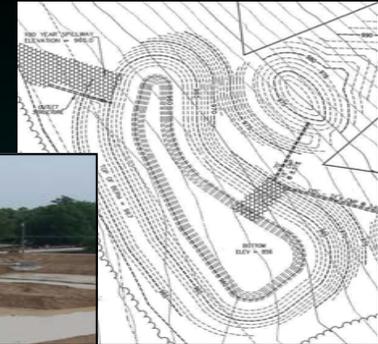


# Storm Water Management & Erosion Control Workshop

*April 22, 2008 – Pewaukee WI*

*“Good planning can’t stop  
when the permit is issued”*



Sponsored by:

- ❖ Waukesha County Department of Parks & Land Use
- ❖ Metropolitan Builders Association
- ❖ MS4 Community Partners in Waukesha County

# Program Overview

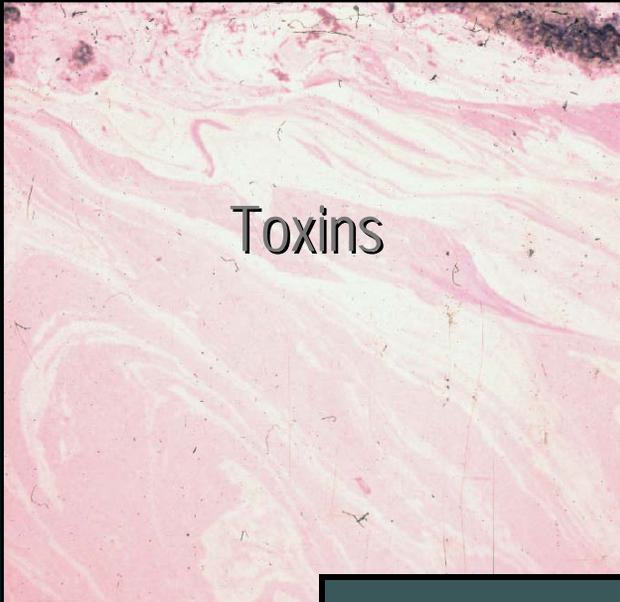


- ☞ Morning Sessions:
  - Overview of Storm Water Permit Process (County)
  - Soils Investigations
    - Break (9:45-10:00)
  - Plan Review Process/Common Mistakes
  
- ☞ Lunch (12:00-12:45)
  
- ☞ Afternoon Sessions:
  - Plan Implementation
    - Break (2:15-2:30)
  - Project Closure & Permit Termination
  - Implementation Roundtable



# Why We Are Here

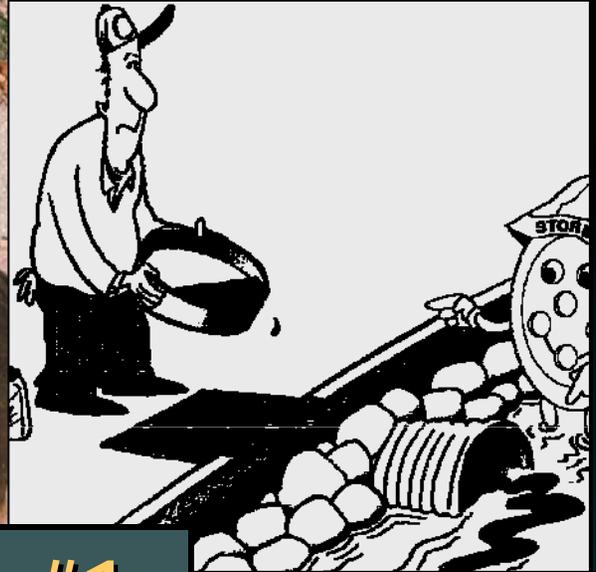
*Perry Lindquist, Waukesha County  
Land Resources Division Manager*



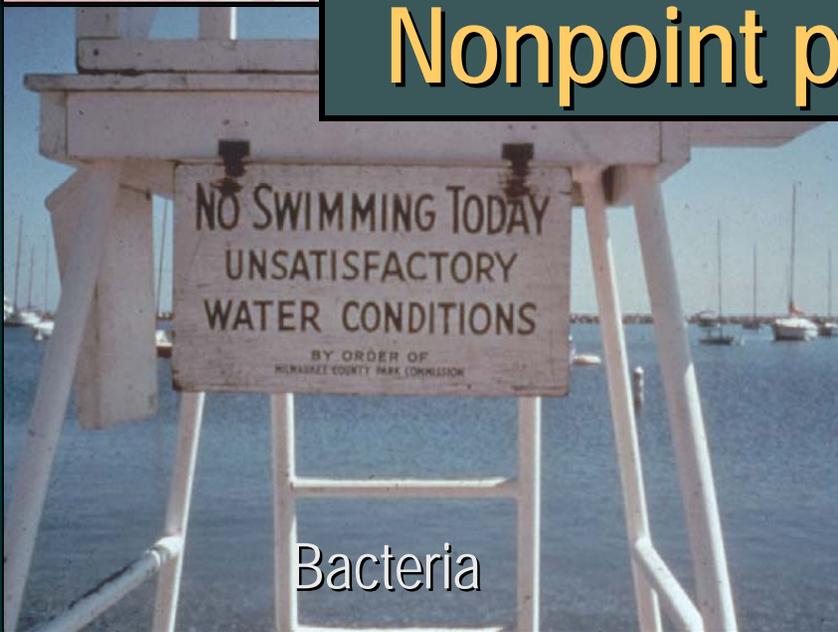
Toxins



Organics



# Nonpoint pollution #1



Bacteria



Sediment



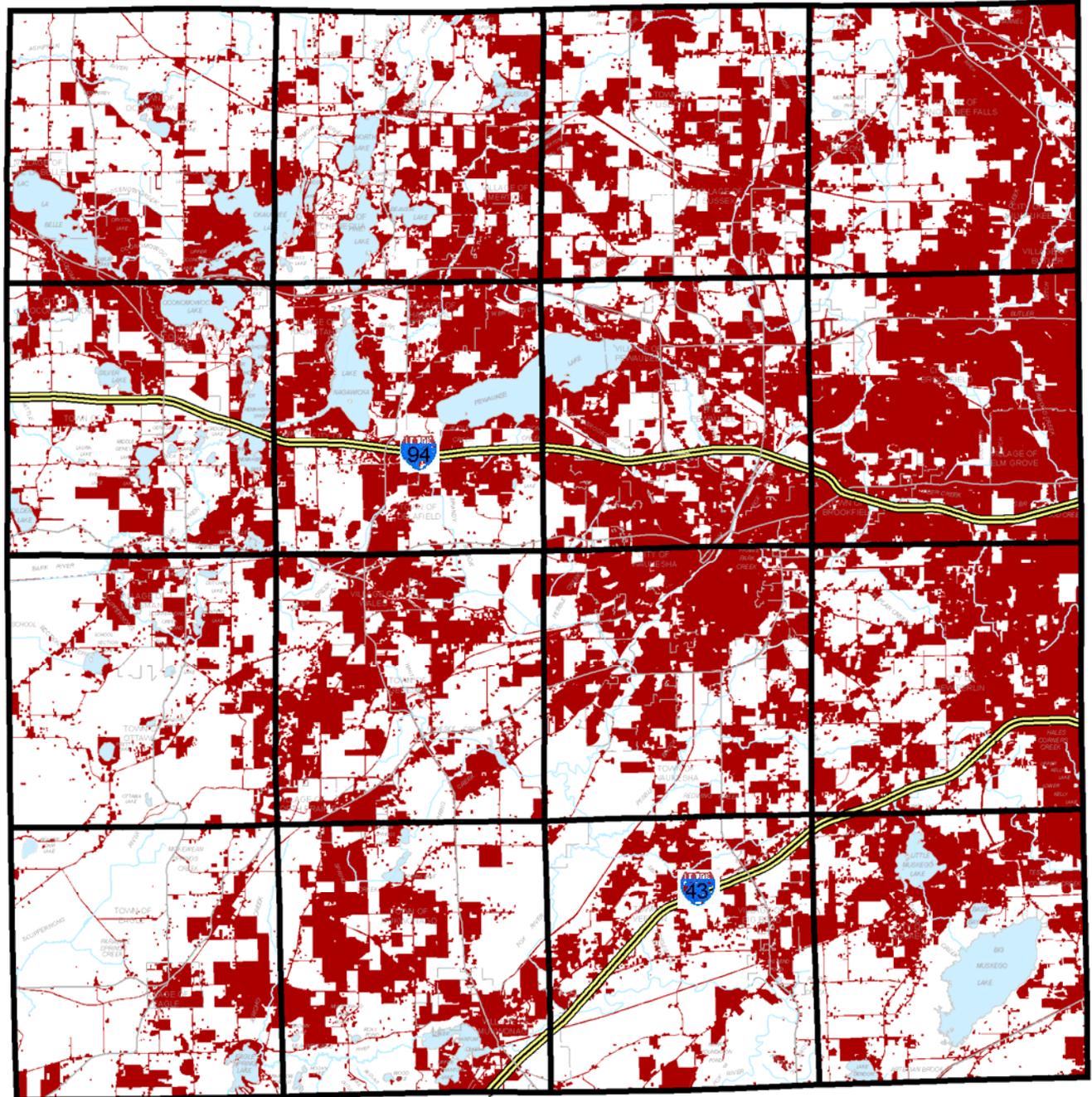
# Developed Lands

Waukesha County  
2005

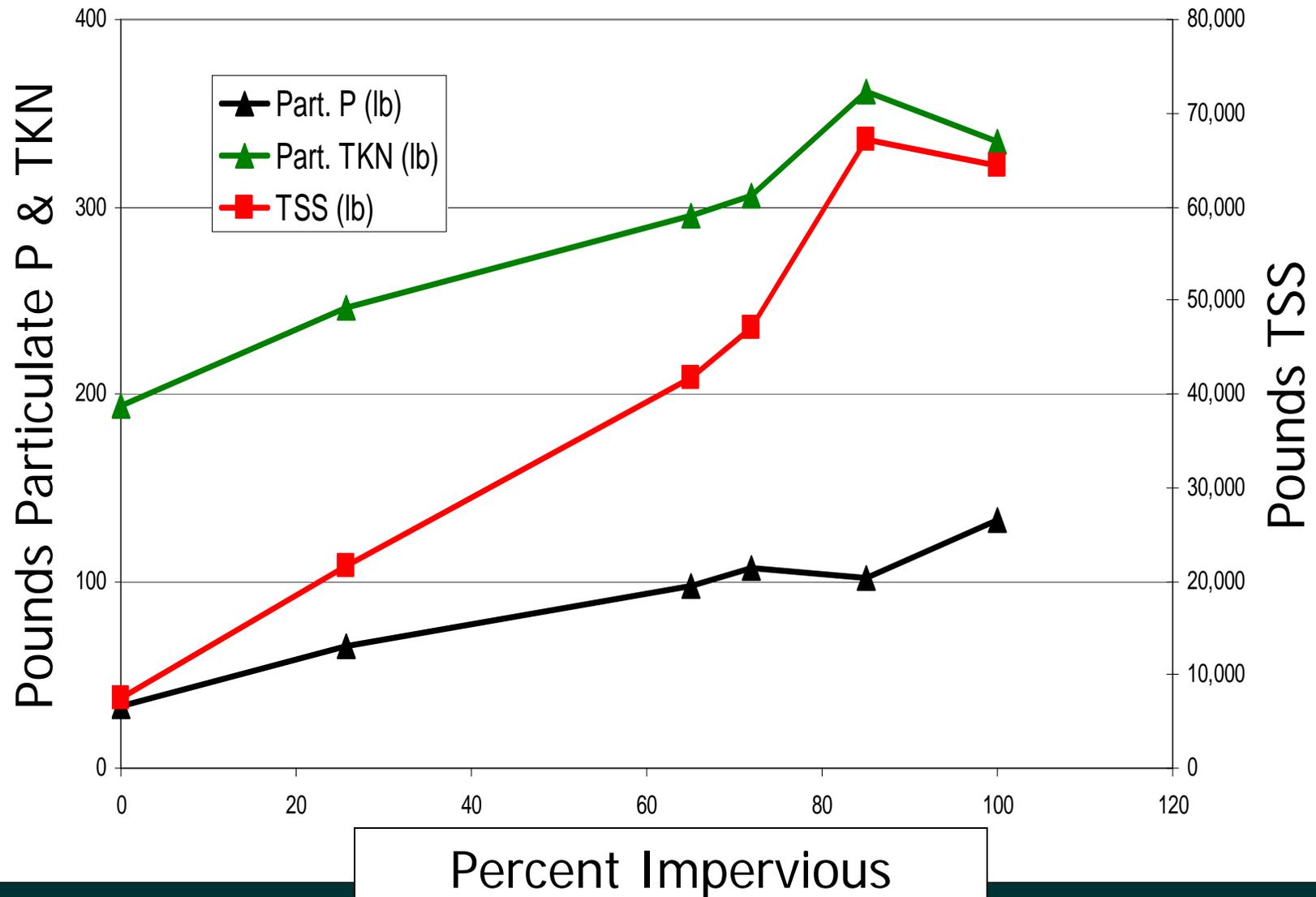
## Legend



Urban and  
residential  
land uses

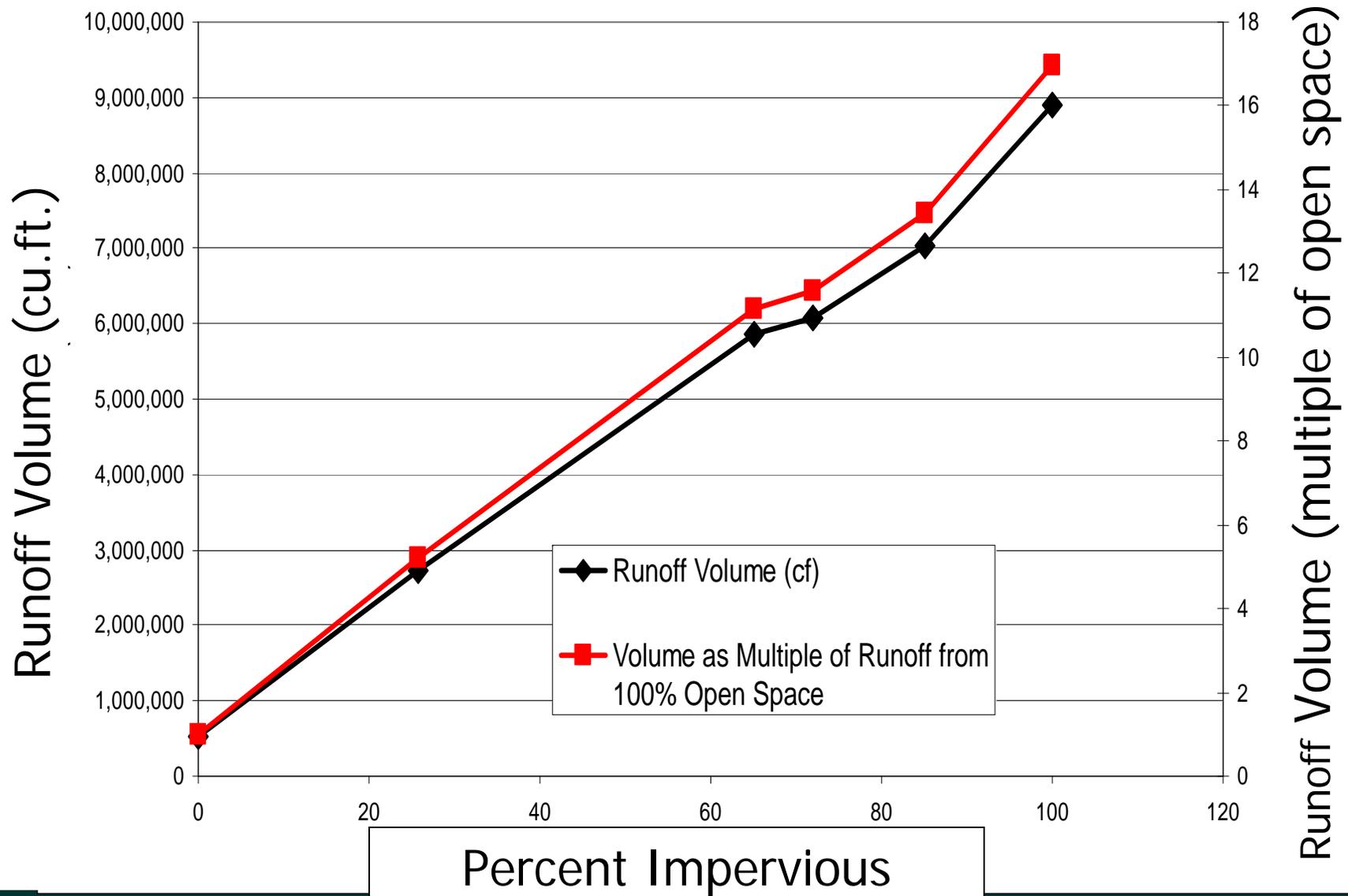


# Pollutant Loadings vs. Percent Impervious





# Runoff Volumes vs. Percent Impervious



# Larger faster flows



Downstream  
flooding



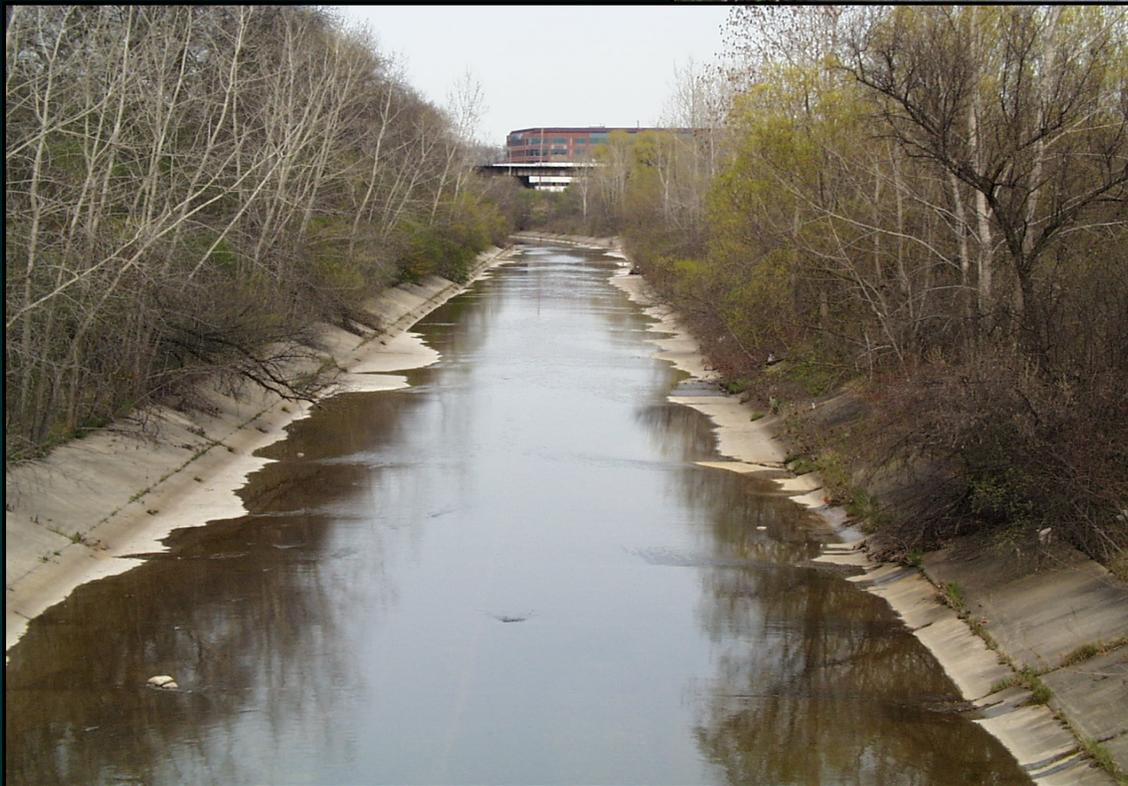
Bank  
erosion



# Lost base flows & channel armoring

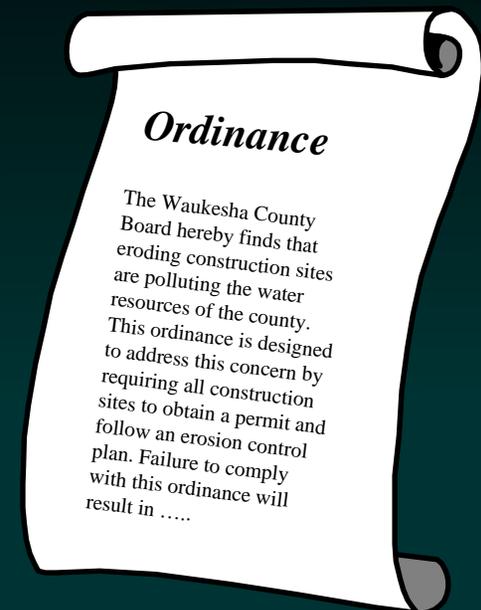


The end result if  
no prevention



# Storm Water Mgt. & Erosion Control Ordinances

- ⌘ Required by federal and state law
- ⌘ Local implementation
- ⌘ Have evolved quickly
  - 1970-80's Peak flow & erosion control
  - 1990's + Water quality
  - 2000's + Runoff volume and site drainage

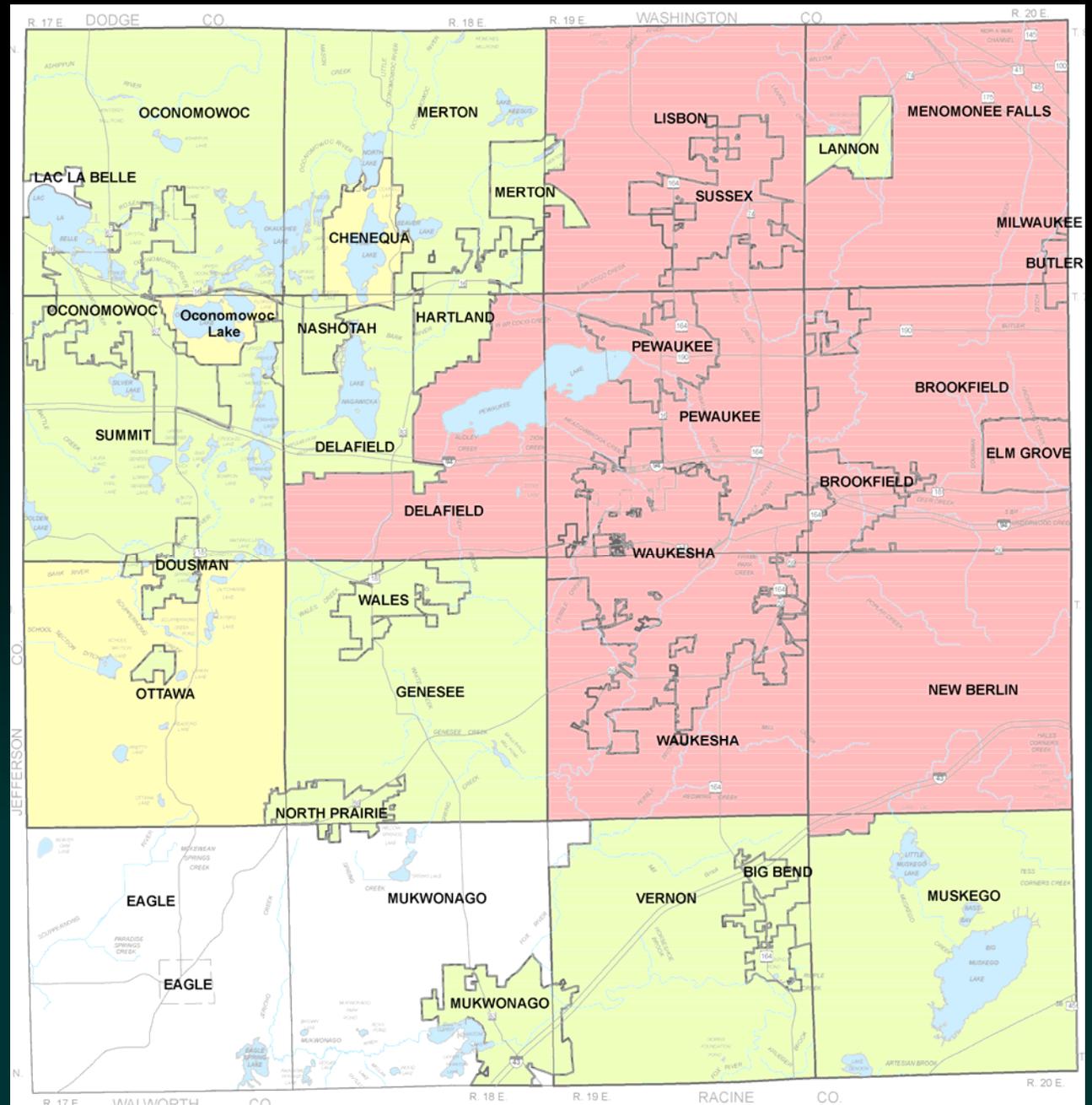


# Waukesha Co. Municipalities with MS4 Permits

## Legend

- Phase I (13)
- Phase II (18)\*
- Exempted (3)
- Not required (4)

\* Includes Waukesha Co.



(31 out of 38 communities)

# Overview of Waukesha County Storm Water Permit Process

Leif Hauge, P.E., Senior Civil Engineer  
Waukesha Co. Land Resources Division

# Guiding principles



## ☞ Erosion Control

- ☞ Grading that *fits the terrain*;
- ☞ *Minimize the time* the soil is exposed.
- ☞ Use BMPs that *prevent soil detachment*.

## Storm Water Management:

- Reserve *adequately sized areas* for storm water early
- Groundwater recharge
- Emphasize *plantings*, and low flow velocities
- Keep *roof runoff separate*
- *Distribute* bioretention and infiltration BMPs



# Erosion Control Plan



- Disturbs *3,000 square feet*
- Excavation or filling of *400 cubic yards*
- Trenching of *300 feet* of a utility
- Land disturbing activity, *regardless of size*, that the LRD determines is likely to cause an adverse impact to an environmentally sensitive area or other property.

# Storm Water Management Plan

- ▣ *Subdivision plat*
- ▣ *CSM or other development with  $\geq 0.5$  acres of impervious surfaces*
  - Includes smaller sites that may be constructed at different times
- ▣ Construction of any *road*
- ▣ Land development activity, *regardless of size*, that the LRD determines is likely to cause an adverse impact.

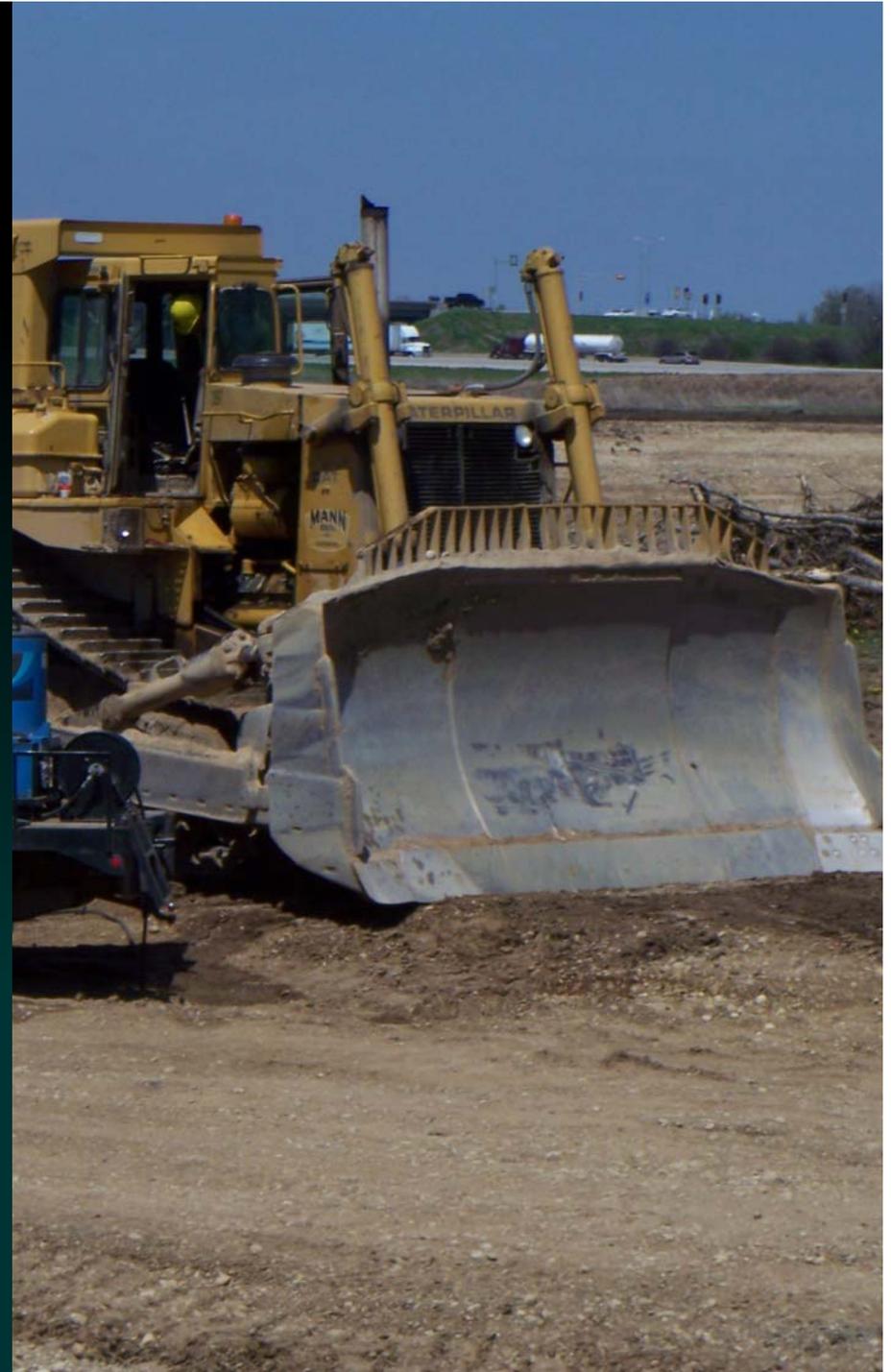




400 ft

# Preliminary Review Letter

- Unique to WC
- Disturbs *1 acre*
- Construction of a *road*
- Addition of *0.5 acres or greater of impervious surfaces*, including smaller individual sites that may be constructed at different times
- Other land disturbing or land development activities, as determined by the LRD.

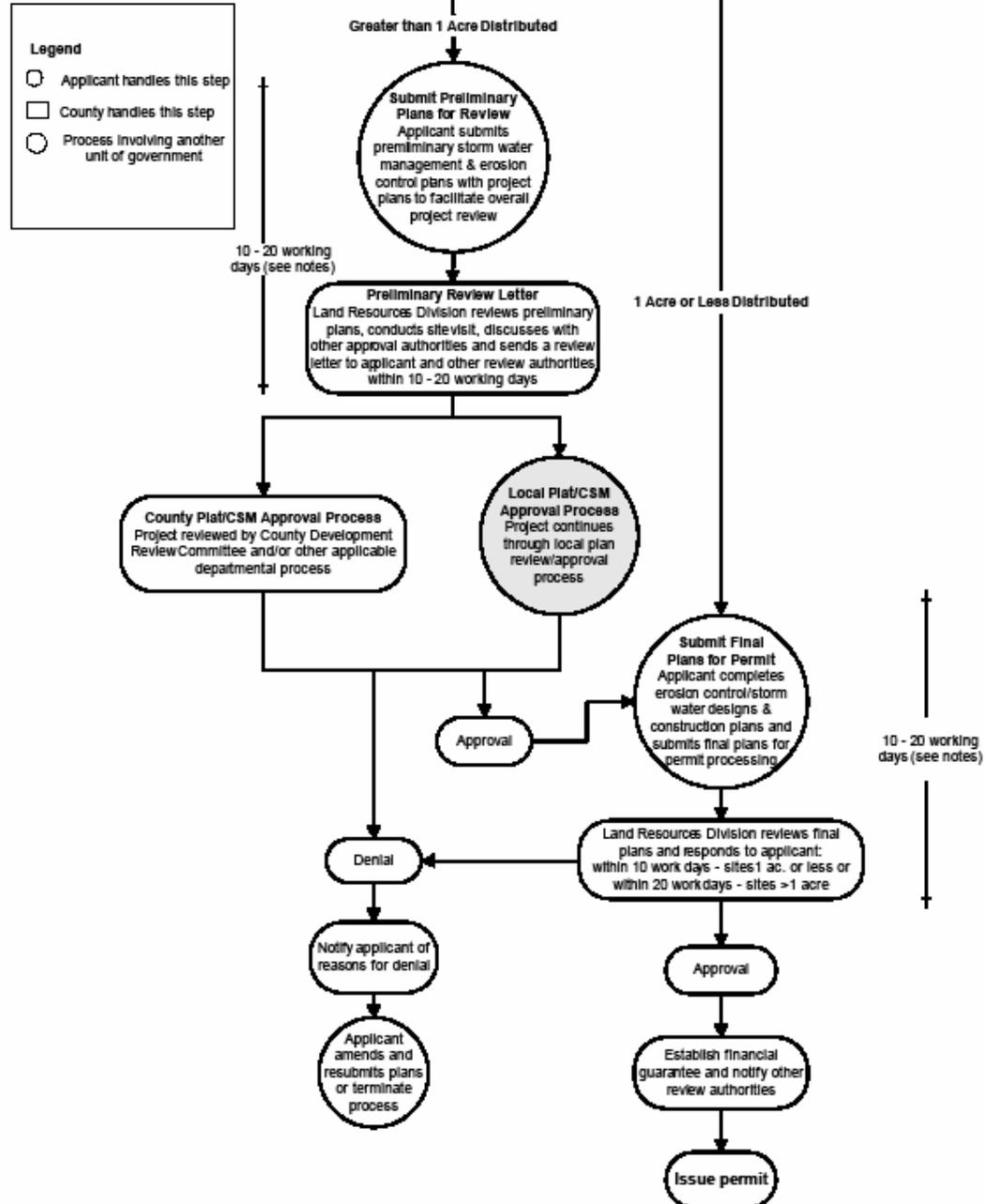


# How to get a storm water permit (with storm water management plan)

- ⌘ Pre-application conference, development review team
- ⌘ *Application form & fee*
- ⌘ *Preliminary and final plans*
- ⌘ *General requirements agreement*
- ⌘ *Construction inspection schedule*
- ⌘ *Financial assurance*
- ⌘ *Plan implementation meeting and sign-off*
- ⌘ Approval of (& record) *maintenance agreement*

20 day

STORM WATER MANAGEMENT & EROSION CONTROL PERMITS



10 day



Waukesha County Dept. of Parks & Land Use – Land Resources Division  
1320 Pewaukee Road, Room 260  
Waukesha, WI 53188-3868

Phone: 262-896-8300

Fax: 262-896-8298

## Storm Water Permit Application Form

Project Name:

Project Type (From Fee Schedule):

Per NR 216

Project Location:        1/4, Section        Township of

The following contacts are required at the time of application: (Enter on back page)

- **Applicant:** The person or entity holding fee title to the property or their representative, as delegated on page 2 of this form. The applicant shall sign the initial permit application form in accordance with the items 1-5 listed below, after which the applicant may provide written authorization for others to serve as the applicant's representative: 1) In the case of a corporation, by a principal executive officer of at least the level of vice-president or by the officer's authorized representative having overall responsibility for the operation of the site for which a permit is sought; 2) In the case of a limited liability company, by a member or manager; 3) In the case of a partnership, by the general partner; 4) In the case of a sole proprietorship, by the proprietor, or; 5) For a unit of government, by a principal executive officer, ranking elected official or other duly authorized representative.
- **Engineer** (or Planner): The primary contact for the preparation of erosion control and storm water management plans. All plan review comments will be addressed to this contact. For all storm water plans and other engineering, this person must: 1) be a licensed P.E. in Wisconsin; 2) stamp P.E. number and sign all plans submitted as part of permit; and 3) oversee and verify construction of all practices.

Additional contacts are required before a permit will be issued:(See permit check box below)

• please use the Storm Water Permit Supplemental Information Form to identify these contacts

# Storm Water Permit Plan Review Fees – 2008

Waukesha County Department of Parks & Land Use – Land Resources Division (LRD)

Project Type (LRD determines)	Fee
<p><b>Erosion Control Plan ONLY (Type 1)</b> - any project that the LRD determines does not require a Storm Water Management Plan, which may include:</p> <ul style="list-style-type: none"> <li>➤ Pond construction</li> <li>➤ Small building/grading/filling projects</li> <li>➤ Referrals from the zoning office or Town</li> <li>➤ Utilities (&gt;300 lineal feet)</li> </ul>	<p>\$ 300.00 per project + \$ 75 per acre disturbed &gt;1 acre</p> <p><i>(Note: Utilities are exempt if they are plowed or bored and are located outside of channel flow)</i></p>
<p><b>Storm Water Management Plans (Type 2)</b> – any project that also requires a Storm Water Management Plan, which may include:</p> <ul style="list-style-type: none"> <li>➤ Buildings, parking lots &amp; roads that add 0.5 acres or greater of impervious surfaces</li> <li>➤ Other sites, as determined by the LRD</li> </ul>	<p>\$ 600.00 + \$ 75.00 per 20,000 ft<sup>2</sup> added impervious surface, as defined in the ordinance (roofs, driveways, parking lots, etc.)</p>
<ul style="list-style-type: none"> <li>➤ Subdivision plats</li> <li>➤ Minor land divisions</li> <li>➤ Any new road</li> </ul>	<p>\$ 600.00 + \$ 50.00 per lot</p>
<ul style="list-style-type: none"> <li>➤ Golf courses</li> </ul>	<p>\$ 600.00 + \$ 10.00/acre</p>

Additional Fees:

- Projects subject to a permit that begin land disturbing or land development activities prior to obtaining a permit will be charged double the above noted fees.
- Permit amendments and exemption requests are \$50 each for Type 1 or \$ 250 for Type 2.
- Projects that submit incomplete plans without addressing issues in previous LRD review letters will be charged an additional \$300 per review. This fee will also be applied to miscellaneous projects where the LRD provides technical design or GIS services.

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## Financial Assurance

A financial assurance is required as a condition of obtaining a Storm Water Permit. It is returned to the applicant upon satisfying all permit termination conditions, including but not limited to: 1) submitting “as-built” survey of final construction; 2) verification of as-built design/construction/plantings by a PE/LA; 3) final site inspection by LRD staff (verify stabilization, etc.), and 4) the applicant providing copies of all required storm water documents recorded through the Register of Deeds. The amount required as a financial assurance includes:

- \$10,000 cash for each planned storm water management facility on the site, up to a maximum of \$30,000 per site; or
- \$500 to \$5,000 cash for sites that have no planned storm water management facility, or the facility is not regulated by the LRD, depending on the scope of the project.
- A Letter of Credit for two times the amounts listed above may be substituted for cash following minimum terms provided by the LRD.

*\*Note: The LRD may exempt a project from the financial assurance requirements if the County has other regulatory means to ensure compliance, such as withholding an occupancy permit. 1/1/08*

# Plan Submittals

- ☒ Checklist 1 – Site Plan
- ☒ Checklist 2 – Erosion Control Plan
- ☒ Checklist 3 – Storm Water Management Plan

## General Requirements Agreement For Storm Water Permit

Subject to Subchapter VIII, Chapter 14 of the Waukesha County Code of Ordinances ("ordinance"), storm water permits are subject to all of the requirements listed below. The Land Resources Division ("LRD") may include other permit requirements that the LRD determines are necessary to ensure compliance with the ordinance. Signing this form is required before a permit will be issued. Violation of any permit requirement shall cause the permit holder and any other responsible party (as defined) to be subject to enforcement action.

*[Definition: "Responsible party" means any person or entity holding fee title to the property or acting as the owners representative, including any person, firm, corporation or other entity performing services, contracted, subcontracted or obligated by other agreement to design, implement, inspect, verify or maintain the BMPs and other approved elements of erosion control and storm water plans and permits under this ordinance.]*

1. **Other Permits.** Compliance with a storm water permit does not relieve the permit holder or other responsible party of the responsibility to comply with other applicable federal, state, and local laws and regulations. The LRD may require the applicant to obtain other permits or plan approvals prior to issuing a storm water permit.
2. **Approved Plans.** All best management practices shall be installed and maintained in accordance with approved plans and construction schedules. A copy of the approved plans shall be kept at the construction site at all times during normal business hours.
3. **Plan Modifications.** The LRD shall be notified of any significant modifications proposed to be made to the approved plans. The LRD may require proposed changes to be submitted for review prior to incorporation into the approved plans or implementation. Any modifications made during plan implementation without prior approval by the project engineer under sub. 6 below and the LRD are subject to enforcement action.

# General Requirements Agreement

- ☼ Construction *in accordance with approved plans and schedules.*
- ☼ Notification of *proposed modifications.*
- ☼ *Provide an engineer to be responsible for general plan compliance, implementation of inspection plan, and verification of construction.*
- ☼ *Provide a qualified professional to verify the infiltration planting process.*

# General Requirements Agreement

- ☞ *Provide a qualified professional to conduct erosion control inspections and maintain an inspection log.*
- ☞ *Repair all best management practices within 24 hours of inspection... until a permit termination letter is issued by the LRD.*

## Plan Implementation Sign-off Form

### *Waukesha County Storm Water Management and Erosion Control Program*

Waukesha County will not issue a Storm Water Permit until proof of *Plan Implementation Sign-off* has been submitted for all applicable contractors charged with implementing the approved version of the storm water management and erosion control construction plans. This is a signed statement from each of the key people charged with implementing the storm water management and erosion control plans for a proposed project. By signing below, the following people indicate that they:

- Have a copy of the approved plans
- Have read the plans and understand their role in implementation, and
- Understands that non-compliance subjects them to enforcement action.

PLAN DATE \_\_\_\_\_

Role in Project	Printed Name	Organization or Company	Mailing Address	Signature	Phone Number	Fax	Email
Owner / Permit Applicant							
Project Engineer							
Grading Contractor							
Erosion Control Inspector							
Erosion Control Contractor							
Landscaping Contractor							
Construction Inspector							

“Sign-off” of the final plans by each person noted above can be faxed to the LRD at 262-896-8298.

## Storm Water Management Practice Maintenance Agreement

Document Number

[Owners Name], as "Owner" of the property described below, in accordance with Chapter 14 Waukesha County Code of Ordinances [or other applicable code], agrees to install and maintain storm water management practice(s) on the subject property in accordance with approved plans and Storm Water Permit conditions. The owner further agrees to the terms stated in this document to ensure that the storm water management practice(s) continues serving the intended functions in perpetuity. This Agreement includes the following exhibits:

**Exhibit A: Legal Description** of the real estate for which this Agreement applies ("Property").

**Exhibit B: Location Map(s)** – shows an accurate location of each storm water management practice affected by this Agreement.

**Exhibit C: Maintenance Plan** – prescribes those activities that must be carried out to maintain compliance with this Agreement.

**Exhibit D: Design Summary** – contains a summary of key engineering calculations and other data used to design the wet detention basin.

**Exhibit E: As-built Survey** – shows detailed "as-built" cross-section and plan view of the wet detention basin.

**Exhibit F: Engineering/Construction Verification** – provides verification from the project engineer that the design and construction of the wet detention basin complies with all applicable technical standards and Waukesha County ordinance requirements.

Through this Agreement, the Owner hereby subjects the Property to the following covenants, conditions and restrictions:

1. The Owner shall be responsible for the routine and extraordinary maintenance and repair of the storm water management practice(s) and drainage easements identified in Exhibit B in accordance with the maintenance plan contained in Exhibit C.

Name and Return Address

Parcel Identification Number(s) – (PIN)

## Example Combined Construction Sequence and Construction Inspection Schedule

Date	Duration	Milestone or Task	Date of Inspection	Inspector Initials	Inspector Role
		Prior to grading activities			
		Surveyor stakes road, drainageways, storm water BMPs. Mark wetlands.			
		Plan implementation meeting			
		Hold pre-construction meeting with Town, County, DNR, contractors, utilities			
		Install tracking pad			EC insp.
		Install silt fence or other perimeter BMPs, clearing and grubbing as minimally needed			EC insp.
		Contact County LRD and other authorities at least 2 days prior to beginning construction			
		Construct Basins			
		Strip topsoil in basin and subsoil stockpile areas			
		Excavate temporary or permanent basins to be used for sediment control			
		The following steps apply to construction of wet detention basins			
		Before berm material is placed, verify that			
		Topsoil, stumps, and vegetation are stripped in basin berm footprint			Engineer
		A 2'x8' keyway is excavated under berm (if permanent pool will pond >3 ft against embankment)			Engineer
		The basin berm is constructed with the specified material			Engineer
		Before a liner is placed, verify that:			
		Basin interior slopes do not exceed maximum pitches (3:1 above water, 10:1 safety shelf, 2:1 below)			Engineer
		Basin bottom and shelf elevations are correct			Engineer
		The safety shelf is at least 8 ft wide			Engineer
		Before the berm is re-compacted around outlet pipes following installation, verify that:			
		The correct pipe diameter, drain hole diameter, and materials are used			Engineer
		The outlet pipe and riser elevations are correct			Engineer
		Anti-seep devices are installed on specified outlet pipes			Engineer
		Before topsoil is re-applied, verify that:			
		A compacted 2-ft clay liner is installed up to the permanent pool elevation			Engineer
		The 90% standard Proctor compaction req't is met by sampling at five locations along embankment			Engineer
		The berm elevation is 5% above design height (above existing grade) to allow for settling			Engineer
		Verify that topsoil is re-applied to all surfaces above and including the safety shelf			Engineer
		Basin is dewatered to verify bottom elevation and remove sediment			Engineer
		As-built elevations are correct (see as-built survey punch list)			Engineer
		The following steps apply to construction of infiltration basins			
		Before engineered soil is installed in the infiltration area, verify that:			
		Basin was over-excavated to expose permeable soil			Soil Scientist
		Compost used to amend soil meets WDNR specification S100			Engineer
		Correct mixture of engineered soil is used (40% sand, 30% topsoil, 30% compost)			
		Before berm material is placed, verify that			
		Topsoil, stumps, and vegetation are stripped in basin berm footprint			Engineer
		A 2'x8' keyway is excavated under berm (if permanent pool will pond >3 ft against embankment)			Engineer
		The basin berm is constructed with the specified material			Engineer
		Before a forebay liner is placed, verify that:			
		Basin interior slopes do not exceed maximum pitches (3:1 above water, 10:1 safety shelf, 2:1 below)			Engineer
		Basin bottom and shelf elevations are correct			Engineer
		The safety shelf is at least 8 ft wide			Engineer

# Exemptions

## ☞ Applicability Exemptions.

- Cropland & pastures
- State & federal projects
- If another regulatory agency is enforcing
  - Need proof of permit, contacts, as-builts, maintenance agreement, etc.

## ☞ Exempt From Erosion Control Requirements Only:

- Individual one and two family residential.
- Nonmetallic mining.
- Utility that is plowed or bored.

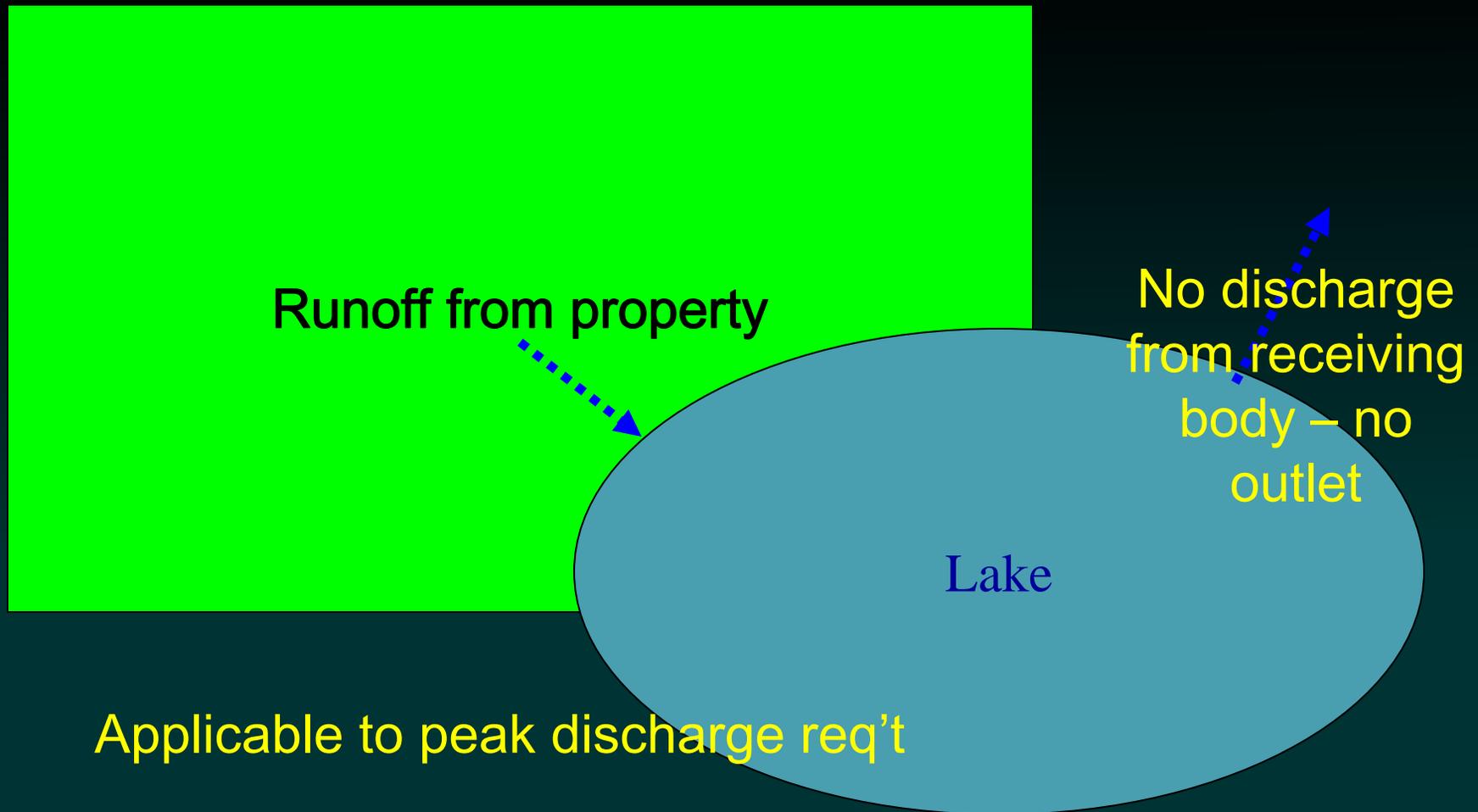


# Technical Exemptions



- *Off-site BMP*
- *Internally drained site*
- It is *impracticable to meet the requirement due to site conditions beyond the control of the applicant.* LRD shall provide special consideration for:
  - Redevelopment sites.
  - In-fill development areas less than 5 acres.
  - Highway projects.
  - <10% impervious and less than 1 ac. impervious

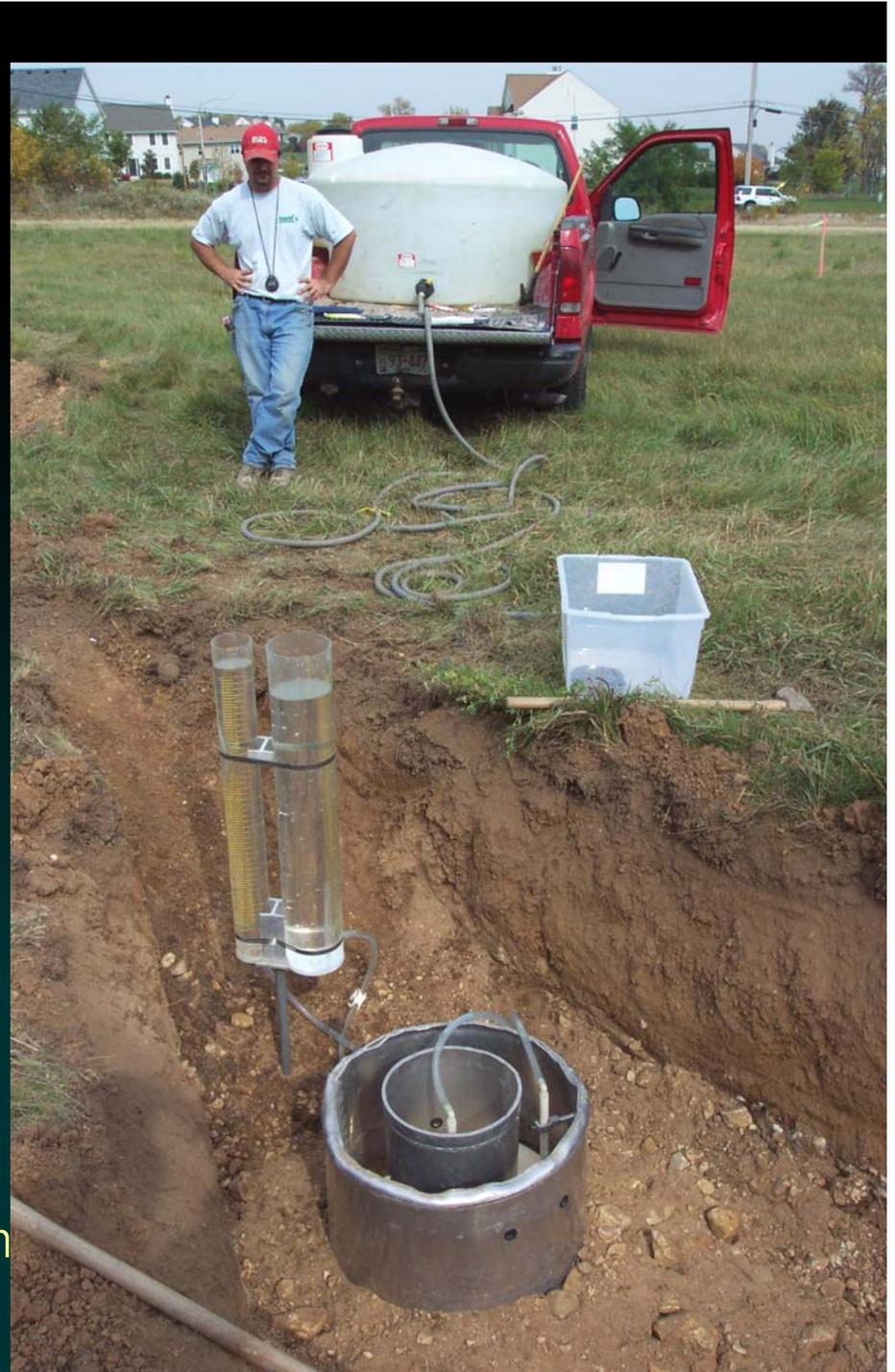
# Internally Drained Exemption



# Application for Exemption

The applicant shall submit:

- ☒ A written request
- ☒ A site plan
- ☒ Review fee
- ☒ Documentation that the site meets the criteria for which an exemption is being applied (eg. Infiltration rate  $<0.6$  in/hr)
- ☒ For off-site BMP(s):
  - As-built plans, construction certification and design summaries;
  - Recorded maintenance agreement.
  - Utility district fee payment documentation



# Exemption Request Processing

- ☼ *20 working day response deadline.*
- ☼ *May require fee to support storm water BMPs or stream restoration expenses off site.*
- ☼ *The applicant may appeal.*



# Pre-Application Meetings

- ☞ Recommended but not required
- ☞ Saves time, effort, and expense
- ☞ Heads off expensive wild goose chases
- ☞ Does not require elaborate submittal

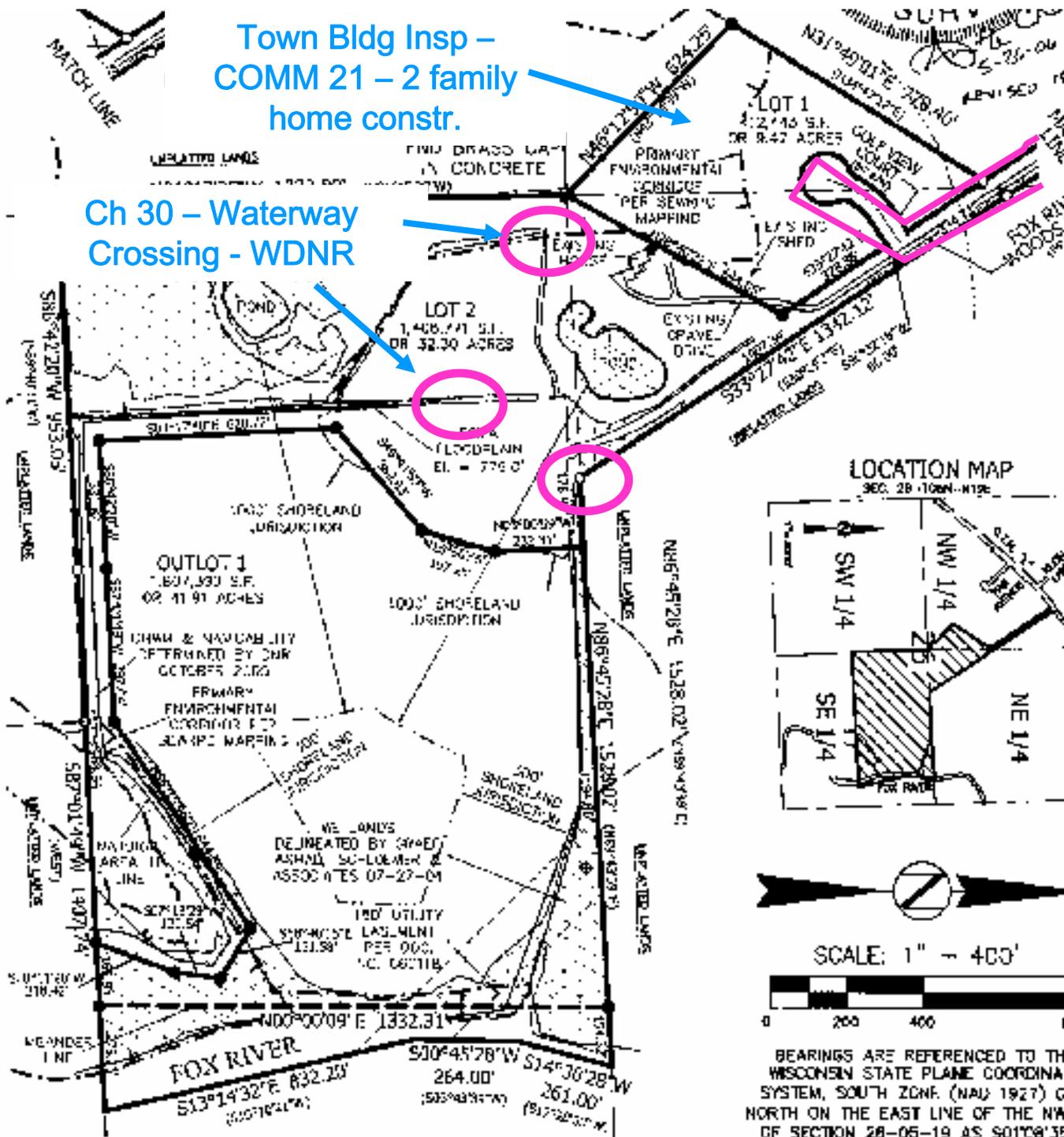


# Soil testing up front



## Permit withholding / cross-compliance with other permits, particularly WDNR Chapt. 30 and wetlands

- ⊗ The LRD may require the applicant to obtain other permits or plan approvals prior to issuing a storm water permit



Public Road, CSM - Town  
 County DPW - Access to CTH L

# Juris-dictional Boundaries

NR 216 - Entire Site - >1 ac dist. - WDNR

County Storm Water - CSM, >1/2 ac, >3,000 sf, road constr.

County Planning & Zoning - CSM for road and outlot parkland, CU permit for condo plat



The End