

LINKING LAND USE & OHIO'S WATERS:

Best Local Land Use Practices



Ohio | Balanced Growth
Ohio Balanced Growth Program
December 2012





Second edition, copyright Ohio Lake Erie Commission,
Ohio Water Resources Council 2012
First edition published as “Linking Land Use and Lake Erie,” 2004
Cover photographs (clockwise from top) by Andrea Aldrich, Arnold
Emerson, Sandra Cobb, and Kirby Date.

The Ohio Balanced Growth Program is a project of:

Ohio Lake Erie Commission

111 Shoreline Drive, Sandusky, Ohio 44870.
Office Phone Number: 419-621-2040
Balanced Growth Phone Number: 419-357-2775
<http://lakeerie.ohio.gov/>

Ohio Water Resources Council

Ohio EPA, Lazarus Government Center
P.O. Box 1049, Columbus, OH 43216-1049
614-644-2039 • 614-644-2745 (fax)
<http://www.ohiodnr.com/tabid/15378/default.aspx>

Member Agencies – OWRC and OLEC:
Ohio Department of Natural Resources
Ohio Environmental Protection Agency
Ohio Department of Agriculture
Ohio Department of Transportation
Ohio Department of Health
Ohio Development Services Agency

Additional Member Agencies – OWRC:
Ohio Water Development Authority
Ohio Public Works Commission
Public Utilities Commission of Ohio
Office of the Governor

Preparation of this document was made possible with grants from the
Lake Erie Protection Fund and the Ohio Water Development Authority.



(photo: Andrea Aldrich)

LINKING LAND USE AND OHIO'S WATERS: Best Local Land Use Practices

Kirby Date, RLA, AICP, Editor
Maxine Goodman Levin College of Urban Affairs
Cleveland State University

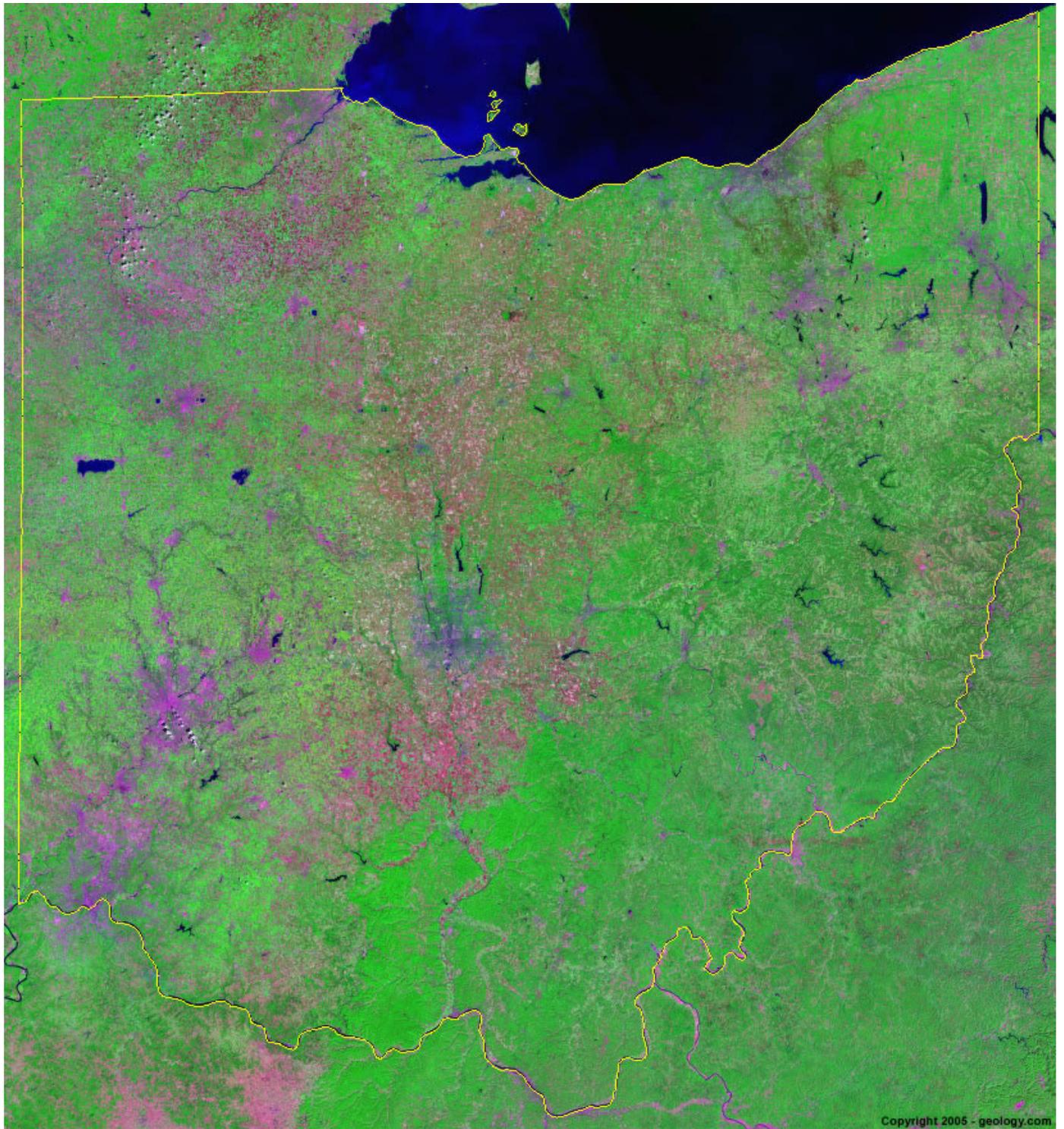
December 2012

Ohio | Lake Erie
Commission

Ohio | Water Resources
Council



*Maxine Goodman Levin
College of Urban Affairs*





(photo: Gabor Balazs)

LINKING LAND USE AND OHIO'S WATERS:

Table Of Contents

pages

1	Introduction	1
2	Comprehensive Planning	13
3	Compact Development	31
4	Conservation Development	39
5	Storm Water Management, Erosion and Sediment Control	50
6	Stream, Floodplain and Wetland Protection	67
7	Source Water Protection	78
8	Natural Areas Management	90
9	Brownfields Redevelopment	99
10	Tree and Woodland Protection	109
11	Steep Slope Protection	116
12	Agricultural Land Protection	124
13	Transfer of Development Rights	132
14	Historic Protection	141
15	Scenic Protection	150
16	Access Management	158
	Appendix	163
	• Acknowledgements	
	• Bibliography / Literature Review	

Chapter 1: Introduction



*Above: Edgewater Beach, Cleveland, Ohio
(photo: Arnold Emerson)*

*Above Right: South Bass Island Lighthouse, South Bass Island, Ohio
(photo: Jennifer Thompson)*

NOW IS THE TIME to adopt best practices in using our land!

How we use our land impacts our water and our quality of life. The thoughtful balance of environmentally friendly practices and development opportunities positively influences the quality of life in our communities. The health of Ohio's citizens now and in the future, and the robustness of the state economy depend upon the quality of our streams, rivers, lakes, and ground water.

How can local governments help?

Be proactive and take action! Follow in the footsteps of other communities that have implemented land use practices to reduce development costs, enhance property values, lower maintenance costs on streets and sewers, and protect the natural landscape. Local governments can help businesses and residents make smart decisions on local land use that will have a positive impact on the watershed and the quality of the community, as well as reduce their own costs.

Revamp dated land use policies, zoning, and development codes! Local governments can help guide businesses and residents to sound development practices by re-thinking and updating land use policies that have been around for decades. When considering land use and development activities – such as shopping malls, commercial and retail facilities, hotels, office parks, mixed-use developments, single- and multi-family detached and attached housing, assisted living and retirement communities, industrial sites, redevelopment and rehabilitated historic developments, schools, and parking lots – local

“About 70 percent of the Earth’s surface is water-covered, and the oceans hold about 96.5 percent of all Earth’s water. Of the world’s total water supply of about 332.5 million cubic miles of water, over 96 percent is saline. And, of the total freshwater, over 68 percent is locked up in ice and glaciers. Another 30 percent of freshwater is in the ground.”

US Geological Survey

The Great Lakes contain 20 per cent of all the world’s fresh water supply, and they shore up around 90% of the fresh water supply in the US.

Planet Green, a Discovery Company

governments should incorporate the best local land use practices contained in this manual. Doing so will increase the overall value of the community and the quality of life of its citizens.

Don’t forget about open spaces! Acreage – such as farmland, wooded and scenic areas, and parks – also add significant value to communities. Talk to land owners about conservation easements and apply best local land use practices when developing open land or when working with landowners on property issues such as drainage and flooding.

Remember you’re not alone! There are a number of agencies and resources ready to assist local governments in their efforts to implement best local land use practices in their communities. Your local county planning commission, county soil and water conservation district, OSU extension office, and watershed group are just a few resources with the professional expertise to assist your local government in moving forward. A comprehensive list of resources and contact information is found on page 7.

When should you begin?

How about now...

In this Introduction...

- What are best local land use practices?
- What practices are in this manual?
- Why are best local land use practices important?
- How can my community begin to implement best local land use practices?
- Examples of why it is important to implement best local land use practices
- Where can I go for help or assistance?
- Background on the Best Local Land Use Practices Program

What are best local land use practices?

Best local land use practices are recommendations from development and environmental professionals that Ohio’s local governments can use to change the way businesses and residents develop and redevelop properties. These practices both reduce the impact on drinking water, fishing and recreation, sanitation, irrigation, watering stock, wetlands, and the quality of other water resources, and provide economic benefits. They are not an exclusive list of ideas, but they are recommendations that may be valuable to local communities faced with the challenges of sensible and sustainable development.



Above: Biking Family, Columbus, Ohio
(photo: Ohio Greenways)

What practices are in this manual?

This manual is a “starting point” to help local governments balance development opportunities and environmentally friendly practices. The manual includes background information, example projects, and sample policy language for local government use, identifies key issues and recommends best practices.

The best local land use practices contained in this manual that have broad applicability to almost every community in Ohio include:

- Comprehensive planning
- Compact development
- Conservation development
- Source water protection
- Stream, wetland, and flood plain protection
- Storm water management
- Natural areas establishment

Best local land use practices in this manual that address other development and environmentally-friendly issues that may be applicable to individual communities, depending upon need, include:

- Agricultural lands protection
- Tree and woodland protection
- Scenic protection
- Historic preservation
- Steep slopes protection
- Transfer of development rights (TDR)
- Brownfields redevelopment
- Access management

Why are best local land use practices important?

Too many of Ohio’s 2,329 local governments are working with outdated land use policies that limit the maximum benefit of best local land use practices. For example, Comprehensive Planning is viewed as key to a government’s careful management of capital improvement funds, ability to fit infrastructure expansion to actual needs, and identification of hazard areas that create significant taxpayer costs if developed. Yet, many of Ohio’s local governments do not have a comprehensive plan or are working with one that hasn’t been updated for decades. Another example is zoning and development codes. These often are not kept current and reflect outdated development and business practices, significantly limiting the creation of innovative

Scenic protection can drive economic development through tourism. Visitors made 23,800 trips to the Paul Bunyan Scenic Byway in Minnesota in 2010 and spent \$21.6 million in the area.

(Liechty, Schneider, and Tuck, 2010)

neighborhoods and commercial areas, health-enhancing parks and trail corridors, and cost-effective storm water management facilities.

The use of best local land use practices gives local governments a chance to enhance property values and create quality places that are attractive to businesses and residents, reduce local government infrastructure costs (streets and sewers), and protect against hazards such as flooding and pollution. Implementing best local land use practices also helps to ease the economic consequences of nonpoint source runoff, which impacts water quality. Clean water provides healthy drinking water for many Ohio families, and is an important input to the production process for manufacturing goods (such as in the steel and electric utility industries), and is important to such industries as tourism, recreational fishing, and aquaculture (fish farming).

Why it is important to implement best local land use practices?

Here are just a few examples of the benefits of the Best Local Land Use Practices. For more information and examples see the Literature Review and Bibliography in the Appendix.

Storm Water Management

In addition to lowering the burden on traditional water infrastructure, incorporating Best Management Practices (BMPs) into new developments can reduce development costs (due to smaller costs for piping and detention facilities, grading, paving, etc.) and increase property values (due to proximity to open space and similar amenities) (US EPA 2007).

Stream, Floodplain, and Wetland Protection

Wetlands ease the water treatment burden of human-made systems. A 2.5-acre protected wetland provides over \$4,000 in avoided water treatment costs, with up to \$10,000 in other benefits annually (Krop, Hernick, and Frantz 2008).

Brownfields Redevelopment

Public investment in brownfields redevelopment leverages private investment. \$5.7 million of brownfields-related public subsidies paved the way for \$325 million in private investment in the city of Milwaukee (Paull 2008).

Historic Preservation

Historic preservation efforts improve property values with significant



*A Neighborhood Sidewalk, Medina, Ohio
(photo: Kirby Date)*

positive spillover to surrounding properties. Median residential properties increased \$67,000 in areas in and near designated historic districts (Gilderbloom, Hanka, and Ambrosius 2009; Zahirovic-Herbert and Chatterjee, 2011).

Tree and Woodland Protection

Trees reduce the strain on stormwater management systems, easing runoff and improving water infiltration rates. A single large tree intercepts 2,100 gallons of rainwater annually. In the upper midwest region, 200 medium sized trees will provide direct water-management benefits equivalent to \$43,000 over a forty year period (before accounting for the reduced costs in new stormwater infrastructure). (McPherson et al 2006)

How can my community begin to implement best local land use practices?

All recommended practices are entirely voluntary, and policy decisions are the realm of the local government concerned.

- 1.** Contact any of the resources to meet with a planning or environmental professional to assess what is needed in your community.
- 2.** Work with a professional to either review or develop a comprehensive plan to determine what actions should be taken and which best local land use tools would be beneficial to your community. This process should involve the public, elected and appointed officials, local businesses, and key community stakeholders in a meaningful engagement process, and build consensus toward implementation of action steps (refer to the Comprehensive Planning chapter in this manual).
- 3.** Form a committee of stakeholders and technical experts to assist with a review of development and zoning codes.
- 4.** Outline and complete a checklist to identify areas of local development and zoning codes that require revision to align with goals of the comprehensive plan (see checklist resources on the Balanced Growth website at <http://balancedgrowth.ohio.gov>).
- 5.** Draft code language as appropriate (see example regulations and comparison matrices in each chapter of this manual for possible “starting points”).
- 6.** Discuss code language in public hearings and workshops, as appropriate.



*A Planning Workshop
(photo: Kirby Date)*

7. Adopt code changes.

8. Review and update the comprehensive plan on a regular basis, at least every 3 to 5 years. This process will include assessment of population needs and development trends, development and zoning regulations, and any changes needed.

The other chapters of this manual include many examples of how the practices have been implemented by other communities.

Where can I go for help or assistance?

- Your local county planning commission
- Your local Soil and Water Conservation District office
- Your local OSU Extension office (<http://extension.osu.edu/>)
- Ohio Balanced Growth Program (balancedgrowth.ohio.gov)
- Ohio State University, Fact Sheet Comprehensive Planning (<http://ohioline.osu.edu/>)
- Meck, S. and K. Pearlman. Ohio Planning and Zoning Law. Baldwin's Ohio Handbook Series. Thomson Reuters Westlaw, updated annually.
- Evans-Crowley, J., ed. Guide to Planning in Ohio. Columbus: Ohio Planning Conference, 2005.
- American Planning Association (312.431.9100 or <http://www.planning.org>)

Background on the Best Local Land Use Practices Program

The Best Local Land Use Practices (BLLUP) program is a statewide initiative to assist individual local governments with implementation of land use policies in support of balanced growth. Balanced Growth, as defined by the Ohio Balanced Growth Program, is a voluntary, incentive-based strategy to protect and restore Lake Erie, the Ohio River, and Ohio's watersheds to assure long-term economic competitiveness, ecological health, and quality of life.

Brownfields redevelopment improves neighboring property values. Properties within a mile of redeveloped brownfields will increase in value between \$0.5 million and \$1.5 million. Crime in areas near redeveloped brownfield sites may also be reduced.

(EPA 2012)

The BLLUP program is the sister program to the Balanced Growth Watershed Planning program, which provides a mechanism for local governments to work together at the watershed level to identify voluntary priorities for development, conservation, and (where applicable) agricultural uses. Where the Watershed Balanced Growth Plans focus on regional cooperation and coordinated land use planning among jurisdictions, the BLLUP program stresses individual actions that can be taken by Ohio's local jurisdictions to improve their local land use policies and provide for balanced growth within their communities. While the Best Local Land Use Practices are an excellent means for local communities to use to work toward implementation of regional watershed planning priorities, the practices may be used by any local jurisdiction in Ohio.

All recommended practices are entirely voluntary, and policy decisions are the realm of the local government concerned.

How did the BLLUP Program begin?

The Ohio Lake Erie Commission adopted the Lake Erie Protection and Restoration Plan in 2000. The Plan, which was prepared with the participation of many Lake Erie stakeholders, experts, and officials, concluded that the "quality of Lake Erie is a reflection of the quality of the entire watershed." The Plan established a priority strategic objective to "infuse best available Balanced Growth principles in local land use decision making." A specific action was recommended:

(H-5, page 10) Publish and distribute a Lake Erie Model Zoning Ordinance and Building code by 2003 and encourage its voluntary acceptance by local communities. Ensure that all interested concerns (local communities, developers, conservationists, agriculture, etc.) have the opportunity to fully participate.

A Balanced Growth Blue Ribbon Task Force was created in 2001 to develop strategies to balance the protection of the Lake Erie watershed with continued economic growth. This task force consisted of government officials, business leaders, conservationists, academia, agriculture, and other stakeholders.

During its deliberations, the Balanced Growth Task Force also decided to develop models and basic standards for best land use practices that could be adopted voluntarily by local governments and would be encouraged through incentives (funding, awards, etc.). The Task Force met over a two-year period to develop recommendations for model land use regulations and guidance that could be used by Ohio local governments to implement land use plans that would be more protective of the



*Urban Housing in the Mill Creek
Development of Slavic Village in
Cleveland, Ohio
(photo: City Architecture)*

their watersheds, while at the same time providing clear direction for continued development. This document became known as “Linking Land Use and Lake Erie: Best Local Land Use Practices.”

A training program for Best Local Land Use Practices was begun in 2006, which provided education, information and referral, and technical assistance to local governments interested in pursuing adoption of the recommendations.

The Ohio Water Resources Council adopted the Ohio Balanced Growth Program statewide in the fall of 2009 as part of its initiative to integrate water resource management with local planning and decision-making. Simultaneously, a statewide outreach program for Best Local Land Use Practices was initiated. The emphasis of this program is to recognize regional variation and issues across the State, and to support the work of local governments, planning agencies, and organizations already working on policy improvement in each region. To date, the Best Local Land Use Practices Program has been highly successful, providing a range of training and technical assistance opportunities across the State.

How can the BLLUP Program help?

The BLLUP Program is designed to assist in the implementation of best local land use practices, as determined by each community. Resources currently available include:

- The BLLUP section on the Balanced Growth website: Contains this guidance document; checklists for code review; example regulations and matrices comparing them; final training modules, an inventory of built practices in each region with a photo and an information file for each (case studies), Power Point slides, and a DVD explaining the practices; information on the larger Balanced Growth Program, including state incentives; and case studies of example projects across the State.
- Technical Assistance: Free technical assistance by professional planners may be available to communities on request. Assistance can be in the form of workshops and education focused on the community; assistance with drafting codes; advice on forming citizen committees and organizing a planning process; help with developer-community conversations; and review of development projects.
- Education and Workshops: These are provided around the state in a variety of settings, covering a variety of topics. See the Balanced Growth website’s Calendar Page.

Stream and floodplain preservation is the most cost-effective means of minimizing flood damage and controlling erosion.

(Chagrin River Watershed Partners, Inc. 2006)

Legal Review

A note about Example Regulations and Legal Review

It is imperative that any governmental entity seeking to adopt or implement any ordinance or policy based in whole or in part upon this guidance seek independent legal review by their own counsel.

The example regulations and guidance documents **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

A number of ongoing practical and legal concerns make independent review upon consideration and adoption of these Guidance documents and example regulations critically important. First, laws of all sovereigns change constantly. Any review previously provided may be out of date given changes in legislation or judicial interpretation. Second, each local sovereign jurisdiction, be it city, county, township, or other entity, may have specific procedural or substantive requirements that may change what can or should be adopted or might compromise the ability to adopt the models as drafted. Finally, as with any legal review, it is impossible to anticipate all factual and legal variables. The Guidance and example regulations raise a number of legal issues about which communities should be aware as they consider development, adoption, and/or implementation of them. Without limitation, a few of the most obvious concerns include:

1. Authority to adopt/Home Rule. The authority of governmental entities within Ohio to act is set forth by the Constitution of the State of Ohio and Chapters 1 through 7 of the Ohio Revised Code. In the adoption of these recommendations, a governmental entity, acting alone or in concert with other such entities, must confirm that the authority to do so is consistent with these authorities.

2. Appropriations/Takings. Both the process for the adoption of the recommendations and the substance of them should be reviewed closely. It is strongly recommended that governmental entities adopting these recommendations include clear and reasonable criteria for the implementation of the ordinances or guidance, coupled with administrative and/or legal procedures to review the decisions of the implementing entity. In addition, it is recommended that any procedures adopted include an administrative procedure for seeking variances from the adopted requirements or procedures in appropriate cases.

Consistency with existing authority

When adopting any new legislation, the governmental entity must consider whether the proposed new laws are consistent with the body of existing law applicable to that jurisdiction. There may be other legal concerns that could be relevant to the specific application of any of these proposed items. While they have all been reviewed in the abstract prior to the recommendation of the Ohio Lake Erie Commission and the Ohio Water Resources Council, each must be considered individually by the adopting entity in order to insure correct procedures for implementation, minimize potential legal liability for the adopting entity, and minimize subsequent litigation among members of the community impacted by any codes or policies that may be adopted.

Where to from here?

Our future quality of life, economic prosperity, and family health depend on the quality of our waterways, lakes, streams, rivers, groundwater, and the quality of our built environment. All of this depends on the actions of every one of our 2,329 cities, villages, townships and counties, which control most policy related to land use in Ohio. It is the goal of the Ohio Balanced Growth Program to continue to assist local communities with the implementation of best local land use practices.

Resources:

Gilderbloom, J., Hanka, M. and Ambrosius, J. (2009). *Historic Preservation's Impact on Job Creation, Property Values, and Environmental Sustainability*. *Journal of Urbanism* 2(2), 83-101.

Krop, R., Hernick, C., and Frantz, C. (2008). *Local Government Investment in Municipal Water and Sewer Infrastructure: Adding Value to the National Economy*. Washington, DC: US Conference of Mayors. Retrieved from <http://www.usmayors.org/pressreleases/uploads/LocalGovtInvtInMunicipalWaterandSewerInfrastructure.pdf>

McPherson, E.G., J.R. Simpson, P.J. Peper, S.E. Maco, S.L. Gardner, S.K. Cozad, and Xiao, Q. (2006). *Midwest Community Tree Guide: Benefits, Costs and Strategic Planting*. Albany, CA: US Department of Agriculture, Forest Service. Retrieved from http://www.fs.fed.us/psw/programs/uesd/uep/products/2/cufr_626_gtr199_midwest_tree_guide.pdf

Peper, P.J.; McPherson, E.G.; Simpson, J.R.; Vargas, K.E.; Xiao Q. (2009). *Lower Midwest Community Tree Guide: Benefits, Costs, and Strategic Planting*. Albany, CA: US Department of Agriculture, Forest Service. Retrieved from http://www.fs.fed.us/psw/programs/uesd/uep/products/2/psw_cufr789_psw_gtr219.pdf

Paull, E. (2008). *The Environmental and Economic Impacts of Brownfields Redevelopment*. Washington, DC: Northeast-Midwest Institute. Retrieved from <http://www.nemw.org/index.php/policy-areas/brownfields/environmental-and-economic-impacts-of-brownfields-redevelopment>

US Environmental Protection Agency (2007). *Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices*. Washington, DC: US Environmental Protection Agency. Retrieved from <http://www.epa.gov/owow/NPS/lid/costs07/documents/reducingstormwatercosts.pdf>

Zahirovic-Herbert, V. and Chatterjee, S. (2012). *Historic Preservation and Residential Property Values: Evidence from Quantile Regression*. *Journal of Urban Studies* 2012 49, 369-382.

Krop, R., Hernick, C., and Frantz, C. (2008). *Local Government Investment in Municipal Water and Sewer Infrastructure: Adding Value to the National Economy*. Washington, DC: US Conference of Mayors. Retrieved from <http://www.usmayors.org/pressreleases/uploads/LocalGovtInvtInMunicipalWaterandSewerInfrastructure.pdf>

For additional references cited, see the Bibliography in the Appendix, <http://balancedgrowth.ohio.gov/BestLocalLandUsePractices/BestLocalLandUsePractices2012.aspx>

Chapter 2



Above: Meaningful public engagement is a critical part of a well-prepared comprehensive plan. (photo: Kirby Date)



Above Right: (map: CP Dalton)

COMPREHENSIVE PLANNING

Background

If you don't know where you're going, you'll wind up somewhere else.

Yogi Berra

Why create a comprehensive plan?

Why should communities invest the time and effort in creating and maintaining a comprehensive plan? A comprehensive plan aligns available resources properly to meet and maintain the goals of a community for preserving current character and creating a future identity. This is a dynamic process that should answer the questions: "Who are we?," "Where do we want to be?" and "How will we get there?"

In the absence of a sound comprehensive plan, communities may lose their valued character and lose sight of their future goals through unplanned decision making. Without a plan, decisions are made on an ad-hoc basis without proper allocation of community resources to meet current and future needs of that community. Managing a community without a comprehensive plan would be like building a home without a proper blueprint.

The comprehensive planning process itself creates a dialogue among the public and stakeholders, as well as providing information about community affairs to those involved. The process also allows stakeholders to evaluate the potential outcomes of their decisions on the community and its neighbors, reducing the potential for unintended consequences, and maximizing the power of benefits that may result.

“Studies suggest that to the extent these smarter development patterns foster equity in regions by improving center-city incomes and vitality, they will also enhance the economic well-being of the suburbs as well as the city. City income growth has been shown to increase suburban income, house prices, and population. Reduced city poverty rates have also been associated with metropolitan income growth.”

(Muro & Puentes, 2004)

How does preparing a comprehensive plan relate to Balanced Growth?

A comprehensive plan enables the community to better anticipate stormwater management needs on a community-wide scale. Open space, priorities for development, and priorities for conservation can be strategically placed to minimize the impacts that stormwater runoff can have on the community's water resources and the whole watershed. Community-wide stormwater management can reduce flooding and improve water quality, habitat, and recreation value, and protect property values and quality of life.

The comprehensive planning process also provides an opportune time to work with neighboring communities to coordinate stormwater management strategies, as each watershed is often a part of a larger watershed. Collaboration among sub-watersheds potentially reduces redundancy in capacity and, consequently, can reduce overall watershed management costs. Effective water management on the local level also provides opportunities for innovative practices that recognize the role of “green infrastructure” in developed areas, at the site, neighborhood, community, and watershed level. Green infrastructure can also mitigate impacts from combined sewer overflows and basement sewer line backups.

A Comprehensive Plan also supports the economic strength and fiscal responsibility of a community. Just as any business must plan for efficiency, effective use of resources, and anticipated future change, so must a responsible local government anticipate future needs and allocate funds for efficient operation, and long term stability. A comprehensive plan is the mechanism for communities to manage their most important physical, infrastructure, and environmental assets in a way that conserves funds and anticipates change.

What is a comprehensive plan?

The comprehensive plan is an adopted public document that serves as a guide for decisions about physical development in the community. It is an explicit statement of future community goals, values, and objectives and provides a formal vision for the community.

A quality plan represents a consensus of the community's intent for its future, which is achieved through meaningful public discussion. It will include policy statements that express an adopted policy position on a planning issue. For example, “The city will encourage the development of light industry within one mile of the interstate highway exchanges and discourage other locations.” (Toner, p. 6) Typically, the comprehensive plan will include a land-use map that illustrates the location of the various land-use activities and a complete transportation map that includes analysis of transportation needs and proposed roadway improvements.



*Columbus City Beautiful Plan of 1908:
A Civic Center & Heart of the City.*

“A mall was proposed to extend from the Statehouse down to the Scioto River. A city hall, state buildings, art gallery, music hall and other public buildings were proposed as part of the civic center complex. The civic center was recommended to be connected to the rest of the city by boulevards and parkways. In their concluding comments, the 1908 Plan authors make the case for implementation by stating that **‘the time has arrived when some definite scheme should be devised looking to the organic development of the city along practical and artistic lines. And this must result in increasing its wealth not only by improving the natural conditions, but by attracting legitimate investment, and above all, by making Columbus a better and pleasanter place in which to live’**.”

(Planning Division, Department of Development, City of Columbus, Ohio)

In addition to meaningful input from the public, the “vision” for the comprehensive plan involves the consensus of key community players including elected officials, appointed officials, technical staff, public agencies, school district representatives, and other stakeholders. This consensus can be used to create momentum toward implementation of the plan once it is completed.

A comprehensive plan also includes implementation strategies that identify the responsible party, the time by which the strategy will be accomplished, the likely cost, and how success will be monitored.

The legal basis for the comprehensive plan:

The comprehensive plan has a firmly rooted basis in Ohio regulations and case law. Preparation of a comprehensive plan is initiated by the local government, and may be at the county, city, township, or village level. The legal foundation for planning rests in the police power to protect public health, safety, and welfare. Planning is not zoning, but it provides the rationale for zoning and other actions to achieve the community’s goals.

Planning provides a strong foundation for local government decision making. The comprehensive plan is based on the consensus of citizens, council and city staff and will be a written statement of policy and long range planning objectives. The document is very strong protection against legal challenges for inappropriate land uses. The plan also is a record for citizens of the intent to provide service and a well planned city. Variation from the plan can be used by neighborhoods or citizens as a breach of faith by city leaders.

The big advantage of creating a comprehensive plan is the ability to inventory and assess the current city so that goals and plans can be established for the benefit of the future city. The early basis for planning was the zoning ordinance but zoning alone has proven inadequate to control growth or prepare for future demand. The comprehensive plan established goals for the zoning ordinance. Zoning must fulfill the plan and the plan is the pattern for development (Evans-Cowley, p. 3.2).

How is a comprehensive plan created?

Preparation of a sound comprehensive plan involves a logical planning process with several steps:

1. Research and analysis of existing conditions: This first step entails a scan of the community and an evaluation of the results and their implications for the community. This includes what the community wants to continue, anticipated demand for housing and non-

“Up to the present, much good work has been scatteringly done in Columbus, but the aggregate benefit has not been what it ought to be, because of this failure closely to knit all improvements into a firm civic fabric.”

Authors of the Columbus City
Beautiful Plan of 1908

residential development, trends for the future, evaluation of existing policy and where change is needed. It should also consider existing planning documents, including applicable state and federal policy, plans of adjacent communities and the relevant county, and plans of key stakeholders within the community (such as major private land holders, Chamber of Commerce, school district, park districts, key businesses, and others).

2. Visioning and goal setting. Where do we want to be? This is where citizen engagement and participation of the key community players comes in to play. Citizen engagement is a critical element of creating a comprehensive plan and should be as broad and inclusive as possible to make sure that the most important goals for the community are accounted for. Some example goals include:

- “Housing opportunities shall be expanded, with an emphasis on affordability, quality and revitalization of neighborhoods”
- “Historical charm and small-town character shall be preserved and enhanced”
- “Development shall be carefully balanced with the preservation of natural resources”

A balanced plan will encourage efficient development in the right places at the right intensity. This will provide a sound economic basis for the community, while doing the best for the natural resources of the watershed. A balanced plan will carefully consider where development happens. Effective stormwater regulations aligned with the plan will ensure that those developments are applying on-site stormwater management practices.

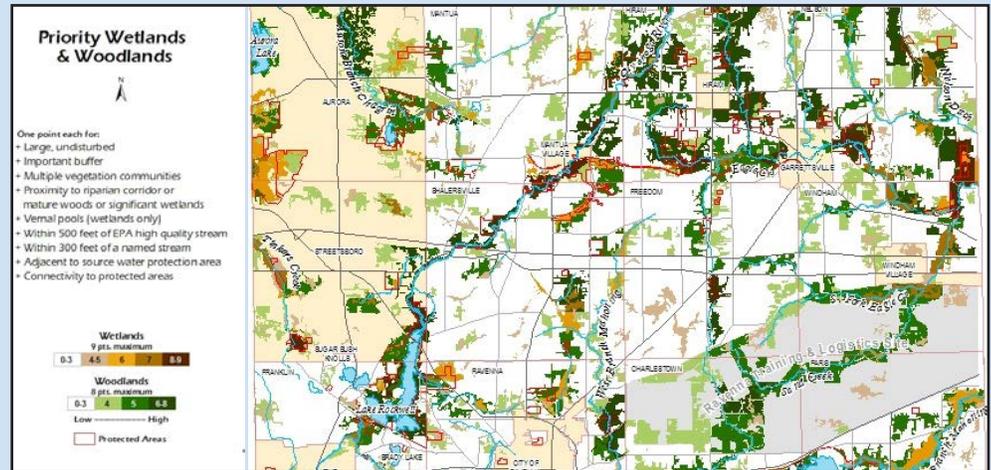
3. Strategy formulation and Scenario Planning: A set of actions are identified that will achieve the goals set forth in the visioning and goal setting process. Local jurisdictions may want to formulate policies based upon their vision and goals as part of this stage. These policies provide a link between the vision and goals and the strategic actions, thus providing a legal basis for these actions. Often this step involves the development of alternative scenarios to achieve the specified goals, each with its relevant projections. This step can be an iterative process where various scenarios are weighed, along with costs and benefits, until a proper balance is achieved. The public should be engaged along the way.

4. Planning for implementation: This requires the consideration of regular capital, operating expenses, and resources available to the community in formulating a realistic timeline for implementation. Priorities should be set strategically for what can be accomplished. Responsible parties for each action step should be identified, and criteria established for measuring success for each step.

5. Monitoring and plan evaluation: As the plan is implemented, periodic evaluation using a pre-determined set of indicators is essential. Revisions to the plan should be made when appropriate so that the community is continually resolving conflicts, addressing development demand, and preserving community heritage and resources.



Above Left: Future Land Use Map, from the Comprehensive Plan for Carlisle Township, Lorain County Ohio
(map: Strategic Public Policy)



Above Right: Prioritization Analysis from the Portage County Watersheds Plan
(map: Portage County Regional Planning Commission)

What is a Sustainable Community?

Truly sustainable communities incorporate a wide range of characteristics that foster long-term prosperity. Some of the characteristics of a sustainable community include:

- Providing for a range of transportation choices within the community for local and regional trips. In addition to auto travel, this includes walking, public transit, and bicycling.
- Providing for a range of housing types and price ranges so that members of all household types, economic and age levels in a community can live there.
- Integrating green infrastructure into the fabric of the community to provide opportunities for recreation, resource management, flooding and stormwater management, and a healthy living environment.
- Reducing travel time for residents by providing work and school options that are close to home.
- Providing opportunities for businesses to cluster to reduce the cost of transportation and communication, to expand collaboration opportunities, and to allow for materials recycling.
- Providing for efficient use of materials, waste handling, and public services to reduce waste and environmental impact including recycling, reuse of old buildings, shared services, incorporating green infrastructure into redevelopment and pollution reduction.
- Matching growth and development to future demand, with reuse and redevelopment to support a “fix it first” approach to infrastructure.



Hands on Planning
(photo: John Thompson & Partners.)

Issues

I. Planning Process and Approach

- **Affording a Plan:** Professional assistance throughout the comprehensive planning process is critical, as many aspects are quite technical. However many communities have limited funds which they can dedicate to experienced planners and experts. Options include working with county planning staff, obtaining grants, cooperating with other communities to share planning services, and utilizing citizen volunteers with professional mentoring.
- **Community Sustainability:** Growth and conservation should be promoted and managed in a balanced approach that ensures sustainability. A quality comprehensive plan will map out strategies for the future that ensure community needs will be met for the long term. See the side bar material for more information.
- **Meaningful public engagement:** Public participation is essential to the community planning process. A strong, defensible plan leverages citizen and stakeholder input to set the overall direction and goals for the community. Residents, landowners and business owners have a unique understanding of their neighborhood that technical data lacks, and including their input helps to ensure acceptance of the plan throughout implementation.

Public engagement can take several forms, each with its proper role in the process. A citizens advisory committee that meets regularly and acts as a sounding board for plan discussion can include residents, landowners, business owners and development community representatives, representatives of community groups, and elected officials, working together to weigh tradeoffs and ensure that all viewpoints are discussed. Periodic community workshops or visioning sessions, along with focus groups, surveys or questionnaires, and interviews, can give all community residents an opportunity to participate. It is becoming essential to include an online component to any community planning process; regular community website updates, along with social media opportunities and outreach, can enhance the resulting plan, while informing participants about key issues in their community.

- **Watershed and Water Resource Protection Policy:** A quality comprehensive plan should be aligned with watershed protection policy recommendations made in local Watershed Action Plans, Balanced Growth Plans, TMDLs, Remedial Action Plans, and other environmental protection plans covering the community location; the State Water Quality Management (208) plan, and Source Water Protection Plans. Best Management Practices (BMPs) are available to every community as a means of protecting critical water resources.



(map: D.B.Hartt, Inc.)

The tools outlined in this document are a good start toward a sound watershed protection policy.

Reducing flood risk should be one of the key goals of a watershed protection plan. The Ohio Department of Natural Resources offers a “Floodplain Management Program” that provides advice and technical information on how to reduce flood hazards.

Two recent developments in Ohio may be of interest to communities considering the use and availability of water resources. The passage of HB 473 implementing the Great Lakes Compact, and the increased use of water resources for industrial and utility purposes, may have a significant impact on the planning protection and use of surface and ground water resources. Communities may want to consider engaging in planning and implementing a sustainable water withdrawal and/or use policy.

- **Fiscal analysis and responsibility:** Sound fiscal management requires careful examination to understand community benefits from proposed development, and what costs are involved. For example, will a future that includes a high proportion of residential development provide an adequate amount of tax income to meet the high service demands of the residents? Will the addition of higher income producing uses such as offices or industry be required so that the community’s income can meet that demand? Some communities in Ohio are beginning to address fiscal impacts in a technical analysis. See OKI in the resources for more information.

- **Property Values:** A comprehensive plan should give careful consideration to the property values of landowners. Tools such as Transfer of Development Rights (TDRs) and Purchase of Development Rights (PDRs) can be used to ensure that community goals are realized while providing return for the landowner.

- **Redevelopment and Infill:** The re-use of existing development is a crucial element to the long-term sustainability of communities. The comprehensive plan should consider strategies for long-term reuse and redevelopment of even newly built areas. New development should be tied to the demand for development. Not only does new infrastructure come at a considerable expense to tax-payers, but existing infrastructure requires continual maintenance for the long-term. Of a specific note are “Brownfields”, abandoned or underutilized properties whose redevelopment is encumbered by perceived or real hazardous substances. Also of recent major concern in many urban areas are vacant and abandoned properties. Planning for overall strategies for infill and redevelopment in urban communities presents many opportunities for integration of local policy, green infrastructure, storm water improvements, open space, and compact development in existing areas.

“Doing regional work, even on an ad hoc basis, requires significant resources. Having full-time staff devoted to the effort and being able to employ expert consultants is often essential to achieving the organization’s aims. Governmental and foundation grants are an important source of support for most ad hoc organizations. In many cases, one or more major foundations become the chief benefactors of regional efforts. For example, Cleveland’s many regional initiatives have benefited from philanthropy by the locally based Gund and Cleveland Foundations.”

(Porter & Wallis, 2002)

Federal and state governments have a variety of development incentives for communities considering redevelopment as a part of their comprehensive plan.

- **Green Infrastructure:** Green infrastructure is the interconnected network of open spaces and natural areas in a community that naturally manages storm water, reduces flooding risk and improves water quality. Examples include greenways, wetlands, parks, forest preserves and native plant vegetation. Green infrastructure can also mean green roofs, permeable pavements, and onsite bioswales, and can also include bioswales, tree and landscaped areas, and other natural absorbent areas built into streetscapes. Green infrastructure provides short and long-term cost savings by serving as a natural stormwater management method, complementing man-made infrastructure that is costly to build and maintain. Green infrastructure is also aesthetically pleasing and provides quality of life benefits for residents.

- **Projections within a Time Frame:** Demand and demand forecasting are critical to a comprehensive plan. A well-designed development proposal should match the likely need in the future. When it is difficult to project trends, a range of “maximum” to “minimum” development potential for an area can provide a frame of reference against which growth can be measured in future years. Many communities in Ohio are experiencing reduced population over time, or changes in age or demographic makeup over time. Projections help to quantify possible scenarios for change, and identify key areas where policy can adapt to accommodate that change.

Development and population projections, research and financial analysis are specialized tasks for trained experts. An investment in this expertise is recommended because of its importance to the success and relevance of the comprehensive plan. Having a timeline for a comprehensive plan is essential in assessing the accuracy of your projections, effectiveness of the plan, and deciding when to revisit and revise the plan.

- **Regional Collaboration in Planning:** Because the development and conservation issues of one community have such real implications for neighboring communities that share the watershed, stormwater management planning is always at its most effective when communities plan together as opposed to working independently. Communities involved in watershed partnerships have the opportunity to work together to designate Priority Conservation Areas, Priority Development Areas, and (where appropriate) Priority Agricultural Areas that align with the more detailed policies in each community’s comprehensive plan. It is important for these collaborations to include different levels of government to avoid or assess conflicting policies.

Continued on page 22



Algal Blooms in Lake Erie
(photo: Landsat image created for NASA's Earth Observatory by Jesse Allen and Robert Simmon, using data provided courtesy of the United States Geological Survey. MODIS Rapid Response imagery provided courtesy of Jeff Schamltz)

Collaborative Stormwater Planning

The need for collaborative stormwater management planning among neighboring communities to protect our watersheds is now plainly evident in Ohio's developed regions. When most communities were developed, little was understood about the impacts of increased stormwater flows that result from vast amounts of dense development. As a result, today we must address the consequences of uncoordinated regional stormwater management planning. The following are a few examples:

- *The Cleveland Metroparks* – Developed land outside the parks have turned the 22,000-acre Emerald Necklace into the region's catch-basin for stormwater runoff, impairing fish populations and damaging park property, costing taxpayers millions of dollars every year.
- *Harmful Algal Blooms* – Pollutants often found in stormwater runoff, such as lawn and farm fertilizers, can facilitate the growth of harmful and sometimes toxic levels of blue-green algae blooms in Ohio's lakes, ponds, and slow-moving streams. Runoff from the highly developed Lake Erie basin causes a late summer algae bloom that can envelop as much as the entire western third of Lake Erie. These blooms not only negatively affect aquatic life and the fishing industry, and impact beaches and tourism, but cost water utility departments thousands of dollars every day that they are present.
- *Combined sewer overflows* -- result from increased stormwater following large storm events and lead to sewage flows entering our waterways. These events negatively impact aquatic life and the recreational value of Ohio's waters and can negatively impact human health.

Retrofitting our built regions so that these effects are mitigated will continue to be a challenging and expensive process. However, we can learn from the mistakes of the past by utilizing modern stormwater management methods as development happens. These methods are most effectively implemented by thinking beyond our own jurisdictional lines and understanding the shared responsibilities of planning for our watersheds. The community comprehensive plan becomes the place where many of these policies and opportunities intersect.



Future Land Use Map, from the Comprehensive Plan for Carlisle Township, Ohio (map: Strategic Public Policy)

Collaboration also brings many other benefits to participating communities, such as the bundling of various services which can present considerable cost savings for communities and their taxpayers.

- **Use of Data:** A comprehensive plan process can generate a great deal of data, from the location of wetlands and woodlands, to travel data, to economic data, to land uses in a community. Data is useful not only for assessment purposes, but as an important tool for projecting trends as well. The range of data tools available increases daily. It is important throughout the comprehensive plan process to recognize the power of data, and yet to keep in mind that all data is only as good as the decision makers using it. A well-run public engagement process, and a considerate citizens committee, will play important roles in weighing tradeoffs and setting priorities for development and conservation, using data as a tool for decision support.

II. Plan Elements

The best comprehensive plans are tailored in content to address the needs of the community. However, some elements are consistently provided in most plans, as outlined here. Additional elements may address historic preservation, scenic character, economic development, and sustainability.

- **Land Use:** A sustainable community plan will outline the right mix of development and conservation and how that balance will be achieved. The Land Use element should rely on sound projections of future population, business, and institutional needs, to project future land needs for each category of use. A well-done comprehensive plan will also look at the proper balance of uses in order to provide a balanced tax base in the future.

In addition to proper zoning of commercial, industrial, institutional and residential uses, the designation of Priority Conservation Areas (PCAs), Priority Agricultural Areas (PAAs) and Priority Development Areas (PDAs) is a first step to overall long term health and prosperity of the community. Designating these priority areas leads to additional steps in determining the types of uses in development areas and the standards that will be applied to conservation areas. It also allows the land use element to tie designation of future land uses to the suitability of land for different types of development, and for conservation and agriculture.

Most comprehensive plans include additional detail on designating areas appropriate for commercial, residential, industrial, institutional, civic, and open space uses, including an analysis of the amount of

Investing in “complete streets” enhances local retail, boosts property values, and revives economic activity. Studies have found complete streets generate an increase in retail sales of 30% and increase land values from 70% to 300%.

(Burden and Littman 2011)

land needed for each use, based on projected population and business development changes.

- **Housing:** The housing element of a comprehensive plan identifies the current status of housing in the community. Analysis determines the type of housing that will be needed (single-family, multi-family, retirement, assisted living, etc) as the demographic characteristics of the community change over time. A good housing assessment will also evaluate housing quality, and the need of community residents for affordable price points.

- **Transportation:** The transportation element is closely linked to the land use element. The location of roads and other lines of transportation, as well as the location of transportation connections and intersections, represents a significant public investment that has a strong influence on land use patterns. Likewise, existing land uses can drive demand for changes in the transportation network.

A balanced comprehensive plan will provide for the feasibility of diverse modes of transportation, recognizing that a healthy community and citizens will have options that include walking, biking and public transit as well. A balanced transportation system provides access and mobility for residents and commercial entities while ensuring safety and efficiency. Communities that accomplish “walkability” provide quality of life benefits for residents including increased social interaction, health, and safety, as well as reduced cost of travel. See the resources for more information on “Complete Streets” that serve a number of different transportation modalities.

Transportation is a critical issue in attractiveness of communities to workers and businesses, as the cost of transportation has a large impact on the family and business “bottom line.” Considering continued cost increases in fuel and infrastructure, a community with foresight will make decisions that enable a flexible approach to transportation.

- **Water and Wastewater Infrastructure:** A special relationship exists between the building of infrastructure and commercial, industrial, and residential development. Development is much more likely to follow wherever this infrastructure is placed. It is important to be mindful of the “leapfrogging” of development, which can occur when alternative infrastructure is available outside the gradual expansion of existing infrastructure frameworks. Examples include multi-family wells, individual septic leachfields for residential wastewater treatment, package and self-contained wastewater treatment systems that serve individual subdivisions. Development that jumps beyond planned areas results in inefficient expansion of developed areas, and inadequate provision of other infrastructure needed to support the

Near 20% of states' and municipalities' budgets are spent on capital outlays for infrastructure, and on recurring expenditures to provide services and maintenance. Even modest percentage savings from smart growth would save taxpayers billions of dollars. Several studies suggest that rational use of more compact development patterns from 2000 to 2025 promise the following sorts of savings for governments nationwide: 11.8 percent, or \$110 billion, from 25-year road building costs; 6 percent, or \$12.6 billion, from 25-year water and sewer costs; and 3.7 percent, or \$4 billion, for annual operations and service delivery.

(Muro & Puentes, 2004)

development, such as roads and schools, often with associated fiscal impacts on the community.

- **Community Facilities and Services:** The comprehensive plan will provide careful consideration of community services and facilities, including the existing level of service for various amenities and opportunities to expand or adapt what are provided. Examples include community buildings (city or village hall and service facilities), schools, parks and recreation facilities, fire and police and emergency services, and libraries. Even institutions such as churches, and private facilities such as golf courses, should be considered in evaluating the overall level of service and amenity in the community.
- **Natural Resources:** Natural resources such as floodplains, soils, steep slopes, forests, natural parks, streams, wetlands and lakes provide a multitude of benefits to communities and their residents including higher physical and mental health, air and sound quality, higher drinking water quality and higher property values. Natural resource protection and enhancement is a strong tool for attracting and retaining businesses and residents, as well as tourists and visitors from outside the community.
- **Agriculture:** Agriculture is one of Ohio's most important industries, providing billions of dollars to the economy and employing one in seven residents. Only four other states can boast of similarly abundant prime agricultural lands. Preserving this valuable and precious resource requires a balanced approach to economic, environmental, and community goals. A well executed comprehensive plan process will include consideration of the economic impact of agribusiness in decisions about land use.

III. Plan Implementation & Administration

- **Compact and Conservation Development:** Compact development and conservation development can play a key role in balancing growth within a community and require consideration during the comprehensive plan process to ensure their success. Consider the characteristics of your community when determining the appropriate density for these developments.
- **Cross-Jurisdictional Implementation:** The viability of a community's various land use goals becomes enhanced through the entering of agreements with surrounding communities. The comprehensive plan sets the stage for cross-jurisdictional agreements that can help both communities better achieve their goals. For example, Transfer of Development Rights (TDRs) enhances conservation goals because it allows development in one community to compensate a landowner in another community by purchasing that landowner's development rights.

Youngstown 2010

The plan provides for a City that is smaller, greener, cleaner, makes efficient use of its available resources, and capitalizes on its many cultural amenities and business advantages.

The Youngstown 2010 Plan has drawn interest from cities around the world that are experiencing post-industrial population loss or declining birth rates. The Plan has also won State and National planning awards, including the prestigious American Planning Association (APA) 2007 National Planning Excellence Award for Public Outreach.”

(The City of Youngstown)

Other examples are Joint Economic Development Districts (JEDDs) and Cooperative Economic Development Agreements (CEDAs). Both provide communities with the opportunity to share the tax benefits of development that occurs in geographic areas of jurisdictional overlap.

Recommendations

1. Prepare a Comprehensive Plan, or update the one you have: Work with adjacent communities, jurisdictional bodies (such as your county) and related agencies (like your Metropolitan Planning Organization) to ensure that the plan is relevant and answers critical questions for the future. Review the plan for consistency with the State’s Water Quality Management (208) Plan, as well as endorsed local watershed plans and source water protection plans.

2. Evaluate your plan annually and update it every 3-5 years: Alterations to the plan are to be expected as needs of the community change. A scheduled re-examination of your plan and analysis of its progress will be needed. Comparing the progress with the timeline of your plan may dictate modifications for the objective to be realized.

3. Involve the public: The process should incorporate meaningful public participation, as determined by the community. A strong educational component should be included to provide the public with information on new planning methods, balanced growth, and their benefits. Include a range of venues for citizen involvement, such as a Citizen Advisory Committee, workshops, and web input opportunities.

4. Include fiscal analysis: The plan should include an economic component that addresses projected tax revenues and the cost of services, the desirable balance of commercial and residential uses, needed public infrastructure, and governing staff and associated costs, etc.

5. Project Demand: Ensure that demand for residential, commercial, institutional uses drives the quantity, type, and location of development.

6. Align your zoning code with your comprehensive plan: Planning merely informs land use decisions. The comprehensive plan serves to legitimize the zoning code and strengthen its legal basis.

“A good plan can benefit the community by creating the power of consensus to implement sound decisions and that is a strong defense against legal attacks” (Evans-Cowley, 2007, p. 3-19).



The City of Youngstown Comprehensive Plan
(map: Youngstown City Planning)

7. Identify potential for cooperation: The plan should address the plans of overlapping and surrounding jurisdictions and identify policy for cooperative efforts such as transfer of development rights, watershed, riparian, and storm water protection that would be more effective at a multi-jurisdictional scale. Starting or joining a watershed planning partnership in your area is one of the many ways to become involved in collaborative land use planning.

Example Comprehensive Plans

County Plan:

- Summit County General Land Use Plan (2006). Found at <http://www.co.summit.oh.us/executive/genplanOverview.htm>
- Wayne County Comprehensive Plan, “Tomorrow Together” (2007). Available at <http://www.wayneohio.org/planning/plan.php>
- Stark County Regional Planning Commission’s Comprehensive Transportation Plan. Available at: <http://www.co.stark.oh.us> (click on “Regional Planning Commission” under “Agencies and Departments”; then click on the “Transportation” tab, and then click “SCATS Transportation Plan” in the second paragraph.)

Township Plan:

- Anderson Township Comprehensive Plan (2010) (Anderson Township, Hamilton County). Available at <http://www.andersontownship.org/departments/planning-and-zoning/comprehensive-plan.aspx>
- Twinsburg Township Comprehensive Plan (2003). (Twinsburg Township, Summit County). Available at <http://www.twinsburgtwp.com/ComprehensivePlan.aspx>
- Ross Township Land Use Plan (2008). (Ross Township, Butler County). Map available at http://development.butlercountyohio.org/content/txtcontent/plan/documents/Ross_LU_Plan_8_12_08_001.pdf
Land Use descriptions available at http://development.butlercountyohio.org/content/txtcontent/plan/documents/Ross_LU_Proposed_Categories_8_12_08.pdf



Amish in Wayne County
 (photo: Amish America, amishamerica.com)

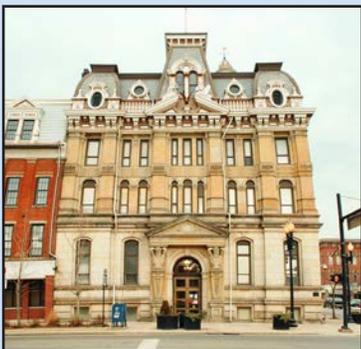
City Plan:

- The City of Wooster Comprehensive Plan (2002). Available at <http://www.woosteroh.com/planningandzoning.php#t1>
- The City of Dublin Comprehensive Plan (2007). Available at <http://dublinohiousa.gov/special-projects/community-plan/>

Continued on next page

Wayne County

**Tomorrow Together
 Comprehensive Land Use Plan 2007**



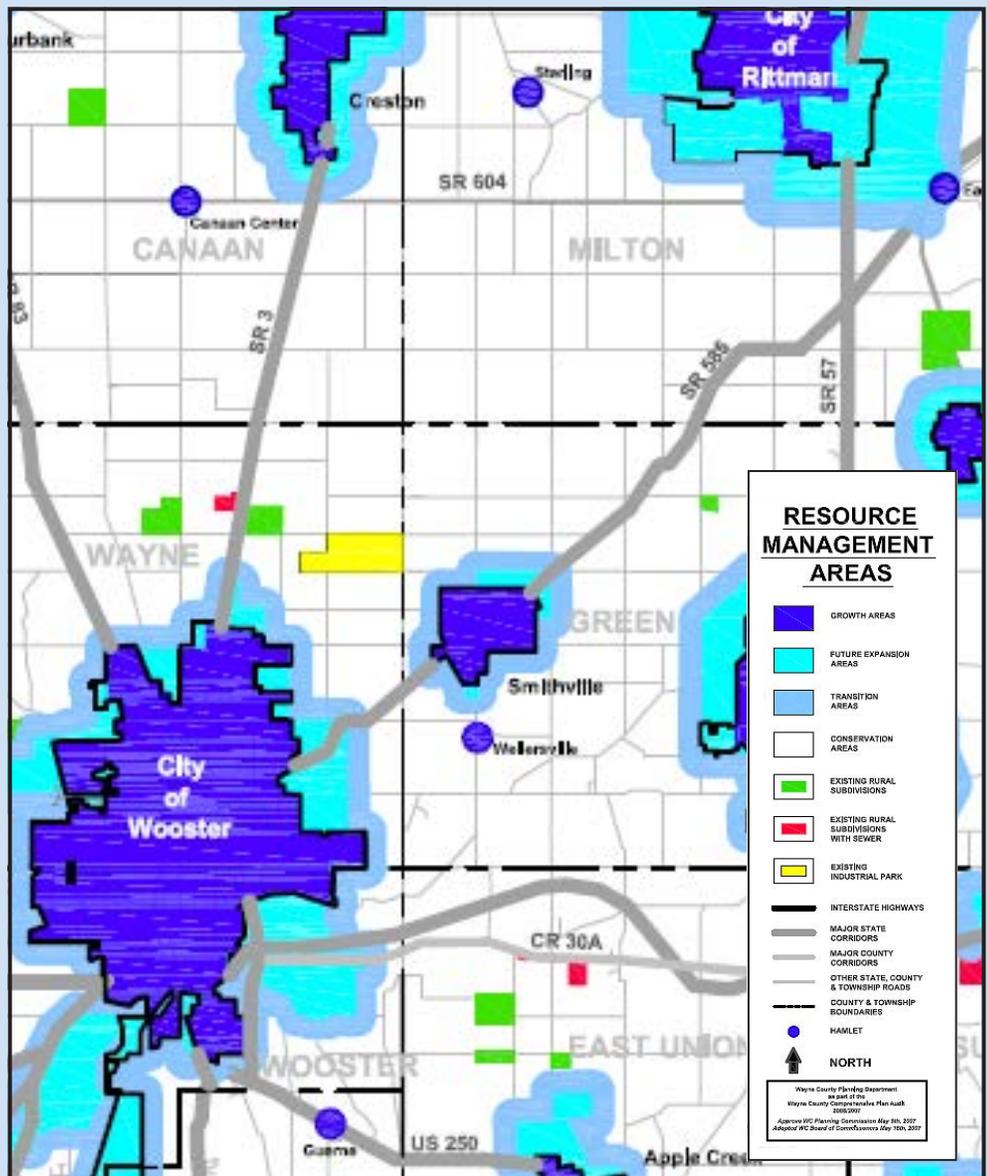
Wayne County Courthouse, Wooster, Ohio
 (photo: Derek Jensen)



Ohio Western Reserve National Cemetery, Rittman, Ohio
 (photo: militaryphotos.net)



Holstein Cows at Pasture
 (photo: planetwire.com)



Wayne County Master Plan
 (map: Wayne County Planning Department)

HEALTHY COMMUNITIES...
A GUIDE TO PLANNING IN OHIO
...PLANNING CONFERENCE

A GUIDE TO PLANNING IN OHIO

...PLANNING CONFERENCE...
...PLANNING CONFERENCE...
...PLANNING CONFERENCE...



OHIO PLANNING CONFERENCE
...PLANNING CONFERENCE...
...PLANNING CONFERENCE...

- The City of Hudson Comprehensive Plan (2004). Available at <http://www.hudson.oh.us/DocumentCenter/Home/View/280>
- The City of Youngstown Comprehensive Plan (2005). Available at http://www.cityofyoungstownoh.com/about_youngstown/youngstown_2010/plan/plan.aspx

Village Plan:

- Village of Granville Comprehensive Plan (2009). Available at http://www.granville.oh.us/draft_comprehensive_plan/

Regional Plan:

- Miami Valley Regional Planning Commission, "Going Places: An Integrated Land Use Vision for the Miami Valley Region" (2007). Available at <http://www.mvrpc.org/rlu/>

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

Resources

Clark, Jill & Hall, Peggy Kirk (2010). *Finding Opportunities across Political Boundaries: Balanced Growth Watershed Plans and Cross-Jurisdictional Agreements*. Center for Farmland Policy Innovation, Ohio State University. Available at: http://aede.osu.edu/sites/drupal-aede.web/files/imce/2010_4.pdf

Daniels, T.L., Keller, J.W., & Lapping, M.B. (1995). *The Small Town Planning Handbook*. 2nd. Ed. Chicago, Ill. American Planning Association Press. Available for purchase at: <http://www.amazon.com>

Evans-Cowley, Jennifer (Eds.). (2007). *A Guide to Planning in Ohio. The Ohio Planning Conference*, 129 South Third Street Suite 510, Columbus, OH 43215-7100, (614) 221-4349. Copy available for purchase at: <http://www.amazon.com>

GreenTreks Network, Inc. Philadelphia, PA. (2010). *Green City, Clean Waters*. Video available at: <http://vimeo.com/10756931>

Meck, Stuart & Pearlman, Kenneth (2010). *Ohio Planning and Zoning Law*, 2010 ed. Banks-Baldwin Law Publishing Company. Available for purchase at <http://www.amazon.com>.

Ohio Department of Development. (2010). *Business Incentives Loans and Bonds*. Available at: http://development.ohio.gov/bs/bs_busgrantsloans.htm

Ohio Department of Development. *Clean Ohio Report*. Available at: http://clean.ohio.gov/Documents/CleanOhio_Report.pdf

Ohio Department of Natural Resources. *Floodplain Management*. (2010). Available at: <http://www.dnr.state.oh.us/tabid/3511/default.aspx>

Ohio Environmental Protection Agency. (2010). *Ohio Brownfield Redevelopment Toolbox*. Available at: <http://www.epa.ohio.gov/portals/30/SABR/docs/Ohio%20Brownfield%20Toolbox.pdf>

Ohio State University Extension *Comprehensive Planning Fact Sheet*. (N.D.) Available at: <http://ohioline.osu.edu/cd-fact/1269.html>

U.S. Environmental Protection Agency. (2010). *Managing Wet Weather with Green Infrastructure*. Available at: http://water.epa.gov/infrastructure/greeninfrastructure/upload/gi_action_strategy.pdf

Schweitzer, J.G., Franko, R. & Gause, J.A. (2007). *Developing Sustainable Planned Communities*. Washington D.C.: The Urban Land Institute. <http://www.amazon.com>

Toner, W., Gil, E., & Lucchesi, E. (1994). *Planning Made Easy*. American Planning Association. (312) 431-9100 Copy available for purchase at: <http://www.planning.org/apastore/>

Ohio-Kentucky-Indiana Council of Governments (OKI), *Fiscal Impact Analysis Tool for Comprehensive Planning*, <http://www.oki.org/departments/landuse/fim.html>

Complete Streets resource: <http://www.smartgrowthamerica.org/complete-streets>

Mid-Ohio Regional Planning Commission – Complete Streets resources:

http://morpc.org/transportation/complete_streets/completeStreets.asp

Federal Highway Administration Scenario Planning web site,
http://www.fhwa.dot.gov/planning/scenario_and_visualization/scenario_planning/index.cfm

Nelson, Arthur C. (2004) *The Planner's Estimating Guide/CD: Projecting Land-Use and Facility Needs*. American Planning Association(312) 431-9100 Copy available for purchase at:

<http://www.planning.org/apastore/>

State Capitol, Columbus, Ohio
(photo: Tom Patterson)

Other Resources

Your local county, municipality, or metropolitan planning commission.

American Planning Association; Tel.(312) 431-9100

www.planning.org

Ohio State University Extension, Community Development; Tel.(614) 292-8436. <http://www.comdev.osu.edu/>

Smart Growth America; Tel.(202) 207-3350

<http://www.smartgrowthamerica.org>



Chapter 3



Above: Medina Square, Medina, Ohio.
(photo: Kirby Date)



Above Right: New neighborhood housing. Compact development is done at a density and scale that is similar to neighborhoods of the early 20th century.
(photo: City Architecture).

COMPACT DEVELOPMENT

Background

What is Compact Development?

“Compact development” refers to development that uses land efficiently through creative and intensive site, neighborhood and district design. Compact development may be residential, commercial or mixed use, but most often approximates the intensity of development that was typical of Ohio communities in the first half of the twentieth century. The most common use of the term is in Traditional Neighborhood Development, which describes the development of mixed use residential neighborhoods within walking distance of commercial, retail, employment, school and institutional uses. However, compact development may also apply to smaller, more limited uses in certain districts of a community or even a small town. Typical densities in compact development residential neighborhoods are from six to eight units per acre; in commercial areas, two and three story buildings are typical, with building fronts right up to the sidewalk, and parking creatively arranged behind and to the side of buildings. Civic spaces are typically included, providing opportunities for civic participation, shopping, recreation, and socializing outdoors in all seasons. A range of housing and transportation options are supported, with an emphasis on improving pedestrian and bicycle circulation, reducing necessary vehicle trips, and providing a variety of housing options, enabling people to live in one community throughout their lifetime.

Compact development requires a relatively small public investment in roads, public safety, and other infrastructure costs, much lower than in low-density developments.

(Littman 2009)

Houses with the above-average levels of walkability command a premium of about \$4,000 to \$34,000 over houses with just average levels of walkability in the typical metropolitan areas studied.

(Cortright 2009)

How does Compact Development relate to Balanced Growth?

As balanced growth encourages new development and redevelopment, the spatial layout of that development can have a major impact on the future of our watersheds. One of the ways to have the biggest impact is to encourage a compact development pattern whenever possible.

Compact development can fulfill many community goals, including creating a traditional small town character, providing quality places for families and mature adults to live, creating vibrant commercial places to shop and recreate, and supporting infill and revitalization of existing developed areas. At the same time, compact development codes support conservation goals and watershed protection.

Compact development requires fewer roads and less impervious surface; allows infrastructure, including storm water management, to be provided in a more efficient fashion; and permits a wider range of cost-effective transportation options. Compact development can allow for the conservation of open space as well as natural and other resources that can fit in to the development. It also enhances the efficiency of business, the quality of neighborhoods, and the relationships (such as schools and religious communities) that develop within them. For these reasons, all communities are encouraged to explore ways in which they can make development more compact where appropriate.

As discussed above, compact development principles apply in a wide range of situations that may not include traditional neighborhoods. Compact development will have a very different character, depending on whether it is occurring in an urban neighborhood, a small town center, a rural crossroads, or a major retail center. The example development regulations provided at the end of this chapter illustrate the possibilities that may be applied.



*Easton Town Center in Columbus, Ohio.
(photo: C.Kennedy)*

Issues

- **Mixed Uses:** One of the primary principles of compact development is providing a mix of uses. In a traditional neighborhood, this means that several types of housing, commercial, and office space are provided in close proximity to facilitate communication among them, good pedestrian access, and a balanced community. However, at the site level, a compact approach may be just as effectively applied to a single residential, commercial, or institutional development project.

- **Hierarchy of scales:** Larger compact development areas are generally designed to incorporate a hierarchy of scales, starting with sites and individual streets at the smallest scale and moving up through neighborhoods, districts, and the town or city itself. A town or city may have several districts, each with its own recommendations for types of buildings and uses, travel distances, streets, central focus areas (such as a main street or neighborhood center), and open spaces. Smaller compact development areas might be designed around one such district or neighborhood, with associated guidelines for streets, center focus, and open spaces.

- **Street Design:** Compact development projects rely on careful attention to traditional street design, with a hierarchy of rectilinear streets, including alleys, to meet practical access needs without impacting pedestrian scale. Blocks are short and provide maximum street frontage for uses. Buildings are often located right at the sidewalk or with a minimal setback, with more extensive parking provided behind the buildings.

- **Small scale commercial uses:** Usually commercial uses are provided at a fairly small scale, often a maximum of 10 to 25,000 square feet, although there has been exploration into providing larger scale retail uses in smaller spaces. The challenge is to provide a balance of pedestrian-friendly walking distances among establishments, while accommodating cars needed for some of the uses, such as major retail or residential parking.

- **Civic spaces:** Compact development design provides for civic spaces in the mix of uses, fostering a sense of community and providing opportunities for community interaction. Schools, meeting halls, parks, and recreation opportunities are woven into the fabric of the development area. Public waterfront access is often a keystone of these projects.

- **Parking:** Specific parking requirements are highly individual to each situation, depending on expected uses and their anticipated markets. Parking requirements should be calculated for each community or district using the models in the resources section below as an example only. Mixed uses take into account the potential for shared parking, which can greatly reduce the amount of space needed by various uses. For example, movie theaters can share parking with offices, one using the parking during daytime hours, the other at night. Restaurants can share parking with religious communities or schools.

- **Design Guidelines:** Design guidelines are critical to maintain compactness, consistency, local and regional identity, and a lively street character. Many compact development regulations have a full set of illustrations accompanying guidelines for building location, parking area design, façade treatments, landscaping, and signage.



Euclid Avenue, Downtown Cleveland, Ohio.
(photo: Gregory SJ Soltis)



*Little Italy, Cleveland, Ohio.
(photo: Gregory SJ Soltis)*

- **Complete Streets:** Many communities are incorporating complete streets concepts into their development plans. These address the potential for incorporating capacity for bicycle, pedestrian, public transit, and cars into street design.
- **Green Infrastructure:** Innovative storm water management techniques can be worked into an overall green infrastructure plan for a compact development area, either new development or redevelopment, resulting in improved stormwater management and reduced storm water impacts. Complete street designs, and vacant or underused lots and parking lots, can be components of an overall green infrastructure plan in development areas.
- **Cottage Development:** In built-out communities where small pockets of undeveloped land remain, “cottage developments” can be an innovative way to do infill development while incorporating open space. These “cottage developments” or “pocket neighborhoods” cluster small groups of houses with walkable and communal open space areas that engage neighbors, but still have privacy elements and vehicular access.

Recommendations

- 1. Identify areas for compact development:** Use the comprehensive planning process to identify development and redevelopment areas that would benefit from a compact development concept.
- 2. Mixed Use Districts:** Look for ways to incorporate a mix of uses into districts that have traditionally been single-use, such as office districts and major retail uses.
- 3. Planning Concepts:** Develop specific planning concepts for individual districts or neighborhoods that address land use; street hierarchy and parking; retail, office and residential markets; resource protection opportunities; green infrastructure; and open space/ recreation needs.
- 4. Transportation Options:** Develop a street design and parking strategy that incorporates a range of transportation options besides the automobile. Look for opportunities for shared parking. Ensure that adequate parking is provided for the typical condition rather than the peak. Ensure that parking does not compromise pedestrian accessibility, short walking distances, and access to public transportation.

5. Design Guidelines: Develop architectural and spatial design guidelines that enhance the vibrancy and quality of the development area.

6. Public Education: When compact development is new to an area, public education is important to provide an opportunity for input, and also to help people understand the design quality and intent of the compact development area.

7. Human Scaled Environments: Whether the area of compact development is supporting the character of an urban setting or creating a new place in a suburban setting, there should be an emphasis on making these areas pedestrian-friendly and making them connect with the surroundings.

Example Regulations

Urban: Columbus TND ordinance

<http://library.municode.com/index.aspx?clientId=16219> (Click on "TITLE 33 - ZONING CODE" in the left-hand column, and then click on "Chapter 3320 - TRADITIONAL NEIGHBORHOOD DEVELOPMENT")

Urban: City of Cleveland, Midtown Mixed Use ordinance

<http://www.amlegal.com/> (Click on "Library" at the top left, then click on the state of Ohio in the US map, then click on "Cleveland" in the list of municipalities, then click "Frames," then click on "PART THREE - LAND USE CODE" in the list to the left, and then scroll down and click on "Chapter 344 Midtown Mixed-Use District" in the list at the center of the screen.)

Urban: City of Cincinnati, Urban Mix District, Chapter 1410

<http://library.municode.com/index.aspx?clientId=19996&stateId=35&st> (Click on "TITLE XIV ZONING CODE OF THE CITY OF CINCINNATI" in the list to the left, and then click on "Chapter 1410 - URBAN MIX DISTRICT" in the list at the center of the screen.)

Small town: Wisconsin ordinance

<http://urpl.wisc.edu/people/ohm/tndord.pdf>

Rural/village: Mantua Village ordinance

<http://mantuavillage.com/planning.php> (Scroll down to the section titled "MANTUA VILLAGE ZONING CODE TABLE OF CONTENTS" click on "TITLE III DISTRICT REGULATIONS" ; see "CHAPTER 320 VILLAGE CENTER DISTRICT.")

Suburban Mixed Use: Shaker Heights Chapter 1234

http://www.shakeronline.com/images/planning/4_zoning_ordinance.pdf

City of Dubuque, Iowa, Cottage Design Subdivision Code, Title 16, Chapter 11-13 http://www.sterlingcodifiers.com/codebook/index.php?book_id=803 (Click on "Codes Online" at the top of the page, then choose "IA" in the list of states, and "Dubuque" in the list of municipalities, and click the "Show Codes" button; then click on "Title 16 - UNIFIED DEVELOPMENT CODE" in the list to the left, then click on "Chapter 11 LAND SUBDIVISION" in the list, and then click on "16-11-13: COTTAGE DESIGN SUBDIVISION" also in the list to the left.)

See the Example Regulations Matrix for a comparison of example codes.



*Danielson Grove - Kirkland, WA
Cottage Development. Developed by
The Cottage Company/Designed by
Ross Chapin
(photo & site plan: The Cottage Company)*

Danielson Grove in Kirkland, Washington

Danielson Grove, Kirkland, Washington. Cottage Development – plan, 16 units in 2.25 acres. High quality design provides a neighborhood setting that is attractive to young families and mature adults. Typical sites are three to five acres and include small housing units (under 1500 square feet), central green space, and consolidated parking. Developed by The Cottage Company/Designed by Ross Chapin. (map: The Cottage Company)

While compact development may show a smaller return than low-density development on a per unit basis, the lost revenue is offset by the larger number of units offered in the compact neighborhood. A developer of a compact neighborhood in northeast Ohio surrendered 10% of the purchase price of each unit by forgoing the low-density model, but the development as a whole generated twice as much revenue due to the higher number of units offered.

(Mikelbank 2008)

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

Resources

Randall Arendt, *Crossroads, Hamlet, Village, Town: Design Characteristics of Traditional Neighborhoods, Old and New*, Report, American Planning Association Planning Advisory Series, No. 487/488, Planners Press, July 1999, ISBN No. 1884829333. Email: bookservice@planning.org

City of Fort Collins - Advance Planning Dept.; Tel: 970-221-6376
Website: <http://www.fcgov.com/advanceplanning/>

1000 Friends of Wisconsin; Tel: 608/259-9045; Website: <http://www.1kfriends.org/>.

City of Columbus, Department of Development, Planning Division; Tel: 614-645-6556; Website: <http://development.columbus.gov/planning.aspx>

Mantua Village, Village Hall & Mayor's Office; Tel: 330-274-3199; Web: <http://mantuavillage.com/>

Municipal Research and Services Center of Washington, *Infill Development: Completing the Community Fabric*
<http://www.mrsc.org/Subjects/Planning/infilldev.aspx>

Municipal Research and Services Center of Washington, Cottage Housing;
<http://www.mrsc.org/subjects/planning/cottagehousing.aspx>

National Association of Home Builders, Mixed-Use and Compact Development;

<http://www.nahb.org/default.aspx>

(Click on the grey button named "Housing Topics" at the top right of the page, then in the list to the left click "Land Development," and then choose "Smarter Growth" , and then then choose "Mixed-Use & Compact Development.")

The Cottage Company, LLC.; Company that has built many Cottage Housing projects with site plans and example codes

<http://www.cottagecompany.com/default.aspx>

Mid-Ohio Regional Planning Commission, Density By Design; http://www.morpc.org/pdf/morpc_density_brochure_CS3.pdf

Complete Streets resource:

<http://www.completestreets.org/>

Mid-Ohio Regional Planning Commission – Complete Streets resources:

http://morpc.org/transportation/complete_streets/completeStreets.asp

http://morpc.org/transportation/complete_streets/toolkit.asp



*Oberlin mixed use compact development project.
(Illustration: Sustainable Community Associates, Urban Design Associates)*

Chapter 4



Above: Entrance to the Johnson-Dagley estates. A common access drive project in Wayne County, Ohio.
(photo: Kirby Date)



Above Right: Avenbury Lakes in Avon, Ohio
(photo: Scaletta Development Corp.)

CONSERVATION DEVELOPMENT

Background

What is Conservation Development?

Conservation Development is a development technique that allows design and layout of an entire development parcel, to conserve resources while allowing development to occur at the same density as the underlying zoning. A special form of Planned Unit Development, conservation development utilizes high standards for open space and design, coupled with design flexibility. Conservation development can be designed to meet a range of goals including conserving open space, conserving natural and cultural resources, creating amenities attractive to buyers, and creating a new neighborhood that is an asset to the community. In many cases, concentrating development on just a portion of a development tract can minimize the cost of providing and maintaining public services and utilities.

A good community comprehensive plan will outline areas for redevelopment and new development, and will also identify areas that are high priority for preservation. Such plans use the wide variety of tools that are available to help offset the impact of unplanned sprawl and ensure the efficient use of land. Conservation development is a technique that applies to the transitional areas, those that we know are going to develop, but where we would like to balance the impact of the development with the protection of water and other resources, including community character.

Lots in the conservation subdivisions cost an average of \$7,000 less to produce, resulted in a 50% decrease in selling time, and had a value of 12 to 16% more as compared to lots in conventional subdivisions.

(Mohamed 2006)

Conservation development practices reduce construction costs and limit flooding and flood damage downstream. On average, conservation development saves \$340 per developed acre in culvert costs alone.

(Johnston and Braden, 2008)

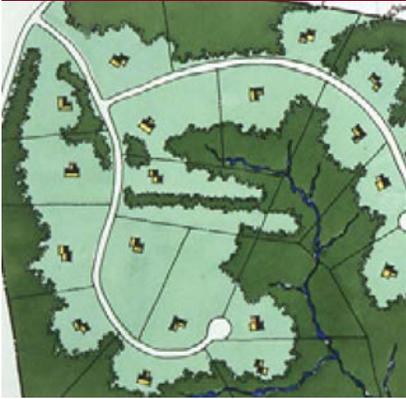
How does Conservation Development relate to Balanced Growth?

Over the last 20 years in Ohio, the impact of new development on community character and environmental quality in rural areas has been a growing concern, and many communities have been exploring options for flexibility to allow more site-sensitive design. Communities appreciate the need for continued growth and expansion, but also are interested in the impact of this new development on the quality of life, rural and community character, and the potential for new approaches that provide for protection of valuable natural resources. Balanced growth addresses these issues, and the concern about the impact of new development on water quality and water quantity. The conventional approach to zoning and designing new development not only results in the potential degradation of natural resources and rural character, but it substantially increases the quantity, and reduces the quality, of water in our waterways, leading to erosion, sedimentation, and nonpoint source pollution. At the same time, developers seek more flexible design approaches that allow them to accommodate natural areas as site amenities, enhancing the value of the lots sold, while in many cases reducing costs for storm water and road infrastructure, grading, and site preparation.

How does Conservation Development work?

Conservation development most often applies to multiple home residential developments, where the number of homes normally permitted on a specific parcel of land at a set density is grouped together on smaller lots, while a sizeable proportion of the property – at least 40% - is set aside as open space. The open space serves as a buffer to protect vegetation, streams, wetlands, and floodplains on the property, and helps to manage storm water effectively on site. In exchange, the developer realizes a premium on the development because the results are high in amenity value, meet an underserved market need, and reduce infrastructure (road and sewer) costs. Conservation development can also apply to commercial and institutional development, primarily to those types that are campus-like in nature, where buildings and parking lots can be rearranged to accommodate natural, agricultural, cultural, or scenic resources. Office parks, graduated living facilities, educational campuses, and the like all work well in a conservation development scheme.

Standard patterns for retail or single parcel commercial development present a related set of problems, however, as any set-aside of open space constitutes a reduction in the development potential of the site, yielding a lower return for the developer under strict multistory or square footage standards. In these cases, open space set-asides are best incorporated when property is changing from residential



Conventional Development
(map: Community Planning Program, CSU)



Conservation Development
(map: Community Planning Program, CSU)

to commercial zoning (the site under commercial zoning, even with open space, most often still has a higher value than under residential zoning) or when the overall value of the property in the neighborhood is significantly enhanced by the overall plan for the area. In some limited cases, significant benefits can be achieved by concentrating the building or parking into multistory structures, permitting open space set-asides without reduction in value. To concentrate structures, often some code variance, community subsidy or other financial involvement is a part of the arrangement in order to offset the restrictions on or cost of construction of multistory structures.

In recent years, some alternative development approaches are being used in addition to conservation development. To meet a variety of needs, including reducing the costs of infrastructure that would arise from new construction in outlying areas, communities are encouraging infill development in denser, urban settings where utility and roadway infrastructure already exists. See the Compact Development section for more information. Compact development provides traditional neighborhoods with a mix of housing and land uses, in developed areas close to services, transportation, commercial areas, and schools. Conservation development, by contrast, usually results in the same overall lower density in a community and dispersed land use pattern, although its impact is reduced through clustering of development on each site, with open space to reduce the site-level impact on site resources.

In minor subdivisions, some counties are permitting a model which allows for common access drives. The incorporation of "Common Access Drives" in these lot splits gives flexibility in the requirements for road frontage by allowing a private road that is shared by the lots through a reciprocal easement agreement. This approach avoids rows of houses along the major roadway that would block the scenic rural vistas, therefore keeping rural community character; and provides for safer access along rural roads. This approach may also facilitate more efficient use of existing large lot (5-15 acre) tracts by providing a format for a rural version of infill development.

It should also be noted that conservation development schemes typically provide for a patchwork of open space and development, especially where several conservation developments are near each other. Such a patchwork of open spaces is well suited to buffer views of development, provide for continuity in linear habitats such as stream corridors, reduce and filter storm water runoff from development, and ensure the long-term survival of wetlands, rural views, and historic features.

However, unconnected patches of open land are generally not

suited to preservation of very large blocks of land, (usually 100 acres or more) as would be desired for a significant natural area or a designated area of farmland preservation. The resulting patchwork creates conflict among residents, workers, and farmers. It also presents access and management problems for the farmer, and increased difficulty in continuing to farm in a developed area. A patchwork of open spaces may also not provide the “critical mass” of farms to support agriculture-related businesses such as banks, supply and equipment stores, and professional advisors. Although individual patches can provide habitat for wildlife, poorly connected patches are not the best arrangement to meet overall wildlife preservation goals.

In summary, conservation development is an approach that should be available in the zoning toolbox of every community that still has large parcels of open and developable land, whether outside or inside of the developed margin. As part of an overall comprehensive approach for each community that includes areas of intensive development (compact development), areas of preservation of blocks of land for natural and agricultural protection (using tools such as TDR and agricultural protection), and areas of partial conservation (conservation development), it plays an important role in balancing conservation and development.

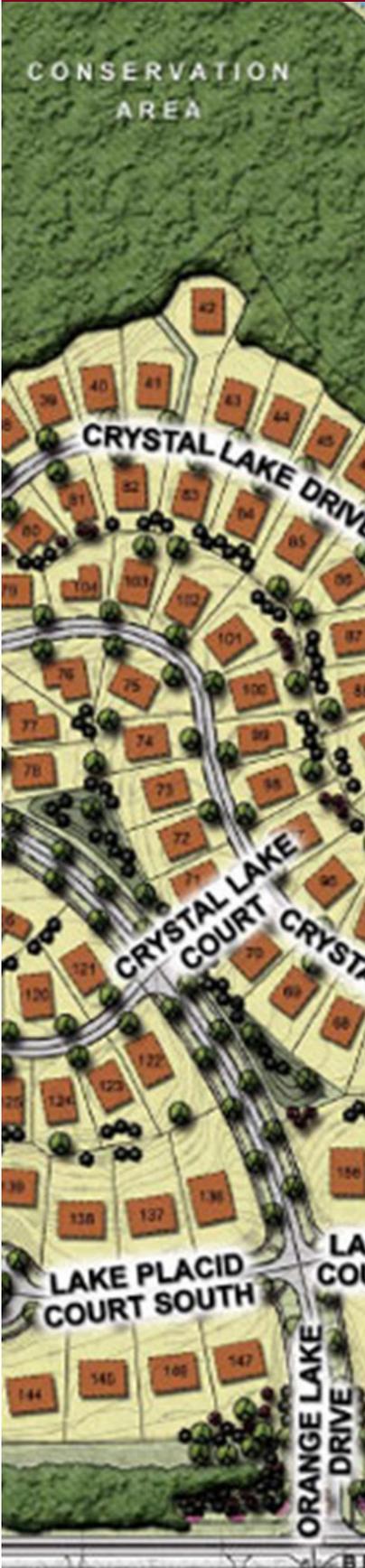
Continued on next page



Common Access Project, Wayne County, Ohio

Common Access Drive, Wayne County, Ohio. Instead of five narrow lots along the frontage, a creative layout was used with a common driveway to provide access to four of the lots with one drive. This reduces the number of entries along the road, increasing safety, and also allows for more open space views along the frontage.

(photos and diagrams, Wayne County Planning Commission.)



(map: The Lakes of Orange, Orange, Ohio by Kertez Enterprises.)

Issues

Communities considering the implementation of conservation development face several important decisions. These decisions are best made as part of a comprehensive planning process conducted before zoning codes are amended.

Residential Conservation Development – Calculating Density.

Residential conservation development often is based on the concept of “neutral density,” i.e., that no additional units will be provided beyond those which could be built with a conventional zoning approach. Some communities choose to incorporate a modest density bonus (e.g., allowing 10% more units than current zoning allows) as an incentive for innovative design. They need to ask what the suitable level of development intensity is for the district(s) which will be zoned conservation development. How will density be calculated?

- **Yield Plan Calculations:** A yield plan asks the developer to work out a suitable conventional subdivision plan, and then it applies that number of units to a conservation development design. This approach can provide a disincentive to innovate, however, as very often, twice the formal review time is involved for the community to examine first the yield plan, then the development plan.
- **Statistical Density Formulas:** Statistical density merely involves the application of the mathematical lot size to the parcel size. So a 100-acre parcel zoned for 1- acre lots would be permitted 100 units. This incorporates an effective density bonus as lot layout inefficiencies for roads, topography, cul-de-sacs, etc., are not considered. This approach can often lead to unintended consequences, such as an effective increase in density in lands surrounding sensitive areas, and is not recommended. A formula approach allows consideration of specific issues affecting the community, including sensitive areas.
- **Alternative Formulas:** Many communities come up with a formula that approximates neutral density based on typical subdivisions and site conditions in their location.
- **Combination with other tools:** It should be noted that higher density bonuses may be considered in cases when conservation development is used in conjunction with a transfer of development rights, or purchase of development rights, program. See the Transfer of Development Rights section for more information.

If a large piece of a development site will be preserved, then site preparation and infrastructure costs will also be reduced by a significant margin.

(Xiao, 2010)

Commercial Conservation Development – Development Intensity

The level of intensity of development is of similar concern, but it is calculated differently. Some communities include maximum floor area ratios (FARs) as a density guide. But typically, commercial regulations only specify the requirements for road access, the amount of parking per square foot of the particular use, and the amount of landscaping or storm water controls needed. The designer works these requirements into an optimum layout covering the entire site that balances parking, landscaping, circulation, and building. As a result, after the amount of open space to be set aside is decided upon, including landscaped and storm water management areas, the amount of parking required can make a big difference in the level of intensity of the final development. It might be desirable to give developers parking reductions in exchange for innovative design, set-aside of open space, etc. It might also be desirable to allow a reduction in the required quantity of open space in exchange for more concentrated, village-like design. (for information on mixed use development, see the Compact Development section).

Both types

- **Regulation Structure:** The structure of the regulation must be decided. Will a Residential Conservation Development or Commercial Conservation Development approach be used? Will the district be a permitted or conditional use? Will the zone be applied on the map to certain districts, or will it “float” until an applicant asks that it be applied to his parcel? The recommended approach, which provides the most streamlined process for the developer and thereby encourages use of conservation development, is to designate a conservation development overlay for a district, and incorporate the zoning map change for the entire district, making conservation development a permitted use. Specific project proposals then can be approved as “by right,” if they are determined to be in agreement with community requirements. This approach makes both conservation development and conventional development a permitted use, and the choice remains at the discretion of the property owner.
- **Infrastructure Requirements:** In rural areas in particular, the provisions for wastewater and water supply must be addressed to allow more concentrated development on one part of the parcel in exchange for another.
- **Public and Private Roads:** A decision must be made about whether roads will be public or private. Private roads can provide important additional flexibility for open space and home arrangements, but must meet certain minimum standards, including construction to public road section standards, and reduced design speeds. Their use should



Cleveland Metroparks North Chagrin
Reservation Wetlands
(photo: Gregory SJ Soltis)

also be limited to lower classification roads only, such as cul-de-sacs and short streets serving 10 or fewer homes.

- **Linked Open Spaces:** Ideally, the desired linkage of open spaces between parcels will be worked out in a community planning process ahead of time.
- **Resource Protection:** The location and protection of wetlands, floodplains, and desired stream setbacks also need to be addressed in the code. In particular, it is important to identify which resources are a priority for conservation. It is recommended that stream, floodplain and wetland areas be given the highest priority for protection. Other resources, such as agricultural soils, tree and woodland areas, steep slopes, and cultural resources, must be weighed based on community priorities. It is important to remember that a broad statement requiring protection of all resources is not practical, as some areas must be left for location of development on the site. A more specific statement, based on evaluation of local resources, ideally done through a comprehensive planning process, will be more useful to the developer and the reviewing body alike.
- **Open Space Requirements:** The requirements for open space must be weighed. How much open space will be required in each district, how will that open space be laid out and connected, and what will be included in that open space? Will the land required for storm water retention be included? Will land required to be landscaped be included? How much of the open space may include active play areas such as soccer fields and playgrounds? Will land that is unbuildable or inaccessible be included? Will it be acceptable for open space to be concentrated in the back of property, out of view?
- **Perimeter Setbacks:** Perimeter distances are a consideration, since concentrating development on parts of a parcel may result in the placement of structures much closer to the parcel boundary than would result under conventional zoning. It is recommended that the conventional zoning perimeter distances be approximated in the conservation development approach to reduce the concerns of adjacent property owners.
- **Approval Criteria:** What approval criteria will be used for the district? What criteria will be objective standards, and what will be more subjective? What education might be needed on the part of zoning or planning officials to ensure an intelligent review according to the criteria?
- **Review Process:** What will be the structure of the review process? This is especially important in townships where review must be dovetailed with the county subdivision review process. It is also

especially important to ensure that the review process is streamlined and functional, and does not involve greater risk or time on the developer's part than would be provided under conventional zoning. A requirement for an up-front "sketch plan" review can actually save time and money for everyone, by providing opportunities for agency discussion before the applicant has spent time and money on engineering solutions.

- **Incentives and Disincentives:** Finally, it is important at the end of the regulation drafting process to review the entire document from the incentives perspective. Are the requirements of the district encouraging or discouraging conservation development? A developer should not have to significantly increase his cost, risk, or approval time to "do the right thing." This is especially important in townships where a residential development approach is an option. Communities must decide how they can balance incentives with disincentives to achieve a measure of success.

Recommendations

It is recommended that communities implement conservation development, both residential and commercial, as a component of their zoning code. This must be done following a well-discussed planning process. As part of that planning process, recommended types of development, levels of development intensity, and areas for open space linkages and retention must be designated. Ideally, areas where the conservation development districts may apply should be mapped; other areas should be identified for compact development. Areas that are a high priority for preservation, especially agricultural preservation, should be addressed with other tools than conservation development.

All development types

1. Communities should plan for conservation development in their comprehensive plan by recommending appropriate locations, project sizes, and appropriate densities for conservation development districts.
2. Every conservation development project should provide for permanent protection of the open space, including provisions for maintenance and capital improvements.
3. Projects should be designed to minimize fragmentation of open space, and to ensure adequate access to the open space by the residents/users of the site.



Gates Mills, Ohio Home & Wildflowers
(photo: D. Iannone)

Lots in conservation developments sell at a premium, are less expensive to build, and sell more quickly than lots in conventional subdivisions. Developed lots in conservation subdivisions carry additional value ranging from 12% to 16% per acre over lots in conventional subdivisions.

(Mohamed, 2006)

4. Early community planning should provide for linkages of open space with other spaces in the community.
5. Requirements should be included in any code for the developer to demonstrate that the highest quality resources on the site were evaluated and are protected via the open space; priority protection should be provided for wetland, stream, and floodplain areas.
6. The code should designate a minimum project size to ensure a viable open space result and the support of a viable homeowner's association.
7. The code should include minimum criteria for homeowners' associations, and for bylaw provisions to support the conservation development concept.
8. The code should include requirements for wastewater and well approval.
9. Perimeter distance requirements around the overall parcel should be included that match the requirements of the underlying zoning for side and rear-yard setbacks.
10. The code should provide for a streamlined approval process, preferably an overlay approach that allows "by-right" approval for the project.
11. Communities should ensure coordination between subdivision review and zoning review in their review/approval process, and provide a sketch plan review phase with input from all involved community and county departments.
12. All codes should include clearly defined review criteria

Residential Conservation Development

1. At least a 40% open space requirement must be included for lot sizes less than one acre, with 50% for lot sizes greater than one acre.
2. Density bonuses should not exceed 10-20%.
3. Maximum access to the open space by private users should be required.
4. Provide flexibility for required road frontage in lot splits and minor subdivisions through the use of Common Access drives to preserve scenic views and rural character.

Commercial Conservation Development – office parks

1. Commercial conservation developments should have at least 40% open space requirement.

Planned Commercial Development

1. For areas already zoned commercial, open space requirement at least 25%.
2. For areas currently zoned residential or being rezoned, open space requirement at least 40%.

Example Regulations

The following example codes are outlined in the Example Regulations Matrix (link).

Model Code for Conservation Development, developed by the Countryside Program of Northeast Ohio, now the Community Planning Program at Cleveland State University:

For Townships: <http://www.balancedgrowth.ohio.gov/LinkClick.aspx?fileticket=UFhHzkZ9NLs%3d&tabid=66> (Copy and paste this address into your web browser)

For Counties: http://www.balancedgrowth.ohio.gov/LinkClick.aspx?fileticket=3PREks5_qiM%3d&tabid=66 (Copy and paste this address into your web browser)

For Municipalities: <http://www.balancedgrowth.ohio.gov/LinkClick.aspx?fileticket=g%2f04jIT8Rag%3d&tabid=66> (Copy and paste this address into your web browser)

Chagrin River Watershed Partners Model (contact for hard copy):
http://www.crowp.org/LID/conservation_development.htm

TMACOG model: http://www.tmacog.org/Environment/TMACOG_Stormwater_Standards_Manual_.pdf

Freilich, White and Murray. *21st Century Land Development Code*. American Planning Association; Chicago, IL, Washington, D.C.; Chapter 2, pg 39-43. Gives standards recommended by the American Planning Association.

Wayne County Subdivision Regulations have regulations for Common Access Drive Subdivisions.

<http://www.wayneohio.org/planning/pdf/subdivision.pdf>

The Planned Commercial District is based on a code developed by D.B. Hartt, Inc., for Rootstown Township, Portage County, Ohio. <http://rootstowntwp.com/330.html>

City of Delaware – Planned Business Overlay District; <http://www.conwaygreene.com/> (Click on “Databases” at the top of the page, then choose “Delaware, Ohio” in the list of municipalities, and click the “Start Here” button; then click on “CHAPTER 1144 Planned Business Overlay District Regulations ” in the list to the left.)

Refer to the Example Regulations Matrices (separate for commercial and residential conservation development) for a comparison of example regulations listed.

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

Resources

The Community Planning Program, Cleveland State University, 2121 Euclid Avenue, UR 26B, Cleveland, OH 44115-2214; Tel: 216-687-5477; Web: <http://urban.csuohio.edu/cpp/>

Rootstown Township – Planned Commercial Developments; Web: <http://rootstowntwp.com/330.html>

City of Delaware – Planned Business Overlay District; Web: <http://www.conwaygreene.com/> (Click on “Databases” at the top of the page, then choose “Delaware, Ohio” in the list of municipalities, and click the “Start Here” button; then click on “CHAPTER 1144 Planned Business Overlay District Regulations ” in the list to the left.)

Chapter 5



Above: Bioswale along a public road
(photo: Chagrin River Watershed Partners)



Above Right: Repairing damage to infrastructure due to excessive storm water from increased impervious surface upstream can be a significant community expense.
(photo: Cuyahoga Valley National Park)

STORMWATER MANAGEMENT, EROSION & SEDIMENT CONTROL

Background

What is Stormwater Management?

Stormwater Management is the long-term, post-construction control of the increased volume, flow rates, and quality of stormwater runoff that are caused by manmade disturbances to land. Such controls consist of a system of structural and non-structural measures, referred to as Best Management Practices (BMPs). The goal of implementing stormwater management BMPs for disturbed lands is to achieve approximately the same stormwater runoff and infiltration characteristics that existed prior to development, and to minimize stormwater pollution.

Structural BMPs refer to engineered physical structures designed to collect, retain and/or treat runoff before it is discharged. Structural BMPs typically require engineering design and engineered construction. Examples include detention basins, retention basins, infiltration basins, porous concrete/pavement, bioretention cells, and vegetated swales, among others.

BMPs reduce downstream flooding, benefiting floodplain property values.

(Beggs & Perrin, n.d.)

Non-structural BMPs are integrated site planning, soil preservation and pollution-prevention practices implemented to prevent or minimize pollutants from entering stormwater runoff and/or reduce the volume and flow rates of stormwater runoff. These BMPs are focused more on the layout and management of sites, generally do not involve specific storm water facilities, and usually work by changing how a site functions through various land use practices or regulations. Examples include improving water infiltration (e.g. disconnecting downspouts), planting vegetation (e.g. trees), Conservation Subdivisions, Stream & Wetland Protection, and Woodland Protection.

Stormwater management is generally most effective when a combination of structural and non-structural BMPs is utilized. More information on structural and non-structural BMPs is available in the resources.

What is Erosion & Sediment Control?

Erosion and Sediment Control is a term that deals specifically with the controls utilized during soil disturbing activities, such as those found on construction sites, that minimize the impact these activities have on other properties and receiving waters.

Erosion control involves minimizing the detachment of soil particles during the rainfall-runoff process. Detachment of soil particles can occur during rainfall impact onto bare soil and by runoff eroding and transporting soil particles as the runoff flows across the disturbed area. Erosion control is achieved through the use of practices such as minimizing land disturbances to the site, maintaining natural vegetative cover, seeding and mulching where no vegetation exists, and applying compost blankets or erosion control mats.

Sediment control involves capturing runoff that flows across the disturbed area in a structural or non-structural BMP and settling out a significant fraction of the transported soil particles (i.e. sedimentation) before the runoff leaves the construction site so that impact to other properties and receiving waters is minimized. This can be achieved through practices such as silt fence installation, compost berms or filter socks, swales, slope drains, and sediment control basins. The degree to which the sediment control BMP promotes sedimentation of soil particles from the runoff is referred to as its trapping efficiency. The trapping efficiency of various sediment control BMPs can vary significantly and they must be strategically utilized and located based upon expected conditions. For more information on ESC practices, refer to the Resources and Additional Resources.



Flooding caused by increased storm flows due to expanding impervious surfaces in a watershed can have a significant impact on daily life and business.

(photo: C. Riddle)

Why Stormwater Management and Erosion/Sediment Control?

The benefits of stormwater management and erosion and sediment control are well documented in Ohio and nationwide. The quantity of stormwater runoff to streams and other water resources has increased as communities grow and expand parking lots, roads, rooftops, and other impervious surfaces, while impacting stream corridors and wetlands that naturally control flooding, limit erosion, and protect water quality. The results of this increase in impervious cover and loss of natural landscape and stream corridor services are increases in storm water runoff volume and flow rates, which include increased velocities, and decreases in water quality.

These impacts are evident in the increased magnitude and frequency of flash flooding, increases in stream bank erosion, and decreases in urban water quality. Flooding, erosion, and water quality problems result in property and infrastructure loss and the degradation of water resources. In areas where groundwater is critical for drinking water and commercial purposes, controlling stormwater quality and quantity is central to ensuring that groundwater is recharged and will retain the quality necessary for its use.

The use of stormwater management/erosion and sediment control tools provide a direct return on investment to communities and landowners by reducing future costs from flooding and erosion, and improved water quality. For example, erosion costs might come in the form of streambank stabilization projects to protect property and infrastructure (e.g. pipelines, bridges, or homes); flooding costs might come in the form more frequent and higher floods, which can adversely impact property and infrastructure. Improved water quality might limit the need for waste water treatment plant upgrades.

Non-structural BMPs, such as natural vegetation and landforms, slow, store, infiltrate and filter stormwater runoff and floodwaters, reducing flooding and erosion, reducing sedimentation, and improving water quality. The preservation and restoration of these natural features as land is developed provides for a lower-cost, lower-maintenance alternative to higher-cost, increased-maintenance, man-made structural BMPs. However, a combination of structural and non-structural BMPs through good site design and construction site management along with local, county and/or regional land use planning (e.g. floodplain management) will be most effective at reducing on-site and off-site flooding, erosion and sedimentation, and water pollution impacts.

In addition to lowering the burden on traditional water infrastructure, incorporating BMPs into new developments can reduce development costs (due to smaller costs for piping and detention facilities, grading, paving, etc.) and increase property values (due to proximity to open space and similar amenities).

(US EPA 2007)

How do stormwater management and erosion and sediment control relate to Balanced Growth?

Stormwater management and erosion and sediment control are our primary tools for reducing impacts to water quality as a result of development of the watershed. Every BMP implemented will result in better quality of our water resources – by slowing, storing, filtering and infiltrating stormwater runoff. Erosion and sediment control measures add to stormwater management measures by reducing soil and sedimentation, which are significant pollutants in our streams, lakes and rivers. In keeping with the economic goals of Balanced Growth, stormwater management and erosion and sediment control also provide economic benefit – by reducing water quantity and quality impacts, our properties are better protected from flooding and sedimentation; our communities save tax money through reduced infrastructure needs; and our quality of life is ensured for prosperity in the future.

How do communities manage their stormwater?

Typically, a community or county adopts a storm water management and erosion/sediment control ordinance or resolution, which can be part of the zoning code or subdivision regulations, or a stand-alone regulation. These regulations usually require the application of stormwater BMPs to new construction or redevelopment projects as well as erosion and sediment controls during soil disturbing activities.

Urban, limited home rule townships can adopt either type of these regulations; other townships can only adopt stormwater management, and typically fall under county authority for erosion and sediment control. Many townships provide zoning inspection or other collaborative services under an overarching county storm water regulation; some provide for the extension of the county regulation to smaller site disturbances than would otherwise be allowed. Township authority in the storm water area is complex, and it is recommended that communities consult with their law director regarding adoption or implementation of stormwater regulations.

In many cases it is most convenient and cost-effective for both municipalities and townships to contract with a county agency or department to provide both erosion-sediment control and stormwater program management services.

In Ohio and most other states, communities that are operators of Municipal Separate Storm Sewer Systems (MS4s) are required by the USEPA's National Pollution Discharge Elimination System (NPDES) program to implement stormwater management and erosion and



Pervious pavement and rain garden with a curve cut (photo: Chagrin River Watershed Partners)

sediment control plans. Communities that are not operators of MS4s can also benefit from stormwater management and erosion and sediment control regulations, particularly if there are development pressures near water resources. A county-wide stormwater management and erosion and sediment control program can encompass all communities which elect to participate.

A variety of additional zoning and land management tools are available to local governments to manage storm water and protect stream (riparian) and wetland functions, including stream and wetland setbacks, source water protection, and floodplain management, explored more thoroughly in other chapters.

Typically, stormwater management happens at the county level. Some municipalities and townships have their own programs; others work with their county agency. The overall approach differs from county to county: often it is the county's Soil & Water Conservation District or County Engineer's office that administers the stormwater management program; other times it is a stormwater management District. In cities, the Service Department, Building Department, or Zoning and Planning Department may be involved. There also are regional sewer districts that encompass multiple counties. Stormwater districts operate under Ohio Revised Code 6119 provisions for management of stormwater, sewer and water infrastructure.

What is the NPDES Phase II Stormwater Program and who does it pertain to?

The NPDES Stormwater Program regulates stormwater discharges from three potential sources: municipal separate storm sewer systems (MS4s), construction activities, and industrial activities. Most stormwater discharges are considered point sources, and operators of these sources may be required to receive an NPDES permit before they can discharge. While Phase I of the program addressed stormwater runoff from large and medium municipalities (MS4s with population over 100,000), Phase II addresses runoff from communities with populations of less than 100,000. The program applies to all owners or operators of Municipal Separate Storm Sewers (MS4s) in urbanized areas including townships, villages, cities, counties, and non-traditional MS4s such as park districts. To comply with this program, these MS4 operators are required to do the following:

1. Implement a Storm Water Management Program (SWMP) detailing how the community will complete:
 - Public Education and Outreach
 - Public Involvement & Participation

- Illicit Discharge Detection & Elimination
- Construction Site Runoff Control
- Post Construction Runoff Control
- Pollution Prevention/Good Housekeeping

2. Require that all owners or operators of construction activities disturbing one (1) acre or more, or less than one (1) acre if it is part of a larger common plan of development, prepare a Storm Water Pollution Prevention Plan (SWP3) detailing how applicant will:

- Treat stormwater quality
- Minimize erosion
- Control sediment
- Control nonpoint pollution

Per the Ohio Construction General Permit, the SWP3 must be prepared in accordance with sound engineering and/or conservation practices by a professional experienced in the design and implementation of standard erosion and sediment controls and storm water management practices addressing all phases of construction and post-construction controls.

For more information regarding the Phase I and Phase II Stormwater Programs, refer to the Resources.

The Role of Low Impact Development and Green Infrastructure

In many cases, storm water management can be completely or partially achieved through Low Impact Development (LID). LID is a site design approach to storm water management that seeks to integrate hydrologically functional design with pollution prevention measures to compensate for land development impacts on hydrology and water quality. LID's goal is to mimic natural hydrology and processes by using site design and small-scale, decentralized practices that infiltrate, evaporate, detain, and transpire storm water. LID practices are uniformly and strategically located throughout the site.

Green infrastructure practices support LID principles with natural storm water management design features utilizing trees, plants, soil and water. "Green" infrastructure practices such as bioswales, vegetated swales, amended soil, and tree plantings can manage stormwater just as effectively as "gray" infrastructure, and often cost less to install and maintain.

Keeping water clean through stormwater management practices is always cheaper than water treatment.

(US EPA 2007)

LID is achieved by:

- Minimizing storm water runoff impacts to the extent practicable through preservation of existing landscape features, such as soil profiles, streams and wetlands, and their hydrologic functions.
- Maintaining or increasing predevelopment time of concentration through strategic routing of surface flows using a variety of site-design techniques.
- Dispersing runoff storage measures through a site's landscape with the use of a variety of detention, retention, infiltration and runoff and other management practices.

LID is a design approach that must be implemented early in the site-design process. LID measures provide post-construction water quality benefits. The LID principles differ from other Best Management Practices (BMPs) in that they are designed to minimize disturbance and manage storm water as close to its source as possible, as opposed to more centralized BMPs such as detention basins. Some examples of LID practices include:

- Pervious pavements
- Parking lot filter strips
- Impervious surface reduction through alternative site layouts
- Soil Preservation
- Stream (riparian) and wetland setbacks
- Bioretention cells
- Vegetated swales
- Cistern & rain barrels
- Infiltration trenches
- Green roofs
- Soil amendments to increase permeability

The Ohio Department of Development offers a below-market-rate loan program for the development of low-impact development practices and other BMPs. For more information, refer to the Resources.



*Woods at Jefferson Subdivision
Raingarden, Columbus, Ohio
(photo: Central Ohio Rain Garden Initiative)*

Issues

- **Regulations:** Ohio EPA Has Set the Minimum Standard: Ohio EPA's NPDES Construction Stormwater General Permits apply to all owners and operators of construction sites disturbing 1 acre or more, or less than 1 acre if part of a larger common plan of development or sale and includes erosion and sediment control requirements and storm water quality requirements. Communities should ensure their erosion and sediment control regulation and storm water management regulation meets these standards at a minimum. Some communities may choose to exceed the minimum regulations. They should work with their community engineer and local district Ohio EPA representative to ensure consistency with surrounding communities and avoid conflicts with regulations.

Meeting Ohio EPA's Requirements for Stormwater Quality Control: Ohio EPA's requirements for storm water quality necessitate that new storm water infrastructure be designed to effectively detain storm water runoff for a period sufficient to protect stream channels and water quality. This will result in increased maintenance and related funding requirements as storm water infrastructure, such as detention basins, will be intentionally designed to promote sedimentation.

Operation and Maintenance: In light of these requirements, it is important that communities ensure the long-term operation and maintenance of storm water management infrastructure by establishing procedures for inspection and funding when these facilities are constructed.

- **Program Rules:** The Ohio Revised Code requires construction erosion and sediment control, post-construction stormwater management and stormwater management plans that address new development and redevelopment which disturbs land of one (1) acre or more. Communities may choose to address smaller plots of land through local zoning resolutions that require erosion and sediment control and storm water management, on sites less than one (1) acre. However, not all communities may have the legal authority to impose more stringent construction stormwater requirements because of home rule authority or lack thereof. Moreover, other state law may prohibit laws or rules that are more stringent than U.S. EPA regulations. As noted above it is recommended that communities consult with their law director or designated legal counsel regarding their authority to implement storm water programs.

Stream and floodplain preservation is the most cost-effective means of minimizing flood damage and controlling erosion.

(Chagrin River Watershed Partners, Inc. 2006)

- **Low Impact Development:** Site Considerations: High clay content soil, high water tables and other site-specific considerations may reduce the cost-effectiveness of LID practices and should be considered during project review.

Deed Restrictions: Maintaining distributed storage and treatment measures within residential subdivisions will require deed restrictions on individual parcels as well as homeowner education to ensure measures are maintained.

Developers may consider locating stormwater infrastructure in right of way and common areas.

Zoning Variances: Variances from zoning, subdivision, building, storm water management, and drainage regulations may be required unless LID is permitted under the storm water management regulations.

- **Runoff Velocity:** One of the chief problems with storm water runoff is velocity. Historically, the approach to managing storm water was to remove it as quickly as possible from the site where it fell, usually through underground systems that directly collected both surface water and roof water. As a result, the increased runoff reached the natural drainage systems (stream and waterways) sooner and with much greater volume and velocity than before development. The cumulative effects of such an approach have been a major cause of accelerated downstream channel erosion and increased frequency and magnitude of flooding downstream from urban development. This issue of velocity is addressed in new construction via the enforcement of release rates from a site into receiving waters that mimic predevelopment rates. The Ohio Department of Natural Resources offers a release rate model that communities may use for guidance. For more information, see the Resources.

- **Stormwater Utilities:** Many communities and/or counties have created storm water utilities and departments that manage storm water programs with funds generated by resident and business fees. Often the fee is based on the amount of impervious surface on a typical or actual site, and the level of service is based on the need within the community, as well as the amount of revenue the community is able to generate through the stormwater program. Many of these programs allow for credits or reduced fees for on-site stormwater management practices, and reduction of impervious surface area.

The choice of fee basis method is of critical importance to the long term success of the utility; options should be carefully evaluated in light of community needs and typical conditions.

- **Complete Streets:** Complete Streets is a planning concept that characterizes a street as a thoroughfare not only for automobiles, but also for multiple purposes to meet the needs of all community members. A Complete Street is designed for use of the young, the old, the motorcyclist, the bicyclist, and the walker or wheelchair user.. In addition, streets can be seen as key locations for enhancing the green infrastructure of a community, with stormwater management structural practices in place to help improve infiltration and reduce runoff from the street itself. Many standards and practices in use by road designers, including the AASHTO Green Book, the TRB Highway Capacity Manual, and the FHWA Manual on Uniform Traffic Control Devices, are in the process of being revised to incorporate Complete Street practices. For more information, see the Resources.

6 Structural Post-Construction BMPs Recommended by the Ohio EPA



*Bioretention area in a parking lot
(photo: Chagrin River Watershed Partners)*



*Fleet Avenue, a "complete, green street" in Cleveland's Slavic Village neighborhood that utilizes bike lanes, bioretention bump-outs and other green infrastructure.
(photo: Human Nature)*

1. Grass Filter Strips
2. Enhanced (Water Quality) Swales
3. Bioretention Cells
4. Sand Filters
5. Infiltration Trenches
6. Water Quality Ponds
 - Dry Extended Detention Basin
 - Wet Extended Detention Basin
 - Constructed Wetland



(Photo: Beatrice Murch)

Recommendations

- 1. Provide a combination of structural and non-structural BMPs:** An essential part of the comprehensive planning process should begin with the careful strategizing of non-structural BMPs, such as the placement of Priority Development Areas (PDAs) and Priority Conservation Areas (PCAs), the implementation of Stream and Wetland Setbacks, and Conservation Development Subdivisions. (see the Introduction chapter, and the chapters on stream protection, and conservation development.)
- 2. Adopt zoning and other appropriate land-use and management provisions:** This allows a community to address storm water management and erosion and sediment control, and allows for the use of low impact development techniques by interested landowners. This may be done through a comprehensive regulation related to site development or a set of related regulations, and should be done in concert with county and regional storm water regulations and programs.
- 3. Enforce Site Runoff Release Rates:** Adopt site release rates that mitigate runoff velocity. The Ohio Department of Natural Resources recommends that development sites control the post-development peak rate of runoff up to the critical storm (e.g. 5-year, 24-hour) so that the peak discharge from more frequent storm events including the critical storm does not exceed the pre-development peak discharge from the 1-year, 24-hour duration storm event for the same area. (Determination of the critical storm is based on the percentage of increase in volume of runoff as a result of development.) Subsequently, the less frequent post-development storm events than the critical storm (e.g. 25-year, 24-hour) should not exceed the pre-development peak discharge for the same storm event for the same area. This stormwater management strategy combined with the Ohio EPA's water quality volume requirement will control release rates that slow runoff velocities and thereby minimize or prevent downstream impacts from development sites. Refer to ODNR's "Ohio Stormwater Control Guidebook", and the Ohio EPA Stormwater Program under Resources for more detailed information.
- 4. Review Parking and Street Standards:** Conduct a detailed review of the community's parking standards and road/street design. It is not uncommon after such a review, to determine that substantial reductions can be made, and street redesign may yield new opportunities for state-of-the-art project design, as well as green infrastructure practices.

For more information on parking and innovative solutions to minimize parking requirements while meeting parking needs, see CRWP's "Review of National Trends in Parking Requirements" in the Resources.

5. Integrate your SWM Plan: Ensure your community's SWM Plan is integrated into daily activities including site plan review, zoning requirements, public involvement, municipal operations, floodplain management, education and outreach.

6. Incorporate ongoing monitoring into community activities: Evaluate the SWM Plan annually; ensure site practices are inspected and maintained, and the provisions for monitoring and maintenance are in place at the project level.

7. Apply SWM Plans even if not legally required to do so: Communities without regulatory obligations should consider incorporating aspects of SWM Plans that apply to them, to ensure protection of valuable water resources and property.

8. Design and Review Process: Create a project design and review process in the storm water management code that enforces the integration of storm water management concerns early in the project design process, instead of adding BMPs at the end of project design. This can be done by requiring attention to storm water management approaches at the pre-application and concept plan review stages, prior to submittal of the preliminary plan.

Erosion and Sediment Control & Storm Water Management Checklist

1. Meet Ohio EPA Standards: Regulations should meet or exceed Ohio EPA minimum standards for erosion and sediment control and storm water management best management practices, as detailed in the most recent version of the NPDES General Permit for Construction Sites.

2. Erosion and Sediment Control and Storm Water Management Plan Review, Inspection, and Enforcement: Regulations should have provisions for plan review prior to construction, regular inspections during construction, and provide the community with the authority to stop work, where allowable by local laws, for activities not in compliance with an approved plan.

3. Allow for the Implementation of Low Impact Development Techniques: A community's storm water management regulation should allow for the implementation of low impact development techniques and provide community staff with the resources necessary to review such proposals and ensure on-going operation and maintenance.

4. On-going Operation and Maintenance: Under both erosion and sediment control regulations and storm water regulations, communities must ensure that contractors provide sufficient funds to stabilize sites if the contractor is unable to complete erosion and sediment control requirements. Similarly for storm water management, communities must ensure that landowners make provisions for on-going operation and maintenance of any structural or non-structural storm water best management practices. It is important that communities clarify long-term costs and have funds available for on-going operation and maintenance before problems develop. Where BMPs are located on private property, communities may want to consider access and maintenance easements to facilitate longterm maintenance. In general, delegating these responsibilities to homeowner associations is not an effective long-term solution.

Example Regulations

The following example codes are outlined in the Example Regulations Matrix (link):

Stormwater:

Chagrin River Watershed Partners, *Comprehensive Stormwater Management Model Ordinance* (2010)

http://www.crowp.org/model_ordinances/model_ordinances.htm

Geauga County, *Geauga County Water Management and Sediment Control Regulations, Post-Construction Storm Water Control Methods* (Section 4.04) http://www.geaugaswcd.com/construction_sites

Hamilton County, *Post Construction Storm Water Quality Regulations (Article V)* http://www.hamilton-co.org/stormwater/HCSWD_Rules_And_Regulations.htm

NOACA, *Ordinance Controlling Post-Construction Water Quality* <http://www.noaca.org/postconddec2009.doc>

TMACOG, *Stormwater Management Standards Manual, Sediment and Erosion Control Ordinance* http://www.tmacog.org/Environment/TMACOG_Stormwater_Standards_Manual_.pdf

Erosion and Sediment Control:

Chagrin River Watershed Partners, *Model Ordinance for Erosion and Sediment Control* http://www.crowp.org/model_ordinances/erosion_sediment_model.htm

Geauga County, Geauga County Water Management and Sediment Control Regulations http://www.geaugaswcd.com/construction_sites

Hamilton County, *Earthwork (Erosion and Sediment Control Rules and Regulation) (Article III)* http://www.hamilton-co.org/stormwater/HC-SWD_Rules_And_Regulations.htm

Lake County, *Erosion & Sediment Control Rules* <http://www.lake-countyohio.gov/RulesandPermits/ErosionandSedimentControlRules/tabid/633/Default.aspx>

NOACA, *Ordinance Controlling Construction Site Soil Erosion, Sediment, and Other Wastes and Storm Water Runoff* <http://www.noaca.org/reglmodord.html>

Impervious Surface Coverage Percentages:

Multi-Resolution Land Characteristics Consortium (MRLC), National Land Cover Database
<http://www.csc.noaa.gov/digitalcoast/data/nlcd-impervious/>

Updated Parking Standards:

City of Columbus, Ohio, Department of Development, Planning Division, *Parking Code Revision* (2010)
<http://development.columbus.gov/planning/parking.aspx>

Chagrin River Watershed Partners, *Review of Nation Trends in Parking Requirements* (2005) http://www.crwp.org/pdf_files/review_national_trends_parking_requirements.pdf

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.



Parking on Vine Street, Cincinnati, Ohio
(Photo: UrbanCincy)

Resources

Always start by checking with your local resources. Local government agencies and non-government organizations might have the most up-to-date information on these issues and will have the most expertise for the unique characteristics of your region.

- **Your Local Metropolitan Planning Organization**
- **Your Local County or Municipality Planning Commission and Engineer's Office**
- **Your Local County Soil and Water Conservation District**
- **Your Local Watershed Group**
- **Your Ohio EPA District Office**

Ohio Department of Natural Resources, *Rainwater and Land Development Manual* (2010); <http://www.dnr.state.oh.us/tabid/9186/default.aspx>

Ohio Department of Natural Resources, *Ohio Stormwater Control Guidebook* (1980); <http://www.dnr.state.oh.us/tabid/9190/Default.aspx>



Ohio EPA, Division of Surface Water, Stormwater Program (2011); <http://www.epa.state.oh.us/dsw/storm/index.aspx>

Ohio EPA, Division of Surface Water, Stormwater Program, *Ohio Administrative Code Chapter 3745-39* (2009); http://www.epa.state.oh.us/dsw/rules/3745_39.aspx

Ohio Department of Development, Alternative Stormwater Infrastructure Loan Program (2011); http://development.ohio.gov/cs/cs_altstormwater.htm

Ohio Department of Natural Resources, Division of Soil and Water Resources, Floodplain Management Program; <http://www.dnr.state.oh.us/tabid/3511/Default.aspx>

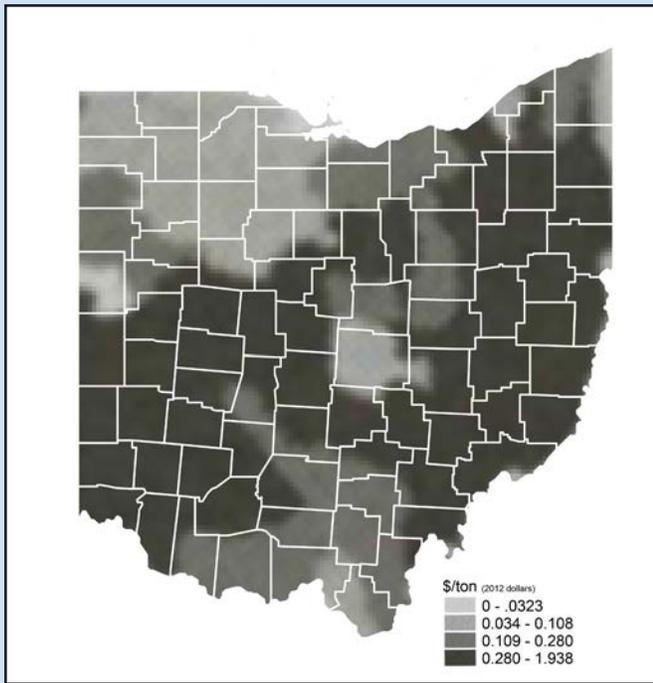


Chagrin River
Watershed Partners, Inc.

The Chagrin River Watershed Partners, *Review of National Trends in Parking Requirements* (2005). Prepared by FMSM Engineers for Chagrin River Watershed Partners; http://www.crwpp.org/pdf_files/review_national_trends_parking_requirements.pdf

Continued on page 66

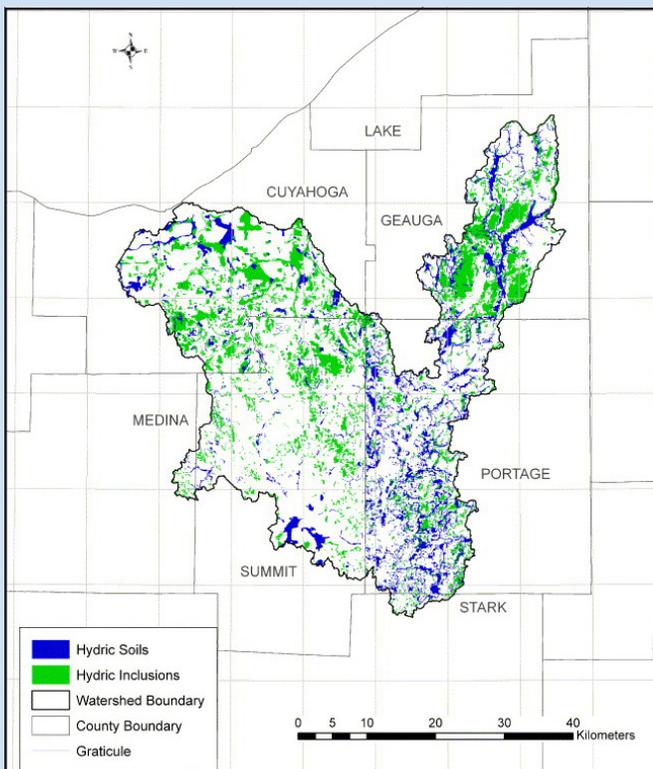
Marginal Benefits of Reduced Erosion in Ohio



In a study that used re-placement cost theory to evaluate the impact of soil conservation on reservoir services, results show that the marginal benefit of a one-ton reduction in soil erosion varies widely across watersheds. Results show that, across the 326 Ohio watersheds, a one-ton reduction in soil erosion provides benefits of up to \$1.94 per ton reduced. These benefits are realized through reductions in reservoir sediment which in turn reduce risks of flooding, increase storage capacity for power generation, increase the productivity of fish stocks, and maintain the depth of water around boat docks. (Hanson and Hellerstein, 2007)

*The Marginal Benefits of Reduced Erosion in Ohio
(map: Gregory SJ Soltis)*

The Cuyahoga River in Cleveland & Akron



Runoff and sediment from residential development, construction sites and agricultural lands may enter the Cuyahoga River watershed's streams and lakes. Also, runoff may carry other pollutants, such as lawn and agricultural chemicals (pesticides and fertilizers), effluent from septic systems, oil and gas from spills, and industrial wastes. The U.S. Geological Survey (USGS) tabulated suspended solid loads on the Cuyahoga River at Independence, where the river flows from Summit County into Cuyahoga County, and calculated total sediment loading based on total drainage area and average annual flow. The average sediment load for the Cuyahoga River is 300,000 tons per year, which means that about 1159 pounds of soil per acre in the watershed enters surface waters through erosion each year.

*Map of hydric soils and soils with hydric inclusions in the Cuyahoga River watershed.
(map: White & Fennessy, 2005)*

Other Resources

Center for Watershed Protection (2011) <http://www.cwp.org/>
The Low Impact Development Center (2011); <http://www.lowimpactdevelopment.org/>

Maryland Department of the Environment, *Maryland Storm Water Design Manual Volumes I and II* (2009); http://mde.maryland.gov/programs/Water/StormwaterManagementProgram/MarylandStormwaterDesignManual/Pages/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.aspx

National Association of Home Builders Research Center, *Toolbase Resources*; <http://www.toolbase.org/>

Thomas R. Schueler, *Environmental Land Planning Series: Site Planning for Urban Stream Protection* (1995).

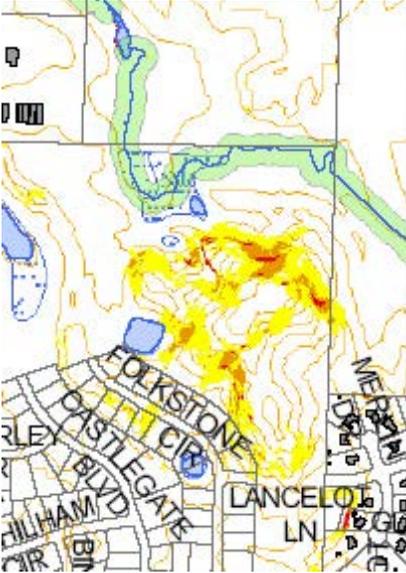
U.S. Environmental Protection Agency, Division of Water, *Urban Run-off* (2011); <http://www.epa.gov/owow/nps/urban.html>

FEMA Library, *The Natural & Beneficial Functions of Floodplains, Reducing Flood Losses by Protecting and Restoring the Floodplain Environment*, FEMA Publication Number 409 (order free hardcopy) (Scroll down to the section entitled "Search by FEMA Publication Number" towards the bottom of the page, then type "409" under "Search Criteria" where it says "FEMA Publication Number"); <http://www.fema.gov/library/index.jsp>

Association of State Floodplain Management (ASFPM), *Natural and Beneficial Floodplain Functions: Floodplain Management – More than Flood Loss Reduction*; http://www.floods.org/PDF/WhitePaper/ASFPM_NBF%20White_Paper_%200908.pdf (Copy and paste this address into your web browser)

See the Access Management section for resources on complete streets.

Chapter 6



Above: Stream setback area shown on a community map.
(map: City of Green Planning Commission)

Above Right: Avenbury Lakes in Avon, Ohio.
(photo: Scaletta Development Corp.)

STREAM, FLOODPLAIN, & WETLAND PROTECTION

Stream and floodplain preservation is the most cost-effective means of minimizing flood damage and controlling erosion

(Chagrin River Watershed Partners, Inc. 2006).

Background

Why are streams, floodplains, and wetlands important?

Streams and wetlands, and their associated floodplains and active stream corridor areas, when left in their natural and functionally sound state, are important components of a community's natural storm water management infrastructure. They can play important roles in controlling flooding, limiting erosion and protecting water quality. However, the impacts of land development projects that remove natural vegetation, modify channels and increase impervious ground cover impair this natural infrastructure. Such impacts can alter the hydrologic response of local watersheds and increase storm water runoff rates and volumes that lead to flooding, stream channel erosion and sediment transport and deposition, and contribute to increased quantities of pollutants in water resources. The cost savings, property protection, and quality of life benefits provided to immediate and adjacent/ downstream communities and property owners by streams, wetlands and their floodplains are worth maximizing through appropriate regulations that protect these resources.

Wetlands ease the water treatment burden of human-made systems. A 2.5 acre protected wetland provides over \$4,000 in avoided water treatment costs, with up to \$10,000 in other benefits annually.

(Krop, Hernick, and Frantz 2008)

Most communities and counties in Ohio have floodplain regulations that enable them to participate in the National Flood Insurance Program (NFIP) that makes available affordable flood insurance for their residents (homeowners insurance does not cover losses from flooding). However, the minimum floodplain management standards of the NFIP have been accepted by many as the default flood control standards for communities, even though they were designed to manage risk exposure for an insurance program and not to control escalating flooding. Since the minimum standards do not require protected stream setbacks, currently a large majority of communities in Ohio do not yet have stream setback provisions, leaving these critical stream areas unprotected. Many local governments assume the minimum NFIP standards provide acceptable flood protection, and are then surprised when flooding continues to be a local problem.

How do communities benefit from Stream, Floodplain and Wetland Protection?

One of the most obvious benefits is cost savings by way of reduced costs associated with flood damage. In addition, stream setbacks can provide monthly savings to property owners in the form of discounts on flood insurance premiums. When a community goes above and beyond the NFIP minimums by installing stream setbacks and other higher standards, the community qualifies for participation in the NFIP's Community Rating System (CRS). This program provides anywhere between a 5 – 45% discount on property owners' flood insurance premiums.

Another form of cost savings is in infrastructure costs. As long as floodwaters are accommodated by vegetated stream areas, need for man-made infrastructure such as dams, dikes, levees, and basins is reduced. Also, because vegetated stream setbacks provide superior pollution filtration, communities enjoy cleaner streams and reduced costs associated with meeting regulatory requirements for clean water.

In addition to cost savings, another benefit to communities includes higher real estate values for properties in proximity to these natural amenities as a result of the vegetated open space and cleaner water. Conserved natural amenities also tend to encourage community-wide growth. (CRWP, "Technical Information", 35-37)

Stream protection and set backs also help communities prevent the substantial homeowner problems associated with changing flood patterns or higher flood elevations. When development and its associated increase in storm water runoff take place anywhere in the watershed, not just near the stream, it will influence flood patterns and flood elevations. Property owners in proximity to streams in



a Bioregional Map

Lake Erie Watersheds of Northeast Ohio

Including the watersheds of the Vermilion River, Black River,
Rocky River, Cuyahoga River, Chagrin River and Grand River

developing areas who never had routine flood problems eventually will; many not previously required to purchase flood insurance are suddenly burdened with heavy premiums when floodplain boundaries are updated. A stream setback helps to avoid such concerns by slowing and naturally storing floodwaters away from existing buildings, and by avoiding construction of new buildings and structures in stream areas that are subject to higher variations in flood patterns. In this way, stream, floodplain and wetland protection can be an important contributor to community resiliency in light of increasing storms and flood events.

How does stream, floodplain and wetland protection relate to Balanced Growth?

Stream, floodplain and wetland protection has a direct role to play in environmental protection and in the economic health of a community, aligning it with the dual goals of Balanced Growth. Stream, floodplain and wetland protection regulations reduce the impact of flooding on property, business activity, health and safety. By protecting water quality, they help to protect a community's quality of life, and our Ohio water assets which draw businesses, residents, tourists and visitors. Stream, floodplain and wetland regulations are important tools for implementation of Priority Conservation Areas as may be designated in a Balanced Growth Watershed Plan. Often floodplains and stream corridors are the primary areas designated for targeted implementation of incentives as part of a Balanced Growth Watershed Plan.

Issues

- **Natural watershed function and service.** Our approach to managing storm water and flooding has traditionally been a reactive one, mitigating problems as they arise through structural and regulatory solutions. However, innovative and sustainable design techniques that are currently being developed take a proactive approach to defining critical watershed functions and services, and taking steps through project design to maintain, enhance and reestablish those services. Such design approaches can reduce development costs, and reduce costs over the long term for communities, property owners, and taxpayers through reduced property damage and better management of water at the source. This approach is becoming especially important as the frequency and intensity of storm events increases over time.

- **Special Flood Hazard Areas (SFHAs).** A Special Flood Hazard Area (SFHA) is an area identified by FEMA as land that has a 1% chance of flooding in any given year. These floods can also be referred to as The Base Flood or The 100-Year Storm Event. SFHAs can be observed on

Lake Erie Watersheds of Northeast Ohio Map. Painted by Mary Kelsey for EcoCity Cleveland.
(Cleveland Museum of Natural History)



FEMA created maps called Flood Insurance Rate Maps, or FIRMs. It is from these maps that determinations of flood risk are established for insurance purposes.

As part of the requirements of the National Flood Insurance Program, development must be regulated within the SFHAs. A structure's lowest point cannot be below the Base Flood Elevation level, or BFE. This is the computed elevation to which floodwater is anticipated to rise during a base flood.

There may be situations where FEMA has not yet fully assessed a community for its Special Flood Hazard Areas. In these communities, the floodplain management regulations that are regulating development within the SFHAs may or may not be adequately protecting their floodplains. It is the communities' responsibility to know whether or not they have been fully assessed by FEMA and, if not, to make preparations for any undesignated floodplains. Failing to do so may result in construction inside a future SFHA that which would require immediate purchase of flood insurance if the loans are federally backed - a situation property owners and the community would clearly want to avoid.

In addition, SFHAs are subject to change. SFHAs are not usually studied by FEMA very frequently - some SFHAs are over 30 years old. Development and other contributing factors change the characteristics of floodplains, which may put previously excluded construction within a SFHA.

- **Higher Standards: Going Above and Beyond the NFIP** Substantial benefits exist for communities that go beyond the minimum standards set forth by the NFIP. Not only will communities reduce flood risk, but property owners will be eligible for discounts on insurance premiums. These discounts are available through the Community Rating System (CRS) and range from 5 to 45%.

Each community which is meeting the NFIP minimum standards is given a Class 10 rating by the CRS. The community can request a CRS credit once a higher standard is implemented. When the community meets the requirements as outlined in the CRS Manual, a new Class Rating will be assigned. Every point deducted from the rating is equivalent to a 5% insurance premium discount. For example, a Class 5 rating results in a 25% discount for property owners.

Stream Setbacks can be a higher standard that will result in CRS credits. Another is the inclusion of a freeboard requirement in a floodplain regulation. Communities participating in the NFIP cannot allow structures to be built under the Base Flood Elevation (BFE). A freeboard (space between the BFE and the structure) is a figure given in a number of feet above this BFE. This extra spacing reduces the risk of flood damage by taking into account unknown factors that may increase flood water height such as future development, ice dams, wave action, obstructed bridge openings or other forms of encroachment. Therefore



*First-order Stream , Broughton Nature Preserve, Washington County, Ohio.
(Photo: Joe, Fly Fish Ohio)*

a floodplain regulation with a 2-foot freeboard might be written as “A structure’s lowest point must be 2 feet above the BFE.” For this extra level of flood safety, the community is awarded CRS credits. Additionally, the lower flood risk associated with a 2-foot freeboard translates to approximately 50% in insurance premium savings over those structures whose lowest point is exactly at the BFE.

Other common ways to increase standards and gain CRS credits include improved foundation design, future conditions mapping, use restrictions, and stormwater management practices and public outreach efforts. See the CRS Manual (see resources) for more information on credit opportunities.

- **Regional and Local Differences:** Unique geographic factors should be taken into consideration when implementing Floodplain Management planning. Some areas in Ohio have rolling terrains and steep slopes. In these areas, local communities might want to require different standards such as higher freeboard requirements. On the other hand many northwestern communities can be very flat, and in these areas a lower freeboard might be more appropriate.

Development patterns in the region should also be considered in the planning process. If there are many actively growing communities or many large tracts of developable lands, communities in that region should consider more stringent freeboard, fill, and stormwater management standards that will anticipate future floodplain alterations.

- **Natural Stream vs. Functional Stream:** It is important to note that leaving a stream in its “natural” state does not mean it still has its full functional capability. What may have been a healthy stream could have been degraded into a down-cut eroding channel that does not perform the same critical functions as a healthy stream. Streams can also be subject to sedimentation that reduces the stream’s capacity within its banks. These unstable and unhealthy streams may need to be restored or rehabilitated.

- **Dual floodplain authority over certain development projects:** Jurisdiction over development projects is complex and may include multiple authorities. If a State agency is involved in the funding, development, or pursuit of a development project, it may preempt local authority in granting of the floodplain permit. Similar restrictions occur over oil and gas development, and mobile home parks. Although any State agency would still be required to comply with minimum federal Flood Insurance Rate Program standards as required by R.C. 1521.13(A), it is important to note that the local permit will not apply on such projects. If the local regulations are more strict than the minimum federal standards, it is likely that they will not apply on such projects. It is recommended that the community consult with their legal advisor, and with the ODNR Division of Floodplain Management, with regard to questions of local authority on floodplain management.

Recommendations

1. Work to understand functions and services provided by streams, floodplains, wetlands and riparian areas: All of these natural elements provide essential services in controlling the quality and the flow of water within the watershed. The goal is to approximate natural function to the extent possible.

2. Maintain, enhance or reestablish critical stream functions and services: Protecting streams that are already severely degraded and have poor functional use may not be enough. The community should assess which active stream areas are healthy enough to be maintained in their natural state, and which areas might need stream restoration efforts to improve the functionality. When incorporating setbacks for the streams, the regulation language should allow for, or even encourage rehabilitation or restoration of vertically unstable channels and unhealthy streams.

3. Apply your floodplain regulation to the entire 100-Year Floodplain Area, not just FEMA designated SFHAs: Many floodplain regulations state that the regulation applies to “all areas within SFHAs.” This type of code language places undue reliance on FEMA’s designation of the flood hazard areas, which may not be up to date or complete. By having language that says the regulation applies to “all areas within the 100-year floodplain,” communities ensure regulation of flood hazard areas regardless of the FEMA designation.

If a Flood Insurance Rate Map (FIRM) exists for that site, then the developer may use that data to apply the floodplain regulation. If no FIRM or other flood data exists, then a community can require the developer to pay a certified engineer to perform an analysis. Sometimes enough flood data exists (USGS maps, soil surveys, county performed flood mapping, etc) that the community’s floodplain administrator can designate a flood hazard area the new floodplain regulation will apply to.

4. Implement higher standards and participate in the Community Rating System: The NFIP minimums are conservative standards. Room was given to communities to improve upon the standards by accounting for the unique characteristics of their communities and applying higher standards when necessary or desired. Using unique and more stringent standards goes a long way in bolstering long-term flood hazard mitigation.

Flood insurance can be a considerable burden for many homeowners and businesses. Communities offer a substantial benefit to their residents by participating in the CRS and providing them with insurance premium discounts. Higher standards realize savings from CRS credits and future savings by lowering insurance premiums due to decreased flood risks.

Riparian setback zoning has no negative effect on values of homes or vacant land and has been shown in some markets to have a positive effect.

(Mikelbank 2006; Qiu, Prato, and Boehrn 2007)

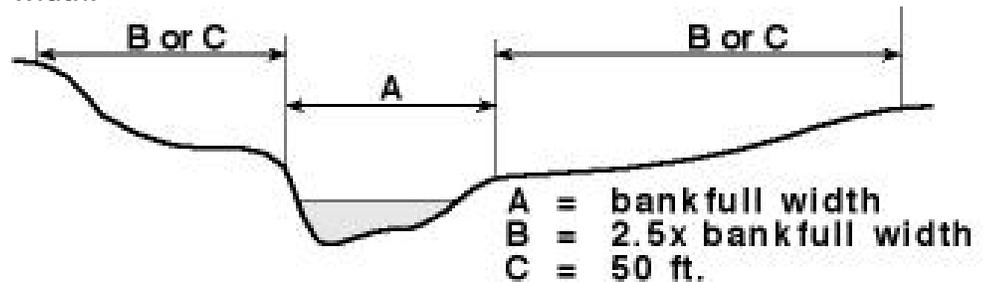
In addition to stream setbacks, adding a freeboard requirement is a higher standard that should be strongly considered by communities. When communities adhere to the NFIP minimum by keeping a structure's lowest point at the base flood elevation, there is no allowance for future floodplain alterations. Structures built at the base flood elevation may be safe from the base flood in the present, but any future activities that alter the base flood elevation, such as encroachment from new development, may result in those structures suddenly finding themselves below it. Freeboard provides a level of security from any future flood elevation changes. The appropriate size of the freeboard should be determined by each individual community, but they typically range from 6 inches to 2 feet and are influenced by factors such as regional topography and development potential of surrounding communities in the stream's watershed.

5. Adopt a stream setback code, either standalone, or within the Floodplain Management regulation: Stream setbacks are first and foremost a flood hazard mitigation technique. Therefore it is recommended the stream setback code be placed within the floodplain management regulation. It is there the stream setback code will be better understood by the public as a flood mitigation measure. However, many communities have existing codes that are standalone, and this can be an acceptable method of adopting the code. It should be noted that stream setbacks are becoming a common requirement in Ohio EPA general construction permits for certain watersheds.

When it comes to determining the appropriate size of the setback, there are a variety of methods. One such method is to size the setback according to the drainage area of that section of the stream. The Chagrin River Watershed Partners have created a model based on this method that has been adopted by many Ohio communities:

- A minimum of 300 feet on either side of all watercourses draining an area greater than 300 square miles.
- A minimum of 120 feet on either side of all watercourses draining an area greater than 20 square miles and up to 300 square miles.
- A minimum of 75 feet on either side of all watercourses draining an area greater than ½ square mile and up to 20 square miles.
- A minimum of 25 feet on either side of all watercourses draining an area less than ½ square mile and having a defined bed and bank.

Another method involves sizing the setback in relation to the width of the stream, or the “bankfull width”: One such standard is a setback on each side of the stream equal to two and one-half times the bankfull channel width or 50 feet, whichever is less. This distance is then measured away from the bankfull channel to arrive at the standard buffer width.



Additional information on this method is included in ODNR’s online materials, including the Ohio Stormwater Control Guidebook, and the Rainwater and Land Development Manual. (see resources)

The morphological condition of the streams being protected should also be considered when developing setback standards for new development and for riparian areas in the watershed. Streams and channels will go through a succession of morphological conditions that may dictate different intensities and locations of setbacks and other riparian protection. For more information, refer to EPA’s “Channel Process: Stream Channel Succession” in the resources.

Regardless of which method communities choose, it is preferable communities in a watershed are consistent in their setback sizing method. Communities should take note of their surrounding communities’ setback regulations and consider using a similar method, reducing confusion among local officials and the development community.

6. Wherever possible, preserve any wetlands within the community and apply a setback: Wetlands act as natural sponges that slow and store stormwater. Every acre of a wetland that is one foot deep can retain over 330,000 gallons of water. When wetlands are filled in for development purposes, this water becomes displaced and enters the stream, contributing to rising flood waters.

Preserving wetlands ensures natural flood mitigation functions that wetlands provide for the community and the surrounding region can be sustained. Applying setbacks to these wetlands helps to ensure structures and impervious surfaces do not inhibit any of its natural functions. It is recommended Class 2 wetlands have at least a 75 ft. setback and at least 120 ft. for Class 3. It is also important to work with developers on options, such as conservation development, for



Riparian Setback Diagram
 (map: Eric Booth)

Investing in “complete streets” enhances local retail, boosts property values, and revives economic activity. Studies have found complete streets generate an increase in retail sales of 30% and increase land values from 70% to 300%.

(Burden and Littman 2011)

conserving wetlands on development sites. Conservation development regulations provide flexibility for lot layouts to accommodate resource protection while maintaining development potential. Chapter 2 of ODNR’s Rainwater and Land Development Manual has additional wetland setback provisions.

7. Collaborate on floodplain management efforts with nearby communities: Few issues substantiate the benefit of community collaboration more than flood hazard mitigation. Even if a community creates the soundest of floodplain management plans, they can still be affected by upstream communities not embracing flood hazard mitigation efforts. One of the best ways to collaborate with your neighboring communities is to create a cross-jurisdictional hazard mitigation plan. The Ohio Department of Natural Resources has created a resource titled “Multi-Jurisdictional Mitigation Planning” that provides suggestions to local governments for preparing multi-jurisdictional hazard mitigation plans. Other benefits include cost savings for plan preparations and shared staff and resources.

Example Regulations

The following example codes are outlined in the Example Regulations Matrix (link):

Chagrin River Watershed Partners, Model Ordinances (2011)
http://www.crowp.org/model_ordinances/riparian_model.htm

Licking County, Ohio, Floodplain Management
<http://www.lcounty.com/Planning/Floodplain/default.aspx>

NOACA Model Ordinance <http://www.noaca.org/ripwet12706.pdf>

TMACOG Model Ordinance http://www.tmacog.org/Environment/TMACOG_Stormwater_Standards_Manual_.pdf

See the Example Regulations Matrix for comparisons of these examples.

The example regulations **should never be adopted without careful local review** to assure that they are adapted to fit the needs of the specific local government. They will need to be adapted for use by the specific type of local government: city, village, township, or county. **The law director/ solicitor or county prosecutor should be consulted prior to adoption of any land use controls.** Questions about the examples and recommendations can be directed to the Ohio Lake Erie Commission and/or the Ohio Water Resources Council.

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

Resources

Always start by checking with your local resources. Local government agencies and non-government organizations might have the most up-to-date information on these issues and will have the most expertise for the unique characteristics of your region.

- **Your Local Metropolitan Planning Organization**
- **Your Local County or Municipality Planning Commission and Engineer's Office**
- **Your Local County Soil and Water Conservation District**
- **Your Local Watershed Group**
- **Your Ohio EPA District Office**

Chagrin River Watershed Partners, *Riparian Setbacks Technical Information for Decisionmakers* (2006)

http://www.crowp.org/Projects/evaluate_riparian_setback.htm

Chagrin River Watershed Partners, *Hedonic Analysis of Riparian/Wetland Setbacks* (2006) http://www.crowp.org/pdf_files/final_report_hedonic_analysis_riparian_wetland_setbacks.pdf

Ohio Department of Natural Resources, *Rainwater and Land Development Manual* (2010) <http://www.dnr.state.oh.us/tabid/9186/Default.aspx>

Ohio Department of Natural Resources, *Ohio Stormwater Control Guidebook* (1980) <http://www.dnr.state.oh.us/tabid/9190/Default.aspx>

Ohio Department of Natural Resources, *Stream Conservation* (2011)
<http://www.dnr.state.oh.us/Home/tabid/21567/Default.aspx>

Center for Watershed Protection (2011)
<http://www.cwp.org/>

U.S. Environmental Protection Agency, Division of Water, *Channel Processes: Stream Channel Succession*:
<http://water.epa.gov/scitech/datait/tools/warsss/successn.cfm>

*Beaver Marsh in the Cuyahoga Valley
National Park
(photo :Tom Jones)*



Chapter 7



Above: Copper Tap
(photo: Gregory SJ Soltis)



Above Right: The Gold Coast in Lakewood, Ohio; viewed from Edgewater State Park on Lake Erie.
(photo: Gregory SJ Soltis)

SOURCE WATER PROTECTION

Background

What is source water?

Source water refers to the sources of our drinking water. Sources of drinking water include groundwater from aquifers, as well as surface water such as lakes, streams, and reservoirs. In much of Ohio, groundwater is the primary source of drinking water. Approximately 95% of Ohio's 5,000 public water systems use groundwater and more than 700,000 households have their own wells. Most of Ohio's largest cities, however, use surface water or a combination of ground water and surface water. For example, Cincinnati, Columbus, and Akron all have intakes on major rivers. Toledo and Cleveland use water from Lake Erie. Altogether, six million people—half of all Ohioans—get their drinking water from surface water.

Why protect source water?

All living beings require clean drinking water to live. Although public water systems are designed to treat the types of contaminants expected in the source water, no process is fail-safe and treatment is usually not available for contaminants that are not expected. When a source of water becomes contaminated, the impacts on a community can be devastating.¹ Even when human health and lives

¹ Recent examples of drinking water contamination that caused illness outbreaks despite the water being treated at up-to-date water treatment plants include the E. coli outbreak in Walkerton, Ontario (May, 2000) where approximately 2,500 became ill and seven died, as well as the cryptosporidiosis outbreak in Milwaukee, Wisconsin (1993) that sickened almost half a million people and contributed to the deaths of over 100.

Nitrates are chemicals produced in soil and groundwater when plant and animal matter rot on the ground. It is usual to find small amounts of nitrates in well water, but levels can be elevated in farming areas where fertilizers are used, or in neighborhoods where there are many septic tanks. Water with nitrate levels in excess of 10mg/L is unhealthy for infants younger than six months of age. There are a number of 'best' or 'beneficial' management practices (BMP) which can be implemented as a low-cost means of protecting ground water and drinking water.

(Brethour, 2009)

are not jeopardized, the treatment required to make contaminated source water potable can be a burdensome expense for communities, including:

- Cost of purchasing a temporary water supply from another community or bottled water.
- New wellfield development if the affected wells must be abandoned.
- Real estate devaluation.
- Decline in consumer confidence in water quality.
- Potential lawsuits from the use of contaminated water.
- Lost jobs.

For all these reasons, protecting drinking water at its source has become a top priority in any community, and must be a priority in any balanced growth plan.

How does source water protection relate to Balanced Growth?

Source water protection is another example of local government policy that addresses the dual goals of Balanced Growth: environmental protection and economic development. Our Ohio source waters are critical environmental assets going forward, as they provide drinking water for many Ohioans, support a high quality of life, and are essential for many businesses. Pollution of source water can create environmental problems that can be very difficult and expensive to clean up, and can affect human health and our economic health for the long term. Avoidance of pollution is a benefit to environmental quality, and to our environment, and is in the authority of local government. Source water protection is implemented in zones based on distance from the well or intake to be protected. These can easily be mapped and incorporated into Priority Conservation Areas and Priority Development Areas in a Balanced Growth Plan. See the Balanced Growth web site for more information.



Cedar Falls, Hocking Hills, Ohio
(photo: ODNR)

Issues

What is Ohio's Source Water Protection Program?

Formerly known as the "Wellhead Protection Program," Ohio's Source Water Protection (SWAP) Program is a statewide program to protect streams, lakes and aquifers that are used as public drinking water supplies. It was initiated through the Safe Drinking Water Act (SDWA) amendments of 1986 and 1996. The Source Water Protection Program involves two phases, the first of which is the "assessment phase." Assessments are completed by Ohio EPA's SWAP program staff or by private consultants, who must:

- Delineate the area to be protected;
- Inventory the potential contaminant sources within that area; and
- Determine the susceptibility of the source water to contamination from human activities.

The bulk of source water assessment reports for existing systems were completed by 2006; however, new public water systems are constantly being formed and Ohio EPA continues to provide SWAP assessments for them. Upon completion, an assessment report is sent to the public water system, to provide information for the second phase: developing a local source water protection plan.

How does the SWAP program protect public drinking water?

Because source water is a local or regional resource, source water protection must be primarily a local effort. Staff from Ohio EPA's Source Water Protection Program encourage individual public water systems to complete a local Source Water Protection plan. The public water supplier, in cooperation with local leadership and other interested parties, is asked to develop a plan that addresses:

- **Education:** educating the local population about protecting the water source;
- **Protective strategies:** assisting facilities within the SWAP area with strategies to protect the source water from contamination by manmade chemicals;
- **Contingency planning:** updating the system's contingency plan to include a process for responding to spills in the SWAP area; and

- **Monitoring (optional):** sampling and analysis of the source water before treatment.

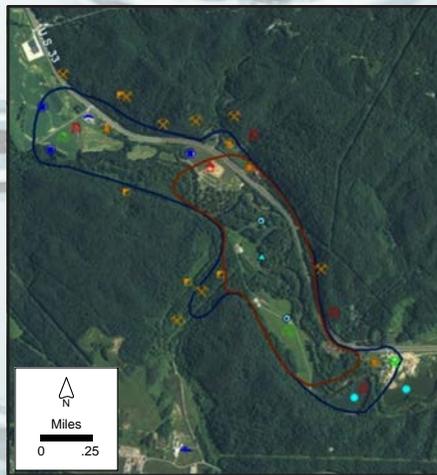
Upon completing a source water protection plan, the community submits it to Ohio EPA for endorsement. Endorsement merely indicates that the plan meets the basic guidelines for a source water protection plan. However, true source water protection does not happen until the community begins to—and continues to—implement the plan.

Are all source water protection plans alike?

No. Source water protection plans all contain the elements of education, protective strategies, contingency planning and (possibly) monitoring, but these elements look very different for ground water vs. surface water systems.

Ground water. Ground water travels through the subsurface very slowly compared to surface water—usually within the range of a few millimeters to a few feet per day. A chemical spill thousands of feet

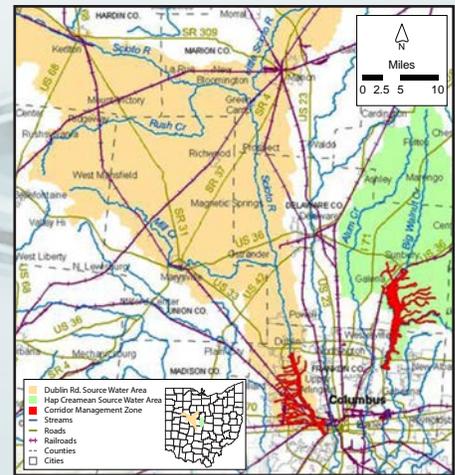
Continued on next page



A Ground Source Water area in rural Ohio.

Ground Water

SWAP areas for ground water systems are much smaller, typically comprising multiple acres. The red line encloses the one-year time-of-travel area; the blue-line encloses the five-year time-of-travel area.



Metropolitan Columbus Source Water Areas

Surface Water

SWAP areas for surface water systems can cover multiple counties and hundreds or thousands of square miles.

away from a well can usually be remediated before it seeps down to the water table and travels to the production wells. Therefore, SWAP areas may range from less than an acre to a few square miles. Such relatively small areas are much easier to protect.

Source water protection plans for ground water systems can be very specific, including such measures as removing an underground storage tank, or rerouting hazardous transport routes. If the area lies within the jurisdictional boundaries of a village or city, local ordinances may be passed restricting the activities that can be pursued in the SWAP area. It is important that a balanced growth plan recognize these areas and avoid designating them as Priority Development Areas, even if they are located in the center of town.

Surface water. Surface water travels very quickly compared to ground water. A chemical spill thousands of feet away from a surface water intake may arrive at the intake in less than an hour, giving the water plant personnel little time to prepare. SWAP areas for surface water systems are therefore much larger than those for ground water systems. They are delineated to include all of the watershed that drains into the water body above the intake; however, the source water protection plan focuses primarily on the river corridor that extends ten miles upstream from the intake (called the “Corridor Management Zone” or CMZ). In a balanced growth plan, the CMZ should be part of the Priority Conservation Areas. Since river corridors usually are so designated, this is consistent with the other protection and preservation goals of balanced growth.

In Ohio no community has jurisdictional authority over the entire CMZ. Therefore, source water protection plans for surface water systems emphasize cooperation with other jurisdictions and with the efforts of county health departments and Soil and Water Conservation districts. The protection plan may even comprise a subsection of a local watershed action plan. The protection plans are meant to focus more on general land uses than individual contaminant sources, and they should be especially concerned with areas of failing septic systems, malfunctioning wastewater treatment plants, animal feedlots, and runoff from agricultural fields. Most of the best local land use practices for balanced growth described in other sections of this document are equally valuable as source water protection practices. And the fact that a surface water body is being used for drinking water adds weight to the arguments for its protection and preservation.

Are there any state regulations requiring source water protection?

Currently, a municipal public water system that is installing a new well or wellfield must provide or update a source water protection plan within two years of receiving Ohio EPA plan approval for the new well/wellfield. In Ohio there are no other rules that require source water protection planning. This is true for the majority of states in the

country. As of 2012, almost a third of Ohio's municipal systems have endorsed source water protection plans, and most of them are ground water systems.

Beyond this, several state programs have rules that prohibit or restrict certain activities within SWAP areas for ground water systems. For example, Ohio EPA's solid waste program prohibits the siting or extension of various types of landfills within SWAP areas. Ohio EPA's Division of Surface Water has rules prohibiting the application of Class B biosolids or wastewater on fields within the one-year time-of-travel portion of a SWAP area. Ohio EPA's Brownfields program and the State Fire Marshal have rules requiring more stringent cleanups within SWAP areas. The Ohio Department of Health's new rules for household septic systems (still in development) are expected to require setbacks from public water systems. Local regulations that conflict or circumvent these requirements, either as drafted or applied, are not recommended, as they would likely conflict with federal or state regulatory authority. For a complete list of SWAP-related environmental rules currently in force, see

<http://www.epa.state.oh.us/ddagw/swap.aspx>, (click on the third tab labeled "Reports, Maps and GIS Data")

Recommendations

1. Source Water Protection Plan. Communities with public water supplies should develop a Source Water Protection Plan tailored to their needs, if they do not already have one, or continue to implement the ongoing strategies (such as education) of their plan.

2. Comprehensive Plan. A municipality's Comprehensive Plan should address the SWAP areas within its jurisdiction. SWAP assessment reports and maps of SWAP areas can be accessed through a password-protected Web site (for more information, go to http://www.epa.state.oh.us/ddagw/swap_assessments.aspx)

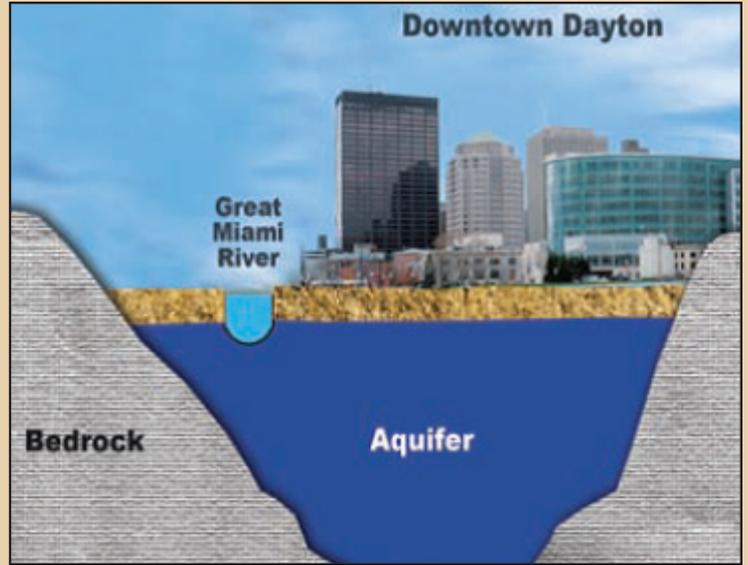
3. Ordinance. Communities with moderate to high potential for groundwater contamination of public or private water supplies should consider implementation of a local source water protection regulation (ordinance), tailored to their needs. The following should be included:

- Identify protection zones
- Establish prohibited and allowable uses within zones
- Include a process for the local planning agency to review new uses within the context of these zones
- Include requirements for geotechnical and hydrologic analysis to determine potential impacts and spill control procedures, particularly for variances

Continued on page 85

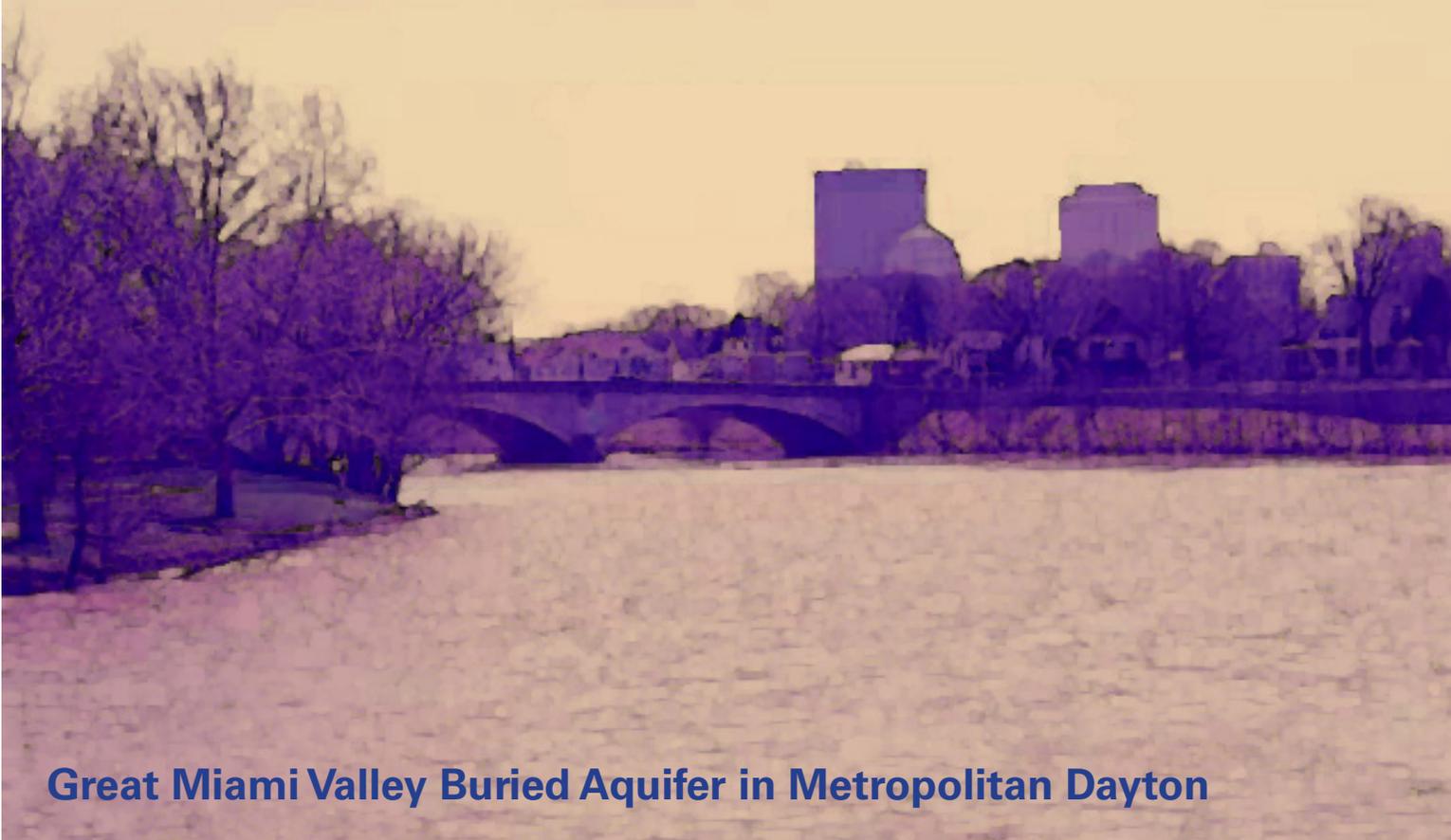


Great Miami River Watershed
 (map: City of Dayton Water Department)



Great Miami Buried Valley Aquifer
 (City of Dayton Water Department)

Significant aquifers in Ohio contribute to economic prosperity and quality of life.



Great Miami Valley Buried Aquifer in Metropolitan Dayton

Downtown Dayton from Gayle B. Price Bridge
 (photo: Miami Valley Trails)

- Detail enforcement mechanisms and authority
- Require reporting of spills
- Require registration of industries within protection zones

The regulations might also include the following components:

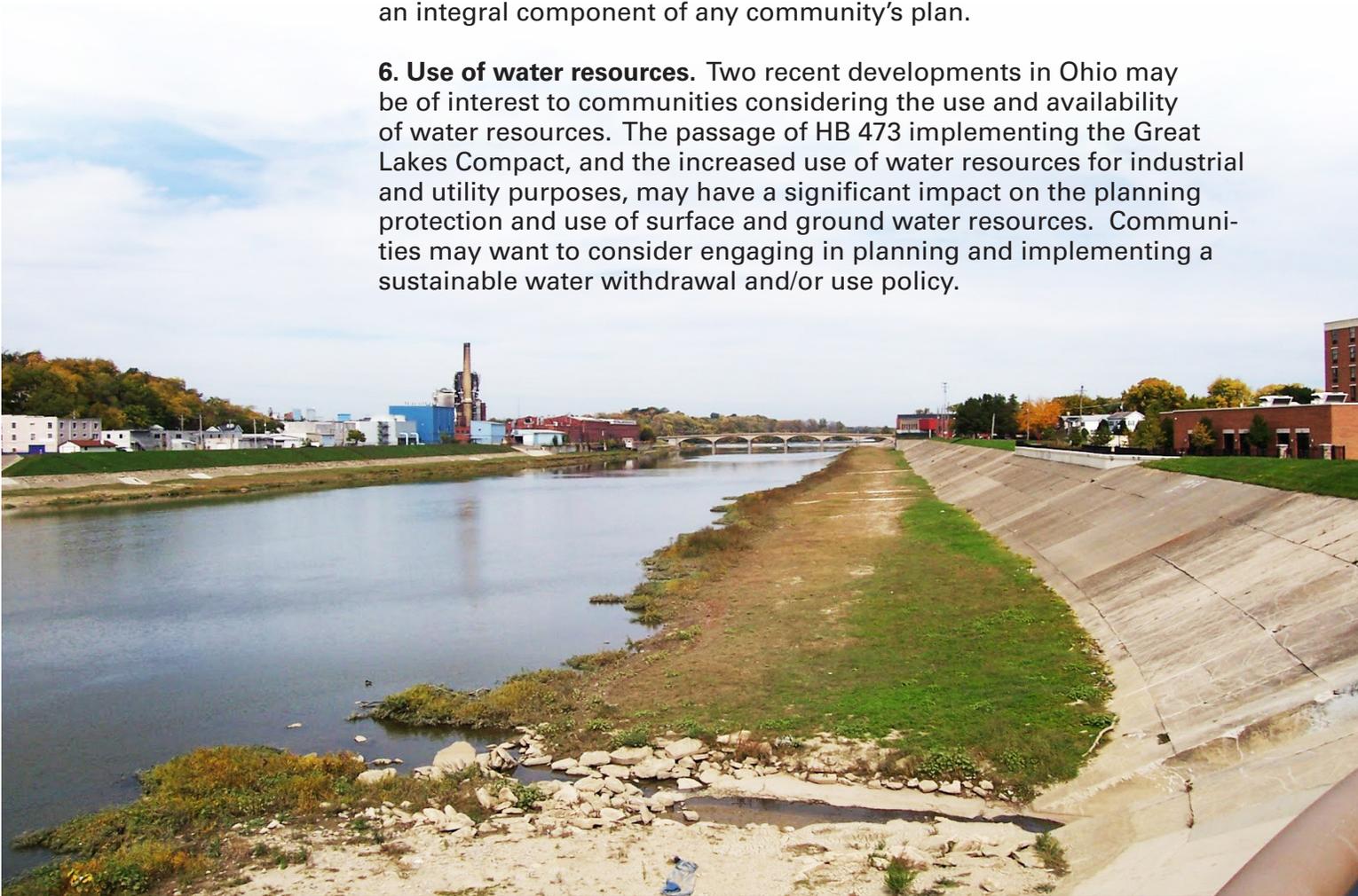
- Delineate multiple protection zones with different uses
- Establish maximum impervious cover allowable
- Establish fees for loan programs (Dayton, OH)

4. Coordination. Communities with surface water supplies for drinking water should implement a protection regulation similar to, or in conjunction with, a setback regulation for stream and floodplain protection. See the Stream, Floodplain, and Wetland Protection section for more information.

5. Education. Communities should be educated on source water issues. Decisions are made every day by people who are impacting the quality of drinking water, without understanding the consequences. Regardless of the extensiveness of a Source Water Protection Plan that a community chooses to employ, education is essential and should be an integral component of any community's plan.

6. Use of water resources. Two recent developments in Ohio may be of interest to communities considering the use and availability of water resources. The passage of HB 473 implementing the Great Lakes Compact, and the increased use of water resources for industrial and utility purposes, may have a significant impact on the planning protection and use of surface and ground water resources. Communities may want to consider engaging in planning and implementing a sustainable water withdrawal and/or use policy.

*Great Miami River in Hamilton, Ohio
(photo: Kevin Buckley)*



Example Regulations

LARGE CITY: City of Hamilton, Butler County (population 61,000)

Note: the City of Hamilton regulates wellhead protection through two ordinances, the Codified Ordinances and the Zoning Code.

Chapter 940 of the Codified Ordinance <http://www.conwaygreene.com/hamilton/lpext.dll?f=templates&fn=main-j.htm&2.0> (Copy and paste into web browser and then enter "Wellhead" in search box)

Chapter 1128 of the Zoning Ordinance (starts on page 163)
<http://www.hamilton-city.org/Modules/ShowDocument.aspx?documentid=557>
 (Copy and paste into web browser)

Continued on page 87

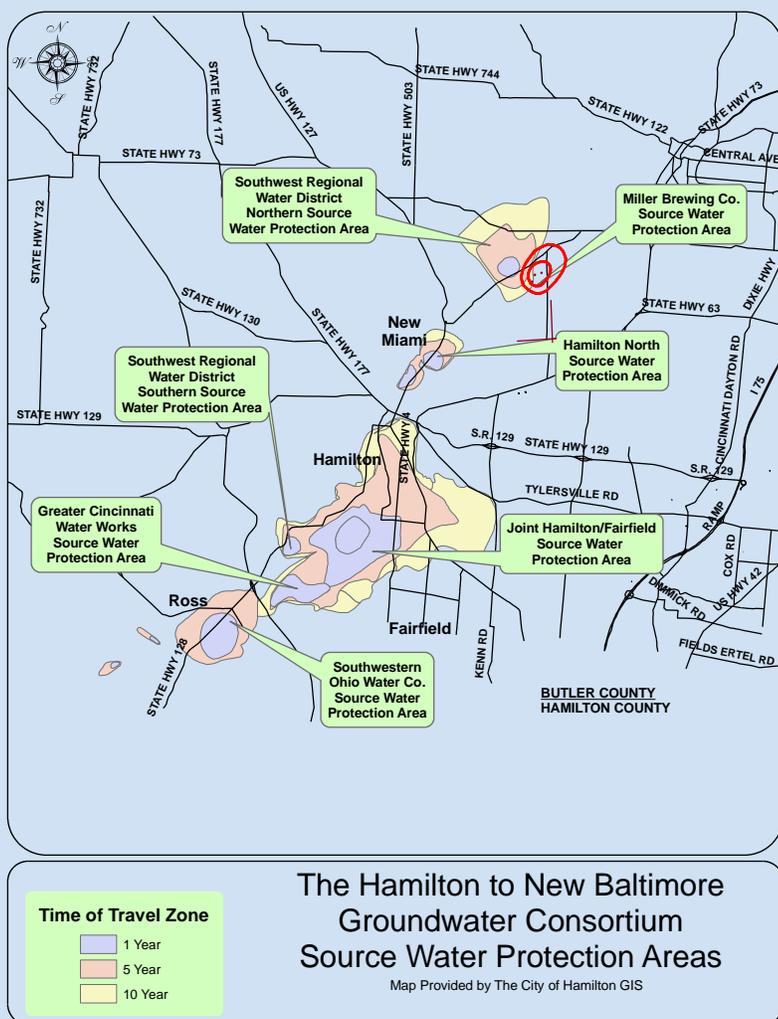


The City of Hamilton, Ohio on the Great Miami River
 (Source: The Hamilton to New Baltimore Ground Water Consortium)

Hamilton, Ohio

"Ground Water is critical to communities in southwest Ohio - for most, it is the only available source of water for residential, commercial, and industrial water needs. This reliance creates a special incentive to protect valuable ground water resources in order to insure a clean, reliable source of water for continued community growth."

(Gound Water Consortium)



Source Water Protection Areas with Phased Time of Travel Areas.
 (Source: The Hamilton to New Baltimore GrounWater Consortium)

SMALL CITY: City of Ontario, Richland County (population 5,280)

www.ontarioohio.org/pdf/Part_Eleven.pdf

Refer to Chapter 1195, pp. 114-121

More examples can be found at:

<http://www.epa.state.oh.us/ddagw/swap.aspx> (click on second tab labeled "Developing a Protection Plan," then click on Step 4)

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.



Resources

Always start by checking with your local resources. Local government agencies and non-government organizations might have the most up-to-date information on these issues and will have the most expertise for the unique characteristics of your region.

- **Your Local Metropolitan Planning Organization**
- **Your Local County or Municipality Planning Commission and**

Engineer's Office

- **Your Local County Soil and Water Conservation District**
- **Your Local Watershed Group**
- **Your Ohio EPA District Office**

Ohio Environmental Protection Agency, Source Water Protection Program; <http://www.epa.ohio.gov/ddagw/SWAP.aspx>

On this Web page, detailed information about various aspects of source water protection can be found by clicking on the Section link (in the box to the left) for "Publications, Fact Sheets". The most useful materials for Balanced Growth efforts are:

GUIDANCE DOCUMENTS:

- Ohio's Source Water Assessment and Protection Program (1999) [PDF]
- Developing Source Water Protection Plans for Public Drinking Water Systems Using Inland Surface Waters (2009) [PDF]
- Developing Local Drinking Water Source Protection Plans in Ohio (2003)[PDF]

FACT SHEETS

- Ohio's Source Water Environmental Education Teams (SWEET) (2009)[PDF]
- Source Water Protection in Ohio (2010 [PDF]
- Ground Water in Ohio (2003)[PDF]

EDUCATIONAL MATERIALS

- COLORING BOOK – Once Upon a Wellfield: The Adventures of Dew [PDF]
- POSTERS: Living/Working/Farming in a Source Water Protection Area [PDF]
- POSTER: Potential Impacts to Your Source of Drinking Water
- VIDEO – Ground Water and the Ohio Wellhead Protection Program (1995)

Other Resources

Hamilton to New Baltimore Groundwater Consortium; Tel: 513-868-5993 <http://www.gwconsortium.org/>

Ohio Department of Natural Resources, Division of Soil and Water Resources, *How to Read and Use Ground Water Pollution Potential Maps;* <http://www.ohiodnr.com/water/tabid/3543/Default.aspx>

Ohio Department of Natural Resources, Division of Soil and Water Resources; <http://www.dnr.state.oh.us/tabid/21817/Default.aspx>

U.S. Environmental Protection Agency, *Ground Water and Drinking Water;* <http://water.epa.gov/drink/index.cfm>

*Downtown Cincinnati on the Ohio River
(photo: National Underground Freedom Center)*



Chapter 8



Above: Mature Woodland
(photo: Cleveland Metroparks)



Above Right: Forb Meadow
(photo: Ohio Prairie Nursery)

NATURAL AREAS ESTABLISHMENT & MANAGEMENT

Background

Why is natural areas establishment important?

In many communities, regulations have been adopted which restrict the height of mowed lawns in private residential and commercial landscapes seen from the road. Known as “weed laws,” these were implemented in recent decades in response to community concern about property owners who neglect their landscapes, which could reduce the property values of surrounding homes. Weed regulations typically set a maximum height for lawns, and outline procedures for notifying the delinquent property owner for permitting the community government to remedy a longstanding noncompliant situation, and for billing the property owner for any services involved.

These regulations typically evolved in communities with a number of standard postwar subdivisions, where the use of lawn was universal and lots were rather small. An unkempt lawn usually was the result of neglect, and could indeed have a negative effect on surrounding property. However, in recent years lots have enlarged, and many landowners have chosen to maintain part or all of their lots in natural meadow. Interest in native plants has expanded among homeowners, and there is a steadily increasing body of knowledge of native meadows and their culture and restoration. A parallel expansion in availability of

“Cost data show that conventional installation of sodded turf grasses may exceed \$12,000 per acre. Planting turf grass seeds may cost in the range of \$4,000 to \$8,000 per acre. This contrasts with installation costs of \$2,000 to \$4,000 per acre for seeding native prairie grasses and forbs.”

(US EPA, 2012)

many plants and seed mixes has added to this increasing sophistication. Many soil and water districts and park districts have active education programs to promote the use of native landscaping, including natural meadows. While problems with neglectful landowners will probably always exist, it is critical that weed laws be designed and applied so that they do not prohibit the use of true, tended, natural meadows.

Furthermore, a new pattern of subdivision design (conservation development) has resulted in an increase of large open space areas held in common by homeowners' associations. Many of these open spaces were specifically designed to be natural meadows. And yet, in many cases weed laws are still applied by the local community, resulting in the mowing of often carefully planned and tended native meadow areas. The expansion of natural meadow use in conservation development subdivisions and large private lots is generally seen as an improvement to environmental quality, especially water quality.

How does natural areas establishment relate to Balanced Growth?

The Balanced Growth Program's dual goals for environmental quality and economic prosperity are supported with the encouragement of natural landscaping. While mowed lawn is often thought of as "soft space," absorbent and natural, it is in fact a surface treatment that has many detrimental effects on watersheds and environmental quality. As it often covers an area that was compacted during construction or through traffic over time, its runoff coefficient is similar to that of many types of paved areas. It also is often over tended with fertilizers, herbicides and pesticides. The result is an impact to local waterways, with increased runoff quantity and increased pollutants in that runoff. Lawn has habitat impacts, as it creates a monoculture that supports large populations of plant pests and diseases, while providing no genetic diversity, and no cover, shelter or food for wildlife. In contrast, natural meadow area absorbs a large percentage of the water that falls on it and filters it before it hits local waterways, both key components of effective storm water management. It is very low maintenance, and the use of polluting substances is limited. Furthermore, natural meadows support huge diversity of wildlife, and can be managed to encourage wildlife habitat enhancement.

In the years since the initial development of these recommendations, many conservation development subdivisions have been built in the State of Ohio. Many of these have contained natural woodland areas in addition to natural meadow areas. As these areas have been established and managed, it has become apparent that many of the issues surrounding natural meadow management are similar in the management of natural woodland areas in subdivision common open space. Some developers and their designers have chosen to allow a part of the open area, once grassland or farmland, to develop through

Continued on page 4

Natural Succession

Natural Succession is the process by which, under the resilient condition of nature, open land area in our Ohio bioregions gradually transitions from grassland to woodland, with woodland as the final state of land left alone. Our Metroparks have become experts at managing this process to ensure that native species predominate and are able to take hold under controlled conditions. They have established protocols for keeping a particular area of meadow at one of the stages indefinitely, through management systems involving prescribed periodic mowing and/or clearing. Metroparks staff have also developed a variety of approaches to managing the transition in natural succession to maximize educational and aesthetic effect.

Most of the general public is unaware of the very high environmental quality of many areas going through natural succession. The high diversity of plant life during the transition creates a diversity of habitat opportunities that can contribute to significant populations of birds and other wildlife. These photographs illustrate the most common stages of natural succession that are prevalent in various bioregions of Ohio. It is highly recommended that every natural succession project include an education component to help the public understand the value of these landscapes, whether it is through community meetings, signage, or organized education opportunities. The Metroparks and Soil and Water Conservation Districts would be good partners in such an effort.

Left from top to bottom; Stage 1 Grass Meadow, Stage 2 Forb Meadow, Stage 3: Shrub Meadow (background) with forb meadow (foreground), Stage 4: Young Woodland, Stage 5: Mature Woodland (photos 1, 2 & 3: Ohio Prairie Nursery), photos 4 & 5 Cleveland Metroparks)



Above: Successional Landscape with grass meadow, forb meadow, some shrubs, and woodland in the background (photo Cleveland Metroparks)



*Tudor Arms Hotel Mural, University
Circle, Cleveland, Ohio
(photo: Gregory SJ Soltis)*

natural succession back into young woodland. This practice is to be commended, as woodland present on properties has been shown to enhance the individual lot values, as well as the overall value of the community through improved aesthetics and enhancement of rural or natural character. Woodland also provides superior watershed characteristics as a land cover, absorbing water and mitigating storm effects. However, during the establishment of natural woodland, and in management of it over the long run, the potential exists for noxious or invasive weeds to become established. The public may also not understand the process of succession and may react adversely to the aesthetics of a true forb or shrub meadow undergoing transformation to woodland. For these reasons, our recommendations include establishment of all natural areas, including both meadow and woodland, and include example regulations that address both design opportunities.

It is also worth mentioning that natural meadows and landscapes are an important element in urban areas. The increase in vacant urban lands is an opportunity to introduce natural areas that will improve stormwater characteristics and neighborhood aesthetics, while reducing the cost of maintenance.

Finally, the opportunity exists for communities to use natural areas in tandem with other protection programs such as stream setbacks and conservation development, to increase the footprint of natural areas in the community. Large blocks of natural areas contribute positively to community and ecological health, and climate change resiliency.

A well-written regulation will permit both natural meadows and lawn in appropriate applications, and will also permit establishment of new woodland through the process of controlled natural succession.

Issues

- **Noxious, Invasive, and Undesirable Weeds.** Natural areas laws are not intended to permit noxious or invasive species to proliferate. State law requires communities, including townships, to control noxious weeds. In addition, there are many species not on the noxious weed list which are invasive and locally undesirable. A well-written regulation will be no less restrictive than state law and will prohibit additional species that are considered to be of local concern.

Continued on page 95

Queen Anne's Lace
(Photo: Rangeley@ Wikipedia)

Musk Thistle
(Photo: Elaine Haug @ USDA-NRCS PLANTS Database)

Oxeye Daisies
(Photo: Brother Alfred Brousseau @ USDA-NRCS PLANTS Database)



Canada Thistle
(Photo: Robert H. Mohlenbrock @ USDA-NRCS PLANTS Database / USDA NRCS. 1992)

Grapevines
(Photo: Clarence A. Rechenthin @ USDA-NRCS PLANTS Database)

Sorghum
(Photo: Steve Hurst @ USDA-NRCS PLANTS Database)

Noxious and Invasive Weeds

Noxious

Apple of Peru, Canadian Thistle, Cressleaf groundsel, Giant Hogweed, Grapevines, Japanese knotweed, Johnsongrass, Kochia, Kudzu, Marestail (Horse weed), Mile-a-Minute weed, Musk thistle, Oxeye daisy, Palmer amaranth, Poison hemlock, Purple loosestrife, Russian thistle, Shattercane, Wild carrot, Wild mustard, Wild parsnip
See OAC 901: 5-7 for the official listing. This list changes from time to time.

Invasive weeds

Refer to your local SWCD (www.dnr.state.oh.us/tabid/9093/default.aspx) for a list of invasive species and weeds of local concern. The ODNR Division of Natural Areas and Preserves (www.ohiodnr.com/Default.aspx?alias=www.ohiodnr.com/dnap) can also provide a list of invasive species.

• **Options for Regulation.** Natural areas laws fall into three general groups:

1. Permit laws – require an applicant to submit for approval a management plan, and require compliance with the plan.

2. Exclusion laws – simply exempt native grass, meadow or woodland areas (species specified) from application of the law.

3. Proactive laws – actually require a certain percentage or amount of native grass, meadow and woodland areas in new landscapes.

• **Permit and Proactive Laws:** Permit and proactive laws are generally seen as more regulatory, requiring a review board qualified and authorized to review, condition, approve, and enforce a design and/or management plan submitted by the applicant. Both types are seen as more difficult and expensive to carry out by the government because of the need for an educated review board and a monitoring program which applies to every applicant. However some communities may feel more comfortable requiring a management plan.

• **Exclusion Laws:** Exclusion laws are less regulatory, relying on the occurrence of a problem before the regulation applies. Exclusion laws typically rely on the designation of a “weed expert” – a person who is qualified and authorized to distinguish on a case-by-case basis between neglected sites and bona fide meadows and establishing woodlands.

• **Landscape Setbacks:** Some laws are set up as setback laws, establishing a setback line (which varies depending on lot size) beyond which natural meadows must be located.

• **Enforcement:** All laws enacted must address a means for enforcement of the requirements.

• **Communities without Mowing Regulations:** Many communities, especially townships, have no restrictions at all concerning the landowners’ choice and maintenance of landscaping, beyond their obligation to comply with state laws controlling noxious weeds. Where there is a lack of regulation, it is not necessary to enact a meadow-friendly weed law. No laws provide the maximum flexibility to the property owner, as long as property values will not be affected by lack of attention to land areas.

“Though it is difficult to quantify, beautification is an important reason, sometimes the fundamental reason, for natural landscaping. Many people living or working in natural landscapes appreciate the variety of textures, colors and shapes of native plants and the dramatic progression of hues throughout the seasons. The wildlife, especially the birds and butterflies attracted to the plants, also enhance the aesthetic appeal of natural landscaping.”

(US EPA, 2012)

- **Application to Built Communities:** Natural meadows are much more desirable than abandoned parking areas, run-down buildings, etc. and thus could be a major tool when dealing with “shrinking cities”. However there is currently little incentive within existing regulations to revert these properties back to their natural conditions.

- **Public Education:** Most of the general public are not aware of the value of natural meadow or successional areas and often interpret these areas, particularly those in the stages of succession from lawn to meadow to woodland, as unkempt, neglected sites. Education is critical to help people understand the water quality, habitat and rural-character value of natural meadow in the appropriate applications, and the process of natural succession. Your metro park district and county soil and water district are good sources of speakers who can help you with public education.

- **Technical Expertise.** Communities need technical resources to determine if an unmowed area is actually a meadow, and to make recommendations for controlling noxious or invasive species. In most counties SWCDs or Metroparks representatives can provide this service.

- **Ongoing Management.** Regulations should address on-going maintenance of the meadow area.

Recommendations

1. Communities wishing to enact new mowing regulations should ensure that natural areas are protected and that lawn is required only in appropriate, limited situations.
2. Those with weed laws should revisit them and insert language that permits and encourages natural meadows.
3. Communities without existing requirements are best left as is, unless there are compelling reasons to restrict the landscaping choices of the homeowner.
4. Communities with local concerns about natural meadows and weed control should work with local experts such as soil and water districts and park districts to educate the public about the benefits of natural areas and the process of natural succession. They should provide technical assistance to those who would like to implement natural meadow areas.
5. Communities should consider incentives such as appropriate density bonuses, reduced sidewalk requirements, etc. as an incentive for establishing a native plant or prairie restoration plan that returns a site back to a condition consistent with pre-settlement conditions.

6. New Natural Areas Establishment regulations must protect against both noxious and invasive weeds; provide a method for discerning natural meadows from neglected landscape, and allow for hearing/appeal procedure. They should include a list of unacceptable plants, with a reference to the appropriate sources (see below) for up to date lists.

Example Regulations

Following are three example regulations addressing natural areas establishment that have been used elsewhere. The code from South Russell Village, Ohio, is an example of a permit law. The Amberley Village, Ohio, model is an example of an exclusion code, while the model from Long Grove, Illinois, is a proactive code. Finally, a fourth example is included that addresses natural succession as well as natural meadows, as developed by the Community Planning Program at Cleveland State University.

Amberley Village, Ohio http://www.egovlink.com/public_documents300/amberley/published_documents/Ordinances%20and%20Resolutions/2011/Ord%202011-11%20Providing%20Exception%20to%20Allow%20Designation%20of%20Meadowlands.pdf

South Russell Village, Ohio <http://www.conwaygreene.com/SouthRussell/lpext.dll?f=templates&fn=main-h.htm&2.0>

Long Grove, Illinois
http://www.sterlingcodifiers.com/codebook/index.php?book_id=363
Wild Ones organization model <http://www.for-wild.org/weedlaws/weedlaw.html>

CSU Model, Natural Landscaping

Refer to the Example Regulations Matrix for a comparison of the example codes. (link)



*Glen Helen Natural Area - Yellow Springs, Ohio
(photo: UGArdener)*

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

Resources

The Community Planning Program, Maxine Goodman Levin College of Urban Affairs, Cleveland State University; Tel. 216-687-5477, Website: <http://urban.csuohio.edu/cpp>

Holden Arboretum; Tel: 440-946-4400; Web: <http://holdenarb.org>

Wild Ones Natural Landscapers, Ltd.; Tel (920) 730-3986 Toll-free (877) FYI-WILD; Web: <http://www.for-wild.org/>

Society for Ecological Restoration International; Tel: 520.622.5485, Web: <http://ser.org/>

Your Local County Soil and Water Conservation District

Your Local Metroparks Staff

Chapter 9



Above: Cincinnati-American Can Building. American Can Building, LLC, was awarded a loan from the Ohio Department of Development Brownfield Revolving Loan Fund to conduct remediation activities at the 2.3-acre American Can property. The completed Factory Square project includes apartments, retail, townhomes and office space. (photo: UrbanOhio)



Above Right: Columbus-AC Humko / Harrison Park. Developed as an industrial property in 1900 and then used as a vegetable oil refinery from 1920 to 2001, this property was transformed into a promising residential development called Harrison Park. A \$3 million Clean Ohio Revitalization Fund grant provided crucial money to do the necessary clean-up of the once-problematic property. (photo: Office of Redevelopment at the Ohio Development Services Agency (OR-ODSA))

BROWNFIELDS REDEVELOPMENT

Background

Why Brownfields Redevelopment?

Brownfields are properties where the expansion, redevelopment, or reuse may be complicated by the presence or potential presence of a hazardous substance, pollutant or contaminant. It is estimated that there are more than 450,000 brownfields in the nation. In recent years, brownfields redevelopment has become a common practice in Ohio, particularly in urban communities, but brownfields exist throughout the state.

Redevelopment of brownfields can be expensive and it requires technical expertise. One of the most significant barriers to redevelopment has been the perceived or actual potential for liability associated with formerly contaminated sites. The resulting lack of redevelopment of these lands plays a negative role in our state, regional and local economies.

Clean up and redevelopment of brownfields not only reclaims vacant properties for new uses, but boosts the economy of the immediate community as a whole. It provides new jobs and can expand the tax base for the jurisdiction. Brownfield redevelopment improves and protects the environment while also reusing existing transportation and utility infrastructure. Revitalizing brownfields reduces development pressure on agricultural properties or open land that is ideal for habitat. A U.S. EPA Brownfields Program economic impact study found that

“On average, it takes seven years for public investments in brownfields redevelopment to be recouped through additional tax revenues. But it only takes two additional years for revenues to double the public investment.”

(BenDor, Metcalf, and Paich 2011)

residential property values increased by two percent to three percent, and caused an overall property value increase in a one mile radius by \$0.5 million to \$1.5 million in areas where their brownfield grants were implemented.

In recent years, several Ohio communities have become very successful with assessing, cleaning up and redeveloping brownfields, and many more communities are realizing the benefits of completing these projects. Several federal and state grant funding programs have helped communities and their development partners address these challenges for their highest priority sites. As Ohio gains more brownfields experts (legal, insurance and consulting fields, as well as regulatory agencies), brownfield redevelopments and their risks are better understood and mitigated, and this has resulted in a more integrated and diverse approach to brownfields in certain communities. In fact, some communities with experienced public-private brownfield teams are diversifying their brownfields portfolios to go beyond the traditional industrial and commercial reuses for these properties. Some of these projects have included new parks and trails, renewable energy facilities, and urban agriculture.

While many brownfields have already been addressed, thousands remain. Brownfield redevelopment must continue to be an integral land use strategy.

How does Brownfields Redevelopment relate to Balanced Growth?

When land in urban areas is not reused and redeveloped, more land is developed in rural and suburban areas, thus contributing to the loss of critical green space, agricultural lands, and to the economic and population decline in existing urban areas. These losses, as well as the failure to remediate contaminated properties that may leach contaminants into Ohio watersheds or groundwater, play a role in the water quality and the environmental conditions in our state, and also in our economic future.

How does Brownfields Redevelopment work in Ohio?

The Ohio legislature and Ohio EPA enacted and are implementing a program to encourage cleanup and reuse of brownfields sites. The program, called the Ohio Voluntary Action Program, or VAP, allows the volunteer (owner, developer, municipality, etc.) that is completing the remediation to clean up a property, under the supervision of an environmental professional certified by the Ohio EPA. When the “certified professional” certifies that the site meets the state’s standards for its intended future use, they will issue a “No Further Action” letter for Ohio EPA review. The volunteer may also seek a “covenant not to sue” from Ohio EPA promising that the State will not



Wheeling-Pittsburgh Mill in
Stuebenville, Ohio
(photo: Tony Nicholas)

pursue legal action to require additional cleanup by the volunteer at the site.

This covenant protects against civil liability to the State for any prior pollution addressed by the voluntary cleanup of the site, but it does not protect the volunteer from potential liability from third parties or the U.S. EPA. (Ohio EPA has negotiated a process with U.S. EPA, known as the VAP Memorandum of Agreement (MOA)Track, through which a volunteer may obtain protection from the U.S. EPA as well by participating in a variation of the cleanup program that requires direct supervision by Ohio EPA and includes opportunities for public participation in the process.)

Issues

- **Role of the Public Sector:** Many brownfields have no prospect of redevelopment without public support and intervention because of the environmental and financial risks and liabilities inherent in their redevelopment. Public personnel involvement and financial support for brownfields assessment and cleanups are often necessary, as private companies do not often want to spend resources and time on assessing and cleaning up properties when they can readily locate on a greenfield site. Assembly of smaller parcels into larger areas by public entities to accommodate new business needs has also been a successful approach. Many public-private partnerships have also been established in Ohio to share personnel resources and strengths toward common goals and to help facilitate redevelopment that reflects both the company and the community's priorities.
- **Encouraging Investment:** In the last decade, there have been many programs and initiatives at the federal, state, and local levels designed to encourage the redevelopment of brownfields. Unfortunately, there are more brownfields in Ohio than resources to address them and many of these programs are conditional on commitments by end users. The traditionally long period of time between assessment, secured funding and cleanup to site redevelopment has discouraged end users from committing to new investment on the site. Streamlining this process could help more end users commit to investing and locating on the site. Programs related to cleaning up the sites in advance for future end users to locate on them have been successful in Ohio.
- **Program Changes:** Ohio has established a very proactive brownfields program to help communities with the technical issues associated with brownfields as well as the financial support for assessments, cleanup, and even environmental insurance. Ohio is known nationally for its successful program, but with current shifts in funding priorities and agency involvement, the program could change in the future.

- **Brownfields in Rural Areas:** Brownfields are often considered an urban issue, but brownfields are found in most small communities and rural areas. Urban communities often have staff and established teams with brownfield expertise. Many smaller communities and rural areas do not have the personnel resources to dedicate to this issue. In many cases, economic development organizations have helped fill this void in these areas for larger, redevelopable sites. Assistance from Ohio EPA, USDA Rural Development, and other organizations helps these smaller communities address brownfields, especially for those projects that could be considered less desirable for a larger redevelopment.

Continued on next page

Chillicothe-Former CSXT Chillicothe Yard



*Chillicothe Transit System
(photo: Ohio Department of
Redevelopment)*

In 2003, the City of Chillicothe was awarded a Clean Ohio Revitalization Fund grant to remediate soil and groundwater on the eight acre site. The remediated site is now a community transit center, with a modern bus terminal, and a maintenance facility and equipment building.

*Top Right: Former CSXT
Chillicothe Yard Before Brownfield
Redevelopment, Chillicothe, Ohio
(photo: OR-ODSA)*

*Bottom Right: Chillicothe
Transit Center; The Former CSXT
Chillicothe Yard After Brownfield
Redevelopment, Chillicothe, Ohio
(photo: OR-ODSA)*



“Brownfields redevelopment lessens greenfields development pressures. 1 acre of redeveloped brownfield corresponds to 4.5 acres of greenfields that remain undeveloped.”

(Paull 2008)

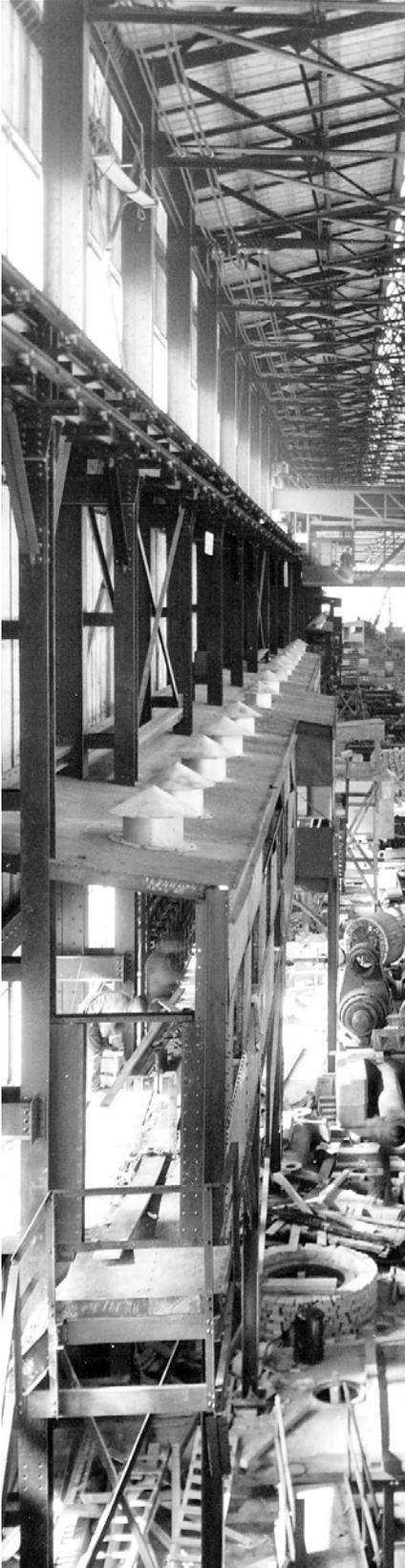
• **Importance of Inventories:** Communities should establish and regularly update their brownfield inventories. US EPA assessment grants have funded brownfield inventories in several Ohio communities. Many other communities have completed brownfield inventories using their own resources. With limited resources, many of these inventories are not updated on a regular basis so they do not always reflect the most recent status of brownfields or the community’s priorities. Updated inventories are useful tools to identify priority sites for the next assessment or cleanup project; to consider current environmental impacts; and to help identify opportunities for new business siting, proactive land assembly, open space or urban agriculture facility planning, or new housing. It should be noted that the designation of a property as brownfield, or the addition of a site to a brownfield inventory, may create a right to appeal that designation by the property owner.

• **Need for Enforcement:** Even when existing programs help lead to the redevelopment of a brownfield, there is some concern about the ability of local governments to enforce the use associated with the cleanup standard the site attained. Some question the actual and legal longevity of deed restrictions because of potential difficulty with enforcement. Samples of covenants that may assist local government in achieving enforceable restrictions are available on the Ohio EPA Voluntary Action web site. Once a brownfield project is completed, its cleanup standard often requires a certain limited set of uses be applied to the site for the long term. Communities need to assess their ability, and appropriate mechanisms, to continue to monitor and enforce the restriction of uses to those approved for the site.

Recommendations

1. Use planning to identify areas and sites for redevelopment.
2. Facilitate the matching of sites to potential users.
3. Involve the community with brownfield redevelopment planning to ensure a common understanding of project goals, to share details on cleanup activities and protection of public health and the environment, and to incorporate citizens’ recommendations into reuse plans.
4. Seek U.S. EPA funding for inventories, assessments, as well as brownfield funding and areawide planning programs through HUD, USDA Rural Development, and other agencies. Support continuation of state funding for brownfield assessments, cleanup and project-related infrastructure improvements.

Continued on page 105



Interior of Republic Steel Corp., circa 1930s
(photo: Western Reserve Historical Society.
CPFL Industrial collection)

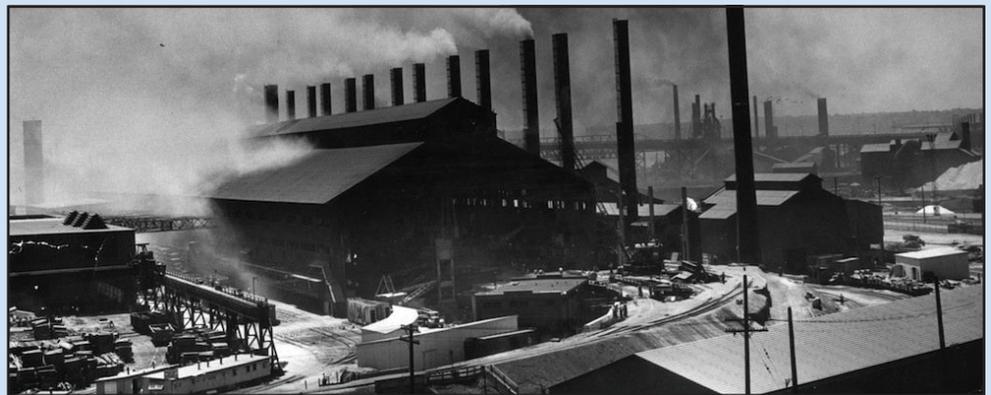
An Example in Cuyahoga County

The Cuyahoga County Planning Commission developed its *Brownfields GIS (Geographic Information System)* as a project through its Brownfields Pilot Demonstration project. The system, begun in 1995 and updated in its current status as an internet application, was designed to promote both economic development of industrial property and to provide information to the public on the status of industrial and commercial sites. The site provides an array of environmental data which may be useful in transaction screening analyses and Phase I assessments. Economic factors and certain infrastructure attributes can also be screened through radial searches featuring demographics, census blocks, travel time, roadways, utility, and rail lines.

The District One Public Works Integrating Committee (DOPWIC) oversees implementation of the State Capital Improvement Program (Issue 2) in Cuyahoga County. In addition to providing financing for capital infrastructure projects, the DOPWIC evaluates and selects brownfields redevelopment projects for financial assistance.

Cuyahoga County Department of Development, Brownfield Division
<http://www.development.cuyahogacounty.us/en-US/brownfield-redevelopment.aspx>

- The County has appropriated \$17.2 million in Brownfield Redevelopment Funds for 25 projects. The Return on Investment, which is generated from income, property and sales taxes, is projected to exceed \$30 million.
- The County has provided Community Assessment Initiative funding to 45 projects.
- They offer multiple types of grants for commercial and industrial redevelopment, and brownfield prevention and site expansion.



Republic Steel Corp., 1949
(photo: Western Reserve Historical Society.
CPFL Industrial collection)

“Brownfields redevelopment improves neighboring property values. Properties within a mile of redeveloped brownfields will increase in value between \$.5 million and \$1.5 million. Crime in areas near redeveloped brownfield sites may also be reduced.”

(US EPA, 2012)

5. Work with the Ohio EPA Technical Assistance and Targeted Brown-field Assessment Programs.
6. Educate the public, businesses, and redevelopers about the benefits and opportunities that exist with existing programs.
7. Continue to improve systems for identification of sites and continue to update and expand inventories of sites.

Example Regulations

Brownfields redevelopment is not typically regulated at the local level. Most law and regulation in this area is at the state and federal level. More information on brownfields issues in general and on state and federal redevelopment initiatives may be obtained from the resources listed below.

Of particular note is the Ohio Revised Code 1724.10 authorizing political subdivisions (counties and municipalities) to establish Community Improvement Corporations for the purpose of “reclamation, rehabilitation, and reutilization of vacant, abandoned, tax-foreclosed, or other real property.” There are special provisions and requirements that apply. See the Resources for more information.

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

Resources

US EPA Brownfields and Land Revitalization; Website: <http://www.epa.gov/brownfields>

- US EPA's Brownfields Program is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse brownfields. Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or containment. Through this US EPA program, technical assistance, funding, information on laws and statutes and other resources are provided. Grants are offered to leverage money for assessments, job training, clean up and revitalization.
- Through its Brownfields Assessment, Cleanup & RLF Pilots/Grants, US EPA has funded many projects in Ohio, including projects in Akron, Cleveland, Columbus, Dayton, Elyria, Fostoria, Girard, Hamilton, Lancaster, Lima, Lincoln Heights, Mahoning County, Mansfield, Reading, Sebring, Springfield, Toledo, and Youngstown. US EPA includes in its "success stories" projects in Cuyahoga County and Lima, Ohio and several Ohio projects have received the US EPA Region 5 Phoenix Awards in recognition of the cleanup activities and site redevelopment. From 1995- 2011, Region 5 has awarded 437 assessment grants that have led to completed assessments for 3,805 properties. This is more completed assessments than any other region in the US. During this same time period, 3,520 acres have been made ready for reuse.

US EPA Region 5; Website: <http://www.epa.gov/R5Brownfields>

- Includes contact information for officials involved in brownfields redevelopment throughout the region, including both local and rural areas.

Ohio EPA Voluntary Action Program; Website: <http://epa.ohio.gov/derr/volunt/volunt.aspx>

- This program was designed to provide a way to investigate possible contamination at a site, clean it up if necessary under the supervision of a certified environmental professional, and receive a promise from the State of Ohio that no more cleanup is needed. The promise, called a "covenant not to sue," protects the participant from liability to the State of Ohio, but it does not protect against liability to third parties

or US EPA. Ohio EPA has negotiated a Memorandum of Agreement with US EPA to provide a process by which a participant may derive some protection from federal liability by following a cleanup process overseen directly by Ohio EPA personnel and includes opportunities for public review of and comment on documents regarding the site. Ohio EPA also provides Technical Assistance (TA) to eligible local public entities (counties, cities, villages, townships, port authorities, etc.) to provide targeted brownfields assessments (TBA) at no cost to the entity or to advise on the VAP program. TBAs could include Phase I environmental site assessments, certified asbestos inspection of buildings, water quality stream surveys, or limited Phase II property assessment. VAPTA assistance can include guidance on technical or legal issues related to potential NFA letters or urban setting designation requests, pre-NFA document review, and reviews for the Environmental Insurance Program.

http://www.epa.ohio.gov/derr/SABR/Grant_Assistance.aspx

Clean Ohio Fund, Brownfield Revitalization Program; Website:

<http://clean.ohio.gov/BrownfieldRevitalization/>

- This program is currently being reorganized and its future status is unknown. Since 2002, the Clean Ohio Fund's Brownfield Revitalization Program had two separate funds that help the remediation of brownfields: the Clean Ohio Assistance Fund (COAF) and the Clean Ohio Revitalization Fund (CORF). These grant programs provided funding assistance for brownfield Phase II assessments and remediation activities to address environmental obstacles and remove blighting influences. The Clean Ohio Brownfield Revitalization Fund programs have leveraged over \$10.00 of investment per grant dollar through the redevelopment of over 300 former commercial and industrial properties. The programs created over 3,200 acres of clean development ready land.

Ohio Brownfield Funding Chart

http://clean.ohio.gov/BrownfieldRevitalization/Documents/CommonBrownfieldFundingSourcesinOhio2011_000.pdf

Ohio Environmental Protection Agency, Division of Emergency and Remedial Response and Revitalization; Tel: 614-644-2924; Website:

<http://www.epa.ohio.gov/derr/volunt/volunt.aspx>

County Land Banks

Community Improvement Corporations for the purpose of reclamation, rehabilitation, and reutilization of vacant, abandoned, tax-foreclosed, or other real property, otherwise known as County Land Banks or Community Revitalization Corporations, may be established under Ohio Revised Code 1724.10. Acting as separate legal entities, land banks can be useful in the implementation of Brownfields and other redevelopment projects, as they have the staff, budgets, and authority to actively acquire land and property, and dispose of it for productive purposes. Many counties in the State of Ohio have now established countywide land banks, which also contract with municipalities for administration of vacant property programs. For an excellent summary of the purpose and benefit of county land banks, see the Federal Reserve Bank of Cleveland's Policy Discussion Paper, Understanding Ohio's Land Bank Legislation, by Thomas J. Fitzpatrick

*Steelyard Commons, Tremont
Neighborhood in Cleveland, Ohio
(photo: Brian Ulrich)*



Chapter 10



Above: Grey Squirrel in a Sycamore Tree
(photo: Rolf Nussbaumer)



Above Right: Historic Schiller Park, German Village, Columbus Ohio.
(photo: Brian Hoffsis)

TREE AND WOODLAND PROTECTION

Background

What is Tree and Woodland Protection?

Tree and woodland protection refers to regulations which some communities adopt to ensure that the potential for tree survival is maximized during development. Tree protection must be addressed in four stages: pre-design; design development; during construction; and post-construction. A good regulation will accommodate all four stages, and will also include a cost-effective method for assessing priorities in tree preservation – ensuring that the highest value tree assets on a site are preserved, and identifying lower value areas where development's impact will not be as important. Tree protection regulations are especially useful in communities where significant tree resources exist, and where conservation development provides the opportunity for design of development in harmony with open space areas.

How does Tree and Woodland Protection relate to Balanced Growth?

The protection of trees and woodlands in developing areas is a critical issue from an environmental quality and community character standpoint. Woodland areas perform important water management services by absorbing and filtering runoff before it can impact local waterways. They provide valuable climate control functions by cooling surfaces and water bodies and processing pollutants in the air. They provide habitat for a variety of wildlife and shade to critical creek habitats. And, they enhance property values significantly when

“Trees improve home values. Tree cover provides up to \$20,000 or 10% in value to residential homes in urban settings. .”

(Dimke 2008)



*Trees are a significant asset to any community. Neighborhood Street in Medina, Ohio
(photo: Kirby Date)*

compared to open, non-wooded sites. Once successfully incorporated into a development landscape, trees and woodland areas continue to provide shade, habitat, and property value benefits.

In spite of these benefits, it is a significant challenge to maintain wooded areas throughout the development process, and so most woodlands are lost to suburbanization. First, our typical spread out pattern of development breaks up blocks of woodland, leaving only a few scattered trees. Trees which were once part of a woodland community fare very poorly once exposed, and can be expected to die within a few years; so even when a developer of a standard subdivision attempts to protect trees, he or she often fails. Standalone trees in the midst of development are subject to drainage pattern alteration, soil and root compaction, and damage during construction, yielding a very low long-term survival rate. And even when subdivisions are well designed to reserve blocks of wooded areas, little attention is given to evaluating the trees prior to design in order to prioritize areas of varying woodland and habitat value.

This document provides some background information on the different types of woodland and tree protection regulations and recommendations on their use. Please also refer to the Natural Areas Management section for information on establishing new woodland through controlled natural succession.

Issues

• **Tree Protection During Development:** There are four stages of the development process at which tree/woodland protection provisions can be applied:

1. Preliminary (concept plan) design – identifying woodland areas on a site or in a community which are of high value for preservation, and of low value due to species, health, or sensitivity to disturbance.
2. Specific site design – identifying specific trees on the site which will be preserved and those which will be removed, and specifying methods for protection of those to remain.
3. Construction protection – implementation of the specifications for protection of trees during the construction process.
4. Post construction monitoring – ongoing evaluation of tree health after construction and implementation of recommendations for remedial care if necessary.



Oak Leaf Wallpaper
(by Fabrics & Papers)

Most regulations only address the second stage. These regulations often make no distinction between trees of good health and high quality, and those of lower quality. Minimum size is used instead as a blanket requirement for identification of trees on the site. This can lead to extensive documentation of every tree with no evaluation or professional judgment of relative importance of various stands of trees, leaving a review board and the designer/developer with little information on which to base decisions.

Identification and evaluation of valuable tree stands at the preliminary stage assists the community in setting priorities for later development decision-making. This evaluation is best done generally as part of a comprehensive plan. At the site plan level, it can be done by a general review by a qualified professional. Size alone should not be used to determine the value of a tree for preservation. Other factors to consider, at a minimum, should include species, apparent general health, and tolerance for disturbance.

The most important step in the design process is the identification of areas of development, and areas of protection, at the concept plan stage. Trees within blocks of protected land stand a much better chance of survival, and are easier to protect throughout the construction process. Trees remaining within the development area are difficult to preserve successfully, and often changes in the field can affect the outcome of which trees can be preserved. Pairing a tree protection regulation with conservation development, which allows for protection of blocks of open space, is the most successful approach to tree protection in new subdivisions, particularly when there are high priority trees targeted for protection.

- **Professional expertise:** Most regulations require the development of a tree protection plan by a qualified professional. Professionals qualified to make tree protection recommendations include certified arborists and urban foresters. See example codes for specific qualifications.
- **Enforcement and Monitoring:** Enforcement and monitoring are critical elements of a well-written tree protection code and provide for protection at stages three and four.
- **Beyond the Right-of-Way:** Many communities have tree protection regulations which apply only to the protection of public trees in road rights of way. This is adequate for older areas, but more must be done in developing areas. It is especially appropriate in the design of subdivisions to ensure that existing tree resources are protected for the long term.
- **Trees and Stream Corridors:** Woodland protection along active stream areas is often provided by stream setback regulations. See the section on Stream, Floodplain and Wetland Protection for more information.



*Emerald Ash Tree in Clinton, Ohio
(photo: used with permission from Wayne White,
Board Certified Master Arborist, Emerald Tree
Care LLC)*

- **Pest Threats:** In recent years Emerald Ash Borer and Asian Long-Horned Beetle have become a real threat to woodland longevity in many parts of Ohio. On development sites, the presence of trees susceptible to these pests should be considered during the preliminary design stage by a qualified arborist or forester, and recommendations made for tree removal and/or future tree species to be used to minimize the effects of devastation on the project design.

Recommendations

- 1. Communities with developing areas should protect woodlands through policies in the comprehensive plan, and controls during and after the development process.** In the comprehensive plan, areas of woodland of likely high value to the community should be identified for further attention at the site design level.
- 2. A zoning code should be developed which avoids the requirement for every tree on a site to be identified but which requires professional evaluation of blocks of woodland at the preliminary design stage.** Then, the code should require a tree protection plan and its approval prior to permit, and assure that the plan is implemented and monitored during construction. Provisions for monitoring for at least a year after construction should be included.

As new areas are annexed to a community, some of the included woodlands may be enrolled in a working forest easement program or the Ohio Forest Tax Law (OAC 1501:3-10-01 to 1501:3-10-07) both of which may require forest management activities. Forest management activities play an important role in the health of forests, water quality, and wildlife habitat on all properties, whether or not they are enrolled in programs that require forest management. It is further recommended that forest management activities can take place while protecting or enhancing the other benefits derived from forests.

- 3. With the spreading prevalence of the Emerald Ash Borer and the Asian Longhorned Beetle, there should be a protocol for preparing for and handling infested trees within your community.** A new code should be created that will supersede woodland protection ordinances to allow removal of infestations and proper disposal of the affected trees.



Protecting a Tree's Root Zone

The dripline of a tree, or the outline of the canopy, can be a useful "rule of thumb" in identifying the area of protection for the root zone. The actual area of protection (area of root spread) will vary depending on the tree species and growing site, and should be confirmed with a professional arborist or forester.



(diagram: Gregory SJ Soltis)

“Proximity to a forest preserve provides a price premium of up to 35% in Grand Rapids, Michigan.”

(Thorsnes, 2002)

Example Regulations

The following example codes are outlined in the Example Regulations Matrix:<http://www.balancedgrowth.ohio.gov/BestLocalLandUsePractices/BestLocalLandUsePractices2012.aspx> (Copy and paste this address into your web browser, then scroll down and under “Matrices” choose “Tree and Woodland Protection.”)

CSU Model, Tree Preservation Approach (In Progress)
<http://www.balancedgrowth.ohio.gov/LinkClick.aspx?fileticket=WNdYVgnKjYU%3d&tabid=66> (Copy and paste this address into your web browser)

Olmsted Falls, Tree Preservation and Management Code (Chapter 1218)
<http://www.conwaygreene.com> (Click on “Databases” at the top of the page and choose “Municipal Codes” from the drop down menu, then choose “Olmsted Falls, Ohio” in the list of municipalities. Click the “Start Here” button; then in the Olmsted Falls folder to the left, click on the folder entitled “PART TWELVE - PLANNING AND ZONING” and then choose chapter 1218 “Tree Preservation and Management” under “TITLE TWO.”)

Dublin, Tree Preservation (Section 153.140)
<http://www.amlegal.com> (Scroll over “services” at the top left, and then choose “Web Hosting” . In the paragraph under the heading “Web Hosting,” click on “Online Library” highlighted in blue. Click on the state of Ohio in the US map, and then click on “Dublin” from the list of municipalities. Click on the button entitled “Frames”. Choose “TITLE XV: LAND USAGE” from the list to the left, then click on Chapter 153 “ZONING REGULATIONS.” Scroll down and select Section 153.140 “Tree preservation requirements”)

Brecksville, Trees, Hedges and Shrubs
http://www.brecksville.oh.us/Depts/Horticulture/hort_pdfs/treeord.pdf

The code from Olmsted Falls is an example (stages 2-4) of a basic tree protection regulation for developing areas. A second example developed by the Community Planning Program at Cleveland State University addresses all four stages of the tree protection process.

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal rami-

fications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

Resources

The Community Planning Program, Maxine Goodman Levin College of Urban Affairs, Cleveland State University; Tel. 216-687-5477, Web: <http://urban.csuohio.edu/cpp>

Shade Tree Commission, City of Olmsted Falls; Tel: 440-238-2691

International Society of Arboriculture, Web: <http://www.isa-arbor.com>

Society of American Foresters; Tel: 301-897-8720; Web: <http://www.safnet.org>

Ohio Department of Natural Resources, Forestry Division; *Canopy Preservation Ordinances* <http://www.ohiodnr.com/Home/urban/UrbanForestryHome/tabid/21720/Default.aspx>

Ohio Department of Natural Resources, Comprehensive Urban Forestry Elements <http://ohiodnr.com/forestry/urban/elements/tabid/5439/Default.aspx>

Ohio Department of Natural Resources, Forestry Division; Ash Removal and Canopy Restoration Grant Program <http://ohiodnr.com/Default.aspx?tabid=23073>

Ohio Department of Agriculture; Emerald Ash Borer Program <http://www.agri.ohio.gov/eab/eabresponse.aspx>

USDA/ODNR Urban Tree Canopy Project, provides information on economic value of trees as assessed in Hudson, Ohio <http://www.midwestutc.org/hudsonintro.aspx>

*The Karl A Staley House in North Madison, Ohio; designed to fit into its site by Frank Lloyd Wright
(photo: ©Dave Freedman)*



Chapter 11



(photos: Chagrin River Watershed Partners)

STEEP SLOPE PROTECTION

Background

What is Steep Slope Protection?

Steep slope protection refers to regulations adopted by many communities to protect health, safety and property from instability and erosion due to inappropriate development of steep slope areas. These regulations are usually based on engineering studies that tailor the regulations to the specific soils, slopes, and conditions of the community

How does Steep Slope Protection relate to Balanced Growth?

Steep slopes are an important consideration in the planning of stream setbacks, and in the prevention of erosion, landslides, and sedimentation. All of these factors can have a significant effect on property values and watershed health in the long term. Many communities are finding that it is well worth the expense to identify unstable and steep slopes that would create a significant hazard, impact property values and stream quality, and cause sedimentation that could lead to flooding.

Active stream areas (also called riparian areas) are naturally vegetated lands along active rivers and streams that may be periodically inundated, but are usually not covered by water. By slowing, storing, and gradually releasing storm flows, they prevent soil erosion, decrease the extent and duration of flooding, and filter and settle out pollutants. This process aids in protecting the ecological functioning of a watercourse. In active stream areas where steep slopes are present,

“Providing public services and infrastructure to steep slope development may well exceed the tax revenue received from these properties.”

(Mountain Ridge and Steep Slope Protection Advisory Committee, 2008)

the ability to control storm flows is greatly diminished, increasing the potential for flood damage and deterioration in the watercourse's ecological health. In addition, highly erodible soils along watercourses can slip, slump or wash away during storm events, leading to property damage and extensive sedimentation which impacts water quality, habitat and recreation value. Development on steep slopes can exacerbate this problem, depending on the type of soil and its slope.

Steep slopes should also be a concern in non-riparian areas. The protection and structural integrity of steep slopes can be important for preserving the aesthetic quality and property values of some communities, along with general watershed well-being.

The impact of developing steep slopes along a stream can often be significant. The main concern is that flood control in these areas is reduced because the developed land (1) provides less infiltration, (2) increases flow velocity, (3) can raise the flood water elevation, and (4) may substantially alter the direction of flow.

Following heavy rainfall, these factors may all contribute to causing the soil to become unstable and erosion and/or slumping to occur. Impacts from these processes can seriously affect the surrounding ecosystem and human communities. Ecologically, one problem that may occur is that habitat in the stream receiving the runoff is destroyed by increases in sedimentation from larger and higher velocity storm flows. There is also the potential for water pollution to occur in these situations due to a lack of adequate filtering and settling out in the riparian areas. Human impacts from developed steep slopes include the aforementioned water pollution problems, and also economic costs. Potential slumping in these areas require extra structural measures to be incorporated into buildings in order to minimize damage.

How does Steep Slope Protection work?

An engineering evaluation is best done during a comprehensive planning and/or zoning code update process, where the full impact of steep slope development can be understood in a community, rather than site-by-site, context. The threshold defining a "steep slope" will vary depending on the soils of the particular area. Usually slopes over 10 or 12% generate the need to do a study identifying the critical slope level of concern for community and development purposes. Some soils may be considered unstable at 15 or 20%; others may have a lower threshold.

The engineering evaluation makes recommendations for the threshold slope above which regulations should be in effect, and the areas of the



Steep Slope Erosion
(photo: Chagrin River Watershed Partners)

(photo: Chagrin River Watershed Partners)



Slope erosion can impact community infrastructure.

community requiring protection. It also will include recommendations addressing the permitted and prohibited types of development, and specific provisions for construction and design practices within the protected area. Sometimes there are recommendations for multiple areas, or zones, with different regulations, based on differing soil types and steepness of slopes.

Once the engineering study is complete, the recommendations can be worked into a regulation that achieves the purpose of protecting health, safety, and property.

Issues

- **Threshold of Instability:** In both stream and upland areas, the threshold of instability on a slope (amount of steepness where instability is a concern) is highly variable and dependent on the soil type, vegetation, length and age of the slope.
- **Type of Development:** The possible impact of erodible slopes is also variable depending on the type of development proposed. A picnic shelter or trail, for example, may be far less impacting on a slope, and less susceptible to damage, than a house foundation. In some soils, the “no-build” threshold may be 20% (ratio of height to width of the slope); in some soils it may be 12%.
- **Engineering Assessment:** It is important for communities with potential steep slope conditions to have them assessed by a qualified professional engineer as part of a comprehensive plan process, and/or build requirements for such assessments into development regulations, so that appropriate recommendations can be made for protection.
- **Coastal Erosion Along Lake Erie:** A special case of steep slope protection exists along parts of the shore of Lake Erie in Ohio. This is called the Coastal Erosion Area. A Coastal Erosion Area is a designated land area along the Lake Erie shore that is anticipated to be lost due to Lake Erie related erosion if preventative measures are not taken. The objective of the Coastal Erosion Area program is to reduce the risk of damage to or loss of property, possessions, infrastructure and life due to coastal erosion along Lake Erie. Administered by the Ohio Department of Natural Resources, the Coastal Erosion Area program requires permits for certain work occurring within the designated area. The ODNR can also provide guidance and assistance on technical solutions for dealing with coastal erosion, and information on funding and loan resources for the work involved. There is a Lake Erie Shore Erosion Management Plan with additional guidance and information. For more information, see the Resources section.



Chagrin River, Gates Mills, Ohio
(photo: Adapted from the Wikimedia Commons
file "Image:Chagrin_river_at_south_chagrin_
reservation.JPG")

Recommendations

The development of areas containing steep slopes should generally be discouraged. Conservation and restoration of landscaped slopes should be a high priority for soil and sediment erosion control. Keeping a variety of plant types is much more effective than monocultures due to the layers of vegetation that offer higher levels of protection. In situations where conservation is not feasible, development should be done with the intent of minimizing soil disturbances, maximizing retention of trees and vegetation, and complementing steep slope character. In addition, the following three options can assist in establishing stream setback widths that provide the same watercourse protection as flatter areas.

Option 1: Permit Based Hillside Protection Zones.

Regulations are passed that limit development activity in areas with slopes between appropriate percentage slopes (for example, between 15% and 30%). In order for permits to be given for disturbances in these areas, additional information including topographic maps, grading and site plans, geotechnical reports, details on future and present site stability, and an erosion and sediment control plan must be submitted for review.

Following this review, the Building Inspector issues permits based on conditions set forth by the Planning Commission. Some activities such as driveways on slopes greater than 10%, embankments above 33%, and excavations above 40% are prohibited, as are projects that may endanger public health, safety, or welfare.

Option 2: Expansion of Stream Setback for Designated Slope.

For many communities, minimum widths are usually established for stream setbacks. In areas in which steep slopes exist within the designated stream setbacks, these widths are expanded. The expansions to the original widths should be determined for the soils involved. Examples are as follows:

- Add 10 feet for slopes between 15-17%
- Add 30 feet for slopes between 18-20%
- Add 50 feet for slopes between 21-23%
- Add 60 feet for slopes between 24-25%

“Increases in reservoir sediment increase risks of flooding, reduce storage capacity for power generation, reduce the productivity of fish stocks, and decrease the depth of water around boat docks.”

(Hanson and Hellerstein, 2007)

Option 3: Expansion of Stream Setbacks Based on Analysis of Slope, Slope Length, Soil Erodibility and Existing Vegetation.

Stream setbacks are adjusted where steep slopes, 10% or greater, exist within 500 feet of a watercourse. In these areas, a plan is required that details information regarding the degree of sloping, the slope length, soil erodibility, vegetative cover, and sediment delivery. For each of these evaluation criteria, a score is given. The recommended percentages should be determined by professional engineering analysis. The following table provides an example (from Baltimore County, MD). For areas with a score of 35 or greater, no development is allowed to take place. Scores of 25 and 30 require additional protective measures in order to be developed.

Areas with a score of 20 or less can be developed with standard protective measures.

Table 1. Evaluation Criteria for Steep Slopes and Erodible Soils

Factors	Scores		
	High (10 points)	Medium (5 points)	Low (0 points)
Slope (S)	$S \geq 20\%$	$10\% < S < 20\%$	$S \leq 10\%$
Slope Length	$SL \geq 200$ feet	$50 \text{ ft} < SL < 200 \text{ ft}$	$SL \leq 50$ feet
Soil Erodibility (K)	$K > 0.32$	$0.24 < K < 0.32$	$K < 0.24$
Vegetative Cover	Bare soil, fallow land, crops, active pasture in poor condition, orchard tree farm in poor condition	Active pasture in fair condition, brush weeds in poor condition, orchard tree farm in fair condition, woods in poor condition	Active pasture in good condition, undisturbed meadow, brush weeds in fair condition, orchard tree farm in good condition, woods in fair condition
Sediment Delivery (distance from down slope limit of disturbance to outer edge of wetlands or top of stream bank)	Adjacent to watercourses or wetlands (<100 ft buffer)	Adjacent to watercourses or wetlands (100 ft – 300 ft buffer)	Not adjacent to watercourses or wetlands (> 300 ft buffer)

Option 1 is the least recommended choice because it focuses mainly on structural integrity and not the functioning of the stream area and watercourse. The recommendations given under this option may also not be appropriate for all areas of the watershed. Option 2 only focuses on the degree of slope and does not take other important factors that play a role in riparian effectiveness into consideration. Option 3 provides the best alternative, as it based on site-specific conditions and recommendations. (source: Chagrin River Watershed Partners)



Cincinnati, Ohio, circa 1908. "Mount Adams Incline."
(photo: Detroit Publishing Company)

Example Regulations

The following regulations provide examples of the options given above. The regulation examples listed below all take different approaches to protecting steep slopes, with some similarities. In Chagrin Falls, the ordinance supports development on a permit basis, but has requirements for percentages of the parcel that will stay undisturbed by development based on slope grade. Cincinnati enacted a code that established a "Hillside Overlay District," which included 23 hillside areas that were chosen from a hillside study. These areas require a permit for development, and standards for construction that have the visual aesthetics in mind. The City of Richmond Heights, Ohio, also has an ordinance that designates "Protected Hillside Zones" with a corresponding map which limits development in these areas for safety, environmental health and aesthetic reasons. The ordinance from Baltimore, Maryland, is an example of option 3. The Chagrin Falls, Richmond Heights, Cincinnati, and Bath Township codes are examples from Ohio that illustrate option 1.

Chagrin Falls, Ohio: Hillside Protection Ordinance

<http://www.conwaygreene.com> (Click on "Databases" at the top of the page and choose "Municipal Codes" from the drop down menu, then choose "Chagrin Falls, Ohio" in the list of municipalities. Click the "Start Here" button; then in the Chagrin Falls folder to the left, click on the folder entitled "PART ELEVEN - PLANNING AND ZONING CODE" and then choose chapter 1165 "Hillside Protection" under "TITLE SEVEN.")

Bath Township, Ohio: Steep Slopes Regulations

<http://www.bathtownship.org>
(Click on "Zoning" to the left and then choose "ZONING RESOLUTION" at the center of the screen. Click the "ARTICLE IV - Use, Area, Height Regulations". See Section 412)

Cincinnati Hillside Overlay District:

<http://library.municode.com/index.aspx?clientId=19996&stateId=35&stateName=Ohio> (Click on "TITLE XIV ZONING CODE OF THE CITY OF CINCINNATI" to the left, and then click "Chapter 1433 - HILLSIDE OVERLAY DISTRICTS" at the center of the screen.)

Richmond Heights, Ohio: Protected Hillside Zone

<http://www.conwaygreene.com> (Click on "Databases" at the top of the page and choose "Municipal Codes" from the drop down menu, then choose "Richmond Heights, Ohio" in the list of municipalities. Click the "Start Here" button; then in the Richmond Heights folder to the left, click on the folder entitled "PART ELEVEN - PLANNING AND ZONING CODE" and then choose chapter 1198 "Protected Hillside Zone" under "TITLE SEVEN.")



Baltimore County, Maryland: Protection of Water Quality, Streams, Wetlands and Floodplains.

<http://www.baltimorecountymd.gov/Agencies/environment/eir/waterqua.html> (*Steep slopes guidelines are contained in Sec. 14-341. "Design Standards for Forest Buffers and Building Setbacks"*)

Refer to the Example Regulations Matrix for a comparison of these regulations. ([link](#))

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

*Forests make the best slope protection.
(photo: Chagrin River Watershed Partners)*

Resources

(photo: Chagrin River Watershed Partners)

The Community Planning Program, Cleveland State University, 2121 Euclid Avenue, UR 26B, Cleveland, OH 44115-2214; Tel: 216-687-5477; Web: <http://urban.csuohio.edu/cpp/>

Department of Environmental Protection and Resource Management, Baltimore County, Maryland; Tel: 410-887-3733; Web: <http://www.baltimorecountymd.gov/Agencies/environment/eir/index.html>
(See "Steep Slope Analysis" under EIR Forms)

Your Local Natural Resources Conservation Service Office
<http://www.oh.nrcs.usda.gov/>

Your Local County Soil and Water Conservation District <http://www.dnr.state.oh.us/tabid/9093/default.aspx>

Your Local County Planning Commission



Chapter 12



Above:
(photo: Tony at mi9.com)
Above Right:
(photo: Matteo Bittanti).

AGRICULTURAL LANDS PROTECTION

Background

What is Agricultural Lands Protection?

There is much debate and discussion about the role of agricultural land in our state, regional, and local economies, and the costs and benefits of its preservation, particularly in communities that are on the edge where rural and urban areas intersect. Of concern is the loss of farmland. According to the USDA's Census of Agriculture, between 2002 and 2007, Ohio lost nearly 343.5 acres of farmland each day (-4% change over the period). During this same period the population grew at just 0.06 percent over the five year period. This high rate of land use turnover, which is inconsistent with the relatively low needs of the population for new housing, leads to inefficiencies of land resource management.

How does Agricultural Lands Protection relate to Balanced Growth?

In recognition of the dual role of the Ohio Balanced Growth Program, which addresses both economic and environmental goals in protecting watersheds in Ohio, it is appropriate for communities to consider the economic benefits of preserving farmland in their areas. The benefits of farmland to the state's economy cannot be overstated, as Ohio's food and agriculture industry annually contributes \$107 billion to Ohio's economy. Additionally, one in seven Ohioans are employed in the sector. The economic benefits of farmland to Ohio's local communities have also been demonstrated through Cost of Community Services studies. These studies have found that, for each

“ Preserving farmland boosts neighboring home prices. A 10% increase in preserved farmland led to a 3%-6% increase in housing prices, according to one Ohio study.”

(Roe, Irwin, and Morrow-Jones, 2004)

\$1 of revenue received from residential properties, local governments spend \$1.16 in providing services to those same lands. For every \$1 of revenue that a community receives from farmland, that same community spends only \$0.32 in providing services to the land. Finally, agricultural land provides indirect economic benefits to the local community. Farmland provides fresh food at a reasonable cost, keeps property taxes down, protects local scenery, and promotes local tourism.

Watershed planning often includes policies related to the conservation of agricultural land due to the contribution it makes in reducing the quantity of storm water entering local waterways. While the quality of water running off agricultural land must be managed, agricultural land preservation, especially when coupled with stream setbacks and vegetation filters, can also play a major role in water quality control in the Ohio watersheds. Agricultural land preservation plays an additional role in Balanced Growth as part of a balanced comprehensive plan, helping to focus new development on compact growth areas where infrastructure is more easily provided and less costly to expand. Finally, agricultural land preservation can play a role in recharge of groundwater sources, leading to better quality and quantity of drinking water within the watershed.

How does Agricultural Lands Protection work?

In recent years, a variety of tools have become available to assist communities in meeting their goals for agricultural land preservation. The table below outlines a number of tools that are available to landowners; these are the most frequently used in Ohio. Tools for local government, the focus of this document, include agricultural zoning, which addresses land use provisions that help to support agriculture, and transfer of development rights, which is discussed in the chapter for that topic. Further information on other tools such as agricultural easements, and enhanced agricultural economic development support, can be found in the resources list at the end of this section. It should be kept in mind that agricultural zoning is only one of a number of tools that can be used and that the most effective land preservation plans will use several tools working together to achieve preservation goals.

Agricultural zoning is a tool with very specific objectives. It is best used in combination with other tools. Its strengths are that it is inexpensive, flexible, and provides uniform protection to an entire district. The use of agricultural zoning in a community can provide significant weight to consideration of applications for other programs. Agricultural zoning has the potential to reduce conflict through

Between 2002 and 2007:

115,200 acres of agricultural land in Ohio were converted to developed uses - an area nearly equal in size to the city of Columbus.

During the 25 year span from 1982 to 2007, Ohio was second only to Texas in the amount of prime farmland lost to developed uses. Prime farmland is land with the best quality soils and the greatest potential for agricultural uses. 796,000 acres were lost. That is the equivalent in area to Franklin (Columbus), Hamilton (Cincinnati), and Lake Counties combined.

(American Farmland Trust, 2010)

requirements for buffers between agricultural land and notification of right-to-farm laws. It makes a strong community statement about intent to preserve land, and can be used to help implement policies for balanced growth in a comprehensive plan. And it can be used, as in Transfer of Development Rights programs, as an incentive to landowners to increase focus on development in appropriate places. (see the Transfer of Development Rights chapter for more information.)

Agricultural zoning, however, is not a commonly used tool in Ohio. Its greatest drawback is that it can reduce the value of land, which many landowners, particularly those in transition zones at the fringe of urban areas, may find undesirable in the absence of programs which compensate that loss in value. In these locations, landowners have a realistic sense that their property could increase in value with development pressure, and many count on that value for economic stability. In communities with strong farm economies, however, the land is seen as a necessary asset, which could be made less suitable for farm purposes by encroaching development; any reduction in land value is seen as a benefit as it also reduces associated property taxes. These communities often can make good use of agricultural zoning to achieve preservation goals.

Issues

- **Developing Community Support:** Agricultural zoning can only be implemented through the careful development of a strong climate of community support. It is best put in place as a follow-up to a thoroughly discussed comprehensive plan which sets goals for balanced growth, development, and preservation. Ideally, this discussion would take place before development pressure begins to build and would include all key landowners who would be affected by the regulation. A strong community education process, which is ongoing over time, is a critical component of any policies that include agricultural zoning.
- **Identifying Priorities:** A comprehensive plan can similarly identify target areas for primary and secondary efforts for agricultural land preservation. Such a plan can also identify a full range of tools that can be implemented toward farmland and farm economy preservation goals.
- **Purpose of Agricultural Zoning:** Agricultural zoning codes vary widely in their provisions, which can be put in place to protect the landowner, adjacent landowners, and community members. If the entity enacting such an Agricultural Zoning regulation is a county or a township, it should clearly state that the ordinance does not attempt to regulate agricultural purposes and is in accordance with O.R.C. Sections 303.21 or 519.21 as applicable.



The traditional zoning method of large lot minimums has historically been an inadequate strategy as a means of discouraging sprawl and development of important agricultural lands.

The following is a list of possible purposes and provisions of an agricultural zoning code:

- Set the minimum size of a farm parcel as of a certain date (size of parcel varies widely from code to code)
- Limit non-farm uses
- Give notice of right-to-farm laws
- Separate agricultural uses from incompatible uses
- Define different types of agricultural uses
- Prohibit planting of inappropriate species adjacent to agricultural fields
- Create setbacks from agricultural property
- Provide for homestead retention
- Permit value-added uses, such as in an “agricultural business overlay”
- Restrict sizes of structures
- Provide for resource protection in agricultural areas
- Require conservation plans

• **Other Agricultural Protection Tools:** Other programs that should be evaluated and implemented along with agricultural zoning. These include: purchase or donation of development rights programs at the state, federal and local level; current agricultural use valuation (CAUV), agricultural districts, agricultural service areas, and transfer of development rights (see the Transfer of Development Rights Chapter) . Economic development programs are also beginning to be effective components of a comprehensive agricultural preservation plan.

LEGEND

- A - Agricultural**
- W-C - Woodland - Conservation**
- V - Village**
- R-L - Low Density Residential**
- R-H - High Density Residential**
- MHP - Mobile Home Park**
- AP - Airport**
- I - Industrial**
- HC - Highway Commercial**
- SWM - Solid Waste Management**

An Example of Agricultural and Woodland Conservation Zoning; Hereford Twp., Berks County, PA



Suburban Cincinnati Encroaches on Farmland in Turtlecreek Twp. (map: bing)

• As they are often confused, the following table outlines the differences among four of the tools for landowners mentioned*:

Program	Requirements/Size	Process	Length	Taxes/Other Benefits	Penalties
Agricultural Districts	Land or combination of lands must total 10 acres or more to be included in the district, or have generated an average yearly gross income of at least \$2,500 during the past three years.	In unincorporated areas, landowner applies to the county auditor for inclusion in the district. There are additional steps for those within municipalities.	District is in effect for 5 years from date of application	Provides protection against nuisance suits over farm operations, deferral of tax assessments on land to build sewer and water lines, and allows for additional review if land is taken by eminent domain for a public purpose.	Recapture is provided upon conversion of the land to development, if it occurs
Current Agricultural Use Valuation (CAUV)	10 or more acres must be devoted exclusively to commercial agricultural use, or have generated an average yearly gross income of \$2,500 or more.	Landowner applies to the county auditor to be given CAUV status.	As long as land is in agricultural use	Property taxes are based on agricultural value of the land, rather than on full development value, which gives a tax reduction to the owner. Value is based on the soil types on the property.	There is a 3 year recoupment if land is converted to development use
Agricultural Security Area (ASA)	Creates blocks of at least 500 acres of farmland where agriculture is encouraged and protected and may include multiple farmland owners. Farmlands must be enrolled in Agricultural District and CAUV.	Local governments agree to not initiate, approve, or finance development for residential, commercial, or industrial purposes for 10 years while landowners commit to exclusively engage in agricultural activities and related development.	10 years	Landowners may request from the local government a tax exemption on new investments in a building, structure, or fixture used exclusively for agricultural purposes	N/A
Agricultural Easement Purchase Program	Must be a minimum of 40 acres, unless adjacent to another farm, then the minimum is 25 acres. Must be enrolled in CAUV.	A minimum of 25 percent of the points-based appraised value of the agricultural easement must be provided either in cash match by the local sponsor, donation by the landowner, or a combination of donation and cash match. Must have local sponsor to agree to share monitoring and enforcement responsibilities.	Length of easement	Farmland preservation.	N/A
Farm and Ranch Lands Protection Program	Must be subject to a pending offer or option to purchase. Must contain 50% prime, unique, statewide, or locally important farmland. Must contain cropland, grassland, pasture land, or forest land that contributes to the economic viability of an agricultural operation. Can not include more than two-thirds of forest land in easement.	Arranges Purchase of Development Rights through conservation easements that limit non-agricultural uses on private lands.	Length of easement	Protects farmland from being sold to developers when property owner is in need of money influx. Will work with state or local governments to match up to 50% of fair market easement value of the conservation easement.	N/A

*Note regarding Agricultural Districts: property can also be enrolled in federal programs in order to qualify for Ag Districts and CAUV. Deferred assessments can also include electric service.

Recommendations

- 1. Citizen Participation:** Communities should develop a comprehensive plan through a sound citizen participation process that identifies goals for local economic stability, including the farm-based economy.
- 2. Educating the Public:** The process should include a thorough public education effort about the various conservation and development tools that are available and their pros and cons.
- 3. Application of a Range of Tools:** If goals are set that include farmland preservation, a range of tools should be explored and implemented to achieve those goals. Agricultural zoning should be considered with input from landowners and farmers along with the possibility of using a Transfer of Development Rights. New ideas include the integration of support for the agricultural industry – producers, processors, and retail providers – into an economic development plan. Refer to the Ohio Department of Agriculture and the Ohio State University Center for Farmland Policy and Innovation, both in the resources, for more information.



Above: House in Rolling Meadows Subdivision
(photo: Kirby Date)



Above Right: Entrance to Rolling Meadows subdivision, Hiram Township, showing protected agricultural lands at the entry.
(photo: Kirby Date)

Rolling Meadows Subdivision, Hiram Township

Incorporating agricultural land into conservation development subdivisions must be done carefully and is not always the right solution, but can be a useful tool where the agricultural parcel is large enough, impacts to nearby homes are minimized, and operator access is feasible. See the conservation development section for more information.

Example Regulations

Included in this section are example agricultural regulations in Ohio from several communities. Further information on these examples may be obtained from the resources listed below. Refer to the Example Regulations Matrix for more information. (link)
Darby Township, Union County, Agricultural District http://www.lucplanning.com/Zoning_Codes/ZC_Union/Darby%20Twp%20Zoning%20Resolution.pdf

Green Township, Ashland County, Prime Farm District
<http://www.greentwp.us/pdf/Zoning%20Resolution.pdf>

Harrison Township, Darke County, Agricultural District
http://cffpi.osu.edu/docs/Zoning_Harrison_Darke.pdf (See "ARTICLE V ESTABLISHMENT OF ZONING DISTRICTS")

Hiram Township, Portage County, Transfer of Development Rights Program
http://aede.osu.edu/sites/drupal-aede.web/files/imce/2010_2.pdf

Pittsfield Township, Portage County, Primary Agricultural Use District Regulation <http://www.pittsfieldtwp.us/docs/zoningreslution012004.pdf>
(page 51 of PDF, page 47 of document)

St. Mary's Township, Auglaize County, Agricultural District <http://www2.auglaizecounty.org/files/stmarystwp1.pdf>

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.



Farmers share the road with suburbanites
(photo: free-photos.co)

Resources

Ohio State University Extension, Fact Sheet Series; Tel; TDD No. 800-589-8292 (Ohio only) or 614-292-1868; Web: <http://ohioline.osu.edu>

American Farmland Trust; Tel: 202-331-7300;
Web: <http://www.farmland.org/default.asp>

Ohio Department of Agriculture; Tel: 614-728-6200;
Email: farmlandpres@agri.ohio.gov
<http://www.agri.ohio.gov/>

Ohio Office of Farmland Preservation; Tel: 614-728-6210
<http://www.agri.ohio.gov/divs/farmland/farmland.aspx>

2008 changes to Agricultural Security Areas bill
http://www.agri.ohio.gov/farmland/docs/Admn_Farm_Bill_Analysis.pdf

ASA Fact Sheet
http://www.agri.ohio.gov/farmland/docs/Farm_ASA_FactSheet.pdf

OSU Center for Farmland Policy Innovation
<http://aede.osu.edu/programs-and-research/cffpi>

Your Local SWCD Office

Your Local County Planning Commission

Cuyahoga Valley Countryside Conservancy, 330-657-2542
<http://www.cvcountryside.org/>

The Land Trust Alliance
<http://www.landtrustalliance.org>

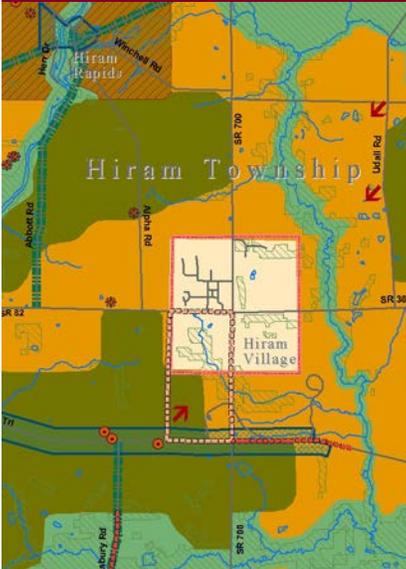


North Union Farmers Market, Shaker Square, Cleveland
(photo: blog.realtimefarms.com)



Family Lane
(photo: Ohio Farmers Union)

Chapter 13



Above: Hiram Township
Comprehensive Plan
(map: Portage County Regional
Planning Commission)

Above Right: The Reserve at Walden
Pond
(photo: Kirby Date)

TRANSFER OF DEVELOPMENT RIGHTS

Background

What is Transfer of Development Rights?

One of the reasons for the expansion of low density development in rural areas is the need for rural landowners to develop their properties to raise funds for retirement, health care, or other family needs. Tools have been developed in other states that allow rural landowners the flexibility to choose to develop, or to sell the development rights on their land to another landowner who can apply them to a more compact development proposal on another property.

For example, a landowner with 100 acres in a 2- acre zoning district would be permitted 40 or 50 homes to be built on his or her property. Instead of selling land for development, this “sending” landowner could sell the 50 development rights to another landowner, perhaps in a village, with 100 acres, thus allowing the “receiving” landowner the right to build 50 additional homes on the receiving property. The sending landowner places a conservation easement on the sending property and retains ownership and the ability to farm or use the property for other open space oriented uses. Usually, a few development rights are retained by the sending landowner to permit homes for his/her children or others.

This approach is known as “transfer of development rights” (TDR). If applied properly in Ohio, it could allow development in rural areas to be transferred to more compact development areas in urban areas, thereby encouraging balanced growth and retaining the quality of life and watershed in the countryside, while enhancing the small town feel and vibrancy of the village site.

TDRs have successfully harnessed market mechanisms to preserve over 40,000 acres of farmland in Montgomery County, Maryland since 1980. The twenty most successful TDR programs in the nation have preserved over 350,000 acres of land from development.

(Walls and McConnell, 2004;
Pruetz and Standridge, 2009)

How does TDR relate to Balanced Growth?

As discussed throughout the Best Local Land Use Practices document, compact development that is focused on areas of existing infrastructure is the most desirable from a watershed protection standpoint. Compact development allows for reduced impervious surface, more efficient management of storm water, a wider range of transportation options, more organized management of wastewater, and the continued strength of existing cities and towns. In rural areas, however, the standard character of new development is just the opposite: low density, decentralized residential and commercial uses extending out into the countryside.

As seen above, one of the demands driving low density development is the need for rural landowners to sell their property for financial reasons. TDR provides an alternative that is a “win-win,” allowing protection of rural land, while benefiting the sending landowner, the receiving developer, the community, and the watershed.

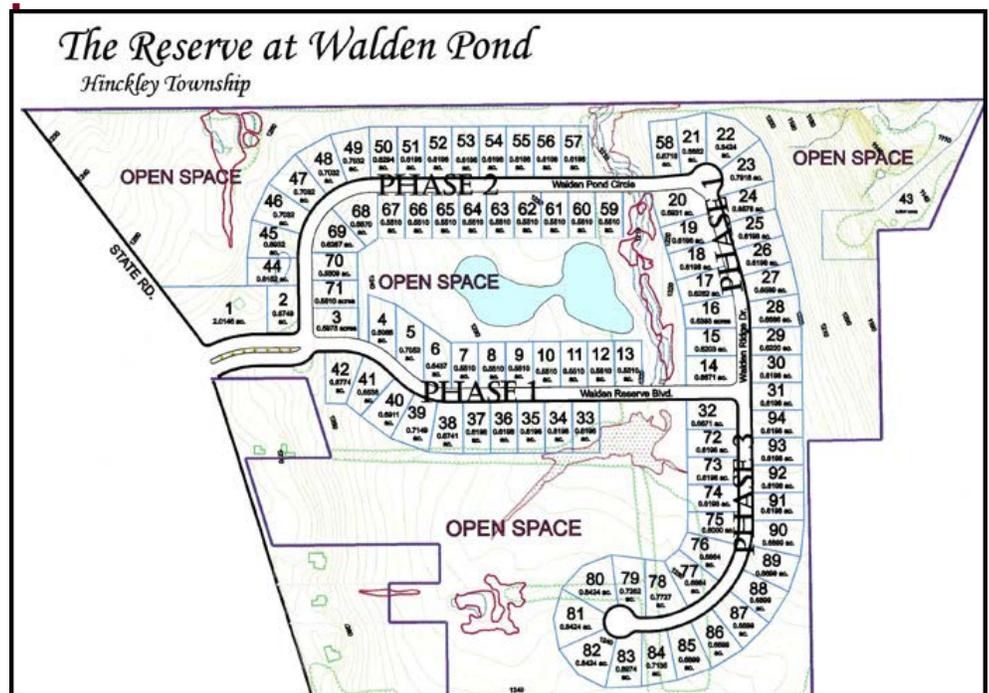
What makes a TDR program successful?

Legislation in other states has included certain components that contribute to the success of TDR, such as:

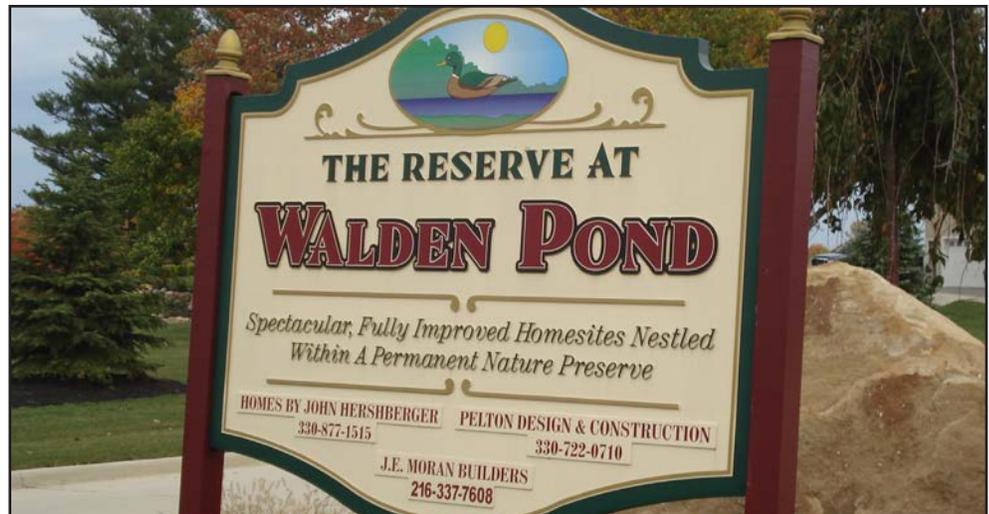
- Program should be voluntary.
 - Program must be tied to comprehensive planning, ideally countywide/region wide watershed-based planning.
 - Programs should provide for receiving zones in areas with supporting infrastructure.
 - Programs must allow for increased density in receiving areas.
 - Programs should provide for township tax base stability in sending zones.
 - Programs should provide for density transfer across jurisdictional boundaries, and should not require contiguous boundaries of participating communities.
 - Communities and counties should be enabled to establish banks to facilitate transfer of development rights.
 - Participating jurisdictions should be enabled to provide incentives such as density bonuses and streamlined review processes.
- The strengths of TDR as a tool for Ohio are first of all that a TDR



program can be set up as entirely voluntary, with incentives to encourage participation without impinging on private property rights. TDR is typically done on the private real estate market, requiring very little in the way of public regulation and revenue. TDR could be a tool that supports regional planning through inter-jurisdictional collaboration. The transfer of development rights can be coupled with a variety of financing mechanisms in the development area, such as Tax Increment Financing, to provide additional incentives. Tax incentives for townships, including CEDA agreements, can be accommodated. Finally, transfer of development rights as a tool particularly suits the township-village relationship which is so prevalent throughout the state.

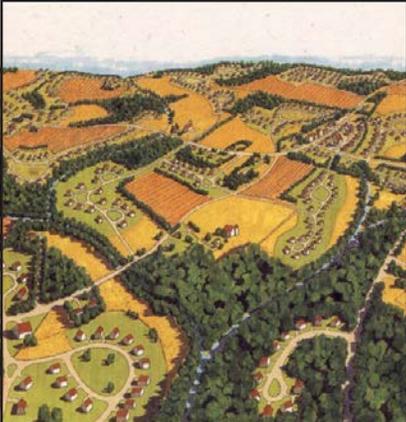
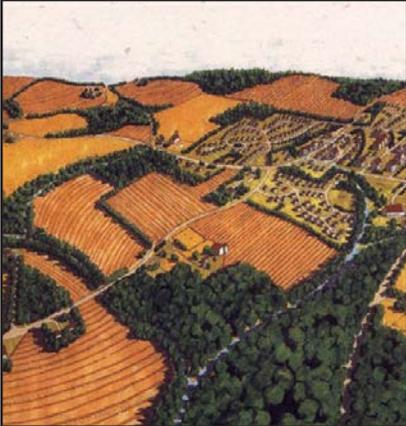
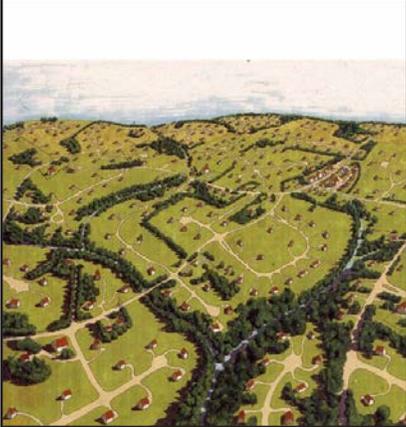
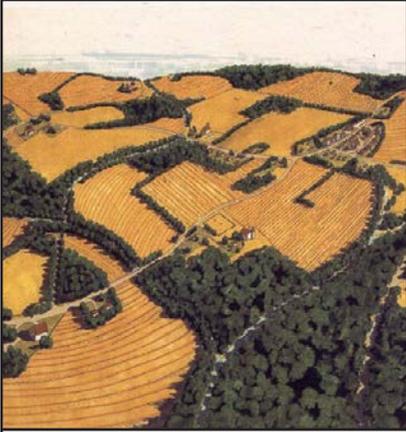


The Reserve at Walden Pond Site Map
(map: Pulte Homes)



The Reserve at Walden Pond
(photo: Pulte Homes)

The Reserve at Walden Pond
Construction Site
(photo: Pulte Homes)



From Top to Bottom: Rural Area Before Development, Conventional Development Pattern, TDR Approach, & Conservation Development Approach

- **Individual vs. Program TDR:** TDR is currently being done in Ohio on a case-by-case private basis as arranged by individual landowners and developers, and accommodated through variances by the local community. However, a well-done TDR program will be based on a comprehensive plan, with designated sending and receiving zones, and may require the cooperation of two or more jurisdictions. While charter cities and villages can currently embark on such a program within their jurisdictional boundaries, there is no specific language in the ORC that allows townships and counties, both critical partners, to do so. In some cases, legal counsel has permitted townships to participate in transfer of development rights on a site-level basis. Statewide enabling legislation is recommended to make this tool widely available in the form of quality programs.

- **Voluntary Programs:** A well-done comprehensive plan will include the designation of desired sending and receiving zones. The number of development rights is based on the underlying existing zoning in these zones. In voluntary programs, incentives are often offered as increased development rights when they are transferred. For example, our landowner in the above illustration might be permitted to build 40 homes on 100 acres, but would be allowed to sell 50 development rights if participating in a TDR program. The addition of 10 rights would be an inducement to sell through a TDR program, rather than build on the site.

- **TDR Banks:** While sometimes landowners are able to locate an interested receiving party at the time they want to sell their development rights, the entire process is facilitated through the establishment of a community, county, or regional bank. Similar to a wetlands mitigation bank, this mechanism allows a sending landowner to sell development rights at their convenience, and an interested receiving landowner to purchase rights at the time of their choosing.

- **Gaining Public Acceptance.** Public resistance to new TDR programs can be traced to three main concerns: (1) general public resistance to new programs, especially due to a lack of understanding of the voluntary nature of the program; (2) resistance of the public in receiving areas to more compact new development with higher densities; and (3) resistance of the sending area communities to “giving up” development that might generate future taxes. To offset these concerns, new TDR programs **MUST:**

1. Incorporate sound education programs with real life examples to help the public understand the benefits and principles of the program (especially with drawings and models of the different types of development);

2. Focus on high quality design and the associated benefits of compact development in villages and cities; and

3. Provide tax-sharing components that ensure sending communities will continue to receive future tax revenues.

- **Gaining Developer and Landowner Acceptance:** Developer and landowner resistance can also be traced to a concern about decreased revenues and increased regulatory requirements. Especially in voluntary programs, it is critical that incentives such as streamlined review processes and density bonuses be incorporated to ensure that the program will be used.

Recommendations

1. Legislation is recommended at the state level to ensure that strong, flexible programs can be established across jurisdictions.

2. Communities should conduct a comprehensive planning process which examines the potential for use of TDR as a development management tool. This planning process should incorporate surrounding jurisdictions and might be best done at the county or regional level. Through this process, sending and receiving zones should be established as well as policies for education, tax sharing, and design in compact areas, base densities in sending and receiving zones, density incentives, and review process incentives.

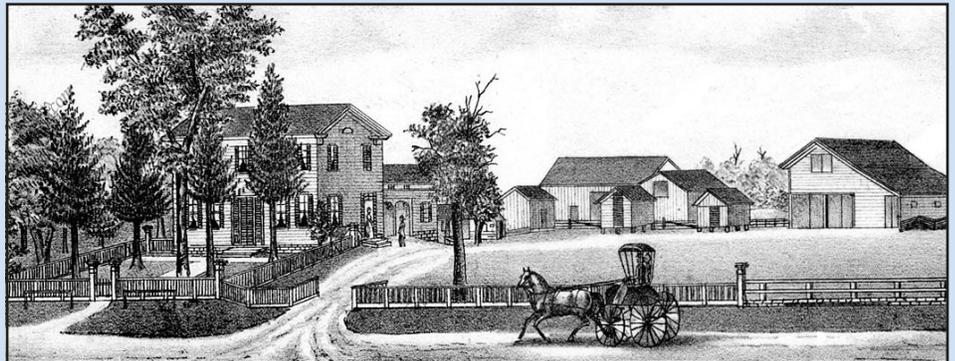
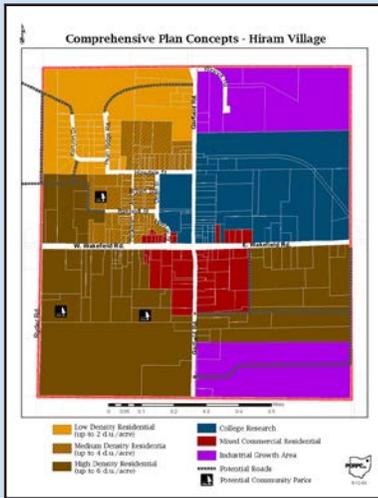
3. Communities should incorporate community education and communication in every step of the process, including meetings with affected landowners and developers, as well as surrounding property owners.

4. Receiving communities should develop design guidelines for compact development that incorporate increased density from TDR in a high quality fashion.

*Preserved Open Space at The Reserve at Walden Pond
(photo: Kirby Date)*



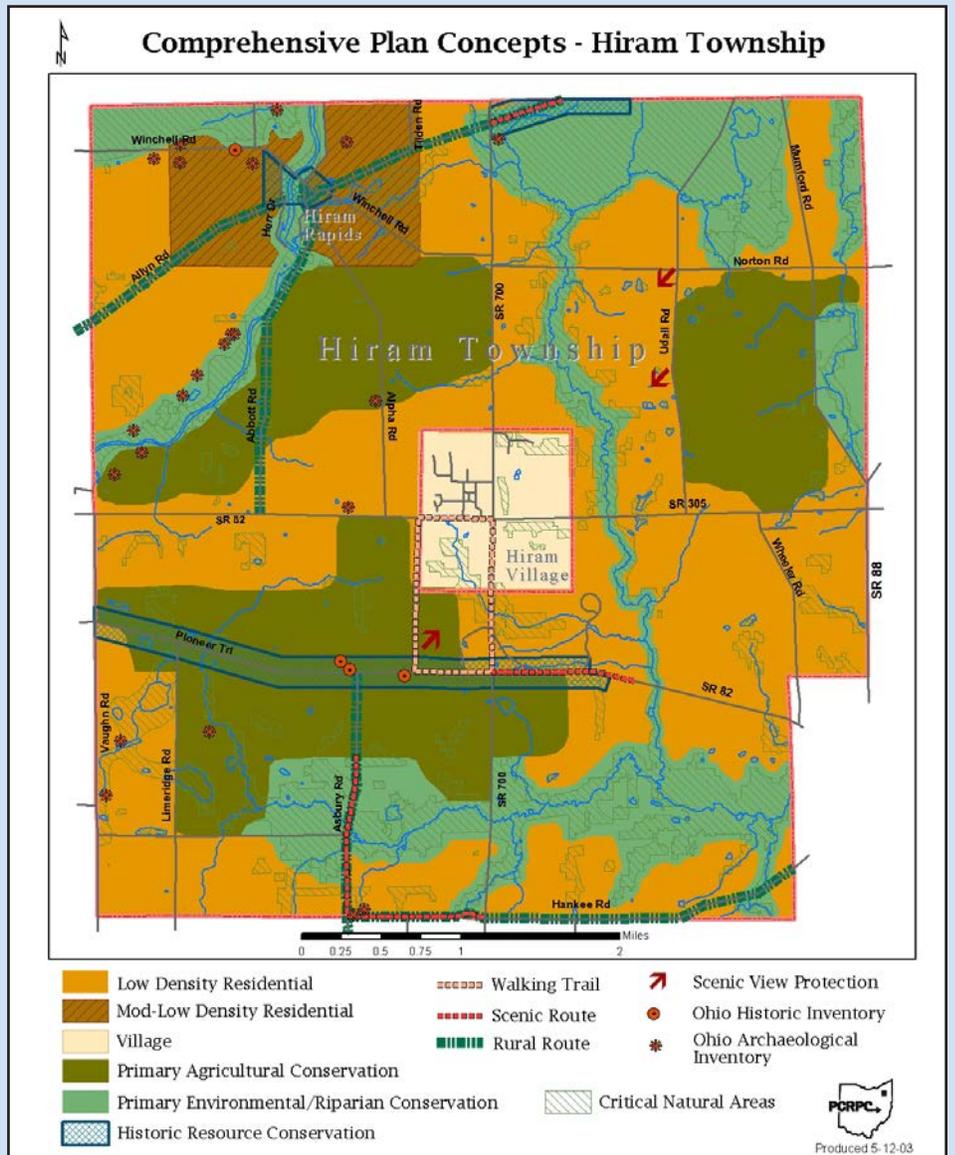
Hiram Village & Hiram Township, The Village-Township Relationship



Residence of W. Stevens, Lot 32 South Street, Hiram Twp. 1800s

(photo: "A History of the Disciples in Hiram, Portage County, Ohio" Cleveland: Robison, Savage & Co., 1876)

Above is the Hiram Village comprehensive plan concepts plan map; and the map to the right is the Hiram Township comprehensive plan concepts map, showing village area and priorities for agricultural preservation. This village-township relationship is a common pattern in Ohio, and provides an opportunity for TDR solutions.



Above: Hiram College Old Main Building
 (photo: Hiram Community Photo Album)
 (maps: Portage County Regional Planning Commission)

Example Regulations

Transfer of development rights, while potentially a highly useful tool in watershed planning and development, usually requires no special zoning language. The comprehensive planning process will need to examine closely the underlying zoning in both sending and receiving zones to ensure that the desired effect in transfer of rights will be achieved. Provisions for density, including incentives such as density bonuses, can be incorporated into existing zoning. Review processes can be streamlined through zoning as well as subdivision regulations and administrative review policy.

Ohio State University's Center for Farmland Policy Innovation (CFFPI) has developed recommendations for tools to be used in a regional perspective. The CFFPI's policy paper titled "Finding Opportunity across Political Boundaries: Balanced Growth Watershed Plans and Cross-Jurisdictional Agreements" offers issues and strategies for communities to use in working with other communities to manage their Priority Development Areas (PDAs), Priority Conservation Areas (PCAs) and Priority Agricultural Areas (PAAs), through TDR and other strategies that take a cross-jurisdictional approach. These issues should be considered with neighboring communities as well as coordinating with all the communities on the local watershed-scale. The website and policy paper can be accessed from the resources section.

The following example codes are outlined in the Example Regulations Matrix (link):

Pennsylvania, Chestnut Hill Township, Monroe County, Optional Transferable Development Rights (Section 119-34)
<http://ecode360.com/6525721>

Pennsylvania, Pocopson, Chester County, Transferable Development Rights (Article XV, Sec. 250-106) <http://www.ecode360.com/6539810>

Pennsylvania, West Lampeter, Lancaster County, Optional Transferable Development Rights and Neighborhood Design Option (Sections 285-33, 285-34) <http://www.ecode360.com/base> (In the box under "Find By Name:" at the top center of the screen, type in "West Lampeter" . Click on the municipality's name in the list below when it appears." Under "Part II General Legislation," click on the button entitled "Chapter 285" with the name "Zoning" next to it. Click on the button entitled "Article III" and "Optional transfer of development rights (TDR)" listed next to it)

Pennsylvania, West Pikeland Township, Chester County, Transfer of Development Rights <http://www.westpikeland.com/> (Click on "Ordinances" at the top right, then click on "Zoning Ordinance" at the center of the screen. At the left, scroll down to and click on "Article XVII.")

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

(Illustration: Randall Arendt)



Resources

Rick Preutz, *Saved by Development, Preserving Environmental Areas, Farmland and Historic Landmarks with Transfer of Development Rights*, Arje Press, Burbank, California, 1997.

The Community Planning Program, Levin College of Urban Affairs, Cleveland State University, Tel. 216-687-5477,
web: <http://urban.csuohio.edu/cpp>

Department of Agricultural, Environmental, and Development Economics, Ohio State University; Tel: 614-688-4907

Ohio State University's Center for Farmland Policy Innovation-Balanced Growth Plans and Cross-Jurisdictional Agreements.
Tel: (614) 247-6479
web: <http://aede.osu.edu/programs-and-research/cffpi>

Ohio Department of Agriculture, Office of Farmland Preservation,
Tel: 614-728-6201,
web: <http://www.agri.ohio.gov/divs/FarmLand/FarmLand.aspx>

Chapter 14



Above: Brick Sidewalk in German Village, Columbus, Ohio (photo: UrbanOhio)



Above Right: German Village, Columbus, Ohio (photo: UrbanOhio)

HISTORIC PROTECTION

Background

What is Historic Protection?

Historic protection refers to tools and programs that can be implemented by local communities and property owners to encourage and implement the preservation and conservation of historic sites. Historic sites can include a multitude of structures and places such as: cemeteries, buildings of all varieties (e.g. houses, schools, barns, and warehouses), landscapes, religious properties, battlegrounds, archaeological sites, etc.

Historic resources can be protected through a range of programs and regulations, including designation on the National Register of Historic Places as a district or landmark; designation of a national historic district or landmark; or designation of a local historic district or conservation district. Other programs include tax incentives and technical assistance available through various state offices. These are further discussed below. The emphasis of this document is the local historic district, implemented through zoning, which is the most powerful tool available to local government to ensure the preservation and continued use of historic structures and areas.

How does Historic Protection relate to Balanced Growth?

One of the principles of Balanced Growth, with its dual economic and environmental goals, is to encourage new development and redevelopment initiatives. The preservation and protection of historic, cultural, and scenic resources is an important component of many development and redevelopment initiatives in existing communities.

Historic preservation efforts improve property values with significant positive spillover to surrounding properties. Median residential properties increased \$67,000 in areas in and near designated historic districts.

(Gilderbloom, Hanka, and Ambrosius 2009; Zahirovic-Herbert and Chatterjee, 2011)



Historic Districts in Cleveland's Ohio City Neighborhood
(Map: Gregory SJ Soltis)

The economic benefits of protecting historic resources are well known, and are a key reason for the creation of a historic preservation regulation. It has been determined that historic designations can increase property values by as much as 20% and often lead to reinvestment in the community. These sites can also increase tourism and employment opportunities by attracting visitors who are interested in exploring the heritage and culture of a community or region. Another benefit of historic protection is that by promoting reuse of buildings in historic areas there is less need to build new infrastructure. This reinvestment in existing core urban areas, transportation, and infrastructure networks serves to enhance the economic viability of existing communities.

Issues

As mentioned above, creation of a local historic preservation zoning district can be an effective tool for historic protection. Two of the main aspects of such regulations pertaining to historic areas are preservation (retaining existing historic structures/areas to the extent possible), and compatibility (ensuring that any new structures, or additions/alterations to existing structures, are compatible with, and do not detract from, the historic character of the building, the district, or adjacent historic properties). The following issues should be addressed when creating such a regulation.

- **Survey and Inventory.** The first step in the process is a survey and inventory of existing sites and designation of future ones. Delineation of boundaries of a potential historic district is an important component of this process. Boundaries should include an adequate buffer area surrounding the district to help protect against development activities that may not be compatible with the existing historical use. If funds are not initially available for an extensive survey and inventory, an expert can prepare an informed brief survey, and additional grant funds for a more detailed survey can be leveraged upon adoption of the code and certification of the community as a Certified Local Government (see below). It is important in doing the survey to use Ohio Historic Inventory and Ohio Archaeological Inventory forms, to ensure the compatibility of collected data with the Ohio Historic Preservation Office and other preservationists in Ohio.
- **Local regulation options.** Options for local government historic protection include adoption of a Local Historic District code, and/or a Conservation District Code. The Historic District code establishes criteria for any changes made to locally significant historic buildings (they need not be state or nationally registered). Approval must be obtained from the local government through a local preservation commission for alteration and/or demolition of any structure protected by the code. Additional provisions can include design guidelines for



*Historic preservation contributes to rural character.
Chardon Western Reserve House
(photo: Kirby Date)*

new construction within the district to ensure that it is compatible with the district character. A Conservation District code is less stringent, but sets guidelines to ensure that any development changes in a designated area are compatible with the overall character of the district. Demolition and alteration of structures are typically not challenged as long as the new construction meets overall character guidelines.

- **Designation on The National Register of Historic Places.** Listing of any structure on the National Register of Historic Places, and/or identification of a neighborhood as a National Historic District, does not prevent demolition and alteration of structures. The benefits that come with these designations are limited to tax benefits for the property owner, which can be substantial, particularly for commercial owners seeking to do rehabilitation work. There are also market advantages for business branding, property value, and tourism that come with public awareness of nationally designated sites. It should be noted that any project involving federal funding (including CDBG, NSP, or other funds) will undergo state-level review if properties involved are designated on the National Register of Historic Places.

- **Design Guidelines.** Design guidelines should be established to provide criteria for design and review that will help to preserve the character of the historic site or area. These guidelines should be professionally prepared and tailored to the specific character of the district. Design guidelines help to establish criteria for review and approval of proposed new development and alterations to existing sites. For Certified Local Governments (see below), grant funds are available to help with the cost of developing design guidelines.

- **Historic Review Boards.** For Historic District and Conservation District codes, a commission or other body is typically needed to help with development of the code and review criteria, administer the code, and oversee the application process. This body may also act as an enforcer of penalties and to evaluate special cases such as hardship, variances, phasing and demolition by neglect. Another job of the commission is to deal with public relations and education for historic sites.

- **Economic incentive programs.** The economic incentives for historic preservation include property tax reductions, reductions in fees, and grants for rehabilitation. Municipalities may provide tax abatement programs, rehabilitation loan programs, and other financial incentives to encourage reinvestment. From those communities that are starting their first historic preservation initiatives to those that have well-established programs, each community that is involved may need help in beginning and completing projects. This usually means a need for funding. Through the Ohio Historic Preservation Office, your local



Historic preservation creates jobs, 2 million over the past 30 years.

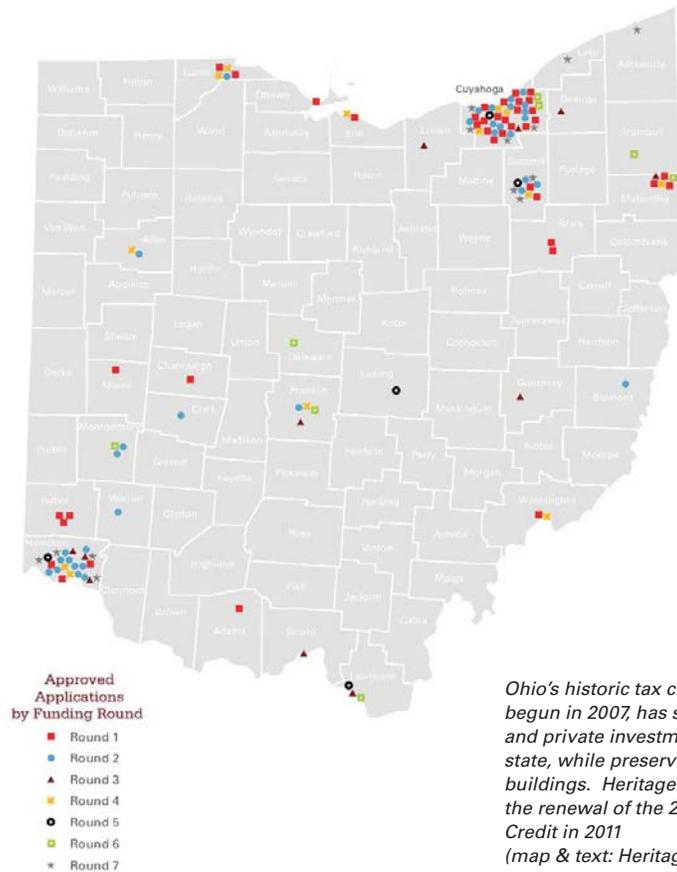
(Preservation Green Lab 2012)

Top: Hotel Onesto , Canton
Middle: Old Home Bank, Newark, Ohio
(photos: Ohio Office of Redevelopment)

government can enroll to be a “Certified Local Government” which supports local goals for preservation, and enlists them as an eligible entity for grants, technical assistance, and other support. This federal-state-local partnership program is administered by the Ohio Historic Preservation Office and the National Park Service.

Tax credits are provided by the Ohio Historic Preservation Tax Credit Program that is administered by the Ohio Department of Development in partnership with the Ohio Historic Preservation Office and the Ohio Department of Taxation. The tax credits apply to rehabilitation of historic buildings. The non-governmental owner of a historic building can be eligible if the work is consistent with the U.S. Secretary of the Interior’s Standards for Rehabilitation, and if the tax credit is a major factor in rehabilitating the building or increasing the level of investment. If received, then the tax credit equals 25% of “Qualified Rehabilitation Expenditures” (QREs) with a project cap of \$5 million. These expenditures can include both construction and design/ engineering costs. Due to the annual funding cap of \$60 million, the OHPCT program is very competitive and applications are submitted on a biannual schedule.

Ohio Historic Preservation Tax Credit
All Approved Applications



Ohio's historic tax credit program, begun in 2007, has spurred job creation and private investment throughout the state, while preserving scores of historic buildings. Heritage Ohio championed the renewal of the 25% Ohio Historic Tax Credit in 2011 (map & text: Heritage Ohio)

Rehabilitating and repurposing is a green energy strategy. It can take up to 80 years for a new building incorporating energy-saving practices to pay back the energy impacts of its construction.

(Preservation Green Lab 2012)

Adaptive reuse projects pay for themselves. Public investments are recouped within 10 years.

(Choi 2010)

There is also a Federal Historic Rehabilitation Investment Credit program which provides 20% of QREs. The federal credit is only available to income-producing certified historic structures. When used together, the state and federal tax credits can amount to 45% of QREs. The federal program is not competitive, and does not run on a set schedule,. Applications are submitted to the Ohio Historic Preservation Office with final decisions made by the National Park Service.

It is recommended that economic incentives be addressed and encouraged in any local preservation plan. Giving a building an “historic” designation does not limit all of its uses. Historic buildings can be used for recreational purposes, offices, government centers or businesses. In some states, government offices are encouraged to move into historic buildings as a means of preservation. Many former commercial buildings are rehabilitated to residential uses. The Ohio Main Street program, administered by Heritage Ohio, provides assistance to member communities in revitalizing historic or traditional commercial areas, enhancing community character and spurring economic activity. The program provides technical assistance, training, mentoring, and funding for Main Street efforts to eligible communities. For more information see the resources.

- **Public education and involvement.** While the economic benefits of historic preservation are well documented, they are not well known or understood by the public. Property owners especially can be skeptical about the long term benefits of implementing a historic preservation regulation. Any effort to establish a local historic preservation program should involve an extensive education and support-building effort with the community, including residents, families, businesses, local government, and institutions.

- **Zoning Standards.** There are other ways to protect or enhance the historical character of buildings within a community. If a community does not have the capacity or support to create historical districts or start an historical preservation program, they may make changes to architectural standards in the zoning regulations for certain districts. This allows a community to create or preserve character on a more basic scale, but without the benefits of tax credits and other related funding for historic buildings. Special consideration should also be given to appropriate uses in historic areas, whether or not they are protected by historic district regulations. For example, drive-through fast food restaurants may negatively affect the character of an historic street, and uses requiring large parking lots may have a similar effect. Attention must be paid to all regulations affecting development in an historic area.

• **Façade easements.** A community could also use façade easements for selected buildings if owners are willing to agree. These easements preserve the exterior of historic buildings. The easement is typically held by the community, or a local nonprofit organization, such as a historical association, that is formed for a recognized public purpose. A typical easement will be negotiated individually to meet the needs of the easement holder and the property owner. Historic protection easements can provide tax benefits to some property owners. Similar to conservation easements, they must be held by a willing third party with a public purpose (such as a nonprofit historical society); this requirement can often be challenging to implement.

The Village of Jefferson Historic District



Above: Village of Jefferson Town Hall (Ashtabula County). Historic buildings contribute to community character and civic pride. (photo: Kirby Date)



Above Right: Village of Jefferson South Chestnut Street circa 1907 Historic preservation is an important component of main street revitalization. (photo: Donald Harrison)

In 2006, the Village of Jefferson in Ashtabula County embarked on a plan to examine ways to balance the need to accommodate new business in their downtown, with an interest in preserving the Village's heritage of historic homes and buildings. A citizens committee, working with the Village's Mayor, Council, Planning Commission, Chamber of Commerce and historic society, led a process to evaluate the economic vitality and market for their downtown and compare the relative benefits of a local historic district with a conservation district, and other programs. The community chose to implement a local historic district, adopting a code in 2010. Recently, a Historic Review Board has been seated and the village has become a Certified Local Government, working with the Ohio Historic Preservation Office to train their new board members and apply for grants for assistance in evaluating historic properties. It is hoped that the downtown district and businesses will continue to thrive and that business and tourist opportunities will expand, with knowledge that the Village's historic character will be preserved and enhanced into the future.



*Glacial Grooves, Kelly's Island, Ohio
(photos: The Simple Life Chronicles)*

Recommendations

1. It is recommended that communities address historic resources through comprehensive planning following an inventory, evaluation, and prioritization of historic sites. Implementation may include local designation of significant sites or boundaries for historic and conservation districts.
2. Establish a community education and outreach program to provide local residents, property owners and businesses with information about the economic benefits of historic protection, as well as information about the various tax benefits and funding programs available to support historic preservation.
3. Zoning regulations designed to preserve historic sites should address the local designation of historic district boundaries, design review criteria and guidelines, variance procedures, and violation guidelines.
4. The State of Ohio supports strong “home rule” standards that allow local governments, particularly municipalities, to create historic districts within their community. There are precedents for townships enacting local historic districts in Ohio; communities interested should consult their Solicitor for advice.
5. Communities adopting a Local Historic District should consider becoming a Certified Local Government through the Ohio Historic Preservation Office which will make them eligible for benefits, training, and funding support for ongoing continuation of their Historic Preservation program.
6. Communities should also explore programs available through Heritage Ohio, Preservation Ohio, and the Ohio Department of Development that support historic preservation.

Example Regulations

Listed below is the example historic preservation model regulation for the State of Ohio, available through the Ohio Historic Preservation Office (OHPO).

Ohio Historic Preservation Office, Model Ordinance

<http://www.ohiohistory.org/resource/histpres/toolbox/clg/clg-11.html>

Visit the Ohio Historic Preservation Office for more information.

<http://www.ohiohistory.org/resource/histpres/index2.html>

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

*Photo Below: Ohio History Center,
Columbus, Ohio*

"The headquarters of the Ohio Historical Society, the Ohio History Center includes a museum, archives/library, historic preservation office, and Ohio Village, in addition to access to the Society's services."



OHIO HISTORICAL SOCIETY



Resources

*West Side Market Tower in the Historic Market Square District in Ohio City, Cleveland, Ohio
(photo: Gregory SJ Soltis)*

The Community Planning Program, Tel: 216-687-5477,
Web: <http://urban.csuohio.edu/cpp/>

Heritage Ohio Main Street Program
<http://www.heritageohio.org/ohiomainstreet/>

Ohio Historic Preservation Office
<http://www.ohiohistory.org/ohio-historic-preservation-office>

Ohio Historic Preservation Tax Credit Program & Policies
http://development.ohio.gov/cs/cs_ohptc.htm

National Park Service – Tax Incentives for Preserving Historic Properties
<http://www.nps.gov/tps/tax-incentives.htm>

The Cleveland Restoration Society; Tel: 216-426-1000
<http://www.clevelandrestoration.org/>

Columbus Landmarks Foundation; Tel: 614-221-0227
<http://columbuslandmarks.org/>

Cincinnati Preservation Association; Tel: 513-721-4506
<http://cincinnati-preservation.org/>

Chapter 15



The beauty of Ohio landscapes is an important economic asset for our state.

(Photo: Keep Ohio Beautiful.)

SCENIC PROTECTION

Background

What is Scenic Protection?

Scenic protection refers to a range of tools that are available to communities to encourage preservation and conservation of viewsheds of scenic beauty, usually as visible from roads or other public spaces and access points. These tools can take the form of scenic area designations, or can be regulatory, working like a setback to designate areas that must meet a certain set of standards. This section is focused on planning and zoning measures, but information is also included on resources for scenic byways and other tools.

How does Scenic Protection relate to Balanced Growth?

Scenic beauty, whether it is found in a farmland, natural, or historic area, is often taken for granted. Scenic quality has been shown to contribute greatly to economic development and tourism, property values, and quality of life. Scenic viewsheds, the areas that can be seen from public roads and other public spaces by travelers and visitors, are the key to scenic quality. In Ohio, there are many areas worthy of protection due to their importance to local economies and community character. Lake Erie, the Ohio River, our smaller lake and river resources, and scenic viewpoints from our state highways and local roads and viewpoints are important components of regional and community character and are assets for our future prosperity. It has been found that nature-based tourism is one of the most promising industries in terms of its potential economic benefit. For example, in a survey completed for the Lake Erie Quality Index, it was found that the

Scenic protection can drive economic development through tourism. Visitors made 23,800 trips to the Paul Bunyan Scenic Byway in Minnesota in 2010 and spent \$21.6 million in the area.

(Liechty, Schneider, and Tuck, 2010)

most popular coastal activity was scenic enjoyment of the lake. Ninety-nine percent of people surveyed stated that viewing the lake was an important and frequent pastime for them. This clearly indicates the strong need for preserving viewsheds in order to maintain quality of life in the region from both recreational and economic perspectives. The benefits attained from protecting viewsheds are not limited to scenic enjoyment and tourism, as scenic resources may also increase property values in the area. In addition, protecting viewsheds allows for reductions in the conversion of open space into developed areas. This may indirectly aid in improving water quality by maintaining the natural hydrology and flow characteristics of streams, tributaries, and wetlands.

How does Scenic Protection work ?

One of the most effective ways to protect and manage scenic areas is to develop a scenic protection regulation. Typically this is best done after a thorough and well-discussed comprehensive planning process that identifies areas of priority to the community for protection. Scenic protection regulations are usually based, like setback regulations, on permitted and prohibited uses within a designated distance from a road. In steep terrain areas, hilltops and hillsides may also be regulated to limit the height and bulk of structures visible from nearby roads. Usually the focus is on visual impacts to key roads in the community that are used by tourists and visitors, as well as local residents, or that serve important cultural and recreational resources.

Other tools that can contribute to scenic protection in a community include scenic easements (conservation easements with a scenic purpose), targeted capital improvements (such as tree planting or undergrounding of utility wires), and designation of scenic rivers and scenic byways. Policies identifying the applicability of these tools can be incorporated into comprehensive plans, and implemented through capital plans, and public-private partnerships with nonprofit organizations. See the resources for more information.

Issues

- **Planning is important.** Designation of scenic areas is an important component of comprehensive planning and visual assessments. Local comprehensive planning sets the context for public policy. Visual preference studies and surveys done as part of comprehensive planning provide a way for community members to identify and prioritize community scenic assets that should be protected. Public policy for stewardship and protection of high priority scenic areas can be implemented through capital improvements, scenic designations, and regulations.

People are willing to pay for a scenic view. Increasing the amount of scenic land within view of a property by 10% can be correlated with an increase in property values of between \$5,500 and \$7,400.

(Sander and Polasky 2009)

- **Scenic easements can be a useful tool for high priority preservation that is supportable by presidents and private landowners.** Similar to a conservation easement, a scenic easement is an overlay on private property that is negotiated between a third party easement holder and the property owner. An agreed-upon restriction is placed on the property, with an associated monetary value, and the easement is held by a third party such as a local government or nonprofit organization. The property owner may be compensated for the monetary value of the easement, or may choose to donate the easement, with associated tax benefits. See the resources for more information.

- **Designation of scenic rivers is another method to enhance protection.** The Ohio Scenic Rivers Act, passed in 1968, was the nation's first scenic rivers legislation. The act set standards for the designation of scenic rivers, and established a program to help protect these high quality assets for the long term. The act requires the appointment of a citizen's advisory council for each designated river, which acts in an advisory capacity, along with ODNR staff. There are currently fourteen scenic rivers in Ohio. The Scenic Rivers Act designates three types of Scenic Rivers, each with its own criteria: wild, scenic and recreational. Communities within a watershed, nonprofit organizations, state and local government may work together to apply for designation of a river or stream. Under the Scenic Rivers Act, review of public development projects such as roads and utilities on sites adjacent to designated rivers is heightened; and technical assistance and education is offered to landowners. The program also provides monitoring and biological survey study to assist with maintaining stream health and the scenic quality of the river. For more information, see the Resources.

- **Designation of scenic byways provides another tool for scenic protection.** The National Scenic Byway Program is part of the U.S. Department of Transportation, Federal Highway Administration. Established under the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, the program is a collaborative effort established to help recognize, preserve and enhance selected roads throughout the United States. The Ohio Department of Transportation's Scenic Byway Program is a grassroots effort designed to increase the focus on Ohio's history and intrinsic resources. The intent of this program is to preserve, enhance and protect the states intrinsic resources for visitors and residents of the state by designation of highway, roads and streets as scenic byway corridors. Through partnerships with communities, organizations and government agencies we can combine our efforts to promote travel, recreation and to enhance and provide stewardship for the features that distinguish the designated byways. With this collaboration it is hoped that we can establish a balance between conservation and land use that heightens the experience of traveling designated byways while improving the communities quality of life.



Ohio & Erie Canal Lock 30 North,
Peninsula
(photo: Kevin Payravi, Wikimedia Commons)

Ohio offers 27 Scenic Byways, 5 which have received a National designation. Byways are established by identifying intrinsic qualities that represent Ohio's outstanding resources that are deserving of recognition. Because these resources are the foundation of the program, criteria is established to ensure their preservation, protection, and enhancement.

- **Historic landscapes can have significant scenic quality and are often protected via historic protection tools.** See the Historic Protection chapter for more information.
- **Communities should address the following points when developing scenic protection regulations.**
 - **Ways that scenic quality is affected:** Scenic areas can be affected by the removal of key visual elements, such as historic structures and landscapes, and also by the addition of incompatible visual elements, such as billboards and inappropriately designed structures. In areas where scenic quality has been determined to be of high priority, design guidelines can help to address these concerns.
 - **The setback approach:** A typical scenic protection regulation defines the boundaries of the protected area, and specifies permitted and prohibited uses within those boundaries. This works very much like a setback regulation, and includes the same basic requirements including variance criteria and procedures, grandfathering, and monitoring for compliance
 - **Public education and involvement:** Designation of the boundaries and rules for uses are of key importance to property owners. An education program that helps property owners to understand the benefits to their property values of the regulation is important to gain support for the regulation.
 - **Review Board:** Similar to a historic protection regulation, a reviewing body is usually established which reviews proposed development changes and structures within the protected area, and makes recommendations to the planning commission about project approval.
 - **Major utility elements.** In Ohio there are specific rules governing the role of local government in the siting and appearance of major utility elements such as cell phone towers, wind and solar facilities, and drilling/mining facilities. Refer to organizations in the resources for more information.
- **Township authority:** In Ohio the case law is not clear about the authority of townships to engage in scenic protection regulations. Townships should consult with their solicitor and/or County Prosecutor for specific recommendations.

Views Protection with Conservation Development

Conservation Development can offer the opportunity to meet the development potential of a site, while protecting critical open space, including scenic areas along public roads. The photo to the right is the entry to Hidden Creek in Jefferson, Ohio, which protects the view from the road.

(photo: Kirby Date)



A new road in Hidden Creek.

(photo: Kirby Date)



Rolling Meadows Development entry drive in Hiram, Ohio.

(photo: Kirby Date)





*Field of Gray-headed Coneflowers along the "Prairie Grass Trail" from Cedarville, Ohio to London, Ohio
(Photo: John E. Silvius)*

Recommendations

1. It is recommended that communities consider scenic issues in comprehensive planning. Specific viewsheds of high priority to the community should be identified, and the case made for protection from an economic and quality of life standpoint. Specific scenic assets should be designated, and appropriate tools for protection of each asset should be identified.
2. Communities should be aware of existing scenic byways and scenic river designations within their jurisdictions, and understand the associated stewardship programs that may be opportunities for collaboration. Consideration may be given to new designations for deserving rivers and byways in the planning area.
3. Designated scenic resource areas can be protected by adopted zoning provisions to address scenic area preservation. Included in such a regulation should be criteria for design review setbacks, enforcement, and penalties.
4. In addition to design review criteria, detailed design guidelines for structures, landscapes, and other elements of the built environment should be developed as appropriate to communicate visual priorities to residents, businesses and developers.
5. Communities may want to consult with their local land trusts, historic society, and landowners about the potential for scenic easements to protect high priority scenic areas and districts.
6. Communities should be aware of opportunities to provide input on the siting and design of major utility and mining facilities, and foster positive and early communication. Scenic resource provisions in the community comprehensive plan will assist in communicating community priorities to the parties involved.

Example Regulations

The following example regulations are intended to provide an example of how to establish protection of scenic areas and viewsheds. The first model on visual management corridors is from Wisconsin and is a framework to help direct development and redevelopment activities along highways. The main focus of this model is on design guidelines. Provided within the discussion are several examples of types of development that can be used to maintain environmental sensitivity and aesthetic compatibility. The second model given is a billboard regulation from Missouri. It details permitted and prohibited uses, along with general design and construction standards. Examples are also included from Philipstown, NY and Redmond, Washington.

Scenic Missouri Model:

<http://scenicmo.org/public/resources/modelbillboardord.pdf>

Philipstown, NY:

<http://www.ecode360.com/6319090#6319090> (Copy and paste into your web browser)

Redmond, WA:

Shoreline Master Program <http://www.zoningplus.com/regs/redmond/codetext.aspx?mode=2&xRef=1&index=1993> (Copy and paste into your web browser)

Wisconsin, Sheboygan County model: <http://www.balancedgrowth.ohio.gov/LinkClick.aspx?fileticket=S1WIF9QaCnk%3d&tabid=66> (Copy and paste into your web browser)

Refer to the Example Regulations Matrix for a comparison of these codes. (link)

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to the Ohio Balanced Growth Program.

Resources

Community Planning Program, Cleveland State University, 2121 Euclid Avenue, UR 26B, Cleveland, OH 44115-2214; Tel: 216-687-5477; Web: <http://urban.csuohio.edu/cpp/>

Ohio Department of Transportation, Division of Planning, Scenic Byway Program, www.ohiobyways.com

Ohio Department of Natural Resources, Division of Watercraft, Ohio Scenic Rivers Program <http://ohiodnr.com/watercraft/scenic/tabid/2310/default.aspx>

Scenic America; Tel: 202-543-6200; Web: <http://www.scenic.org/>

Scenic Ohio; Tel; 330-865-9715; Web: <http://www.scenicohio.org>

National Trust for Historic Preservation, Tel: 800-944-6847; Web: <http://www.preservationnation.org/>

Sun setting over the Hocking River along the Ohio University bike path at the west end of Athens, Ohio.

(Photo: athensohioviewshed.org)



Chapter 16



Above: Mailbox on a County Road in Rural Central Ohio
(Photo: 18banderson rustymailbox.blogspot.)



Above Right: County Road Driveways
(Photo: Joe Robinson)

ACCESS MANAGEMENT

Background

What is Access Management?

Access management regulations specify the number and spacing of driveways, traffic signals, medians, and intersections. These regulations can control allowable turning movements to and from driveways and streets, provide for cross access between parcels, and require adequate space for onsite vehicular circulation without causing overflow onto surrounding major highways. The purpose of these regulations is to reduce vehicular conflicts and accidents and maintain the capacity and efficient flow of major highways. Access management is also important for efficiency of access to local businesses by customers and delivery vehicles. Poorly spaced driveways can reduce roadway capacity by over 50%, and it has been estimated that left turns at driveways account for 60% of accidents on many urban roadways. The need for well thought out access control increases with the importance of the roadway. Local officials need to rank each roadway based on its importance to mobility and access.

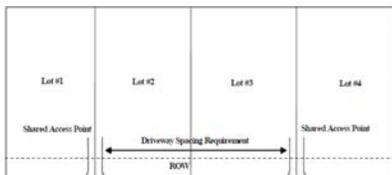
The Ohio Department of Transportation (ODOT) adopted access management regulations for state highways in 1998. Those regulations are spelled out in detail in the ODOT Access Management Manual. (see Resources). In the manual, standards for roadways are set out that are based on the speed limit, traffic volume and length of the roadway. These three factors dictate the types of access to the road, number of lanes and the types of turning lanes that are allowed. Speed and volume will also decide how far apart driveways and other access to the road are spaced. These standards have been developed to maximize safety and efficiency; they do not address land use considerations such as appropriate use, intensity of use, and adjacency concerns.

“Sound access management techniques increase driver safety. Increasing access points along a road increases the number of traffic accidents, so that a road with 60 points of access per mile has an accident rate three times that of a road with 10 access points per mile.”

(Papayannoulis, Gluck, and Feeney, 2000).



Many closely spaced driveways along rural roads can contribute to congestion and traffic hazards. (Photo: K.Date)



Proper driveway spacing can alleviate congestion and reduce traffic hazards.

Subdivision, Land Division, Development and Congestion Prevention Regulations (Map: Licking County Planning Commission)

Often the only access restrictions placed on properties outside commercial areas and high density residential areas is to limit the number of driveways so that they are separated by a safe stopping distance for the posted speed limit. The driveway spacing for category IV highways maintained by ODOT is 250 feet for a section of roadway with a 35 miles per hour speed limit, 325 feet for 40 mph, 495 feet for 45 mph, 550 feet for 50 mph, and 605 feet for 55 mph. Furthermore, limited sight distances near hillcrests or along horizontal curves might restrict driveway and street locations. If not carefully integrated with subdivision regulations or zoning requirements, driveway spacing requirements can require frontages larger than intended, depending on where existing driveways have been placed on adjacent properties.

Counties, municipalities and townships can implement access management regulations on roads within their jurisdiction through spacing requirements for driveways and intersections, and allowing shared driveways to reduce the number of entries along a particular stretch of road. Similarly, requirements should reflect the design speed for the road, sight distances, and other safety considerations. Some counties permit common access driveways as a method of access management. See the Conservation Development chapter for more information.

How does Access Management relate to Balanced Growth?

Access management is an effective tool to help communities manage the safety and congestion impacts of development of individual parcels along a high-use road. It is very important to understand the role of access management in efficient development applications in urban, suburban, and rural areas. Access management helps to address safety and efficient roadway use in low-intensity development areas. However, it cannot substitute for up-front planning for compact, well-designed, efficient land uses that provide a range of transportation options and reduce congestion through their layout and clustering of uses. It is recommended, especially for urban and suburban areas, that careful planning address circulation that minimizes access management needs. In rural areas, however, access management can be a very effective tool for low-density situations. Access management can discourage strip development, flag lots, or minor subdivisions (lot splits) and promote clustering of land uses into unified developments with shared access. In addition to improving safety and mobility, properly implemented access management can discourage wasteful land use practices that can be aesthetically unpleasing and environmentally harmful.

In Florida, Iowa, Minnesota, and North Carolina, implementation of access management projects had an overwhelmingly positive impact on affected businesses and consumers.

(Plazak and Preston, 2005; Williams, 2000; Maze, Plazak, Witmer, and Schrock, 2000; Cunningham et al., 2009)

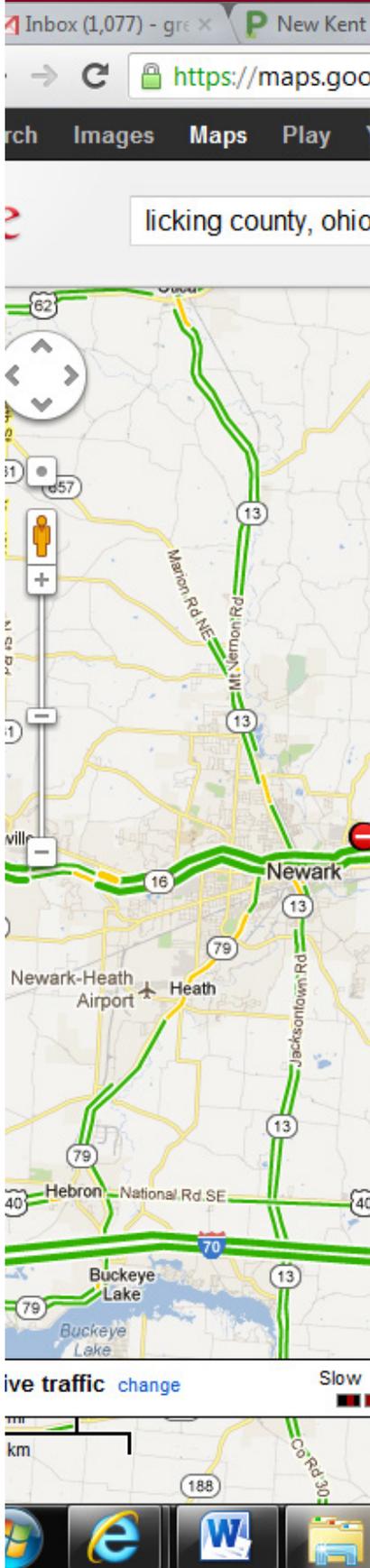
Issues

- Responsibilities and authorities of counties, townships and municipalities with regard to access management differ according to Ohio Revised Code. Consult your County Engineer and County Prosecutor or community law director for advice.
- If your county or community has adopted access management regulations, they should be adhered to even in lot split situations. Your legal advisor is the best advisor on this and related issues.
- All access management regulations should be consistent with appropriate zoning, subdivision, storm water, and other land use-related regulations.
- The best opportunity to establish the most appropriate access management is when new roads are constructed or before development occurs. It is important to be proactive in considering access management in community decision making.
- “Complete streets” are roadways that facilitate different modes of transportation in addition to automobiles, such as pedestrians, bicycles and public transportation. A complete street does not need to accommodate all types of transport, but should try to address the needs that should be serviced in that area. In urban and suburban areas, complete street designs should be considered simultaneously with access management considerations. The Ohio Department of Transportation follows a 2005 Policy on Accommodating Bicycle and Pedestrian Travel on ODOT Owned or Maintained Facilities. This policy provides for ODOT to consider bicycle and pedestrian accommodations as a component of the project development process for all transportation projects on ODOT owned or maintained facilities based on three criteria: 1) safety; 2) feasibility; and 3) local desire and potential for use.

Recommendations

A comprehensive countywide approach to access management is strongly recommended. Land use, zoning subdivision, and commercial regulations should address the following items to support access management. All local governments in the county should work together to ensure that their policies and regulations are aligned.

1. Building set back requirements should be adequate to preserve right-of-way for future road improvements and achieve adequate sight distances.
2. Joint easement requirements should be adequate to allow internal traffic circulation and encourage shared access between adjoining commercial frontages.



3. Minimum frontage requirements should be adequate for conforming lots to support desirable access spacing.
4. Subdivision development should occur along an arterial to provide access to all lots by an internal road system.
5. Regulate minor land divisions (lot splits) to support access standards.
6. Development review should explicitly provide an opportunity to ensure proper access and street layout in relation to existing and planned roadways.
7. Private road regulations and restrictions on flag lots or privately owned access easements should be adequate to prevent or address substandard private roads and related land division problems.

Example Regulations

Refer to the Example Regulations Matrix for a summary of the following. ([link](#))

Licking County Access Management Regulations

<http://www.lcounty.com/planning/PDF/Subdivision%20Regulations.pdf>
(Copy and past into your web browser)

Lucas County Access Management Regulations

<http://www.co.lucas.oh.us/documents/Engineer/AccessManagement-Regulations.PDF>

Butler County Access Management Regulations

<http://www.bceo.org/AccessManagementManual.pdf>

Use of the Guidance and Example Regulations

This example guidance and/or regulations **should never be adopted without careful legal review** to assure that they are adapted to fit the authority and needs of the specific governmental body. They may need to be adapted for use by the specific type of local government and must be independently evaluated against potentially applicable federal or state law. **The law director/ solicitor, county prosecutor or other appropriate qualified legal counsel should always be consulted prior to adoption of any enforceable measures** based upon this guidance document to insure compliance and consistency with any applicable state and federal law, and to consider potential legal ramifications and liability in the implementation of the laws or rules to be adopted. Questions about the models and guidance can be directed to

the Ohio Balanced Growth Program.

Resources

Ohio Department of Transportation, Division of Engineering, *Access Management Manual*. Web: <http://www.dot.state.oh.us/Divisions/Engineering/Roadway/AccessManagement/Pages/default.aspx>

County Commissioners Association of Ohio, *Access Management, County Advisory Bulletin No.2002-06* September 2002, . Web: <http://www.ccao.org/Portals/0/MJ%20Handbook/hdbkchap031-2006.pdf>
(Copy and paste into your web browser)

County Engineers Association of Ohio, Tel: (614) 221-0707;
Web: <http://www.ceao.org>

Butler County, OH, Engineer's Office, *Transportation and Project Studies, Access Management Manual*
<http://bceo.org/studies.html>

Complete Streets resource:
<http://www.completestreets.org/>

Mid-Ohio Regional Planning Commission – Complete Streets resources:
http://morpc.org/transportation/complete_streets/completeStreets.asp
http://morpc.org/transportation/complete_streets/toolkit.asp

Ohio Dept of Transportation policy on pedestrian and bicycle accommodation: <http://www.dot.state.oh.us/Divisions/Planning/SPR/bicycle/Pages/Design.aspx>

ODOT bicycle and pedestrian program: <http://www.dot.state.oh.us/Divisions/Planning/SPR/bicycle/Pages/default.aspx>

Institute of Transportation Engineers
<http://www.ite.org/>

Where a house & driveway once were
(Photo: Brett McBean)