtown aquifer
- Potomac-Raritan-Magothy aquifer system

Unconsolidated and semiconsolidated sand and gravel aquifers
Early Mesozoic basin aquifers
Piedmont and Blue Ridge crystalline-rock aquifers
Piedmont and Blue Ridge carbonate-rock aquifers



Unconsolidated and semi-consolidated sand and gravel aquifers
Basin and Range basin-fill aquifers
Rio Grande aquifer system
California Coastal Basin aquifers
Pacific Northwest basin-fill aquifers
Columbia Plateau basin-fill aquifers
Snake River Plain basin-fill aquifers
Puget Sound aquifer system
Willamette Lowland basin-fill aquifers
Northern Rocky Mountains Intermontane Basins aquifer system
Central Valley aquifer system
High Plains aquifer
Pecos River Basin alluvial aquifer
Mississippi River Valley alluvial aquifer
Seymour aquifer
Surficial aquifer system
Puerto Rico south coast aquifer
Coastal lowlands aquifer system
Texas coastal uplands aquifer system
Mississippi embayment aquifer system
Southeastern Coastal Plain aquifer system
Northern Atlantic Coastal Plain aquifer system

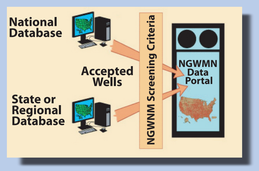
Sandstone aquifers
Colorado Plateaus aquifers
Denver Basin aquifer system
Lower Cretaceous aquifers
Rush Springs aquifer
Central Oklahoma aquifer
Ada-Vamoosa aquifer
Early Mesozoic basin aquifers
New York sandstone aquifers
Pennsylvanian aquifers
Marshall aquifer
Cambrian-Ordovician aquifer system
Jacobsville aquifer
Lower Tertiary aquifers
Upper Cretaceous aquifers
Upper Tertiary aquifers

Sandstone and carbonate-rock aquifers
Edwards-Trinity aquifer system
Valley and Ridge aquifers
Valley and Ridge carbonate-rock aquifers
Mississippian aquifers
Paleozoic aquifers

Carbonate-rock aquifers
Basin and Range carbonate-rock aquifers
Roswell Basin aquifer system
Ozark Plateaus aquifer system
Blaine aquifer
Arbuckle-Simpson aquifer
Silurian-Devonian aquifers
Ordovician aquifers
Upper carbonate aquifer
Floridan aquifer system
Biscayne aquifer
New York and New England carbonate-rock aquifers
Piedmont and Blue Ridge carbonate-rock aquifers
Castle Hayne aquifer
Puerto Rico North Coast Limestone aquifer system
Kingshill aquifer

Igneous and metamorphic-rock aquifers
Southern Nevada volcanic-rock aquifers
Pacific Northwest basaltic-rock aquifers
Snake River Plain basaltic-rock aquifers
Columbia Plateau basaltic-rock aquifers
Hawaiian Volcanic-rock aquifers
Piedmont and Blue Ridge crystalline-rock aquifers
Sand and gravel aquifers north of limit of Quaternary continental glaciation.

Pilot States



A Prototype Data Portal will be developed to serve ground-water levels, ground-water quality, and associated metadata in support of the National Ground Water Monitoring Network. Data that meet Network criteria will be compiled from all Federal, State, and local data providers and served to the Public via a map-based web interface.

For More Information On the Subcommittee on Ground Water http://acwi.gov/sogw/