McHenry County

Stormwater Management Ordinance

Future BMP Requirements

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What's new?????

Not much.....YET.....

What will be new?????

More BMPs and Infiltration

Terminology – Used almost interchangeably but it is not the same……

Infiltration

Runoff Volume Reduction/Stay On

Why??

The County Comprehensive Stormwater Management Plan (1996)

- Limiting post development runoff to predevelopment volumes and rates
- Encourage infiltration where groundwater pollution will not result
- Protecting water quality

The County Groundwater Resources Management Plan

- Use stormwater best management practices that promote infiltration and treatment to the maximum extent practical
- Utilize Sensitive Aquifer Recharge Areas Map (SARA)

NPDES Requirements

- Develop and implement strategies that will reduce the discharge of pollutants, the volume and velocity of storm water flow to the maximum extent practicable

How will the new requirements be implemented and regulated?

- Annual yield based approach
- Limit post-development yield for the entire site
- Standardized spreadsheet tool for determining yield based on landuse/BMPs/soil type
- Required at detention threshold

Brief overview of spreadsheet tool

Lets take a look!!!!

YIELD FACTORS FOR DESIGN

	Hydrologic Soil Group			
	A/B	**C**	**D**	
IMPERVIOUS AREAS				
Hydraulically Connected Impervious	0.9	0.9	0.9	NIPC HSPF modeling and DuPage County TMDLs
Flat Roofs	*0.79*	*0.79*	*0.79*	Pitt "Small Storm Hydrology..."
Pitched Roofs	*0.95*	*0.95*	*0.95*	
Large Impervious Areas	*0.97*	*0.97*	*0.97*	
PERVIOUS AREAS				
Graded Lawn	0.1	0.2	0.3	Mueller and Thompson, AWRA, 2009
Pitt Factors (0.6 inch rainfall)	*0.1*	*0.19*		Pitt "Small Storm Hydrology..."
Tilled or Undisturbed Lawn	0.02	0.03	0.1	Mueller and Thompson, AWRA, 2009
Pitt Factors (0.6 inch rainfall)	*0.02*	*0.19*		Pitt "Small Storm Hydrology..."
Native Vegetation	0.01	0.02	0.07	K.R. Brye, 1999
Wetland	0.1	0.15	0.2	Kadlec, Treatment Wetlands
Forest	0.02	0.04	0.05	CWP, 2008, The Runoff Reduction Method
BMPs				
Rain Garden	0.05	0.1	0.15	Mueller and Thompson, AWRA, 2009
Grassed Swale	0.1	0.2	0.3	Mueller and Thompson, AWRA, 2009
Wetland Detention	0.7	0.7	0.7	Kadlec, Treatment Wetlands
Wet Detention	0.9	0.9	0.9	CWP, 2008, The Runoff Reduction Method
Dry Detention	0.7	0.8	0.8	Madison
Permeable Pavement (2" live storage, not underdrained)	0.1	0.1	0.1	From studies cited in AWRA Damodaram
Permeable Pavement (2" live storage, underdrained)	0.7	0.75	0.8	From studies cited in AWRA Damodaram
Green Roof (1" live storage)	0.2	0.2	0.2	Mueller and Thompson, AWRA, 2009
DISCONNECTION OF IMPERVIOUS AREAS				
(applied to both impervious and pervious areas)				Mueller and Thompson, AWRA, 2009
1:1 (impervious:pervious area ratio)	0.04	0.09	0.23	
2:1	0.07	0.15	0.33	
5:1	0.15	0.31	0.48	
10:1	0.3	0.48	0.61	
INFILTRATION				
10:1 or less	0.01	NA	NA	

RESIDENTIAL EXAMPLE

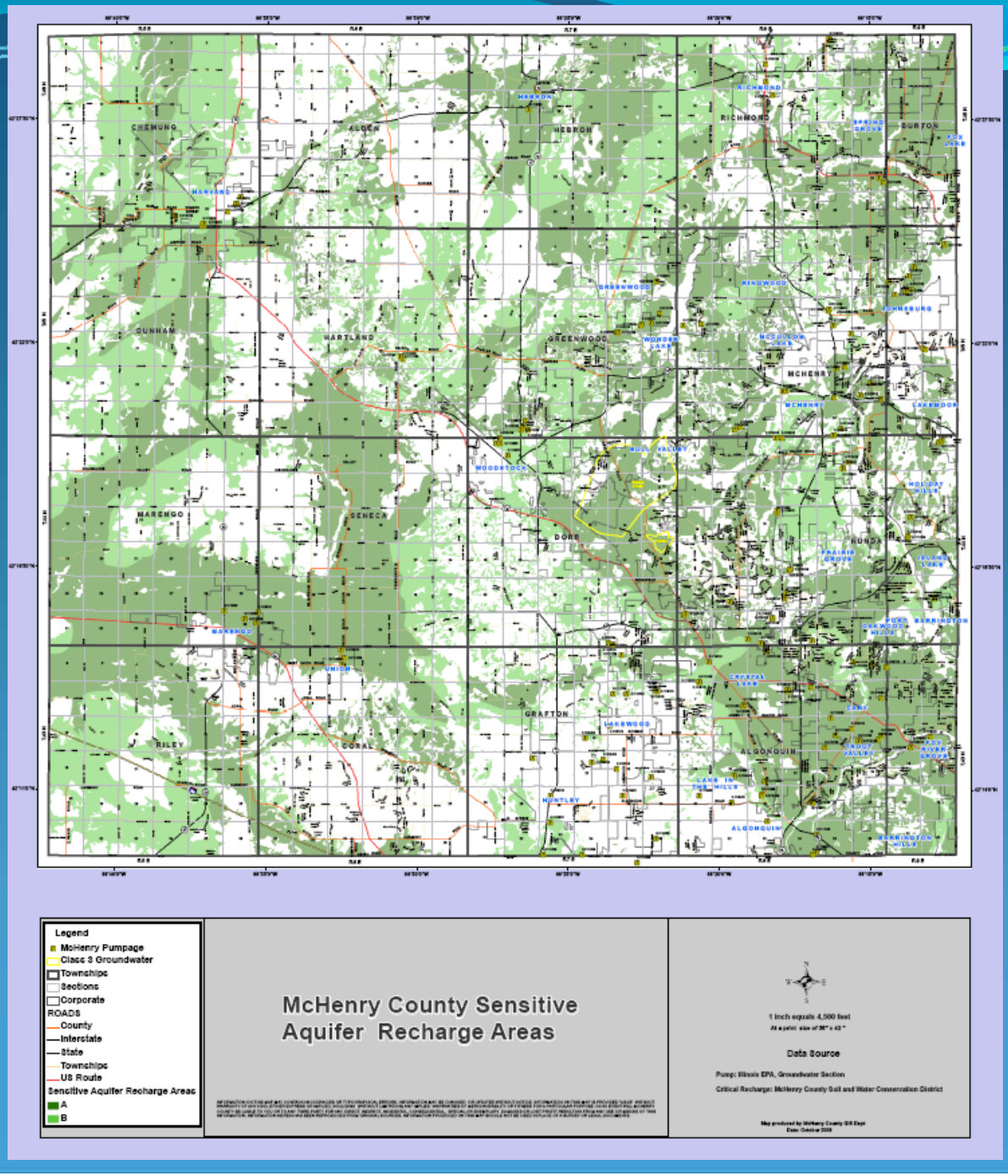
Rainfall (in)	34
Single Family Residential	
Allowable Yield (in)	12
Size (acres)	40
1/5 acre lots - 40% Impervious	
Urban Section	
Wet Detention with Native Sideslopes	
C HSG Soils	

Current Design

	Percent	Area (ac)	Surface Runoff Yield Factor	Annual Yield (in)		
Detention	10%	4	0.9	30.6	122.4	
Native Sideslopes	5%	2	0.02	0.68	1.36	
HCI	38%	15	0.9	30.6	459	
Graded Lawn	48%	19	0.2	6.8	129.2	
		40			711.96	
Total Yield (in)					17.80	Too High

Deep Till, Wetland Detention, Disconnect Impervious, Wetland Detention Buffer

	Percent	Area (ac)	Surface Runoff Yield Factor	Annual Yield (in)		
Wetland Detention	10%	4	0.7	23.8	95.2	
Native Detention Buffer	5%	2	0.02	0.68	1.36	
HCI	15%	6	0.9	30.6	183.6	
Undisturbed/Tilled Lawn	35%	14	0.03	1.02	14.28	
Disconnected Impervious (2:1)	23%	9	0.15	5.1	45.9	
Lawn for Disconnected Impervious	13%	5	0.15	5.1	25.5	
		40			365.84	
Total Yield (in)					9.15	OK


CHEMUNG
HARVARD
HEBRON
RICHMOND
SPRING GROVE
SORTON
GREENWOOD
KINNSBURG
DUNHAM
HARTLAND
MCHENRY
LAKEMOOR
WOODSTOCK
MARENGO
SENECA
DORR
RUNDA
UNION
GRAFTON
LAKEWOOD
RILEY
CORAL
ALGONQUIN
HUNTLEY
Legend
McHenry Pumpage
Class 3 Groundwater
Townships
Sections
Corporate
ROADS
County
Interstate
State
Townships
US Route
Sencitive Aquifer Recharge Areas
A
B
McHenry County Sensitive
Aquifer Recharge Areas
1 Inch equals 4,500 feet
Data Source
Pump: Illinois EPA, Groundwater Section
Critical Recharge: McHenry County Soil and Water Conservation District

What are the desired goals?

- Maintain runoff volume from entire site
- Protect water quality (both ground and surface)
- Allow flexibility in site design
- Create robust and redundant practices
- Allow credit for “good site” practices (such as native landscaping, soil restoration, and impervious disconnection

Specifics yet to be resolved

- Yield and practice values
- Level of field investigation required
- Protection of groundwater quality
- Certain land uses
- Maintenance requirements
- Deed restrictions
- Fee in lieu

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