



A Wise Investment for Our Nation's Future

The Healthy Watersheds Initiative encourages states, local governments, watershed organizations and others to take a strategic, systems approach to conserve healthy watersheds with a goal to protect high quality waters and prevent future water quality impairments.

Benefits of Healthy Watersheds

- *Clean, Healthy Water*
- *Fish and Wildlife Habitat*
- *Flood Minimization*
- *Climate Adaptation*
 - *Carbon Sequestration (reduced green house gases)*
 - *Resistant and Resilient Ecosystems (habitat complexity and corridors)*
- *Recreation Opportunities*
- *Drinking Water Protection*
- *Billions in Cost Savings*



Spawning Sockeye Salmon

EPA's Healthy Watersheds Initiative



Despite billions of dollars spent in the last three decades to address impairments to water resources, aquatic ecosystems are still in decline. A recent EPA survey of the nation's wadeable streams found 42 percent in poor biological condition and 25 percent in fair condition. Nearly 40 percent of North America's freshwater fish, 700 species in total, are imperiled. We face a serious conservation crisis.

The solution demands a more integrated approach that looks broadly to maintain water quality and ecological integrity on a geographic – or watershed basis. Thanks to today's highly advanced assessment, planning and data analysis tools, we now can achieve the vision for holistic water resource management embraced by EPA and others in the early 1990's. Under the new **Healthy Watersheds Initiative**, EPA is proposing:

- **A Strategic Framework** that outlines a systems-based approach to integrated watershed assessment, protection and conservation programs.
- **A New Policy Direction** that focuses on maintaining healthy waters and meeting Clean Water Act (CWA) goals of fishable and swimmable.
- **A Collaborative Approach** that integrates CWA programs and other aquatic resource programs across agencies and the private sector.
- **Technical Assistance and Funding** to states and watershed organizations to support healthy watershed assessment and conservation.

***Tangible Environmental Results
Responsible Stewardship
Cost Savings
Better Quality of Life***

Why Emphasize Healthy Watersheds?

Healthy watersheds provide numerous environmental benefits and services, including clean water for healthy aquatic ecosystems, habitat for fish and wildlife, drinking water, recreational opportunities, and reduced vulnerability to severe impacts from invasive species, climate change and future land use changes.

Habitat for Fish and Wildlife

Healthy watersheds and streamside areas provide clean water and habitat for fish, amphibians, birds and insects, and offer green corridors that connect animal and bird populations to food and water sources. Maintaining healthy watersheds also makes economic sense. Healthy watersheds serve as refuges where people spend money to fish, boat, hike and pursue other recreation opportunities.



Better Resilience Against Storms and Floods

Healthy watersheds tend to suffer less damage from floods, fires, and other natural disasters, thereby reducing costs to communities.



Lower Drinking Water Treatment Costs

Protecting aquifer recharge zones and surface water sources reduces drinking water treatment costs. For every 10 percent increase in forest cover, the chemical and treatment costs decrease by 20 percent according to a survey of 27 different water treatment utilities (Ernst, et al., 2004).



Our Most Treasured Waters Are At Risk

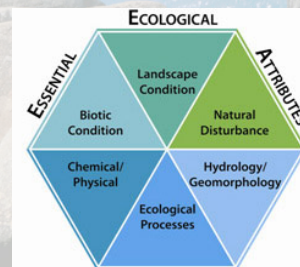
- Over the last 50 years, coastal and freshwater wetlands have declined; surface water and groundwater withdrawals have increased by 46%; and non-native fish have established themselves in many watersheds (Heinz Center, 2008).
- A recent national water quality survey of wadeable streams showed that 42% of the nation's stream length is in poor biological condition and 25% is in fair biological condition (U.S. EPA, 2006).
- Nearly 40% of fish in North American freshwater streams, rivers, and lakes are found to be vulnerable, threatened, or endangered; nearly twice as many as were included on the imperiled list from a similar survey conducted in 1989 (Jelks et al., 2008).

“The cost of protecting watersheds is much less than the cost of restoring impaired waters. Choosing to protect ecologically valuable systems will save money in the long run.”

—Laura Gabanski
Senior EPA Biologist and Healthy Watersheds Initiative Leader

Expanding the Watershed Approach

The Healthy Watersheds Initiative focuses on using a holistic approach to protect and conserve healthy aquatic ecosystems. To maintain ecological integrity of aquatic resources, watershed managers need to understand not only the biological, chemical and physical condition of waterbodies, but also critical watershed functional attributes, such as hydrology, geomorphology and natural disturbance patterns. Programs that protect and restore aquatic ecosystems are most effective when they integrate these dynamics and manage watersheds as systems. To maintain healthy aquatic ecosystems, the processes that drive their condition need to remain intact. In addition to the traditional focus on chemical and physical parameters, the goal is to look more broadly at overall health and condition, taking into account key dynamics of the watershed system.



The Healthy Watersheds Framework is largely consistent with the ecological attribute approach found in the Framework for Assessing and Reporting on Ecological Condition, a tool developed by EPA's Science Advisory Board in 2002 (see www.epa.gov/nps/healthywatersheds/publications.html#integrated). The framework provides a construct for addressing the dynamic complexities of watershed ecosystems through an integrated assessment of essential ecological attributes.

Healthy Watersheds Framework's Essential Ecological Attributes

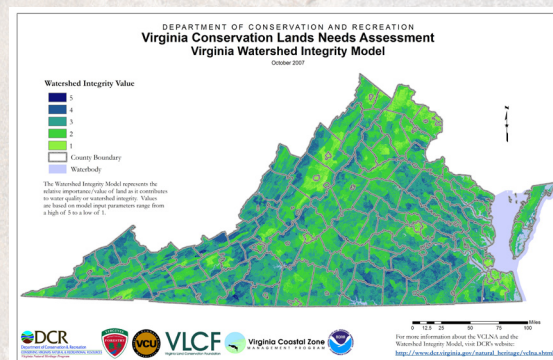
The Healthy Watersheds concept views watersheds as integrated systems that can be understood through the dynamics of essential ecological attributes, including:

- **Landscape Condition.** Natural vegetative habitat patches and corridors provide the green infrastructure, or interconnected natural areas, necessary to maintain good landscape condition in healthy watersheds.
- **Biotic Condition.** Healthy aquatic ecosystems reflect healthy watershed conditions. The biotic condition is measured by examining both habitat and the presence, numbers and condition of aquatic organisms and communities in a waterbody.
- **Chemical/Physical Parameters.** Parameters such as nutrients, temperature, dissolved oxygen, organic matter and pH are important components of ecosystem health.
- **Natural Disturbance Regimes.** Understanding the natural disturbance regime (fire and flood frequency, etc.) of a watershed allows managers to develop management and protection measures that will maintain the watershed in as natural a condition as possible.
- **Hydrology/Geomorphology.** Healthy streams have a natural flow regime with a magnitude, frequency, duration, timing and rate of change that creates habitat for multiple species. Further, in a healthy stream, erosion and sediment deposition rates achieve a balance, or dynamic equilibrium, based on water flow, soil type and other factors. The dynamic equilibrium of the physical system establishes the dynamic equilibrium of the biological system, thus maintaining the ecological integrity of the system as a whole.



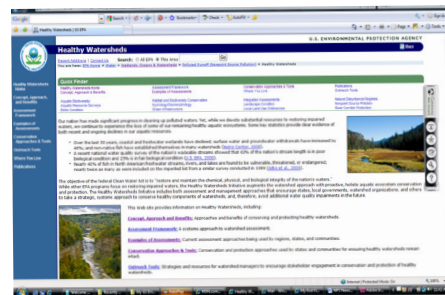
Identifying and Protecting Healthy Watersheds

Many states, local governments, and non-governmental organizations are leaders in protecting high quality waters and healthy watersheds. For example, Virginia used an integrated assessment approach in developing its watershed integrity model. Virginia's natural landscape assessment information combined with water quality data (modified IBI), source water protection zones, head-water streams and contributing areas, an index of terrestrial integrity, and other assessment information provides the basis for identifying high quality watersheds.



After identifying healthy watersheds or healthy components of watersheds, watershed managers or local planning authorities can incorporate a variety of strategies to ensure that the watersheds remain healthy. EPA's new Healthy Watersheds Web site describes a series of conservation and protection approaches and provides links to case studies, reports and useful tools. Often a mix of tools need to be tailored for a particular location to most effectively maintain watershed health and integrity. The Web site provides tools for:

- Habitat and biodiversity conservation
- Green infrastructure and landscape conservation
- River corridor protection
- Land protection programs and local land use ordinances



The New Healthy Watersheds Web site provides the tools and information that states, local governments and others need to identify and protect healthy watersheds.

The Rivanna River Basin and Healthy Watersheds

The Rivanna River Basin contains some of the highest quality river and stream systems located in piedmont Virginia. In addition to having numerous endemic and rare species, the rivers provide recreational opportunities and drinking water for the growing population of Charlottesville and the surrounding area. The Rivanna River Basin Commission, chartered under state law and comprised of local communities, was established to help local jurisdictions make decisions that are consistent with protecting the river's health. Several activities in the Basin support this goal and include elements of a healthy watersheds approach.



- The Rivanna Healthy Waters Implementation Project will bolster the conservation of healthy streams by identifying these streams through a biological assessment and developing tools to support local protection of the ecological integrity of these streams.
- The Rivanna Water and Sewer Authority developed a 50-year Community Water Supply Plan to improve river flows by mimicking natural flows from its reservoirs and to provide for stream buffers in permanent conservation easements.
- The City of Charlottesville integrated an urban Green Infrastructure Strategy into the city's Comprehensive Plan, including urban forest conservation, walking trails, water quality and riparian habitat protection.
- Fluvanna County's Comprehensive Plan emphasizes the importance of green infrastructure through a conservation easement program and cluster development regulations, along with renewing its Agricultural/Forestral District.
- The Thomas Jefferson Planning District Commission (TJPD) is developing a Green Infrastructure Plan that includes the entire Rivanna watershed. The Plan identifies habitat corridors using the Virginia Conservation Lands Needs Assessment, Tier III and identified "healthy waters," lands protected by easement, and other critical layers of green infrastructure. The River Basin Commission is working with TJPD to incorporate protective measures into local plans and codes.

Collaboration and Partnerships are Key to Success

To realize its vision for healthy watersheds, EPA recognizes the need to work collaboratively with other federal agencies, state, tribal and local organizations as well as with local watershed groups and private organizations such as recreational fishing groups that care deeply about clean water. Over the next several years, EPA will build on existing partnerships and leverage national and regional conservation efforts, including many already underway. (e.g., the National Fish Habitat Action Plan).

For more information, contact:
 Laura Gabanski, USEPA
 1200 Pennsylvania Ave, N.W.,
 Mail Code 4503T, Washington, DC 20460
 Phone: 202-566-1179 ,
 E-mail: gabanski.laura@epa.gov

Photos of Lake Tahoe by Jon Paul