



LakeLinks

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A multi-disciplinary forum for dialogue and expression of diverse viewpoints on issues of importance to the Great Lakes region.

Purdue Predicts Pollution Problems: The Future of Nonpoint Source Pollution Control

by Natalie Carroll

(Associate Professor, Purdue University)

Nonpoint source pollution is probably the primary cause of water quality degradation in the United States today. In order to assess the prevailing academic view regarding nonpoint source pollution the author interviewed 12 faculty members working in the area of water quality. These experts come from the departments of Agricultural & Biological Engineering, Agronomy, Earth and Atmospheric Sciences, and the Sea Grant College Program at Purdue University. A variety of opinions were expressed about both the relative importance of various sources and possible solutions to nonpoint source pollution. This article is a compilation of what the author heard during those interviews in answer to the specific questions listed.

What Is the Major Threat to Water Quality in the United States?

Most of the faculty members interviewed noted that nutrients, pesticides, sediment, and bacteria constitute the major threats to water quality. These contaminants enter the surface water as runoff or enter groundwater through the soil. Sources of contamination include poor land use practices, unregulated development, problems with faulty

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The Ecological Framework

by James Houk (jehouk@rmi.net)

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Introduction

The Ecological Framework is presented as an alternative community based ecological stormwater management strategy. It proposes an extensive connective system of public and privately owned open space for the purposes of stormwater runoff treatment and storage. The strategy investigates the Framework opportunities from regional watershed, local community and backyard perspectives, and tests the benefits of a vegetative "Best Management Practice" neighborhood retrofit.

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The Case for the Control of Nonpoint Pollution in the Great Lakes:

The Regulation of Farming Practices

By Gary Overmier¹

(Assistant Director, Legal Institute of the Great Lakes)

Few, if any of us, want to live or work in an area where the environment is polluted. One only has to look

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Cooperative Approaches in Soil Erosion Control and Sediment Management in the Great Lakes - St. Lawrence River Basin

by Dr. Jennifer G. Read¹ and Thomas R. Crane²

Nonpoint source pollution is widely recognized as among the most significant sources of pollution entering

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waste disposal systems, failing or improperly installed septic systems, and livestock facilities. One faculty member, however, suggested that there might be threats to water quality that are unidentified as yet. Another faculty member noted that it is a mistake to try to identify the “major” threat to water quality. Trying to find “the biggest problem” wastes time and effort that could be used to address problems we already know and can do something about.

Who do you think is primarily responsible for the threat to water quality?

The first response that the author received to this question was “Us - we have met the enemy and he is us.” Most other respondents stated similar sentiments, but elaborated and specifically identified sources that included: agriculture, inadequate sewage treatment, failing septic, construction sites, population growth with its resulting development, and a lack of comprehensive planning. Specific groups that were mentioned as contributors to the nonpoint source pollution problems were: homeowners, livestock operators, and “the small portion of farmers who are on difficult landscapes or are not good managers.”

One faculty member noted that primary pollution sources vary from watershed to watershed. In primarily urban watersheds, contamination generally comes from homeowners, industry, schools, businesses, and municipalities. In primarily rural watersheds, the major source of pollutants are agriculture and, to a much lesser degree, wildlife fecal material.

Two faculty members stated that we must continue to study the very complex nonpoint source system that is degrading ground and surface water before we can identify the primary source of contaminants. They feel it may be premature to ask the question, “Who is responsible?”

What steps need to be taken to address this threat? Do you advocate changes to nonpoint source (NPS) pollution regulations? If so, what?

This question sparked a lot of discussion because respondents believe we should balance regulation against the need for site-specific solutions to problems. One faculty member suggested that small communities need financial assistance in dealing with combined sewer overflows because they often do not have the resources needed for improvements. This expert also said that we should think carefully about how we regulate agriculture and should set priorities that make sense. Further, it must be noted that the same

inputs will affect the water quality in different locations differently because of differences in soils, geology, etc. Areas with sandy soils and karst geology tend to be much more vulnerable to ground water contamination than areas with soil structures that allow for slower water movement.

Most faculty members interviewed advocated holding off on changes to current regulations. One said, “We have a very poor understanding of the mechanisms controlling nonpoint source contributions. Once we develop a good research base that relates management practices to impact on water quality we will be in a position to revisit regulations.” Some noted that we need to enforce the current regulations. The enforcement of existing laws would go a long way to curb the nonpoint source pollution problems, one faculty member stated. Another cautioned that regulations, per se, could cause problems because there is no “one-size-fits-all” solution. For example, some of the more innovative septic systems may not be legal, and, if legal, they may be used inappropriately (on the wrong soils, etc.).

The Purdue faculty feels that we must balance science and regulations. Specific regulations are needed to address specific threats and pollution sources/contaminants (e.g. failing systems, animal waste, combined sewer overflows, nonexistent/incomplete systems, crop and livestock agriculture, etc.) We must apply regulations uniformly to all parties with no exceptions because exceptions lead people to look for ways around regulations. The faculty member that made this statement went on to say “don’t reward polluters by letting them ‘get away with it’. Everyone should work on a level playing field.” Another expert cautioned, however, that regulations must take into account the variability of pollution potential for different situations. The nonpoint source pollution potential varies greatly for sites with different soils and geology so while everyone must be accountable, it does not make sense to apply the same regulations for people on a sandy soil (for example) as for those on a loam or a flat versus a hilly geography. This is the reason that continued research in water contamination potential is so important.

The faculty also noted that we need to continue educational efforts to help people understand regulations, best management practices (BMPs), and the negative impacts of nonpoint source pollution. There are many BMPs for construction sites, agriculture, and housing development that are not currently being used. We should also identify critical places where most of the pollution originates and then create targeted programs for managers of that landscape. We must clearly explain why this education is important to our natural resources so that people will invest in change, particularly since some of the solutions and safeguards will cost money. Citizens are generally reluctant to spend additional money (over previous options) unless they clearly understand the beneficial impact of new programs.

The faculty members recommended that we think carefully about whom to work with in any educational efforts. A number of faculty suggested that an important first step is to work with people who do comprehensive planning so they put in safeguards and mitigation measures before development

starts. Assuming that development pressures will continue in all areas (rural and urban), land-use planning for any land-use change should be done and must incorporate a consideration of the impact of development on water quality and other natural resources.

Would you like to make any other comments about NPS pollution?

Answers to this closing question were:

- We must look at both ground and surface water and prioritize our efforts. We should work on the big problems and spend the money there. We should make the biggest impact we can with our efforts. We can't solve all our problems at once, so it makes the most sense to concentrate on the worst cases.
- The Total Maximum Daily Load (TMDL) rules could be significant in their impact from a nonpoint source focus.
- The Clean Water Act (and amendments) makes provisions to clean up the water. These need to be enforced!
- We know that there are many problems and each one has a specific solution (or solutions). We need to work on each problem. Too many people use the excuse that we don't know the 'biggest problem' as an excuse not to do something.
- Agriculture is a source — it should be cleaned up; but remember, it is only one of many sources.
- We need to think about the next Farm Bill, as it will have an impact on nonpoint source pollution.
- The concept of "water quality trading," where there is a market for buying and selling quotas of allowable releases of potential pollutants in a watershed, has huge potential and should be of enormous interest to the legal community. The concept is established and up and running in air pollution, and there are test programs for water pollution. It seems to offer a lot of promise as a way to avoid some of the limitations of regulatory approaches and to stimulate cost-effective solutions, although, of course, "the devil is in the details."

In summary, nonpoint source pollution is of major concern and an issue that needs to be addressed now. The experts at Purdue suggest that we enforce the regulations we currently have, continue to research the many contributors to nonpoint source pollution, and educate planners and the general public about the problems.

Nonpoint Source Pollution Websites

1. USEPA's Office of Water's nonpoint site.

<http://www.epa.gov/OWOW/NPS/>

2. North Carolina State University's site: Agricultural Nonpoint Source Pollution Control Concepts

<http://h2osparc.wq.ncsu.edu/info/concepts.html>

3. Ohio State University Extension Fact Sheet on nonpoint pollution.

<http://www.ag.ohio-state.edu/~ohioline/aex-fact/0465.html>

4. The Great Lakes Information Network's (GLIN) water quality site. This site also provides links to all Great Lake Basin programs on both sides of the border.

<http://www.great-lakes.net/envt/water/quality.html>

5. The State of Wisconsin Department of Natural Resources' nonpoint site.

<http://www.dnr.state.wi.us/org/caer/cfa/EF/nps/nonpoint.html>

Introducing....

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An example of the Ecological Framework is found in Jack Ahern's Extensive Open Space System (EOSS) (Ahern 1991). Ahern suggests a methodology for sustainable landscape planning through a network of open space corridors and patches within the existing urban and rural landscape. Optimal patterns of ecological landscape structure and function are identified based on the mapping and spatial analysis of the fragmented open spaces. The objective is to mitigate the negative ecological impacts of urban development.

Articulating functional landscape patterns, the Ahern model suggests economic benefits in community erosion control treatments, aquifer buffers, recreational trails, wildlife management and planning investments (Ahern, 1991). The Ecological Framework is presented as a conceptual alternative community based planning solution, offering residents and decision makers a non-traditional point of beginning.

The water resources of a community depend on the interactions of various physical factors and biological processes, which are influenced by the degree of cultural development. These modifications increase the rate of runoff and erosion, and reduce the filtering and recharge benefits that the natural landscape provides. According to Tom Schueler (1994) with the Center of Watershed Protection, the measured areas and the degree of modified natural surfaces or the degree of imperviousness caused by urban development practices are useful indicators for evaluating the impacts of development on associated receiving water.

Best Management Practices

Best Management Practices (BMPs) are introduced methods, measures, and practices designed to meet nonpoint source control needs. They are structural or non-structural means employed to reduce or eliminate pollution from reaching water resources. Structural BMPs are introduced detention basins, drainage swales, dams, or sediment traps. Non-structural solutions are typically implemented standards or policies that alleviate the cause of the problem while preserving existing beneficial practices and physical landscape features. The Eco-Framework focuses on the opportunities for retrofitting structural and non-structural BMPs over the watershed.

As communities continue to struggle to secure and control the impacts of stormwater runoff, they must focus on retrofitting existing systems to enhance and improve remaining natural resources. The objective of the study was to evaluate the opportunities available within the built environment by retrofitting the existing

drainage networks with proposed green BMPs. The Framework is intended to offset the impacts of impervious surfaces on the watershed and to protect the future uses of a community's resources.

The proposed BMP retrofits are complicated by spatial and land-use constraints. In fact, leading stormwater planners and experts in the field contend that retrofitting can be impractical or, at best, difficult (Lutz 1995). Regardless of the cost, stressed older traditional conveyance systems are being upgraded to handle growing demands. They offer an excellent opportunity for considering alternative management strategies that may prolong the life of existing systems and the life expectancy of new systems protecting community investment.

Supporting the Ecological Framework Strategy, many experts rate vegetative BMPs as a preferred treatment in situations of spatial constraints (Lutz, 1995). John Cox, an environmental specialist with the Florida Department of Environmental Regulation, Stormwater and Nonpoint Management Section, says that any opportunity within the urban framework should be seized (Lutz, 1995).

A Regional GIS Analysis

Southeast Michigan's Rouge River watershed was identified to illustrate the Ecological Framework concept. In the highly developed watershed of the Rouge River, water quality has been degraded to the point that aquatic habitat is severely impacted and recreational value lost. The watershed consists of approximately 438 square miles of mixed urban and rural land. The watershed involves 48 communities of Wayne, Oakland and Washtenaw counties.

In 1996 a Geographic Information Systems (GIS) analysis explored the concept of a regional ecological framework within the context of the existing Rouge River watershed (Houk, 1996). Designed to analyze the attributes of the existing urban watershed, the study examines the alternative framework opportunities. From a regional perspective, the analysis isolated and identified a spatial pattern of mixed open space along the Rouge River waterways. The identified land-use patterns were then studied with regards to potential points of interaction between the watershed communities and the preliminary framework patterns. The river and its tributaries acted as the main spine for the Ecological Framework.

Adjacent to the river corridor, the study examined the extent and character of the watershed's available open space. While being aware of political and social implications of the Ecological Framework approach, the study offers direction for further watershed planning considerations.

As mentioned above, the ecological strategy stresses the physical links between individual political communities and the Ecological Framework. The regional GIS analysis begins to explore these linkage points. To illustrate the findings, the study isolated the opportunities associated with the city of Northville located in the upper Northwest portion of the watershed. Comparing the GIS findings and city

The Ecological Framework

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master plan, the realities of the ecological links were realized along Northville's public and semi-public parks, woodlands, drainage ways and Mill Pond.

A Backyard Perspective

During the spring of 1997, research was conducted to investigate the opportunities and constraints of a backyard stormwater BMP retrofit model within an existing Northville residential neighborhood (Houk, 1997). Through a process of computer modeling and overlay analysis of residential land uses and activities zones, vegetative BMPs were introduced to treat stormwater runoff. The study evaluated the conditions of two small watersheds/sub-watersheds adjacent to the Rouge River.

The conceptual BMPs tested the introduction of native landscape plantings within the context of the neighborhood basins. BMPs were designed to reinforce the spatial residential activity while developing greater stormwater runoff control. The results of the study found that with an average 15% change in the traditional residential turf areas to "Green BMPs", an improvement in stormwater runoff control was possible. The BMPs suggested an average 14.25% reduction of peak runoff rates and 2.6% reduction in runoff volumes. No existing pavements were removed as part of the study.

Conclusion

While the sub-watershed research was conducted as a baseline study, the results lend support for the Ecological Framework proposal. First, the BMP retrofit strategy provides improved stormwater control and storage. The findings suggest a small step in the right direction towards curbing the impacts of urban stormwater runoff. Secondly, the BMP designs illustrate the contributions that an individual residential site can make towards watershed protection. Sub-watershed involvement reduces the forces of urban runoff and extends the benefits of the Ecological Framework into and over a greater area of the watershed community.

What benefits does the alternative stormwater management framework offer community watershed planning? With growing environmental awareness, more private citizens are becoming involved in the management and decision making process. This study offers an alternative means for citizen involvement in watershed management.

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Case for Control of Nonpoint Pollution

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at property values around clean lakes and streams to determine society's value of clean water. Over the years society has demanded the clean up of wastes being dumped into our water. As a result, industries such as sewage treatment plants, factories and other point sources² have been regulated for many years. However, there is one important source of water quality pollution that remains elusively uncontrolled – nonpoint

Nonpoint Pollution

Nonpoint source pollutants (NPSP) are pollutants that enter our rivers and lakes from diffuse sources. NPSP include sediment, fertilizers, pesticides, organic materials, bacteria and other similar materials. It is the largest, by volume, remaining pollutant of our waters. Most of these pollutants are the result of food, timber and fiber production. NPSP increase economic costs to the users of the water and cause harm to the environment by degrading habitat.

Why No NPSP Regulation

There are three main reasons why NPSP remain exempt from direct regulation by the federal government.³ First, there is a misplaced view by the public of agriculture as an idyllic life-style where every farm has a few chickens, a collie dog and a well-tended garden, the paragon of a nonpolluting self-sufficient lifestyle. Second, the entrenched conservation bureaucracy favors volunteer NPSP control efforts that keep them in the “good guy” category. Third, taxpayer dollars for a non-prioritized voluntary system are spread around in each congressional district.

The Idyllic Life?

The idyllic life of non-polluting self-sufficiency of yesteryear's farms and ranches does not exist any more than the horse and buggy or the Model T. The investment by these operations in land, equipment, seed, fertilizers, fuel, oil, pesticides, and other supplies amounts to hundreds of thousands of dollars per year. Farms and ranches are small businesses. They are no more self-sufficient than the local fast food restaurant franchise, the local small factory, machine shop or retail establishment. If these types of businesses must comply with air and water quality standards, why are farms and ranches different? They are businesses and businesses that pollute.

The Good Guys

The Federal government agencies assigned to control NPSP were established as scientific and educational agencies. Their enabling legislation followed the tradition of the United States Department of Agriculture to provide landusers free technical information on the best ways to manage the production of food and fiber. This puts the staff of these agencies in the “good guy” category. A tradition of 150 years or more is hard to break. Their employees want to

work in the agencies because they are viewed as being a “good guy”.

Congress and Money

Members of Congress are elected, in part, on their abilities to direct taxpayer dollars into their districts. A volunteer system spreads the money around the country and keeps spreading it year after year. Setting up priority areas is next to impossible.

The Limitations of Voluntary NPSP Control

Here is how they work (or don't work as the case may be) on the federal level. Congress sets up a program to pay farmers and ranchers to voluntarily implement NPSP control practices. They must go to the local agency office to determine their qualification for the program. If they qualify, the agency's technicians develop an implementation plan. The farmer or rancher agrees to install the approved NPSP improvement practices in exchange for the taxpayer paying most of the cost.



The production of food and fiber can cause serious water quality problems.

There are several flaws with this system. What if no one shows up at the agency door? What if not enough show up? What if enough show up but they are from non-priority areas? What if the money runs out before all that want to participate are provided services? A voluntary program is just that – voluntary. If no one has to participate, what is the real likelihood of effectively controlling NPSP? You could not develop a less efficient system to protect the environment.

Suppose there is a tremendous traffic problem on a particular road and numerous accidents are everyday occurrences. A study has shown that the placement of stop signs at the intersections would significantly reduce accidents and increase the flow of traffic. The signs are installed but no driver has to actually stop at the signs. It is only suggested that drivers stop. Some do but most do not. There are still numerous accidents.

The legislature becomes aware of the problem and enacts the Voluntary Stop Sign (VSS) Act. Individual drivers are asked to voluntarily go to the traffic control agency and agree to participate in the VSS program. A driver agrees to stop at the corner stop sign in exchange for a payment. Thousands sign up. The government

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program appears to be a resounding success until you realize there are thousands of drivers that never signed up. There are also thousands more that signed up for different stop signs along the route. Further, half the way through the year the traffic control agency ran out of money before they were able to sign-up all the individuals who wanted to volunteer. As a result, no one has to stop at all the stop signs and the roads are still littered with accidents.

The same chaotic situation exists with voluntary NPSP programs. Not everyone signs up to participate. There is little priority of the placement of the control practices. The critical areas that need to be protected may be on the land operated by individuals who do not participate in the program. There is never enough money and individuals continue to pollute while our tax dollars are spent inefficiently.

There are too many individual NPSP producers scattered over the entire country to be efficiently controlled with a volunteer program.

A New Proposal

The regulation of NPSP in specific critical areas (Designated Protection Areas - DPA) provides the best possible method to ensure the protection of these areas while being fiscally responsible in the expenditure of taxpayer dollars.

Regulation is an attempt by society to formalize a code of conduct desired by the society and to provide a method to coerce “bad actors” to conform to that code of conduct. Regulations are nothing new. We are surrounded by regulation. Landusers are regulated in other areas of their operations. They have to comply with safety, traffic, pesticide and other types of regulations.

Regulations should never approach the point of being arbitrary and capricious. However, a well-developed regulatory scheme⁴ sets up a reasonable and specific code of conduct and imposes penalties on nonconforming entities.

Unique Areas Need Increased Protection:

Designated Protection Areas – DPA

Some rivers and lakes are so special, unique and valuable economically that they need to be forcibly protected from nonpoint source pollution. The entire Great Lakes Basin may be one such system. Certainly there are areas within the Basin that are special, unique and valuable economically. Designating DPAs will prioritize areas needing specific, additional governmental intervention. This will provide a narrow framework to focus our efforts to achieve the most results for the least cost.

More Efficient Government

Regulation can be an efficient form of government

intervention. First, most citizens comply with regulations voluntarily, especially if the regulations appear meaningful, necessary and have a chance of obtaining the stated results. Our basic desire to be law-abiding citizens and of course the desire to avoid punishment for noncompliance is the main reason for voluntary compliance. Thus, society can expect a fairly high level of NPSP compliance with almost no expenditure of taxpayer dollars.

Second, regulation of NPSP in DPAs would automatically direct government resources to priority areas. Resources would not be “wasted” on areas of significantly less environmental and economic importance. Within a DPA, NPSP control progress can be measured and enforcement actions can be rapidly asserted to correct deficiencies.

Third, the current voluntary NPSP control program, at least at the national level, has no rational basis for existing. It does not know where it is, where it is going or when it will get there. A regulatory system can provide a distinct set of priority and goals.

Fairness: Individual Action and Responsibility

Regulation of NPSP is also a matter of fairness. If an individual’s actions pollute the environment and cause harm they should be responsible for their actions, not the rest of society. If a land-use manager contributes to the pollution of a stream or lake are they not responsible to stop what they are doing and repair the damage they caused? How are others, as taxpayers, responsible for the clean up?

Conclusion

The current system of controlling NPSP wastes fiscal resources and does not provide the environmental benefits necessary to protect the unique and economically sensitive areas in our country. The problem of NPSP is too diffuse to control without regulation and the problem is too serious to leave to a volunteer effort.

¹ Currently Mr. Overmier is the Assistant Director of the Legal Institute of the Great Lakes – University of Toledo College of Law and an Asst. Prof. (part-time) at Bowling Green State University - Center for Environmental Programs. Mr. Overmier worked for the USDA-NRCS as a conservationist for almost thirty years. He has dealt extensively with the NPSP problem in Ohio. He also farms and uses management practices that considerably reduce the nonpoint source pollutants that result from his farming operation.

² Point sources are pollutants that enter a watercourse from a defined source or point such as a pipe from a factory.

³ Because of the broad nature of nonpoint source pollution and its occurrences over large areas that cross state and local political boundaries, federal government oversight provides the best framework for effective control.

⁴ To some I realize this is an oxymoron.

Cooperative Approaches in Soil Erosion Control *continued from Page 1*

the Great Lakes and their tributaries. These pollution sources negatively impact the environmental health, economic productivity and quality of life in this eight state, two province region of North America. Great Lakes water resources supply 40 million people with drinking water and provide habitat for thousands of fish and wildlife species. They support a multi-billion dollar recreation/tourism industry. The Great Lakes, their connecting channels and the St. Lawrence River also offer considerable transportation opportunities which contribute significantly to the region's economy. In addition, the binational Great Lakes Basin is a major agricultural region accounting for 30 percent of all agricultural sales in the U.S. Protecting these valuable resources from the impact of erosion and sedimentation is an important task for those involved in Great Lakes-St. Lawrence resource management.

Soil erosion and sedimentation is a specific form of nonpoint source pollution that results from a variety of often improper urban and rural land-use practices. In recent years an array of state, provincial, federal, regional and local agencies, environmental groups, business organizations and other resource users have initiated efforts to address the causes and impacts of soil erosion and sedimentation. These collective efforts and coalitions have begun to make real progress and reap benefits from a variety of new policy and program initiatives, successful management practices and binational information exchange



The management of eroded sediment is a costly business.

on these important issues. The interjurisdictional nature of the challenge and the increasing emphasis on a watershed-based approach to water quality management, speak to the importance of such cooperative efforts in resource management.

The binational Great Lakes Commission, serving the eight Great Lakes states and two Canadian provinces, is one organization that is making a difference in soil erosion control and sediment management issues through a cooperative approach with state, provincial, federal non-governmental and private sector partners. The Commission, established in 1955 by the Great Lakes states, promotes the orderly, integrated and comprehensive development, use and conservation of the water and related natural resources of the Great Lakes basin and St. Lawrence River. The Commission addresses a wide variety of environmental protection, resource management, transportation and sustainable development issues of importance to the region. One of these high profile, cross-cutting issues is that of sediment management and erosion control. (www.glc.org/sedmgmt.html).

The Great Lakes Commission manages or is involved with several collaborative projects related to erosion and sediment control. The Commission is partnering with the U.S. Army Corps of Engineers on implementing components of the Water Resources Development Act. It also provides ongoing staff support to the Great Lakes Dredging Team and manages the federally funded Great Lakes Basin Program for Soil Erosion and Sediment Control. These projects, and other Commission activities, support the dual goals of improved Great Lakes water quality and sustaining a strong regional economy.

The Great Lakes Commission is working with the U.S. Army Corps of Engineers to implement Section 516 of the Water Resources Development Act of 1996, under which the Corps is authorized to develop sediment transport models for tributaries to the Great Lakes that discharge to Federal navigation channels or Areas of Concern (AOCs). These models are useful for targeting upstream areas where implementing preventative measures to control sediment loadings will benefit downstream navigation projects and AOCs. (www.glc.org/projects/sediment/).

The Great Lakes Sediment Management Program maximizes efficiency by coordinating efforts with Great Lakes states and utilizing existing data and information. The Great Lakes Commission has facilitated this coordination by organizing technical and user's workshops, and participating in the process to identify priority tributaries for modeling. Funding is authorized for five years; however, the program has only been funded in three of the past four years. Nevertheless, models have been completed for the Nemadji River (Minn.), the Saginaw River (Mich.) and the Maumee River (Ohio). After going unfunded in FY 2000, the Great

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Lakes Sediment Management Program was funded at \$500,000 in FY 2001. The Corps will begin work on the Buffalo River this fiscal year.

The Great Lakes Commission is cooperating with the U.S. Army Corps of Engineers on another project with elements related to Great Lakes sediment management. The four-part John Glenn Great Lakes Basin Program was authorized under Section 507 of the Water Resources Development Act of 1999. The program's first element is a strategic plan for the Great Lakes region that includes sediment transport analysis, sediment management planning, and identifying activities to control excessive sedimentation and prevent shoreline erosion. Another component is a bihydrological study that includes information on ground and surface water hydrology, altered tributary dynamics and other data relevant to sustainable water use management in the Great Lakes basin. A third component is an assessment of the economic benefits of Great Lakes recreational boating, focusing particularly on those harbors currently maintained by the Corps. The final element of the program allows for the Corps to provide technical assistance to state governments to improve consistency and efficiency in state water use activities and policies. In FY2001 Congress appropriated approximately \$100,000 to begin these studies and the Commission is working closely with the Corps to ensure appropriate participation of the Great Lakes states, tribal governments, interested non-governmental organizations, relevant Canadian federal, provincial and First Nations governments and the public.

Since 1996, the Great Lakes Commission has provided administrative support and coordinative leadership to the Great Lakes Dredging Team (GLDT). The GLDT is a federal and state partnership, formed in response to recommendations from an interagency work group headed by Department of Transportation – Maritime Administration. Its purpose is to ensure that the dredging of U.S. harbors and channels throughout the Great Lakes; connecting channels and tributaries is conducted in a timely and cost effective manner while meeting environmental protection, restoration, and enhancement goals. The GLDT acknowledges the connection between soil erosion and sedimentation and dredging needs. For example, an ad-hoc GLDT Watershed Planning Workgroup developed a framework for integrating watershed analysis in Dredged

Material Management Plans. A GLDT task force is examining beneficial ways to use dredge material after it has been removed from the water. Recently, the GLDT held a joint session with the Great Lakes Soil Erosion and Sedimentation Task Force and the National Association of Conservation Districts Great Lakes Committee to explore opportunities for cooperation among the dredging, erosion control and agricultural communities. (www.glc.org/projects/dredging/)

In 1991 the U.S. Congress appropriated \$1 million to establish the Great Lakes Basin Program for Soil Erosion and Sediment Control. The Basin Program is designed to protect and improve Great Lakes water quality by: controlling erosion and sedimentation; limit the input of associated nutrients and toxic contaminants to the waters of the Great Lakes basin; and minimize sources of sediment which cause off-site damages to harbors, streams, fish and wildlife habitat, recreation facilities and the basin's public works systems. The program is a joint federal/state initiative with funding provided by the U.S. Department of Agriculture and program coordination provided by the Great Lakes Commission. A task force, composed of representatives of the eight Great Lakes states, federal agencies and regional organizations, oversees the program which consists of an annual grants program and an regional information/education program. (www.glc.org/basin/glb.html)

The Basin Program supports innovative demonstration, program and technical assistance, and information/education projects that address problems associated with soil erosion and sedimentation in the U.S. portion of the Great Lakes basin. As a result of the joint meeting with the Great Lakes Dredging Team (referred to above), the 2001 request for proposals was expanded to include the beneficial use of dredge materials as an area of program interest. The groups intend to meet again to discuss further opportunities for cooperating on erosion control.

Since 1991, the Basin Program has invested more than \$4.6 million in federal funds to support 158 projects in each of the eight Great Lakes states.

The Great Lakes Commission also manages a regional information/education program that consists of the quarterly newsletter, *Keeping it on the Land*, and a web-site where descriptions of the technical innovations developed under completed Basin Program projects are available to everyone with Internet access.

continued on Page 10



Chesapeake Bay
National Estuarine
Research Reserve
in Virginia



GRANTS PROGRAM: TEN-YEAR SUMMARY - 1991-2000

<i>State</i>	<i>Number of Grants</i>	<i>Total Funding</i>
Illinois	2	\$ 59,500
Indiana	11	167,453
Michigan	53	2,622,530 ¹
Minnesota	22	471,873
New York	30	607,271
Ohio	7	285,691
Pennsylvania	11	203,298
Wisconsin	12	218,723 ²
TOTAL	158	\$4,636,339

¹Includes three separate \$600,000 appropriations (FY 91-93) to the Michigan DNR for the Saginaw Bay Erosion and Sedimentation Control Program.

²Includes a grant of \$21,368 to the National Association of Conservation Districts (NACD) for seven soil erosion workshops in the Great Lakes Basin.

**Essential Elements of Coastal Science
for Lawyers**

A workshop for students and professionals

**Lake Erie Center
April 23, 2001
Oregon, Ohio**

(\$70.00 per Person)

The Great Lakes Commission is undertaking a series of initiatives currently that will bring additional efforts to bear on soil erosion and sediment control in the Great Lakes basin. These include aggressive efforts to initiate *The Great Lakes Program*, a bold, new ten year Congressional funding initiative that emphasizes federal/state partnership and the interdependence of environment health and sustainable economic development. The Great Lakes Program is based largely on federal programs, such as those outlined above, that have been authorized but inadequately or never funded, in conjunction with matching funding from state and local governments.

The Great Lakes Commission's interest in promoting a sustainable Great Lakes environment and economy means that it will continue to pursue a coordinated, regional response to issues, such as sedimentation, that have both economic and environmental impacts. For further information please contact: Tom Crane, Program Manager, Resource Management, or Steve Thorp, Program Manager, Transportation and Sustainable Development at (734)665-9135.

¹Dr. Jennifer G. Read is a program specialist in the Resource Management Program, Great Lakes Commission.

²Thomas R. Crane is the manager of the Resource Management Program, Great Lakes Commission.

8:30-9:00 AM
9:00-9:30

Registration

Lawyers and Environmental Science

Dr. Niebuhr, *William & Mary*

Issues and Processes of Shoreline Stabilization Dr. Niebuhr, *William & Mary*

BREAK

Human Impacts and Management of Wetlands Dr. Gottgens, *University of Toledo*

Foundations and Issues of the Endangered Species Act Dr. Niebuhr, *William & Mary*

LUNCH - *Provided*

Nutrient Movement and Management

Dr. Sinsabaugh, *University of Toledo*

BREAK

The scientific method:

Strengths and limitations of mathematical modeling

Dr. Moorhead, *University of Toledo*

Introduction to Basic wetland and shoreline processes: Field Experience

Gene Wright, *Old Woman Creek National Estuarine Reserve*

Evaluations



11:30-12:00

12:00-1:00

1:00-2:00

2:00-2:15

2:15-3:15

3:15-4:15

4:15-4:30

Application has been made to the Ohio Supreme Court Commission on Continuing Legal Education for 5.75 Hours of Continuing Education Credit for this program including 0 hours of Ethics, Substance Abuse and Professionalism.

Note: Registration information on Page 11.

Trade and the Great Lakes
SeaGate Centre - Toledo, Ohio
April 19 & 20, 2001

April 19, 2001

1:00 PM Welcome

1:15 PM State of Trade

Warren Jestin, *Chief Economist - Bank of Nova Scotia* - Confirmed

William A. Strauss, *Economic Advisor and Senior Economist Federal Reserve Bank of Chicago* - Probable

2:15 PM – The Current Economics of the Shipping Industry

George H. Robichon, *Fednav Ltd.* - Invited

George J. Ryan, *Lake Carriers Association* - Invited

3:00 PM Break

3:15 PM Breakout Sessions

a) Commodities and Their Interrelationship in Trade

William Hudson, *ProExporter* - Confirmed

John Baker, *President Great Lakes International Longshoremans' Association* - Invited

b) Infrastructure (herein of the Soo Locks, the Seaway, the Welland and the Seaway)

Albert S. Jacques, *Administrator St. Lawrence Seaway Development Corporation* – Confirmed

Jim Campbell, *Vice President & General Manager Chamber of Maritime Commerce* - Confirmed

c) Cruises and Ferries

Economic potential, success stories, infrastructure and port needs

David Knight, *Editor Great Lakes/Seaway Review* – Confirmed

Mike Doran, *Port of Toronto* - Invited

Commentator - **Daniel Smith**, *Vice President Great Lakes - American Maritime Officers* - Confirmed

4:15 PM Repeat Breakout Sessions

6:00 PM Reception/ Dinner

Lake Erie Center – **Hon. Mike DeWine**, *U.S.Senator* - Probable

April 20, 2001

8:00 AM Continental Breakfast

8:30 AM Welcome for the Day

8:45 AM Plenary Session – Environmental Issues in International Trade – Biologically Modified plants and the Grain Trade

Jack Hervey, *Federal Reserve Bank Chicago* - Confirmed

Stanley H. Abramson, *Arent Fox Kintner Plotkin & Kahn, PLLC, Washington D.C.* - Invited

9:30 AM Breakout Sessions

a) Global Warming, Lake Levels, Dredging

W. Scott Parker, *U. S. Army Corps of Engineers* - Invited

Jan Miller, *U. S. Army Corps of Engineers* - Invited

b) Aquatic Nuisance Species

Sandra Zellmer, *University of Toledo, College of Law* – Confirmed

Fred Dobbs, *Old Dominion University* - Confirmed

c) Environmental Standards for Vessels

Commander Patrick Gerrity, *U. S. Coast Guard* - Confirmed

Chris Wiley, *Dept. Fisheries and Oceans, Canada* - Invited

10:30 AM Repeat Breakout Sessions

11:30 AM – The Future of Trade on the Great Lakes

Hughes Morrisette, *Montreal* – Confirmed

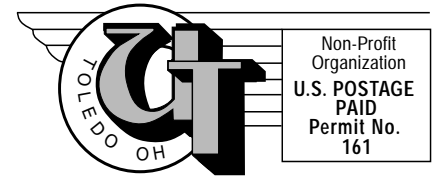
Dr. Mark Kasoff, *Bowling Green State University* - Invited

12:30 Adjourn



To register for the **Trade and the Great Lakes** seminar (Course #5660; \$85 includes dinner and materials), and for the **Essential Elements of Coastal Science for Lawyers** seminar (Course #3694; \$70 includes lunch and materials), please contact the University of Toledo, Division of Continuing Education, 401 Jefferson Avenue, Toledo, OH 43604-1055. Phone (419) 321-5139. Fax (419) 321-5112.

Legal Institute of the Great Lakes
College of Law
The University of Toledo
Toledo, Ohio 43606-3390



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The Legal Institute of the Great Lakes serves as a forum for the development and exchange of solutions to the legal problems of the Great Lakes region. We welcome correspondence.

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Professor Frank S. Merritt (Chair)
Professor John A. Barrett, Jr.
Professor Sandi B. Zellmer

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