



products & services
software data books consulting gis store

company information
news events careers about esri

support & solutions
support education & training gis for your specialty partner solutions library

contact us search site map home

E S R I

ARCNEWS

FALL 2000

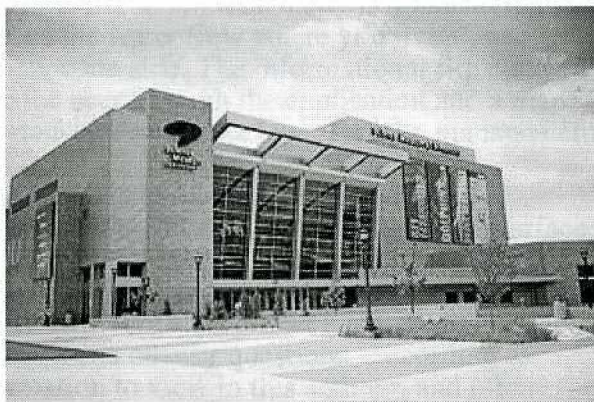
@ n l i n e

GIS at the Science Museum of Minnesota

10,000 Lakes, Unlimited Maps

Visitors of the Science Museum of Minnesota, St. Paul, Minnesota, can create thematic maps of any watershed in the State using a new GIS-based exhibit.

"Find Your Watershed" is an ArcView GIS-based application that displays maps of 20 topics ranging from presettlement vegetation to groundwater contamination potential. The exhibit is one of several innovative programs at the Museum and is an outgrowth of the Map Lab, which was established in 1997 to bring GIS technology to the museum.



One of the primary goals of the exhibit is to help educate visitors about water management issues including concepts such as "watershed-based planning" and "sustainable development." In addition, the exhibit introduces GIS technology to the public and provides a user-friendly means for citizens to access data of interest to them. Users search by town name to find the watershed in which they live and focus the map on that area. They then choose from a list of data layers to view maps, elevation models, or aerial photos of their watershed. A definite attraction factor to the activity is the aerial photographs.

"When visitors realize they can view aerial photographs of their residences, lines start to form," says Daphne Karypis, GIS specialist at the museum.

The Find Your Watershed exhibit grew out of an earlier project at the Map Lab known as the Sustainable Lakes Project, a collaboration between the museum, the Minnesota Lakes Association, and the University of Minnesota's Center for Urban and Regional Affairs (CURA). For the Sustainable Lakes Project, students from CURA worked at the Map Lab compiling data and producing maps to be used in lake management plans. The output of the Sustainable Lakes Project was printed maps, however, and the museum wanted an interactive display that would allow visitors to direct their own explorations.

Above left: The Science Museum of Minnesota's exhibit "Find Your Watershed" allows visitors to create thematic maps of any watershed in the state. An ArcView GIS-based application, the exhibit displays maps of 20 topics.

Karypis was a graduate student at the university who took on the challenge of producing the interactive display as her thesis project. Karypis was involved in the Sustainable Lakes Project and was familiar with the data sets. As a volunteer in the Map Lab, Karypis also was familiar with the museum's mission and the need to make scientific information intelligible to visitors. Karypis's biggest challenge was to design an interface that would allow visitors with no prior GIS experience to find their watershed and browse the 20 data layers. Learning Avenue as she went along, Karypis began work on the exhibit in the spring of 1999. At that time, the museum was in the process of relocating to a new building on the bank of the Mississippi River in downtown St. Paul. The pressure was on to complete the exhibit by the time the museum reopened in the fall.

The exhibit debuted in December 1999 with the opening of the new Science Museum of Minnesota. Find Your Watershed is located in the Mississippi River Gallery, a large exhibit area overlooking the river. Other exhibits in the gallery also focus on water and natural resources. Three posters and an informational flip chart accompany the application to aid users in understanding watersheds and lake management. The posters ask simple questions, such as "Does water flow north?", "Which city is downstream from North Dakota?", and "Where does the water flow where you live?", and provide simple answers on the opposite side. The informational flip chart includes instructions that guide the user through the application and a map section that describes the importance of each data layer for lake management.

Designed for exhibit use, the application is mouse-driven and hides traditional interface buttons, tools, and menu options from the user interface, preventing users from accidentally minimizing or exiting the ArcView GIS application. A kiosk software program on the computer confines it to run only the Find Your Watershed project. Museum staff and volunteers are available to help visitors with the application and answer questions. According to Karypis, "There is a lot of information to view in this activity, and often people do not take the time to view it all. With assistance, visitors tend to spend more time interacting with the activity and learning about watersheds, planning, and GIS. Some learn what a watershed is for the first time."

In addition to the Find Your Watershed exhibit, the Map Lab is involved in many projects making use of GIS technology. The lab produces maps to support research, exhibits and education programs throughout the museum including a large floor map of Minnesota that can be assembled by schoolchildren. The lab also is developing Digital Earth applications that allow visitors to navigate through a large volume of satellite-derived data of the earth. One of these applications will focus on the consequences of a major storm that occurred in the Boundary Waters Canoe Area Wilderness in July 1999. The storm blew down an estimated 25 million trees, drastically affecting the landscape in the most heavily visited wilderness area in the National Forest System. Using satellite and GIS data from both the United States and Canada, the Map Lab is developing a Digital Earth prototype application that could be accessible both as an exhibit within the museum and as an Internet Map Server application on the Web.

The Find Your Watershed application runs on an HP Kayak computer running Windows NT (350 MHz processing speed, 128 MB RAM, 16 MB VRAM). The computer is attached to an 81 gigabyte data server and an HP 2500 CP 36-inch plotter and a color laser jet printer. Much of the 52 gigabytes of data used in the application come from the Minnesota

Department of Natural Resources (DNR). The DNR also provided technical assistance on the project, as well as software extensions such as the DOQ Reader, which simplifies access to digital orthophoto quadrangles (aerial photographs) and digital raster graphics (topographic maps).

For more information about Find Your Watershed and other Map Lab activities, contact Daphne Karypis, GIS specialist (e-mail: dkarypis@smm.org), Science Museum of Minnesota, 120 W. Kellogg Blvd., St. Paul, Minnesota 55102 (tel.: 651-221-2590).

[ArcNews home page](#)

| [Software](#) - [Data](#) - [Books](#) - [Consulting](#) - [GIS Store](#) | [News](#) - [Events](#) - [Careers](#) - [About ESRI](#) |
| [Support](#) - [GIS Education & Training](#) - [GIS for Your Specialty](#) - [Partner Solutions](#) - [Library](#) |

Copyright © ESRI
Send your comments to: webmaster@esri.com
[ESRI Web Site Privacy Policy](#)
October 5, 2000