

The Minnesota Pollution Control Agency (MPCA) employs a watershed-oriented approach to assessing surface water quality and defining restoration and protection measures. Each of Minnesota's 81 major watersheds is assessed intensively every ten years, based on a staggered schedule that addresses, on average, eight watersheds per year. For each lake and river/stream found to have "impaired" water quality, MPCA determines the steps needed to restore the water to meet applicable standards. For waterbodies now meeting their standards, protective measures are defined to ensure continued good water quality.

This watershed management process is inherently data intensive. The MPCA specialists working on each phase of the ten-year cycle generate new data and draw on existing data from the preceding phases. Other organizations participating in the process contribute data at every stage and wish to be informed about progress.

The MPCA's capabilities for electronic handling and sharing of all this data have not kept pace with the program's rapid maturation over the last few years. The MPCA has eight separate surface water data systems, with few interconnections among them. Other important data is maintained only in spreadsheets or text files. As a consequence, staff often must spend considerable time piecing information together from disparate sources, and most data cannot be accessed online by partner organizations and the general public. To address these shortcomings, the MPCA has undertaken a multi-year Watershed Data Integration Project.

A Phased Improvement Process



Phase 1, completed in 2009, performed two baseline tasks: a business process analysis of the watershed program, and focus group discussions to identify needs and priorities for improved data management and access.

Phase 2, to be completed in June 2011, will produce three major outcomes that lay the foundation for future progress in the Watershed Data Integration Project (see below). These activities were funded by a legislative appropriation from the Clean Water Fund.

In Phase 3 and succeeding phases, the MPCA will implement numerous data integration and access improvements in accordance with the development plan, if the necessary resources can be obtained.

Phase 2 Outcomes

Enhanced waterbody inventory. The MPCA's database of descriptive information on Minnesota's lakes, wetlands, and river/stream segments has been modified to strengthen its role as the essential linchpin for data integration.

Useful new data elements were added and obsolete fields removed, aligning the inventory with current business practices and information needs.

The inventory will be relocated to the "core" (enterprise-level) sector of the MPCA's data architecture, where this critical shared resource will be subject to more stringent data integrity protections.

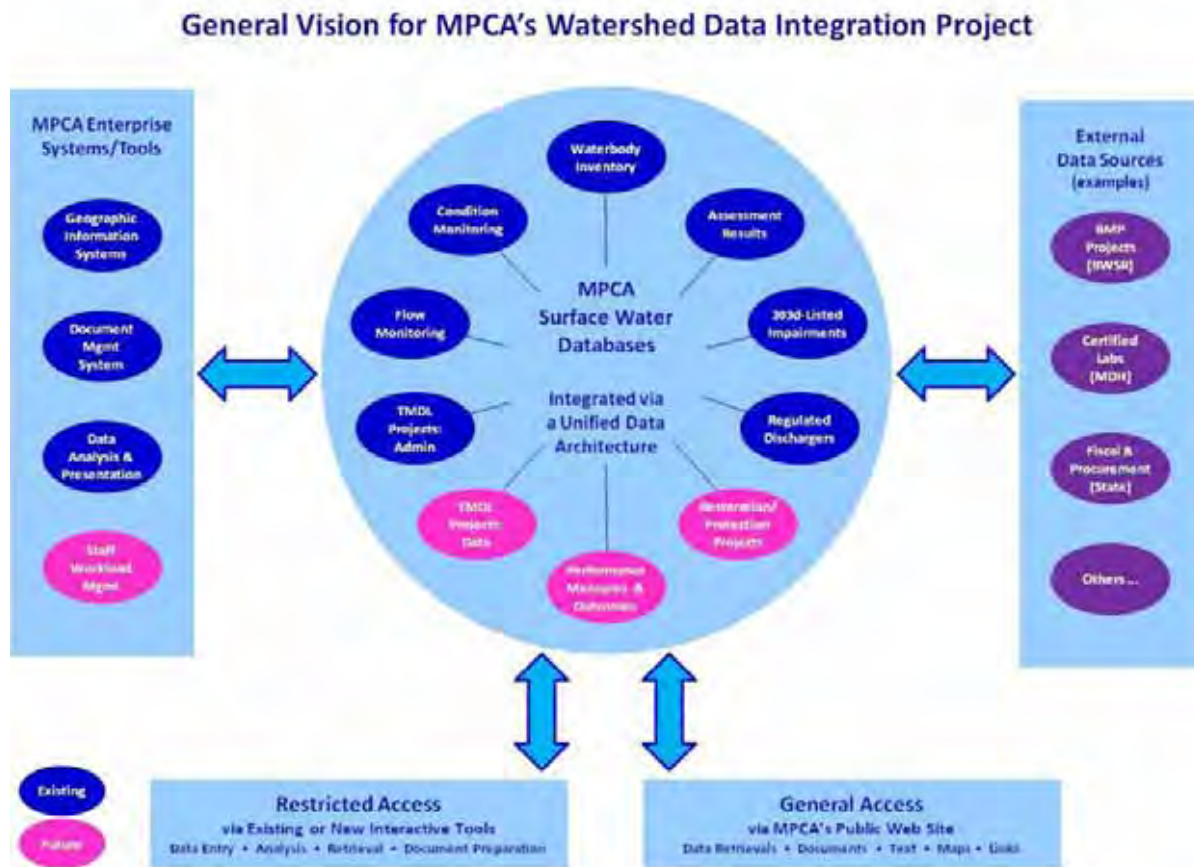
The data structure was changed to allow a waterbody to be represented as located in multiple political subdivisions—i.e., it crosses municipality, county, or legislative district lines—allowing more accurate retrieval of the waters (or impairments) within a given jurisdiction.

New web-based data retrievals. Since 2003 the MPCA has provided web-based access to water quality monitoring data via its “Environmental Data Access” webpages. The MPCA is now developing web-based retrieval of other kinds of data to meet common information needs. For example, by mid-2011 visitors to the website will be able to:

- Examine information regarding the MPCA’s assessment of a given waterbody, including the parameters that were evaluated and the assessment team’s comments.
- Search the Impaired Waters List online to determine the impairments in a geographic area and the status of MPCA activities to address them.
- Retrieve lists of MPCA restoration/protection studies (“TMDL projects”), e.g., by geographic area or project status.

Technical vision and phased plan for additional improvements. The MPCA is also preparing a detailed technical vision and a phased development plan for additional work in the Watershed Data Integration Project. These Phase 2 products will provide “roadmaps” for the following future advances, among others:

- A unified watershed data architecture that “pre-integrates” the data from all phases of the watershed management process, dramatically reducing the need for costly ad hoc integrations. The goal is not to create one monolithic system but rather a properly organized and efficient data structure underlying all surface water-related systems, current and future.



- A web-based “central file room” where project participants and the interested public have convenient online access to all of the data and documents associated with each phase of a watershed’s ten-year management cycle.
- Additional web-based data retrievals to meet both internal and external needs.

For More Information

For more information about the Watershed Data Integration Project, contact the MPCA at 800-657-3864 or 651-296-6300.