

NONPOINT SOURCE

I. Problem Statement

Water pollution from nonpoint sources is a substantial contributor to the impairment of waters across the Great Lakes basin. Nonpoint source pollution is present throughout the basin, in many forms and with many interactions. The complexity of the pollutants and their presence in soil, water and air make pollution abatement for nonpoint sources particularly difficult to address. Strategies to date have failed to deliver widespread stream and lake restoration necessary for the protection and maintenance of the Great Lakes. This strategy recommends actions for mitigating stressors that cause nonpoint source pollution.

Nonpoint source impacts vary greatly in frequency and severity across the Great Lakes. Impacts have been particularly severe in the coastal wetlands and tributaries that once buffered the Lakes from environmental damage. Other prime impact areas include western Lake Erie, Saginaw Bay, Green Bay, the coastal region of Ohio, selected Areas of Concern (AOCs), and selected tributaries or near-shore areas. Due to this variability, the tools and strategies required to address nonpoint source pollution must be tightly coordinated among partner agencies and organizations and must be geographically targeted. In addition to working directly to address pollutant stressors, effective reduction of nonpoint sources will also include integrating control strategies with local land use and smart growth issues.

Nonpoint Pollution Stressors: Five nonpoint source pollution stressors – physical or chemical changes that occur within the ecosystem – significantly impact the biological components, patterns, and relationships in the natural system of the Great Lakes: nutrients, contaminants, pathogens, sedimentation, and altered flow regimes. These stressors enter the Great Lakes through three primary pathways: surface runoff, groundwater infiltration, and atmospheric deposition. Nonpoint source pollution in each of the five forms damages flora and fauna in the Lakes, threatens human health, reduces recreational opportunities, and increases the cost of treating drinking water and dredging our harbors and marinas. Actions against stressors have direct short-term costs, but often save money in the longer-term and sometimes make new sustainable growth possible.

Existing Programs and Their Effectiveness: The total input of stressors from nonpoint source pollution today considerably exceeds that from point sources. Work on point sources approaches a point of diminishing returns; funding to increase point source control beyond 90% or 95% is less effective than providing the same amount of funding to address nonpoint sources. Many governmental agencies, non-governmental organizations, including universities and colleges, and the regulated community, are already at work at, or interested in, reducing nonpoint source pollution in the Great Lakes. The combination of federal, state, tribal, and local institutions and programs that is already actively involved in reducing nonpoint sources has resulted in many successful projects across the basin. However, despite these successes, pollution from nonpoint sources has led to a Great Lakes ecosystem that is deteriorating in health and quality. Existing programs must be coordinated for efficient tracking of results, evaluated routinely for effectiveness, and held accountable for achieving environmental outcomes.

There are three fundamental barriers to addressing nonpoint source pollution more effectively in the long-term: authority, funding, and coordination.

Authority: The authorities in place are spread out over a variety of jurisdictions primarily through voluntary programs and their application and implementation is inconsistent. While they have high participation rates, they can only penetrate so far into the market responsible for the nonpoint stressors.

Funding: Funding currently available to these programs is far less than is needed to achieve maximum penetration using voluntary measures. Current funding levels will not come close to reaching the levels of implementation needed to make a difference in the Great Lakes.

Coordination: These programs and the agencies implementing them often are not integrated. In the few places where there is an integrated watershed-based effort, it is usually at the sub-watershed area or smaller. To be effective for the Great Lakes, agencies and programs at all levels – federal, regional, state, tribal, and local – must coordinate to accomplish efficient delivery and utilization of resources, targeting of critical areas, and monitoring of progress toward common objectives.

II. Goals and Milestones

Goal: Protect existing wetlands and restore wetlands in both urban and rural areas so that rivers, streams, and lakes across the Great Lakes region function as healthy ecosystems.

Interim Milestones:

- By 2010, restore, recover, and protect 550,000 acres of wetlands within the Great Lakes basin.¹
- By 2015, restore, recover, and protect 1,000,000 acres (450,000 additional) of wetlands within the Great Lakes basin.

Goal: Measurably reduce at least hundreds of thousands of tons of sediment, pounds of phosphorous loading, and pounds of nitrogen loading in to the Great Lakes basin.

Interim Milestones:

- By 2010, create 335,000 new acres of buffer strips within the Great Lakes basin.
- By 2020, create 1,000,000 new acres (665,000 additional) of buffer strips within the basin.

Goal: Reduce the amount of sediment reaching the Great Lakes through installation and continued use of management practices on cropland, especially those that increase crop residue left on the surface.

Interim Milestones:

- By 2010, have 2,000,000 new acres of Great Lakes basin cropland under appropriate residue management. This increase corresponds to 40% decrease in soil loss.
- By 2015, extend to 2,800,000 new acres (800,000 additional new acres) of Great Lakes basin cropland under appropriate residue management.

Goal: Reduce livestock agriculture's contribution to nonpoint source loading by 40-70 percent through comprehensive nutrient management planning (CNMP) and practice implementation.

Interim Milestones:

- By 2008, 70% of all livestock farmers will attend education programming regarding nutrient management.
- By 2010, all acreage utilized for livestock production in a major phosphorous-impaired Great Lakes watershed in each Great Lakes State will be covered by certified CNMPs.
- By 2010, triple the number of certified CNMP providers in the basin that directly assist farmers.
- By 2015, 70% of all livestock production in the U.S. portion of the Great Lakes basin will be covered by certified, phosphorous-based CNMPs.

¹ These 550,000 wetland acres are the same acres recommended by the Habitat Strategy Team.

Goal: Improve flow regimes to meet sediment reduction goals and restore sustainable biological communities.

Interim Milestones:

- By 2010, in all watersheds classified as severely or moderately impacted based on degree of altered hydrology and ecological sensitivity using scientifically defensible indicators: 1) develop better understanding of baseline conditions (appropriate time frame, natural vs. human influences) and relationship between stressors and ecological endpoints (water quantity as stressor, effectiveness of BMPs, cumulative impacts); 2) develop appropriate assessment criteria (numeric vs. narrative; relate to societal values); 3) develop/refine new methods (decision support systems, monitoring technology); and 4) apply most strategic remediation alternatives to foster goal of restoring natural flow regime.
- By 2015, restore/manage the hydrologic regime in 10 select watersheds to restore sustainable biological communities and reduce excessive sediment loadings.
- By 2020, document improvements in: measurable changes in hydrology (reduction in peak flow and volume); measurable reduction in bank erosion and sediment loading; and measurable improvement in the health of the biological community in significant portions (stream orders 1-3) of 10 urban watersheds and/or sediment loading into areas where these watersheds discharge to the Lakes.

III. Recommendations

In general, programs need coordination at a higher level and a focus on mitigating specific problem areas, such as Areas of Concern. Although agencies offer grants to States, Tribes and local groups to address these concerns, the grants are given without any overall, interagency focus or strategy. Effectively targeting and addressing problems will require not only federal agency budget enhancements, but also coordination of efforts and data so that agencies at all levels concentrate their energies on the same priority problems. To this end, the NPS Strategy Team suggests designating or establishing an organization to coordinate efforts, roles, and initiatives among federal, state, and local agencies and private organizations in the Great Lakes basin.

1) Congress should provide \$110 million per year (550,000 acres² at \$1000 per acre over five years) to fund wetlands restoration activities.

- **USDA and U.S. EPA will form a task force that includes, at a minimum, USACE, USFWS, and NOAA and other federal, state, tribal and local agencies. Agencies will work in partnership with other federal, state, and local agencies and organizations.**

Rationale: Wetland loss in the eight Great Lakes States from the 1780s to the 1980s totaled 23.6 million acres, or approximately half of the natural Great Lakes wetlands. This loss (through filling or draining) is primarily due to agriculture, urban uses, shoreline development, and resource extraction. These same causes continue to threaten the natural Great Lakes wetlands that remain in existence today. The loss of wetlands poses special problems for hydrological processes and water quality because of the natural storage and cleansing functions of wetlands.

Wetland priority areas for the Great Lakes exist in many active ongoing plans. To appropriately address NPS issues, wetland conservation efforts should occur throughout the watershed in areas strategically selected to best impact water quality concerns. Immediately available priority areas with active partnerships and implementation teams include: several watersheds currently active under USDA's Conservation Reserve Enhancement Programs in the Saginaw Bay watershed, the Maumee River

² These 550,000 wetland acres are the same acres recommended by the Habitat Strategy Team.

watershed, and the western and central Lake Erie watersheds (OH and PA), River Raisin and Macatawa watersheds (MI), and Eastern Wisconsin riparian areas, and areas noted in the National Strategy to Restore Coastal and Estuary Habitats.

2) Congress should provide \$335 million to restore 335,000 acres of buffers over five years.³

- **Create a new program to address education and installation of buffers in urban and suburban environments.**
- **Critical Geographies: Land areas draining to western and central Lake Erie, the Maumee River watershed, Green Bay, Saginaw Bay, Lake St. Clair, nearshore waters of Lake Michigan, and AOCs.**
- **USDA, NRCS and FSA to lead. Lead agencies will work in partnership with other federal, state, tribal and local agencies and organizations.**

Rationale: Buffer strips include a variety of practices including riparian buffers, filter strips, grassed waterways, windbreaks, living snow fences, contour grass strips, cross-wind trap strips, field borders and other vegetative barriers. Vegetative buffer strips slow water runoff, trap sediment; enhance infiltration within the buffer while trapping fertilizers, pesticides, pathogens, and heavy metals; and reduce blowing soil in areas with strong winds.

The anticipated results and benefits of increasing riparian buffer acreage will be improved water quality based on a measurable reduction of sediment load and of fertilizer, pesticide, pathogen and heavy metal contaminants, subsequently improving overall stream and riparian ecology for fish and wildlife habitat. A history of the program indicates that landowner willingness to participate exceeds program goals and that a State's ability to increase its acreage goal is directly related to the availability of adequate funding.

3) Based on a cost of \$60/acre and a 2.5 ton/acre reduction in soil loss, Congress should invest \$120 million by 2010 to achieve a 40 percent reduction in soil loss in ten selected watersheds.

- **By 2015, invest \$168,000,000 (\$48 million additional).**
- **USDA and NRCS to lead in partnership with other federal, state, tribal and local agencies and organizations. Utilize EQIP as the lead federal program to provide financial and technical assistance.**
- **Critical Geographies: Land areas draining to western and central Lake Erie, the Maumee River watershed, Green Bay, Saginaw Bay, Lake St. Clair, nearshore waters of Lake Michigan, and AOCs.**

Rationale: Although conservation tillage has been heavily promoted in many areas of the Great Lakes region, many farmers still choose to use conventional tilling methods, which plow crop residues into the soil. Keeping crop residues can assist in preventing erosion between planting seasons. Achieving a 40 percent reduction in sediment loss from croplands will result in greater water clarity, greater desirable aquatic plant growth, less algae, better fish habitat, and less sedimentation of bays and harbors. The 40 percent reduction is largely consistent with the percent reduction in sediment and phosphorus loads (where information is available) to meet designated uses.

4) Congress should provide \$106 million in funding to support the development and implementation of comprehensive nutrient and manure management on livestock farms.

³ This level of funding and restored buffer acreage should be continued at the same rate over 15 years (until 2020) for a total of \$1 billion provided to restore one million acres of buffers.

- **This includes \$96 million to assist the approximate 12,000 farms with more than 50 animals⁴ (estimated cost of \$8,000 per CNMP), \$5 million for educational material development grants, and \$5 million for increased technical assistance at NRCS.**
- **USDA and NRCS to lead in partnership with other federal, state, tribal and local agencies and organizations.**
- **Critical Geographies: Phosphorous impaired watersheds; leading livestock producing counties.**

Rationale: Manures and nutrients generated by livestock production facilities contribute to nonpoint source pollution in the absence of conservation planning. If poorly controlled, manure and nutrient products can contaminate surface and ground waters, cause odor problems, and serve as a source of infectious disease. Increased comprehensive management of nutrients and manure on livestock farms will greatly reduce livestock agriculture's contribution to nonpoint source loading.

The anticipated results and benefits of the recommendation will be a 40-70 percent reduction in nonpoint source contribution of phosphorus from livestock agriculture. This result is from the fact that farms with certified CNMPs apply 20–30 lbs of phosphorous less per acre than farms that do not have CNMPs and minimize nutrients leaving the farm through site-specific conservation planning. The actions would provide livestock farmers with financial and technical assistance to complete certified CNMPs, reward farmers that complete and maintain CNMPs, and increase market demand for certified CNMP providers.

5) Congress should provide \$18 million per year over five years⁵ to hydrologically improve 10 watersheds of various sizes.

- **Four federal agencies, the Army Corps of Engineers (USACE), the U.S. Geological Survey (USGS), United States Department of Agriculture (USDA), and U.S. EPA have resources, expertise, and experience to assist in various aspects of any new federal initiative. USDA would modify/expand its focus to incorporate off-site impacts into their conservation programs. The CWA Section 319 funding for nonpoint source control programs would be used to address urban stream flow issues related to aquatic life impairments; however, traditional non-pollution abatement activities are the current focus. Lead agencies will work in partnership with other federal, state, tribal and local agencies and organizations.**
- **Critical Geographies: The new program should focus on urbanized areas where runoff from development and the associated impairments directly affect natural waterways and their confluence with the Great Lakes or connecting waters. Likely candidates include smaller watersheds or sub-watersheds within the Milwaukee, Green Bay, Gary, Detroit, Cleveland, Toledo, and Buffalo metropolitan areas.**

Rationale: Alterations in the natural hydrology of surface and ground water in the Great Lakes basin, such as in the form of floods, droughts, reduced base flow, or altered timing of natural flow regimes, has resulted in changes to the structural and functional integrity of the physical, chemical, and biological elements in these ecosystems. Current federal assistance, regulatory and grant programs, and related state programs do not focus on in-stream flows in urban areas. A new, integrated federal initiative is needed to address flow regime issues in urban watersheds including infiltration and groundwater recharge. The anticipated results and benefits of protecting, conserving, and improving the hydrology of watersheds will be reduced infrastructure costs due to elevated stream flows and excessive sediment loadings, improved shipping capacity, increased public use, and improved aquatic ecosystem health.

⁴ 50 animals is the number used to derive 12,000 farms in accordance with the 2002 Agricultural Census. The number does not reflect a regulatory or statutory threshold for what defines an animal feeding operation; it is a value selected to ensure that resources go toward correction of problems on farms with greater nutrient management risk.

⁵ This level of funding should be continued at the same rate for a total of 20 years (until 2025). Including a higher proportion of dollars in the first five years for the upfront costs may make restoration efforts more likely to succeed.