

SAVE IT! VOLUME II:

STRATEGIES FOR ACHIEVING SMART GROWTH IN THE HUDSON RIVER VALLEY



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FOREWORD

There can be no doubt that sprawling development is destroying our environment, local economies, health, and quality of life. It is high time that the Smart Growth alternative to sprawl be achieved throughout the New York City drinking water supply watershed, the Hudson River Valley, and New York State.



The Croton Reservoir and more distant Hudson River –shown here as viewed from the Turkey Mountain Nature Preserve in the Town of Yorktown, Westchester County – are natural treasures that must be protected from the onslaught of suburban sprawl. Photo by Leila Goldmark.

Riverkeeper’s Watershed Program frequently battles ill-conceived development proposals that threaten New York City’s drinking water supply. Through the course of our routine investigations into the many direct and indirect negative impacts of sprawl, it became clear that many problems associated with, and potential solutions to sprawl are equally applicable to the entire Hudson River Valley.

Our first publication, *Pave It Or Save It? Volume 1: The Environmental, Economic and Social Impact of Sprawl*, examined not only the threats to our shared environment and natural resources, but also the more subtle economic and social impacts that destroy the unique character of our local communities. With this publication, we raised awareness and helped increase public demand for the proactive, forward-thinking planning that is required to control growth, reinvigorate our Main Streets and historic hamlets, sustain our cherished forests and agricultural landscapes, and protect the shared natural resources

upon which we all depend. Educated and armed with facts, citizens and public officials become motivated and prepared to fight against sprawl and take action to create the communities in which they want to live.

To further community dialogue, Riverkeeper created a compelling, visual, companion Power Point program for *Volume I* that we presented to more than 20 town and planning boards, citizens' and business groups throughout the East-of-Hudson Watershed (including parts of Dutchess, Putnam, and Westchester Counties). In addition, we hosted community roundtable discussions that served as brainstorming sessions, identifying particular local problems and specific needs that must be addressed to craft successful local solutions.

With valuable guidance from a variety of community stakeholders, Riverkeeper prepared this report, *Save It! Volume II: Strategies for Achieving Smart Growth in the Hudson River Valley*. While we have done the homework, the strategies presented here represent your ideas and goals. We are all responsible for taking action to achieve Smart Growth.

Please join us. Together we can shape a world that is smart, sustainable and sound.

– Leila Goldmark, former Riverkeeper Staff Attorney & Watershed Program Director

EXECUTIVE SUMMARY

What is “Smart Growth?”

In *Pave It Or Save It? Volume 1: The Environmental, Economic and Social Impact of Sprawl*, Riverkeeper defined “**sprawl**” as “haphazard, auto-oriented development characterized by strip malls outside of existing downtown centers and McMansion subdivisions in formerly rural areas” – essentially low-density development that requires new infrastructure and services to be delivered in fringe locations.

The antidote to sprawl, often termed “**smart growth**,” is frequently defined by reference to principles that are the antithesis of sprawl. Because there is no single, authoritative definition, in *Volume I* Riverkeeper adopted the Natural Resources Defense Council’s definition of “smart growth,” which requires:

... planning better, concentrating development where schools, roads and sewer lines are already in place, and reinvesting in older communities instead of abandoning them. [Smart growth planners] are placing homes near major transit stations or within walking distance of shops, restaurants and offices. They are building communities that help preserve natural, open spaces and that are more livable and attractive than their sprawling counterparts.¹

An additional component of smart growth is the understanding that development and environmental protection can coexist. For example, the Urban Land Institute defines smart growth as a policy that “does not seek to stop or limit growth, but rather to accommodate it in a way that enhances the economy, protects the environment and preserves or improves a community’s quality of life.”²

Though precise definitions may vary slightly, the main principles and objectives of smart growth are to:

- Create a range of housing opportunities and choices that reflect the actual needs of the community;
- Mix land uses and adopt flexible zoning that allows creative design;
- Create walkable neighborhoods and eliminate car-dependence;
- Provide a variety of transportation choices;
- Strengthen and direct development towards existing communities;
- Preserve open space, farmland, natural beauty and critical environmental areas;
- Take advantage of compact building design;
- Encourage community and stakeholder collaboration;
- Foster distinctive, attractive communities with a strong sense of place; and
- Make development decisions predictable, fair and cost effective.³

Community Views

Following the release of *Pave It Or Save It? Volume 1: The Environmental, Economic and Social Impact of Sprawl*, Riverkeeper hosted several community roundtable discussions in Westchester and Putnam Counties in order to receive feedback and gain insight from local residents, government officials, developers and businesses about what smart growth means to them and the changes they want to make to the development patterns in their communities. The first step in achieving smart growth is having the public support and political will to challenge and change the status quo that has led us down the road to sprawl.

Over the course of the roundtable discussions, there were several overarching issues that arose time and again in relation to almost every identified impact and proposed solution. Thus, they are not sprawl solutions in and of themselves, but remain very important issues to acknowledge and incorporate into the development of any individual solution. Overwhelmingly, residents and elected officials identified the need for:

- Better enforcement of existing laws;
- Improvement of existing laws / adoption of new laws and regulations;
- Promotion of preemptive, voluntary policies to guide both planning and natural resource protection;
- Active citizen participation in government (particularly local) decision-making;
- Enhanced and ongoing education of planners and decision-makers; and
- Comprehensive, intermunicipal data collection to support informed planning and decision-making (e.g., GIS capability, mapping of environmental resources, stormwater and other infrastructure features).

Thus, all of the strategies presented in *Save It! Volume II: Strategies for Achieving Smart Growth in the Hudson River Valley* contemplate and were designed to respond to these overarching themes.

Report Organization: Strategies to Achieve Smart Growth

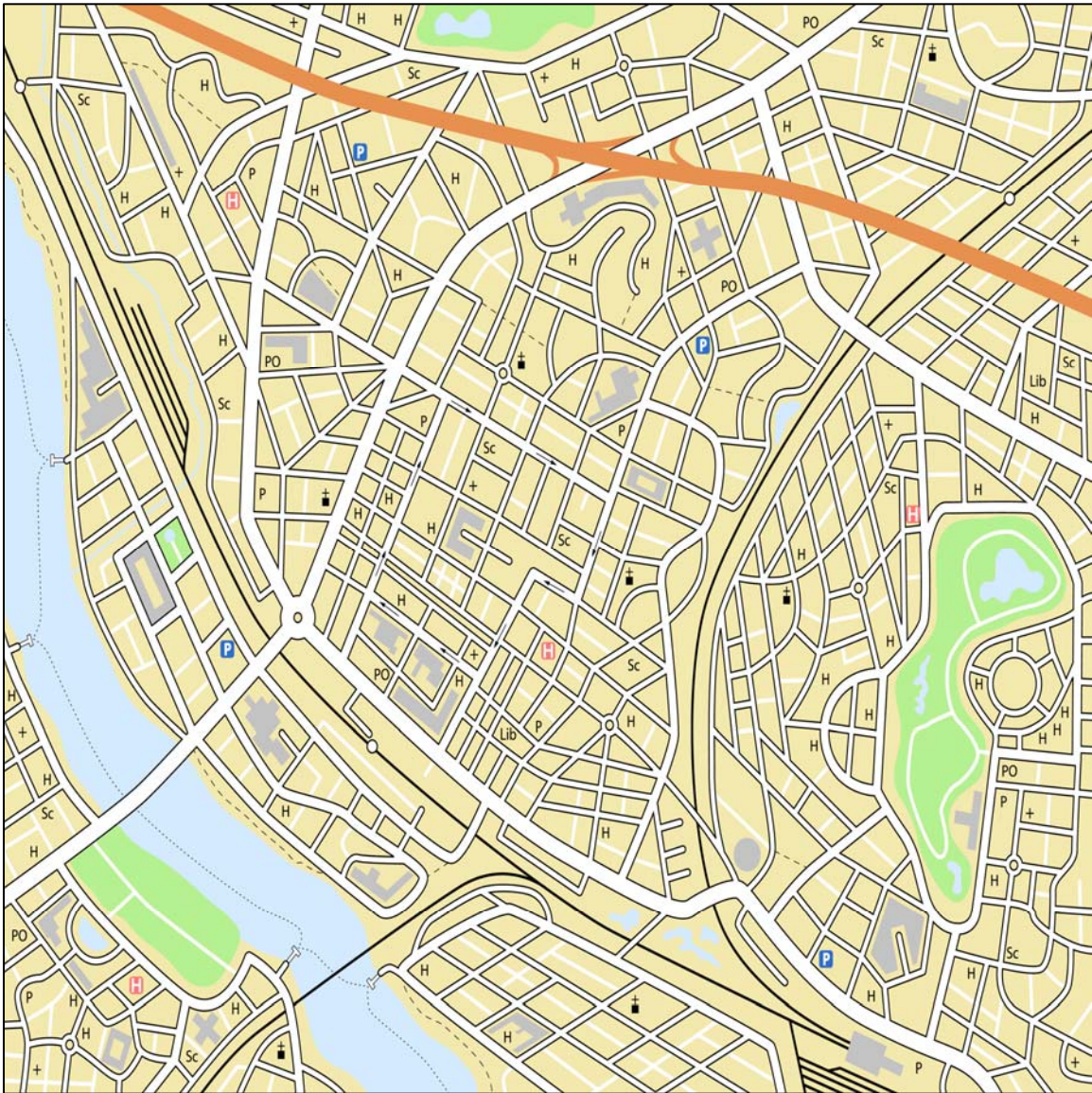
Fundamentally, sprawl and its antidote – smart growth – are about design, about where and how to grow. But envisioning and building smart designs involves more than a discussion of zoning and engineering practices. It also requires community and political support, and public policies and laws that encourage rather than hinder implementing smart design. Thus, this report is divided into three chapters: I) Building Smart: Planning and Designing Sustainable Communities; II) Legal Tools: Adopting Effective Laws and Regulations, and III) Community Empowerment: Personal Action and Voluntary Initiatives. Within each chapter, strategies are presented in subsections designed to address the main goals and principles of smart growth laid out above.

¹ Natural Resources Defense Council, *In Contrast: Smart Growth Versus Sprawl*, available at <http://www.nrdc.org/media/pressReleases/011211.asp> (last visited May3, 2010)

² HAINES, A., SMART GROWTH: A SOLUTION TO SPRAWL?, The Land Use Tracker Vol. 2 iss. 4, Center for Land Use Education, (2003).

³ See Smart Growth Network, *Smart Growth Online*, available at <http://www.smartgrowth.org/about/default.asp> (last visited May 3, 2010).

I. BUILDING SMART: PLANNING AND DESIGNING SUSTAINABLE COMMUNITIES



A. *Regional Planning and Partnerships*

STRATEGY 1: New York State Must Revitalize and Expand its Smart Growth Initiative

STRATEGY 2: Communities Must Support Regional Planning Efforts

STRATEGY 3: Training for Local Planners Must Improve

STRATEGY 1: *New York State Must Revitalize and Expand its Smart Growth Initiative*

Problem

In January 2000, Governor Pataki launched New York's Smart Growth initiative by signing Executive Order 102, which created the Quality Communities Interagency Task Force (the Task Force).¹ The Governor recognized that "it is important to encourage redevelopment of main streets, downtown and historic districts, and brownfields in order to revitalize certain areas of the State and to preserve community character and New York's precious open space resources," but also that "certain State programs, statutes and regulations...may inhibit revitalization and encourage sprawl."² Thus, the Executive Order directed the Task Force to "inventory key local, State and federal programs which affect the various community development, preservation and revitalization goals of New York's urban, suburban and rural municipalities, and make recommendations for coordinating, reorganizing and improving the consistency of the delivery of those programs with the choices of New York's communities."³

The Lieutenant Governor chaired the Task Force and included 18 State agencies; a 27-member Advisory Committee also included representatives from local governments, advocacy groups, and the business community. In 2001, the Task Force issued its first report, *State and Local Governments Partnering for a Better New York*, which made 41 recommendations to curb sprawl.⁴ It also set out eight guiding principles for the Quality Communities Initiative:

- 1) Create, implement and sustain a vision of a Quality Community
- 2) Encourage sustainable economic development
- 3) Revitalize our downtowns and city centers
- 4) Conserve open space and other critical environmental resources
- 5) Promote agriculture and farmland protection
- 6) Strengthen intergovernmental partnerships
- 7) Enhance transportation choices and encourage more livable neighborhoods
- 8) Advance and encourage the use of technology.⁵

To implement the 2001 recommendations, Governor Pataki established the Interagency Working Group, which was coordinated by the Department of State and involved 25 State agencies. In 2006, the Interagency Working Group issued a concluding report, *Quality Communities: Five Years of State and Local Partnerships*, which provided updates regarding the previous 41 recommendations and made an additional 15 recommendations to move the Quality Communities Initiative forward.⁶ The Quality Communities Clearinghouse is a consolidated online "portal" to the many State agencies that provide services to local governments to support development of Quality Communities.⁷

In 2007, Governor Spitzer issued Executive Order 20, which – using more common language – established the Smart Growth Cabinet.⁸ At the same time, the Governor established a \$2 million Smart Growth Fund within the Environmental Protection Fund, and launched three regional initiatives to address specific growth challenges. These initiatives are:

- 1) The Lower Hudson Valley Smart Growth initiative will help communities plan for economic growth and development that will be spurred by several major state infrastructure projects – Stewart Airport, the Tappan Zee Bridge and converting Route 17 into I-86;
- 2) The Adirondack Smart Growth initiative will help attract economic growth to areas appropriate for development by integrating smart municipal planning with the need for environmental stewardship and open space protection in the Park; and
- 3) The Central Catskills program will help revitalize town and hamlet centers along the Route 28 corridor.⁹

New York should be commended for undertaking these Smart Growth initiatives. However, New York has not been the national leader on this issue that it could be. To date, New York has chosen a voluntary, bottom-up approach to Smart Growth as opposed to the top-down approach taken by other states. While it is important for the State to support the needs and wishes of local communities, an improved Smart Growth initiative should better balance its use of both carrot and stick approaches.

Solution: New York State Must Revitalize and Expand its Smart Growth Initiative and Adopt a Comprehensive Package of Smart Growth Legislation

While the Quality Communities Initiative included many successful programs and helped move New York in the right direction, there are many ways to build upon and improve these initial efforts to achieve Smart Growth across the State. In addition, it is important for the current administration not to lose the momentum of past successes.

One of the most important things that the State can do is to act as a role model for local communities. To do this, the Governor, as the State’s chief executive, should direct all State agencies to act in accordance with the identified Quality Communities / Smart Growth principles identified above. Governor Paterson signed Executive Order 4, which establishes a State Green Procurement and Agency Sustainability Program, and sends a clear signal that this Governor understands the importance sustainability and Smart Growth.¹⁰

The Governor can provide leadership, but he must also work with the State Legislature to adopt a



comprehensive package of Smart Growth legislation that provides state leadership and assistance to local communities that undertake Smart Growth planning efforts. While many bills have been offered in recent years, they have not gained the support and momentum needed for passage. The following bills could further Smart growth and sustainable development and their passage would help move New York toward achieving a more robust Smart Growth program.

- **A.00697/S.2526 – The Smart Growth for a New Century Act:**¹¹ This legislation seeks to provide comprehensive authority and powers to encourage local, intermunicipal Smart Growth planning. It is perhaps the most comprehensive Smart Growth bill offered in New York State and identifies Smart Growth principles that local plans must achieve: 1) public investment: to minimize the true social, economic and environmental costs of new development, “including infrastructure costs such as transportation, sewers and wastewater treatment, water, schools, recreation, and open space;” 2) economic development: to encourage economic development in areas with existing adequate infrastructure; 3) conservation: to protect, preserve, and enhance the state’s natural, historic and architectural resources; 4) coordination: to promote cooperation in state and local decision-making to provide cost-effective and efficient services; 5) community design: to strengthen communities by adopting development and redevelopment strategies that integrate all age and income groups in mixed-use, compact designs; 6) transportation: to provide transportation choices and increase public transit to reduce automobile dependency; and 7) constituency: to ensure predictable building and land use codes.

The bill facilitates coordinated urban and regional planning and public investments through use of “smart growth compact areas,” which must consist of at least two separate municipalities. Each compact area would be authorized to establish a Smart Growth Compact Council with planning, environmental review, and enforcement powers. A public consensus-building process is required to create local plans, and in order to receive State benefits, local communities would be required to submit Smart Growth Plans to the State Smart Growth Review Board for certification.

The bill provides the following State incentives for local participation by directing State agencies to: 1) conduct their activities in a manner consistent with local Smart Growth Compact Plans; and 2) prioritize funding to municipalities that have Smart Growth Compact Plans. Specifically, State incentives would be available to participating municipalities for: 1) drinking water infrastructure; 2) clean water and water pollution control; 3) open space acquisition and DEC conservation easements; 4) energy assistance; and 5) agricultural protection.¹²

In addition, a unique provision in this bill would require the State to indemnify and provide legal assistance to participating municipalities in the event that legal actions were brought as a result of implementation of a certified Smart Growth Compact Plan.

This bill would also establish the Smart Growth Revolving Loan Fund, which would be administered by the Department of State (DOS). DOS would also run the Smart Growth Local Assistance Office, which would provide technical, scientific, and funding assistance to local municipalities.

- **A.05718– The New York State Smart Growth Compact Act:**¹³ This legislation provides a more limited version of the Smart Growth for a New Century Act, but incorporates the same Smart Growth principles, such as the creation of a smart growth compact council, procedures and guidelines of a smart growth compact plan, and provisions by which to implement the plan. The bill also provides State incentives for local municipal participation. One notable difference is the elimination of the proposed real property tax exemptions detailed in the Smart Growth for a New Century Act.
- **A..5560 – The State Smart Growth Public Infrastructure Policy Act:**¹⁴ This legislation would establish a State policy of “maximizing the social, economic, and environmental benefits from public infrastructure development through minimizing unnecessary costs of sprawl.”¹⁵ Specifically, it would amend the Environmental Conservation Law to require State infrastructure agencies to meet, to the fullest extent practicable, Smart Growth infrastructure criteria: 1) to give priority to (i) projects for the use, maintenance, or improvement of existing infrastructure and (ii) projects located in developed areas or areas designated for development under a municipally approved comprehensive land use plan; 2) to protect, preserve, and enhance the State’s resources; 3) to foster mixed-use and compact development, downtown revitalization, brownfield redevelopment, beautification of public spaces, diverse and affordable housing in proximity to work, recreation, and commercial development that integrates age and income groups; 4) to provide mobility through improved public transit and reduced automobile dependency; 5) to coordinate State, local, intermunicipal, and regional planning; and 6) to participate in community-based planning and collaboration. This bill would also require certain state agencies to create smart growth advisory committees.
- **A.02320/S.4293 – A Bill to Establish a Sustainable Development Task Force:**¹⁶ This legislation would establish a fifteen member Sustainable Development Task Force “to study the feasibility of adopting goal oriented and performance based regulatory systems” and adopting a state sustainable development policy.¹⁷ Creation of such a task force would require natural resource agencies to report to the task force on sustainable development policies. The task force would also be required to report to the governor and legislature.

¹ See New York Exec. Order No. 102, N.Y. Comp. Codes R. & Regs. Tit. 9, § 5.102 (2000).

² *Id.*

³ *Id.*

⁴ See QUALITY COMMUNITIES INTERAGENCY TASK FORCE REPORT, STATE AND LOCAL GOVERNMENTS PARTNERING FOR A BETTER NEW YORK (2001).

⁵ GOV. GEORGE E. PATAKI, QUALITY COMMUNITIES: FIVE YEARS OF STATE AND LOCAL PARTNERSHIP 3 (Quality Communities Interagency Working Group 2006).

⁶ *See id.*

⁷ *See* New York State, Quality Communities Clearinghouse, *available at* <http://www.qualitycommunities.org/index.asp> (last visited April 21, 2010).

⁸ *See* New York Exec. Order No. 20, N.Y. Comp. Codes R. & Regs. tit. 9, § 6.11 (2007).

⁹ *See* SMART GROWTH NEWS, *available at* <http://www.smartgrowth.org/news/article.asp?art=6395&state=33&res=1280> (last visited April 23, 2010).

¹⁰ *See* New York Exec. Order No. 4 (Apr. 24, 2008).

¹¹ *See* A.00697/S.2526, 2008-2009 Reg. Sess. (NY. 2008).

¹² This list provides examples, and is not a full account of possible state incentives.

¹³ *See* A.05718, 2008-2009 Reg. Sess. (NY. 2008).

¹⁴ *See* A.08011/S.5560, 2008-2009 Reg. Sess. (NY. 2008).

¹⁵ *Id.*

¹⁶ *See* A..02320 2008-2009 Reg. Sess. (NY. 2008).

¹⁷ *Id.*

STRATEGY 2: *Communities Must Support Regional Planning Efforts*

Problem

The Constitution of the State of New York,¹ New York Municipal Home Rule Law,² and the New York Statute of Local Governments,³ provide broad authority for local governments to pass local laws related to zoning, planning, development, and natural resource protection.⁴ While Home Rule could be used as a powerful tool to combat sprawl, too often it is used as an excuse to thwart effective intermunicipal cooperation and regional planning.

Water bodies, forests and complex ecosystems exist across multiple municipal boundaries. Therefore, a regional perspective and approach to zoning and land use planning is necessary to protect water quality, natural, cultural and scenic resources, to manage ecosystems, and to plan appropriate transportation corridors and areas of growth. Because local land use ordinances lack uniformity and vary among the municipalities within a given region, the local system does not provide a coherent regulatory framework to establish a shared vision of future land use. This results in the fragmentation of vision and authority, failures that prevent more comprehensive and cost-effective solutions to the regional problems of sprawl.

Solution: *Establish and Support Regional Planning Bodies to Implement Uniform Land Use Planning and Natural Resource Protection Policies*



Local communities must join forces and together create and implement regional planning goals.

Local governments should cooperate regionally on land use planning, administration and enforcement, by forming binding intermunicipal agreements (IMAs). This type of regional cooperation can be a practical alternative to statewide planning, which is frequently met with political opposition, and local planning, which does not address regional issues with uniformity. Through legally binding IMAs, regional agreements can protect natural resources while retaining the strength and character of local town governments.⁵

Local municipalities also can save money by collectively sharing equipment, as well as administration and enforcement expenses. Towns also gain more influence in obtaining grants and in lobbying for legislative changes when they do so under the auspices of a regional planning body. A major incentive for towns to plan regionally is the protection of their investments in open space and other community resources. New roads and commercial and residential development in neighboring towns

often have negative impacts on surrounding towns, as well. Regional planning can avoid such impacts by guiding land use policies toward a shared vision.

Regional cooperation in the Hudson River Valley region has increased in recent years. Some IMAs have been formed to address water pollution prevention, with the most notable example being the 1997 Watershed Memorandum of Agreement (MOA), which was negotiated by New York City, New York State, the U.S. Environmental Protection Agency, numerous watershed municipalities, and five environmental groups: Riverkeeper, Inc., New York Public Interest Research Group Fund, Inc., The Catskill Center for Conservation and Development, Trust for Public Land, and Open Space Institute.⁶ The MOA is divided into three components: watershed regulations, land acquisition, and partnership programs, all of which seek to protect water quality in the New York City Watershed.

Other IMAs center on tourism, sustainable development, biodiversity, scenic resources and transportation. But, whatever the initial focus of an IMA, all IMAs have the potential to evolve into regional land use planning mechanisms. For example, in 1994, 13 riverfront communities initially formed the Historic River Towns of Westchester⁷ to coordinate tourism marketing, but this effort ultimately evolved into a consortium of municipalities that work cooperatively on planning studies, grant applications, Main Street revitalization, and coordination to ensure that waterfront projects in different communities do not negatively impact or compete with each other.

The following list provides a wide variety of examples of regional planning bodies and initiatives, some that include government participation and use of IMAs, and others that are comprised of a variety of members with less legal authority. A particularly important commonality among these initiatives is that they include government participation and legally enforceable IMAs that provided for regional decision-making authority. In addition, to address sprawl and water quality impacts, such regional bodies should be formed around specific watersheds or other resource boundaries.

- Bronx River Watershed Coalition: In 2006, 13 towns, along with the Bronx River Alliance, Bronx River Conservancy, New York State Department of Environmental Conservation, New York State Department of State, and Westchester County Planning Department, created a water quality improvement plan. The County Planning Department is developing recommendations for strengthening municipal land use regulations and improving stormwater management.⁸
- Croton to Highlands Biotic Corridor: Three towns in Westchester and one in Putnam County cooperatively review zoning to address protection of biodiversity.⁹ The goals of the partnership are to address the impacts of sprawl on natural ecosystems by developing baseline data and innovative tools, and to integrate these elements into regional land use planning
- Dutchess County “Greenway Connections”: The program promotes community connections through cooperation between neighbors, creating opportunities for regional connections, and broadening areas for cooperation between communities.¹⁰

- Eastern Westchester Biotic Corridor: The primary goal of this project was “to address the impacts of sprawl on natural ecosystems by: (1) providing baseline scientific information, (2) developing innovative tools, and (3) integrating those elements into the land use decisionmaking process.”¹¹
- Indian Brook-Croton Gorge Watershed area program: In 2007, five Westchester Towns and the County Planning Department wrote a plan for stormwater management, habitat restoration and protection, promotion of sustainable development, and intermunicipal cooperation.¹²
- Kisco River Intermunicipal Agreement: In 2006, the Towns of Bedford, New Castle and Mount Kisco, in cooperation with the Croton Watershed Clean Water Coalition, Federated Conservationists of Westchester County, and Trout Unlimited, formed an IMA to identify and eliminate pollution in the Kisco River Watershed.¹³
- Long Island Sound Watershed Intermunicipal Council: In 1998, 12 municipalities in the Long Island Sound Watershed formed a council to prevent non-point source pollution, preserve open space and natural resources, develop compatible comprehensive plans and land use regulations, enforce regulations, and provide education and funding for intermunicipal projects. The council is exploring the creation of a Regional Stormwater District to fund stormwater control.¹⁴
- Rockland Riverfront Communities Council: In 2002, 11 towns, Rockland County and the Palisades Interstate Parkway Commission formed a council with the goal to protect the Hudson River’s natural, historic and cultural resources while promoting economic development through improved land use planning and development and inter-municipal cooperation. Other goals include the creation of a continuous greenway trail along Rockland’s riverfront, a Ridgeline Protection Resolution, and a steep slope protection resolution.¹⁵
- Wappinger Creek Watershed Intermunicipal Council: 14 towns in the Wappinger Creek Watershed of Dutchess County address prevention of non-point source water pollution, preservation of open space and natural resources, and the expansion of economic activities consistent with watershed protection. The council’s goal is to create a riparian buffer throughout the Wappinger Creek Watershed, to employ an erosion and sediment control specialist, to examine the codes of the Towns of Wappingers and Clinton to determine how local ordinances can be modified to reduce overall site imperviousness, to preserve and enhance existing natural areas, and to integrate stormwater management.¹⁶
- Westchester County Greenway Compact Plan: This Plan encourages development in existing centers that have infrastructure and public transportation, encourages a range of housing types, preserves open space and natural resources, and supports local and regional planning efforts.¹⁷

¹ See N.Y. CONST. art. IX §§ 1, 2, and 3.

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- ² See N.Y. MUN. HOME RULE LAW §§ 1-59 (McKinney 1994).
- ³ See N.Y. STAT. OF LOCAL GOV'T §§ 1-21 (McKinney 1994).
- ⁴ See Legislative Commission on State-Local Relations, New York State Assembly, *The Legal Framework for Providing Local Government Services*, at Planning and Zoning, available at <http://www.assembly.state.ny.us/comm/StateLocal/20070823/planzone.pdf> (last visited April 21, 2010). See also, Joe Stinson, *New York's Home Rule Authority* (1997), available at <http://landuse.law.pace.edu/landuse/documents/StudentArticle/Reg2/HomeRuleAuthority.doc> (last visited April 21, 2010).
- ⁵ To learn about the successful regional planning efforts in Cape Cod, see SMITH, R.W., REGIONAL LAND USE PLANNING AND REGULATION ON CAPE COD: RECONCILING LOCAL AND REGIONAL CONTROL.
- ⁶ See NEW YORK, NEW YORK CITY WATERSHED MEMORANDUM OF AGREEMENT (1997), available at <http://www.nysefc.org/home/index.asp?page=294> (last visited April 21, 2010).
- ⁷ See Westchester County Department of Planning, *Historic River Towns of Westchester*, available at <http://www.westchestergov.com/PLANNING/regionalplan/HRTW.htm> (last visited April 21, 2010).
- ⁸ See Westchester County Parks Department, *Bronx River Progress Report*, available at <http://www.westchestergov.com/parks/BRPPProgressReport/BuildingAlliances.htm> (last visited April 21, 2010).
- ⁹ See NICHOLAS A. MILLER, M.S. & MICHAEL W. KLEMENS, PH.D., WILDLIFE CONSERVATION SOCIETY, CROTON-TO-HIGHLANDS BIODIVERSITY PLAN: BALANCING DEVELOPMENT AND ENVIRONMENT IN THE HUDSON RIVER ESTUARY CATCHMENT (2004), available at http://www.ecostudies.org/mca/7_Croton_to_Highlands_Biodiversity_Plan.pdf (last visited April 21, 2010).
- ¹⁰ See GREENWAY BENEFITS, available at <http://www.co.dutchess.ny.us/EnvironmentLandPres/Connections7-9.pdf> (last visited April 23, 2010).
- ¹¹ See NICHOLAS A. MILLER, M.S. & MICHAEL W. KLEMENS, PH.D., WILDLIFE CONSERVATION SOCIETY, EASTERN WESTCHESTER BIOTIC CORRIDOR (2002), available at http://www.ecostudies.org/mca/4_Eastern_Westchester_Biotic_Corridor.pdf (last visited April 23, 2010).
- ¹² See Westchester County Department of Planning, *First Ever Comprehensive Watershed Program Planned for Croton Bay* (Winter 2007), available at <http://www.westchestergov.com/planning/docs/Newsletter/Newsletter.htm> (last visited April 21, 2010).
- ¹³ See Herbert Fox, *Our Advocacy Efforts Continued*, WESTCHESTER ENVIRONMENT 1 (2007), available at <http://www.fewc.org/WEArchive/010207/index.htm> (last visited April 21, 2010).
- ¹⁴ See The Long Island Sound Watershed Intermunicipal Council, *Grants*, available at <http://www.liswic.org/grants.html> (last visited April 21, 2010).
- ¹⁵ See Rockland County Department of Planning, *Rockland Riverfront Communities* (2002), available at <http://www.co.rockland.ny.us/planning/landuse/rivercomm.htm> (last visited April 21, 2010).
- ¹⁶ See TOWN OF WAPPINGER ET AL., RECOMMENDED MODEL DEVELOPMENT PRINCIPLES FOR CONSERVATION OF NATURAL RESOURCES IN THE HUDSON RIVER ESTUARY WATERSHED (2006), available at (http://www.dec.ny.gov/docs/remediation_hudson_pdf/hrewbsdwap.pdf) last visited April 23, 2010).
- ¹⁷ See Westchester County Department of Planning, *Westchester County Greenway Compact Plan*, available at <http://www.westchestergov.com/planning/regionalplan/GreenwayCompact.htm> (last visited April 21, 2010).

STRATEGY 3: Training for Local Planners Must Improve

Problem

Smart Growth requires good planning, and good planning requires informed decision-making. Local officials – including town board, planning board, and zoning board of appeals members – are charged with making planning and zoning decisions that will have both immediate and long-term impacts and implications for their community and region. A significant problem noted by residents and board members alike is the lack of technical training for local decision-makers.

The decision to require training of planning board and zoning board of appeals members has historically been at the discretion of each municipality. Not infrequently, town board and planning board members do not have professional expertise to make complex planning decisions. While the chairman of a zoning appeals board or a planning board usually has some professional background (for example, is an urban planner, engineer, or architect), many board members have little or no relevant experience before joining the board. Members are either elected or appointed, and while some are paid, others are unpaid volunteers with an interest in helping to shape their community. The only legally required qualifications were that the board member be at least 18 years old, a United States citizens, and residents of the municipality. While many boards may participate in voluntary, episodic training, more routine, ongoing training must be required to keep pace with rapidly advancing technologies and best management practices.

Solution: Local Boards Must Establish Meaningful Training Programs to Implement Mandatory State Requirements

Effective January 1, 2007, New York State’s General Municipal Law, the General City Law, the Town Law and the Village Law have been amended to require planning board and zoning board of appeals members, as well as county planning board members to receive a minimum of four (4) hours of training a year.¹ Individuals who do not fulfill the minimum training requirement will not be eligible for reappointment to the board.² Acceptable training courses, providers and formats are chosen by the governing body of the city, town, village or county and may include, but are not limited to, training provided by a municipality, a state agency, a statewide municipal association, or a college.³ Towns should take advantage of this new law to establish meaningful training programs so their officials can plan and achieve Smart Growth.

While the new amendments have the potential to greatly enhance continuing education of local planners, there are several potential weaknesses regarding the amount of discretion municipalities maintain in the implementation of the training requirements. For example, municipalities can avoid the training requirement completely if local governing boards deem it to be “in the best interest of the Town” to waive or modify the requirement through resolution.⁴ There is little guidance as to when it would be in the interest of a community to forgo training. Although a waiver of the training requirement may be

justified for an individual board member with professional background, the option to essentially opt out of the requirement may be inappropriately used by municipalities simply to avoid the law. Similarly, the local governing board also establishes the type of training and the topics covered that will satisfy the training requirement. Thus, rigorous implementation of the training requirement could ensure that members of the board receive adequate training, or more lax criteria could dilute the positive intent of requiring mandatory training.

The amendments do include some penalties for non-compliance. Members who do not receive the required training will be prohibited from serving another term on the board. But, beyond this prohibition, members, as well as municipalities, may not feel compelled to receive or encourage training, as there is no immediate consequence regarding decisions made by an inadequately trained board. The amendments provide that decisions of a planning board or zoning board of appeals will not be declared invalid or void based on the members' failure to comply with training requirements.⁵

To date, qualified training is offered by various organizations in several different formats. The New York State Department of State offers a variety of classes through its Local Government Training Series.⁶ Classes vary in duration and location and are hosted by several different organizations, including towns, counties, the Adirondack Park Agency, and the Catskill Watershed Corporation.⁷ Basic courses that are particularly aimed at planning and zoning board members include, for example: Adopting and Amending Zoning, Conservation Subdivision, Community Design Tools - Taking Control of Your Community's Character, and Smart Growth: Tools and Strategies.⁸



With increasingly complex regulations and continuously evolving building practices, local planners must receive ongoing education to be informed decision-makers for their communities.

The New York Planning Federation (NYPF) offers both half-day training sessions and two-hour training sessions that could fulfill the training requirement.⁹ The NYPF offers a variety of courses, including Land Use Training, Environmental Review and SEQR, as well as trainings tailored to the needs of a specific community.¹⁰ The NYPF tries to provide training at a location and time convenient to a municipality.¹¹

Online training is offered through the New York Municipal Insurance Reciprocal (NYMIR).¹² The NYMIR Zoning School program includes nine tutorials, as well as a glossary of definitions and statutes.¹³

The Land Use Law Center at Pace Law School in White Plains offers local leader training and certification programs covering land use matters.¹⁴ Programs offered include

the Land Use Leadership Alliance Training Program, which is a four-day comprehensive training program, as well as a one-day basics program and a half-day orientation.¹⁵

Municipalities can choose to allow board members who are professional planners to fulfill their training requirement through continuing education provided by the American Institute of Certified Planners (AICP).¹⁶ AICP provides training options in several formats including CD-ROM, live audio/web conferencing series, conferences, and workshops.¹⁷

To ensure that board members receive proper training, local governments must use the decision-making discretion given them under the new amendments, to institute a comprehensive training program and criteria. Municipalities may require board members to receive more than the four-hour minimum state requirement.¹⁸ Local government officials should consider the variety of training options that exist and determine which programs will educate board members to allow them to make smart decision to achieve Smart Growth and sustainable site design for the betterment of the local and regional communities.

¹ See New York State Division of Local Government, *Chapter 662 of the Laws of 2006 Mandatory Training for Planning Board and Zoning Board of Appeals Members*, available at <http://www.dos.state.ny.us/lgss/mtlaw.htm> (last visited April 23, 2010).

² See New York State Division of Local Government, *Annual Training for Planning Board and Zoning Board of Appeals Members*, available at <http://www.dos.state.ny.us/lgss/mandatorytraining.htm> (last visited April 23, 2010) (Individuals participating in training in excess of four hours per year, may carry over excess hours to the next year).

³ See *id.*

⁴ New York State Division of Local Government, *supra* note 1.

⁵ See New York State Division of Local Government, *supra* note 2.

⁶ See New York State Division of Local Government, *2008 Local Government Official Training*, available at <http://www.dos.state.ny.us/lgss/training.htm> (last visited April 23, 2010).

⁷ See *id.*

⁸ See *id.*

⁹ See New York Planning Federation, *NYPF Training*, available at <http://www.nypf.org/nypftraining.htm> (last visited March 31, 2008).

¹⁰ See *id.*

¹¹ See *id.*

¹² See New York Municipal Insurance Reciprocal, *Zoning School*, available at <http://www.nypf.org/zoningschool.htm> (last visited April 23, 2010).

¹³ See *id.*

¹⁴ See Pace Law School, Land Use Law Center, *Training Programs*, available at http://www.pace.edu/page.cfm?doc_id=23925 (last visited March 31, 2008).

¹⁵ See *id.*

¹⁶ See American Planning Association, *Training and Workshops*, available at <http://www.planning.org/education/training/> (last visited April 23, 2010).

¹⁷ See *id.*

¹⁸ See New York State Division of Local Government, *Annual Training for Planning Board and Zoning Board of Appeals Members*, available at <http://www.dos.state.ny.us/lgss/mandatorytraining.htm> (last visited April 21, 2010).

B. *Community Planning*

STRATEGY 4: Community Input Must Guide the Planning Process

STRATEGY 5: Mixed-Use, Infill Development Should be Encouraged

STRATEGY 4. *Community Input Must Guide the Planning Process*

Problem

As noted in Pricewaterhouse Coopers' *Emerging Trends in Real Estate 1999*, “[s]uburbs struggle because they have let developers run amok, oblivious to traffic growth, sewer system capacity, or even recreational needs.”¹ Too often, municipalities will accept any development proposal, and the end result is an uninviting amalgam of dissimilar “projects” that lack any relationship to one another.

In many instances, communities are not against all growth, but continue to find themselves battling ill-conceived projects offered with a developer’s financial goals clearly leading the design. Not only are the majority of projects not environmentally sound, but they also fail to respond to community desires or needs. Outsized projects that maximize use of every scrap of land do not protect community character and do not offer a desired mix of housing types or space for needed goods and services. The result is fragmented landscapes characterized by big box, strip mall commercial development and cookie-cutter housing subdivisions.

What is needed are creative planning and zoning that reflect the type of development that current residents actually want. Citizens must be proactive to help envision and plan the projects they want to see built and *then* market this vision to potential developers willing to implement these shared community goals.

Solution: *Create and Market Design Guidelines*

To create successful communities, all stakeholders must take part in the planning and design process and create visions for the communities they want. Typically, a “comprehensive plan” (or “master plan”) is the primary planning document for a community. The local planning objectives contained in the comprehensive plan are then carried out through creation of appropriate zoning ordinances. Comprehensive plans are created or revised by committees that are typically comprised of municipal staff and citizens volunteers, often with the assistance of a consultant.

Comprehensive plans and zoning codes in the Hudson River Valley and New York City Watershed often seek to achieve the preservation of “rural community character” and may also seek to protect environmentally sensitive areas by creating overlay districts



Communities must anticipate, envision, and invite the type of development they desire if they are to thwart the onslaught of one-size-fits-all projects typically offered by developers.

(wetland and wetland buffer protection; groundwater and aquifer protection; tree preservation; steep slopes; etc.), but they often stop short of providing specific guidelines that would achieve aesthetic / community character objectives while protecting environmental resources.

To preserve community character and invite desired growth, a certain standard of quality should be achieved by designing guidelines for architectural styles, materials, and layout. Developers can then be approached with a coherent planning vision and asked to submit proposals for projects that already have community support. This will help build community trust, and thus save time and money over the course of the planning process.

Some basic design elements and strategies to consider that will help create an inviting, walkable atmosphere while protecting natural resources include:

- Wide, pervious sidewalks separated from the road by vegetated areas and street trees;
- sidewalk benches or other gathering areas so pedestrians can congregate or rest;
- small setback requirements that allow placement of buildings at the sidewalk edge and place parking lots behind buildings; and
- appropriate scales and styles so new buildings fit with the character of the existing neighborhood.

In the suburbanized New York City Watershed and Hudson River Valley, where citizens' goals frequently include preservation of the rural character and heritage of the community while also desiring growth to raise revenue, it would be particularly useful for communities to create Rural Design Guidelines to guide development.

For example, Anne Arundel County, Maryland created the South County Small Area Plan.² Like the East-of-Hudson Watershed communities, South County is within 30 miles of major urban centers (Washington, D.C. and Baltimore, MD), yet is characterized by farms, fields and pastures, forests, wetlands, and open water, including the Patuxent River and the Chesapeake Bay and its tributaries and estuaries. The community goals were to halt the rapid suburbanization of the area, to encourage reuse of existing commercial land (infill) while discouraging new commercial zoning, and prevent expansion of public water or sewer systems (which do not exist outside of two specific subdivisions).³ Working with the community, planners identified the rural characteristics that they wished to preserve (wooden barns; panoramic views; narrow, winding rural roads; small villages with well defined edges; etc.) as well as suburban qualities to be prevented (uniform building size, orientation, and setbacks; subdivision entry features like signs, monuments, and gates; landscaping using exotic species; continuous lawns between lots; sidewalks and streetlights; etc).⁴ Once they identified objectives, communities created Rural Design Guidelines, which approach both environmental and community character issues in a comprehensive and creative way.⁵

¹ NORTHEAST-MIDWEST INSTITUTE AND CONGRESS FOR THE NEW URBANISM, STRATEGIES FOR SUCCESSFUL INFILL DEVELOPMENT 12-13 (2001) (quoting *Emerging Trends in Real Estate 1999* (by Lend Lease Investments and Pricewaterhouse Coopers)).

² ANNE ARUNDEL COUNTY, MARYLAND, SOUTH COUNTY SMALL AREA PLAN (plan effective date Dec. 28, 2001; zoning effective date Apr. 11, 2002), *available at* <http://www.aacounty.org/PlanZone/SAP/SouthCounty.cfm> (last visited April 21, 2010).

³ *See id.* at 26.

⁴ *See id.* at 40-43.

⁵ *See id.* at App. 5.

STRATEGY 5: *Mixed-Use, Infill Development Should be Encouraged*

Successful infill development refers to the planning, design, and construction of homes, stores, workplaces, and other facilities that make existing cities and towns more livable. It describes the reuse of property and buildings in a way that makes economic sense for property owners, local governments, and the regional economy. Successful infill development channels economic growth into existing urban and suburban communities and conserves natural resources at the periphery of the metropolis.¹

Problem

Throughout the United States, conventional development has led to sprawling development patterns – in other words, development is growing out, not up. Developers typically favor building in “greenfield” areas on the edges of existing urban centers because in many areas this rural and suburban land is cheaper than urban land, and developing new project sites is less complicated than rehabilitating and redeveloping older, abandoned downtown or ex-industrial sites that may be contaminated. It is this pattern that has turned our once rural lands into the sprawling suburbs that are typical of the Hudson River Valley. Open lands are being destroyed, downtown commercial centers are struggling, local property taxes are rising faster than revenues raised from new development, and we are ever-increasing the car-dependant nature of our communities.



In Sleepy Hollow, General Motors' former manufacturing site presents a potential opportunity for positive waterfront redevelopment. Using Smart Growth and low-impact development principles, redevelopment of this site could remove existing contamination, restore the historic use and health of the Pocantico River, and provide a walkable, mixed-use project located in a downtown area in close proximity to public transportation. Photo by Robert Goldstein.

One very significant factor contributing to this sprawling pattern is the lack of long-term regional planning and cooperation among local municipalities. The Center on Urban & Metropolitan Policy has noted that sprawl often occurs in older regions, like the Hudson River Valley, that are already dense and have fragmented local government structures.² Local governments that misguidedly seek additional development to raise revenue make planning decisions with a narrow, short-term, municipal focus. Such decisions are likely to conflict when viewed from a regional or environmental perspective.

Solution: Mixed-Use Infill Development Should be Encouraged in Existing, Downtown Areas, with Infrastructure Capacity

Increasingly, better suburban areas look like smaller versions of traditional cities, featuring attractive neighborhoods, easily accessible retail office districts, and mass transportation alternatives to the car. Refurbishing infill retail districts will create more value than slapping together another supermarket strip on the way to exurbia...³

An alternative to conventional greenfields development is “infill development” – creative reuse of vacant or abandoned sites within already developed areas with existing infrastructure and services. This is a particularly important concept for older regions, like the East-of-Hudson Watershed, which are already heavily developed and where future planning must evolve around existing infrastructure. By creating walkable, mixed-use, human-scale development that is attractive and inviting, communities can attract new residents and consumers to support both the day and night activity that keeps a community alive. Smart planning will allow significant growth in infill areas, and will allow more open space to be set aside to protect watersheds, airsheds, and parks for community recreation. Many general principles can be tailored to address suburban and rural development concerns and be applied to redevelopment or new development scenarios. The following are examples of solutions that promote mixed-use development.

Encourage mixed-use development that includes a mix of housing, employment opportunities, shops, restaurants, community services like child-care and medical centers, special arts or historic districts, and recreation.

Local zoning often strictly separates residential and commercial districts, and thus fosters a car-dependent development pattern. However, some towns are beginning to embrace Smart Growth principles and are amending their codes to allow for mixed-use districts. In the day, workers provide a customer base for shops and restaurants, and at night, residents can enjoy local community activities, like movies, theaters, restaurants, or outdoor events in community open space areas. This can revitalize downtown shopping areas, and help create an inviting, safe, all-hours neighborhood. As the Northeast-Midwest Institute and Congress for the New Urbanism reported, a 1997 survey of 516 new-home shoppers conducted by *Builder* magazine found that, “[w]hile one-third said they preferred life in suburbia, nearly two-thirds objected to the extra driving suburbia typically requires. Some 84 percent desired proximity to a town center with shops, cafes, and small parks.”⁴ And, in addition to preserving land and local resources, a comparison of BTU consumption shows that infill development is more energy efficient even than “green” suburban building when transportation is considered.

Older Hudson River Valley communities were originally characterized by defined “Main Street” village areas (in essence, walkable core communities). Over time, these unique town centers are merging, being connected by generic strip malls, big box stores, and

first-generation enclosed shopping malls surrounded by oceans of parking lots. Yet, even these sprawling misadventures can be rehabilitated with desirable, mixed-use, infill projects. For example, the failing Eastgate Mall in Chattanooga, Tennessee was reincarnated as the Eastgate Town Center, with a mix of shops, restaurants, services and civic space (YMCA; legal service offices related to commercial insurance companies; etc.) being provided on the ground level and office space in the upper levels. A central green public square and a network of tree-lined paths encourage people to walk throughout the new community. Similarly, in Mashpee, Massachusetts, an old strip mall was converted into a village center with a traditional New England style, providing a mix of housing, street-front “mom and pop” shops, and community buildings (library, fire department, etc.)

Target underutilized parcels for improvements.

Oftentimes, municipalities own underutilized buildings and properties that could be improved to serve public uses. This is true in many Hudson River Valley towns where historic buildings often sit unused. By restoring historic buildings in downtown areas, municipalities can create historic districts to attract tourism, or house government and service offices in downtown areas where people conduct their day to day affairs. Attention should be paid to historic farms and parks, theaters, and ex-industrial waterfronts, all of which could be use to create special districts with different themes and inspire cohesive designs.

Provide a mix of housing options.

Mixed housing can provide environmental, social, and economic benefits. Neighborhoods with a mix of apartments, townhomes, and single-family homes foster a diverse population, including families and individuals of diverse ages, races, and incomes. Daily interaction between groups that might otherwise be separated along socio-economic lines can foster social and cultural diversity, and can also provide a varied workforce. Where communities’ school systems are already overburdened, creating appropriately-sized units can attract new residents that are a new tax base, not a tax drain – single-occupancy units will attract singles and young professionals who do not have children, and resident seniors (empty-nester) who wish to downsize from their larger homes, or retain their independence when they can no longer drive, by living in walkable communities with accessible public transportation.

Providing the right type of high-density housing can also allow for the creation of affordable and market rate housing. As the Northeast Midwest Institute and the Congress for the New Urbanism aptly note, “[a]ffordable housing is not always low-income or subsidized public housing. Increasingly, it means housing for the young adults and middle-class people who are priced out of the communities where they work.”⁵ In the lower Hudson River Valley, property taxes that are among the highest in the State provide a significant barrier to home ownership for young adults and retirees who wish to remain in their home communities. Developers often complain that given the high cost

of land and low-density zoning, they cannot build “affordable” housing and are forced to build only large, luxury homes.

However, when developers create a mix of housing types, they can attract people with mixed incomes and a balance of affordable housing can be achieved. Because infill development is located in areas with existing infrastructure, developers can avoid the significant costs of constructing and maintaining water and sewage treatment facilities, and thus keep the cost of housing down. For example, in Irvington, New York, the Burnham Building, a historic waterfront facility that had been used for manufacturing and office space was rehabilitated as mixed-use space. The existing building, located near public train transportation, was converted to house a library on the first floor and the Town’s first affordable housing units on the second floor, a reconfiguration that helped to revitalize the downtown Main Street and historic waterfront district.⁶

A Caveat: Negative impacts of high-density housing

While building high-density units in town centers with existing infrastructure is “smart growth,” placing large, high-density developments in rural areas is not. Such fringe “density” requires that additional services be provided and can easily drain a local tax base.⁷ Thus, in sprawling suburbs, the existing taxpayers end up subsidizing new development rather than benefiting from increased revenue added by new residents and businesses. For example, a study published by the Urban Land Institute in 1987 compared the capital cost of services for single dwelling units for different development patterns and found that compact growth patterns cost \$18,000, low density sprawl cost \$35,000 and low density sprawl located 10 miles from existing development cost \$48,000.⁸

In addition, creating high-density housing in fringe areas can lead to significant environmental impacts. For example, in the East-of-Hudson Watershed, less than half of the region is sewerred, and in many places existing sewage treatment plants are at or near full capacity. It is critical that a comprehensive assessment of areas that can sustain high-density infill development be made *before* zoning codes are created that misguidedly allow high-density housing in environmentally sensitive areas or where existing infrastructure is already overburdened.

¹ NORTHEAST-MIDWEST INSTITUTE AND CONGRESS FOR THE NEW URBANISM, STRATEGIES FOR SUCCESSFUL INFILL DEVELOPMENT 10 (2001).

² See WILLIAM FULTON ET AL., CENTER ON URBAN & METROPOLITAN POLICY, WHO SPRAWLS MOST? HOW GROWTH PATTERNS DIFFER ACROSS THE U.S. (July 2001).

³ STRATEGIES FOR SUCCESSFUL INFILL DEVELOPMENT, *supra* note 1, at 68.

⁴ *Id.* at 9.

⁵ STRATEGIES FOR SUCCESSFUL INFILL DEVELOPMENT, *supra* note 1.

⁶ See F. KAID BENFIELD ET AL., SOLVING SPRAWL: MODELS OF SMART GROWTH IN COMMUNITIES ACROSS AMERICA 91-95 (2001).

⁷ See Sierra Club, *Costs of Sprawl: Tired of Higher Property Taxes? Study Shows We Need to Control Sprawl Development to Control Property Tax Growth*, available at <http://www.sierraclub.org/sprawl/articles/cost.asp> (last visited April 21, 2010).

⁸ See J. Frank, *The Costs of Alternative Development Patterns: A Review of the Literature* (The Urban Land Institute 1989). Several other economic studies have been conducted to assess the differences between sprawl and compact growth patterns. See J. Duncan et al., *The Search for Efficient Urban Growth Patterns* (Florida Department of Community Affairs 1989); R.W. Burchell and D. Listokin, *Land, Infrastructure, Housing Costs and Fiscal Impacts Associates with Growth: The Literature on the Impacts of Sprawl Versus Managed Growth* (Lincoln Institute of Land Policy 1995).

C. Transportation

STRATEGY 6: New York State Must Invest in Mass Transit

STRATEGY 7: Design Should Foster Walkable Communities and Consolidate Transportation and Parking

STRATEGY 8: Adopt Best Management Practices for Roads

STRATEGY 6: *New York State Must Invest in Mass Transit*

Problem

The typical sprawling suburb is characterized by increasing traffic congestion and a lack of adequate public transit. There is substantial evidence that over-dependence on highway travel— often funded at the expense of mass transit – leads to expansive sprawl, congested traffic, and impacts on human health and safety.

At the federal level, transportation funding for highway-related construction has historically been allocated at roughly five times that for mass transit. This trend is perpetuated in current transportation legislation, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU),¹ which was adopted in 2005 and applies to a five-year funding cycle through 2009.²

The massive funding discrepancy between roads and mass transit is inconsistent with the goals of reducing traffic, limiting sprawl, and protecting human health, and is in fact at odds with public opinion that strongly supports public transit over new highways.³

Solution: *Funding Must Meet Public Demand for Mass Transit*

Clearly, public transit is critical to transportation in New York State. New York Department of Transportation (DOT) reports that “based on the 1990 census, use of public transportation for resident journey-to-work in New York State is 33.6% of the national total.”⁴ According to the Surface Transportation Policy Project, 59% of Americans “would strongly / somewhat favor using part of the state transportation budget for improvements in public transportation, even if this means less money to build new highways.”⁵ Similarly, 36% support improvements in public transportation as the best solution to congestion, as opposed to 25% who support building new roads.⁶ Other studies show that as many as 60% - 80% of Americans favor expanding public transportation.⁷



Funding for public transit must keep pace with increasing ridership demand.

Yet, contrary to public desires, DOT census information indicates that in 2000 over 56% of New Yorkers drove alone to work, while only 24.4% took public transportation.⁸ Based on the 1990 census, this represents an *increase* in those who drove alone and a *decrease* in those who took public transportation.⁹ The State must continue to invest in public transportation to reverse these numbers. Further, studies show that building more roads merely increases, or induces, traffic.¹⁰

New York is somewhat hamstrung in its efforts to fund mass transit, based on the discrepancy in federal assistance for highways over transit. But, to the extent the State must fund transit beyond the assistance it gets from federal funding, such funding is a good long-term investment. One comparison study of Houston and New York City showed that whatever higher taxes New Yorkers pay to support mass transit is far outweighed by the nearly \$3,000 less that New Yorkers pay for transportation than Houstonians.¹¹

In comparison to other states, it appears that New York is doing a demonstrably better job funding transit versus highways. In a Sierra Club report, New York was the only state that received an “A” grade, which was linked to the State’s spending \$128 per city resident for every \$100 spent on highways.¹² Given the predominance of transit use in New York, this is not surprising. But, considering the DOT’s own evidence that New Yorkers are decreasing their use of public transit, the State must continue – if not improve on – its relatively positive spending trend.

Mass transit in the Hudson River Valley has always garnered significant investment, especially because the Metropolitan Transit Authority’s (MTA’s) Metro-North Railroad provides commuter rail lines connecting the region’s workforce to New York City. Metro-North is one of the largest commuter rail lines in the country, carrying more than 84 million riders in 2008 and serving many communities both east and west of the Hudson River.¹³ Investing in this rail service is one critical step to fight sprawl in the Hudson River Valley. In 2004, MTA proposed a \$1.4 billion, five-year rebuilding plan for Metro-North. The plan calls for buying \$363 million worth of new M-7 and M-8 commuter rail cars and spending \$253 million for rehabilitating stations (such as Tarrytown and Ossining) and additional station parking facilities.

This trend of investment is well-warranted, but it is not enough to alleviate the region’s sprawl-related transportation problems, particularly for workers who are not commuting to or from New York City. In addition to at least maintaining its current mix of transportation funding, New York should direct transit funding to densely populated areas to prevent traffic problems that could eventually direct growth to currently-uninhabited open areas. Because states can most efficiently use transit investment in areas with transit-oriented development (as opposed to low-density areas),¹⁴ careful regional transportation planning can, in turn, further encourage localities to promote transit-oriented development.

Finally, reducing the need for motorized transportation is a smart, long-term strategy for reducing congestion and expenditures while promoting public health. A new report from the Natural Resources Defense Council shows that meeting national demand for conveniently located homes in walkable neighborhoods could significantly reduce the growth in the number of miles Americans drive, thereby reducing global warming pollution while giving people more housing choices.¹⁵

¹ See U.S.C. §§ 101, et seq.

² See U.S. Department of Transportation, *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users*, available at <https://www.fhwa.dot.gov/safetealu/index.htm> (last visited April 21, 2010).

³ See Surface Transportation Policy Project, *Walking in New York*, available at http://www.transact.org/library/reports_pdfs/pedpoll/NY.pdf (last visited April 21, 2010) (Highlights from STPP's National Poll 2003).

⁴ PLANNING AND STRATEGY GROUP, NEW YORK STATE DEP'T OF TRANSPORTATION, *A TRANSPORTATION PROFILE OF NEW YORK STATE 26* (1999).

⁵ See Surface Transportation Policy Project, *supra* note 3.

⁶ See *id.*

⁷ See Surface Transportation Policy Project, *Ten Years of Progress*, Ch. 2 (2002), available at <http://www.transact.org/report.asp?id=60> (last visited April 21, 2010).

⁸ See New York Department of Transportation, *Census Transportation Planning Package 2000 – New York State Profile*, available at <https://www.nysdot.gov/portal/page/portal/divisions/policy-and-strategy/darb/dai-unit/tss/repository/html/ny.html> (last visited Feb. 12, 2008).

⁹ See *id.*

¹⁰ See Sierra Club, *New Roads are Not the Answer: Avoiding Traffic Congestion Through Transportation Choices*, available at <http://www.sierraclub.org/sprawl/induced.pdf> (last visited April 21, 2010).

¹¹ See Surface Transportation Policy Project, *Driven to Spend: The Impact of Sprawl on Household Transportation Expenses*, at 12-13 (March 2000), available at <http://www.transact.org/report.asp?id=36> (last visited Feb. 12, 2008).

¹² See Sierra Club, *Public Transit vs. Highways: What Cities are Spending to Improve Our Health*, available at <http://www.sierraclub.org/sprawl/report01/transitvshighways.asp> (last visited April 21, 2010).

¹³ See Metropolitan Transportation Authority, *Metro-North Railroad Annual Ridership*, available at <http://www.mta.info/mnr/html/aboutmnr.htm> (last visited April 23, 2010).

¹⁴ See SMART GROWTH NETWORK, *GETTING TO SMART GROWTH: 100 POLICIES FOR IMPLEMENTATION 62-63* (2002), available at <http://www.smartgrowth.org/pdf/gettosg.pdf> (last visited April 21, 2010).

¹⁵ See Press Release, NRDC, *Less Auto-Dependent Development is Key to Reducing Global Warming Pollution, According to New Report* (Sept. 20, 2007), available at <http://www.nrdc.org/media/2007/070920b.asp> (last visited April 21, 2010).

STRATEGY 7: *Design Should Foster Walkable Communities and Consolidate Transportation and Parking*

Problem

The sprawling pattern of development combined with a lack of usable public transit forces people to drive, making more trips over larger distances to commute or complete everyday errands. This car-dependence has seriously eroded all aspects of our society – our environment, with added emissions contributing to air and water quality degradation; our quality of life and productivity, with wasted hours spent sitting in traffic; our health, with physical ailments now correlated to the sedentary lifestyle that sprawl engenders; our society, with racial and socioeconomic consequences; and our freedom, with various segments of the population who do not or cannot afford to drive – typically teens, older citizens, and low income workers –are trapped at home.

An additional impact from car-dependence is the massive infrastructure that is required to service cars. Ever-wider roads and excessive parking lots account for a significant percentage of impervious surface area in the developed landscape. Expansive parking lots are typical of conventional commercial development and many communities are dominated by strip malls and big box stores surrounded by tremendous paved lots. In some instances, rigid local ordinances require businesses to provide a certain number of parking spaces for their customers or street front lots that disconnect businesses from pedestrian activity. Developers frequently complain that they would like to make smaller parking lots, but fall back on the excuse that large, chain “anchor” stores require a certain number of spaces if they are to locate there.



Heavy traffic congestion in this Albany suburb is increasingly common throughout the Hudson Valley – and it need not be rush hour. Photo by Giles Ashford.

Solution: *Create Transit-Oriented Communities and Consolidated Parking*

To create pedestrian-friendly, transit-oriented communities, infill development should be located around existing public transit, and when possible, different modes of transportation should be consolidated into a hub transportation area. This will reduce the need for individual vehicle travel, and the need for parking.

However, to maintain public transportation, there must be a critical mass of riders to make it financially feasible. Thus, a certain density of riders must be achieved. In *Strategies for Successful Infill Development*, the Northeast Midwest Institute and the Congress for the New Urbanism states that:

Density of at least 10 homes per acre is a prerequisite for effective transit systems. Most people will not walk more than one-quarter mile to catch a train or bus, so housing should be clustered near transit connections. To maximize walking and bicycling as transportation choices, housing density should increase in districts within one-quarter-mile of transit, shopping, or employment centers.¹

New commercial or office space should be located near existing, or coordinated with plans for future, public transit. This will help bring the critical mass of riders needed to support transit systems, and reduce the traffic impacts that could otherwise be created by bringing new workers into the community. In addition, focusing development on previously used land will help bring transit-oriented development to an existing mass of riders and transportation. For example, in Mountain View, California, planners anticipated the needs of a growing commuter population and sought to locate housing near existing transportation. Thus, The Crossings project was located at an abandoned shopping mall that was adjacent to a commuter train line; mixed housing types were located within walking distance of offices and shops.



The New York City metro region has a strong network of north-south rail lines, but lacks adequate east-west connections, particularly to cross the Hudson River. While many stations along Metro North's Hudson Line, such as the Croton-Harmon station (left), are located adjacent to the river along the fringes of the community and have expansive parking lots, stations along the Harlem Line, such as the Pleasantville station (right) are fully incorporated into the downtown area with train access and shared municipal parking located in the downtown business area. Photos by Leila Goldmark.

In addition, consolidating parking can have significant environmental, social, and aesthetic benefits. To reduce the negative environmental impacts associated with runoff from impervious surfaces, parking should be consolidated in parking structures that reduce exposed surface area. By locating parking structures in strategic downtown locations, people can park once and walk to a variety of destinations in the same trip, thus reducing traffic congestion and reducing vehicle emissions. By allowing local businesses and shops to avoid having their own parking lots by purchasing parking "credits" in the shared garage, shops can be located directly along streets with sidewalks and attract new customers as pedestrians can look in the windows as they walk by. For housing or

community parking, impervious pavers that feel more like open space and allow water to permeate into the ground, can be used. Such areas can do double duty as a courtyard or plaza and provide open space in off-hours or for public events.

¹ NORTHEAST-MIDWEST INSTITUTE AND CONGRESS FOR THE NEW URBANISM, STRATEGIES FOR SUCCESSFUL INFILL DEVELOPMENT 33 (2001). In addition, “[i]n *Public Transportation and Land Use Policy* (Indiana University Press, 1977) Boris S. Pushkarev and Jaffrey M. Zupan define an empiric system for assessing the connection between density and transit. They conclude, for example, that a residential neighborhood with four homes to the acre can support an hourly bus. Bump it to seven homes per acre and the neighborhood can support a bus on the half hour.” *Id.* at 47.

STRATEGY 8: *Adopt Best Management Practices for Roads*

Problem

The U.S. Environmental Protection Agency (EPA) reports that nonpoint source pollution, such as runoff from roads and other impervious surfaces, is the leading cause of water quality degradation.¹ The 6,000 miles of paved roadways in the New York City drinking water supply watershed contribute significant impervious surface area to the 4,000-square-mile land area. The pavement on these roads intercepts rainwater, prohibits infiltration and facilitates the transportation of contaminated runoff to surface waters. As a result, a host of contaminants – including sediment, pesticides and herbicides, nutrients from fertilizers, pathogens, vehicle emissions, and deicing salts – enter our streams and drinking water reservoirs during rain events and spring snowmelt. To preserve water quality benefits as new development encroaches on forested lands, planning considerations for roads and highways must incorporate pollution prevention practices that avoid or adequately mitigate impacts to adjacent surface waters and wetland areas.

In addition, many new subdivisions have wide access roads that are the product of municipal zoning. These wide roads often were designed in response to fire safety concerns, but limit pedestrian use, and ultimately are a product of the misguided priority of cars over pedestrians. Ironically, wider roads may exacerbate problematic safety issues. Requiring wide roads in order to facilitate shorter emergency response time leads to a greater number of traffic accidents, with people driving faster on wider roads.² A study conducted by Swift & Associates concluded that the “most significant relationship to injury accidents was found to be street width. As street widths widen, accidents per mile per year increases exponentially, and the safest residential street widths are the narrowest.”³



The Croton Dam Road runs adjacent to, and has the potential to send sediment into the City’s Croton Reservoir in the Town of Yorktown, Westchester County. Photo by Leila Goldmark.

Solution: *Adopt Best Management Practices for the Design, Construction, and Maintenance of Paved and Unpaved Roads*

Adopting best management practices (BMPs) to design, construct and maintain roads for safe travel can significantly mitigate adverse impacts to water quality and aquatic ecosystems.

Sediment transport during road construction can be limited by capturing and treating stormwater runoff before it leaves the project site. The EPA recommends use of BMPs, “such as permanent storm water retention/detention ponds, slope protection, or grass strips, and temporary sediment traps, silt fences, diversion trenches, and provisions for washing vehicles before they leave the construction site are all means to reduce runoff pollution.”⁴ To reduce erosion and sedimentation, and protect wetlands and surface waters from degradation, the EPA recommends that planners incorporate specific management practices when designing road systems or bridges. Specific practices include:

- *Evaluate alternatives for incorporating a road system or bridge into the natural characteristics of the site.* Analyze environmental features, such as topography, drainage patterns, soils, climate, and existing land use. Natural drainage systems can be taken advantage of, clearing and grading can be minimized, natural vegetation and buffer areas can be preserved, and sensitive land and water areas that provide water quality benefits (e.g., wetlands, spawning waters, etc.) and areas susceptible to erosion and sedimentation can be avoided.
- *Preserve corridors for highways well in advance of construction to be certain that roads are built where they are most suitably located in terms of environmental and economic considerations.* Lack of advanced planning can lead to locating roads wherever space is available, which may be in a highly-sensitive environmental area.
- *Avoid building roads and bridges where they will impact riparian areas adjacent to surface waters and wetland areas.* These vegetated areas provide enormous water quality benefits through their ability to filter pollutants out of water passing through them.⁵

The EPA also recommends management practices for road inspection and general maintenance, snow and ice control, right-of-way maintenance, and road cleaning and debris removal.⁶

Unlike paved roads, gravel roads do not facilitate the scouring of pollutants in stormwater runoff; however, unpaved roads are more subject to erosion and therefore require special maintenance guidelines to prevent sedimentation of adjacent waterways. The U.S. Department of Transportation (USDOT) reports that there are 1.6 million miles of unpaved roads in the United States.⁷ USDOT has developed guidelines for the design, construction and maintenance of gravel roads that include methods of stabilizing and rehabilitating gravel roads in addition to dust control practices.⁸ These guidelines are presented in a manual that “describes and illustrates cost effective techniques and practices which can be used to enhance stability and maintenance of unpaved roadways while reducing sedimentation and improving the quality of surface waters.”⁹ These include climate-based roadbed soils, gradation requirements based on the plasticity of materials, proper drainage practices, methods of stabilization and dust control, and rehabilitation of degraded roads.¹⁰

The U.S. Forest Service has developed a best management practices field guide for designing low-volume roads that connect communities.¹¹ “Key issues that should be addressed when planning a road project include changes or negative impacts to the area that a road can cause which may be significant, irreversible, or difficult to mitigate.”¹² Low-impact rural roads should be well drained with stable slopes and driving surfaces. Planners also should consider lane width. For safe travel at slower speeds, low-volume roads do not require the wide highway lanes designed to accommodate heavy service vehicles. Narrowing each lane of a two-lane road by just two feet reduces pavement coverage by nearly one acre for every two miles of road length.

Towns should review their zoning codes and find opportunities to reduce road width in



Allowing narrower roads slows traffic while maintaining vegetated roadside buffers protects water quality.

development projects. In addition to mitigating a number of impacts described above, narrow streets can allow for more plantings, create space for grass swales and other stormwater infiltration practices, reduce traffic speeds, make developments more aesthetic, and prohibit pavement from being a dominant characteristic of the development.

Moreover, narrower streets are less expensive to build than wider streets. As noted by the Stormwater Manager’s Resource Center, the typical cost of paving a road is \$15 per square yard, yet “shaving even a mere four feet from existing street widths can yield cost savings of more than \$35,000 per mile of residential street...[S]ince narrower streets produce less impervious cover and runoff, additional savings can be realized in the reduced size and cost of downstream stormwater management facilities.”¹³

¹ See U.S. Environmental Protection Agency, *What is Nonpoint Source (NPS) Pollution?*, available at <http://www.epa.gov/owow/nps/qa.html> (last visited April 21, 2010).

² See ANDRES DUANY ET AL., *SUBURBAN NATION: THE RISE & THE DECLINE OF THE AMERICAN DREAM* 66 (2000).

³ *Id.* at 1.

⁴ U.S. ENVIRONMENTAL PROTECTION AGENCY, *CONTROLLING NONPOINT SOURCE RUNOFF POLLUTION FROM ROADS, HIGHWAYS AND BRIDGES* (1995) (EPA-841-F-95-008a), available at <http://www.epa.gov/owow/nps/roads.html> (last visited April 21, 2010).

⁵ *Id.*

⁶ See *id.*

⁷ See U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION, *GRAVEL ROADS MAINTENANCE AND DESIGN MANUAL* (2000) available at <http://www.epa.gov/owow/nps/gravelroads> (last visited April 21, 2010).

⁸ See *id.* at viii.

⁹ CHOCTAWHATCHEE, PEA AND YELLOW RIVERS WATERSHED MANAGEMENT AUTHORITY, RECOMMENDED PRACTICES MANUAL: A GUIDELINE FOR MAINTENANCE AND SERVICE OF UNPAVED ROADS (2000), *available at* <http://www.epa.gov/owow/nps/unpavedroads.html> (last visited April 21, 2010).

¹⁰ *See id.*

¹¹ *See* GORDON KELLER & JAMES SHERAR, U.S. DEPARTMENT OF AGRICULTURE, LOW-VOLUME ROADS ENGINEERING BEST MANAGEMENT PRACTICES FIELD GUIDE (2003), *available at* <http://zietlow.com/manual/gk1/web.doc> (last visited April 21, 2010).

¹² *Id.*

¹³ BETTER SITE DESIGN FACT SHEET: NARROWER RESIDENTIAL STREETS, *available at* http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool4_Site_Design/narrow_streets.htm (last visited April 21, 2010).

E. *Site Design*

STRATEGY 9: Require Compact, Cluster Designs

STRATEGY 10: Reduce Imperviousness and Promote Stormwater Infiltration

STRATEGY 11: Use Low-Impact Development (LID) Principles to Protect the Environment and Reduce Project Costs

STRATEGY 12: Use SEQRA to Require Better Site Designs and Use of Low-Impact Development (LID) Principles

STRATEGY 13: Stormwater Best Management Practices (BMPs) Must Address Site-Specific Runoff Conditions

STRATEGY 9: *Require Compact, Cluster Designs*

Problem

Many residential zoning ordinances encourage traditional development designs by requiring minimum lot sizes, uniform road frontage and lot setbacks, and specific standards for roads and other infrastructure. “In general, the only open space within such developments has been the yards between adjoining privately owned housing lots. In many cases, little planning went into preserving or improving the quality of the open-space areas or protecting natural features on the developed parcel.”¹ The result of this



Typical suburban zoning creates cookie-cutter subdivisions that fail to preserve natural features while allowing a high level of imperviousness on each lot.

planning oversight has been increased impervious areas, threatened surface and ground water supplies, lost open space and wetlands, increased flooding, and destroyed wildlife habitat.

Despite these impacts, many developers, town planners and local residents are wary of alternative site design practices that they fear may require more scrutiny, a longer review process, and greater capital investment than traditional site designs.²

Solution: *Use Cluster Development and Compact Site Design Principles to Reduce Imperviousness and Stormwater Runoff, Protect Water Quality, and Preserve Natural Areas*

The State Green Building Construction Act promotes green building design and prioritizes rehabilitation of existing structure over new construction and applies to all state-owned agency buildings. It amended the Energy Law and authorized the New York State Department of Environmental Conservation (DEC) to establish standards and regulations to achieve these goals.

Adverse environmental impacts of traditional development site planning can be mitigated by employing “cluster” or “open space” development: a site planning practice that “concentrates dwelling units in a compact area to reserve undeveloped space elsewhere on the site.”³ The objectives of cluster planning are to allow for development “while still protecting the area’s environmental features, allowing for more open space, and protecting farmland and the character of rural communities.”⁴

Benefits of cluster development include reductions in impervious area, soil erosion, stormwater runoff and pollutant loads, capital costs and the cost of public services required by the development.⁵ Benefits also include the preservation of open space, concentration of runoff where it can be treated with a wider variety of stormwater control practices, increased property values, and larger wildlife habitat areas.⁶ Based on research by the Center for Watershed Protection,⁷ the following recommendations are elements of cluster development that promote the protection of surface waters and preserve open space:

- 1) Adopt open space design for subdivisions that incorporate smaller lot sizes to minimize total impervious area, reduce total construction costs, conserve natural areas, provide community recreational space, and promote watershed protection by reducing pesticide and fertilizer application.
- 2) Relax residential lot setbacks and allow for narrower frontages to reduce total road length in the community and overall site imperviousness. Relax front setback requirements to minimize driveway lengths and reduce overall lot imperviousness.
- 3) Promote flexible design standards for residential subdivision sidewalks. Where practical, consider locating sidewalks on only one side of the street and providing common walkways linking pedestrian areas.
- 4) Reduce overall lot imperviousness by promoting the use of permeable pavers on driveway surfaces and shared driveways that connect two or more homes.
- 5) Clearly specify how community open space will be managed and designate a sustainable legal entity responsible for managing both natural and recreational open space.
- 6) Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas and avoid routing rooftop runoff to the roadway and the stormwater conveyance system.⁸

Conservation of natural areas within cluster developments can be accomplished by creating variable width, naturally vegetated buffer areas adjacent to perennial streams so that they provide protection of critical environmental features, such as 100-year floodplains, steep slopes, and freshwater wetlands. The riparian stream buffers should be preserved or restored with native vegetation and maintained through the plan review, delineation,



Cluster zoning can allow more flexible subdivision and lot design while strategically preserving open space.

construction, and post-development stages. In addition, the clearing and grading of forests and native vegetation on a site should be limited to the minimum necessary to build lots, allow access, and provide fire protection. A fixed portion of any community open space should be protected green space that is located in a consolidated manner. In these areas, trees and other vegetation should be preserved. Wherever practical, incorporate trees into community open space, street rights of way, parking lot islands and other landscaped areas.

Incentives and flexibility should be encouraged to promote cluster development and the conservation of stream buffers, forests and other areas of environmental value. Some of the incentives planners have employed to encourage developers to adopt cluster development practices include “an expedited review process, more flexibility in design and density, and a greater investment in education and training of consultants and landscape architects.”⁹

Where clustering has been achieved, conservation easements¹⁰ are a preferred method to protect open space, and municipalities should utilize them in cluster zoning ordinances. For example, the Town of Warwick in Orange County mandates in its cluster zoning ordinance that “the permanent preservation of such open space shall be legally assured to the satisfaction of the Planning Board and Town Attorney” and that the Town has the right to enforce the conservation easement or other binding instrument.¹¹

¹ University of Illinois Extension, *Local Community Resources: Cluster/Conservation Development*, available at, <http://www.urbanext.uiuc.edu/lcr/LGIEN2000-0010.html>, (last visited Feb. 12, 2008).

² See THOMAS SCHUELER, CENTER FOR WATERSHED PROTECTION, *SITE PLANNING FOR URBAN STREAM PROTECTION* 71 (1996).

³ See U.S. Environmental Protection Agency (U.S. EPA), *Open Space Development*, available at <http://www.epa.gov/nps/ordinance/openspace.htm>, (last visited April 21, 2010).

⁴ See University of Illinois Extension, *supra* note 1.

⁵ See THOMAS SCHUELER, *supra* note 2, at 61.

⁶ See *id.*

⁷ See generally, Center for Watershed Protection, available at <http://www.cwp.org> (last visited April 21, 2010).

⁸ See THOMAS SCHUELER, *supra* note 2, at 55 *et seq.*

⁹ *Id.* at 72.

¹⁰ For more information on conservation easements, see Strategy 26.

¹¹ Code of the Town of Warwick New York, Chp. 164, Art. IV, § 164-41.1(J).

STRATEGY 10: *Reduce Imperviousness and Promote Stormwater Infiltration*

Problem

Impervious surfaces, such as roads, driveways, parking lots, and rooftops, seal over natural surfaces and prevent infiltration of water into the soil.¹ When stormwater can no longer percolate through soil, stormwater runoff increases in volume and velocity, scouring from impervious surfaces a variety of pollutants including pesticides, heavy metals, motor oil, litter, animal waste, salt, sand and other materials, which then enter surface waters such as streams, lakes and drinking water reservoirs.²



Many commercial projects, such as the Poughkeepsie Galleria Mall (above), unnecessarily pave huge swaths of land for oversized parking lots while structured parking is more environmentally friendly and attractive. Photo by Giles Ashford.

The addition of impervious surfaces to watershed lands adversely impacts water quality, aquatic ecosystems, stormwater control, streambank stabilization, soils, vegetation, and human health. In addition to these environmental impacts, sprawl and its attendant impervious surfaces supplant open space with roads and other infrastructure, increase traffic volume and vehicle emissions, and degrade the natural beauty and character of areas undergoing urbanization.

There is a direct correlation between the amount of impervious surface and water quality. The Center for Watershed Protection classifies stream quality levels by the percent imperviousness of their watershed basins.³ For example, watershed stream basins in a range of 1-10% impervious cover are classified as “stressed streams,” basins with 11-25% cover are “impacted,” and those with greater than 25% cover are considered “degraded.”⁴ At covers as low as 5%, the water quality of surrounding water bodies can be severely impaired. In order to avert irreversible water quality degradation, it is necessary for municipalities to reduce the amount of imperviousness and adopt more environmentally friendly practices.

Solution: *Adopt Stormwater Best Management Practices that Reduce Imperviousness and Promote Infiltration*

The U.S. Environmental Protection Agency (EPA) has identified the use of porous pavement instead of concrete or asphalt pavers as a best management practice for stormwater control.⁵ Unlike impervious paving surfaces, pervious pavement allows stormwater to pass through a permeable layer and infiltrate into the soil instead of being transported to surface water supplies. Pervious pavers include “porous asphalt, porous

concrete, modular perforated concrete blocks, cobble pavers with porous joints or gaps or reinforced/stabilized turf.”⁶ All of these porous alternatives help to improve the quality of receiving waters. Although pervious pavers can reduce runoff and the associated pollutants that drain from an area, these materials are best suited for use in areas that are not exposed to high volumes of traffic or heavy equipment.⁷ They are predominantly used for driveways and streets in suburban areas and parking lots in urban areas. Pervious pavers also can clog if abrasives such as sand or other sediment are applied to their surfaces.⁸ For this reason, vacuuming or jet-washing to remove sediment from blocked pores is required.⁹ Despite these periodic maintenance requirements, pervious pavement is beneficial in treating contaminated stormwater runoff.



Biopavers (left) and other pervious pavers (right) allow stormwater to seep into the ground, helping to protect water quality and prevent flooding. Left photo by William Wegner.

Biopaving is a solution that protects the surrounding soil from contamination and reduces runoff and the need for additional stormwater treatment. This process is a new development in stormwater management that “integrates impervious surfaces and islands of biomitigating and bioremediating plant material; grasses and weeds such as crabgrass. These bio-islands of phytoremediating plants are manufactured into the product and unwrapped by the environment after installation through the biodegradation.” With its plant islands, biopaving allows contaminants to enter the porous soil along with stormwater. The contaminants are then taken up by plant roots through a natural defense mechanism for plants to ward off predators, a process called phytoremediation. Thus, runoff infiltrates into ground water aquifers while the plant islands render contaminants immobile. Like porous pavement, biopaving is ideal for sidewalks, driveways and parking lots.

Another practice that reduces the amount of stormwater runoff from impervious surfaces is the construction of green roofs. This practice can be employed on any type of building with a level roof. Green roofs detain stormwater, thereby preventing it from reaching surface waters, and also improve insulation, reduce ambient air temperatures, and prolong roof life.

Instituting an impervious surface tax also helps to persuade developers and landowners to adopt alternative practices such as porous paving and green roofs. Such a policy tool



Green roofs are attractive and cost effective while also providing stormwater treatment.

requires landowners to pay for treatment of stormwater runoff that is traced to their property. Thus, the more stormwater a land parcel generates, the higher the tax. Accordingly, this tax policy creates a strong incentive for landowners to limit or reduce the amount of impervious surface on their land.

Pervious pavers, biopaving, green roofs, and Smart Growth practices all contribute to mitigating the adverse impacts of impervious surfaces without imposing undesirable changes on community character. Because impervious cover is a leading cause of water quality degradation, it is essential that developers and municipalities adopt practices that restrict the addition of impervious surfaces now – before our lakes, streams and rivers become unsuitable for drinking water and recreational uses.

¹ See Chester L. Arnold & James Gibbons, *Impervious Surface Coverage: The Emergence of a Key Environmental Indicator*, 62 J. AM. PLANNING ASS'N 243, 245 (1996).

² See Jayne E. Daly, *The Protection of New York City's Drinking Water*, Commemorative Edition PACE L. REVIEW 63, 69-75 (1995).

³ See Tomas Schueler, *The Importance of Imperviousness*, 1 WATERSHED PROT. TECHNIQUES 100, 102 (1994).

⁴ *Id.* at 107.

⁵ See U.S. ENVIRONMENTAL PROTECTION AGENCY (U.S. EPA), PRELIMINARY DATA SUMMARY OF URBAN STORMWATER BEST MANAGEMENT PRACTICES 5-10 (1999), available at <http://www.epa.gov/waterscience/guide/stormwater/> (last visited Feb. 12, 2008). U.S. EPA also promotes low-impact development and use of green infrastructure to control stormwater runoff. See U.S. EPA, REDUCING STORMWATER COSTS THROUGH LOW IMPACT DEVELOPMENT (LID) STRATEGIES AND PRACTICES (2007), available at <http://www.epa.gov/owow/nps/lid/costs07/> (last visited Feb. 12, 2008).

⁶ *Id.*

⁷ See *id.*

⁸ See *id.*

⁹ See *id.*

Strategy 11: *Use Low-Impact Development (LID) and Better Site Design (BSD) Principles to Protect the Environment and Reduce Project Costs*

Problem

Adverse environmental impacts are associated with many conventional site design practices. These practices fail to minimize impervious areas, protect wetlands and buffers, or minimize the transport of contaminants to streams and reservoirs in stormwater runoff. Impervious surfaces on rooftops, parking lots and paved roads increase erosion and the volume of runoff that carries sediment to receiving waters. The disturbance of wetlands and buffers impairs their ability to filter the increased volume of stormwater runoff. Compounding the impacts of increased runoff volumes and the impairment of natural filters such as wetlands and buffers, the application of fertilizers and pesticides to landscaped areas increases the concentration of nutrients in stormwater runoff. Similarly, road salts applied during de-icing operations are transported to receiving waters during snowmelt and rain events. In addition to the environmental impacts associated with conventional site design, developers also face economic burdens of constructing infrastructure for stormwater controls and reduced lot yield as a result of siting drainage structures and stormwater management facilities being placed in otherwise developable areas.¹

Solution: *Utilize LID and BSD Principles*

The Low Impact Development Center explains that Low Impact Development (LID) principles can help protect the environment and water resources through comprehensive land use planning and engineering:

with a goal of maintaining and enhancing the pre-development hydrologic regime of urban and developing watersheds. In practice, LID design principles help to preserve the natural hydrological processes during rain events and reduce the concentration of pollutants that are captured and transported in stormwater runoff. This design approach incorporates strategic planning with micro-management techniques to achieve superior environmental protection, while allowing for development or infrastructure rehabilitation to occur.²

In cooperation with the LID Center, the U.S. Environmental Protection Agency (EPA) has compiled a comprehensive review of literature on environmentally sensitive site design principles that allow stormwater to infiltrate rather than run off of impervious surfaces.³ Additionally, EPA has developed a database of 220 studies that allow stormwater professionals to assess the performance of over 275 stormwater best management practices (BMPs).⁴ Titled the *Urban BMP Performance Tool*, EPA will periodically update the collection of studies, with an emphasis on the performance of LID practices. EPA “has found that implementing well-chosen LID practices saves money for developers, property owners, and communities while protecting and restoring water

quality.”⁵ Environmental benefits of LID practices include pollution abatement, protection of downstream water resources, ground water recharge, water quality improvements, habitat improvements, and reduced treatment costs.⁶ In fact, for every \$1,000 invested in construction costs:

- greenstreets, or pocket parks within developed areas, can reduce stormwater runoff volume by nearly 15,000 gallons per year;⁷
- green roofs can reduce runoff by more than 800 gallons per year;⁸
- street trees can reduce runoff by 13,000 gallons per year;⁹
- rain barrels can reduce runoff by \$9,000 gallons per year;¹⁰

In addition, the vegetated LID practices listed above remove air pollution (including greenhouse gasses such as carbon dioxide), increase property values, and cost less than end-of-pipe capture and treatment of stormwater.¹¹ The following section provides descriptions of several LID practices that promote infiltration of stormwater and thus reduce runoff volume and velocity.

Green roofs

Rooftop gardens replace conventional impervious roofs with soil and plants that capture and hold water in the plant foliage, absorb water in the root zone, slow the velocity of direct runoff, and reduce thermal shock by cooling the roof and air. Green roofs improve stormwater management by absorbing rain that falls on them and helping to regulate runoff temperature, velocity and volume. In addition, green roofs conserve energy. Their vegetation provides natural insulation in winter and reduces temperature fluctuations in summer. A typical tar roof can fluctuate 90 degrees in temperature between seasonal extremes, whereas a green roof typically fluctuates only 18 degrees.¹² This capacity to insulate can significantly reduce energy consumption and the costs associated with heating and air conditioning.



Green roofs can be used effectively on both residential and commercial buildings. By using native plants, green roofs can be sustained in a wide range of climates.

Pervious paving materials

Pervious pavement allows rainwater to infiltrate between tiles instead of sheet draining onto soils. This process reduces the need for additional stormwater management practices to capture runoff and promotes infiltration to more closely replicate the natural hydrology of the developed site. In addition to increasing groundwater recharge, pervious paving materials reduce the volume of polluted runoff reaching surface waters, reduce the need for irrigation by channeling stormwater to plants' root systems, and reduce the thermal impacts associated with asphalt and other impervious pavements.¹³



Pervious pavers come in a wide variety of shapes, colors and styles. They can add to a project's character and sense of place while enhancing water quality.

Green parking lots

Limiting imperviousness and capturing stormwater runoff in parking lots can be enhanced using site-specific BMPs. These practices “include setting maximums for the number of parking lots created, minimizing the dimensions of parking lot spaces, utilizing alternative pavers in overflow parking areas, using bioretention areas to treat stormwater, encouraging shared parking and providing economic incentives for structured [mutli-level] parking.”¹⁴

Grass swales

Grass or vegetated swales promote infiltration, capture suspended sediment, and reduce the velocity of stormwater runoff.¹⁵ Swales reduce peak flow rates and capital costs, but can be subject to erosion during significant storm events and are therefore most effective when used in sequence with filter strips, wet ponds, or other BMPs.¹⁶

Bioretention

Bioretention can be used in parking lots and on, or adjacent to, other impervious structures. This practice incorporates soils and plants to absorb rainwater, retain pollutants, and process nutrients as food for plants.¹⁷ Bioretention areas also enhance aesthetics by providing natural habitat on developed sites.

In consideration of the economic benefits of LID, sustainable low-impact site plans can increase developers' lot yields, reduce the number of linear feet of paved street and drainage pipe, and reduce the cost of infrastructure for installation of stormwater drainage structures.¹⁸ In addition to higher lot yield, the benefits realized from one studied LID project included increased lot value while lowering lot cost, enhanced marketability, additional amenities such as parks and open space, recognition by state and professional groups, and more than a \$2.2 million increase in the developer's profits.¹⁹



Vegetated filter strips (a type of bioretention) placed below grade easily capture and treat polluted runoff from parking lots while providing shade and enhancing the aesthetics of the space.

Better Site Design (BSD)

In addition to LID practices, which can be applied to new development on a large scale, BSD principles focus on reducing imperviousness and conserving natural habitat by scaling back project elements at the site level. The goals of BSD are “to reduce the amount of impervious cover, to increase natural lands set aside for conservation, and to use pervious areas for more effective stormwater treatment. To meet these goals, designers must scrutinize every aspect of a site plan – its streets, parking spaces, setbacks, lot sizes, driveways, and sidewalks – to see if any of these elements can be reduced in scale.”²⁰ Some effective BSD principles include shared driveways that connect two or more homes, narrower yard setbacks and frontages, narrower road widths based on traffic volume, minimizing parking stall dimensions, and minimizing the clearing and grading of trees and other native vegetation. For a comprehensive list of BSD principles and recommendations for incorporating them, visit the Center for Watershed Protection website.²¹

¹ See Ron Tyne, *Bridging the Gap: Developer Can See Green*, NATIONAL ASSOCIATION OF HOMEBUILDERS MAGAZINE, Spring-Summer 2000, at 28.

² The longer mission statement quoted in this report has recently been modified, but Riverkeeper chose to use the longer, more-descriptive explanation of goals of LID. For the revised statement, see Low Impact Development (LID) Center, *LID Center Mission*, available at <http://www.lowimpactdevelopment.org> (last visited April 21, 2010).

³ See U.S. Environmental Protection Agency, *Low Impact Development (LID) Literature Review and Fact Sheets*, available at <http://permanent.access.gpo.gov/websites/epagov/www.epa.gov/OWOW/nps/lid/lidlit.html> (last visited April 21, 2010); see also U.S. EPA, *Low Impact Development (LID) and other Green Design Strategies*, available at

<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=124>
(last visited April 21, 2010).

⁴ See U.S. EPA, *Urban BMP Performance Tool*, available at

<http://cfpub.epa.gov/npdes/stormwater/urbanbmp/bmpeffectiveness.cfm>, (last visited April 21, 2010).

⁵ U.S. EPA, REDUCING STORMWATER COSTS THROUGH LOW IMPACT DEVELOPMENT (LID) STRATEGIES AND PRACTICES iii (2007), available at

<http://www.epa.gov/owow/nps/lid/costs07/documents/reducingstormwatercosts.pdf> (last visited April 21, 2010).

⁶ See *id.* at 7-8.

⁷ See RIVERKEEPER, SUSTAINABLE RAINDROPS 16 (2006), available at <http://www.riverkeeper.org/wp-content/uploads/2009/06/Sustainable-Raindrops-Report-1-8-08.pdf> (last visited April 23, 2010).

⁸ See *id.* at 17

⁹ See *id.* at 16.

¹⁰ See *id.* at 19.

¹¹ See *id.* at 26.

¹² See U.S. EPA, VEGETATED ROOF COVER, PHILADELPHIA, PENNSYLVANIA, EPA-841-B-00-005D (2000), available at <http://www.epa.gov/owow/nps/roofcover.pdf> (last visited April 21, 2010).

¹³ Anne Balogh, The Concrete Network, *Pervious Concrete Pavements: The Environmentally Friendly Choice*, available at http://www.concretenetwork.com/pervious/enviro_benefits.html (last visited April 21, 2010).

¹⁴ The Stormwater Manager's Resource Center, *Better Site Design Fact Sheet: Green Parking*, available at http://www.stormwatercenter.net/Assorted%20Fact%20Sheets/Tool4_Site_Design/GreenParking.htm (last visited Feb. 12, 2008).

¹⁵ See U.S. EPA, STORMWATER TECHNOLOGY FACT SHEET: VEGETATED SWALES, EPA 832-F-99-006 (1999), available at www.epa.gov/owm/mtb/vegswale.pdf (last visited April 21, 2010).

¹⁶ See *id.*

¹⁷ See U.S. EPA, STORMWATER TECHNOLOGY FACT SHEET: BIORETENTION, EPA 832-F-99-012 (1999), available at <http://www.epa.gov/npdes/pubs/biortn.pdf> (last visited April 21, 2010).

¹⁸ See Tyne, *supra* note 1.

¹⁹ See *id.*

²⁰ Center for Watershed Protection, *Better Site Design*, available at <http://www.cwp.org/Store/index.htm> (last visited April 23, 2010).

²¹ See Center for Watershed Protection, *Site Planning Model Development Principles*, available at <http://www.cwp.org/Store/index.htm> (last visited April 23, 2010).

Strategy 12: *Use SEQRA to Encourage Better Site Design (BSD) and Use of Low-Impact Development (LID) Principles*

Problem

A majority of suburban subdivisions and commercial development proposals in the New York City Watershed and Hudson River Valley fail to use innovative and creative techniques to protect water quality and reduce stormwater impacts. Instead, many projects add excessive amounts of impervious surfaces, destroy more open space than necessary, and fail to conform to the limitations of natural features.

Local town and planning boards have, but infrequently utilize, their power to require better site design. Such techniques help watershed communities achieve the goals of reducing and limiting the amount of impervious cover, increasing the natural lands set aside for conservation, and using pervious surfaces for more effective stormwater management. The documented benefits of properly implemented better site design techniques include the following: 1) protecting local streams, lakes, wetlands, estuaries, forests, and habitats; 2) reducing stormwater pollutants; 3) reducing soil erosion during construction; 4) reducing development and construction costs; 5) increasing local property values and tax revenue; 6) encouraging pedestrian-friendly neighborhoods and safer residential streets; 7) promoting compliance with wetland and other resource protection regulations; 8) creating more aesthetic and naturally attractive landscapes; 9) incorporating neighborhood designs that provide a sense of community; and 10) increasing urban wildlife habitats through preservation of natural areas.

Solution: *Towns Should Use SEQRA Alternatives Analysis to Encourage BSD and Use of LID Principles*

The State Environmental Quality Review Act (SEQRA), which applies to development projects, requires an alternatives analysis for projects that must complete an environmental impact statement (EIS).¹ Central to any EIS is “consideration of such alternatives to various aspects of the project as might result in amelioration of environmental problems caused thereby.”² “The purpose of requiring inclusion of reasonable alternatives to a proposed project is to aid the public and governmental bodies in assessing the relative costs and benefits of the proposal. To be meaningful, such an assessment must be based on an awareness of all reasonable options other than the proposed action.”³

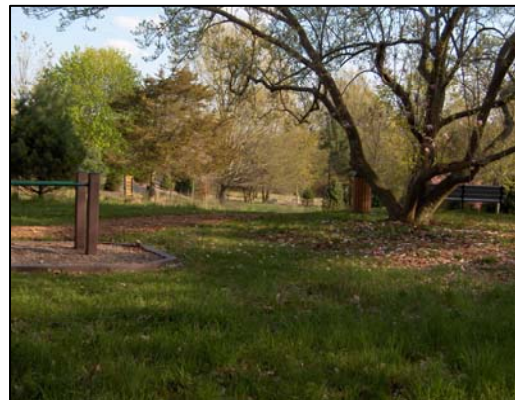


Stacked parking and use of low-phosphorous de-icers help MBIA mitigate potential impacts from roads and vehicles. Photo by William Wegner.

To incorporate better site designs into projects, we urge towns to undertake the following: for all projects preparing an EIS under SEQRA, require, in the Alternatives Analysis, an alternative that incorporates Better Site Design (BSD) and Low Impact Development (LID) principles. LID principles include, at the minimum, vegetated swales, pervious surfaces, rain gardens, rooftop gardens, downspout disconnections, narrower roads without curbs, etc. With this requirement, developers and officials quickly will learn the numerous economically feasible benefits available when creativity and innovation are incorporated into a project.

Using these principles, along with creativity and innovation, can result in development projects that provide economic growth, while being environmentally sensitive. For example, in 2002, the MBIA Insurance Corp. (MBIA) proposed to expand its corporate headquarters, which are located in the sensitive Kensico Reservoir watershed. As originally conceived, MBIA proposed construction of more than 250,000 square feet of new office and “amenity” space – including an office building of roughly 165,000 square feet, a 5-level parking structure, basketball and tennis courts, and a corporate meeting house. This plan would have paved over an additional 1.6 acres of green space that sits approximately 500 feet upslope from the Kensico Reservoir.

In 2003, Riverkeeper and an environmental coalition – including the Bronx Council for Environmental Quality, Federated Conservationists of Westchester County, Friends of Jerome Park Reservoir, Natural Resources Defense Council, New York Public Interest Research Group, and Sierra Club: Lower Hudson Group – developed a Low-Impact Alternative Plan (LIA) for the MBIA project. The LIA Plan provided the basis for further discussion, and ultimately, MBIA adopted and incorporated virtually all of the recommendations contained in the LIA Plan. The town also incorporated these items as conditions to site plan approval.



MBIA achieved BSD goals by removing paved areas from its original proposal. The proposed paved sculpture garden was replaced with grass (top) and proposed ball courts were relocated to the office rooftop. Unused homes and old infrastructure were removed and the area was returned to a natural meadow with a pervious recreational walking path (bottom). Photos by William Wegner.

Specifically, MBIA made legally-binding commitments to:

- 1) Achieve an approximate 11,700 square foot net reduction in impervious surface acreage from existing site conditions;
- 2) Place conservation easements on approximately seven acres of open space land that borders the Kensico Reservoir, with such easements to last in perpetuity upon completion of the headquarters expansion;



- 3) Not disturb wetlands and wetland buffers with impervious surfaces;
- 4) Follow an environmentally sound winter maintenance program (by eliminating the use of sand, and by committing to use of only low-phosphorous de-icers, such as Ice-B-Gone);
- 5) Implement an Integrated Pest Management program to maintain environmentally sensitive landscaping (by conducting visual inspections and applying treatments only when certain established thresholds of infestation/deterioration have been surpassed, by using only low-phosphorous fertilizers, and by refraining from use of pesticides, herbicides and fertilizers on established zones across the property, particularly the sensitive lands that border DEP property and the Kensico Reservoir); and



Routine maintenance, rough-cut buffers, and landscaping that follows Integrated Pest Management (IPM) practices all help to keep water clear in MBIA's stormwater basin. Photos by William Wegner.

- 6) Manage and maintain stormwater treatment systems on an on-going basis in accordance with a regular schedule (no less than twice each year), and in accordance with the New York State Department of Environmental Conservation's Stormwater Design Manual.

The success of this effort goes beyond resolution of the MBIA expansion project. It highlights the environmental community's ability to work cooperatively with commercial developers to achieve environmentally-sensitive low-impact designs, and curb sprawling patterns of growth by supporting responsible infill development in existing business centers.

¹ The SEQRA regulations require in an EIS:

(v) a description and evaluation of the range of reasonable alternatives to the action that are feasible, considering the objectives and capabilities of the project sponsor. The description and evaluation of each alternative should be at a level of detail sufficient to permit a comparative assessment of the alternatives discussed. The range of alternatives must include the no action alternative. The no action alternative discussion should evaluate the adverse or beneficial site changes that are likely to occur in the reasonably foreseeable future, in the absence of the proposed action. The range of alternatives may also include, as appropriate, alternative: ('a') sites; ('b') technology; ('c') scale or magnitude; ('d') design; ('e') timing; ('f') use; and ('g') types of action. For private project sponsors, any alternative for which no discretionary approvals are needed may be described. Site alternatives may be limited to parcels owned by, or under option to, a private project sponsor;

N.Y. COMP. CODES R. & REGS., tit. 6, § 617.9(b)(5)(v)(2008).

² Rye Town/King Civic Ass'n v. Town of Rye, 442 N.Y.S.2d 67 (2d Dept. 1981); *see also* N.Y. ENVTL. CONSERV. LAW, § 8-0109(1)(2007) (SEQRA mandates that agencies shall “choose alternatives which, consistent with social, economic and other essential considerations, to the maximum extent practicable, minimize or avoid adverse environmental effects, including effects revealed in the environmental impact process.”).

³ Webster Assocs. v. Town of Webster, 59 N.Y.2d 220, 228 (1983).

STRATEGY 13: *Stormwater Best Management Practices (BMPs) Must Address Site-Specific Runoff Conditions*

Problem

Stormwater runoff is widely cited as the greatest threat to the safety and quality of our waterways. According to the U.S. Environmental Protection Agency (EPA), 40% of U.S. waterbodies do not meet water quality standards, and the leading source of water quality impairment is polluted stormwater runoff.¹ Increasing rapidly in scale and spread, urbanized areas are the primary source of contaminated runoff. The proliferation of impervious surfaces represents the primary mechanism of rapid and concentrated pollutant transport into waterbodies. Sediment transported in runoff impacts “aquatic life by filling interstitial spaces of spawning gravels, impairing fish food sources, filling rearing pools, and reducing beneficial habitat structure in stream channels.”² In addition to the environmental impacts of sediment in runoff, the economic costs are astronomical. EPA cites a study that estimates the annual cost of damage due to sediment pollution in North America at \$16 billion.³



A small detention basin is sufficient to treat roadside stormwater (top) before it discharges, whereas an oversized structure wastes money while doing little to further improve water quality. Photos by William Wegner.

A multitude of structural best management practices (BMPs) are designed to capture and treat runoff, but many are limited by design for site-specific characteristics. For example, some pervious pavers and catch basin inserts will clog with sediment if the site is not adequately stabilized against erosion. In addition, undersized detention basins overflow during significant rain events and export polluted runoff to surface waters. In many cases, development spreads into sensitive natural areas such as wetlands and buffer zones. As a result, BMPs are often proposed to be sited within buffers. Infringement on buffers by BMPs impairs their ability to act as an intermediary area to wetlands. Siting detention basins or other structural practices within natural buffer areas displaces specific buffer functions and may intercept surface or groundwater flow when soils are cut and graded for installation.

Furthermore, the inherent performance value of BMPs varies from practice to practice. Some BMPs are designed primarily for flood control and provide few other water quality

benefits, and performance values for other BMPs are undocumented.⁴ Although recent research has contributed to better understanding of BMP performance, many underperforming practices are already in place and the considerable economic investment needed to retrofit or replace them with higher performing structures continues to threaten water quality.

Solution: Select Site-Specific Stormwater BMPs to Protect Water Quality Benefits and Achieve Regulatory Compliance

In its Nationwide Urban Runoff Program (NURP), the EPA identified various structural and non-structural BMPs that address pollution problems related to stormwater discharges.⁵ Both categories are “designed to improve the quality of urban and urbanizing streams and the larger water bodies to which they drain.”⁶ Structural practices include detention basins, porous pavement, vegetated swales, and other physical systems that employ infiltration to capture, treat and return stormwater to ground water aquifers so that it does not discharge overland to surface waters. Some structural practices attenuate the velocity of runoff (e.g., grassed swales, riprap) while others provide in-line pollutant removal (e.g., catch basin inserts). Non-structural practices include educational outreach programs, modified use of fertilizers and pesticides, low-impact development, and other programmatic management practices.

EPA stresses that:

the benefits of BMPs are site-specific and depend on a number of factors including:

- the number, duration and intensity of wet weather events;
- the pollutant removal efficiency of the BMP;
- the water quality and physical conditions of the receiving waters;
- the current and potential use of the receiving waters; and
- the existence of nearby “substitute” sites of unimpaired waters.⁷

To achieve the optimum pollutant removal efficiency at a given site, planners must consider these factors when selecting and designing stormwater BMPs. As the EPA notes, “[s]ome BMPs can represent a significant cost to communities, but these costs should be weighed against the various benefits they provide.”⁸

To control discharges from Municipal Separate Storm Sewer Systems (MS4s), the EPA has promulgated stormwater regulations that require urbanized areas to implement six minimum control measures: 1) public education and outreach, 2) public participation/involvement, 3) illicit discharge detection and elimination, 4) construction site runoff control, 5) post-construction runoff control, and 6) pollution prevention/good housekeeping. These elements are described in the EPA’s MS4 stormwater program overview.⁹ Because these measures include practices that encourage public education and involvement, the MS4 stormwater program affords grassroots environmental organizations a role in outreach programs and lends citizens an informed voice in decision-making processes that address stormwater management.

BMP Resources

A wide range of stormwater BMP design manuals are available from state and federal regulatory agencies. These manuals typically provide information on how to properly size, design, select, and locate stormwater BMPs at a development site to comply with New York's stormwater performance standards.¹⁰ The New York State Stormwater Design Manual was developed to comply with the State's "general permit for stormwater runoff from construction activities from all sizes of disturbance."¹¹ The New York State Department of Environmental Conservation (DEC) requires structural BMPs to capture and treat 90% of the average annual stormwater runoff volume and to protect stream banks from erosion due to flooding.¹²

The Center for Watershed Protection (CWP) co-authored the New York State Stormwater Design Manual with the DEC.¹³ CWP has conducted extensive research in stormwater management and has developed similar manuals for regulators in Massachusetts, Georgia, Vermont, Maryland, Virginia, and Washington, D.C.¹⁴

The EPA, the Water Environment Federation, and the American Society of Civil Engineers also produced a series of guidance documents that address stormwater BMP performance and selection.¹⁵ Readers should consult the aforementioned references for a thorough discussion of stormwater management design.

¹ See U.S. ENVIRONMENTAL PROTECTION AGENCY (U.S. EPA), *Stormwater Program Background*, available at <http://yosemite.epa.gov/R10/WATER.NSF/0/fd82644588a892f588256c41007d61b6?OpenDocument> (last visited April 21, 2010).

² U.S. EPA, NATIONAL MANAGEMENT MEASURES TO CONTROL NONPOINT SOURCE POLLUTION FROM URBAN AREAS 0-28 (2005), available at http://www.epa.gov/nps/urbanmm/pdf/urban_intro.pdf (last visited April 21, 2010).

³ See *id.* at 0-29.

⁴ See U.S. EPA, Preliminary Data Summary of Urban Storm Water Best Management Practices 1-2 (1999), available at <http://www.epa.gov/waterscience/guide/stormwater> (last visited April 21, 2010).

⁵ See *id.* at 2-2.

⁶ *Id.* at 6-1.

⁷ See *id.* at 1-2, 1-3.

⁸ *Id.* at 6-1.

⁹ See U.S. EPA, STORM WATER PHASE II FINAL RULE (2000), available at <http://www.epa.gov/npdes/pubs/fact1-0.pdf> (last visited April 23, 2010).

¹⁰ See NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL (2003), available at <http://www.dec.ny.gov/chemical/29072.html> (last visited April 21, 2010).

¹¹ *Id.*

¹² See *id.* at 4-2, 4-5.

¹³ See generally, CENTER FOR WATERSHED PROTECTION, available at <http://www.cwp.org> (last visited April 21, 2010).

¹⁴ See Center for Watershed Protection, *Stormwater Management*, available at http://www.cwp.org/stormwater_mgt.htm (last visited April 21, 2010).

¹⁵ For more detailed discussion of stormwater design, see U.S. EPA, MUNICIPAL WASTEWATER MANAGEMENT FACT SHEETS: STORM WATER BEST MANAGEMENT PRACTICES, EPA 832-F-96-001 (1996);

U.S. EPA, HANDBOOK: URBAN RUNOFF POLLUTION PREVENTION AND CONTROL PLANNING, EPA 625-R-93-004 (1993), *available at* <http://yosemite.epa.gov/water/owrcatalog.nsf/e673c95b11602f2385256ae1007279fe/55482854a27e9a1485256b0600723c26!OpenDocument> (last visited April 21, 2010); WATER ENVIRONMENT FEDERATION (WEF) AND AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE), DESIGN AND CONSTRUCTION OF URBAN STORMWATER MANAGEMENT SYSTEMS, WEF MANUAL OF PRACTICE NO. FD-20, ASCE MANUALS AND REPORTS OF ENGINEERING PRACTICE NO. 77(1992), Alexandria, VA, and New York, NY; and WEF AND ASCE, URBAN RUNOFF QUALITY MANAGEMENT, WEF MANUAL OF PRACTICE NO. 23, ASCE MANUAL AND REPORT OF ENGINEERING PRACTICE NO. 87 (1998), Alexandria, VA, and Reston, VA.

E. *Funding*

STRATEGY 14: Require New Development to Pay for Itself

STRATEGY 15: Utilize Purchase of Development Rights (PDR) and Transfer of Development Rights (TDR) as Disincentives to Sprawl

STRATEGY 16: Create Financing Options to Encourage Mixed-Use, Infill Development

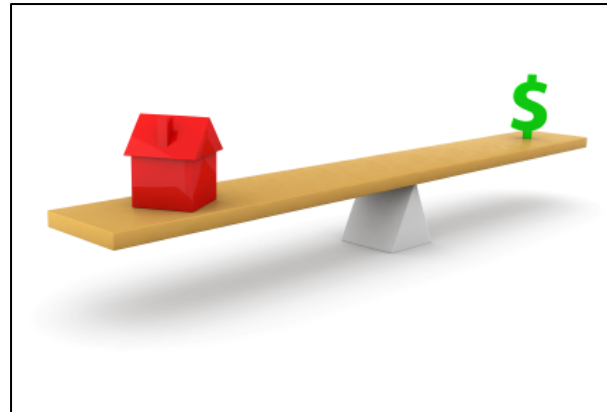
STRATEGY 14: *Require New Development to Pay for Itself*

Problem

When development occurs outside of a municipality's center, there are increased financial impacts upon city services and infrastructure. These impacts include the need for more schools, increased fire and police protection, additional road, sewage and stormwater infrastructure, among other requirements for supporting a larger, more dispersed population. Studies show that all too often, new development does not raise additional tax revenue, but is actually a drain to a community, which must pay the cost of providing new services to outlying areas.

Solution: *Use Economic Incentives to Promote Compact Development and Discourage Sprawl*

Aside from local zoning, there are two tools municipalities can use to discourage sprawl and focus desired development in community centers. In this way, municipalities are able to build and reinvent their communities rather than develop valuable open space lands, pushing people to the fringes and causing blight in decaying downtown areas. These two tools are: 1) "impact fees," also referred to as exactions; and 2) local ordinances that require cost benefit analysis to prove that new development will in fact pay for itself and not be a drain on existing municipal services.



Local communities must determine whether or not new development will truly pay for itself and not be a financial drain on existing residents.

Impact Fees

Impact fees differ from traditional exactions in that impact fees are: 1) typically paid at the time of issuance of a building permit; 2) broader than traditional exactions because they are not just assessed on subdivisions, but also upon condominiums and commercial development; 3) are typically based upon individual characteristics of each parcel, such as number of bedrooms, and therefore provide a closer correlation between impacts and assessment than do traditional exactions, which are based upon acreage; and 4) used to fund a greater variety of services and facilities than traditional exactions.¹

More than half the states, including New York, now authorize impact fees.² Where there is a lack of specific state authority to impose impact fees, courts look to whether a fee is a valid exercise of police powers, or whether it is an unauthorized tax.³ Generally, courts

look to see whether the fee is imposed upon the transaction of issuing a building permit or approval, rather than a tax imposed upon the land.⁴

Local communities in the Hudson River Valley should make more widespread, and more appropriate, use of impact fees. For example, New York Town Law provides that local planning boards may require a subdivision plat to reserve parkland.⁵ However, too often, a developer is not required to preserve open space on the proposed development parcel, but rather is charged an impact fee to support development of town parks or sports fields in another location. More novel approaches are needed to encourage more compact site and community design. For example, sliding-scale impact fees could be assessed based on:

- *Imperviousness*: To encourage compact footprints and keep impervious surface levels low, impact fees could be structured so that no tax would be assessed for proposals that stay under the scientifically supportable threshold of 8% imperviousness. To provide a deterrent, fees could then exponentially increase as imperviousness and the threats from stormwater runoff increased. Such a tax could help offset the community cost of stormwater collection and treatment as stormwater leaves developed sites and enters community stormwater systems (both Combined Sewer Overflows (CSOs) and Municipal Separate Storm Sewer System (MS4s).
- *Distance*: Distance-based impact fees could be used to promote downtown redevelopment and infill and offset the increased cost of providing community services to outlying areas. Growth boundaries around hamlet areas can be defined, inside of which development would not be taxed, but a distance-based tax. But, the farther outside a new development is proposed from the designated growth boundary, the greater the distance-based impact fee would be.

Cost-Benefit Analysis

While the State Environmental Quality Review Act (SEQRA) does envision some economic impact assessment, this requirement is often ambiguously interpreted, is rarely used to its fullest capacity, and does not require a pure cost-benefit analysis.⁶ However, as leading SEQRA experts note, “[t]he chief relevance of economics, however, is its role in the balancing process that is integral to decision-making under SEQRA.”⁷

SEQRA can be a useful tool to curtail development outside of an established community and does justify the use of cost-benefit analysis. SEQRA declares that “[s]ocial, economic, and environmental factors shall be considered together in reaching decisions on proposed activities.”⁸ Similarly, SEQRA mandates that agencies “shall act and choose alternatives which, consistent with social, economic and other consideration, to the maximum extent practicable, minimize or avoid adverse environmental effects....”⁹ Thus, SEQRA requires some assessment of both social and economic factors in the review process.

Assessing social and economic factors is often tied to the assessment of “community character.” In determining whether a proposed action will lead to a significant adverse environmental impact, lead agencies must compare the action against specific criteria, many of which relate to social and economic factors, including:

- (iv) the creation of a material conflict with a community's current plans or goals as officially approved or adopted;
- (v) the impairment of the character or quality of important historical, archeological, architectural, or aesthetic resources or of existing community or neighborhood character;
- (vi) a major change in the use of either the quantity or type of energy;
- (vii) the creation of a hazard to human health;
- (viii) a substantial change in the use, or intensity of use, of land including agricultural, open space or recreational resources, or in its capacity to support existing uses;
- (ix) the encouraging or attracting of a large number of people to a place or places for more than a few days, compared to the number of people who would come to such place absent the action; [and]
- (x) the creation of a material demand for other actions that would result in one of the above consequences;¹⁰

Additionally, New York’s leading court has concluded that “population patterns and neighborhood character are physical conditions of the environment under SEQRA...regardless of whether there is any impact on the physical environment.”¹¹ Though not often, some courts have annulled negative declarations that did not take a “hard look” at community character impacts.¹²

While SEQRA clearly supports economic and social impact assessment, it stops short of requiring a full cost benefit analysis. While a typical Environmental Impact Statement (EIS) will offer complete studies on traffic impacts, the same level of rigor is rarely applied to determine the financial impact to schools, and other public services and infrastructure. Using SEQRA as a foundation, municipalities should require more in-depth analysis of these issues in EISs or move to adopt local ordinances that require cost benefit analysis to prove that tax revenue from a proposed development will truly cover the increased costs of servicing that new development.

¹ See JOHN R. NOLON & PATRICIA E. SALKIN, *LAND USE IN A NUTSHELL* 121-22 (2006).

² See *id.*

³ See *id.*

⁴ See *Jordan v. Village of Menomonee Falls*, 28 Wis.2d 608, 137 N.W.2d 442, *appeal dismissed*, 385 U.S. 4 (1966) (Wisconsin Supreme Court upheld an ordinance that required dedication of land for schools, parks, and recreational facilities, or a fee in lieu thereof as a condition for subdivision plat approval). The *Jordan* case is known as a seminal case establishing a “reasonable relationship test” to apply to local ordinances requiring dedications for the proposed development. See *Dolan v. City of Tigard*, 512 U.S. 374 (1994) (establishing a “rough proportionality test” such that a “city must make some sort of individualized

determination that a required dedication is related both in nature and extent to the impact of the proposed development” in accordance with the Fifth Amendment).

⁵ See N.Y. TOWN LAW § 277(4)(a-c)(2007).

⁶ See MICHAEL B. GERRARD ET AL., ENVIRONMENTAL IMPACT REVIEW IN NEW YORK, § 5.10[12] (Matthew Bender, 2006) (hereinafter “GERRARD TREATISE”).

⁷ See *id.* at § 5.10[12].

⁸ N.Y. ENVTL. CONSERV. LAW § 8-0103(7)(2007).

⁹ N.Y. ENVTL. CONSERV. LAW § 8-0109(1).

¹⁰ See N.Y. COMP. CODES R. & REGS., tit. 6, § 617.7(c)(1)(2008).

¹¹ Chinese Staff & Workers Ass’n v. City of New York, 68 N.Y.2d 359, 366 (1986).

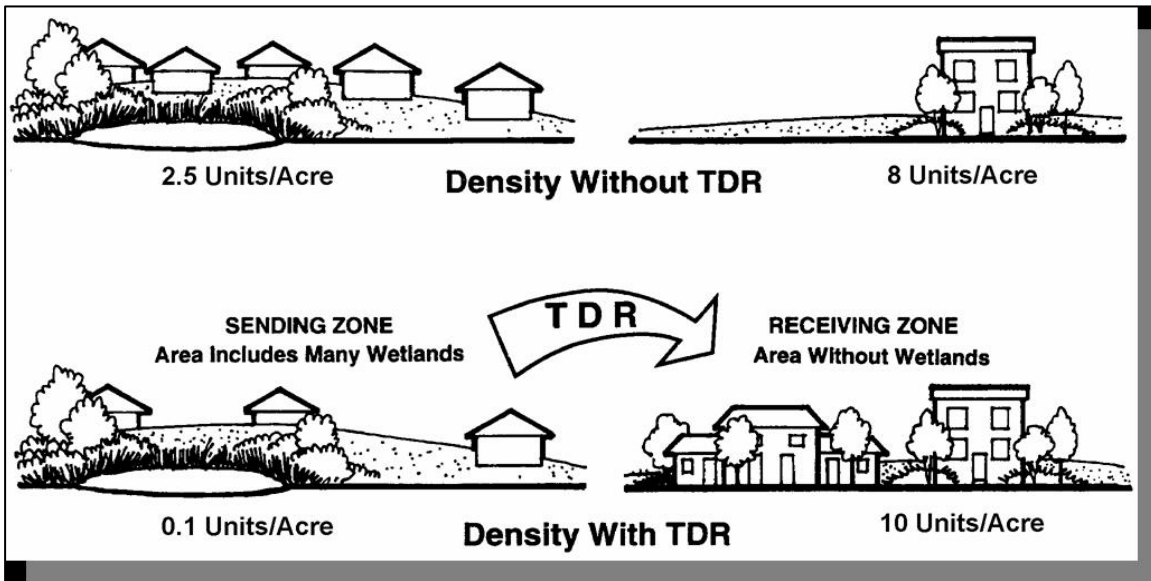
¹² GERRARD TREATISE, § 5.12[12]; *see e.g.* Allens Creek, Inc. v. Town of Penfield Planning Bd., No. 94/04855 (Sup. Ct. Monroe Co. Feb. 17, 1995)(annulling negative declaration for failure to address various environmental concerns, including impairment of the existing community or neighborhood character by subdivision construction).

STRATEGY 15: Utilize Purchase of Development Rights (PDR) and Transfer of Development Rights (TDR) as Disincentives to Sprawl

Problem

Transfer of development rights (TDR) and purchase of development rights (PDR) are terms describing tools allowing landowners to surrender the right to develop a parcel of land, either in exchange for transferring that right to different parcel (TDR) or financial compensation (PDR). Under a TDR program, a community or regulatory agency regulates site densities by allowing higher densities on some parcels in exchange for lower densities on other parcels.¹ In some sense, TDR is a method of “correcting” unsuitable densities otherwise allowed by zoning regulations.

Similarly, PDR allows a landowner to sell development rights to a parcel of land to a government agency or conservation organization, but retains all other ownership rights. The purchaser then commonly “retires” the development rights on that parcel.² This allows for preservation of open space at a lower cost than outright purchase of the land.



The image above is an illustration of parcel densities without TDR and with TDR development rights transfer to protect wetlands. This diagram is reproduced courtesy of Michigan Department of Environmental Quality, 1995, produced by Planning and Zoning Center and published in ELIZABETH RIGGS, POTENTIAL IMPACT OF TRANSFER OF DEVELOPMENT RIGHTS FOR MICHIGAN COMMUNITIES (2007).

New York is one of the few states to have an established PDR program and has approved tax expenditures for purchasing conservation easements.³ PDR was pioneered in Suffolk County, NY in 1974.⁴ More recently, in 2000 the Town of Warwick passed a \$9.5 million PDR program. By 2006, the successful Warwick PDR program had preserved 2,300 acres, including 12 farms. The concept of TDRs actually began in 1916 in New York City, to allow the transfer of “air rights” over established development.⁵ Thus, New York State essentially pioneered the idea of both TDR and PDR.

The problem is that PDR and TDR programs are largely underutilized or improperly implemented. Used correctly, PDR and TDR programs “can accomplish multiple goals, including farmland protection, protection of environmentally sensitive areas, the development of compact urban areas, the promotion of downtown commercial growth, and the preservation of historic landmarks.”⁶ Although municipalities in New York are authorized to use TDR, it has not yet been widely used.⁷ In 2003, the Town of Yorktown proposed a TDR program (the Density Reduction Program) when updating its Comprehensive Plan.⁸ But, controversy regarding the selection of appropriate sending and receiving sites was not resolved and the Density Reduction Program was not adopted in the final Comprehensive Plan.

Solution: New York State Should Promote Appropriate TDR and PDR as Tools to Discourage Sprawl

Given the continuing development pressure faced in New York, in particular the “sprawl creep” seen in its suburbs and exurbs, the State should expeditiously implement PDR and TDR programs on a wider scale. Ideally, the State would anticipate the pattern of development pressure and plan accordingly, before market prices prohibit use of these tools.⁹ One of the potential roadblocks to using PDR and TDR programs is the cost of acquiring or transferring development rights.¹⁰ By acting before these costs become prohibitive, this roadblock can be overcome. Early anticipation of development pressure and preservation needs can also prevent haphazard PDR and TDR use from resulting in fragmented land protection.¹¹

In 2000, Governor Pataki created the Quality Communities Interagency Task Force to study community growth in New York State and develop measures to help communities create and adopt land development and preservation strategies to promote both economic development and environmental protection. The 2000 Quality Communities Task Force report touted TDR and PDR as efficient and effective means of preserving sensitive land parcels.¹² In accordance with the findings of the Task Force, the State should now follow up with an aggressive promotion of these tools for combating sprawl.

¹ See, e.g., Sierra Club, *Stop Sprawl: A Catalog of Key Techniques*, available at <http://www.sierraclub.org/sprawl/resources/challenge/growth.asp> (last visited April 21, 2010).

² See *id.*

³ See NAN STOLZENBERG, ASSOCIATION OF STATE WETLAND MANAGERS, PLANNING AND ZONING TECHNIQUES FOR PROTECTING QUALITY OF LIFE: RESOURCE PROTECTION OPTIONS FOR COMMUNITIES (UNDATED), available at <http://www.aswm.org/lwp/nys/cqb-rpo.htm> (last visited April 21, 2010).

⁴ See Sierra Club, *supra* note 1.

⁵ See GERRIT-JAN KNAPP, AN INQUIRY INTO THE PROMISE AND PROSPECTS OF SMART GROWTH 14 (Draft Aug. 2002), available at http://www.smartgrowth.umd.edu/research/pdf/Knaap_SGInquiry_DateNA.pdf (last visited April 21, 2010).

⁶ AMERICAN FARMLAND TRUST, FACT SHEET: TRANSFER OF DEVELOPMENT RIGHTS (2001), available at http://www.farmlandinfo.org/documents/27746/FS_TDR_1-01.pdf (last visited April 21, 2010).

⁷ See QUALITY COMMUNITIES INTERAGENCY TASK FORCE, OFFICE OF THE GOVERNOR, STATE AND LOCAL GOVERNMENTS PARTNERING FOR A BETTER NEW YORK 60 (2001).

⁸ See TOWN OF YORKTOWN, DRAFT COMPREHENSIVE PLAN 5-4 (2003), *available at* http://www.yorktownny.org/Public_Documents/YorktownNY_CompPlan/draftplan2003/five.pdf (last visited April 21, 2010).

⁹ See QUALITY COMMUNITIES INTERAGENCY TASK FORCE, *supra* note 8.

¹⁰ See NAN STOLZENBERG, *supra* note 3.

¹¹ TDR in fact was used successfully to preserve 55,000 core acres of the Long Island Pine Barrens, which had been threatened by hundreds of development proposals. See KATHRYN M. RYAN, *OPEN SPACE IN NEW YORK* (2000).

¹² See QUALITY COMMUNITIES INTERAGENCY TASK FORCE, *supra* note 8.

STRATEGY 16: *Create Financing Options to Encourage Mixed-Use, Infill Development*

Sprawl is everywhere, and that type of development can't be sustained forever... My feeling is, if you're not doing infill development in the next 10 years, you won't be doing development at all. Developers who don't get on this bandwagon will be left behind. I think infill projects are rapidly becoming one of the most important games in town.¹

~ Fred Stemmler, partner for development and operations for Hopkins Real Estate Group.

Problem

Although national development corporations are gaining experience building and becoming more comfortable with mixed-used development, many smaller developers may not yet feel prepared to tackle these types of projects. In large part, this is due to the complicated financing arrangements that may be required, with different financing mechanisms and sources of funding being used for different portions of a project.²

Solution: *Create Builder Incentives and Financing Options*

Although banks are increasingly willing to lend money for mixed-use projects, they traditionally have been reluctant to do so.³ Thus, municipalities must be creative when it comes to financing. Further, more and more New York developers and municipalities are entering into public/private partnerships to better facilitate redevelopment projects. While some of the options presented here may be more feasible for cities or larger urban areas, they should nonetheless provide ideas for local governments that may not have the available moneys needed for development incentives. In addition, money need not always come from municipal budgets as numerous state and federal programs can often provide assistance.



Money can be found to finance complex multi-use redevelopment projects.

Offering incentives and assistance to builders will help ensure that successful infill development is achieved, which will then pay for itself over time. That being said, builder incentives can be abused if not properly implemented. Communities must consider the financial realities of their locale and would be well advised to seek professional expertise when considering whether or not any of the following options may be beneficial to the community as a whole. Some options to consider include:

Create Financing/Tax Incentives

- Industrial Development Agency (“IDA”): An IDA is a quasi-public entity that accomplishes public development goals by offering financial incentives (i.e., tax breaks) to attract, retain, and expand businesses within its jurisdiction. IDAs can acquire and sell land, issue tax-exempt bonds, and provide technical assistance for qualified projects.⁴
- PILOT Agreements: New York law allows local development agencies (or IDAs) to enter into a payment in lieu of taxes (“PILOT”) agreement in which a developer makes a fixed payment that is below what it would otherwise pay in property taxes.⁵
- Empire Zone Program: Qualified businesses are eligible for a wide range of benefits including personal or corporate tax credits, real property tax credits, sales tax exemptions, wage tax credits, and utility rate reductions.⁶
- Tax-increment Financing (TIF): TIF allows for the incremental increases in tax revenue that development generates to finance redevelopment projects aimed at blighted areas.⁷
- Tax-exempt Bonds or Loan Guarantees: IDAs are authorized to issue tax-exempt municipal bonds.⁸
- Self-taxing Business Improvement Districts (BIDs): A BID is an organization made up of property owners and commercial tenants dedicated to promoting business development and improving an area’s quality of life. BIDs deliver supplemental services such as sanitation and maintenance, public safety and visitor services, marketing and promotional programs, capital improvements, and beautification for the area - all funded by a special assessment paid by property owners within the district.
- State-sponsored, Short term Financing: Such financing can be used, for example, to convert buildings for desired new uses.
- Federal Tax Credits: Such credits can be used, for example, for affordable housing (ex. Low Income Housing Tax Credits) or rehabilitation of historic sites.
- Federal Empowerment Zone/Enterprise Community (EZ/EC) Program: This Federal initiative is designed to create long-term economic development in areas of deep poverty and unemployment. It provides financial incentives to rejuvenate depressed areas.

Forge Partnerships

- Municipal/Local Business Partnerships: Such partnerships can work to improve community character, for example, by improving signage, streetscapes, and highlighting recreational and tourism opportunities.
- Real Estate Investment Trusts (REITs): REITs often have the staff and sophistication to acquire and develop properties, and can access funding for infill projects because they can better manage risks than smaller developers.
- Community Development Corporations (CDCs): CDCs often can help coordinate planning efforts, and then approach investors and new businesses.
- Public/Private Partnerships through an IDA or Urban Renewal Agency: New York authorizes municipalities to create quasi-governmental agencies that serve as an intermediary corporation between the municipality and the private sector. New York law provides for local formation of (i) an Urban Renewal Agency⁹ and (ii) an IDA. These agencies facilitate redevelopment projects.
- Nonprofit Housing and Development Corporations: Such entities often have more experience and resources to coordinate infill projects. Some examples include:
 - Funders' Network for Smart Growth and Livable Communities¹⁰
 - Groundwork USA¹¹
 - National Main Street Center¹²

Federal Resources

- U.S Environmental Protection Agency (EPA): The EPA provides both technical assistance and grants for Smart Growth projects.¹³
- U.S. Department of Commerce, Economic Development Administration (EDA): The EDA provides assistance to “distressed communities to revitalize, expand, and upgrade their physical infrastructure to attract new industry, encourage business expansion, diversify local economies, and generate or retain long-term, private sector jobs and investment.”¹⁴
- U.S. Department of Housing and Urban Development (HUD): HUD provides assistance with economic development,¹⁵ community planning and development,¹⁶ and also offers New York specific information.¹⁷
- U.S. Department of Transportation (DOT): The DOT’s Federal Transit Administration provides grants to assist communities with transportation planning, vehicle purchases, facility construction, operations, and other transportation-related projects.¹⁸

New York State Resources

- Empire State Development (ESD): ESD’s Restore NY program encourages economic development by providing municipalities with financial assistance for commercial and residential revitalization.¹⁹ ESD also designates Environmental Zones where enhanced tax credits that are available through the Brownfield Cleanup Program apply.²⁰
- New York State Housing Trust Fund Corporation: The Office for Small Cities administers the federal Community Development Block Grant (CDBG) Program to provide funding to housing and community development. The New York State Small Cities Program provides assistance to smaller communities.²¹
- Division of Housing and Community Renewal (DHCR): The DHCR administers the Low-Income Housing Trust Fund Corporation, a public benefit corporation that provides State-funded loans and grants to for-profit and not-for-profit entities to develop housing for low-income families, the elderly, and those with special needs. It also administers the State’s Neighborhood and Rural Preservation programs, which provide funding to local not-for-profit organizations to implement housing preservation and development projects.²²
- Municipal Bond Bank Agency (MBBA): The MBBA promotes adequate capital markets and facilitates borrowing by municipalities for public improvement projects.²³
- Housing Finance Agency (HFA): The HFA provides financing to for-profit and non-for-profit developers to build new, and preserve existing, multifamily affordable housing.²⁴
- Office of Parks, Recreation and Historic Preservation (OPRHP): The OPRHP administers a number of grant programs to support parks, historic preservation and heritage area projects.²⁵

¹ Michele Lerner, *Filling in the Blanks*, NAREIT: REAL ESTATE PORTFOLIO, Jul./Aug. 2002, available at <http://www.nareit.com/portfoliomag/02julaug/feat3.shtml> (last visited April 21, 2010).

² For a more in-depth discussion of financing options, including information about understanding loan applications and financing criteria for different types of projects, see NORTHEAST-MIDWEST INSTITUTE AND CONGRESS FOR THE NEW URBANISM, STRATEGIES FOR SUCCESSFUL INFILL DEVELOPMENT 83-87 (2001).

³ For a general discussion of financing difficulties using the mixed-use Highlands’ Garden Village project in Denver, Colorado, see Seth A. Brown, *Why Building “Smart” is Hard*, THE NEXT AMERICAN CITY, Spring 2003, at 8-10.

⁴ See N.Y. GEN. MUN. LAW Art. 18-A (2007).

⁵ See N.Y. GEN. MUN. LAW § 858 (2007).

⁶ See N.Y. GEN. MUN. LAW Art. 18-B (2007).

⁷ See REINVENTING REDEVELOPMENT LAW: A GUIDE FOR LOCAL LEADERS 79 (Noelle V. Crisalli ed., Pace Law School, 2005).

⁸ See N.Y. GEN. MUN. LAW § 864 (2007).

⁹ See N.Y. GEN. MUN. LAW Art. 15-A (2007).

¹⁰ “The mission of the Funders’ Network for Smart Growth and Livable Communities is to inspire, strengthen, and expand philanthropic leadership and funders’ abilities to support organizations working to improve communities through better development decisions and growth policies.” Funders’ Network, *About the Funders’ Network*, available at <http://www.fundersnetwork.org/about/mission/> (last visited April 21, 2010).

¹¹ “The mission of the Groundwork USA network is to bring about the sustained regeneration, improvement and management of the physical environment by developing community-based partnerships which empower people, businesses and organizations to promote environmental, economic and social well-being.” Groundwork USA, *Mission*, available at http://www.groundworkusa.net/GW_USA/mission.html (last visited April 21, 2010).

¹² The National Trust Main Street Center is one of the nation’s largest full-service commercial district revitalization organizations. Established in 1970s, the Center helped develop the Main Street Four-Point Approach, a comprehensive methodology that has been used by over 1600 communities to revitalize their traditional commercial districts. The approach, which is tailored to meet local needs and opportunities, focuses the work of local staff and volunteers in four key areas, 1) organization, 2) design, 3) promotion, and 4) economic restructuring. See National Trust for Historic Preservation, *Main Street Center*, available at <http://www.preservationnation.org/main-street/about-main-street/the-approach/> (last visited April 23, 2010).

¹³ See U.S. Environmental Protection Agency, *Making Smart Growth Happen*, available at http://www.epa.gov/dced/sg_implementation.htm (last visited April 23, 2010).

¹⁴ U.S. Department of Commerce, Economic Development Administration, *Economic Adjustment Assistance Program*, available at <http://www.eda.gov/InvestmentsGrants/Pgmguide.xml> (last visited April 21, 2010).

¹⁵ See U.S. Department of Housing and Urban Development (HUD), *Economic Development*, available at <http://www.hud.gov/economicdevelopment/index.cfm> (last visited April 21, 2010).

¹⁶ See HUD, *Community Development*, available at <http://www.hud.gov/offices/cpd/communitydevelopment/index.cfm> (last visited April 21, 2010).

¹⁷ See HUD, *HUD in New York*, available at <http://www.hud.gov/local/index.cfm?state=ny> (last visited Feb. 12, 2008).

¹⁸ See U.S. Department of Transportation, *Grants & Financing*, available at http://www.fta.dot.gov/grants_financing.html (last visited April 21, 2010).

¹⁹ See Empire State Development, *Restore NY Communities Initiatives*, available at <http://www.empire.state.ny.us/BusinessPrograms/RestoreNY.html> (last visited April 21, 2010).

²⁰ See Empire State Development, *Brownfield Redevelopment*, available at <http://www.empire.state.ny.us/BusinessPrograms/BrownfieldCleanup.html> (last visited April 21, 2010).

²¹ See NYS Housing Trust Fund Corporation, Office for Small Cities, *Program Information*, available at <http://www.nysmallcities.com/ProgramInformation/default.asp> (last visited April 21, 2010).

²² See Division of Housing and Community Development, *Community Development*, available at <http://www.dhcr.state.ny.us/AboutUs/Offices/CommunityDevelopment/> (last visited April 21, 2010).

²³ See nyhomes.org, *History of the Municipal Bond Bank Agency*, available at <http://www.nyhomes.org/home/index.asp?page=40> (last visited April 21, 2010).

²⁴ See nyhomes.org, *New York State Housing Finance Agency (HFA)*, available at <http://www.nyhomes.org/home/index.asp?page=47> (last visited April 21, 2010).

²⁵ See Office of Parks, Recreation and Historic Preservation, *Grants Program Information*, available at <http://nysparks.state.ny.us/grants/> (last visited April 21, 2010).

II. LEGAL TOOLS: ADOPTING EFFECTIVE LAWS AND REGULATIONS



A. *Natural Resource Protection*

STRATEGY 17: Provide Federal Protection for all Waters

STRATEGY 18: New York State Must Improve Freshwater
Wetland Protections

STRATEGY 19: Limit Disturbance and Expand Wetland Buffer
Widths

STRATEGY 20: Prioritize Wetland Restoration and Enhancement

STRATEGY 17: *Provide Federal Protection for All Waters*

Problem

It is beyond question that wetlands and wetland buffers provide critical functions, which if lost, will have disastrous impacts on ecological and human health. Historically, wetlands have received federal protection under the Federal Water Pollution Control Act of 1972, now commonly termed the Clean Water Act (CWA).¹ The CWA protects “navigable waters,” which are defined in Section 502(7) to mean “waters of the United States.”² The CWA provides a basis for regulating the discharge of pollutants to “waters of the United States,” a term that for most of the CWA’s history has been interpreted to include not only navigable waters, but also their non-navigable tributaries and adjacent wetlands.³ But, the long-standing federal protections for wetlands and other intermittent headwater streams have been eroded by judicial decisions in recent years.

The SWANCC Decision

In January 2001, the U.S. Supreme Court’s decision in *Solid Waste Agency of Northern Cook County v. Army Corps of Engineers (SWANCC)* removed federal jurisdiction over so-called “isolated” wetlands where the sole basis for jurisdiction was use of such waters by migratory birds.⁴ Specifically, the Supreme Court invalidated the portion of the regulatory definition of “waters of the United States”⁵ – which is commonly referred to as the “Migratory Bird Rule”⁶ – as applied to the property of the petitioners in the *SWANCC* case. Although technically narrow, this decision has been more broadly interpreted by agency officials.

In January 2003, the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (ACOE) published an Advanced Notice of Proposed Rulemaking (ANPRM) to solicit information and data from the public to clarify the extent of CWA coverage of wetlands in light of *SWANCC*.⁷ This rulemaking could have removed federal protection from more than 60 percent of all watersheds – the smaller creeks and wetlands that form the headwaters of every river system – and impacted more than 9,000 square miles of small streams in the Hudson River Valley and New York City Watershed.⁸ However, a bipartisan group of 218 members of Congress, environmental agencies from 39 states, and groups representing conservationists, anglers and hunters spoke out and strongly opposed this ill-conceived plan. As a result, EPA and ACOE



Since 2001, the U.S. Supreme Court has been chipping away at long-standing protections for certain classes of waters, including “isolated” wetlands and intermittent streams.

announced in December 2003 that they would not go forward with the proposed rulemaking.⁹

While the proposed rulemaking was stopped, a dangerous policy guidance remains in effect¹⁰ that continues to weaken federal jurisdiction and enforcement capability under the CWA, and continues to threaten an estimated 20 million acres of wetlands (20% of the wetlands in the United States, excluding Alaska) and countless miles of small streams.

Ostensibly, the joint EPA/ACOE policy guidance, issued with the ANPRM in January 2003, was offered to clarify issues of jurisdiction in light of the *SWANCC* decision and subsequent case law, but it is unnecessary and harmful. The current guidance: 1) provides an overly broad interpretation of the *SWANCC* decision, one that is more broad than the policy guidance previously issued in 2001,¹¹ and 2) hamstring enforcement efforts by directing EPA and ACOE field staff not to assert jurisdiction over all isolated, intrastate, non-navigable wetlands and waters previously protected by 33 C.F.R. § 328.3(a)(3)(i)-(iii) without getting prior approval from agency headquarters.¹²

In many cases, ACOE is now refusing jurisdiction over so-called “isolated” wetlands when reviewing Section 404 permit applications, despite the fact that it had found the same wetlands to be jurisdictional during earlier wetland delineation assessments. A 2004 report by the U.S. General Accounting Office (GAO) surveyed 16 of 38 ACOE district offices to assess the impact that the *SWANCC* decision has had on jurisdictional determinations. The GAO report states that, “Corps districts differ in how they interpret and apply the federal regulations when determining what wetlands and other waters fall within the jurisdiction of the federal government.”¹³ In addition, the GAO found that while different districts “used generally similar criteria to identify the jurisdictional limits of tributaries, they used differing approaches in how they apply these criteria.”¹⁴ In addition, only 13 of the 16 districts surveyed make documentation of their practices for making jurisdictional determinations available to the public.¹⁵

Due to the discrepancies documented in the GAO report, ACOE has agreed to have district offices report any negative jurisdictional determinations involving issues raised by *SWANCC* to EPA for one year; however, ACOE refused EPA’s request that district offices coordinate with EPA prior to making such determinations.¹⁶ EPA also agrees that it would be “helpful” to make determination criteria and practices, and jurisdictional determinations available to the public.¹⁷ However, a clear Congressional mandate would provide a faster and more coherent solution than this piecemeal administrative approach. To stop further dismantling of the CWA by administrative tinkering with the regulatory framework, Congress must reassert the clear intent of the CWA to protect and restore *all* waters of the United States, and end the disparate treatment of wetlands across the Nation.¹⁸

The Rapanos Decision

Another dangerous attack to the jurisdictional scope of the CWA came in 2006 when the Supreme Court issued its controversial and sharply divided decision in the consolidated cases of *Carabell v. United States* and *Rapanos v. United States (Rapanos)*.¹⁹

In *Rapanos*, the Petitioners argued that CWA protections apply only to “traditional navigable” waters (those suitable for use by commercial vessels) and those wetlands and streams directly adjacent to those waterways. In particular, unlike the abandoned quarry ponds in *SWANCC* – which did not share proximity, or demonstrate hydrological or ecological connections (beyond migratory bird use) with other waters – the waters at issue in *Rapanos* involved tributaries to larger water bodies (specifically, the Great Lakes) and wetlands adjacent to those tributaries.

In a split 4-1-4 decision, the Court’s plurality opinion held that wetlands adjacent to non-navigable tributaries are “waters of the United States” subject to CWA jurisdiction *only* if two conditions are met: 1) the tributary to which the wetland is adjacent is a “relatively permanent” waterbody; and 2) the wetland has a “continuous surface connection” with the tributary.

In a separate, concurring opinion, Justice Kennedy articulated a “significant nexus” test, requiring that wetlands or waters falling within the scope of the CWA’s Section 404 jurisdiction possess a “significant nexus” to waters that are or were “navigable in fact” or that “could reasonably be so made.”²⁰ In practice, the new “significant nexus” test is administratively burdensome to apply and is not based on accurate scientific principles of hydrology.

Rapanos thus opens the door to removing CWA protection for our nation’s vital network of small headwater streams, intermittent creeks and their associated wetlands. Alarming, EPA estimates that *Rapanos* could remove CWA protection from 53-59 percent of the Nation’s waters (excluding Alaska); other scientists and environmental groups believe this is a conservative estimate and that a far greater percentage of our Nation’s waters could lose protection.

Like *SWANCC*, the *Rapanos* decision has also resulted in an overly broad and confusing EPA/ACOE policy guidance, whereby agency staff have to incorporate a confusing combination of the *Rapanos*’ plurality and concurring opinions. It is of little surprise, therefore, that *Rapanos* has already resulted in a flurry of litigation (since the 2006 decision, there have been at least four Courts of Appeals rulings and eight federal district court rulings, each rendering vastly inconsistent verdicts.²¹

Solution: *Pass the Clean Water Restoration Act of 2007 (H.R. 2421/S. 1870)*

The Clean Water Authority Restoration Act (CWRA) was offered each session since 2002, and was reintroduced in 2007 as the Clean Water Restoration Act (CWRA).²² If passed, CWRA will put an end to the state of confusion that *SWANCC* and *Rapanos* have

engendered and return to the “status quo” of CWA regulation that was in place for thirty years, prior to 2001. CWRA will provide a clear mandate and reassert that Congress intended the CWA to protect from pollution *all* “waters of the United States,” including “isolated” wetlands and headwater streams. It will amend the CWA and clearly define “waters of the United States” to include “intrastate” and “intermittent” waterbodies.²³ Specifically, it will:

- *Replace disputed terms*: CWRA will amend the CWA to replace the problematic term “navigable waters,” throughout the Act, with the term “waters of the United States,”²⁴ and
- *Correctly define “waters of the United States”*: CWA Section 502 will be amended to define “waters of the United States” as “all waters subject to the ebb and flow of the tide, the territorial seas, and all interstate and intrastate waters and their tributaries, including lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, and all impoundments of the foregoing, to the fullest extent that these waters, or activities affecting them, are subject to the legislative power of Congress under the Constitution.”²⁵

This legislative solution would resolve the shortcomings of the *SWANCC* and *Rapanos* decisions by specifically including interstate, intermittent waterbodies and wetlands as “waters of the United States,” and thus would assure environmental protection for these critical waters, regardless of navigability.

¹ See 33 U.S.C. §§ 1251-1387 (2001).

² See 33 U.S.C. § 1362 (2001).

³ Certain wetlands are included in the applicable U.S. Environmental Protection Agency (U.S. EPA) and Army Corps of Engineers (ACOE) *regulatory* definitions of “waters of the United States.” See 40 C.F.R. § 122.2 (1983); 40 C.F.R. § 232.2(q) (1983); 33 C.F.R. § 323.2(a) (2002); 33 C.F.R. part 238.3(a) (2002). See also *United States v. Bayview Homes, Inc.*, 474 U.S. 121, 123 (1985) (which held that the ACOE acted reasonably in interpreting the CWA to require permits for the discharge of material into wetlands adjacent to other “waters of the United States”). Generally, federally regulated wetlands are those that are “adjacent to navigable waters or their tributaries and those, the use, degradation or destruction of which could affect interstate commerce.” NICHOLAS A. ROBINSON, *THE TREATISE ON NEW YORK ENVIRONMENTAL LAW* 370 (1992).

⁴ See 531 U.S. 159 (2001).

⁵ See 33 C.F.R. § 328.3(a) (2002).

⁶ See 51 Fed. Reg. 41,217 (1986).

⁷ See Advance Notice of Proposed Rulemaking on the Clean Water Act Regulatory Definition of “Waters of the United States,” 68 Fed. Reg. 1991-01 (Jan. 15, 2003) [hereinafter “ANPRM”].

⁸ For further examination of the scientific importance of small wetlands, see JUDY L. MEYER ET AL., *WHERE RIVERS ARE BORN: THE SCIENTIFIC IMPERATIVE FOR DEFENDING SMALL STREAMS AND WETLANDS* (American Rivers; Sierra Club 2007), available at http://www.rivercenter.uga.edu/publications/pdf/scientific_imperative.pdf (last visited April 23, 2010).

⁹ See Press Release, U.S. EPA, EPA and Army Corps Issue Wetlands Decision (Dec. 16, 2003), available at <http://yosemite.epa.gov/opa/admpress.nsf/b1ab9f485b098972852562e7004dc686/540f28acf38d7f9b85256dfe00714ab0?OpenDocument> (last visited April 21, 2010).

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- ¹⁰ See ANPRM, *supra* note 7, Appendix A, at 20.
- ¹¹ See Memorandum from U.S. EPA and ACOE, Supreme Court Ruling Concerning CWA Jurisdiction over Isolated Wetlands (Jan. 19, 2001).
- ¹² See ANPRM, *supra* note 7, Appendix A.
- ¹³ U.S. GEN. ACCOUNTING OFFICE, WATERS AND WETLANDS: CORPS OF ENGINEERS NEEDS TO EVALUATE ITS DISTRICT OFFICE PRACTICES IN DETERMINING JURISDICTION 3, GAO-04-297 (February 2004).
- ¹⁴ *Id.* at cover page.
- ¹⁵ *Id.* at 27.
- ¹⁶ See *id.* at 15.
- ¹⁷ See *id.* at 29.
- ¹⁸ See 33 U.S.C. § 1251(a) (stating that “[t]he objective of this chapter is to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters”).
- ¹⁹ See 547 U.S. 715 (2006).
- ²⁰ In order to find a “significant nexus,” the wetland or water at issue must, either alone or in combination with similarly situated lands, have a significant effect on the chemical, physical and biological integrity of traditional navigable waters.
- ²¹ See ENVIRONMENTAL LAW INSTITUTE, THE CLEAN WATER ACT JURISDICTIONAL HANDBOOK (2007).
- ²² See Clean Water Restoration Act of 2007, H.R.2421, 110th Cong. (2007), available at <http://thomas.loc.gov> (last visited April 21, 2010).
- ²³ *Id.*
- ²⁴ *Id.*
- ²⁵ *Id.*

STRATEGY 18: *New York State Must Improve Freshwater Wetland Protections*

Problem

Wetlands and wetland buffers provide critical functions that protect ecological and human health. Because the New York State Freshwater Wetlands Act primarily protects wetlands that are 12.4 acres and larger, New York historically has relied on the U.S. Army Corps of Engineers (ACOE) to protect the vast majority of smaller wetlands throughout the State.¹ However, since 2001, ACOE has largely stopped regulating so-called “isolated” wetlands,² claiming it lacks legal authority to do so as a result of the Supreme Court ruling in *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers (SWANCC)*, 531 U.S. 159 (2001) and subsequent ACOE/Environmental Protection Agency (EPA) policy guidance issued in 2003.



While this wetland is protected as part of the Turkey Mountain Nature Preserve in the Town of Yorktown, similar small, seasonal wetlands are not protected under New York law. Photo by Leila Goldmark.

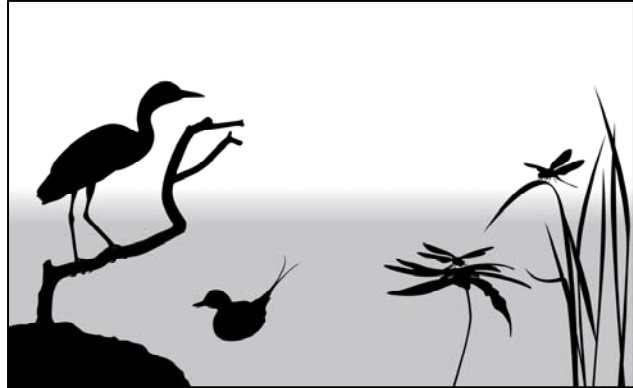
The result of these federal rollbacks is that hundreds of wetlands threatened by development in New York are not protected by either the State or the federal government. In 2005, the Environmental Integrity Project reported that New York is among the top 15 states for federal wetlands losses following federal rollbacks.³ A survey of ACOE records for the period 2001 – 2005 conducted by the Natural Resources Defense Council (NRDC) identified more than 330 sites, each with at least one wetland that ACOE said it would no longer protect.⁴ These wetlands would have been federally protected prior to 2001. Similarly, the Attorney General’s Office recently reviewed all wetland permit determinations available following federal rollbacks (New York District 2002-2004, Buffalo District 2001-2004).⁵ Fully 45 % (562) of the applications received were found to be non-jurisdictional by ACOE.⁶ Of those, only one application was found that qualified for regulation under State law.⁷

Following *SWANCC*, several states, including Wisconsin, Indiana and Ohio, upgraded their freshwater wetland protection laws to regulate the wetlands that ACOE no longer protects. Other northeastern states, including Pennsylvania, New Jersey, Connecticut, Massachusetts, New Hampshire, Vermont and Maine already had adequate wetland protection laws on the books – basing regulation on scientific criteria, not wetland size – so no corrective action was necessary. Unlike many other states, New York established its own wetlands protection law in 1975. However, this law authorizes the New York Department of Environmental Conservation (DEC) to regulate only 1) mapped wetlands,

which are 12.4 acres or more, or 2) wetlands of unusual local importance.⁸ Because State law and regulatory maps are woefully outdated and New York can no longer rely on federal efforts to protect our smaller State wetlands, it is crucial that the State act now to protect these vital wetland resources on its own.

Solution: *Pass the Clean Water Protection / Flood Prevention Act to Protect New York State Wetlands*

The Clean Water Protection/Flood Prevention Act (A.7133/S.3835) will amend the current New York State Freshwater Wetlands Act to regulate wetlands one acre or larger, and ensure that our wetlands receive State protection even if existing federal protections are weakened or removed.⁹



The proposed legislation would remedy this problematic reliance on now-questionable federal protection by:

Many wetland-dependant species require wetlands of different sizes – including small, seasonal wetlands – during different stages of their life cycle.

- lowering the jurisdictional threshold from 12.4 to one acre (wetlands under one acre that are adjacent to other waterbodies, or of significant local importance would also be regulated);
- removing grandfathering provisions that allow certain activities to be undertaken without a permit;
- changing the basis for jurisdiction from whether a wetland is mapped to whether the land at issue meets the scientific criteria for wetland designation;
- streamlining the mapping process so that maps more accurately reflect the actual presence of wetlands throughout the State;
- ensuring that citizens and municipalities have input in the development of the wetland map; and
- eliminating the current classification system, which undervalues riverine and forested wetlands, the primary wetland type in many parts of the State.¹⁰

Healthy, functioning wetlands of any size are vital to protect our water quality, prevent erosion and flood damage, provide unique fish, plant and wildlife habitat, and preserve valuable educational and tourism destinations. It is, therefore, crucial for the State to lower the regulatory threshold one acre.

¹ See N.Y. ENVTL. CONSERV. LAW § 24-0301(1)(2007).

² So-called “isolated” waters and wetlands are defined by caselaw as intrastate, intermittent waters lacking a year-round surface connection or other “significant nexus” to a jurisdictional “water of the U.S.” See

Solid Waste Agency of Northern Cook County (SWANCC) v. United States, 531 U.S. 159 (2001). From a scientific, hydrologic standpoint, extremely few wetlands truly are isolated and lack a surface or groundwater connection to other waterways. As noted in a report examining the scientific importance of headwater streams and isolated wetlands:

even wetlands that are referred to as “isolated” are not isolated at all, but have both hydrologic and biologic linkages to regional aquatic systems, and thus are referred to as “geographically isolated” and remain significantly related. Wetlands are almost always linked to stream networks and other wetlands through groundwater.

JUDY L. MEYER ET AL., WHERE RIVERS ARE BORN: THE SCIENTIFIC IMPERATIVE FOR DEFENDING SMALL STREAMS AND WETLANDS 9 (American Rivers; Sierra Club 2007), *available at*

(http://www.rivercenter.uga.edu/publications/pdf/scientific_imperative.pdf last visited Feb. 12, 2008).

³ See ENVIRONMENTAL LAW INSTITUTE, STATE WETLAND PROGRAM EVALUATION: PHASE I (Jan. 2005).

⁴ See NATURAL RESOURCES DEFENSE COUNCIL (NRDC), DETERMINATIONS OF NO JURISDICTION FOR WETLANDS IN NEW YORK STATE BY THE U.S. ARMY CORPS OF ENGINEERS (Aug. 17, 2005) (unpublished study).

⁵ This information is not published, but was orally presented at a wetlands conference in Albuquerque, NM. Lemuel Srolovic, Environmental Protection Bureau Section Chief, Office of the New York State Attorney General, Identifying “Waters of the U.S.” After SWANCC (October 18-19, 2005).

⁶ See *id.*

⁷ See *id.*

⁸ See N.Y. ENVTL. CONSERV. LAW § 24-0301(1).

⁹ See A.7133, 2007-2008 Reg. Sess. (NY. 2007).

¹⁰ See *id.*

STRATEGY 19: *Limit Disturbance and Expand Wetland Buffer Widths*

Problem

While New York State and many municipalities regulate activities within wetlands themselves, wetland buffers (or wetland adjacent areas) often remain unregulated, or the regulated area is too small to adequately protect vital buffer functions. Vegetated wetland buffers provide transitional areas that intercept stormwater from upland habitat before it reaches wetlands or other aquatic habitat. Water quality benefits of buffer zones include reducing thermal impacts (shade), providing nutrient uptake, providing infiltration, reducing erosion, and restoring and maintaining the chemical, physical and biological integrity of water resources.¹ Buffers also filter sediment, pesticides, heavy metals and other pollutants from stormwater, and reduce nutrient loadings to wetlands by uptake in vegetation and denitrification,² thereby protecting wetlands from excessive loadings and allowing them to perform similar functions without overloading of contaminants. Buffers also function to store water and reduce peak runoff velocities during storm events and provide unique recreation, academic and aesthetic opportunities.³ In addition, buffers provide habitat for flora and fauna and corridors for wildlife to move between larger sections of habitat.⁴



Eliminating buffers allows nutrient-laden stormwater to run off directly into waterways without the pretreatment benefits that buffers provide.

While recommendations and requirements vary among states and regions, water quality benefits are significant when protected buffers exceed the common minimum 100-foot width. A survey of scientific literature by the Environmental Law Institute, specifically pertaining to thresholds applicable to land use decision-making, found that “land use planners should strive to establish 100-meter [328.08 feet] wide riparian buffers to enhance water quality and wildlife protection.”⁵ In addition, case studies have documented that 100-foot buffers failed to prevent sediment discharge after clearing⁶ and allowed various pollutants to enter surface and groundwater supplies, including nutrients⁷ and pesticides.⁸

In addition to failing to protect buffers of adequate size, planners frequently allow unwise disturbance within existing buffers. For example, siting stormwater management practices in buffers can impair buffer function by clearing trees, sacrificing stream channels located above the practice, altering existing wetland hydrology, and increasing thermal impacts.⁹ Additional practices that impair buffer function include the application of landscaping chemicals, clearing of healthy vegetation, construction activities, and siting landscaped areas, roads and other impervious surfaces adjacent to buffers. These

practices can increase the discharge of sediment, nutrients and pesticides into buffers and thereby compromise their ability to intercept and retain stormwater runoff before it enters wetlands or other aquatic systems.

Solution: State Law and Local Ordinances Should Increase Buffer Widths to at Least 150 Feet and Limit Disturbance of Buffers

Wetland buffer ordinances should regulate buffer widths to a minimum of 150 feet and also require: 1) boundaries to be clearly marked on local planning maps; 2) maintenance language that restricts disturbance of vegetation and soils; 3) tables that illustrate buffer width adjustment by percent slope, wetland proximity, critical areas, etc.; and 4) direction on allowable uses and public education.¹⁰ In the heavily developed East-of-Hudson Watershed, nearly all municipalities have local wetland ordinances, and several communities are taking progressive steps to increase buffer protections. The Towns of Lewisboro and Pound Ridge have expanded their regulated buffer widths to 150 feet. Other municipalities, including Bedford and Somers, have considered, but not yet adopted, amendments to expand buffer protection ordinances and regulations to 150 feet.



Water quality benefits can be achieved by limiting lawn area and establishing “no mow” zones. Photo by Leila Goldmark.

Additional measures municipalities can implement to enhance buffer function include:

- prohibiting the siting of stormwater management practices in stream and wetland buffers;
- developing an Integrated Pest Management (IPM) program to reduce or eliminate the application of chemical pesticides;
- prohibiting the use of traditional high phosphorus-content fertilizers, and instead encourage alternative low or no phosphorus fertilizer use when necessary;
- prohibiting, or requiring a permit for, all mowing, trimming and removal of healthy vegetation in wetland buffers;
- requiring infiltration practices wherever practicable in order to reduce stormwater runoff onto buffer lands; and
- restricting permitted activities in buffers with steep slopes or erodible soils.

Although the average wetland buffer width is 100 feet, more environmentally proactive planners have established wider buffers.¹¹ One hundred feet is considered the *minimum* buffer width recommended for water quality protection.¹² But, depending on a waterbody’s position in the watershed, the composition and density of vegetation present,

adjacent land use and slope, buffers can require thousands of feet to provide ecological functions and benefits.¹³

The following are examples of wider buffers recommended to protect specific functions:

- Water Quality Improvement: For water quality improvement, the National Resources Conservation Service recommends 150 feet for forested buffer strips.¹⁴
- Flood Prevention: To intercept overland runoff, promote floodplain storage, increase runoff travel time, and reduce flood peaks, buffers should be up to 150 meters (492 ft) wide.¹⁵
- Suspended Sediment: Filtration of surface flow is dependent on a number of factors, including the desired efficiency of removal, hydraulic loading rate to the buffer, erodibility of land surfaces upslope of the buffer, slope, infiltration rate, and surface characteristics within the buffer.¹⁶ Modeling suggests that buffers up to 200-foot wide are required for “substantial” sediment retention based on the above factors.¹⁷ Removal of vegetation can increase sediment discharge to the point where 100-foot buffers are ineffective.¹⁸ When not subject to limiting conditions, 100-foot buffers may initially function to remove significant levels of sediment, although the accumulation of sediment over time may impair their efficiency at sediment retention, thus requiring wider buffers to sustain the desired functions.¹⁹ In a Maine study, a 200-foot vegetated buffer strip removed 80% of the suspended sediment in stormwater.²⁰
- Nutrients: Buffers decrease nutrient loading of wetlands and other surface waters through the processes of retaining sediment-bound nutrients, uptake of soluble nutrients by vegetation, and absorption of soluble nutrients by organic and inorganic soil particles.²¹ Phosphorus removal is accomplished primarily by sediment retention, while nitrification removes and processes nitrates.²² A Maryland study reported that 50 m (164 ft) of forested buffer was required to remove almost all of the dissolved and particulate nitrogen and 80% of the dissolved phosphorus in surface runoff.²³ While narrower buffers may sequester nutrients under ideal conditions, wider buffers are required when site conditions increase pollutant loads or impair a buffer’s ability to function. For example, elevated levels of nitrite migrated through a 100-foot forested buffer in a Pennsylvania watershed up to 11 years after the upland area was clearcut.²⁴ Nutrients also may be mineralized over time and released from buffers, which indicates that wider buffers can function more efficiently over the long term.²⁵
- Wildlife Habitat: Providing suitable wildlife habitat requires wider buffers. Vermont Department of Environmental Conservation proposes that some wildlife species require up to 600-foot wetland buffers for feeding and breeding.²⁶ Most avian populations require a minimum of 300 feet.²⁷ To provide food and shelter for a wide variety of aquatic wildlife, some aquatic systems require buffers in excess of 500 meters (1,640 ft).²⁸

- Pesticides: For effective pesticide removal, minimum buffer width varies with pesticide type, rate and method of application, soil type, topography, and seasonal fluctuations in temperature and rainfall.²⁹ One study reported that an 80-foot buffer allowed 30% of runoff-borne 2,4-D herbicide to pass through the buffer. During aerial spraying for mosquitoes in Canada, another field study reported 20% mortality of larvae 50 meters (164 ft) downwind of a permethrin spray line.³⁰ In both of these studies, wider buffers would have further mitigated the transport of pesticides.

¹ See U.S. Environmental Protection Agency (U.S. EPA), *Aquatic Buffers* (2006), available at <http://www.epa.gov/owow/nps/ordinance/> (last visited April 21, 2010).

² See U.S. ARMY CORPS OF ENGINEERS (ACOE), BUFFER STRIPS FOR RIPARIAN ZONE MANAGEMENT 2 (1991) [hereinafter BUFFER STRIPS].

³ See *id.* at 3.

⁴ R. FISCHER & J. FISCHENICH, DESIGN RECOMMENDATIONS FOR RIPARIAN CORRIDORS & VEGETATED BUFFER STRIPS 2 (U.S. Army Eng'r Research and Dev. Ctr., 2000), available at <http://el.erdc.usace.army.mil/elpubs/pdf/sr24.pdf> (last visited April 23, 2010).

⁵ ENVIRONMENTAL LAW INSTITUTE, CONSERVATION THRESHOLDS FOR LAND USE PLANNERS 20 (2003), available at http://www.elistore.org/reports_detail.asp?ID=10839 (last visited April 21, 2010).

⁶ BUFFER STRIPS, *supra* note 2, at 13 (citing J.R. MORING, DECREASE IN STREAM GRAVEL PERMEABILITY AFTER CLEAR-CUT LOGGING: AN INDICATION OF INTRAGRAVEL CONDITIONS FOR DEVELOPING SALMONID EGGS AND ALEVINS, *Hydrobiologia* 88, 295-298, (1982)), available at <http://naelibrary.nae.usace.army.mil/dp199/nd91039.pdf> (last visited April 21, 2010).

⁷ See *id.* at 17 (citing J.A. LYNCH & E.S. CORBETT, DEVELOPMENT OF BEST MANAGEMENT PRACTICES FOR CONTROLLING NONPOINT POLLUTION FROM SILVICULTURAL OPERATIONS, *Water Resources Bulletin* 26 (1):41-52, (1990)).

⁸ See *id.* at 21 (citing L.E. Asmussen et al., *Reduction of 2, 4-D Load in Surface Runoff Down a Grassed Waterway*, *J. ENV. QUALITY* 6, 159-162, (1977)).

⁹ See FISCHER, *supra* note 4, at 6.

¹⁰ See U.S. EPA, NATIONAL MANAGEMENT MEASURES TO CONTROL NONPOINT SOURCE POLLUTION FROM URBAN AREAS 4-11, 4-12 (2002), available at <http://www.epa.gov/nps/urbanmm/#08> (last visited April 23, 2010).

¹¹ See *id.*

¹² See TOMAS SCHUELER, SITE PLANNING FOR URBAN STREAM PROTECTION 111 (Metropolitan Washington Council of Gov'ts, 1995).

¹³ See FISCHER, *supra* note 4, at 3.

¹⁴ See *id.* at 4.

¹⁵ See *id.* at 8.

¹⁶ See BUFFER STRIPS, *supra* note 2, at 6.

¹⁷ See *id.*

¹⁸ See *id.* at 13.

¹⁹ See *id.* at 14.

²⁰ See R. HORNER & B. MAR, GUIDE FOR WATER QUALITY IMPACT ASSESSMENT OF HIGHWAY OPERATIONS AND MAINTENANCE, Wash. Dep't of Transp., in: FISCHER, *supra* note 4, at 5.

²¹ See BUFFER STRIPS, *supra* note 2, at 14.

²² See *id.*

²³ See *id.* at 15.

²⁴ See *id.* at 17.

²⁵ See *id.*

²⁶ See VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION, WETLANDS FACT SHEET (1999), available at http://www.vtwaterquality.org/wetlands/docs/wl_factsheet18.pdf (last visited April 21, 2010).

²⁷ See ACOE, TECHNICAL AND SCIENTIFIC CONSIDERATIONS FOR UPLAND AND RIPARIAN BUFFER STRIPS IN THE SECTION 404 PERMIT PROCESS 4 (2002).

²⁸ See FISCHER, *supra* note 4, at 8.

²⁹ See BUFFER STRIPS, *supra* note 2, at 21.

³⁰ See *id.*

STRATEGY 20: *Prioritize Wetland Restoration and Enhancement*

Problem

The U.S. Environmental Protection Agency (EPA) reports that half of our nation's wetlands have been lost to development over the past 200 years and that many of the remaining wetlands are degraded.¹ Wetlands provide water quality and other functions that protect biologically productive ecosystems. These functions include 1) habitat for wildlife shelter, breeding and feeding; 2) flood and stormwater control; 3) sediment and toxin retention; 4) nutrient uptake and processing; 5) groundwater recharge and discharge; and 6) recreation, education, and scientific research. When wetlands are degraded by pollution or destroyed by development projects, these functions are impaired or altogether lost. To compensate for wetland losses, the U.S. Army Corps of Engineers requires developers to mitigate lost wetland functions by creating new wetlands, enhancing existing wetlands, or restoring existing degraded wetlands.

However, in a comprehensive examination of wetland mitigation measures, the National Research Council (NRC) Committee on Mitigating Wetland Losses determined that wetlands functions are not easily replaced.² Hydrological functions are one of the biggest influences of constructed wetlands and “the difficulty of restoring wetland hydrology increases as the degree of wetland degradation increases.”³ Water quality is a function that “can be mitigated but rarely duplicated”⁴ because hydrology and chemical composition are difficult to replicate. Created wetlands also require the proper installation and maintenance of an impermeable liner to sustain the hydrology that supports wetland biochemical processes. In New York State, created wetlands have achieved only moderate success with wetland plantings because invasive plant species consume much of the nutrients in wetland soils, a process that reduces functional capability and threatens biodiversity.



Without proper maintenance, constructed wetlands such as this one created by the NYSDOT in the late 1990s in the Town of East Fishkill, Dutchess County, are likely to degrade and fail to provide the many benefits of natural systems. Photo by William Wegner.

Solution: *Wetland Mitigation Rules Should Prioritize Restoration and Enhancement of Existing Wetlands over New Wetland Creation*

Manipulation of existing onsite wetland processes (or processes of offsite wetlands situated in the same drainage basin) can restore or enhance the functions of a disturbed wetland. EPA has adopted definitions of three terms for wetland replacement:

- Restoration: Returning a degraded wetland or former wetland to a pre-existing condition or as close to that condition as possible.
- Enhancement: Increasing one or more of the functions performed by an existing wetland beyond what currently exists or previously existed in the wetland.
- Creation: Converting a non-wetland (either dry land or unvegetated water) to a wetland.⁵

Proper planning of wetland restoration and enhancement projects is essential to replacing sustainable wetland functions. Goals and objectives must be clearly defined in order to identify project constraints, site selection, and necessary activities.⁶ EPA has published planning criteria in a comprehensive guide to wetland replacement.⁷

Restoration may require “reconstruction of antecedent physical conditions, chemical adjustment of the soil and water; and biological manipulation, including the reintroduction of absent native flora and fauna.”⁸ Enhancement does not require reestablishment of lost functions, but instead “the modification of specific structural features of an existing wetland to increase one or more functions based on management objectives, typically done by modifying site elevations or the proportion of open water.”⁹

To compensate for wetland losses, many degraded wetlands can be restored in addition to establishing and maintaining vegetated buffers. Where the required onsite hydrology already exists, the practices of restoring degraded wetlands and establishing vegetated buffers to protect them from further degradation are much more likely to sustain wetland function than is the construction of artificial wetlands.

Wetland vegetation also is important to the function of water quality, and hydrology affects the way in which seeds disperse and germinate. Many seeds cannot germinate in standing water and therefore flow is essential. Vegetation, in turn, influences flow rates and thus reciprocally affects hydrology. Many constructed wetlands are improperly maintained and become dominated by invasive plant species that reduce biodiversity and functional capability.¹⁰ Attempts to convert upland areas to wetlands often “result in ecosystems that do not closely resemble natural wetlands and that provide limited wetland functions (valuable upland habitat might be lost in the process as well).”¹¹

Restoration or enhancement of existing on- or offsite wetlands does not require the conversion of upland habitat but instead modifies wetland functions *in situ* to increase their values. These practices maintain the necessary balance of soil nutrients to support native wetland vegetation and increase biodiversity. The more nutrient-rich wetland soils of existing or pre-existing wetlands also provide better filtering and water quality

benefits. Without the correct organic content of hydric soils, wetlands will not function properly.¹² These soils support the hydrology necessary to retain and filter water for the long-term sustainability of wetland functions.

For these reasons, enhancement of existing wetlands or restoration of pre-existing wetlands is preferable to the creation of artificial wetlands when replacing wetland functions for compensatory mitigation purposes. State and local wetland permits should be amended to incorporate this preference.

¹ U.S. ENVIRONMENTAL PROTECTION AGENCY (U.S. EPA), AN INTRODUCTION AND USER'S GUIDE TO WETLAND RESTORATION, CREATION, AND ENHANCEMENT (undated), *available at* <http://www.epa.gov/owow/wetlands/pdf/restdocfinal.pdf>, (last visited April 21, 2010) [hereinafter USER'S GUIDE].

² JOY ZEDLER ET AL., COMM. ON MITIGATING WETLAND LOSSES, COMPENSATING FOR WETLAND LOSSES UNDER THE CLEAN WATER ACT 28 (Nat'l Acad. Press 2001).

³ *Id.* at 23.

⁴ *Id.*

⁵ USER'S GUIDE, *supra* note 1, at 6.

⁶ *Id.* at 12.

⁷ *Id.*

⁸ NATIONAL RESEARCH COUNCIL, RESTORATION OF AQUATIC ECOSYSTEMS: SCIENCE, TECHNOLOGY AND PUBLIC POLICY 18 (1992). For a general explanation of wetlands mitigation, see U.S. EPA, *River Corridor and Wetland Restoration: Definitions & Distinctions* (2007), *available at* <http://www.epa.gov/owow/wetlands/restore/defs.html> (last visited April 21, 2010).

⁹ S. Gwin et al., *Evaluating the Effects of Wetland Regulation Through Hydrogeomorphic Classification and Landscape Profiles*, 19(3) WETLANDS 477-489.

¹⁰ ZEDLER, *supra* note 2, at 24.

¹¹ *Id.*

¹² *Id.* at 25.

B. *Fund Protection Efforts*

STRATEGY 21: New York State Must Expand Local Financing Options for Open Space Preservation

STRATEGY 22: New York State Must Significantly Increase Funding for the Environmental Protection Fund

STRATEGY 21: *New York State Must Expand Local Financing Options for Open Space Preservation*

Problem

The Hudson River Valley is being transformed by sprawling development at an alarming rate. This poor planning harms our communities in numerous ways. Several land preservation options are available to towns trying to curb haphazard development and preserve community resources by purchasing developable lands, but funds often fall short. Little State money exists for land preservation projects. The funds from the 1996 Clean Water/Clean Air Bond Act are almost entirely spent. In 2008, approximately \$300 million in land conservation funding will be needed to ensure that key parcels are protected¹ yet the FY 2008-2009 Environmental Protection Fund falls far short in meeting this demand, appropriating only \$66 million to state-wide land acquisition programs.² Clearly, State funds are in short supply.

Solution: *Pass the Community Preservation Act (A.7333/S.3836)*



The CPA would allow voters to approve a real estate transfer tax to fund local open space and historic preservation plans.

It is clear that citizens understand the need for better planning and are willing to commit financial resources to purchase local lands for preservation purposes. Since 2000, “[t]hirteen communities have bought at least 1,976 acres of open space, spending \$31.5 million in municipal money and combining it with \$46.9 million from New York State, Westchester County, New York City, and private sources.”³ However, while people are willing to invest in protecting open spaces, they often are fearful of taking on additional public debt or raising property taxes.

To achieve better community planning and land preservation goals, many communities are looking for new ways to fund land acquisition initiatives. Passage of the Community Preservation Act (CPA) would allow local communities to tap into a new source of revenue for land purchases.⁴

The CPA would provide an important new tool that can help towns achieve their planning and preservation goals. To raise funds for land acquisition and historic preservation, a town currently can: 1) dedicate some of its property or sales tax revenue, 2) borrow money using a general obligation municipal bond, or 3) use a real estate transfer fee, provided the State Legislature passes a special law giving the town permission to put a referendum before the voters. While all options have their benefits and borrowing or taxation may be preferred in some towns, the CPA

would make the option of real estate transfer fees easier to implement as it would give authority to all towns to choose to put a referendum before the voters without the need for special approval from the Legislature on a case-by-case basis.

The framework for the CPA is modeled after the successful Peconic Bay Community Preservation Act of 1998, which established community preservation funds in five towns on the East End of Long Island.⁵ The CPA would allow towns to create Community Preservation Funds (CPF) after developing Community Preservation Project Plans that identify land to be preserved. Local laws could be passed by voter referendum to create a program where home buyers would pay a one-time transfer fee of 2 percent (or less) of the purchase price above the median home value in that county to fund the local CPF, and lower-income households would not be burdened.⁶ In addition to the revenue received from this transfer tax, the towns are also able to apply for matching funds from the state, county, and federal government to purchase areas identified in their Community Preservation Project Plans. Thus, the CPA would give communities an additional source of funds to achieve their planning and preservation goals without incurring additional debt or creating an undue hardship on poorer residents.

Currently, communities in New York State seeking to fund local land conservation and preservation initiatives must go through the New York State Legislature for approval before they can conduct a voter referendum to establish a CPF. The process is arduous, time-intensive, and often prohibitive. The CPA would greatly benefit towns by removing the requirement that they first seek state-wide legislative approval before conducting a voter referendum to establish a CPF. In 2007, a regional version of the CPA, the Hudson Valley Community Preservation Act, was signed into law for communities in Westchester, Putnam, Orange and Rockland Counties.⁷

¹ This estimate is generated by data collected by Friends of New York's Environment (FONYE).

² See Environmental Protection Fund FY2008-2009 Budget, dated 1/22/08.

³ See WESTCHESTER LAND TRUST, Land We Helped Preserve, available at <http://www.westchesterlandtrust.org/land-acquisitions> (last visited April 28, 2010).

⁴ See A.7333, Reg. Sess. (N.Y. 2007).

⁵ The five town referendum involving East Hampton, Riverhead, Shelter Island, Southampton, and Southold was approved in November 1998 and the Community Preservation Funds have generated over \$400 million and preserved 7,500 acres to date. Residents overwhelmingly support these successful programs. In 2006, voters in all five townships approved a referendum to extend the program from 2020 to 2030.

Environmental Advocates of New York has prepared case studies showing how the CPA could benefit land acquisition in Amherst and Oyster Bay. See ENVIRONMENTAL ADVOCATES OF NEW YORK, *The Community Preservation Act: A New Tool for Protecting New York State's Natural & Historic Heritage*, available at <http://www.eany.org/issues/cpa.html> (last visited April 21, 2010).

⁶ For the latest available median home values by county, see <http://www.orps.state.ny.us/sales/resmedian.cfm> (last visited April 21, 2010).

⁷ For press releases see <http://scenichudson2.org/node/96> and <http://assembly.state.ny.us/mem/?ad=101&sh=story&story=23825> (last visited April 28, 2010).

STRATEGY 22: *New York State Must Significantly Increase Funding for the Environmental Protection Fund (EPF)*

Problem

Created in 1993, the New York State Environmental Protection Fund (EPF) established New York's first dedicated funding mechanism to provide critical funding for the Department of Environmental Conservation, the Office of Parks, Recreation and Historic Preservation, and grants to local governments and non-profit organizations. EPF funding helps to implement a variety of environmental programs to protect public health and ensure communities have clean water, land, and air; to preserve open space and working farms; and to create and maintain public parks. State-level Smart Growth initiatives, such as those adopted for the Route 28 corridor in the Catskills and the Hudson River Valley,¹ are also funded through the EPF. Thus, it is critical that budget appropriations provide adequate funding to support the broad range of programs that support preservation and regional planning throughout the State.

EPF-funded programs that are of particular importance to Smart Growth and resource protection include:

- Hudson River Estuary Program and Natural Resource Damage Assessment;
- Hudson River Park Construction;
- Local Waterfront Revitalization Program;
- Non-point Source, Stormwater Management Water Quality Projects;
- DEC/OPRHP open space land acquisition; and
- Pesticide use database program.

The EPF is primarily financed through the New York State Real Estate Transfer Tax (RETT) but also receives revenue from income derived from the sale of surplus State lands, the leasing of underwater State-owned lands, and New York's "open space" license plate. As initially envisioned and established by the New York State Legislature, EPF appropriations are not intended to have any significant effect on the State's annual budget because EPF revenue represents statutorily dedicated funds not intended to be spent on other State programs.

For seven years, the EPF was funded at \$125 million, with program demands exceeding budget appropriations, despite the fact that the real estate transfer tax revenue had grown from less than \$200 million in 1997 to more than \$900 million in 2006.² This picture



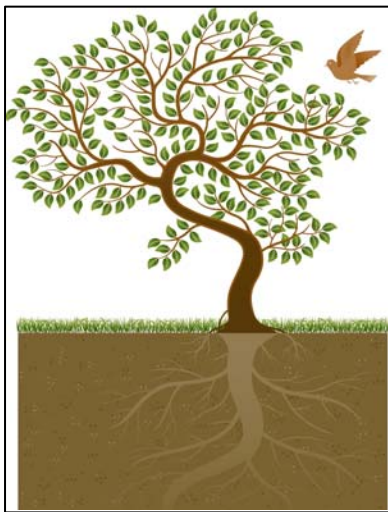
Environmental protection programs cannot succeed without adequate funding.

seemed to change in July 2007, when Governor Spitzer signed into law the EPF Enhancement Act, which provides for additional deposits from the RETT to be made to the EPF.³ The enactment of this legislation increased revenue to the EPF from \$225 million to \$250 million in FY 2008-2009, and to a permanent level of \$300 million commencing in FY 2009-2010.⁴ Although environmental groups across the State, including Riverkeeper, lauded Governor Spitzer's actions, the passage of this 2007 legislation now threatens to be an illusory victory because of the Governor Paterson's proposed "sweep" from the EPF to the General Fund for FY 2008-2009. Paterson's proposed Budget and Deficit Reduction Bill slashed the EPF by \$50 million in FY 2008-2009 and by \$95 million in FY 2009-2010. The end result for FY 2008-2009 was an increase in the total "sweep" of EPF funding into the General Fund for non-environmental purposes from \$125 million to \$175 million.

Unfortunately, the practice of "sweeping" the EPF is not new. Beginning in 2001, Governor Pataki began the misguided practice of transferring appropriated funds from the EPF to the General Fund. Governor Spitzer continued this practice of raiding monies from the EPF for the General Fund. In his inaugural year in office, Governor Spitzer diverted \$20 million from the FY 2007-2008 EPF, bringing the grand total of funds diverted from the EPF since its establishment to \$322 million, with no plans for repayment into the fund. In his FY 2008-2009 Executive Budget Proposal, Governor Spitzer has recommended an additional "sweep" of \$125 million from the EPF into the General Fund, the largest single-year sweep in the EPF's history.⁵

Failure to both appropriate critical EPF funds, or to subsequently sweep EPF monies into the General Fund, has a huge and immediate impact on the environment and health of all New Yorkers by potentially cutting essential program and project funding to zero.

Solution: Increase EPF Funding and Ensure that EPF Appropriations Are Not Transferred to the General Fund



Local communities depend on the EPF to support local parks and improve quality of life.

To fight for increased EPF funding and ensure survival of successful environmental programs, Riverkeeper is a member of Friends of New York's Environment (FONYE), a coalition of more than 200 local, state and national environmental groups. FONYE has identified over \$1 billion in annual environmental funding needs that are dependent on increased appropriations to the EPF, including hundreds of millions needed for Smart Growth, water quality projects, waterfront revitalization, pollution prevention, land conservation, recycling programs, estuary programs, renewable energy initiatives, and stewardship of natural resources on state owned lands.

Riverkeeper, along with FONYE, calls on the NYS Legislature to approve \$275 million in funding for the

EPF in FY 2008-2009 and for a \$500 million EPF by 2010. In addition, the coalition urges that the funds “borrowed” from the EPF in previous years for unrelated, non-environmental programs be returned so that they are available for their intended use, for the plethora of environmental projects in dire need of funds.

All New Yorkers must also urge the State Legislature work to ensure that appropriates through the EPF to State agencies be authorized by the Department of Budget to fully spend their yearly appropriations in an expeditious manner so that yearly appropriation levels more closely match agency spending levels and actual program needs. It is critically important that EPF spending levels reach the same level as appropriations so that previously announced projects can be completed, and new projects to protect New York State’s land, air and water can move forward.

¹ See Press Release, Governor Spitzer, Governor Spitzer Creates Smart Growth Cabinet, Multi-Agency Working Group Will Promote Smart Growth as an Economic and Environmental Tool (Dec. 10, 2007), available at <http://www.dec.ny.gov/environmentdec/40526.html> (last visited April 23, 2010).

² For a history of EPF funding, see CITIZENS’ CAMPAIGN FOR THE ENVIRONMENT, NYS ENVIRONMENTAL PROTECTION FUND (1993-2007) (Oct. 2006), available at http://www.citizenscampaign.org/PDFs/EPF%20funding%20history_102506.pdf (last visited April 21, 2010).

³ See A.8339/S.5304, Reg. Sess. (N.Y. 2007), available at <http://assembly.state.ny.us/leg/?bn=A08339> (last visited Feb. 12, 2008).

⁴ See *id.*

⁵ See A.9808-B/S.6809-A, Reg. Sess. (N.Y. 2008), available at <http://assembly.state.ny.us/leg/?bn=A09809&sh=t> (last visited Feb. 12, 2008).

C. *Fair Systems of Taxation*

STRATEGY 23: New York State Should Increase SPDES Permit Fees to Fund and Staff State and Local Stormwater Programs

STRATEGY 24: New York State Should Close the Corporate Income Tax Loophole

STRATEGY 25: New York State Should Provide Clear Guidance on the Use of Tax-Increment Financing (TIF) in the State

STRATEGY 23: *New York State Should Increase SPDES Permit Fees to Fund and Staff State and Local Stormwater Programs*

Problem

Pursuant to its Clean Water Act authority, the New York State Department of Environmental Conservation (DEC) issues general permits for construction activities in order to control stormwater discharges. The permits require erosion and sediment controls, stormwater plans, inspections, and other water quality protections. Before 2003, construction activities disturbing five or more acres of land were required to secure State Pollutant Discharge Elimination System (SPDES) permits.¹ However, as of March 10, 2003, and as a result of the U.S. Environmental Protection Agency’s Phase II stormwater regulations, construction activities that disturb one or more acres of land must obtain SPDES permits.² In DEC Region III, lowering the permit requirement threshold from five acres of disturbance to one acre has led to an increase in permits issued per year of approximately three times the number of permits issued before 2003, a reflection of the increase in permits issued statewide.³

In addition to the General Permit for Construction Activity program change in 2003, EPA’s regulations require SPDES permits for stormwater discharges from regulated Municipal Separate Stormwater Sewer Systems (MS4s).⁴ Regulated municipalities, including all East-of-Hudson Watershed towns, were required to develop, implement, and enforce stormwater management programs designed to reduce the discharge of pollutants to the “maximum extent practicable” and submit a Notice of Intent by March 10, 2003.⁵



Marking storm drains effectively educates the public about where each drain discharges and also can help satisfy the MS4 permit requirements for pollution prevention/good housekeeping.

Pursuant to the stormwater permits, regulated municipalities must include six minimum control measures in stormwater plans: 1) public education and outreach; 2) public participation/involvement; 3) illicit discharge detection and elimination; 4) construction site runoff control; 5) post-construction runoff control; and 6) pollution prevention/good housekeeping.⁶ Moreover, the municipalities must “provide adequate resources to fully implement the SWMP [Stormwater Management Plan] no later than five years from the issuance date of” the permit.⁷ These programs are critical, given that stormwater is one of the greatest threats to water quality. However, as is typical with

many regulatory programs, the federal government failed to provide funding resources to assist communities in developing, implementing, and enforcing the stormwater management plans. The federal government spends only approximately 2% of its total

water pollution budget on stormwater,⁸ despite the fact that EPA cites stormwater as a leading source of water quality impairment.⁹

In addition to a lack of federal funding for municipalities, DEC suffered severe budget and staffing cuts under Governor Pataki, with approximately 800 fewer employees than it had in the mid-1990s. As a result, DEC and municipalities are charged with inspecting and enforcing a large number of construction sites that pose threats to water quality, but lack the resources to implement and enforce a meaningful program.

Solution: New York State Should Apply Permit Fees to Fund Enforcement of Stormwater Regulations and Increase Fines and Penalties for Noncompliance

From 1988 until the approval of the new fee by the State Legislature during the FY 04-05 budget process, the permit fee for construction activities was \$50.¹⁰ Under Governor Pataki's permit program a new fee, from which municipalities are exempt, is calculated based on \$50 per acre of disturbed land plus \$300 per future impervious acre.

Impervious area is the single most important factor influencing stormwater runoff, as it replaces natural absorbent ground surfaces, causing more stormwater to run off the land rather than soak into the soil. By linking permit fees to the amount of area impacted by imperviousness, an acreage-based fee provides developers an economic incentive to minimize the potential environmental impact of construction projects and could result in an annual revenue increase of approximately \$7 million for the State. Moreover, this permit fee system requires those responsible for adding impervious surfaces and increasing stormwater runoff to internalize costs traditionally imposed on town residents and New Yorkers living downstream.

Riverkeeper supports an acreage-based construction permit fee. However, for this new funding source to be effective in controlling stormwater runoff, there must be a commitment at the onset for some of that new funding to be dedicated for local and state stormwater programs. If increased revenues are put into the general fund, it will not address the economic harms and public health threats posed by the construction activities covered in the permit.

The benefits accrued by properly implemented and enforced stormwater programs include, among other things:

- clean water;
- flood control;
- public health cost savings;
- increased property values;
- increased freshwater habitat diversity;
- increased recreational and tourism opportunities; and
- decreased costs from fewer threatened or endangered species listings.

In addition, DEC should increase fines and penalties for noncompliance with terms and conditions of SPDES permits. Heavy fines deter developers from skirting the requirements of their permits and can be used to generate additional revenue to support

the implementation and enforcement of stormwater programs. As with the permit fees, penalties and fines also should be committed to local and state stormwater programs rather than funneled into the general fund.

¹ See New York State Department of Environmental Conservation (NYSDEC), SPDES General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-93-06.

² See NYS DEC, SPDES General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-0-10-001, available at http://www.dec.ny.gov/docs/water_pdf/gpsconspmt10.pdf (last visited April 23, 2010).

³ DEC Region III General Permit for Construction Activity figures from 1998 to present are: 1998 – 41; 1999 – 91; 2000 – 90; 2001 – 143; 2002 – 88. See *id.* DEC Region III General Permit for Construction Activity figures from 2003 to 2006 are: 2003 (March through December) – 315; 2004 – 421; 2005 – 493; 2006 – 461. Statewide General Permit for Construction Activity figures for 2003 to 2006 are: 2003 – 1,405; 2004 – 1,799; 2005 – 1,949; 2006 – 1,954. This information was gathered from spreadsheet obtained from DEC, which is on file with the authors.

⁴ An MS4 generally is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) that discharge into waters of the United States.

⁵ See NYSDEC, SPDES General Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems, Permit No. GP-0-08-002, available at http://www.dec.ny.gov/docs/water_pdf/ms4permit08.pdf (last visited April 23, 2010).

⁶ See *id.* Part IV. C.

⁷ See *id.* Part IV. B.

⁸ See SCOTT CALLAN & JANET M. THOMAS, ENVIRONMENTAL ECONOMICS AND MANAGEMENT: THEORY, POLICY AND APPLICATIONS 3E 359 (2004).

⁹ See U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA), STORM WATER PROGRAM BACKGROUND, available at <http://yosemite.epa.gov/R10/WATER.NSF/0/fd82644588a892f588256c41007d61b6?OpenDocument> (last visited April 21, 2010).

¹⁰ The \$50 fee had not been changed since at least 1998, see DEC Freedom of Information Law response from Beth Zicca, Division of Water, DEC to Marc Yaggi, Rivekeeper (Nov. 12, 2003) (on file with authors). Other sources indicate that the fee has been \$50 since it was established in 1988.

STRATEGY 24: *New York State Should Close the Corporate Income Tax Loophole*

Problem

For years, corporations – particularly national discount retailers (“big box” stores) – have been taking advantage of corporate tax loopholes and failing to pay their fair share of corporate income taxes. These loopholes, which exist in New York and certain other states, provide an incentive for national corporations to open stores in these states and give these corporations an unfair advantage over locally owned businesses.

In addition, corporate tax revenue has declined sharply in recent years. “According to the U.S. Census Bureau, corporate income taxes supplied 10.2 percent of state tax revenue in the states levying them in 1979, but just 6.3 percent in 2000.”¹ In New York, for example, corporate income tax accounted for 10.5% of state income tax in 1979, 7.6% in 1989, and 6.6% in 2000.² These figures seem odd, given the economic boom of the 1990s and the corporate monoculture that is strangling locally owned businesses.

Corporations use tax loopholes by establishing subsidiaries (or passive investment companies) in states such as Delaware or Nevada that have special exemptions or do not collect income tax.³ The corporations then transfer ownership of patents or trademarks to the subsidiary.⁴ The subsidiary charges the corporation large royalties for use of these trademarks or patents.⁵ These royalties are deductible and, thus, are not taxable to states like New York, where the corporation is operating. In addition, the subsidiary sometimes loans money back to the corporation; the corporation then deducts interest paid on the loan.⁶ A study of this issue estimated that just three corporations have been shifting approximately \$750 million annually into their passive investment subsidiaries.⁷



Corporations known to have passive investment companies include CompUSA, The Home Depot USA, Kohl’s, and Toys R Us.⁸ For example, “Geoffrey [a subsidiary of Toys R Us and incorporated in Delaware], without any full-time employees, had an income of approximately \$55 million and paid no income taxes to any state.”⁹ “Between 1992 and 1994, Limited Brands transferred more than \$1.2 billion from its retail chains into Delaware subsidiaries. Kmart shifted \$1.25 billion into its Michigan subsidiary, Kmart Properties, Inc., from 1991 to 1995.”¹⁰ Several states are not vulnerable to this loophole (e.g. Alaska, Arizona, and Illinois) or have enacted laws to address this income-shifting loophole (e.g. Connecticut, Massachusetts, and New Jersey); however, New York remains vulnerable and, therefore, is subsidizing big box sprawl.¹¹

Unlike locally owned businesses, foreign corporations pay taxes outside of New York State.

Solution: *New York State Should Close the Tax Loophole that Allows Big Box Stores to Avoid Paying Their Full Share of Corporate Income Taxes*

New York State can change its tax law to close the loophole, which would provide a disincentive to sprawling big box stores, level the playing field for locally owned businesses, and shore up budget gaps. To close the loophole, New York could implement “combined reporting” and/or other measures. Combined reporting treats all related corporations as one business and, thus, one taxpayer. Therefore, a corporation that owns a subsidiary would have to combine profits from its subsidiaries and apportion the subsidiaries’ profits that are taxable in that state. The Institute for Local Self Reliance estimates that “Wisconsin, for example, would generate an estimated \$70 million in added tax revenue annually by adopting combined reporting, while Pennsylvania would gain \$100 million.”¹² Currently, sixteen states use combined reporting.¹³ In *Container Corp. of America v. Franchise Tax Board*, the U.S. Supreme Court upheld as lawful a combined reporting tax scheme.¹⁴

While combined reporting requires a substantial change in tax law, there are interim measures that can help stem the flow of funds out of New York State. For example, as noted by the Institute for Local Self Reliance:

[S]even states have laws that prevent tax evasion based on profit transfers to trademark-holding companies. The downside of these laws is that, unlike combined reporting, they do not account for other ways that corporations can transfer profits to subsidiaries, for example, through the payment of interest on loans.¹⁵

Nevertheless, the measures can provide a stop-gap until combined reporting is adopted.

Despite predictable threats from the corporate lobby, it is unlikely that such a measure will send businesses to other states or inhibit future corporate investment in New York. A study by an economist at the Federal Reserve Bank of Boston “found no statistically significant correlation between business tax burdens and the location of new investment.”¹⁶

Rather than subsidize sprawl and offer economic incentives to large, foreign corporations that lead to the loss of locally owned businesses, New York should ensure that all corporations pay their full tax share. New York also should review other measures that can prevent corporations from siphoning funds to other tax havens that could otherwise be used to offset the cost of environmental impacts or providing services to those businesses by local communities.

¹ MICHAEL MAZEROV, CENTER OF BUDGET AND POLICY PRIORITIES, CLOSING THREE COMMON CORPORATE INCOME TAX LOOPHOLES COULD RAISE ADDITIONAL REVENUE FOR MANY STATES (May 23, 2003), available at www.cbpp.org/4-9-02sfp.htm (last visited Feb. 12, 2008) [hereinafter Mazerov].

² See *id.* at Table 1.

³ See *id.* at 6.

⁴ See *id.*

⁵ See *id.*

⁶ See *id.*

⁷ See *id.* at 7. In *Geoffrey, Inc. v. S.C. Tax Comm'n*, 437 S.E.2d 13 (S.C.), *cert. denied* 114 S.Ct. 550 (1993), the South Carolina Supreme Court affirmed a decision requiring Geoffrey, a Delaware-based subsidiary of Toys R Us, to pay South Carolina income tax and business license fees. In the case, the court noted that Geoffrey, Inc. became the owner of trademarks and trade names, including Toys R Us. Then, Geoffrey executed an agreement allowing Toys R Us to use the “Toys R Us” name, other trade names, and merchandising skills for a royalty. Thereafter, Toys R Us deducted the royalty payments from its taxable income in South Carolina. The South Carolina Tax Commission allowed the deduction, but required Geoffrey to pay South Carolina income tax. The South Carolina Supreme Court found that the tax did not violate the Due Process Clause or the Commerce Clause.

In a similar case, *A&F Trademark, Inc. v. Tolson*, No. 02-CV-007467 (N.C. Sup. Ct. May 22, 2003), the North Carolina Superior Court upheld the State’s taxation of corporate income and franchise taxes against nine subsidiaries of the Limited Stores, Inc. See also Press Release, State of North Carolina Department of Revenue, Department of Revenue Wins Ruling; Holding Companies Required to Pay (May 23, 2003). The Department of Revenue estimated that the “decision has implications for more than \$150 million in state revenue due to the widespread use of this tax planning technique.” *Id.*

⁸ See MAZEROV, *supra* note 1, at 8, citing Glenn R. Simpson, *A Tax Maneuver in Delaware Puts Squeeze on Other States*, WALL ST. J. (Aug. 9, 2002).

⁹ *Geoffrey*, 437 S.E.2d at 17, n.1. See *supra* note 7.

¹⁰ New Rules Project, *How Chain Stores Evade Paying State Taxes ...And What To Do About It*, HOME TOWN ADVANTAGE BULLETIN (July 2003), available at <http://www.newrules.org/retail/news/how-chain-stores-evade-paying-state-taxes-and-what-do-about-it> (last visited April 26, 2010).

¹¹ See MAZEROV, *supra* note 1, at 8.

¹² New Rules Project, *supra* note 10.

¹³ See MAZEROV, *supra* note 1, at 15-16. These states are Alaska, Arizona, California, Colorado, Hawaii, Idaho, Illinois, Kansas, Maine, Minnesota, Montana, Nebraska, New Hampshire, North Dakota, Oregon, and Utah. See MAZEROV, *supra* note 1, at 8.

¹⁴ 463 U.S. 159 (1983).

¹⁵ New Rules Project, *supra* note 10. These states are Alabama, Connecticut, Massachusetts, Mississippi, New Jersey, North Carolina, and Ohio. See MAZEROV, *supra* note 1, at 8.

¹⁶ See MAZEROV, *supra* note 1, at 11, citing Robert Tannenwald, *State Business Tax Climate: How Should It Be Measured and How Important Is It?*, NEW ENG. ECON. REV. 23-38 (Jan./Feb. 1996).

STRATEGY 25: *New York State Should Provide Clear Guidance on the Use of Tax-Increment Financing (TIF) in the State*

Problem

Tax-increment financing (TIF) is a development tool that relies upon the incremental increases in tax revenue that development generates to finance redevelopment projects aimed at blighted areas.¹ Essentially, a municipality finances a development with the property tax revenue that the development generates. Specifically, once a TIF “district” is designated, bonds are normally issued to pay for the redevelopment, which are subsequently serviced using the property taxes generated by redevelopment.² New York law provides TIF as a tool to eliminate “blight,” subject to the constraint that a municipality can only engage in redevelopment which “cannot be accomplished by private enterprise alone.”³



TIF lets new development help to pay for desirable redevelopment of blighted areas.

While TIF has been used widely throughout the country, it has not been used much, if at all, in New York. An important barrier may be the limitation that in New York, TIF bonds may only be used to eradicate “blight” and only when private enterprise alone cannot accomplish this.⁴ Some states allow the use of TIFs without a blight analysis.⁵ In addition, there are a number of other concerns and drawbacks to using TIF. For example, there are legitimate concerns that:

- TIF’s are complex;
- there may be a lack of investor interest;
- TIF has been used for big-box retail stores and strip malls at the expense of locally-owned businesses;
- TIFs can interrupt market forces and lead to an overbuilding of retail development;
- TIF projects can freeze a municipality’s tax revenue; and
- redeveloped blighted areas with an increased standard of living and tax base could push out existing residents who can no longer afford to live there.⁶

Solution: *The State Should Provide Clear Guidance and Promote Use of TIF in New York*

TIF has been used in hundreds of districts in California, Florida, and Illinois, often with the negative consequences enumerated above.⁷ New York has had TIF enabling legislation in place since 1984, but has not yet made strong use of the process.⁸ New York needs clearer guidance on the use of TIF that removes the concerns and drawback

identified above. This guidance could come, for example, from Empire State Development.

The state of Missouri has identified certain negative consequences and proposed legislation to reform TIF in the state to ensure its original intentions are met.⁹ The following are among the provisions in the legislation. First, the bill specifies TIF is to be used only in economically distressed areas. Second, developers would need to demonstrate the redevelopment could not occur without TIF. Third, TIF cannot provide more than 30% of redevelopment costs for retail projects. And fourth, TIF would not be available in areas that are at least 25% “greenfields.”

New York’s TIF-enabling law does constrain its use to redevelopment that “cannot be accomplished by private enterprise alone.”¹⁰ However, the law does not provide guidance on how this is to be demonstrated leaving room for abuse.¹¹ Furthermore, like the Missouri reform, New York already has a provision which limits TIFs to “blighted” areas. However, New York’s law gives municipalities wide discretion to define a “blighted area.”¹²

New York’s TIF law is relatively flexible in other respects, allowing inclusion of industrial, commercial, and residential development in a TIF district, and imposing no acreage or time limitations on TIF projects.¹³ This flexibility, again, could lead to abuse of TIF and inefficient construction of certain types and sizes of development. Therefore, there needs to be clearer guidance on the use of TIF in New York.

¹ See REINVENTING REDEVELOPMENT LAW: A GUIDE FOR LOCAL LEADERS 79 (Noelle V. Crisalli ed., Pace Law School 2005).

² See NEW YORK CITY INDEPENDENT BUDGET OFFICE, FISCAL BRIEF – LEARNING FROM EXPERIENCE: A PRIMER ON TAX INCREMENT FINANCING (Sept. 2002), available at <http://www.ibo.nyc.ny.us/iboreports/TIF-Sept2002.pdf> (last visited April 21, 2010); SAM CASELLA, TAX INCREMENT FINANCING: A TOOL FOR REBUILDING NEW YORK (Jan. 16, 2002), available at http://nynv.aiga.org/pdfs/NYNV_TaxIncrementFinancing.pdf (last visited April 21, 2010). The term “increment” comes from the increase in tax revenue resulting from the redevelopment, which is then diverted back into the designated TIF district to pay for the redevelopment, while the “original” tax revenue remains used for services like police and fire. See GREG LEROY, COMMENTS FOR “TAX INCREMENT FINANCING COMING TO THE BIG APPLE? RISKS AND OPPORTUNITIES” NEW YORK CITY (March 12, 2003) available at http://www.goodjobsny.org/tif_leroy.htm (last visited April 21, 2010).

³ N.Y. Gen. Mun. Law § 970-b (2007).

⁴ See *id.*

⁵ See New York City Independent Budget Office, *supra* note 2, at 2.

⁶ See REINVENTING REDEVELOPMENT LAW, *supra* note 1, at 81.

⁷ See Casella, *supra* note 2.

⁸ See N.Y. Gen. Mun. Law §§ 970-a to -r.

⁹ See S.B.172, Bill Summary, available at <http://www.senate.mo.gov/03info/bills/sb172.htm> (last visited April 21, 2010).

¹⁰ See N.Y. Gen. Mun. Law, § 970-b.

¹¹ See New York City Independent Budget Office, *supra* note 2. The NY state TIF law also provides only a general definition of ‘blighted area’ as with a “predominance” of deteriorated or economically unproductive lands, buildings, or structures needing redevelopment. See N.Y. Gen. Mun. Law § 970-c(a).

¹² See N.Y. Gen. Mun. Law Art., 18-C, § 970-c.

¹³ See *id.*

III. COMMUNITY EMPOWERMENT: PERSONAL ACTION AND VOLUNTARY INITIATIVES



A. *Civic Participation*

STRATEGY 26: Citizens Must Become More Involved in Local Decision-Making

STRATEGY 26: *Citizens Must Become More Involved in Local Decision-Making*

Problem

With the rise of sprawl throughout the nation, there has been an alarming decline in civic participation. Such a decline erodes our nation's founding principles of democracy and hinders the public's ability to be involved in local decision-making. As a result, sprawling subdivisions, big box stores, and strip malls sail through approval processes and citizens wake up to find their quality of life diminished. In other words, financial capital is replacing social capital in our communities, endangering participatory democracy.

In the book *Bowling Alone*, political scientist and Harvard University Professor Robert D. Putnam offers numerous examples of our decline in civic participation. Below are a few of them:

- Voter turnout is down approximately 25% over the past forty years (since 1964), despite removal of most barriers to voter registration and the right of African Americans and women to vote.¹
- “The frequency of virtually every form of community involvement measured in the Roper polls declined significantly from the most common petition signing – to the least common – running for office.”²
- In the 1990s, Americans were about half as likely to work for a political party or attend a political rally as they were in the 1970s.³
- “The forms of participation that have withered most noticeably reflect organized activities at the community level.”⁴
- “Between 1973 and 1994 the number of Americans who attended even one public meeting on town or school affairs in the previous year was cut by 40 percent. Over the same two decades, the ranks of those who had served as an officer or a committee member for a local club or organization – any local club or organization – were thinned by an identical 40 percent.”⁵
- Between 1973 and 1994 the number of citizens who took a leadership role in any local organization decreased by more than 50%.⁶
- “In the mid-1970s, nearly two-thirds of all Americans attended club meetings, but by the late 1990s, nearly two-thirds of Americans *never* do.”⁷

Solution: *Citizens Must Be Active Leaders and Participants in the Planning Process*

Residents in the Hudson River Valley and New York City Watershed must become more active in local decision-making. Otherwise, sprawl will continue to consume our natural resources and diminish our quality of life. As Putnam notes:

As the twentieth century ended, Americans gradually began to recognize that the sprawling pattern of metropolitan settlement that we had built for ourselves in the preceding five decades imposes heavy personal and economic costs – pollution, congestion, and lost time . . . [M]etropolitan sprawl has also damaged the social fabric of our communities. So I challenge America’s urban and regional planners, developers, community organizers, and home buyers: *Let us act to ensure that by 2010 Americans will spend less time traveling and more time connecting with our neighbors than we do today, that we will live in more integrated and pedestrian-friendly areas, and that the design of our communities and the availability of public spaces will encourage more casual socializing with friends and neighbors.*⁸

A few opportunities to face this challenge, increase participatory democracy, and curb sprawl are:

- **Register and vote:** It is easier than ever before to vote. You can register at: http://www.rockthevote.com/rtv_register.php or <http://www.elections.state.ny.us/>.
- **Join and become active in a community group:** As sprawl creeps throughout the region, community groups are forming throughout all towns. These groups monitor the activities of their Town and Planning Boards and actively participate in the review of development proposals that threaten their communities.
- **Attend your local planning board and town board meetings:** Your elected officials need to hear that you want to revitalize downtown centers, benefit locally owned businesses, remediate water quality problems, and preserve open space.
- **Participate in the decision-making process:** Positions on planning boards, open space and conservation boards are typically made by appointment from the Town Board. These government bodies must represent citizen views and openings frequently arise. In addition to serving on a board, opportunities for participation include, but are not limited to:



Get involved! Help shape the community you want to live in.

- *Comprehensive Planning* – A comprehensive plan is a blueprint for how your community will grow. Although municipalities are not required to have a comprehensive plan, most do because courts generally uphold zoning laws if they are consistent with a comprehensive plan. A comprehensive plan can recommend higher density in areas of existing infrastructure, open space preservation, larger wetland buffers, and other Smart Growth principles. Comprehensive plans should be updated every five years and typically allow for a number of public participation opportunities.
- *Development Review* – All development projects are subject to the State Environmental Quality Review Act (SEQRA). If a project may have a significant impact on the environment, an environmental impact statement (EIS) must be prepared. The EIS process presents a number of public participation elements and is a good opportunity to advocate for low-impact development principles.
- *Open Space Planning* – In 2000, seven Northern Westchester towns voted to increase property taxes to raise \$17 million in funds to preserve open space.⁹ Many of these communities have formed or are forming open space committees to determine open space acquisition priorities. Contact your municipal leaders to get involved in the process.

¹ ROBERT D. PUTNAM, *BOWLING ALONE: THE COLLAPSE AND REVIVAL OF AMERICAN COMMUNITY* 32-35 (2000).

² *Id.* at 41.

³ *See id.*

⁴ *Id.* at 44.

⁵ *Id.* at 42.

⁶ *See id.* at 60.

⁷ *Id.* at 61 (emphasis in original).

⁸ *Id.* at 408 (emphasis in original).

⁹ *See* Westchester Open Space Alliance, Statement from the Westchester Open Space Alliance on the Passage of Open Space Referenda Bedford, Pound Ridge, Lewisboro, North Salem, Somers, Yorktown, and Irvington (Nov. 2000).

B. *Individual Action*

STRATEGY 27: Landowners Should Establish Conservation and Forestry Easements to Protect Open Space

STRATEGY 28: Landowners and Landscapers Should Limit Chemical Use and Adopt Organic Practices

STRATEGY 29: Homeowners and Businesses Should Reduce Use and Properly Dispose of Hazardous Household Products (HHPs)

STRATEGY 30: Consumers Should Support Local Businesses

STRATEGY 27: *Landowners Should Establish Conservation and Forestry Easements to Protect Open Space*

Problem

As the costs of owning land increase, owners of undeveloped and agricultural lands are forced to bow to economic pressures and frequently sell off their holdings to developers. Undisturbed forests and rural lands that once produced local crops now sprout sprawling, cookie-cutter subdivisions. If we are to keep our air and water clean and protect our natural resources, these farms and open spaces must be preserved.

One obvious option is to create public preserves and parks. However, the high cost of purchasing privately-owned lands can be prohibitive for local municipalities and other government agencies. Another solution is to afford private landowners who wish to be good stewards and preserve their lands the financial ability to do so. Conservation and forestry easements are effective tools that can allow landowners to reap financial benefits while permanently limiting development, and preserving open space and local farms.

According to the Land Trust Alliance, the pace of private land conservation in the United States is soaring. Between 2000-2005, the amount of private land set aside for conservation more than tripled from the previous five-year period.¹ The use of conservation easements as a preservation tool is increasingly popular; their use has “more than doubled in the past 5 years, with the Northeast being the most active in this area.”²

Solutions:

Encourage the Development of Conservation Easements by Private Landowners

Landowners should take advantage of the economic and environmental benefits of conservation easements. A conservation easement is a legally enforceable agreement between a landowner and either a land trust, municipality, or the State that restricts the development, management or use of land for the purpose of preserving certain environmental, historic, or other characteristic of the property.³ In such an agreement, landowners agree to permanently preserve and/or limit the allowable uses of their land in exchange for some financial compensation. In New York, conservation easements are of perpetual duration, unless otherwise provided.⁴ As such, a conservation easement can be an ideal way to protect environmentally sensitive lands, such as wetlands, watersheds, and plant and wildlife habitats.

Easements are very flexible and are crafted to suit the needs of private landowners. Landowners and the land trust or government agency work together to craft an agreement where certain rights are given up by the landowner in an effort to protect certain desirable aspects of the land. Landowners may opt to forego all development rights, or may reserve the right to engage in limited activities (e.g. agricultural or forestry uses) on portions of their property. Thus, private ownership and the desired use of the property is

maintained. In addition, landowners retain title to the property along with the right to sell it or pass it on to heirs.

When entering into a conservation easement with a land trust that qualifies as a public charity under Internal Revenue Service regulations, the landowner often receives income and estate tax savings. In addition, an experienced land trust will often take on the responsibility of enforcing the conservation easement. In New York, a conservation easement may be enforced by its grantor, holder, or by a public body or any not-for-profit conservation organization designated in the easement as having this right.⁵ Easements are recorded at the appropriate county or town records office in order to give future owners notice of any restrictions on the land. As most easements “run with the land,” the original owner and all subsequent owners are bound to abide by the easement’s requirements and restrictions.⁶



Properly managed, limited tree harvests are preferable to full-scale development and can provide the economic return that a landowner needs to retain ownership.

Economic Benefits of Conservation Easements

Conservation easements can be sold, but generally they are donated. If the public benefits from the conservation value of the donated easement, and if the easement meets certain requirements under the federal tax code, the easement can qualify as a tax-deductible charitable donation. The amount of the donation is the difference between the land’s value with the easement and its value without the easement.⁷ While an easement may lower the market value of land, it in turn also lowers the estate tax.

The Pension Protection Act of 2006 increased the tax benefits for landowners who establish conservation easements. Under the Act, a taxpayer who donates land or a conservation easement may take a charitable tax deduction of up to 50% of his/her adjusted gross income. If the landowner is a farmer or rancher, he/she may be able to deduct 100% of his/her income. These deductions may now also be spread out over 16 years.⁸

Recently, a New York State Conservation Tax Credit was also created. Under the new credit, landowners in the State who establish conservation easements may receive an annual rebate of 25% of the property taxes paid on the protected land for up to \$5,000 per year.⁹ This rebate comes in the form of a credit on a landowner’s state income taxes after the landowner has paid his/her property tax bill.

The New York State law is permanent, and applies to both old and new easements, i.e. landowners who have already donated easements or landowners who choose to donate easements in the future.

Conservation and Forestry Easements in the New York City Watershed

Seventy-five percent of the million-acre Catskill watershed is owned by private landowners.¹⁰ The non-profit Watershed Agricultural Council (WAC) works to protect water quality through the conservation of open space on farms and forests throughout the watershed regions. WAC helps local, traditional industries maintain their productivity but also serves as a land trust for private landowners interested in creating conservation easements on their farms and in their forests.

The WAC conservation easement program is funded by the New York City Environmental Protection and is specifically designed to encourage sustainable management of the region's privately owned agricultural and forestry lands by maintaining the productivity of these lands while also helping to permanently protect their open spaces from the pressures of development and sprawl.¹¹ These conservation easements allow landowners to retain many of their traditional land rights, including the use, maintenance, and improvement of existing structures and agricultural activities as well as the right to continue enjoyment of recreational activities such as hunting, fishing, and hiking. WAC has helped establish conservation easements on 52 farms in the New York City Watershed, covering over 13,000 acres of protected land.¹²

The Watershed Forestry Program, administered by WAC, provides informational guidance and technical assistance in order to help landowners actively manage their forests using sustainable best management practices (BMPs).¹³

The Watershed Forestry Program offers cost-sharing to watershed landowners of parcels of ten acres or more to encourage the establishment of Forest Management Plans for landowners' forested land.¹⁴ A Forest Management Plan can help landowners assess the value of the land and create a plan for sustainably managing the land for generations. Funding is available for qualified landowners to enlist the services of local forestry professionals who can assist in the establishment of such plans.¹⁵ As of 2005, over 500 plans covering over 90,000 acres had been written by Qualified Foresters.¹⁶

The Watershed Forestry Program also provides technical assistance and cost-sharing for landowners who want to plan, plant and maintain riparian areas on their property. Streambanks with adequate vegetation can help control erosion, protect against flooding, enhance wildlife habitat, and protect water resources for humans and fisheries. Landowners and timber harvesters working on watershed forest plans are eligible for funding to help design roads and install different types of BMPs to control erosion and protect their streams and rivers from harmful runoff during timber harvesting operations.¹⁷

Resources

Land Trust Alliance

1660 L Street NW, Suite 1100
Washington, DC 20036
www.lta.org
202-638-4725

The Nature Conservancy

New York State Office:
195 New Karner Rd., Suite 200
Albany, NY 12205
518-690-7850
www.nature.org

Open Space Institute

1350 Broadway, Suite 201
New York, NY 10018
212-290-8200
www.osiny.org

Watershed Agricultural Council

West-of-Hudson: Main Office
33195 State Highway 10
Walton, NY 13856
607-865-7790
www.nycwatershed.org

East-of-Hudson:

1275 Hanover Street
Yorktown Heights, NY 10598
914-962-6355
www.nycwatershed.org

Westchester Land Trust

11 Babbitt Road
Bedford Hills, NY 10507
914-241-6346
www.westchesterlandtrust.org

¹ See Press Release, Land Trust Alliance, Private Land Conservation in U.S. Soars (Nov. 30, 2006), available at <http://www.landtrustalliance.org/about-us/news/alliance-news/private-land-conservation-in-u.s.-soars> (last visited April 21, 2010).

² *Id.*

³ See N.Y. ENVTL. CONSERV. LAW § 49-0303(1).

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- ⁴ See N.Y. ENVTL. CONSERV. LAW § 49-0305(1).
- ⁵ See N.Y. ENVTL. CONSERV. LAW § 49-0305(5).
- ⁶ See OPEN SPACE INSTITUTE CONSERVATION EASEMENTS FAQ, available at <http://www.osiny.org/site/DocServer/ConservationEasements.pdf?docID=121> (last visited April 21, 2010).
- ⁷ See *id.*
- ⁸ See Open Space Institute, *Creating Conservation Easements*, available at http://www.lta.org/yourregion/ny/faq_ny_ce_program.pdf (last visited April 21, 2010).
- ⁹ See HENRIETTA JORDAN, LAND TRUST ALLIANCE, FREQUENTLY ASKED QUESTIONS ABOUT NEW YORK'S CONSERVATION EASEMENT TAX CREDIT (Nov. 2006), available at <http://www.nyalt.org/New%20York%20StateTax%20Credit%20for%20Easements.pdf> (last visited April 21, 2010).
- ¹⁰ See WAC, *Forest Management Planning*, available at http://www.nycwatershed.org/lc_fmp.html (last visited April 21, 2010).
- ¹¹ See WAC, *Land Stewardship: Agricultural Easements*, available at http://www.nycwatershed.org/lc_agricultural.html (last visited April 21, 2010).
- ¹² See WAC, *Land Stewardship*, available at http://www.nycwatershed.org/index_landcons.html (last visited April 21, 2010).
- ¹³ See WAC, *supra* note 10.
- ¹⁴ See *id.*
- ¹⁵ See *id.*
- ¹⁶ See Kevin Brazill, *The Forgotten Forest Product: Forestry in the New York City Watershed; Private Lands, Public Benefit*, 1 WISDOM 6, available at <http://www.nycwatershed.org/pdfs/By%20Kevin%20Brazill.pdf> (last visited April 21, 2010).
- ¹⁷ See WAC, *supra* note 10.

STRATEGY 28: *Landowners and Landscapers Should Limit Chemical Use and Adopt Organic Practices*

Problem

Along with sprawl comes a heavily managed and manicured landscape. Intensive landscaping and gardening practices can harm water quality. Pesticides, herbicides and fungicides are chemicals that pose risks to human health and the environment. Overuse of fertilizers containing phosphorous and nitrogen can impair waterbodies by causing “eutrophication,” a condition where high levels of nutrients cause algae blooms, which in turn reduce the level of dissolved oxygen available in the water supply and kill aquatic organisms. Vegetation removal and the preference for lawns increase stormwater runoff and can lead to the loss of important wetlands and riparian buffer areas, as well as expose soils, and cause erosion and sedimentation.



Maintaining perfectly manicured, weed-free lawns often comes at the cost of environmental damage from unnecessary herbicide, pesticide and fertilizer application. But, with a proper understanding of organic methods, a beautiful lawn that is chemical-free can be achieved.

Toxic chemicals (pesticides, herbicides and fungicides) are applied to keep suburban lawns crisply manicured and to prevent insect pests from destroying valuable farmland. Despite their success in this area, pesticides are cause for concern due to their harmful effects on ecosystem and human health. Throughout New York State pesticide use has increased in recent years, posing risks to human health and the quality of our drinking water supplies. In New York, the Department of Environmental Conservation (DEC) requires reporting of pesticide sales and applications by certified applicators and technicians. However, this data

does not include the additional amount of pesticide applied by private individuals and actual use is underreported. In 2004, Westchester County was second only to Suffolk County in terms of reported pesticide application, with 2,303,960.12 lbs. of pesticides applied.¹ In Dutchess and Putnam Counties respectively, 430,024.53 lbs. and 188,700.17 lbs. were applied.² These numbers represent only a small portion of the nearly one billion pounds of pesticides applied throughout the U.S. each year, many of which are linked to cancer, birth defects, neurological disorders and environmental impacts.³

A recent study by the U.S. Geological Survey (USGS) highlighted how widespread and serious a threat pesticides are in our environment. The study, *Pesticides in the Nation's Streams and Groundwater, 1992-2001*, evaluated contamination by pesticides in rural and urbanized areas over a ten-year period. In major rivers and streams throughout the

country, USGS found that 100% of all surface water samples, 96% of all fish, and 33% of all major aquifers contained one or more pesticides at detectable levels.⁴ Through soil percolation and stormwater runoff, pesticides have reached almost all waterways, including public drinking water supplies. This process is further facilitated by the increasing amount of impervious surface area added by urbanization.

Many pesticides have been linked to human health problems. A class of chemicals called organophosphates, which were developed in the 1940s as warfare agents, are of particular concern. Although organophosphates were banned by the U.S. Environmental Protection Agency (EPA) for household use in 2001, these chemicals are still widely used in treating farmland. In fact, EPA reported that nearly 20% of all fruits, vegetables and grains sold in 2001 had residues of one or more organophosphate pesticides.⁵ These compounds affect the brain and nervous system by blocking a key enzyme called cholinesterase. This can cause seizures, paralysis, coma, and even death when individuals are exposed to high concentrations. Some of these chemicals, such as chlorpyrifos, affect hormone production, raising concern about links to hormone-related cancers such as breast, prostate and testicular cancer. Although levels that cause severe effects were not detected in drinking water supplies, organophosphates and many other chemicals used in pesticides are ingested by people everyday.

Children are at increased risk to the effects of chemicals in the environment. Because they are in the developmental stages of life and their bodies cannot tolerate toxins as well as adults, children are highly susceptible to damaging effects from the chemicals in pesticides. A recent study reported that a natural enzyme in the human body that breaks down toxics, including commonly used pesticides, varies greatly between infants and adults. Researchers discovered that “some newborns may be 26 times more susceptible to diazinon [an organophosphate]



Chemicals in many lawn care products have been linked to human health impacts, and children are at increased risk to certain effects.

exposure than newborns with the highest level of enzyme, and 65 times more susceptible than adults with the highest enzyme levels.”⁶ Tests concerning chlorpyrifos showed an even greater disparity. Because both of these chemicals are still used in farming, children under the age of two remain in jeopardy of being harmed by pesticides.

While fertilizers do not pose a direct threat to human health, excessive nutrient loadings (particularly phosphorous) threaten aquatic environments and water quality. When eutrophication causes algae blooms, the algae stress the entire aquatic ecosystem and can react with chlorine during the disinfection process to create cancer-causing byproducts that end up in our drinking water. Many reservoirs in New York City’s East-of-Hudson

Watershed are water quality limited and exceed phosphorus levels established under current Total Maximum Daily Loads (TMDLs).⁷ While municipalities struggle to reduce phosphorous loadings by limiting development and upgrading sewage treatment facilities (the other major sources of phosphorous), homeowners can also reduce their contribution of phosphorous to the environment.

Solution: Encourage Organic and Integrated Pest Management Practices and Reduce Use of Phosphorous-Based Fertilizers

Removing the threat from toxic chemical products requires the sharp reduction or total elimination of chemical applications to treat lawns, fields and farmlands. Protecting our water supplies also requires reduction of phosphorous loadings.

Organic landscaping adopts a full commitment against chemical use and promotes a holistic approach to growing healthy lawns and farm ecosystems, instead of simply treating insect and weed damage. While going organic is clearly the best approach, Integrated Pest Management (IPM) programs also provide a first step towards reducing chemical use and exposure. IPM programs seek to use alternatives to chemical pesticides and practice more environmentally-friendly ways of preventing pests through a knowledge of ecosystems. Like organic programs, IPM programs strive to treat infestation on an as-needed basis, as opposed to the conventional approach that uses preventative routine treatment whether needed or not. However, while some proponents use a chemical-free approach, others allow for use of chemical treatment as a “last resort.”

Organic Landscaping

Organic programs focus on maintaining healthy soil ecosystems that can sustain turf grass and crops with minimum weeding, watering and pest control; they go beyond the IPM approach of merely controlling pests and weeds.⁸

Although pesticides may temporarily rid a lawn of unwanted insects and weeds, they actually destroy the beneficial soil organisms that are essential in keeping yards free from pests. For this reason, it is important not to use pesticides when maintaining your lawn. One of the most important steps in organic landscaping is taking soil samples and maintaining healthy soils. Lawns require different levels of nutrients at different stages of growth and times of year, and soil tests prevent excess fertilizer use by determining when various amounts are needed. This calculated use of fertilizer based on need reduces the amount of excess fertilizer that is not absorbed and would otherwise be washed into adjacent waterbodies. There is also a variety of ways to strengthen soil, including raking an inch of compost into the lawn each spring and fall and adding microbial inoculants that support beneficial microbes necessary to grow healthy turf.

Other organic landscaping practices include, but are not limited to:

- Leave grass clippings on the lawn after mowing: This reduces the amount of fertilizer needed by 50% and provides nitrogen to the lawn, a vital nutrient that is contained in many fertilizers.
- Reseed annually: A thick turf is one of the best ways to control weeds. If grass is occupying all of the available soil in the lawn, then there is no room for weeds.
- Do not cut grass shorter than 3 inches: This length allows the blade to shade the roots, conserve moisture and prevent weeds from germinating.
- Water once a week in the early morning for several hours instead of daily: Take into consideration the type of soil, whether sandy or clay-based, and water accordingly.
- Use organic control products: For example, instead of using chemical herbicides to kill weeds, which can put harmful chemicals into your lawn, use an organic corn gluten product that prevents weed seeds from germinating. For spot weed control, it is best either to pull them out manually by the roots, or to apply a vinegar based product.⁹

Integrated Pest Management (IPM)

By using specific biological and cultural pest management methods, IPM reduces the need for pesticides and other chemicals. IPM is especially useful in and around the home and is easy for homeowners to practice. DEC defines IPM as:

... a systematic approach to managing pests that focuses on long term prevention or suppression with minimal impact on human health, the environment, and nontarget organisms. IPM incorporates all reasonable measures to prevent pest problems by properly identifying pests, monitoring population dynamics, and utilizing cultural, physical, biological or chemical pest population control methods to reduce pests to acceptable levels.¹⁰

This very broad definition includes any pest control method that incorporates knowledge of the insects and plants in the lawn and considers the environmental impacts of their management. One practice environmentally conscious farmers use is the release of beneficial insects that prey on crop pests. This allows a natural predator-prey relationship to occur while protecting crops and the environment. The dispersal of parasites that are pest-specific is another benign way to limit damage from insect pests. A popular physical method is the placement of bug traps on lawns or farmland. Like the previously mentioned biological practices, the placing of traps concentrates on pests rather than harming organisms that are not causing damage to vegetation.

In addition, cultural methods can be applied around the home and throughout farms. By gaining an understanding of insects, weeds and other pests in your area, it is easy to practice specific pest control methods. For example, if a certain lawn pest proliferates under moist conditions, it would be beneficial to modify the amount of water applied to the lawn. Such simple adaptations can solve many pest problems.

Many other IPM practices can be used around the home to prevent and reduce pest risk. These include growing pest-resistant plants (e.g. Kousa dogwood), destroying diseased plant material, digging out weeds by hand, and cultivating plants that encourage beneficial insects.¹¹ IPM also incorporates the use of alternative pesticides that are less toxic to the environment. These can include insecticidal soaps, which can be very effective in fighting a variety of pests, or true chemical pesticides that are less harmful to human health and the environment. One such alternative fumigant is metam sodium, which has contributed to the reduced agricultural use of toxic methyl bromide on fruit and vegetable crops.¹²

Reduce Use of Phosphorous-Based Fertilizers

Soils in the Hudson River Valley are naturally rich in phosphorous and little to no fertilizer is needed to maintain healthy lawns and gardens. Soil should be tested and the need for treatment established prior to applying any fertilizer. If needed, fertilizers should not be applied prior to anticipated rain events because they will not have time to be absorbed in the soil and plant root and will quickly be washed into nearby waterbodies.

Progressive communities should follow the lead of Westchester County, which in 2009 enacted a lawn fertilizer law that restricts the use of phosphorus fertilizers and provides guidelines for lawn care.¹³ The law is not an outright ban, and application of such fertilizers would be allowed if a soil sample proved a need.¹⁴ Also in 2009, New York State legislators introduced a similar bill that is currently under review by the Senate Committee on Environmental Conservation.¹⁵ Both organic and conventional no- and low-phosphorous fertilizers are commercially available at comparable cost to phosphorous-based formulas.

¹ See NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (DEC), 2005 PRL ANN. REP., available at <http://www.dec.ny.gov/chemical/8523.html> (last visited April 21, 2010).

² See *id.* While applications in Westchester County continued to increase from 2004 to 2005 (up from 1,991,787.52 lbs.), applications in Dutchess and Putnam Counties decreased in the same period (down from 707,465.65 lbs. and 258,224.05 lbs. respectively). See DEC, 2004 PRL ANN. REP., available at <http://www.dec.ny.gov/chemical/8523.html> (last visited April 21, 2010).

³ See U.S. ENVIRONMENTAL PROTECTION AGENCY (U.S. EPA), PROTECTING THE PUBLIC FROM PESTICIDE RESIDUES IN FOOD, available at <http://www.epa.gov/pesticides/factsheets/protect.htm> (last visited April 21, 2010).

⁴ See U.S. GEOLOGICAL SURVEY, PESTICIDES IN THE NATION'S STREAMS AND GROUND WATER, 1992–2001, USGS Circular 1291 (2006), available at <http://pubs.usgs.gov/circ/2005/1291/> (last visited April 21, 2010).

⁵ See U.S. EPA, MEASURE E8: PESTICIDE RESIDUES ON FOODS FREQUENTLY CONSUMED BY CHILDREN, available at <http://www.epa.gov/economics/children/contaminants/e8-background.html> (last visited April 21, 2010).

⁶ Press Release, UC Berkeley, Susceptibility to Pesticides Highly Variable Among Latina Women and Children (Mar. 2, 2006) available at http://www.berkeley.edu/news/media/releases/2006/03/02_pesticides.shtml (last visited April 21, 2010).

⁷ See DEC, PHASE II PHOSPHORUS TOTAL MAXIMUM DAILY LOADS FOR RESERVOIRS IN THE NEW YORK CITY WATER SUPPLY WATERSHED 33, 36 (Jun. 2000).

⁸ See GRASSROOTS HEALTHY LAWN PROGRAM, A GUIDE FOR CONSUMERS: WHAT YOU CAN EXPECT FROM YOUR NATURAL LAWN PROGRAM, Grassroots Environmental Education, Scarsdale, NY (undated).

⁹ See *id.*

¹⁰ DEC, IPM IN AND AROUND YOUR HOME (1999), available at http://www.dec.ny.gov/docs/materials_minerals_pdf/pm2.pdf (last visited April 21, 2010). For a general overview of IMP principles, see U.S. EPA, *Integrated Pest Management (IPM) Principles*, available at <http://www.epa.gov/opp00001/factsheets/ipm.htm> (last visited April 21, 2010); Cornell University, *New York State Integrated Pest Management Program*, available at <http://nysipm.cornell.edu/program/default.asp> (last visited April 21, 2010); and New York State Attorney General, *Integrated Pest Management*, available at <http://www.ag.ny.gov/bureaus/environmental/ipm3fold.html> (last visited April 26, 2010).

¹¹ See DEC, *supra* note 10.

¹² U.S. EPA, METHYL BROMIDE ALTERNATIVES, available at <http://www.epa.gov/ozone/mbr/alts.html> (last visited April 26, 2010).

¹³ See http://www.westchestergov.com/pdfs/ENVFACIL_2008LawnFertilizerLaw.pdf.

¹⁴ For \$12.00 Cornell Cooperative Extension offers soil testing at many of their field offices, including those in Westchester and Putnam Counties. For contact information, see Riverkeeper's website at http://riverkeeper.org/document.php/308/Lawncare_Fertil.pdf (last visited April 21, 2010).

¹⁵ See <http://files.statesurge.com/file/2585503>.

STRATEGY 29: Homeowners and Businesses Should Reduce Use and Properly Dispose of Hazardous Household Products (HHPs)

Problem

“Americans generate 1.6 million tons of hazardous household waste per year.” – *U.S. Environmental Protection Agency*¹

In a sprawling landscape, some people regularly use a host of legal, yet potentially dangerous everyday products. The chemical compounds contained in household cleaning



Everyday products that are spilled on the ground or poured down drains make their way into our water supplies.

products, paints and solvents, used motor oil and antifreeze, batteries, pesticides, and medicines are potentially hazardous to human health and the environment. These products “contain corrosive, toxic, ignitable, or reactive ingredients... Improper disposal of household hazardous wastes can include pouring them down the drain, on the ground, into storm sewers, or in some cases putting them out with the trash.”² Contamination of surface waters via stormwater runoff can impact aquatic communities and drinking water supplies. Similarly, infiltration to ground water aquifers can contaminate drinking water wells and stream base flows.

Pharmaceuticals – including prescription and non-prescription drugs, steroids and hormones – are also household pollutants that are released directly into the environment through wastewater treatment plants and household septic systems. They enter and persist in surface waters and, because they are designed to alter human physiology, can pose health risks as their concentrations in drinking water supplies increase over time.

In 2000, the U.S. Geological Survey sponsored a survey of organic wastewater contaminants in U.S. streams included 11 sampling sites in the Croton watershed. All 11 sampled streams contained detectable levels of human pharmaceutical compounds.³ Many pharmaceuticals enter and persist in surface waters through human excretion and wastewater disposal. Concentrations of any organic wastewater contaminants in water resources may be toxic to humans and aquatic life, and hormonal compounds pose the most significant health risks. In addition to the direct toxic effects of hormones



Pharmaceuticals are detectable in drinking water supplies, but human health impacts are not yet fully understood.

and other pharmaceuticals, combining selected compounds can produce synergistic toxic effects. An even greater health risk may be attended when some pharmaceuticals degrade into more persistent compounds and enter surface waters in addition to their parent compounds.⁴

Solution: Reduce, Reuse, Recycle and Properly Dispose of Hazardous Household Products to Protect Human Health and the Environment

A sensible two-step approach to protect human health and the environment from hazardous household chemicals is to reduce the use of these products and when used,



Environmental stewardship begins at home. We must all act to protect and conserve our shared resources.

dispose of them properly. Reduction can be accomplished through practices that limit product application or substitute non-hazardous alternative products for hazardous products. For example, before applying phosphorus-containing fertilizer to lawns or gardens, homeowners can have their soil tested to determine the amount and type of fertilizer needed for optimum plant growth. For a small fee (\$12.00 on last inquiry), Cornell Cooperative Extension offers soil testing at many of their field offices, including those in Westchester and Putnam Counties. Homeowners also can time fertilizer application to coincide with plant nutrient uptake periods. Soil testing and application timing both help to reduce the amount of nutrients that can enter surface waters in stormwater runoff.

Reduction by substitution of alternative products and practices includes Integrated Pest Management (IPM), which uses natural predators, growth regulators, pheromones, trapping devices, and biological pesticides such as species-specific bacteria to limit the use of chemical pesticides.⁵ By way of example, between 1979-1988 in the Quinnipiac River Watershed in Connecticut pesticides accounted for the highest percentage of contaminated wells in the state, with pesticide levels as high as 66% after routine applications. Following an aggressive IPM campaign, agricultural and green industry cooperators' pesticide applications were reduced by 63%, nitrogen use by 32%, and phosphate and potassium use by 47% in the watershed.⁶

The U.S. Environmental Protection Agency (EPA) has published a list of non-hazardous alternatives that include plant spray, cleaners, polishes, preservatives, and pet products.⁷ EPA also offers a series of reduction, reuse, recycling, and disposal options as tools to safely manage hazardous household products.⁸ Collection options for hazardous household products, including unused pharmaceuticals, provide a means to intercept these products before they are disposed of improperly and, when practicable, recycle them for reuse. Collection options recommended by EPA include:

- Permanent collection or exchange: See if your community has a facility that collects Household Hazardous Waste (HHW) year-round. Some of these facilities have exchange areas for unused or leftover paints, solvents, pesticides, cleaning and automotive products, and other materials. By taking advantage of these facilities, materials can be used by someone else, rather than being thrown away.
- Special collection days: If your community doesn't have a year-round collection system for HHW, see if there are any designated days in your area for collecting solid waste at a central location to ensure safe management and disposal.
- Local business collection sites: If your community has neither a permanent collection site nor a special collection day, you might be able to drop off certain products at local businesses for recycling or proper disposal. Some local garages, for example, may accept used motor oil for recycling.⁹

Proper storage of hazardous household products is necessary to avoid spills, leaks, and/or ignition of flammable compounds. Products should be stored in their original containers with original labels to avoid accidents.¹⁰

¹ U.S. Environmental Protection Agency (U.S. EPA), *Household Hazardous Waste*, available at <http://www.epa.gov/wastes/consERVE/materials/hhw.htm> (last visited April 26, 2010).

² *Id.*

³ See KIMBERLY K. BARNES ET AL., U.S. GEOLOGICAL SURVEY, WATER-QUALITY DATA FOR PHARMACEUTICALS, HORMONES, AND OTHER ORGANIC WASTEWATER CONTAMINANTS IN U.S. STREAMS, 1999-2000 (2002), available at <http://toxics.usgs.gov/pubs/OFR-02-94/index.html> (last visited April 21, 2010).

⁴ *See id.*

⁵ See U.S. EPA, *Pesticides and Food: What "Integrated Pest Management" Means*, available at <http://www.epa.gov/pesticides/food/ipm.htm>, (last visited April 21, 2010).

⁶ See CT DEPARTMENT OF ENVIRONMENTAL PROTECTION, QUINNIPIAC RIVER WATERSHED INTEGRATED PEST/CROP MANAGEMENT PROJECT SUCCESS STORIES (Jan. 2001), available at http://ct.gov/dep/lib/dep/water/nps/success_stories/qripmicm.pdf, (last visited April 21, 2010).

⁷ See U.S. EPA, *Source Reduction Alternatives Around the Home*, available at <http://www.epa.gov/epaoswer/non-hw/reduce/catbook/alt.htm>, (last visited April 21, 2010).

⁸ See U.S. EPA, *supra* note 1.

⁹ *See id.*

¹⁰ For further guidance on the safe use, storage and disposal of paints, pesticides, and reactive, corrosive and toxic products, see Office of Waste Management, University of Missouri Extension, *Household Hazardous Waste*, available at <http://outreach.missouri.edu/owm/hhw.htm> (last visited April 21, 2010).

STRATEGY 30: *Consumers Should Support Local Businesses*

Problem

National discount retailers (“big box” stores) are flourishing throughout the United States at the expense of local businesses. Because chains like Wal-Mart and Home Depot find it easier to build according to formula on undeveloped land than to adapt to existing vacant buildings, they tend to abandon city and town centers, contributing to suburban sprawl. Not only are local businesses often unable to compete in terms of price and selection, but many large retailers put their own smaller stores out of business by creating new “supercenters” rather than expanding their existing stores.¹ In addition, as national corporations force out locally owned businesses, local residents must seek employment at the big chain businesses. Frequently, they are underpaid and forced to work overtime without pay.²



This big box complex in the Town of Southeast in Putnam County not only sheered off the top of a mountain, but also drew business away from local Main Street businesses in the Village of Brewster. Photo by Marc Yaggi.

When faced with the choice between shopping at a national chain store or patronizing a locally-owned business, it is important to compare the hidden costs of buying from the nationally owned conglomerate with the benefits of buying local. While “unparalleled selection,” “great prices” and “one-stop shopping” all sound alluring, to support the big box stores that have coined these phrases is to generate considerable burdens for communities, individuals and the environment. The discounts symbolized by smiley faces and cartoon mascots can also represent unfair labor practices, dying town centers and diminished community involvement. The familiarity and convenience contained within hundreds of thousands of square feet of retail space denote absentee owners, dwindling selection and environmental decline.

Solutions: *Communities Should Support Local Businesses to Combat the Proliferation of Big Box Stores*

Government

Regrettably, many current zoning laws impede local businesses while facilitating sprawl development beyond town centers. Subsidies and other incentives are often dispensed to large chain companies for quick short-term benefits, at long-term expense to local business and communities in general. If subsidies are to be distributed, they should be

designed to draw businesses into walkable shopping districts or downtown areas, and to encourage local entrepreneurship.³

Independent Businesses Alliances

Local businesses can greatly help their cause by forming Independent Business Alliances, which create venues for businesses to share ideas and create a unified voice in marketing and public affairs. Furthermore, they can promote business through innovative ideas such as community benefit cards. For instance, the Boulder Independent Alliance sells a community benefit card for \$15 that offers major discounts at more than 60 locally-owned businesses.⁴ Independent businesses need not stand alone in the face of big box competition, as they can help serve each other's causes with cooperation and coordination.

Local Consumers

The group with the greatest influence in curbing the growth of big box retailers, however, is local consumers. Consumers should understand the ramifications of big box stores entering their local communities and the urban sprawl associated with them, and support local businesses instead. Many consumers simply see the cheap price tags at their local Wal-Mart and are willing to drive the extra distance to stockpile inexpensive goods.



In the Town of Rhinebeck in Dutchess County, a vibrant, pedestrian-friendly Main Street invites shoppers to support local businesses. Photo by Marc Yaggi.

However, consumers must realize that the cost of products at big box stores is greater than what is simply listed on the labels. The environmental costs of the sprawl associated with big box stores include increased impervious surfaces and stormwater runoff, air pollution, contamination of natural resources, and consumption of large quantities of open space lands. While these costs are often disregarded because they are not felt in the immediate monetary sense, they are shared by every member of the local community. Community members must ask themselves how much of the environment they are willing to sacrifice in the name of cheaper prices.

Another major cost of shopping at national chains is the forgone revenue that local businesses recycle back into the community but that national chains do not. Studies show that local businesses create three times the local economic activity that big chains do.⁵ For instance, a study in Austin, Texas found that for every \$100 spent in the local Borders bookstore, the total local economic impact was only \$13. On the other hand, for every \$100 spent in the local independent bookstore, the local economic return was \$45.⁶ Independent businesses generate greater local economic impact because local merchants

spend much more money on local labor and spend their profits within the local community. In contrast, the profits of a big box store go to a central headquarters located outside the branch's local community. Therefore, consumers who shop at independent businesses, while they may pay a higher direct price, may receive returns on those purchases in the future, as money is recycled back into the community.

The long-term benefits of big box stores are minimal. Supporters of the expansion of these large chains argue that they are simply providing competition and diversity to the market. However, as independent businesses often cannot compete with them, big box stores emerge as near monopolies. Therefore, competition is actually reduced, not increased.⁷ Furthermore, while some people may be excited to see these stores enter their community bearing large inventories and low prices, they should know that the large discounts these stores offer may be only temporary. Evidence shows that once big box stores drive out local competition, their prices immediately increase.⁸ One study of Wal-Mart outlets in Virginia found that prices varied by as much as 25 percent depending on the existence of local competitors.⁹

Lack of economic stability is also a major issue associated with big box stores. If a town is dependent on big box stores, then it is susceptible to economic disaster should those stores leave town or go out of business, as they often do. Also, economic research has found that towns and cities with a strong sense of local identity are more likely to attract entrepreneurs and new investment.¹⁰ In general, communities that rely on local businesses have a much more stable base for long-term economic growth and prosperity.

¹ As of May 2000, Wal-Mart had left over 25 million square feet of unoccupied space throughout the US. See Public Broadcasting Service, *Store Wars: When Wal-Mart Comes to Town*, available at <http://www.pbs.org/itvs/storewars> (last visited April 26, 2010).

² See AL NORMAN, SLAM-DUNKING WAL-MART 45 (1999). For example, unionized supermarkets pay an average of \$13 per hour, while Wal-Mart pays an average wage of about \$8.50 an hour. See Steven Greenhouse, *Wal-Mart, Driving Workers & Supermarkets Crazy*, NY Times, Oct. 19, 2003, at WK3. See also Institute for Local Self-Reliance, *Small Businesses Pay their Employees, Wal-Mart Doesn't*, New Rules Newsletter (Feb. 2003), available at <http://www.newrules.org/retail/news/small-businesses-pay-their-employees-walmart-doesnt> (last visited April 26, 2010).

³ See DALE F. RUBIN, PUBLIC SUBSIDIES TO PRIVATE CORPORATIONS: STOP VIOLATING THE UTAH CONSTITUTION! (1996), available at <http://www.heartland.org/Article.cfm?artId=5675> (last visited April 21, 2010). Vermont has enacted a number of incentives, including "Historic Building Rehabilitation Tax Credits;" "Older Buildings Rehabilitation Tax Credits" and even "Employee Training Tax Credit," through which an employer can earn tax credits by training economically disadvantaged employees with the intent of providing jobs. See Stacy Mitchell, 10 Reasons Why Vermont's Homegrown Economy Matters, Institute for Local Self-Reliance, at 25 (Oct. 2003), available at http://www.ptvermont.org/publications/HomegrownEconomy/sprawl_book.htm (last visited April 21, 2010).

⁴ See Stacy Mitchell, *HOME GROWN ECONOMICS - How Boulder Businesses are Staying Ahead of the Chains*, ORION MAGAZINE, Autumn 2001, available at <http://www.newrules.org/retail/smorionafield.html> (last visited April 21, 2010).

⁵ See LIVEABLE CITY, ECONOMIC IMPACT ANALYSIS: A CASE STUDY, LOCAL MERCHANTS VS. CHAIN RETAILERS (Dec. 2002), available at <http://www.liveablecity.org/lcfullreport.pdf> (last visited April 21, 2010).

⁶ See Civic Economics, “Economic Impact Analysis, A Case Study: Local Merchants vs. Chains,” December, 2002.

⁷ See Mitchell, *supra* note 3, at 9.

⁸ See Elizabeth Humstone and Thomas Muller, “Impact of Wal-Mart Stores on Northwestern Vermont,” September 1995.

⁹ See Mitchell, *supra* note 3, at 10.

¹⁰ See *id.* at 3.

C. *Municipal Initiatives*

STRATEGY 31: Communities Should Support Responsible
Agriculture

STRATEGY 32: Municipalities Should Adopt Winter Road
Maintenance Practices That Reduce the Use of
Road Salt

STRATEGY 31: *Communities Should Support Responsible Agriculture*

Problem

Throughout the United States, sprawl has impacted farmland. According to the U.S. Department of Agriculture’s National Resources Inventory, “from 1992 to 1997 more than 11 million acres were converted to developed use – and over half of this land” was converted from agricultural use.¹ Farms are susceptible to sprawl for many reasons. Land conversion is largely due to the fact that farmland is optimal for development: it is already flat, well drained, and affordable. As urbanization supplants crops and other characteristics of farmland, the effects of sprawl become apparent.

Sprawl causes economic loss as residential development requires expensive infrastructure to be put in place, including roads, energy, and conveyances for sewage treatment and clean drinking water. Sprawl converts farmland into impervious surfaces, which increases stormwater runoff volume and velocity. As a result of increased flooding, some farmers must relocate their farms to areas where arable land still exists.

While agricultural operations have the potential to threaten water quality – from animal waste, pesticides, herbicides, and excess use of fertilizers – properly managed operations that maintain buffer zones, rotate crops, and use heightened stormwater treatment practices for animal rearing provide a clearly beneficial alternative to subsequent development, and are cultural and often historic resources that should be maintained.



Without appropriate Best Management Practices in place, livestock operations can pose a significant threat to water quality. In the NYC Watershed, the Watershed Agricultural Council works with local farmers to create Whole Farm Plans to protect water resources.

Solutions: *Make Farming Affordable*

Encourage the Purchase of Agricultural Easements from Farmers

The best way to prevent sprawl from displacing farmland is through the purchase of agricultural easements. Agricultural easements are very flexible in that they “recognize the farmer’s need to be able to respond to a changing” agricultural environment.²

An easement is generally defined as a voluntary limitation on a proprietor’s property to protect a certain aspect of the land. More specifically, an agricultural conservation easement is defined as “a voluntary, legally recorded agreement between the landowner and ... [a] qualified conservation organization that restricts land to agriculture and open-

space uses.”³ The easement limits the owner from practices that could potentially damage the agrarian integrity of the land. Landowners still hold title to their land, but uses of the land are limited to the agreement reached in the easement.⁴ In other words, the land cannot be developed under an agricultural easement unless it is determined that development would benefit agricultural needs. In exchange for giving up rights to their land, farmers may be able to reap financial benefits from reduced taxes under federal, state or local laws. In this way, sprawl-type development on farmland can be avoided.

Encourage Farmers to Create or Join Agricultural Districts

Agricultural districts also help farmers protect their land from the impacts of sprawl. The Agricultural Districts Law (Article 25-AA) of the New York State Agriculture and



Dairy and corn farms are an important part of the local economy throughout the Hudson River Valley.

Markets Law encourages the continued use of farmland for viable agricultural production to prevent farmland from being lost to sprawl.⁵ An agricultural district is formed when a group of “interested landowners,” who collectively own at least 500 acres, present a proposal to their respective county to become an agricultural district.⁶

Belonging to an agricultural district provides farmers with many forms of protection. These protections allow farmers to farm their land without having to be restricted by certain laws. The most notable of these protections is Section 305-A of the Agriculture and Market Laws, which immunizes farmers from eminent domain when a law is determined to be overly restrictive.⁷ In addition, agricultural districts require assessment of the farmland value. For this assessment a Land Evaluation and Site Assessment (LESA) is used. The purpose of a LESA is to assess property taxes as well as the agricultural viability of the land parcel.⁸ This gives farmers a free evaluation of their farmland and potential tax reductions.

Encourage the Implementation of Better Zoning Strategies

Rural agrarian communities have used zoning restrictions on lot size to prevent the destruction of farms. One zoning strategy is to increase the minimum lot size, which allows farmland “to remain as farmland since it can not be subdivided into smaller buildable lots.”⁹

Farmers can also zone their land as agricultural. The purpose of agricultural zoning is “to minimize the subdivision of existing land parcels into smaller sized lots.”¹⁰ By zoning

this way, the land parcel retains its agricultural viability. Agricultural zoning promotes farming in locations where it is a staple of the local economy.¹¹ Because of the economic boost that farmers provide to a town (by paying local taxes that exceed the community costs of providing services to agricultural land use), residents gain confidence in their local farms and are often enthusiastic about resisting urban development.

¹ JULIA FREEDGOOD, COST OF COMMUNITY SERVICES STUDIES: MAKING THE CASE FOR CONSERVATION 2 (2002).

² JUDY ANDERSON & JERRY COSGROVE, EXAMPLES OF AGRICULTURAL EASEMENT LANGUAGE (2002), available at <http://www.privatelandownernetnetwork.org/plnpro/exageasement.pdf> (last visited April 21, 2010).

³ AMERICAN FARMLAND TRUST, GUIDE TO LOCAL PLANNING FOR AGRICULTURE IN NEW YORK STATE (2005).

⁴ See COZATA SOLLOWAY & SEAN NOLAN, AGRICULTURAL PRESERVATION 9 (undated), available at <http://landuse.law.pace.edu/landuse/documents/StudentArticle/AgPres.doc> (last visited April 21, 2010).

⁵ See AMERICAN FARMLAND TRUST, GUIDE TO LOCAL PLANNING FOR AGRICULTURE IN NEW YORK STATE (2005).

⁶ See New York State Department of Agriculture and Markets, *Agricultural Districts: Farmer Benefits and Protections*, available at <http://www.agmkt.state.ny.us/AP/agsservices/agdistricts.html> (last visited April 21, 2010).

⁷ See AMERICAN FARMLAND TRUST, *supra* note 5.

⁸ See U.S. Department of Agriculture, Natural Resources Conservation Service, *LESA System Design*, available at http://www.nrcs.usda.gov/programs/lesa/lesa_sysdes_uses.html (last visited April 21, 2010).

⁹ AMERICAN FARMLAND TRUST, *supra* note 5.

¹⁰ See Agricultural Zoning, *Local Leader's Guide*, Series III, Issue 9.

¹¹ See *id.*

STRATEGY 32: *Municipalities Should Adopt Winter Road Maintenance Practices That Reduce the Use of Road Salt*

Problem

Sprawl development results in more and larger roads with the subsequent need for maintenance. Every winter, highway maintenance crews apply sand and salt to roads as traction and deicing agents to ensure the safety of motorists and pedestrians. Despite the success of these agents in keeping highways safe for travelers, they have become hazardous to our drinking water supplies, aquatic ecosystems, bridges and roads. The millions of tons of road salt applied to roads, parking lots and sidewalks each year are carried in stormwater runoff from those impervious surfaces during spring rains and snowmelt and end up in the surrounding soils, groundwater aquifers, streams, and our drinking water reservoirs. As concentrations increase year after year, the salt begins to kill trees and other vegetation, poisons fish and other wildlife, and contaminates drinking water wells. Sand is likewise washed from roadsides during spring rains and clogs storm drains, injures fish and other aquatic organisms, and transports to receiving waters other pollutants – such as oil, hydrocarbons, and phosphorus – that adhere to it.



With conventional spreaders, much of the rock salt applied is immediately lost as it bounces off the road. Photo by William Wegner.

The use of road salt, which consists of granular sodium chloride, has increased in recent years, especially in the Northeast. According to the National Research Council, Massachusetts, New Hampshire and New York report the highest annual road-salt loadings, with New York applying half a million tons per year on roadways.¹ Because road salt application rates increase as areas become more densely developed, streams in or near residential areas have the highest base flow concentrations of chloride.² As a result, chloride levels have been increasing steadily as sprawl encroaches into undeveloped lands. In fact, a recent scientific study has shown that if road salt application continues at its current rate, many of the streams in the Northeastern United States will be too salty for use as drinking water supplies.³

Exposure to salt inhibits soil bacteria, which compromises soils structure and inhibits erosion control. The chloride in road salts creates chemical imbalances in plants and can kill or injure trees up to 200 meters from salted roadways.⁴ Damage to soils and vegetation in the buffer areas between roads and streams diminishes the beneficial value of the buffers to capture and filter contaminants before they reach groundwater aquifers and drinking water reservoirs. Damage to vegetation further degrades wildlife habitat by destroying food resources, migration corridors, shelter, and breeding or nesting sites. In

addition, our freshwater ecosystems are becoming impacted by the salt in surface runoff and stream base flows as increasing chloride concentrations reach levels that are toxic to fish and other aquatic organisms. Some Croton Watershed lakes and reservoirs, where chloride levels increased 30% in 2004, may already be approaching these levels.⁵ The sodium contained in road salt infiltrates through soil to reach groundwater aquifers, where it can contaminate drinking water wells and corrode plumbing fixtures in homes that rely on well water.

In addition to the environmental impacts associate with chloride deicers, the corrosivity of road salt also generates significant economic impacts related to motor vehicles and infrastructure. Installing corrosion protection measures in new bridges and repairing old bridges is estimated to cost snow-belt states between \$250 and \$650 million per year.⁶ In addition, corrosion protection practices have increased the cost of auto manufacturing by nearly \$4 billion per year.⁷

Solution: Regional Planning, Environmentally Benign Chemical Alternatives, and Operational Practices Provide Economic Benefits and Reduce Road Salt Contamination of Freshwater Resources

Operational practices to reduce road salt application include proactive winter highway maintenance protocols and the implementation of new technology. One proactive strategy is to prioritize roads within a given municipality so that the main thoroughfares are treated during snowstorms and lower level-of-service roads are plowed and treated, if necessary, after the storm has abated and the primary roads have been cleared. This practice requires community cooperation and the understanding that safe travel on secondary roads requires reduced speed.



This spreader truck was converted for brine application by Westchester County Department of Public Works. Photo by Jim Johnson.

Regional coordination and planning provide another means for municipalities to reduce road salt application. Recently, Westchester County's Northern Westchester Watershed Committee formed a Highway Deicing Task Force in partnership with all of the Northern Westchester Towns, the County, New York State Department of Transportation, New York City Environmental Protection, Riverkeeper, and NYPIRG. After the County surveyed current deicing practices among the watershed municipalities, the task force structured uniform data collection practices and identified strategies to decrease road salt application in the Croton Watershed. The information collected will help track the amount of salt and other

materials applied during various operational strategies and under specific weather conditions. The task force also drafted a report titled *Northern Westchester Watershed Committee, Highway Deicing Task Force Report*, which is available on the County's

website.⁸ The report was distributed to all municipalities in Westchester County to promote standardized data collection during winter road maintenance operations and to quantify the road salt application rates associated with various deicing practices. It is intended that this data will be used to determine the best practices, given local conditions, for effective winter road maintenance that reduce the use of salt.

Brine Solutions

Salt brine and other liquid solutions can be applied during both anti-icing and deicing operations. Anti-icing is the control practice of preventing the formation or development of bonded snow and ice by applying a chemical agent that lowers the road surface's freezing point before a snowfall. Deicing is the practice of removing snow and ice from road surfaces after it has begun to accumulate. Brine solutions or pre-wetted granular salt can be applied as anti-icing or deicing agents. Pre-wetting is the practice of spraying deicing salt with a chemical solution before spreading the salt on road surfaces to accelerate the melting properties of the salt. Sodium chloride brine is an economical and effective pre-wetting agent, although calcium chloride and magnesium chloride brines are used as well. Pre-wetted salts and brine solutions work faster and at lower temperatures than dry salt, and with less waste. A variety of alternative liquid deicers also are available; however, some contain high levels of phosphorus, which may be inappropriate for use in areas where surface waters may receive runoff from roads.

Infrared Sensors

The use of truck-mounted infrared sensors that read the real-time road surface temperature can calculate more accurately the appropriate rate of road salt application and help protect both public and private water supplies. Salt application rates are determined by measuring ice or snowpack thickness and corresponding pavement temperatures, which can be measured directly by infrared sensors mounted under salting trucks. The sensors can be interfaced with a computerized system that allows operators to time and gauge the rate of salt application with freezing road surface temperatures. Infrared sensor systems are not cost prohibitive, and initial investments in equipment easily can be recouped in the cost savings of reduced salt application.

Chemical Alternatives

Chemical alternatives, such as calcium magnesium acetate (CMA) and potassium acetate (KA), are relatively harmless to plants and animals, non-corrosive to metals and nondestructive to concrete and other structural materials.⁹ Currently, these alternatives are too costly for widespread commercial application (\$800/ton vs. \$60/ton for road salt) and are largely unavailable for sale to private homeowners. However, they are appropriate and affordable for small-scale application by municipalities in environmentally sensitive areas such as bridge crossings over waterways or where buffers separating roads from streams and reservoirs are extremely narrow.

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- ¹ See NATIONAL RESEARCH COUNCIL, TRANSPORTATION RESEARCH BOARD, HIGHWAY DEICING: COMPARING SALT AND CALCIUM MAGNESIUM ACETATE, Special Report 235. (1991), available at <http://gulliver.trb.org/publications/sr/sr235.html> (last visited April 21, 2010).
- ² See STROUD WATER RESEARCH CENTER, WATER QUALITY MONITORING IN THE SOURCE WATER AREAS FOR NEW YORK CITY: AN INTEGRATIVE APPROACH 40 (2005), available at http://www.stroudcenter.org/research/nyproject/Yr5Report_27Oct2005.pdf (last visited April 21, 2010).
- ³ See Sujay S. Kaushal et al., *Increased Salinization of Fresh Water in the Northeastern United*, 102 PROC. NAT'L ACAD. SCI. 13518 (2005), available at <http://www.pnas.org/cgi/reprint/102/38/13517> (last visited April 21, 2010).
- ⁴ See ENVIRONMENT CANADA, PRIORITY SUBSTANCES ASSESSMENT REPORT: ROAD SALTS 134 (2000), available at http://www.hc-sc.gc.ca/ewh-semt/alt_formats/hecs-sesc/pdf/pubs/contaminants/psl2-lsp2/road_salt_sels_voirie/road_salt_sels_voirie_e.pdf (last visited April 26, 2010).
- ⁵ See NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP), 2004 WATERSHED WATER QUALITY ANNUAL REPORT 41 (2004).
- ⁶ See NATIONAL RESEARCH COUNCIL, *supra* note 1.
- ⁷ See *id.*
- ⁸ See NORTHERN WESTCHESTER WATERSHED COMMITTEE, HIGHWAY DEICING TASK FORCE REPORT (2007), available at <http://www.westchestergov.com/planning/jdocs/HighwayDeicingReport2007.pdf> (last visited April 21, 2010).
- ⁹ See NATIONAL RESEARCH COUNCIL, *supra* note 1.