

# **Wetlands Working For Your Community: Planning and Zoning for Clean Water**

## **Local Wetland Protection Options**

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# How and Where We Develop Land Effects Water Quality!



phase 1 neighborhood plan  
Project: Board of Mayor and Council  
Dalley Road  
Walton & Associates, Inc.  
Walton & Associates, Inc.

### Dalley Road Housing Development

**43.2 Acres total**  
**20 Homes**  
**35.8 Acres of open space**



# Why Local Protection

- Local Government is where land use decisions are being made
- These decisions can have a great impact on water quality and natural resources
- Every plan I see has **clean water as a goal**
- **What I don't see is how it will be achieved**
- Local Government has the authority to protect wetlands beyond what is done by the federal and state governments.

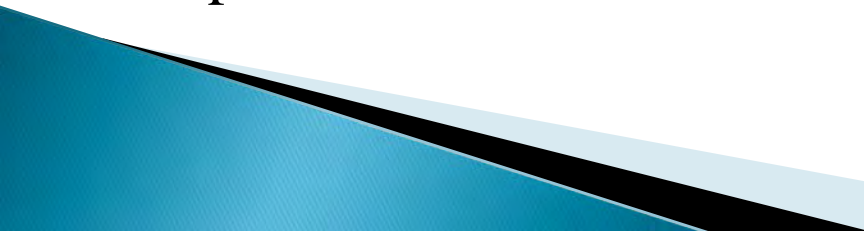
# Local Government Authority

Through planning and zoning, local governments have the authority to decide what land will be developed and how it will be developed.

**Indiana Code** lists the following purposes for local zoning ordinances

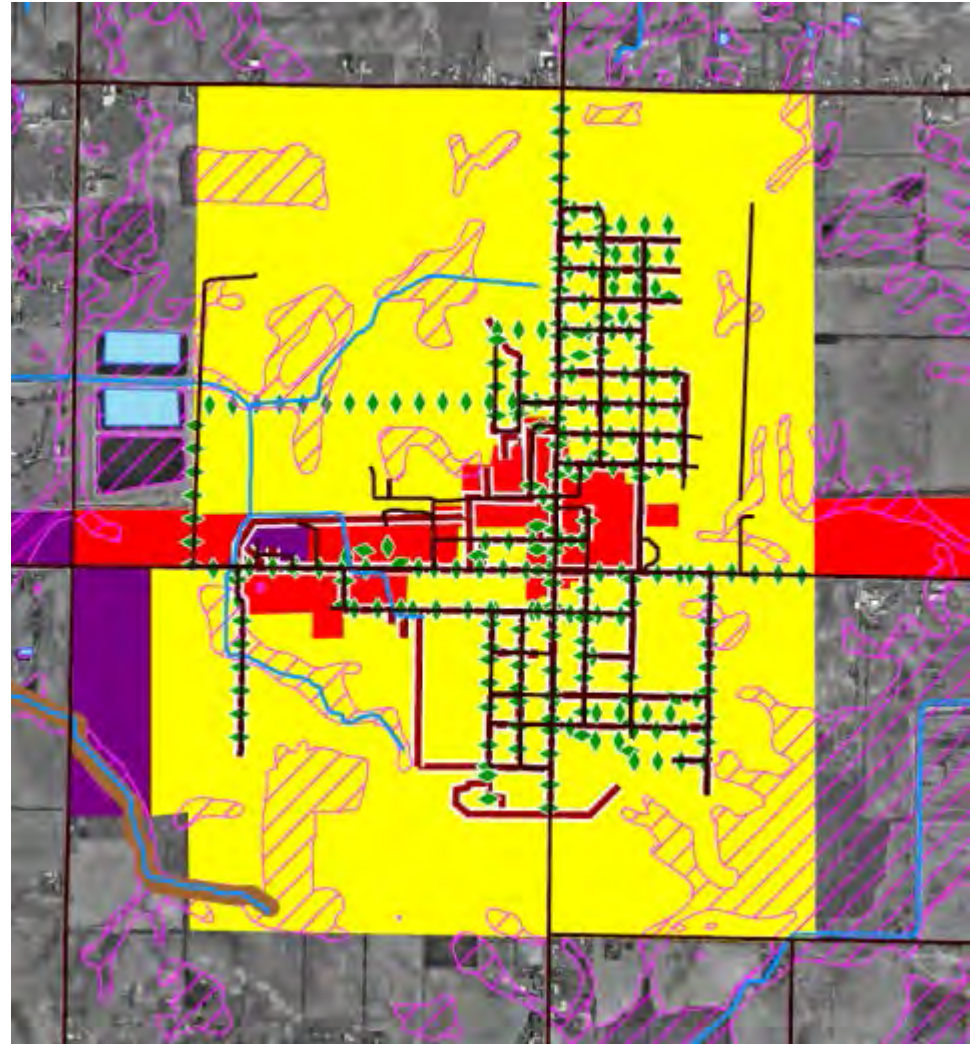
- Securing adequate light, air, convenience of access and safety from fire, **flood, and other danger**
- Lessening or avoiding congestion on public ways
- Promoting the **public health, safety**, comfort, morals, convenience and **general welfare**

# Planning & Zoning for Wetlands

- ▶ Learn to identify wetlands (existing maps, physical cues, professional services)
  - ▶ **Master Plan Language and Maps**
  - ▶ **Implement effective ordinances – Change the Rules of Development!**
  - ▶ Identify open space opportunities. Target open space acquisitions to protect important wetlands or provide buffers around them.
  - ▶ Work with partners to educate public about wetlands and also promote wetland restoration and protection.
- 

# Wetlands in the Master Plan

- ▶ Where **are** they?  
Where **were** they?
- ▶ **Compare to Future Land Use Map**
- ▶ What functions do/did they serve?
- ▶ What are they planned for? Are there any protections?
- ▶ **SHOW ON FUTURE LAND USE MAP!**



# Wetlands and the Master Plan

Master Plan – guide for where and how land is developed

## Key Elements for Wetlands

- ▶ Identify and **map** wetlands
- ▶ Discuss **values/benefits** of wetlands
- ▶ Have information about **quantity** of wetlands (acres of wetland existing and lost)
- ▶ Have information about **quality** of wetlands (existing and lost)
- ▶ Establish protection, restoration and management **goals**, objectives, and **policies/regulations**
- ▶ Show wetlands (existing and lost) on the **Future Land Use Map**

# Maps of Wetlands – Where Are They?



## National Wetlands Inventory

Ecological Services

 Search NWI Website

Menu: [Home](#) | [Wetlands Data](#) | [Status and Trends](#) | [Wetlands Layer](#) | [Other Topics](#) | [NWI Program](#) | [Contact Information](#)

### Wetlands Mapper

The Wetlands Mapper integrates digital map data with other resource information to produce timely and relevant management and decision support tools. We recommend looking at the following prior to launching a map:

1

Please read the [Disclaimer](#), [Data Limitations](#), [Exclusions and Precautions](#), and the [Wetlands Geodatabase User Caution](#).

2

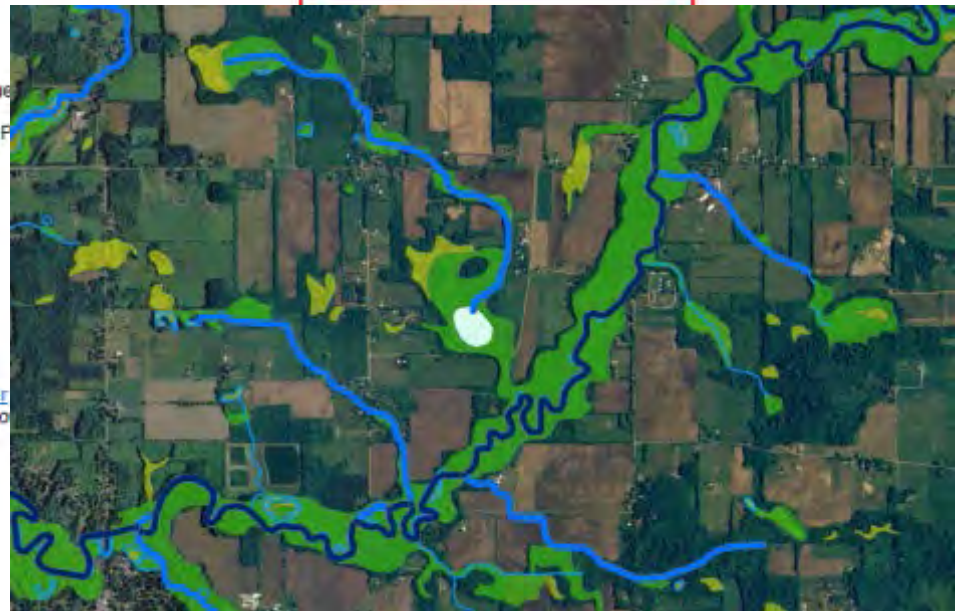
Refer to the following links for documentation and answers to frequent questions:

- [Wetlands Mapper Documentation and Instructions Manual](#) (PDF)
- [Frequently Asked Questions: Wetlands Mapper](#) (PDF)
- [Frequently Asked Questions web page](#)
- [Printing maps with the Wetlands Mapper](#) (PDF)
- [Mapper Introduction](#)

3



[Click here to open the Wetlands Mapper](#)  
(Mapper program will open on a new browser window.)





# Why should I care? Values/Benefits

Wetlands contribute to the quality of other natural resources, such as inland lakes, ground water, fisheries, and wildlife, as well as to the \_\_\_\_\_River and its tributaries. **Acre for acre, wetlands produce more wildlife and plants than any other land cover type.**

Benefits of wetlands include:

- ▶ **Reducing flooding** by absorbing runoff from rain and melting snow and slowly releasing excess water into rivers and lakes. (One-acre, flooded to a depth of one foot, contains 325,851 gallons of water.)
- ▶ **Filtering pollutants** from surface runoff, trapping fertilizers, pesticides, sediments, and other potential contaminants and breaking them down into less harmful substances, improving water clarity and quality.
- ▶ **Recharging groundwater** supplies when connected to underground aquifers.
- ▶ **Contributing to natural nutrient and water cycles**, and producing vital atmospheric gases, including oxygen and serving as nutrient traps, when next to inland lakes or streams
- ▶ **Providing commercial and recreational values to the economy**, by producing plants, game birds (ducks, geese) and fur-bearing mammals. Survival of certain varieties of fish directly depend on wetlands, requiring shallow water areas for breeding, feeding and escaping from predators.

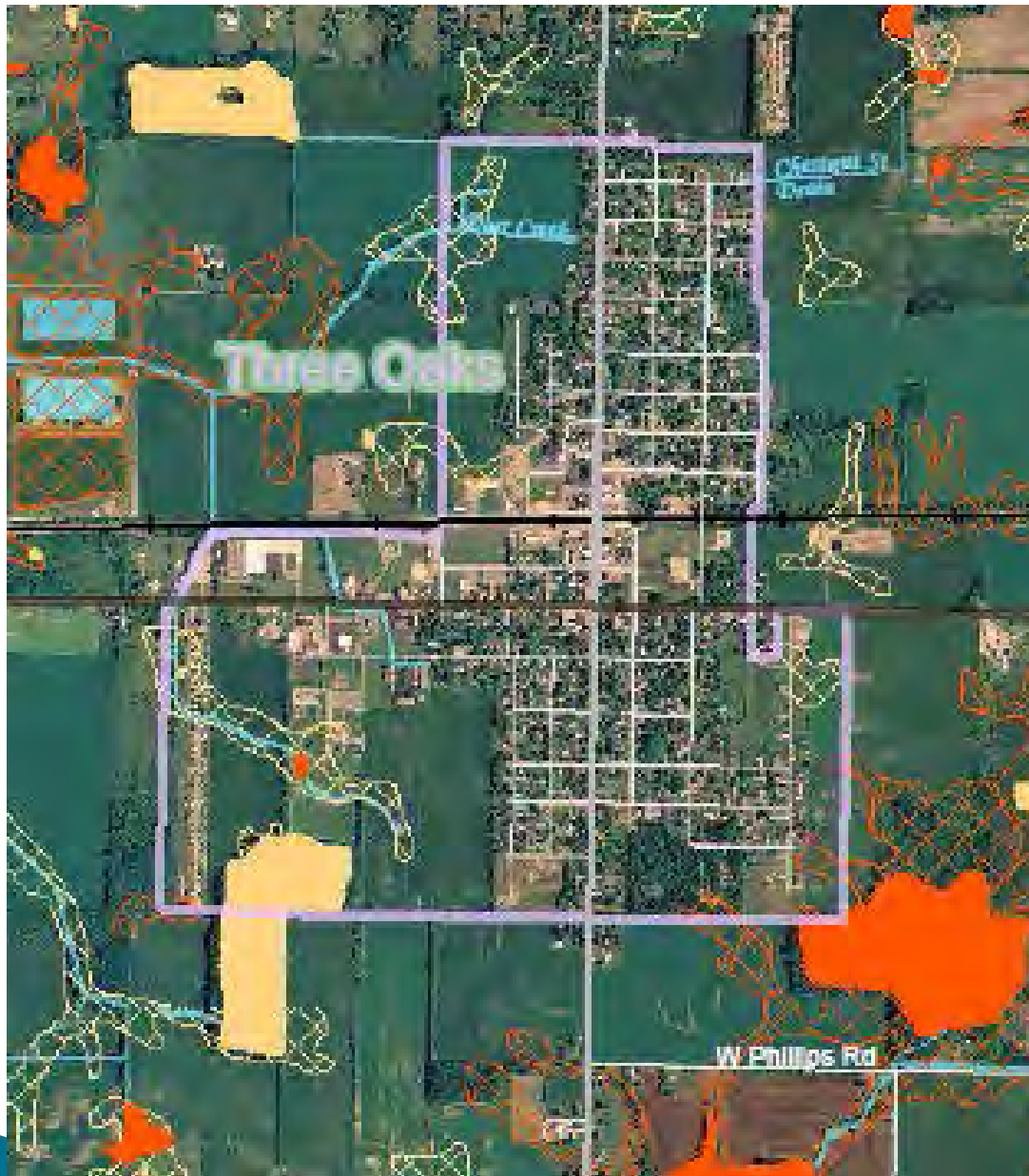
# Why Should I Care? How Many?

COUNTY	Current Wetland Acres	PreSettlement Wetland Acres	Wetland Loss
Berrien County	19,033	40,192	53%
Branch County	43,084	86,980	50%
Calhoun County	32,430	40,942	21%
Cass County	39,694	55,096	28%
Dekalb County	393	2,133	82%
Elkhart County	12,654	58,115	78%
Hillsdale County	12,052	21,191	43%
Kalamazoo County	24,843	30,491	19%
Kosciusko County	2,848	18,164	84%
Lagrange County	21,246	62,276	66%
Noble County	20,938	57,948	64%
St. Joseph County (IN)	2,311	27,896	92%
St. Joseph County (MI)	34,431	53,232	35%
Steuben County	16,199	35,601	54%
Van Buren County	32,869	66,283	50%
<b>TOTAL</b>	<b>315,024</b>	<b>656,540</b>	<b>52%</b>





# Why Should I Care? What Have We Lost?

COUNTY	Wetland Loss	Floodwater Functional Loss	Streamflow Maintenance Functional Loss	Nutrient Transformation Functional Loss	Sediment Retention Functional Loss
Berrien County	53%	58%	52%	44%	52%
Branch County	50%	60%	54%	41%	51%
Calhoun County	21%	42%	23%	4%	20%
Cass County	28%	37%	31%	31%	36%
Dekalb County	82%	78%	77%	71%	55%
Elkhart County	78%	76%	82%	69%	71%
Hillsdale County	43%	48%	44%	35%	38%
Kalamazoo County	19%	42%	27%	10%	30%
Kosciusko County	84%	84%	86%	76%	70%
Lagrange County	66%	67%	67%	46%	52%
Noble County	64%	66%	67%	47%	47%
St. Joseph County (IN)	92%	92%	94%	89%	87%
St. Joseph County (MI)	35%	45%	37%	29%	39%
Steuben County	54%	62%	51%	44%	56%
Van Buren County	50%	61%	49%	52%	61%
<b>TOTAL</b>	52%	58%	54%	42%	49%

# Maps of Qualitative Information



## Wetland Function\*

-  Existing High Significance
-  Existing Medium Significance
-  Historic High Significance
-  Historic Medium Significance





\*Wetland Function is composed of one or more of the following assessments:

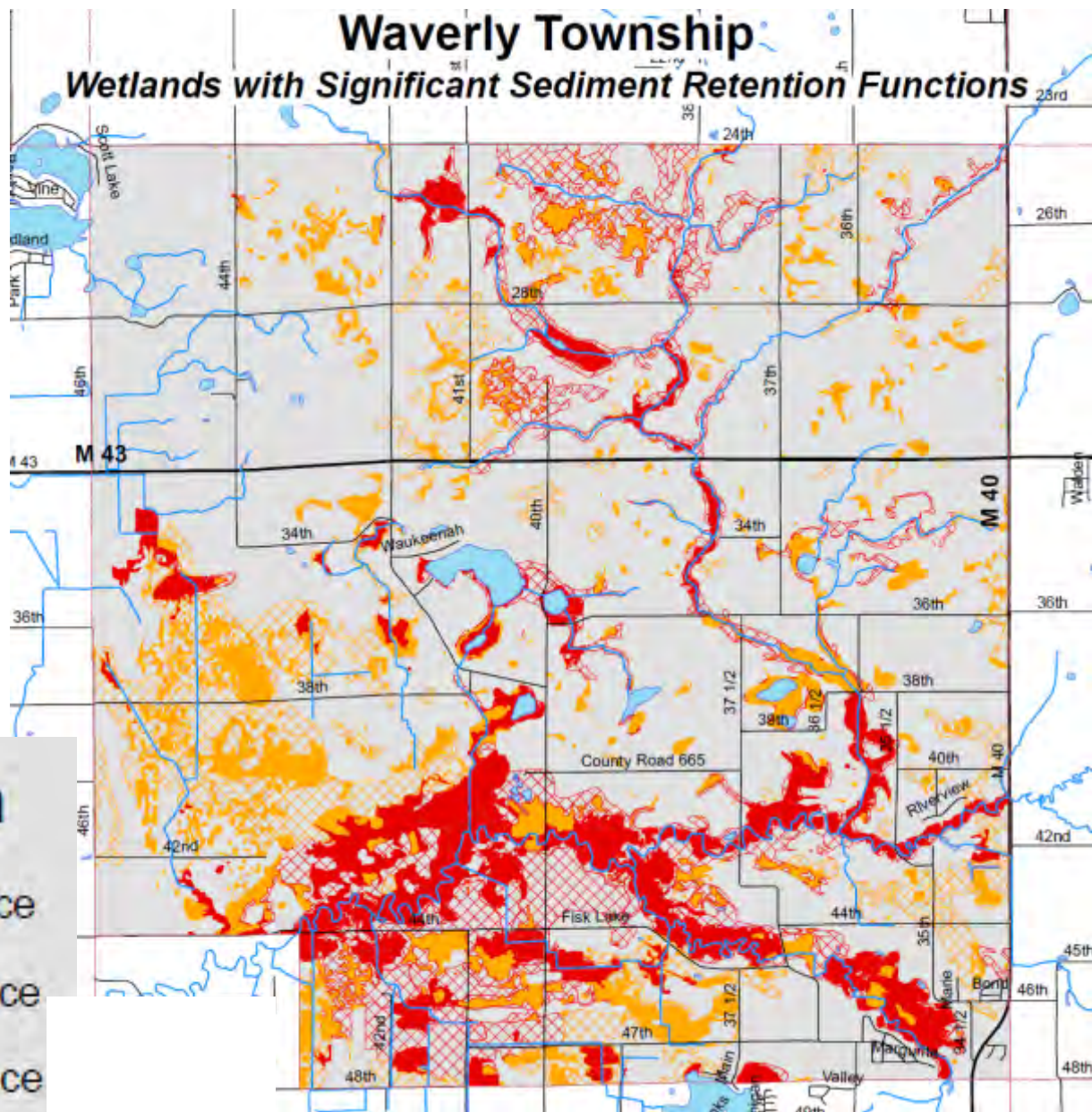
1. Sediment & Particulate Retention
2. Nutrient Transformation
3. Surface Water Detention

# Map Wetland Function - Sediment Retention

55% loss of  
function

## Sediment Retention

-  Historic Med Significance
-  Historic High Significance
-  Existing Med Significance
-  Existing High Significance



# Wetland Related Goals

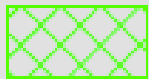


- ▶ Protect streams, rivers, lakes and wetlands.
- ▶ Protect wetlands and wetland **function** to protect and enhance water quality and aquatic habitat.
- ▶ Protect **and restore** wetland **areas** and their **functions**, thereby protecting and improving hydrology and water quality.

# Future Land Use Map

Identifying Opportunities for Protection and Restoration

## Legend



Existing Wetlands



Lost Wetlands

## Future Land Use



Agriculture



Commercial

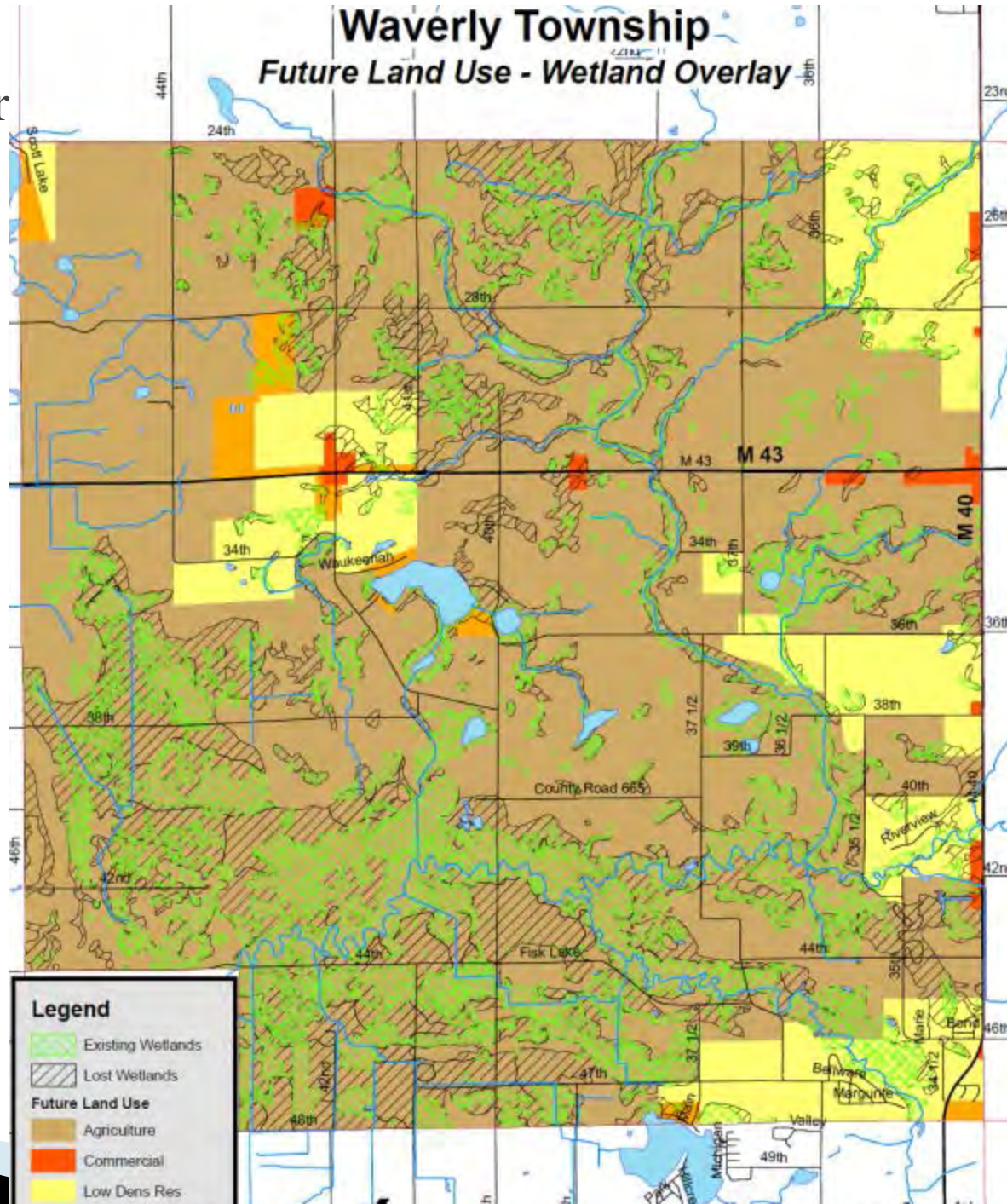


Low Dens Res



Med/High Dens Res

## Waverly Township Future Land Use - Wetland Overlay



# Wetland Protection Options

**Allow** ↔ **Encourage** ↔ **Require**

Land Use Plan

Development Plan Review

**Development Plan Review**

Remove Zoning Barriers

Incentives for Planned Unit  
Developments/  
Conservation Subdivisions

**Explicit about wetlands  
being included in open  
space**

Public Land – Examples/  
Demonstrations

**Overlay Districts**

**Wetland Protection  
Ordinance**

**Restrict Development in  
Hydric Soils**

**Building Setbacks with  
Vegetated Buffer**





# From Plan to Implementation

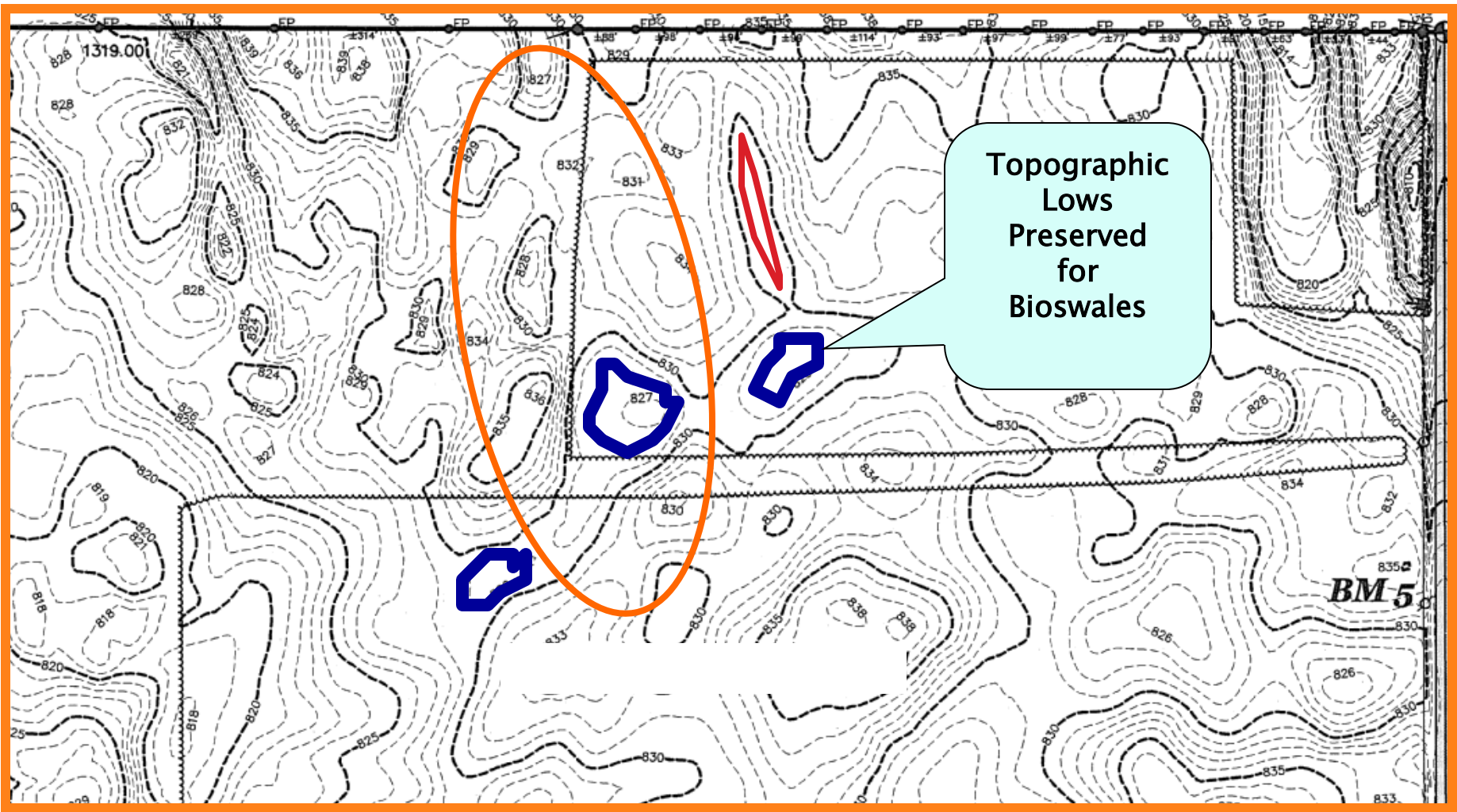
- Explicit coordination with state/federal agencies on wetland permit process
- Development Plan Review/Site Plan Review
- Planned Unit Developments (PUDs)
- Open Space Developments (conservation developments, cluster developments)
- Wetland Protection Ordinance
- Building restrictions for hydric soils
- Overlay District
- Building Setbacks and Buffers



# Development Plan Review

- Explicitly state that applicants must abide by state and federal wetland related laws
- Ensure coordination with state/federal wetland permit process
- Require all natural features including wetlands and areas of hydric soils to be shown on site plan
- Review Standards that:
  - **Protect wetlands** and **minimize impacts** to wetlands and their functions
  - **Restrict removal or alteration** of significant natural features
  - **Preserve topography** and **natural drainage** patterns (swales, low areas, wetlands, ponds)
  - Encourage/Require use of **Low Impact Development**





**Goals - Protect Watershed Hydrology  
Protect Natural Features**

**Strategy: Incorporate Design into Topography  
(utilize natural drainage patterns)**

# Open Space Developments and PUDs

Traditional



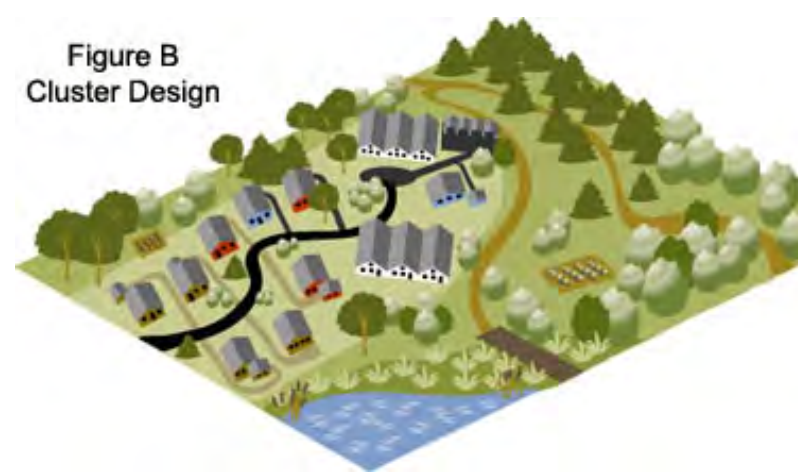
Open Space Development




# Open Space/PUDs

- ▶ A **by-right** form of development
- ▶ PUDs require open space (30-50%)
- ▶ Open Space Developments & PUDS explicitly require wetlands to be included in open space areas
- ▶ **Provide Incentives** for developers that conserve non-regulated lands (wetlands)
  - Allow for flexible site design criteria (setbacks, road widths, lot sizes)
  - Density bonuses, Stormwater credits, Lower property tax rates

Figure B  
Cluster Design
























# Wetland Protection Ordinance

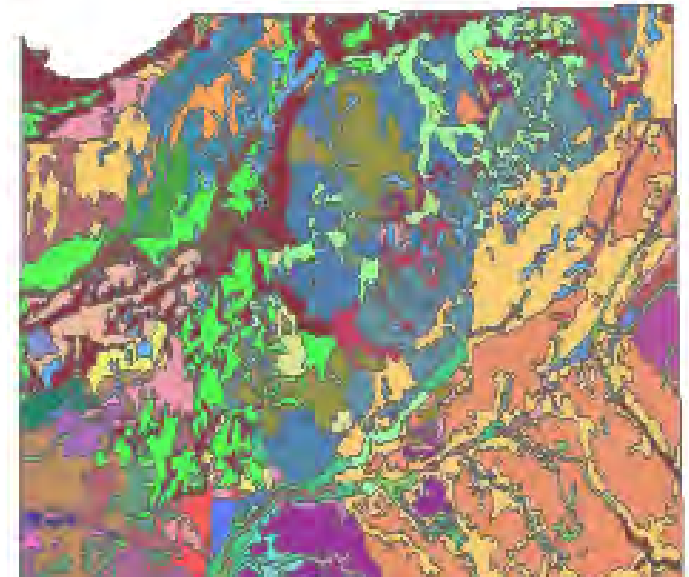
- ▶ Cover wetlands that are not under state/federal jurisdiction
  - ▶ Require standards that are more strict than state/federal laws (activities in a wetland, mitigation requirements)
  - ▶ Identify and map wetlands: prioritize which wetlands the ordinance applies to, particularly in communities with extensive wetland resources. (use LLWFA)
  - ▶ Ensure local permitting process coordinates with state and federal permits if they have jurisdiction
- 

# Building restriction for hydric soils

12/13/2007

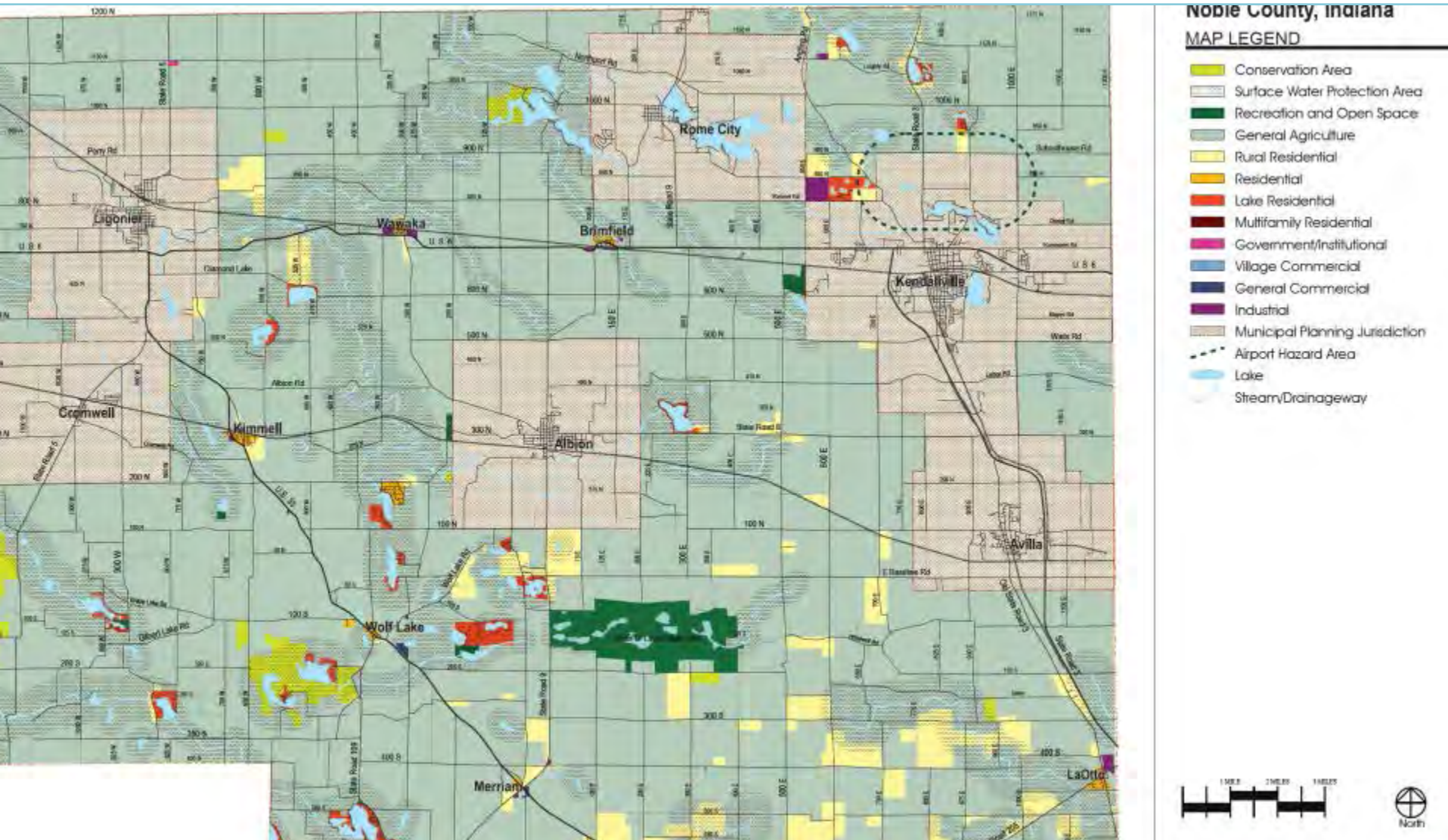
## Indiana State Soil Geographic Database (STATSGO)

 Clio-Hus (2365)	 Dana-II-Lawson-Geneva (2327)
 Corydon-Carey-III (2380)	 Dalywood-Pan-Branner-Osage (2349)
 Critic-Bedford-Sarker (2379)	 DeLeon-Limer-Gilbert (2324)
 Croker-Baldwin (2314)	 DeLeon-Finley-Rame-Ilwaco (2317)
 Cydex-Costly (2316)	 DeLeon-Gilmer-Brian (2304)
 Dixmore (2335)	 Dixie-Maine-Gilbert (2307)
 Eagle-Casper (2311)	 Dixie-Oakland (2362)
 Fairport-Bethesda (2270)	 Dixie-Oakland-Bouillon-Lee-Boyer (2363)
 Hilkey-Cleveland (2377)	 Dixie-Elkhartville (2360)
 Homer (2364)	 Dixie-Fallon-Tenille-Canden (2347)
 Houghton-Gardner-Adair (2321)	 Dixie-Roxie-II-Frost-De-Camille (2342)



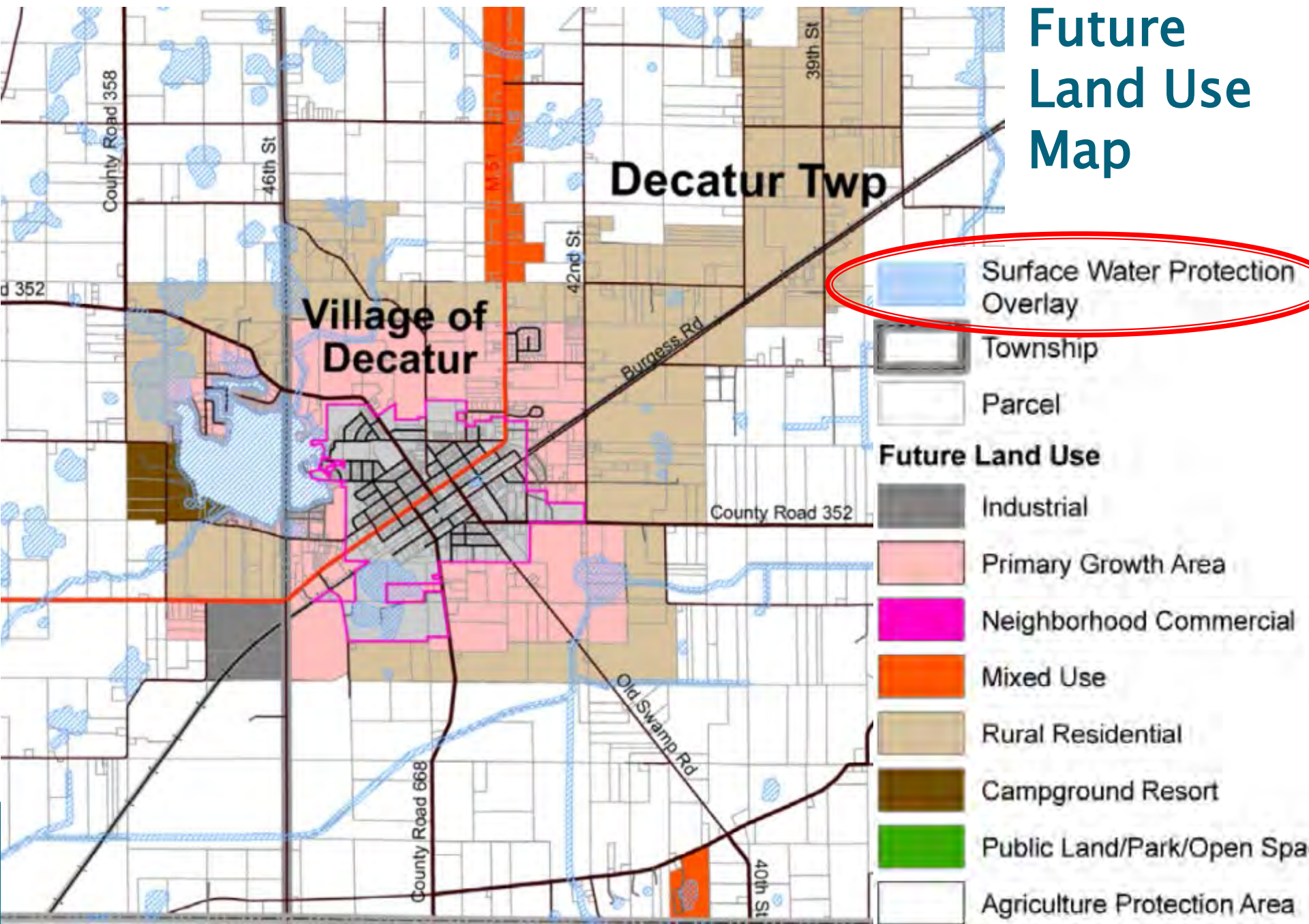
# Water Quality Overlay District

- ▶ Usually include rivers, streams and lakes- ADD WETLANDS!





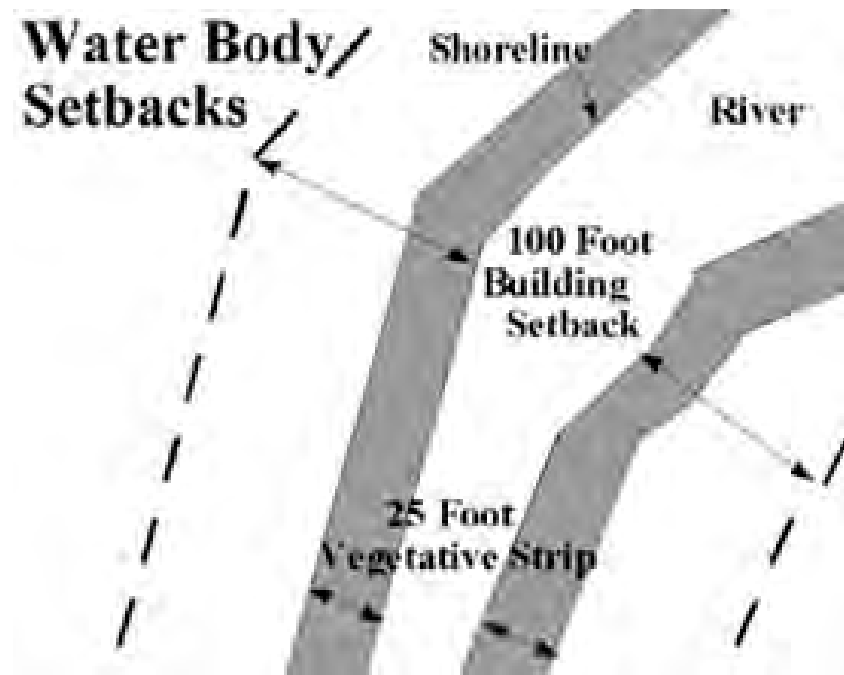
# Future Land Use Map



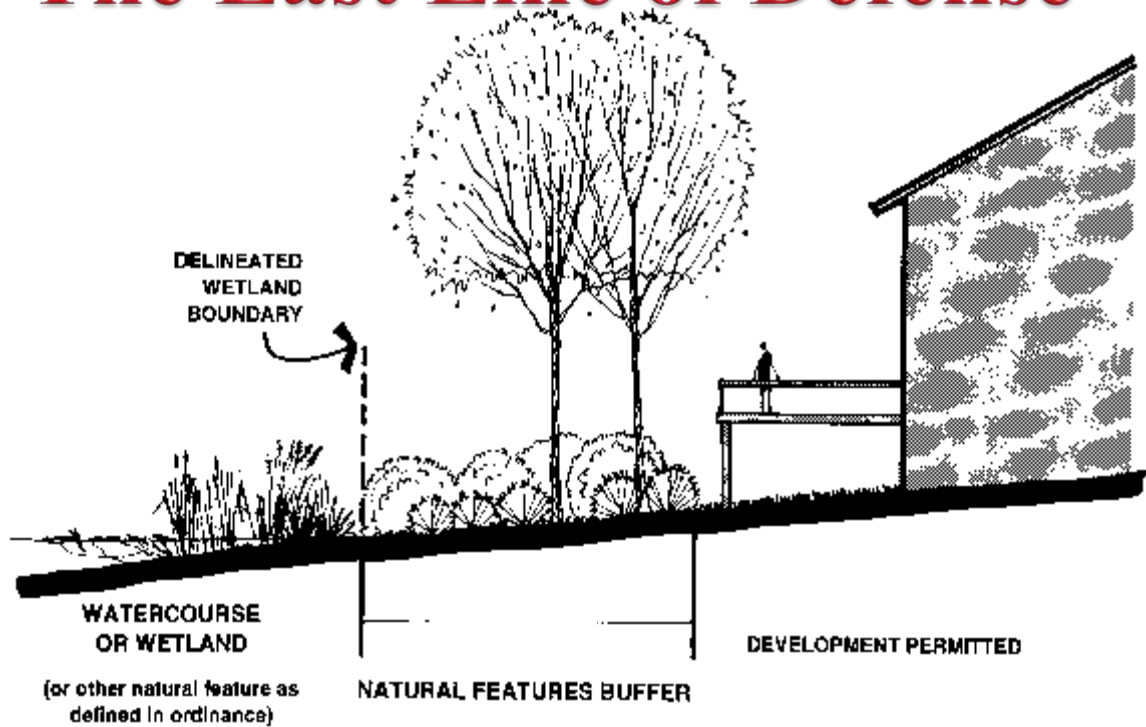
# Building setbacks for wetlands with vegetated buffer

- ▶ **Last Line of Defense** - last opportunity to clean polluted runoff

Over 60%  
of water  
pollution  
comes from  
runoff



# The Last Line of Defense



- Minimum 100-foot setback for structures and septic systems from the shoreline/edge
- At least a 25-foot wide native, uncleared vegetation buffer strip immediately adjacent to a water body

**Waterfront and Wetland Water Quality Setbacks** Setback from shoreline or edge of wetland. All waterfront lots or lots containing wetlands shall maintain a minimum setback for any permanent structure (dwelling unit, other principal building or an accessory building) from the ordinary high water mark and/or delineated wetland boundary as follows, which may be in excess of the minimum requirements of this Ordinance. Any person proposing to erect, install, move, or enlarge a permanent structure on a waterfront lot or lot containing a wetland is required to satisfy these minimum standards unless a greater setback is otherwise required elsewhere in this Ordinance:

1. Fifty (50) feet from the ordinary high water mark of an inland lake, river, stream, creek, or other watercourse.
2. Fifty (50) feet from the boundary or edge of a wetland, which is designated on the Township wetland map, as delineated on a professionally prepared survey completed by a certified professional submitted to Township and reviewed by Township staff, Michigan DEQ, and/or other professionals, as required.

# Other Benefits for No Mow Areas

## ▶ **Save Money.**

- Average \$700/acre/year to maintain a lawn  
wildflower meadow costs \$30/acre/year

## ▶ **Reduce Air Pollution.**

- A lawn mower emits 10 to 12 times as much hydrocarbon  
per hour as a typical car

## ▶ **Conserve Water.**

- Thirty percent of water consumed on the goes to watering  
lawns

## ▶ **Improve Water Quality.**

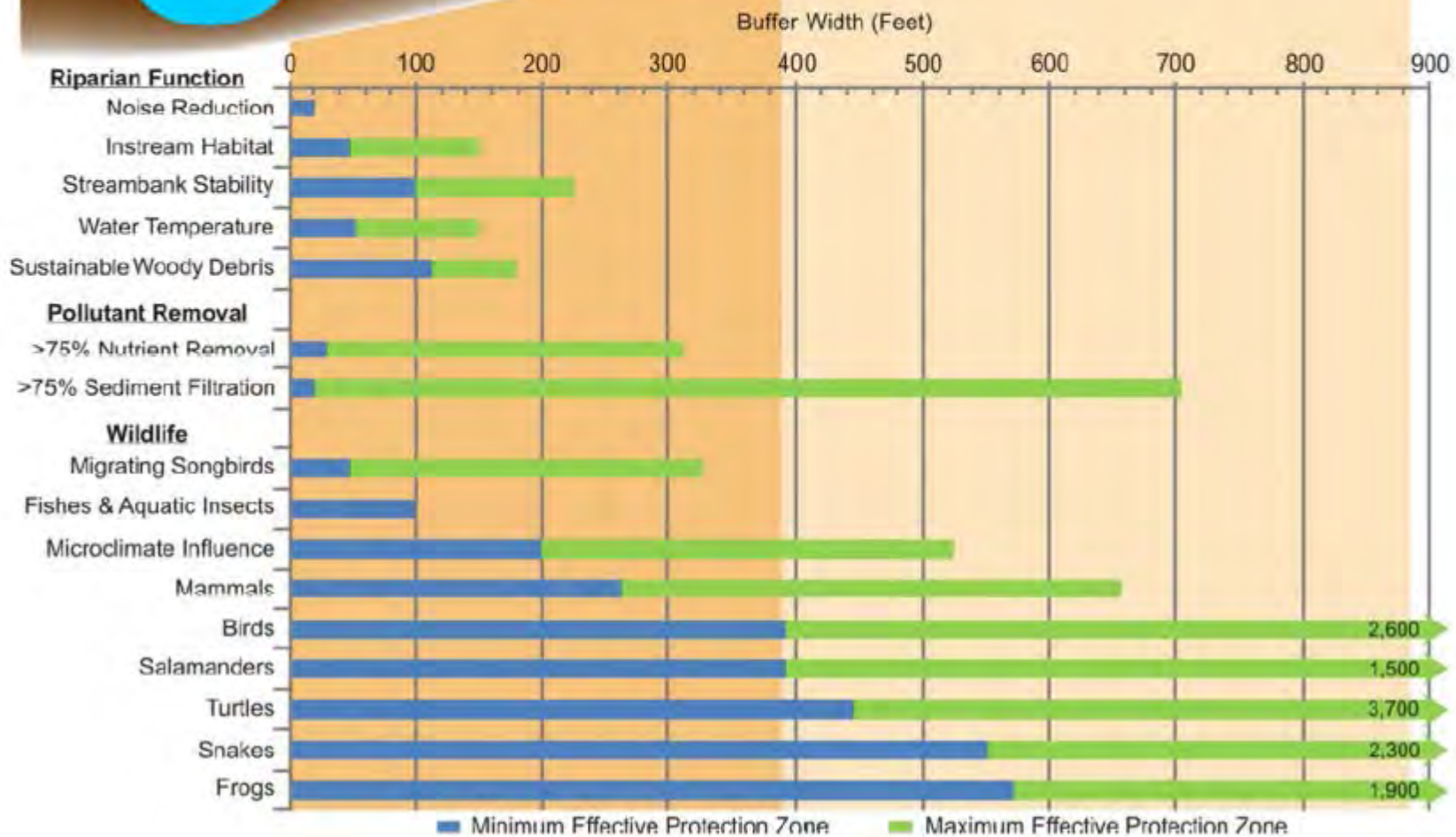
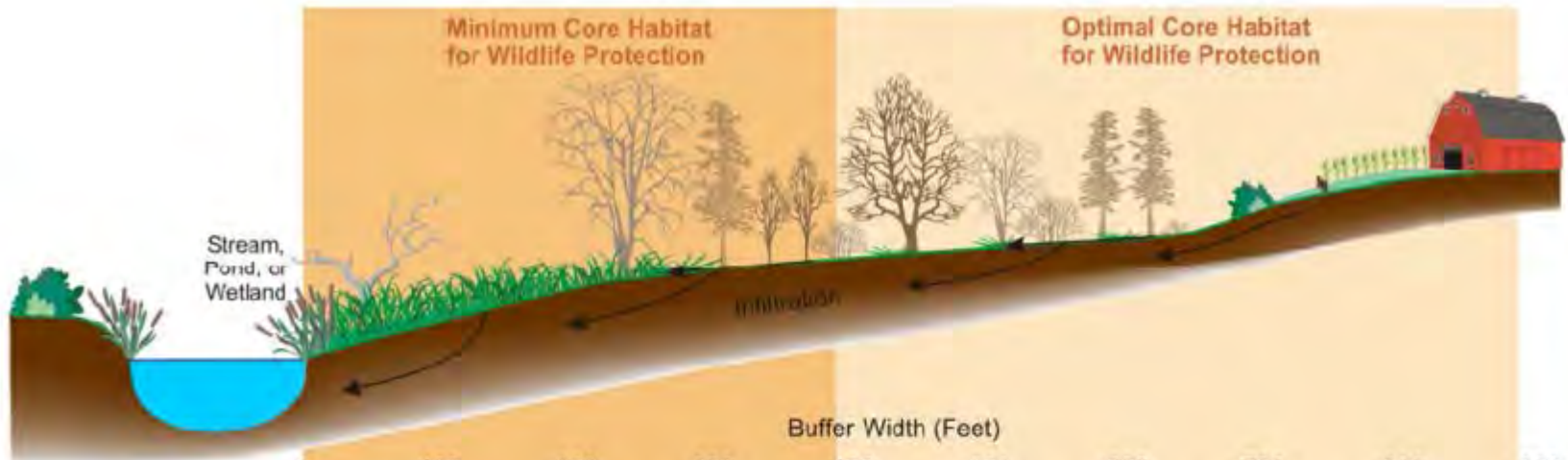
More than 70 million pounds of chemical pesticides are applied to lawns in the U.S. each year.



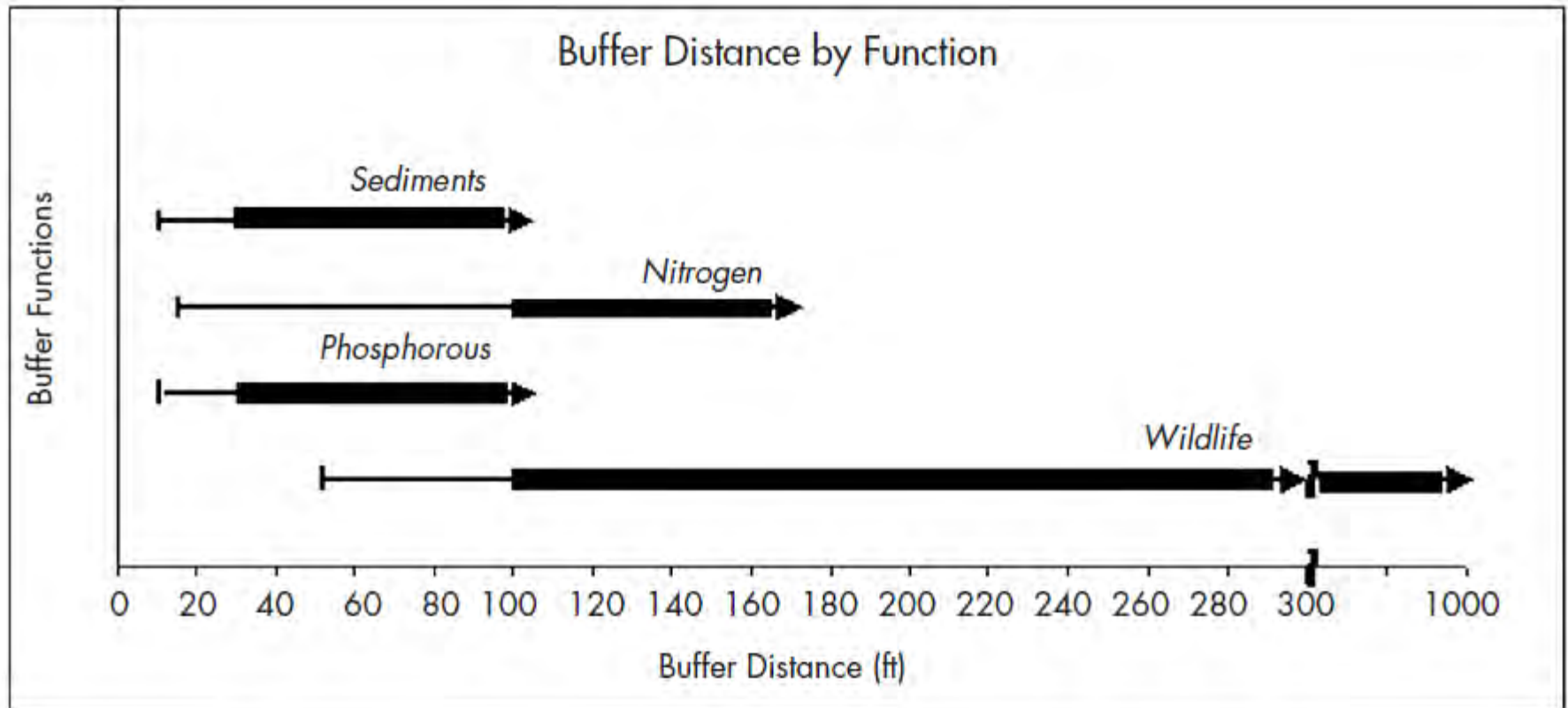
# Homeowners Pay More



- ▶ Homeowners are willing to pay more to live near buffered streams and open space, according to a study in Missouri
- ▶ Thought requirements would ultimately increase the price of new homes.
- ▶ Ordinance requires a 25- to 50-foot buffer around streams (depending on stream size) on all land developed for residential or other non-agricultural uses.
- ▶ **Contingent Valuation Method.**
- ▶ WTP of approximately **\$6,858** to live adjacent to community-owned and open accessible riparian buffers.
- ▶ People were willing to pay approximately **\$1,625** to live in subdivision but not immediately adjacent to the buffer.
- ▶ **Hedonic Pricing Method**
- ▶ All properties within a 500-foot wide buffer zone around Dardenne Creek and its tributaries sold for **\$2,500 to \$3,800** more than properties farther away.
- ▶ Properties adjacent to open space sold for **\$4,600 to \$6,400** more than properties without open space.



# Buffer Width



Protect and preserve the remaining high quality natural buffers

A 150 foot wide **Protection Zone** protects habitat and minimizes edge effects

Opportunities for Expansion

Protection Zone

Minimum Core Habitat

Optimal Core Habitat

Wetland

Optimal Core Habitat

Protection Zone

Opportunities for Expansion

Opportunities for Outreach

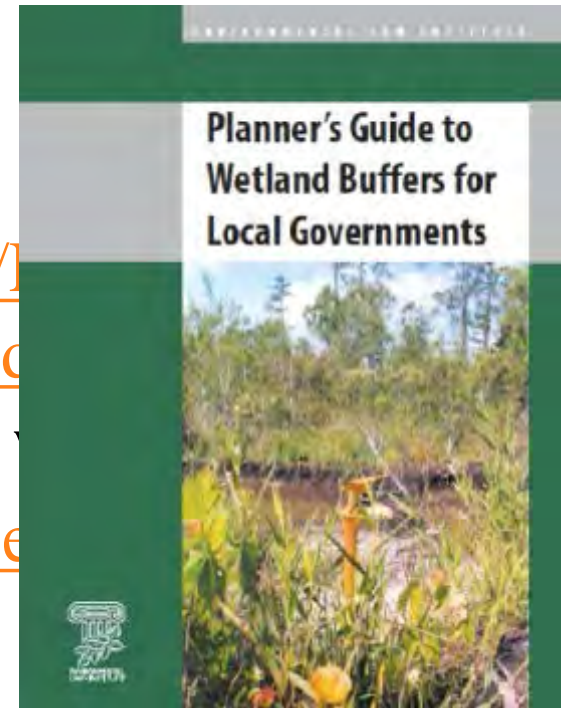


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# Resources

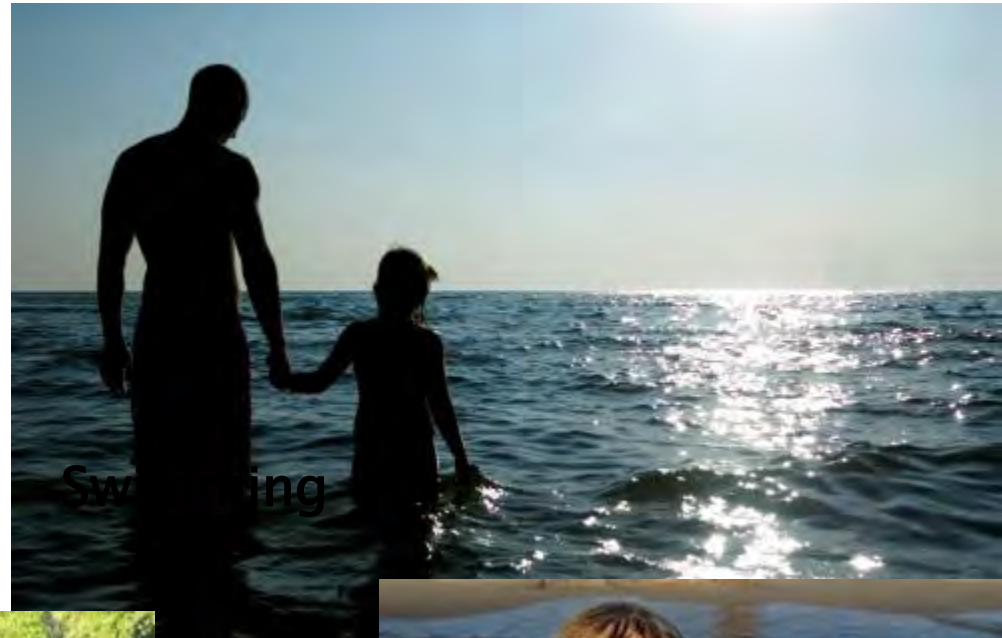
- ▶ <http://www.sewrpc.org/SEWRPCFiles/RecentPublications/ManagingtheWatersEcobrochure.pdf> - buffers – managing the
- ▶ <http://www.angelfire.com/in4/earthpages/wetlands.html> - wetland ordinance for IN
- ▶ [http://www.elistore.org/reports\\_detail.asp?ID=11272](http://www.elistore.org/reports_detail.asp?ID=11272) – wetland buffers for local governments
- ▶ [www.swmpc.org/lid.asp](http://www.swmpc.org/lid.asp) - Low Impact Development



# Do your part so we can enjoy....



Drinking water



Swimming



Canoeing



Playing in the water

# Summary

- ☛ We are blessed with many water resources.
  - ☛ There is an opportunity to develop in a manner that will protect water resources.
  - ☛ Continue to learn and get involved to protect our water resources!
- 