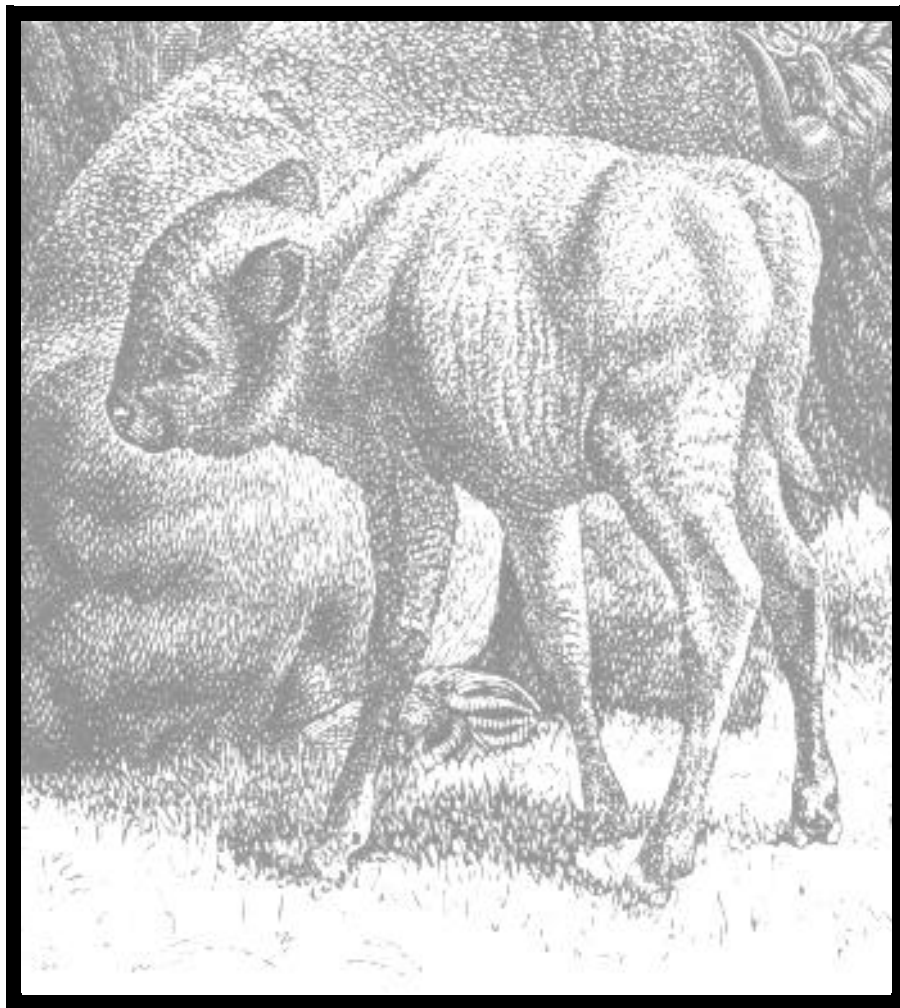


Data Sources for Water Indicators



Data Sources for Water Indicators

The databases for water indicators draw mainly from Clean Water Act section 305(b) reports submitted biennially by states to the USEPA STORET (STORage and RETrieve) database, and from activities conducted by the U.S. Geological Survey. Data sources presented here are:

- USEPA STORET (STORage and RETrieval System);
- USEPA Environmental Monitoring and Assessment Program (EMAP);
- USEPA Safe Drinking Water Information System (SDWIS);
- USGS National Water-Quality Assessment Program (NAWQA);
- USGS Water Resources of the United States; and
- USGS Estimated Use of Water in the United States.

Information includes:

- how to get the data,
- description of the database,
- possible limitations of the data,
- where the data come from,
- how the data are shown, and
- how the data can be used.

A discussion of the Permit Compliance System (PCS), USEPA's tracking system for over 75,000 National Pollutant Discharge Elimination System (NPDES) Permits is found in a description of Envirofacts under the **Waste** section.

Summary Evaluation of the Databases

USEPA STORET (STORage and RETrieval Section 305(b) Reporting Database)

This database represents the states' analysis of the quality of their water and, therefore, the quality of all waters within the U.S. All states must report biennially, resulting in data being continually available. However, state measurements represent only a portion of all the water in the U.S., due to differing state budgets, laws, regulations, and priorities. In the absence of uniform measurement guidelines, states use different criteria when preparing reports, and may measure different waters or areas of waters than in previous years. This makes it difficult to establish a trend within a state, within a region, or to make comparisons between states.

The data that are collected do attempt to give an accurate picture of the health of water bodies in the U.S. today. Each state's data and the methodology used are open to public access. The data can be sorted and arranged in a number of ways; for example, to measure compliance with water quality standards across states, determine trends of certain pollutants, or find the location of industrial waste sites and other disposal systems. Though the STORET database is not user friendly, access and assistance to the data are available by mail, by phone, and by computer (Telnet and Internet) at either no charge or minimal cost.

Environmental Monitoring and Assessment Program (EMAP)

EMAP data is derived from an innovative survey design that has yielded extensive but incomplete national and regional data. Seven resource groups (agricultural lands, estuaries, forests, the Great Lakes, lakes and streams, rangelands, landscape ecology) work together on specific sites around the country to develop current and long-term trends of a given region's ecological resources. Analyses of data have been presented and are available for the public in periodic reports. The program is receiving less funding, but the concept is viable and useful.

Safe Drinking Water Information System (SDWIS)

This source of data is maintained by the USEPA Office of Groundwater and Drinking Water. There was some degree of difficulty in locating and receiving information on SDWIS. At the time of review, the data was only available through calling the Drinking Water Implementation Division. The system is currently in a process of modernization, including the recent addition of a Website. The Website will contain state reported data such as coliform bacteria sample results, reports of violations, and other enforcement and compliance issues.

United States Geological Survey (USGS) Databases

The U.S. Geological Survey has been mandated to provide hydrologic information and monitor numerous components of the quality and quantity of the nation's waters. Therefore, the USGS databases comprise information from major nationwide monitoring programs. The USGS is involved in implementing the *National Water-Quality Assessment Program (NAWQA)*, and publishes *Water Resources of the United States* (hardcopy report available), and *Estimated Use of Water In the United States* (hardcopy report available). The NAWQA Program provides data from 60 important river basins and aquifers across the nation. The Water Resources Program provides data on the quantity, quality, and location of the water resources in the United States. USGS also works with NAWDEX (National Water Data Exchange) to help assist users of water data and water information in the identification, location, and acquisition of the needed data and information.

Though some overlap exists with each of these sources of data, the USGS acts as a facilitator in gathering its own data and coordinating the data of other federal agencies, states, and local governments and making the findings available for public use. The three sources reviewed here represent just a part of USGS involvement. Information on ground and surface water, stream gauging, and well monitoring can all be accessed

through the USGS databases. Access and assistance to the data are available by mail, phone, and computer (Telnet and Internet) at either no charge or minimal cost.

Water Data Source One: **STORET (STORage and RETrieval Section 305(b) Reporting Database)**

How to Get the Data

There are several ways by which states can obtain STORET data. Through the Freedom of Information Act (FOIA), users can request STORET data from USEPA offices. The user will be charged on a cost-plus basis for the computer work involved, usually a nominal amount.

The National Water Data Exchange (NAWDEX) can also give access to STORET data. For data and information from NAWDEX, call (703) 648-5663 or (FTS) 959-5663.

The National Technical Information Service (NTIS) manages high volumes of data requests from STORET. NTIS can be contacted at their Virginia headquarters by calling Audree Zapka at (703) 487-4807 or (FTS) 737-4807. Finally, both federal and state agencies can access STORET directly by using accounts established for them by USEPA offices.

The USEPA mainframe computer system has its own Internet host address:

epaibm.rtpnc.epa.gov

USEPA also operates an E-mail service with a STORET mailbox at:

STORET@epamail.epa.gov

This mailbox may be used by members of the general public to make inquiries about any aspect of STORET. For further assistance with STORET, the user may write:

STORET User Assistance
US Environmental Protection Agency
Mail Stop 4503F
401 M St., SW
Washington, DC 20460

Description of the Database

STORET is based on State 305(b) reports. The 305(b) Report represents the evaluation of each state's water quality and is mandated by Section 305(b) of the Clean Water Act. The law states:

“(b)(1) Each State shall prepare and submit to the Administrator by April 1, 1975, and shall bring up to date by April 1, 1976, and biennially thereafter, a report which shall include--

“(A) a description of the water quality of all navigable waters in such State during the preceding year, with appropriate supplemental descriptions as shall be

required to take into account seasonal, tidal, and other variations, correlated with the quality of water required by the objective of this Act (as identified by the Administrator pursuant to criteria published under section 304(a) of this Act) and the water quality described in subparagraph (B) of this paragraph;

“(B) an analysis of the extent to which all navigable waters of such State provide for the protection and propagation of a balanced population of shellfish, fish, and wildlife, and allow recreational activities in and on the water;

“(C) an analysis of the extent to which the elimination of the discharge of pollutants and a level of water quality which provides for the protection and propagation of a balanced population of shellfish, fish, and wildlife and allows recreational activities in and on the water, have been or will be achieved by the requirements of this Act, together with recommendations as to additional action necessary to achieve such objectives and for what waters such additional action is necessary;

“(D) an estimate of (i) the environmental impact, (ii) the economic and social costs necessary to achieve the objective of this Act in such State, (iii) the economic and social benefits of such achievement, and (iv) an estimate of the date of such achievement; and recommendations as to the programs which must be undertaken to control each category of such sources, including an estimate of the costs of implementing such programs.

“(2) The Administrator shall transmit such State reports, together with an analysis thereof, to Congress on or before October 1, 1975, and October 1, 1976, and biennially thereafter.”

The 305(b) evaluations help determine what progress has been made in the restoration and maintenance of waters and to signify the extent to which water quality problems remain. Generally, the evaluation of a state’s surface waters is based on the degree to which each waterbody supports what use the state has designated them. The USEPA has encouraged states to assess support of the following individual beneficial uses:

- Aquatic Life Support
- Fish Consumption
- Shellfish Harvesting
- Drinking Water Supply
- Primary Contact Recreation-Swimming
- Secondary Contact Recreation
- Agriculture

The degrees of support are expressed as:

- Fully supporting - Water quality meets designated use criteria.
- Threatened - Water quality supports designated uses now but may not in the future unless action is taken.
- Partially supporting - Water quality fails to meet designated use criteria at times.
- Not supporting - Water quality frequently fails to meet designated use criteria.
- Not attainable - The state has performed a use-attainability study and documented that use support is not achievable due to natural conditions or human activity that cannot be reversed without imposing widespread economic and social impacts.

Where Do the Data Come From

Each state water body assessed has a number of monitoring stations that sample water quality anywhere from two to twelve times a year. These samples are averaged to produce an annual value for each area or reach. The values become part of the state's 305(b) reports and are entered into the USEPA STORET database.

STORET includes several individual systems which reflect information on particular areas. Sites where data have been collected contain geographical, political, and descriptive information. These sites, known as "stations" within STORET, are the basis to which data are attached. Measurements of the physical characteristics and chemical composition of water, fish tissue, or sediment sampled at these sites are referred to as "parametric" data in STORET. Counts and descriptions of living organisms found at these sites are recorded and known as "Biological Field Surveys" in STORET. Stream flow data, as obtained from the U.S. Geological Survey, are called the "daily values" system.

STORET software edits incoming data for errors and inconsistencies, but the owners of the data have primary responsibility for corrections. Associated with each piece of data are a station identifier or monitoring location, latitude and longitude of the site, state and county code of the site, hydrologic unit code (drainage basin identifier), text describing the location of the site, and samples (such as a drawing of water, accompanied by an analysis of the water for chemical and biological attributes). Data samples may optionally contain time of day, depth, sampled medium (water, mud, tissue, etc.) and descriptors of any compositions used.

Limitations of the Data

Water quality data in the 305(b) reports are limited because it is not feasible for states to sample every point in every water body on a continuous basis to determine the values for the parameters of ambient surface water quality. States often focus on monitoring and assessing major perennial rivers, estuaries, and public lakes with suspected pollution problems. Therefore, the 305(b) reporting process assumes that samples collected at a few points within a water body at different times of the year will reflect the annual ambient water quality for sections of each type of water body.

The number of samples taken by a given monitoring station can vary, although the minimum number is two samples for any parameter to be included in the 305(b) reports. The timing and location of the samples is random; however, if any sample produces an extreme reading indicating close proximity to a point source of contamination or an isolated contamination event, the sample is excluded from the 305(b) report.

States have adopted different criteria, standards, and assessment methodologies in their 305 (b) data collection efforts. Since these may change over time, the information that each state presents cannot always be compared with previous years. Some states have the funds for more sophisticated monitoring techniques while other states must rely on more conventional methods to identify pollutants of concern. The amount and location of waters monitored change from year to year, which limits the consistency of data used in evaluation of long term trends. In addition to limitations due to sampling techniques, the evaluation of water quality data do not take into account regional patterns of pollution or natural occurrences that might affect ambient water quality such as abnormally high rainfall periods or droughts, which can skew the ambient

measurements of water quality parameters. Data are contained in the appendix of the report. Though limitations do exist for 305(b) report data, this is the foremost available source of information useful for assessing the long-term trends in surface water quality for each state.

Hardcopy Reports from the STORET Database

There is one hardcopy report from the STORET database included in this Catalog: the National Water Quality Inventory Report to Congress. The 1992 report was the most current annual report available at the time of review.

National Water Quality Inventory Report to Congress

The NWQI is reported to Congress biennially. In 1992, the Report described the overall quality of the Nation's assessed surface and groundwaters during 1990 and 1991.

How To Get the Report

For information on the Report, or for additional copies of this report or the companion summary document, contact:

Barry Burgan
National 305(b) Coordinator
U.S. Environmental Protection Agency (4503F)
401 M Street, SW
Washington, DC 20460
Telephone: (202) 260-7060
Fax: (202) 260-1977

The newest biennial report is available as of June, 1996. The analysis here is based on the previous report, the 1992 report. It is recommended that states use the reports for comparison purposes and develop environmental indicators from state-specific data sets.

Description of the Report

The Report summarizes information from the 1992 Water Quality Assessment Reports (305(b)) prepared by each state and discusses the geographic extent of water pollution across the country, identifying specific pollutants and sources of pollutants contaminating waters.

Each state summary includes a contact within the respective state environmental organization. Tables in the summaries are presented that show

- *Waterbody Type,*
- *Waters Assessed in miles/acres,*
- *Waters Fully Supporting Designated Use,*
- *Waters Partially Supporting Designated Use, and*
- *Waters Not Supporting Designated Use.*

The Waterbody Types are Rivers, Lakes, Estuaries, Oceans, and Wetlands.

Three additional summaries are included:

- *Causes and Sources of Water Quality Impairments,*
- *Programs to Correct Impairments,* and
- *Programs to Assess Water Quality and Program Effectiveness.*

The individual state summaries begin in Chapter 8 with more detailed data included in the Appendix. Individual state data are broken into sections covering:

- Rivers and Streams;
- Lakes, Reservoirs, and Ponds;
- Estuaries and Coastal Waters;
- Wetlands;
- Public Health and Aquatic Life Concerns;
- Great Lakes; and
- Section 314 Clean Lakes Data.

The types of data under each section are as follows:

Rivers and Streams

- Overall Designated Use Support in Rivers and Streams (miles)
- Aquatic Life Use Support in Rivers and Streams (miles)
- Fish Consumption Use Support in Rivers and Streams (miles)
- Swimming Use Support in Rivers and Streams (miles)
- Secondary Contact Recreational Use Support in Rivers and Streams (miles)
- Drinking Water Supply Use Support in Rivers and Streams (miles)
- Agriculture Use Support in Rivers and Streams (miles)
- Leading Causes of Pollution in Assessed Rivers and Streams (miles)
- Leading Sources of Pollution in Assessed Rivers and Streams (miles)

Lakes, Reservoirs, and Ponds

- Overall Designated Use Support in Lakes, Reservoirs, and Ponds (acres)
- Aquatic Life Use Support in Lakes (acres)
- Fish Consumption Use Support in Lakes (acres)
- Swimming Use Support in Lakes (acres)
- Secondary Contact Recreational Use Support in Lakes (acres)
- Drinking Water Supply Use Support in Lakes (acres)
- Agriculture Use Support in Lakes (acres)
- Leading Causes of Impairment in Assessed Lakes (acres)
- Leading Sources of Impairment in Assessed Lakes (acres)

Estuaries and Coastal Waters

- Overall Designated Use Support in Estuaries (square miles)
- Aquatic Life Use Support in Estuaries (square miles)
- Fish Consumption Use Support in Estuaries (square miles)
- Shellfishing Use Support in Estuaries (square miles)
- Swimming Use Support in Estuaries (square miles)

- Secondary Contact Recreational Use Support in Estuaries (square miles)
- Leading Causes of Estuarine Impairments (square miles)
- Leading Sources of Estuarine Impairments (square miles)
- Overall Designated Use Support in Ocean Coastal Waters (shore miles)
- Aquatic Life Use Support in Ocean Coastal Waters (shore miles)
- Fish Consumption Use Support in Ocean Coastal Waters (shore miles)
- Shellfishing Use Support in Ocean Coastal Waters (shore miles)
- Swimming Use Support in Ocean Coastal Waters (shore miles)
- Secondary Contact Recreational Use Support in Ocean Coastal Waters (shore miles)
- Leading Causes of Ocean Coastal Water Impairments (shore miles)
- Leading Sources of Ocean Coastal Water Impairments (shore miles)
- Characteristics of National Estuary Program (NEP) Sites
- Point Source Problems at National Estuary Program Sites
- Nonpoint Source Problems at National Estuary Program Sites
- Other Sources of Problems at National Estuary Program Sites

Wetlands

- Current Sources of Direct Wetlands Losses
- Overall Designated Use Support in Wetlands (acres)
- Causes Degrading Wetlands Integrity
- Sources of Integrity Degradation in Wetlands
- Development of State Wetland Water Quality Standards

Public Health and Aquatic Life Concerns

- Number and Extent of Fishing Restrictions Reported by the States
- Number of Fishing Restrictions Caused by Individual Pollutants
- Sources of Pollutants Causing Fishing Restrictions
- Drinking Water Restrictions Reported by the States
- Contact Recreation Restrictions Reported by the States
- Sources Associated with Shellfish Harvesting Restrictions
- Fish Kills Caused by Pollution
- Pollutants Causing Fish Kills
- Sources of Pollutants Causing Fish Kills
- Sediment Contamination Reported by the States
- Size of Waters Affected by Toxic Substances

Great Lakes

- Overall Designated Use Support in the Great Lakes (shore miles)
- Aquatic Life Use Support in the Great Lakes (shore miles)
- Fish Consumption Use Support in the Great Lakes (shore miles)
- Swimming Use Support in the Great Lakes (shore miles)
- Secondary Contact Use Support in the Great Lakes (shore miles)
- Drinking Water Supply Use Support in the Great Lakes (shore miles)
- Agriculture Use Support in the Great Lakes (shore miles)
- Leading Causes of Great Lakes Impairments (shore miles)
- Leading Sources of Great Lakes Impairments (shore miles)

Section 314 Clean Lakes Data

- Trophic Status of Significant Publicly Owned Lakes
- Acidity in Significant Publicly Owned Lakes
- Sources of High Acidity in Lakes
- Trends in Significant Publicly Owned Lakes
- Clean Lakes Program Projects

How States Can Use the Data

States can use the data to analyze the trends and conditions of water quality, the effectiveness of current measurement methods used to gauge the conditions, and the effectiveness of current management methods used to protect water.

Water Data Source Two: **Environmental Monitoring and Assessment Program (EMAP)**

EMAP is a nationwide program to evaluate the quantity and quality of ecological resources and identify any significant trends using a well-thought out sampling design. EMAP consists of seven integrated units, each dedicated to evaluating an individual ecological resource area. The three units dealing with water are *estuaries*, *the Great Lakes*, and *surface waters*. The estuaries unit deals with the status and trends in the condition of the nation's estuaries (extending inland to the head of tide). This includes coastal embayments, bays, inland waterways, tidal rivers, coastal wetland areas, and saltwater marshes. The Great Lakes unit observes the status and trends of the Great Lakes. The surface water unit measures trends and conditions in lakes, streams, rivers downstream to the head of tide, and inland wetland areas. There are numerous offices and agencies working together in these units, including the USEPA, the U.S. Fish and Wildlife Service, the USGS, and the National Oceanic Atmospheric Administration. EMAP also has a coordinating group that is doing indicator research. A report on ecological indicators was published by EMAP in 1990 which includes indicator strategies for Near-Coastal Waters, Inland Surface Waters, and Wetlands.¹

How to Get the Data

For information on EMAP indicators research, contact:

Craig Barber
USEPA
ERL-Athens
960 College Station Rd.
Athens, GA 30613
Telephone: (706) 546-3147
Fax: (706) 546-3252
E-mail address is barber.craig@epamail.epa.gov

Website address: <http://earth1.epa.gov/emap>

At the EMAP Home Page, links are provided for specific documents and data sets under each grouping. On the Navigator Page, all documents and data sets are listed on one long page, broken down by program groupings and categories. At the bottom of these two pages is a text search or query window in which single or multiple words may be entered to search all the documents in the EMAP World Wide Web site.

Description of the Database

¹ Hunsaker, C.T. and D.E. Carpenter, eds. 1990. Ecological Indicators for the Environmental Monitoring and Assessment Program. EPA 600/3-90/060. U.S. Environmental Protection Agency, Office of Research and Development, Research Triangle Park, NC.

EMAP was initiated in 1990, so its findings are relatively new and ongoing. EMAP resource groups will produce annual summaries containing descriptive statistics such as means, medians, distributions, ranges, and standard deviations for the various indicators monitored within the sampling frame or for selected indices computed from these data. EMAP will also produce regional, multi-regional, or national assessments that address the condition of a particular resource, the condition of selected resources, and the condition of all resources that occur in a region.

As an example of the data, EMAP *Estuaries* data sets can be accessed through the Web site. The menu provided allows the user to choose from:

- About EMAP Estuaries Data Sets;
- Descriptions of Estuaries Data Sets;
- 1991 Virginian Province Water Quality Metadata;
- 1991 Virginian Province Water Quality Data;
- 1991 Virginian Province Benthic Metadata; and
- 1991 Virginian Province Benthic Data.

Description of the Hardcopy Report:

Ecological Indicators for the Environmental Monitoring and Assessment Program,

This 1990 report includes indicator fact sheets which list the indicators, how each applies to what is being measured, the period of time that it is best to gather measurements, the type of measurement (such as a water column profile), primary problems with using each indicator, and bibliographic references.

Indicator fact sheets for near-coastal waters include:

- Dissolved Oxygen (as an indicator of estuarine ecosystem processes);
- Benthic Abundance, Biomass, and Species Composition;
- Biological Sediment Mixing Depth;
- Extent and Density of Submerged Aquatic Vegetation;
- Fish Abundance and Species Composition;
- Presence of Large Indigenous Bivalves;
- Gross Pathology: Fish;
- Acute Sediment Toxicity;
- Chemical Contaminants in Sediments;
- Water Clarity;
- Water Column Toxicity;
- Chemical Contaminants in Fish and Shellfish; and
- Dissolved Oxygen (as an exposure indicator of anoxic conditions).

Indicator fact sheets for inland surface waters include:

- Lake Trophic Status;
- Fish Index of Biotic Integrity;
- Macroinvertebrate Assemblage;
- Relative Abundance of Semiaquatic Vertebrates;
- Diatom Assemblages in Lake Sediments;
- Top Carnivore Index: Fish;
- External Pathology: Fish;

- Water Column and Sediment Toxicity;
- Chemical Contaminants in Fish;
- Routine Water Chemistry;
- Physical Habitat Quality;
- Water Column Bacteria; and
- Heavy Metals and Man-Made Organics (Toxics).

How States Can Use the Data

States can use the data to analyze the trends and conditions of water quality, to identify the strengths and weaknesses of various measurement methods, and to gauge the effectiveness of current management methods.

Water Data Source Three: **Safe Drinking Water Information System (SDWIS)**

This database is the central source of drinking water information maintained under the USEPA Office of Groundwater and Drinking Water. The system is currently in a process of modernization and will contain state reported data such as coliform bacteria sample results, reports of violations, and other enforcement and compliance issues.

How to Get the Data

Questions about the database can be addressed to:

Carl Reeverts, Chief
Data Management and Support Branch
Drinking Water Implementation Division USEPA
401 M Street SW (4604)
Washington, DC 20460
Telephone: (202) 260-5530
Fax: (202) 260-4656
E-mail: reeverts.carl@epamail.epa.gov

Jeff Sexton
Drinking Water Implementation Division
Telephone: (202) 260-5530

There is also a SDWIS technical support line which receives and logs calls from all SDWIS users, provides technical assistance, and documents problems with SDWIS applications.

Telephone: (703) 908-2012

A brand new Website is now available at: <http://www.epa.gov/OW/OGWDW/>
Information requests on drinking water programs, regulations, and standards can be sent through the Website or via e-mail at:
hotline-sdwa@epamail.epa.gov

Description of the Database

The database contains data relating to public water systems, number of people served, number of violations, and type of violation such as exceeding the Maximum Contaminant Level (MCL).

How States Can Use the Data

States can use the data to analyze the trends and conditions of drinking water quality and to gauge the effectiveness of current management and protection methods.

Water Data Source Four: **US Geological Survey**

The USGS administers the Water Resources Research Act of 1990. It is charged with assessing the quantity and quality of surface water and ground water resources; to collect, analyze, and disseminate data on water use; and to determine the effects of human activities and natural phenomena on hydrologic systems. The USGS can be contacted through:

Philip Cohen, Chief Hydrologist
US Geological Survey
Water Resources
12201 Sunrise Valley Dr.
Reston, VA 22092
Telephone: (703) 648-5215
Fax: (703) 648-5295

Three of the programs/reports that USGS administers are presented here.

US Geological Survey National Water-Quality Assessment Program (NAWQA)

This program was designed to assess historical, current, and future water quality conditions and provide information on such things as the extent of groundwater pollution and sustainability of water resources. Regional and national assessments focus on priority national issues including non-point source pollution, sedimentation, and acidification.

How to Get the Data

Questions about the program can be addressed to:

Tim Miller, Chief NAWQA
US Geological Survey
413 National Center
Reston, VA 22092
Telephone: (703) 648-5716
Fax: (703) 648-6693
E-mail address is tlmiller@srv1rvares.er.usgs.gov

Website address: <http://wwwrvares.er.usgs.gov/nawqa/NAWQA.OFR94-70.html>

Description of the Database

The NAWQA Program provides consistent and comparable information on water resources in 60 important river basins and aquifers across the nation. Data, methods, and information from USGS, federal agencies, state and local agencies, universities, and volunteer organizations are reviewed and integrated into the database.

Intensive assessment activities in each of the study units are conducted on a rotational basis, with one-third of the study units being studied intensively at any given time. For each study unit, 3-5 year periods of data collection and analysis will be alternated with 5-6 year periods of less intensive study and monitoring. Locations of the 60 NAWQA study units and their proposed implementation dates are shown in the map at the Website. Coinciding with the study-unit investigations are national synthesis assessments focusing on critical issues. The *Occurrence of Nutrients and Pesticides in Rivers and Groundwater* was selected as the first issues investigated by national synthesis. The next topic will be the *Occurrence and Distribution of Volatile Organic Compounds (VOCs)*.

Early findings are accessible at the Website for:

- Hudson River Basin,
- Delmarva Peninsula,
- Western Lake Michigan drainage,
- Red River of the North,
- Apalachicola-Chattahoochee-Flint River Basin,
- Trinity River Basin,
- Lower Kansas River Basin,
- Rio Grande Valley,
- Upper Snake River Basin,
- Yakima River Basin,
- Nevada Basin and Range, and
- Selected Early Results from the Pesticides and Nitrates.

How States Can Use the Data

States can use the data to analyze the trends and conditions of water quality and to gauge the effectiveness of current management and measurement methods.

USGS Water Resources of the United States

The USGS has the principal responsibility within the federal government for providing hydrologic information and for appraising the nation's water resources. Hydrologic data and other data are used in research and hydrologic studies to describe the quantity, quality, and location of the water resources of the United States. The collection, analysis, and interpretation of these data are done in cooperation with other federal, state and local agencies, universities, and research centers.

How to Get the Data

Paper copies of reports can be obtained at no charge from:

April Kobayashi or Joyce Dickey
U.S. Geological Survey
Information Services
Box 25286, Federal Center
Denver, CO 80225

Telephone number for the District Office in Colorado is (303) 236-4882 Ext. 311

Website address is <http://h2o.er.usgs.gov/>

USGS Home Page address is <http://www.usgs.gov>.

Currently, daily-discharge data are published on a water-year basis for each state in the USGS report series Water Resources Data. Reports are generally published from six months to one year after the end of the water year (October 1-September 30). Data are also archived in the National Water Data Storage and Retrieval System (WATSTORE). This system contains the data and a number of programs that can be used to analyze and produce statistical summaries of the data contained therein.

Water data reports are placed on CD-ROM and distributed to agencies and libraries. They are available for sale by the USGS Earth Science Information Center at the above address in Denver, Colorado.

Description of the Database

The program provides a continuous, well-documented, and broad-based source of reliable water data. For example, streamflow data are provided for a variety of purposes that range from current needs (such as flood forecasting) to future or long-term needs (such as the detection of changes in streamflow due to human activities or global warming). There were 7,292 gauging stations in operation as of 1994. The database holds mean daily-discharge data for about 18,500 locations and more than 400,000 station-years of record.

The data available on the Website includes *Historical Streamflow Data Retrieval*, *Real-time Streamflow Conditions*, access to NAWDEX (National Water Data Exchange), *Spatial Data*, and *Water-Use Data*. For example, accessing the *Daily Values Surface Water Data*, a user can retrieve stream discharge data collected by the USGS and display it in either tabular or graphical format.

All stations are organized by state and county. Measurements included are:

- Cumulative Reservoir Storage in the United States;
- Number of Stations Operated by the USGS in 1994, by State or Possession;
- Number of Stations and Sources of Funds, 1994 fiscal year;
- Relation Between Standard Error of Estimate and Record Length for Minnesota;

- Relation Between Drainage Area and 50-year Flood for Small Rural Streams in Eastern Massachusetts;
- Number of Stations and Record Lengths with Acceptable Data for Studying Climate Fluctuations;
- Percentage Distribution of Funds for USGS Hydrologic Data Collection, 1994 fiscal year;
- Map Showing Aerial Distribution of Stations for Kansas by Funding Source;
- Number of Stations in the USGS Survey data base, 1900-90; and,
- Discharge Measurements Made in 1993, by State or Possession.

How States Can Use the Data

The data can be used by states to:

- Characterize current water quality conditions;
- Determine input rates of various pollutants into lakes, reservoirs, and estuaries;
- Compute the loads of sediment and chemical constituents;
- Understand the biological effects of contamination;
- Set permit requirements for discharge of treated wastewater;
- Set minimum flow requirements for meeting aquatic life goals;
- Allocate water for municipal, industrial, and irrigation uses;
- Evaluate surface water and ground water interactions; and,
- Undertake scientific studies of long-term changes in the hydrologic cycle.

Estimated Use of Water in the United States

This USGS report was published in 1993 with the purpose of presenting consistent and current water use estimates for each county, state, and water-resources cataloguing unit of the United States. Estimates are made for water withdrawn from surface- and ground-water sources, consumptive use, instream use, and wastewater releases.

How to Get the Data

Paper copies of reports can be obtained at no charge from:

Books and Open-File Reports Sales
 U.S. Geological Survey
 Federal Center
 Box 25286
 Denver, CO 80225

Telephone number for Information Services is: (303) 202-4700

USGS also has a Water Information Home Page at:

<http://h2o.usgs.gov/public/watuse/index.html>

The 1990 National Report as well as other water-use publications are available from this Home Page Website.

Description of the Report

The report is a result of cooperation between State and local agencies and the U.S. Geological Survey's District Offices for each county in the United States. Sources of information and accuracy of data vary and are discussed for each category throughout the report. The data is presented both in a map layout and tabular format. Measurements include:

- Total Offstream Water Use;
- Total Water Withdrawals by Water-use Category;
- Surface-Water Withdrawals by Water-use Category;
- Ground-Water Withdrawals by Water-use Category;
- Public-Supply Freshwater Use;
- Domestic Freshwater Use;
- Commercial Freshwater Use;
- Irrigation Water Use;
- Livestock Freshwater Use;
- Industrial Water Use;
- Mining Water Use;
- Thermoelectric Power Water Use;
- Thermoelectric Power Water Use by Energy Source;
- Hydroelectric Power Water Use;
- Wastewater Treatment Water Releases; and,
- Trends of Estimated Water Use in the United States at 5-Year Intervals, 1950-90.

How States Can Use the Data

The data can be used by states to gauge the general trend of withdrawals by state or by water use category. The data may also be used to evaluate the effectiveness of alternative water-management policies and conservation activities with relation to population growth and industrial demand.