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The core of recovery

What does Wisconsin most need to do to protect, restore and enhance its waters in times of diminishing funds and increasing pressure on natural resources?

Lisa Gaumnitz

Waterfronts represent different things to different people. Some want solitude; others, a place for recreation; those on shore want a view. Rules regulating piers, grading, seawalls and development are being revised. © Joe King

The heated discussions of last summer were not about hot weather, but shorelines and shallow water.

Who would need permits for piers and boathouses? Would permits be needed to dredge or grade a shoreline? Would top musky and walleye waters maintain the habitat scientists say they need for good fishing?

Similarly, during the cool, wet summer, readers were flooded with stories about sewage bypassing, construction site erosion, toxic algae and mercury in fish. Manure spills, fish kills and beach contamination were front-page fodder. A season that is supposed to be about fun in the sun instead seemed to say “stay out of the water and don’t eat the fish.”

The cold, wet summer put a damper on good news as well. Todd Ambs, Wisconsin’s top water official, can cite many achievements obscured by the summer’s bad headlines, including new state rules to reduce mercury contamination in lakes and rivers; growing partnerships to stop the spread of zebra mussels and other invasive aquatic species; and successful projects to reclaim lakes, for starters.

In fact, Ambs sees a silver lining to the water woes.

“The headlines drive home how important water resources are to Wisconsin people,” he says. “They raise awareness about what government is doing to protect these resources and what individuals can do.”

Ambs sees such broad awareness and public actions as one leg of a three-legged stool. The other two legs are a shared vision for Wisconsin’s water resources and strong goals to reach that vision. That solid foundation gives DNR staff direction to protect waters, it provides a game plan to involve the public in water protection and should provide a report card on how we’re doing in reaching those goals.

“Protecting Wisconsin’s water resources is arguably one of the most important tasks in state government, not only for the environment, but for our economy, particularly our $12 billion tourism economy, and our quality of life,” Ambs says. “Here, we hold water resources in trust for everyone. We are expected to balance competing uses and private property rights as well as providing public recreation while preserving waterways for future generations. It is a difficult task."

Ambs, appointed DNR water division administrator in January 2003, was struck by three things in his first six months on the job: "We've got great people, doing great work under great pressures," he says. "But we need to work smarter, not harder, to do the best we can with the staff and funding available to us."

Working smarter is increasingly important as DNR's responsibilities for Wisconsin's abundant water resources grow ever larger and available funding and staffing decrease.

The big picture shows that water resources themselves may be more vast than we had imagined. New satellite and mapping technology more accurately calculates waterbody sizes and suggests that Wisconsin has 84,474 miles of streams, not 57,000 as previously thought; more than 15,000 lakes totaling 1.2 million acres; and 1,000 miles of Great Lakes coastline. Add to that 5.3 million acres of wetlands and enough groundwater to cover Wisconsin to a depth of 100 feet. Those statistics help anchor the state's status as one of the nation's wettest.

Yet, tight state tax dollars and less federal money means Water Division staffing and funding have been pared back in recent years and will be pared again. Thirty-two jobs were cut in the last two years and more cuts could occur if state revenues don't improve.

Goal one: protect the Public Trust Doctrine

Given those realities, Ambs and DNR's top water leaders statewide took a step back and asked what did we most need to do to protect, restore and enhance the waters that remain the birthright of all Wisconsinites, the lifeblood of our ecosystems, and the economic engine and beacon for yet another century?

They looked to the state's figurative headwaters for their first goal: protect lakes and rivers that belong to all Wisconsin citizens by enforcing the Public Trust Doctrine.

That doctrine flows from the state Constitution and more than 150 years of court cases and laws that interpret how and where all citizens have the right to use and enjoy public waters. Private landowners have a right to reasonable use of their waterfront, including a pier, but those private rights are clearly secondary to public rights.

This revolutionary, egalitarian concept was incorporated into English law in the Magna Carta in 1225, and was brought to colonies in America and became part of the laws of the original 13 states, according to Mike Cain, a student of the doctrine and a DNR lawyer who has represented water programs since the 1970s. As settlement marched westward, the Northwest Ordinance of 1787 declared: "The navigable waters leading into the Mississippi and St. Lawrence…shall be common highways and forever free…."

Wisconsin's founding citizens enshrined those words in their State Constitution. Since then, the state Supreme Court, the Legislature, the Department of Natural Resources and private citizens have been very aggressive in upholding the trust doctrine and broadening the interpretation of public rights to include a variety of water uses like hunting, fishing, boating, skating, swimming, natural scenic beauty and good water quality.

For decades, DNR has carried out its responsibility to protect public rights in public waters in part by reviewing and issuing permits for erosion control measures, grading, boathouses, and other projects along shorelines and shallow waters. The permitting program aims to assure that projects are properly designed, built and located to minimize environmental damage and to avoid interfering with boating.

In 1966, lawmakers worried that a post-World War II building boom was harming the state's lakes and natural scenic beauty and decided to further protect the state's water resources. They passed the nation's first law requiring shoreland zoning in unincorporated areas to reduce the density of development and provide a natural buffer along lakes and rivers. DNR sets statewide minimum standards that counties must enforce along lakes and rivers for lot sizes, how far buildings are set back, and limits on cutting down trees and removing native plants.

Today, the Public Trust Doctrine is more important than ever, Cain says. Development along lakes and rivers continues to boom even as research in Wisconsin and elsewhere documents the cumulative damage to lakes, rivers and wetlands from thousands of small projects at the water's edge, just what the Supreme Court alluded to in its 1966 decision in Hixon v. PSC:

> "A little fill here and a little fill there may seem to be nothing to be excited about. But one fill, though inconsequential, may lead to another and another and before long, a great body of water may be eaten away…Our navigable waters are a natural heritage. Once gone, they disappear forever."

As plants and downed trees are removed from many developed shores, lakes and rivers are losing their songbirds, frogs and loons. New research suggests that nongame fish, important as as part of a balanced ecosystem and as a foodsource for game fish, are vanishing from Wisconsin waters as water quality degrades due to shoreline development. Game fish reproduction hangs in the balance.

“Good fishing in Wisconsin absolutely depends on having good aquatic habitat and good water quality in every lake and stream,” said Mike Staggs, who leads DNR’s fisheries management and habitat protection program. “Construction of docks, riprap, seawalls and boathouses, dredging, filling, removal of aquatic plants and woody cover, and the installation of more impervious surfaces all can degrade aquatic habitat if not done properly.

“If we destroy the natural shoreline habitat then fishing will get worse, and we cannot fix that situation simply by stocking or changing fishing regulations. If you want great fishing, you have to protect fish habitat,” Staggs said.

He recounted recent research in Wisconsin and elsewhere to amplify the point. Muskies reproduce best on lakes where less than 20 percent of the shoreline is developed. Bluegill production is two and a half times higher on undeveloped lakes compared with developed lakes. Trout populations disappear in watersheds where more than 11 percent of the land becomes built and paved. “Cleaning up the shoreline” to remove wood and aquatic plants that fish rely on for cover reduces fishing exponentially. The amount of woody cover, plants and bank cover is 30-600 percent higher on natural shorelines as compared to riprapped.

Fewer permits and quicker reviews

Wisconsin's program for regulating shoreline projects must protect the habitat but also be supported and accepted by the public, Staggs says. "We've heard two concerns about the program: decisions take too long and they're inconsistent, and that the program isn't working to protect our environmental resources."

A new law aimed at streamlining the permitting program sought to address time and consistency concerns without weakening environmental protection. DNR's temporary rules to help carry out the law enabled half of the projects submitted in 2004 to be exempt from permitting and comprehensive DNR review or to qualify for a general permit and 30-day review.

Continuing to issue timely, consistent decisions is one of the goals Staggs and his staff have set. The second goal seeks to ensure that the permitting program is protecting the environment by requiring DNR habitat protection staff to make random checks of projects to ensure they meet the applicable environmental rules for designing, building and locating their projects. Previously, DNR inspected projects only after receiving citizen complaints. Early results from compliance checks of 68 projects completed in summer 2004 were encouraging, Staggs says, particularly with the confusion over changes to the temporary rules.

Goal two: enforce the Clean Water Act

By the late 1960s, Wisconsin had a slew of laws on the books designed to keep people, cities and industry from polluting state waters, but the reality was it took decades to upgrade treatment plants and enforce those laws in a meaningful way. The state’s major rivers were choked with poorly treated wastes from municipal treatment plants and factories. The Wisconsin Legislature set up The Wisconsin Fund to make treatment plant improvements affordable for communities and by 1983, Wisconsin became the first state nationwide to meet the law’s interim clean water standards. While we’ve made significant, visible progress we haven’t reached the overall goal. Due to polluted runoff, airborne pollution, dams and other habitat alterations, and sedimentation, many of our waters are still not fishable and swimmable, but it’s a work in progress.

The challenges include containing ubiquitous pollutants like mercury. All Wisconsin stream miles are considered impaired by mercury contamination -- some from sources in Wisconsin and some from airborne pollutants that drift in from other states and across the nation, including small amounts that are by-products from coal-fired power plants.

Addressing problems like mercury contamination will require help from beyond Wisconsin’s borders, notes Russ Rasmussen, who leads the DNR program charged with carrying out the Clean Water Act. He and staff will focus on activities that most directly affect the environment. Even the relatively few waters that won’t reach fishable and swimmable conditions due to rapid community growth can improve.

“Rather than just pushing out permits, we’re stepping back and making sure our requirements are really the most important ones to protect the environment,” Rasmussen says. “We’re also going to do more to make sure businesses and communities are meeting the terms of those permits.”

Rasmussen and staff have created seven targets to gauge their progress, including:

1. completing rules to decrease bacterial loads in wastewater
2. reducing wastewater temperature to better protect coldwater trout streams and public health in recreational waters
3. tightening standards on discharging phosphorus and other nutrients
4. drafting rules that explain the policies DNR uses to tell the EPA when Wisconsin waters are impaired and don't meet clean water standards
5. setting a timetable to evaluate the stormwater management plans that more than 1,200 municipalties and industrial sites are developing
6. completing rules to reduce sanitary sewer overflows into state waters as well as investigating those occurences and taking enforcement actions, where appropriate.

Finally, Rasmussen and staff set a goal of issuing permits to industrial and municipal wastewater dischargers in a timely fashion while ensuring that plants are meeting standards and using current technologies. Permit reviewers are aiming to keep their current record of having the most efficient permit processing times of any midwestern state. They aim to reduce the time it takes to process permits to large-scale farming operations while stepping up environmental monitoring of those businesses to prevent manure spills and runoff that can harm water quality and fish.

"We're not going to be able to do as many things as we did in the past, but what we do, we're going to work to do better," Rasmussen says.

Goal three: meet drinking and groundwater needs

Wisconsin's come a long way from the days when contaminated drinking water was a leading killer, "but we can't grow complacent or lose ground," says Jill Jonas, who leads the Drinking Water and Groundwater program. The state has a long history of legislation, well codes, training and inspections to provide safe drinking water and protect the groundwater aquifers that supply nearly 70 percent of state residents with water.

Sustaining ample supplies of healthy drinking water is particularly challenging as the state and many public water supply systems struggle to find affordable means of reducing the levels of arsenic, radium and other contaminants in public drinking water supplies, Jonas says.

Where populations continue to grow rapidly, water demand is increasing faster than our water supplies naturally recharge. As a consequence, community costs to dig deeper wells are rising. Water drawn from deep aquifers may release contaminants like radium and arsenic. Withdrawing more water potentially changes long-distance aquifer flow, and it takes delicate, international negotiations to determine which communities and businesses should have the rights to withdraw Great Lakes water.

"Prevention, prevention, prevention," Jonas emphasized. "It's important to be on-site when a well is going in, whether it's a municipal well or a private well. Because once the well's in, it's difficult to assess whether it's been constructed properly to keep contaminants out or avoid contaminating the aquifer. It's also important to inspect facilities and water supply systems to make sure they're operating properly to prevent problems," she says.

Goal four: enhance and restore outstanding fisheries

Good habitat and clean water are key ingredients for good fishing. But those two alone aren't enough. Managing fish and the people who pursue them is critical in a state where fishing is a treasured tradition and an economic engine.

Nearly 1.4 million people buy fishing licenses and spend 22 million days each year on Wisconsin lakes and streams -- numbers that swell when you add in kids and others who don't need licenses. Fishing generates $2.3 billion in economic activity, supports 26,200 jobs, and provides $95 million in state tax revenue. Fishing is a key draw for out-of-state tourists and Wisconsin attracts more nonresident anglers than any state except Florida.

Researchers want to know if native nongame fish can serve as indicators of water quality and healthy ecosystems.

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"Fundamentally, any time you have two million people try to use a resource and many of them harvesting fish, you have to make choices on how to allocate that resource or you will collectively use the resource to death," Staggs says. "So we develop fishing regulations, habitat management programs, stocking programs, and others to provide for a sustainable fishery that meets as many of our customers' needs as possible."

Staggs and his fisheries management staffers in the late 1990s created a strategic plan to guide their work for the next decade. In 2004, they dug into that same plan, assessed what they had accomplished, what was left undone and came up with several dozen goals to achieve in the next two years.

Among those goals are:

1. improving trout habitat in impaired waters to 30 stream miles a year (up from 25) while maintaining past improvement projects

2. maintaining fish stocking by implementing the long-term hatchery development plan to rebuild and continue maintenance of the state's aging fish hatcheries. The first project? Completing renovations at the Wild Rose State Fish Hatchery by 2007. The facility is the state's production king for Lake Michigan trout and salmon, a $200 million fishery that is almost totally dependent on stocking.

3. removing dams and improving the associated stream habitat where sport fisheries and aquatic diversity can be improved, where the local communities are willing partners, and where external funding is available.

4. continuing to implement the court-mandated requirements for monitoring, assessing and managing the joint sport and tribal fisheries in the ceded territory.

5. restoring naturally reproducing native brook trout in four streams statewide per year.

6. rehabilitating 500 to 700 acres of Mississippi River habitat each year using federal environmental management funds.

7. managing for a stable commercial fishery within the productive capacity of Lake Michigan, Lake Superior and the Mississippi River.

8. increasing trophy fishing opportunities for muskies greater than 45 inches and doubling the catch rate of trophy musky by 2007.

9. boosting to 50 percent the proportion of stocked trout that are the progeny of wild fish.

These targets are just a few of the goals fisheries management folks have set for themselves, and for achieving the Water Division's goal of enhancing and restoring fisheries.

Ambs is careful to stress that the fisheries goals -- like those in the three other areas -- are near-term starting points, not the end-all, be-all of DNR programs to protect lakes, rivers, wetlands and groundwater.

“We’re not done,” Ambs says. “What you see here is a snapshot of some of the goals we have identified. For instance, we will add water monitoring and shoreland strategies later this year.

“We’ll periodically step back and review those four goals, measure our progress in meeting them, and adjust and adapt as necessary.”

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