

SMART GROWTH FOR

Clean Water



Innovative Strategies for NPDES Phase II Stormwater Management in Michigan

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Table of Contents

Introduction . D 1

Storm Water Management 2

Phase II in Michigan 3

Land Use and Storm Water 4

Land Use in Michigan 5

Using Smart Growth Tools in Phase II Planning 7

Looking Ahead 18

References and Resources 19



Introduction

Polluted storm water runoff is one of the nation’s leading threats to clean water. Rain and snowmelt running over parking lots, roofs, over-fertilized lawns and open construction sites wash dirt, chemicals and bacteria into the water we drink. And as our cities, towns and suburbs have grown, storm water problems have gotten much worse.

Unlike pollution from industrial operations, storm water comes from everywhere at once, which makes it challenging for the federal government to effectively manage it through conventional regulatory approaches. Regulators have had to devise new strategies to combat storm water pollution, the most important of which are community storm water reduction plans. Today, more than 5,000 communities nationwide are developing plans to comply with the standards of the National Pollutant Discharge Elimination System, known as NPDES.

As they struggle to find cost-effective solutions, some local water quality managers are turning to their colleagues in the transportation and land use planning fields, because the built environment has a tremendous impact on how much storm water runs off a site, how fast it goes and where it ends up. Shared solutions that integrate storm water management and existing planning activities save time and money—and perhaps most importantly—increase the chances that plans to protect our water will work.

This paper discusses some of the shared solutions that can help smaller communities meet federal regulations. It focuses on Michigan, where we recently organized a summit on “Smart Growth for Clean Water” to draw attention to these opportunities. But many other states and localities are implementing innovative policies or are facing similar challenges. They also have much to contribute to and learn from this emerging discussion as it spreads across the nation.

While all land use plans deal with issues that **impact** storm water runoff, **smart growth tools** and **techniques** are particularly **promising** ways to address issues of non-point source water pollution, including storm water runoff.



Resources for Phase II Implementation

- **EPA storm water page:**
http://cfpub.epa.gov/npdes/home.cfm?program_id=6
- **National management measures to control non-point source pollution from urban areas:**
www.epa.gov/owow/nps/urbanmm
- **Performance data for 190 storm water management practices:** www.bmpdatabase.org
- **Michigan State University Citizen Planner Program:**
www.msue.msu.edu/cplanner/
- **Smart Growth America:**
www.smartgrowthamerica.org
- **Center for Watershed Protection:**
www.cwp.org
- **River Network:**
www.rivernetwork.org

Storm Water Management

In 1987, Congress amended the Clean Water Act's permitting system for point source pollution, the National Pollutant Discharge Elimination System (NPDES), to address the growing problems associated with diffuse sources of pollution, including storm water runoff.

Unlike pollutants from specific industrial and sanitary wastewaters - known as point source pollutants - non-point source pollutants come from sources like roads, parking lots and construction sites, making them difficult to track and control. Rain running over impervious surfaces like streets, driveways and rooftops picks up dirt, oil and other pollutants and washes them into rivers, lakes, ponds, coastal zones, wetlands and even the groundwater sources used for drinking water.

The NPDES Storm Water Program created a permitting process for storm water runoff, which includes training, public outreach, pollution prevention and guidance on the use of best management practices to prevent or reduce the effects of storm-water-related pollutants. Phase I of NPDES required permit applications by 1992 from cities with populations over 100,000, from select industrial activities, and from construction sites of five acres or more. Starting in 1999, NPDES Phase II expanded coverage to all cities, villages, and townships within census-designated "urbanized areas" - those with a population core larger than 50,000 people - relying on municipal separate storm water sewer systems, known as MS4s. Phase II also regulates smaller construction sites of one to five acres.

Phase II increased the emphasis on "post-construction controls", or ways to manage runoff after a site is built out. As our understanding of the impacts of development on a watershed's health has grown, public interest in the long-term implications of existing development sites on storm water pollution has increased.

In most cases, the EPA has delegated the administration of the Storm Water Program to individual states and their environmental regulation agencies, which are responsible for "developing maps, issuing a general permit for the state and establishing a process under which affected localities apply for coverage." In Michigan, the Michigan Department of Environmental Quality (MDEQ) has the authority to implement Phase I and Phase II of NPDES.

Phase II in Michigan

Michigan is home to 413 Phase II communities. Each community had the choice of applying under a standard EPA jurisdictional permit, or under a related watershed-based Michigan-specific program. The Michigan watershed program is similar to the standard EPA permit, with a few additional tools to encourage regional approaches to storm water management, and increased flexibility for their implementation. Over 80 percent of the 413 communities applied for Michigan's unique watershed-based storm water permit, while the other 20 percent applied for the standard EPA jurisdictional permit.

Phase II Storm Water Management Plans under both types of permits require compliance with six "minimum control measures." The Michigan watershed-based general permit accomplishes the six control measures on a regional basis by requiring a Watershed Management Plan (WMP), and locally through a Storm Water Pollution Prevention Initiative (SWPPI).

This paper is intended only as a general overview of the Phase II program. Specific questions about creating and implementing Phase II Storm Water Management Plans should be directed to the Michigan Department of Environmental Quality. Like Michigan, most states administer their own set of storm water management regulations in addition to the federal regulations. Applicants should familiarize themselves with their own state's regulations and the federal regulations to ensure full compliance.

Stormwater Management Plan Minimum Control Measures

- Watershed Management Plan (Michigan Watershed Permit only)
- Stormwater Pollution Prevention Initiative (Michigan Watershed Permit only)
- Public Education and Outreach
- Public Participation/Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post-Construction Runoff Control
- Pollution Prevention/Good Housekeeping

Source: <http://cfpubl.epa.gov/npdes/stormwater/swfinal.cfm>

General Permit Timeline

This timeline applies to watershed-based permits, which 80 percent of Michigan's Phase II communities will use.

1. Select watershed on which to base permit application
2. Delineate drainage area and identify storm water discharges
3. Develop Illicit Discharge Elimination Plan
4. Develop Public Education Plan
5. SUBMIT APPLICATION
6. DEQ approves application and issues a Certificate of Coverage
7. Implement Illicit Discharge Elimination Plan and Public Education Plan within 6 months after permit approval
8. Develop and submit a Watershed Management Plan within 2 years after permit approval
9. Develop and submit a Storm Water Pollution Prevention Initiative (SWPPI) with implementation schedule within 2 1/2 years of permit approval
10. Implement Watershed Management Plan
11. Implement SWPPI upon DEQ approval
12. Submit a revised Watershed Management Plan and SWPPI by the date specified by DEQ

Ten Smart Growth Principles

1. Create a range of housing opportunities and choices
2. Create walkable neighborhoods
3. Encourage community and stakeholder collaboration
4. Foster distinctive, attractive communities with a strong sense of place
5. Make development decisions predictable, fair and cost effective
6. Mix land uses
7. Preserve open space, farmland, natural beauty and critical environmental areas
8. Provide a variety of transportation choices
9. Strengthen and direct development towards existing communities
10. Take advantage of compact development design

Land Use and Storm Water

The traditional approach to controlling runoff focuses on moving water off an individual piece of property as quickly as possible. Most communities employ a complex system of curbs, gutters, culverts, trenches and pipes to carry water into drains and from there to streams, rivers, and lakes. Storm water may pass through a treatment facility, but more often it discharges without treatment.

While this approach works to drain each site, continued expansion of low-density developments (urban sprawl) means that too much water, carrying too much pollution, is running into drains. The results are poor water quality where the drains empty out and a dramatic drop in the refill rate of aquifers, streams and groundwater sources. The 20 regions in the country that developed the greatest amounts of land over the period 1982 to 1997 now lose between 300 and 690 billion gallons of water annually that would otherwise have filtered through the earth and been captured as groundwater.

The practice of storm water management is evolving, and regional considerations beyond the site level are getting increased attention. For water quality professionals, this new perspective requires an integrated approach to planning for development and infrastructure. Smart growth planning and investment tools have emerged as a way to facilitate this integrated approach, not only benefiting the environment, but also assisting residents and planners in achieving community transportation, and economic goals.

Smart growth efforts have taken different forms around the country. Some communities have focused on preserving open space and clustering development to maximize the open ground that absorbs and filters storm water, while others have looked at creating more transportation options to reduce the amount of new roads and parking lots they need to build. In other localities, plans call for allowing a mix of uses to foster more compact development.

In thinking about the relationship between land use and storm water planning, it is important to remember that one-size-fits-all storm water management regulations can make it very difficult to pursue some smart growth strategies. For example, requiring on-site storm water infiltration on all projects or imposing a generic impervious surface limitation in an urban context could have the effect of impeding redevelopment of brownfields and promoting sprawling development in fields and farmland. It is critical to examine the issue of storm water management regionally and promote solutions that fit the desired land use patterns.



Smart growth **planning** and **investment tools** have emerged as a way to facilitate this **integrated approach**, not only benefiting the **environment**, but also assisting residents and planners in **achieving** community, transportation and economic **goals**.

Land Use in Michigan

In reevaluating current land use and development policies, Michigan has benefited enormously from the guidance of the Michigan Land Use Leadership Council (MLULC). This 26-member panel was selected by a bi-partisan group of government leaders to lay out a vision for Michigan's land use future with the ten principles of smart growth in mind. See page 4 for a list of these principles. The resulting document, published in August of 2003, set out over 150 recommendations that sought to improve planning and reduce the impact of unmanaged growth on Michigan's urban centers, farmland and open spaces. For the full report, visit www.michiganlanduse.org.

Among the MLULC recommendations were calls for the revitalization of existing urban centers and developed communities and the protection of remaining open spaces and farmland. The committee suggested using tools like

land banking, encouraging the use of more compact development, providing municipalities the authority to plan across jurisdictional boundaries, and encouraging a fix-it-first approach to transportation and infrastructure decisions.

Each of these recommendations has immediate storm water management applications. For example, joint municipal planning authority allows land use planners to examine the regional effects of land use decisions and rely on coordination rather than competition in addressing new development. It also allows them to share requirements to provide for certain types of land use. If this joint planning authority were used to address storm water management goals, as laid out in Phase II guidance documents, it could guide location of new developments and encourage redevelopment, thereby limiting the amount of new and diffuse impervious surfaces.

New Smart Growth Tools in Michigan

- Context Sensitive Transportation Planning
- Joint Municipal Planning Authority (PA 226 of 2003) and Watershed Alliance Authority (PA 517 of 2004)
- Land Bank Fast-Track Authority (PA 258 of 2003)
- Vacant Lot Redevelopment/Infill Development Incentives
- Special Development Districts (e.g., Planned Unit Developments, Cluster Development, Contract-based Rezoning, Non-Contiguous Planned Unit Developments)
- “Fix it First” infrastructure policies, Cool Cities awards program
- Urban Service Districts
- Purchase of Development Rights and Revised Farmland Preservation Fund (PA 116)

For more about Smart Growth strategies in Michigan, visit:

- www.michiganenvironmentalcouncil.org
- www.mlui.org
- www.michiganlanduse.org

Using Smart Growth Tools in Phase II Planning

This paper collects a number of Michigan-specific smart growth techniques and presents them according to the NPDES Phase II or Michigan Watershed-Based Control Measures they help fulfill. A complete list of these measures is in the box on page 6.

As you read this paper, keep in mind that the storm water management plan or SWPPI your community must submit is either still under development or is in the very early stages of implementation. Your community will be implementing the plan for years to come, and must regularly seek public input - which means you have time to influence the ordinances, public programs and storm water control measures your community will use to achieve its goals. In addition, NPDES permits must be renewed every five years, so cities under Phase I may also want to look to the following techniques as their permits evolve.

Public Education/Outreach and Public Participation/Involvement

The Phase II storm water permit requires affected communities to pursue both public education and public involvement when developing their plans. One of the major hurdles encountered during Phase I of the program was the amount of ongoing management, enforcement and regulation of storm water features and projects. Both structural and non-structural management techniques needed ongoing maintenance and care. In Phase II, Public Education Plans and Public Participation and Involvement strategies are emphasized as ways to involve a larger segment of the community in maintaining good storm water management practices over time.

Smart Growth Tools: Community Engagement Techniques

Hands-on visioning sessions and charrettes are visual, interactive group processes that help public participants understand and engage with the implications of planning decisions. These tools are being used across Michigan as communities respond to increasing demand for recreation and greenway opportunities, non-motorized transportation and environmental protection.

Many of these techniques could be used to satisfy requirements in Phase II planning. Opportunities include the use of design charrettes, informational websites, visioning sessions and asset identification workshops. By using ongoing public engagement processes to address storm water in combination with other issues, communities could save money, too. If your community has master planning activities, large rezoning discussions, or community visioning activities underway or planned, a storm water component could easily be included.



Community design charrettes are an effective way to gain more input on storm water and land use policies and plans. They can also fulfill one of the major requirements of Phase II Stormwater Management permits.

Check with your **zoning and planning agency**, such as the **township** or city **planning commission**, to see if they are conducting **public involvement activities**, significant plan revisions or updates, or infrastructure planning.

Check with your zoning and planning agency, such as the township or city planning commission, to see if they are conducting public involvement activities, significant plan revisions or updates, or infrastructure planning. Because workshops and charrettes require a lot of preparation and lead time, your community may have hired a consultant or other “third party” to run the program. They may be open to including a storm water component. A combined planning process can lead to better-integrated storm water decisions because the development plans and storm water plans are considered jointly and the public can have a better sense of the big picture as they make decisions for the future.

See the Greenways Collaborative, Inc. (www.greenwaycollab.com), the Land Information Access Association (www.liaa.org) or the Planning and Zoning Center (www.pzcenter.com) for examples of these tools in Michigan.

Smart Growth Tool: Context Sensitive Transportation Solutions

Context Sensitive Solutions, sometimes called Context Sensitive Design, are an update to the traditional highway design process, which does not always take into account the full environmental, historical and social context of a community during the planning process. When this planning process takes place without the consideration of the effects of a transportation project on the local watershed, it can make the task of creating a comprehensive storm water management plan very difficult.

A Context Sensitive Solutions policy, or CSS, is a collaborative approach to development that encourages participants to consider the effects of a project on all parties. CSS engages stakeholders and accounts for community assets to develop a facility that truly fits its physical setting, moving transportation planning out of any outdated notion that a standardized “straighter and wider” approach meets transportation, land use and water quality needs.

Incorporating storm water into Michigan’s successful model of CSS could result in state and local action to include earlier and more complete public engagement and involvement in problem need and identification activities, consideration of growth projections and multiple modes of transportation in addressing transportation concerns, more flexibility in road siting, speeds and design to minimize impacts to existing vegetation and impervious surfaces, and regional visioning to simultaneously address transportation, community and storm water management issues.

In 2003, Governor Granholm directed the Michigan Department of Transportation to adopt a CSS policy for its projects. Citizens urged more public engagement in defining project need and more flexibility in design, to allow projects to be more sensitive to environmental and aesthetic desires. The Context Sensitive Solutions policy was approved by the Michigan State Transportation Commission on May 26, 2005.

Illicit Discharge Detection and Elimination

Phase II regulations require that communities develop, implement and enforce an illicit discharge detection and elimination program. The IDEP has the goal of eliminating raw sewage discharges and addresses failing septic systems and improper connections of sanitary and industrial sewers to storm drains and open waterways. The IDEP must include, among other things, a map of the storm sewer system, to help locate any non-storm water discharges.

Smart Growth Tools: Capital Outlay Plans and Mapping

In many cases, communities have already begun the process of mapping their storm and sanitary sewers, including attempts to plan ahead for expansions of the system to serve current and future developments. Some are beginning to use Geographic Information Systems (GIS) modeling to determine the impacts of these growth trends and the capital outlay required to build the infrastructure to support different growth patterns. The integration of these mapping and planning tools can give land use, transportation and water resource planners a better sense of the community’s storm water management needs in the context of current and projected land use trends.

Much of the debate about the effects of unmanaged growth on Michigan’s natural areas, cities and farmland arose from the examination of GIS models published by the Michigan Economic and Environmental Roundtable (MEER) in November 2001. The Michigan Land Resource Project (www.pscinc.com/Documents/lbilu/fullreport.pdf) expands on previous studies by using geospatial

mapping to make a computer projection of the future of Michigan's natural resources if current trends of uncoordinated planning and sprawl continue.

This report was presented to the MLULC at their first meeting and was effective in elevating the land use debate in Michigan. It played a significant role in the MLULC recommendations. In fact, one of the recommendations calls for the state to "complete its natural features inventory and update its 1978 Michigan Resource Information System (MIRIS) Current Use Inventory by completing a new round of aerial photography and land classification and, where appropriate, utilizing existing satellite imagery on a statewide basis. The new information can then be integrated with the Michigan Center for Geographic Information's Michigan Geographic Framework program." The Michigan Aerial Imagery Partnership was established in May 2005 through a partnership between Michigan State University's Land Policy Program and seven statewide agencies, including the Department of Environmental Quality and the Department of Labor and Economic Growth. The Aerial Imagery Partnership will conduct the first major survey of Michigan's land use/land cover since the 1978 MIRIS project.

Construction Site and Post-Construction Runoff Control

Construction activities have major impacts on storm water runoff, as soil is disturbed and subjected to erosion by wind and rain. The best management practices for construction sites aim to minimize the amount of soil that makes it off the construction site, either by reducing site disturbance or by using silt fences, hay bales and special filtering devices to keep soil out of storm drains and streams.

Only in the last decade has post-construction storm water control gained attention, and techniques like low-impact development and green building are innovative ways to address the amount of storm water that leaves a site. However, construction norms still tend to favor concrete conveyance systems - curbs and gutters - for urban areas and retention/detention facilities - ponds - for suburban projects.

There are two basic principles of smart growth that make it a good solution for storm water management: building more compactly, and building on redevelopment and infill sites. More compact developments disturb less land and require less new impervious surface per unit - whether a unit is a home or a square foot of commercial space - so they produce less construction runoff and less runoff per unit over time. Redevelopment and infill sites may require no new impervious surface and may actually reduce impervious cover, at the same time they increase the tax base existing communities can rely on to maintain their existing storm water infrastructure.

Smart Growth Tool: Land Bank Fast-Track Authority

Michigan's Public Act 258 of 2003 provides for the creation of land bank fast-track authorities to assist governments in the assembly and clearance of title to property, which is often a major hurdle in the process of attracting private redevelopment projects to abandoned, tax-reverted and brownfield properties.

The language in Michigan’s NPDES permit contains clues to the development of joint smart growth and storm water policies and regulations.

The permit’s language on post-construction measures requires use of an “ordinance or other regulatory mechanism to address post-construction runoff,” which may be a stand-alone storm water ordinance, or it may be incorporated into existing land use codes. So your smart growth codes may serve to meet this objective as they stand or with slight modifications. In some cases, a locality will use the ordinance to refer to a design manual, since an ordinance may not be the best option for complex site design instructions.

- The ordinance “shall be designed to prevent or minimize water quality impacts” - This is an important advantage of smart growth options, since redevelopment can absorb growth that might locate in the undeveloped areas within a watershed, creating new water quality impacts.
- The program to address post-construction runoff must include “review of post-construction storm water best management practices during initial site plan review” - Since many smart growth techniques are non-traditional, a site review can help customize the site design requirements so that they are integrated in an economical and efficient way.
- It must also include “strategies for implementation of BMPs appropriate for the community”- With Michigan’s established smart growth program, strategies that credit smart growth policies as BMPs that prevent and reduce the impacts of storm water can be part of every Phase II initiative.

The law enables municipal governments to assemble and redevelop large amounts of abandoned, tax-delinquent property and put it into productive use, thereby reducing pressure for development of existing open spaces and farmland.

Smart Growth Tool: Urban Redevelopment and Infill Development Incentives

Cool Cities Program: Cool Cities is designed to help foster the development of vibrant, attractive cities and urban centers that are appealing to the “creative class.” During 2004, the highly successful program awarded catalyst grants of up to \$100,000 each to Michigan cities, and gave them access to more than \$100 million in state grants, loans, and other resources. The expanded 2005 program will reward more cities in search of “coolness” with a variety of options including the Neighborhoods in Progress program - formerly the catalyst grant program - which is available to programs in major urban centers with a local historic district ordinance; the Michigan Main Street and Blue Prints for Michigan’s Downtowns programs, which are available to all municipalities; and

The Cool Cities pilot program is designed to **help communities** create **vibrant, attractive** places for people to **live, work** and **play**.



Cool Cities and the Creative Class

The goal of Michigan's Cool Cities initiative is to attract and retain the creative sector of Michigan's economy. By combining more than 75 of the state's community improvement grants, loan programs and assistance programs into a single "resource toolbox" that can be used by cities and communities for revitalization projects, the Cool Cities pilot program is designed to help communities create vibrant, attractive places for people to live, work and play. The expected result - places where creative, young entrepreneurs will want to stay, build companies and invest in the future.

the Neighborhoods of Choice program, which is available only to Community Development Block Grant eligible communities in non-entitlement communities.

Mixed Use Zoning: This type of zoning allows residential, office and retail buildings to be built close to one another, something traditional zoning forbids. More intense, compact development works best when different uses are within walking distance, so mixed developments can reduce the amount of land needed per unit. They also support a range of transportation options and facilitate shared parking, thereby reducing the amount of surface needed for roads and parking lots.

Compact Lot Sizes: In some areas, zoning codes and subdivision standards have been rewritten to allow people to use land more efficiently by building on smaller lots. Smaller lot sizes can be instrumental in drawing development to smaller or oddly-shaped infill lots within existing or "built-out" communities. Smaller lots also means smaller lawns - large lawns treated with fertilizers and chemicals are a significant contributor to storm water pollution.

Setbacks: Where conventional zoning codes often call for minimum setbacks, such as requiring a building to be at least 50 feet from the street, the smart growth approach uses maximum setbacks, which establish a maximum distance between buildings and the street. This change encourages more efficient use of space and pedestrian friendliness. Minimum setback requirements often result in excess pavement, so they are good candidates for reform.

Smart Growth Tool: Special Development Districts

Special development districts are created to achieve comprehensive planning and urban design objectives in a specified area. The special district allows for a coordinated and comprehensive review of zoning and policy for the area. The process for zoning may occur all at once, or a community may add categories or zoning "overlays" to existing zoning districts to meet certain goals. Michigan has created some unique legislation to allow for these special districts in new development and redevelopment projects.

Conditional Rezoning and Density Bonuses: Public Acts 577-579 give municipalities contract rezoning authority, which allows them to require that rezonings be contingent on incorporation of desired features into development projects. Required features could include increased development density and open space protection. Municipalities could also provide density bonuses to developers who agree to treat storm water on-site in new developments or who agree to upgrade infrastructure serving the project in built-up areas. A density bonus could also be used to reduce impervious surface by allowing a developer to build the amount of square footage he or she is entitled to in a taller building.

PUDs and non-contiguous PUDs: Public Acts 227-229 of 2003 amend the planning and zoning acts to allow local governments to approve a planned unit development (PUD) that preserves open space not connected to the rest of the PUD. A PUD can refer either to a comprehensive development plan for a large area, usually indicating where roads, schools, recreational, office, commercial or industrial and residential areas will be; or to a subdivision that has common areas reserved for the use of and commonly owned by the separate lot owners. With this authority, new growth around a watershed can be directed so that there are low densities near the headwaters and high densities in strategic areas.

Financial Incentives: Tax-increment financing, tax and economic incentives for redevelopment, and promotion of cost-of-service utility fees can all be used to encourage more compact development in existing communities. Tax increment financing (TIF) leverages the increase in property values associated with infrastructure improvements or other re-investment. The extra property taxes that result from rising property values in a given district are used to pay back the costs of improvement. Cost-of-service utility fees are an alternative to average cost pricing, which subsidizes dispersed development by requiring all users to pay for the cost of extending service to distant new development.

Smart Growth Tool: Purchase of Development Rights and Farmland Preservation Fund

Purchasing development rights to a piece of land can be an effective, affordable tool to protect large blocks of open space or farmland. These areas serve an essential function as low-cost, low-maintenance water recharge and filtration areas that help meet Phase II storm water goals. Purchase of Development Rights (PDR) allows municipalities, individuals and organizations to purchase just the rights to develop (or not develop) a piece of land, instead of buying the land outright. PDR is currently available at both the state and local government levels, and conservancies and land preservation groups are helpful in learning more about these programs.

When used as part of a watershed plan, PDR benefits to a community depend on identifying and preserving undeveloped land to serve a specific storm water management purpose. These benefits are best achieved by combining PDR with tools that promote higher density development in urbanized areas and direct development towards areas already served by infrastructure. PDR as part of a storm water management plan should focus on headwater areas and other areas of intense value.

Michigan Agricultural Preservation Fund Scoring System

Applying communities receive additional points for:

- Participation in "working lands" conservation programs (addressed in the Michigan Land Use Leadership Council report, Chapter 5)
- Local designation of areas for farmland preservation in comprehensive plans (Chapter 6)
- Intergovernmental cooperation (Chapter 6)
- Planning education for local officials (Chapter 6)
- Interagency cooperation (Chapter 6)
- Coordination of farmland preservation efforts with other land resource-based preservation efforts (Chapter 5)

The complete Agricultural Preservation Fund scoring system is available at: www.michigan.gov/mda (keyword: farmland)

The Michigan Land Use Leadership Council report is at: www.michiganlanduse.org

The Michigan Department of Agriculture and the Michigan Agricultural Preservation Fund Board recently adopted an updated scoring system to decide how to award grants to local agricultural PDR programs. The system rewards the use of cooperative, multi-jurisdictional comprehensive land use plans, intergovernmental cooperation in farmland preservation efforts, and an overall examination of land uses within the region. Each of these activities, if conducted locally, could also be integrated with Phase II storm water planning efforts to save resources and improve the overall outcome of both programs. (Note that these planning techniques are just as important in the areas that receive new development - not just those agricultural areas that send development elsewhere.)

Smart Growth Tool: Urban Service Districts

Municipalities use urban service districts to define the edge of a community by limiting the extension of urban infrastructure. Currently any municipality in Michigan is allowed to establish such a boundary.

Limiting the extension of infrastructure has a variety of benefits for storm water management. It is an effective way to promote infill development, vacant lot redevelopment and fix-it-first strategies that protect open spaces at the fringe of communities where storm water can be filtered and absorbed. Urban service districts also effectively limit the spread of pollution sources, making them easier to monitor and regulate. Finally, with a limit on new infrastructure, more funding can be made available to repair existing storm water sewer systems, which can help prevent combined sewer and sanitary sewer overflows.

Smart Growth Tool: Low Impact/Green Infrastructure Developments

Low Impact Development (LID) is a series of techniques that equip developments to mimic natural storm water filtration, managing rainfall at the source using

design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source – tree planting, green roofs and rain gardens are some commonly used techniques. Instead of conveying and managing storm water in large, costly end-of-pipe facilities located at the bottom of drainage areas, LID uses smaller, cost-effective landscape features spread throughout a watershed.

When thinking about LID techniques, it is important to think about the development context. For urban areas where the natural hydrology has already been significantly disrupted, there are LID techniques that can be installed when sites are redeveloped or landscaped. Other strategies are better suited to new greenfield developments. For more information on appropriate techniques for different contexts, visit www.lid-stormwater.net.

Watershed Management Plan and Storm Water Pollution Prevention Initiative (Michigan only)

A Watershed Management Plan is required for the approximately 350 communities that have chosen to use Michigan’s unique watershed-based Phase II permit. The plan must include an assessment of the nature and status of the watershed ecosystem, identification of short and long-term goals to protect and

Low Impact/Green Infrastructure Development Tools

For a comprehensive list of LID techniques, see www.lid-stormwater.net

For EPA’s guidance on using LID efforts for Phase II credit, see www.cfpub.epa.gov/npdes/stormwater/menuofbmeps/edu_7.cfm or www.fpub.epa.gov/npdes/stormwater/menuofbmeps/post.cfm



BEN STUPKA, MICHIGAN ENVIRONMENTAL COUNCIL

Faced with the costly traditional means of conveying and managing stormwater, Ingham County, Michigan, turned to a less expensive solution: the Tollgate Drainage District Wetland Detention Basin in Lansing.

restore the watershed, a determination of the actions needed to achieve those goals, and a realistic assessment of the benefits of those actions.

A local action plan to achieve the goals of the Watershed Management Plan, known as the Storm Water Pollution Prevention Initiative (SWPPI), is also unique to Michigan's watershed-based permit. One aspect of the SWPPI is to protect receiving waters from the effects of urbanization in the watershed by creating a management structure for coordinated storm water control. The SWPPI must include implementation and evaluation of pollution prevention "good housekeeping" activities and site appropriate, cost-effective structural and nonstructural best management practices to minimize the water quality impacts from areas of new development and significant redevelopment.

Several smart growth approaches can enhance and facilitate both the watershed management plan and the SWPPI.

Smart Growth Tool: Joint Municipal Planning Authority

Storm water management in a watershed basin typically involves cooperation and integration with several municipalities, jurisdictions and planning agencies - a daunting task in a state with more than 1800 units of government with planning authority and responsibilities. Public Act 226 authorizes local governments to pull together regional planning entities - Joint Planning Commissions. These Commissions facilitate cooperation and coordination by overseeing issues for the region, or a portion of a region in which they may have an interest, such as a business district, watershed or greenway.

Cooperative joint planning can reduce the demands on any single community to provide for all land uses, better guiding development to minimize negative environmental impacts. Beyond sound land use plans, this legal authority also allows Phase II communities to work together to create joint land use plans to cover an entire watershed, which increases the likelihood that non-point source storm water will be effectively controlled.

Smart Growth Tool: Watershed Alliances

A related tool that facilitates the watershed plan in Michigan is enabled by Public Act 517 of 2004, which allows two or more municipalities, by resolution of their governing bodies, to establish a voluntary watershed alliance to study problems and to plan and implement activities designed to address surface water quality or water flow issues.

Smart Growth Tool: Fix-it-first Infrastructure Policies

Fix-it-first policies prioritize the repair and maintenance of existing infrastructure over the creation of new or expanded infrastructure. Generally, these programs apply to transportation (roads, bridges and rail systems) and water infrastructure (sewers and drinking water treatment/distribution). For example, using her line item veto power, Gov. Granholm created a "Preserve First" priority for transportation projects in Michigan, directing resources towards fixing the crumbling road infrastructure of already existing communities instead of embarking on 34 new road projects.

Fix-it-first policies have long-term effects on storm water management by encouraging replacement of older infrastructure, which can be a significant source of water quality problems resulting from system overflows, failures and leaks that dump pollution directly into rivers, lakes and groundwater. Repairing and replacing these failing systems before building new systems in undeveloped areas reduces the economic and environmental burden on Michigan's older urban and suburban areas. Fix-it-first policies also encourage infill construction, which saves open land on the urban fringe.

This state-level call for examining and repairing existing infrastructure translates readily to storm water management. Communities could examine their existing infrastructure and use the repair and maintenance of that structure as a best management practice, or develop their watershed plan around achieving full use of existing infrastructure.



CONSERVATION DESIGN FORUM

The green roof project on Chicago's City Hall shows how storm water management projects can be cost-effective, aesthetically pleasing and creative enough to fit into many different environments.

Looking Ahead

As runoff from increasingly spread-out development becomes the primary contributor to water pollution, the wisdom of joining forces to create clean water solutions is clearer than ever. Land use choices affect water quality and efforts to protect water quality can have perverse impacts on land use - the outdated concept that low-density developments are the only effective answer for controlling storm water runoff has certainly prevented more sensible, compact growth.

The thousands of Phase II communities grappling for innovative solutions will find a wealth of management techniques in the combination of land use and water quality goals. This paper is the tip of the iceberg. Communities in Michigan and across the country can help usher in the new phase of water resource management by looking for additional ways to integrate their storm water activities with smart growth tools and solutions, beginning with the regional or watershed management programs that may already be under way in their community's land use and transportation planning departments.

Help with these innovations abounds. In addition to the sources cited here, the U.S. EPA expects to stay involved over the NPDES permitting period to help communities develop joint storm water and smart growth programs and policies. In the future, EPA hopes to deliver technical assistance, develop special design manuals for joint smart growth and storm water plans and post examples of the innovative policies, ordinances and plans that communities like yours develop to meet their unique needs.



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