STORET

A System for Managing Biological Monitoring Data

STORET is a U.S. Environmental Protection Agency (EPA) database of ambient environmental data relating to water quality. The original STORET was developed in the 1960s, and today the system continues to serve as EPA's principal repository for marine, freshwater, and biological monitoring data. STORET is currently used by a variety of groups, including federal agencies, states, tribes, local governments, academic groups, watershed and volunteer monitoring organizations, and the public.

What are the benefits of using STORET as a biomonitoring database?

- STORET provides a common architecture for storing data, which makes it easier for agencies to share biomonitoring data.
- Once data are in STORET, they are available for public viewing.
- STORET is a free product maintained by the EPA.
- STORET provides the ability to generate results and reports of biomonitoring data.
- The system can store documents, graphics, and photos.
- Data in STORET are safe in the event of staff turnover.
- All data are in one central location, not spread across multiple databases and agencies.
- STORET is ODBC compliant, so it is easy to connect to external analysis software.

What types of biomonitoring data does STORET support?

STORET supports a variety of types of biomonitoring data on fish, benthic macroinvertebrates, and habitats. In addition, users can store metadata describing how, where, and when field data were collected. Examples of the types of data STORET can store include:

- **Fish**—sampling methods, species richness, weight, length, and fish tissue lab results.
- **Benthic macroinvertebrates**—sampling methods, collection methods, and taxa or species frequency.
- **Habitat assessment**—riparian vegetation, velocity, stream gradient, substrate components, pool/riffle ratio, embeddness, temperature, and channel width. All habitat assessment data are compliant with the EPA Rapid Bioassessment Protocols.

Does STORET support the Integrated Taxonomic Information System (ITIS)?

Yes, STORET can manage more than 320,000 taxa from ITIS, the authoritative source for taxonomic information. STORET contains information for the following biological communities at many taxonomic levels:

- Benthic macroinvertebrates
- Fish
- Amphibians
- Periphyton
- Phytoplankton/zooplankton
- Ichthyoplankton
- Aquatic vegetation
- Terrestrial vegetation
- Fungi
- Bacteria/virus
- Mammals, birds, reptiles.

How does STORET categorize biomonitoring results?

STORET defines and supports three types of biological samples: Biological Individual, Biological Tissue, and Biological Taxon Abundance.

Biological Individual: This sample is defined as a plant or animal individual for which the biologist records physical measurements and/or observations. This individual is uniquely identified in STORET and may be used as a parent of subsequent single or composite tissue samples.

Biological Tissue: This sample is defined as a plant or animal biopart for which a series of either physical and/or chemical measurements are recorded. This sample may be created from a single Biological Individual Sample (tissue extraction) or from many Biological Individual Samples (composite tissue), and as a result may have one or many identified parent samples. Tissue samples may also be recorded in STORET without parent sample identification.

Biological Taxon Abundance: Taxon abundance samples have their results portioned into one or many biological Result Groups. The user may create as many Result Groups as needed in any combination to fully describe the sample results. All Result Groups except Multi-Taxon Population Census are taxon specific (i.e., restricted to a single taxon of any rank). Each taxon may be grouped as many times as necessary to tabulate all desired counts. Multiple groups of the same Single Taxon type may be made in order to capture detailed information about each taxon in the sample. There are four Result Groups:

- **Multi-Taxon Population Census**—This group captures the total count (% cover, relative %, etc.) of each taxa observed in the sample. Taxonomic Names may be of any Taxonomic Rank. Species Numbers may be added to all Ranks above Species. Lab Sample Preparation Procedure, Field/Lab Procedure, and Laboratory Information may be stored for each taxon.

- **Single-Taxon Frequency**—A sample may consist of many of these Result Groups, one for each taxon represented in the sample. This Result Group contains two Subgroups: Physical and Biological. The Physical subgroup allows for the tabulated counts of the members of a single taxon according to sex and/or lifestage for user-defined physical Classes (e.g., The researcher has the ability to create Class ranges for each taxon. The Class subject is selected from a STORET

list of physical attributes such as fork length, weight, health index, etc.), thereby creating a parametric histogram. The Biological subgroup allows for the enumeration of the members of a single taxon according to sex and/or lifestage. Lab Sample Preparation Procedure, Field/Lab Procedure, and Laboratory Information are available for each characteristic.
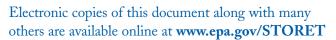
- **Single-Taxon Group Summary**—A sample may consist of many of these Result Groups, one for each taxon represented in the sample. Rather than recording data for each individual within the Single Taxon Group, the researcher may summarize the group according to items such as the number of individuals, average weight or length, and maxima and minima of various measures of the group. Lab Sample Preparation Procedure, Field/Lab Procedure, and Laboratory Information are available for each characteristic.

- **Single-Taxon Individuals**—A sample may consist of many of these Result Groups, one for each taxon represented in the sample. The researcher may record results on an individual basis. For example, the researcher may wish to record weight, fork length, sex, lifestage, and a general observation for each member of a given taxon. Lab Sample Preparation and Field/Lab Procedures are available for each individual.

How can I import existing biomonitoring data into STORET?

The STORET Import Module (SIM) provides agencies with a fast, convenient, and automated way to import biomonitoring data from existing systems (e.g., Ecological Data Application System [EDAS]) into STORET. For more information about SIM, refer to the STORET Web site.

Where can I get more information about STORET?

For more information, visit the STORET Web site, **www.epa.gov/STORET**, or contact the EPA STORET assistance hotline at 1-800-424-9067, or at STORET@epa.gov.

Electronic copies of this document along with many others are available online at **www.epa.gov/STORET**