EROSION & SEDIMENT CONTROL REFERENCE GUIDE

FOR THE:

EROSION & SEDIMENT CONTROL ORDINANCE

DATE:
March 1, 2021

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EXECUTIVE SUMMARY

The Village's Erosion & Sediment Control Reference Guide (Reference Guide) has been created to act as a companion to the Village's Erosion & Sediment Control Ordinance (Ordinance). The Ordinance cites the Reference Guide as the resource for details that were omitted from the Ordinance. Items in the Reference Guide can be changed without the public hearing process as the changes are typically administrative and/or technical and do not affect the Ordinance's intent and requirements. The Reference Guide is organized similar to the Erosion & Sediment Control Ordinance for ease of relating the Reference Guide to the appropriate sections in the Ordinance.

The Erosion & Sediment Control Ordinance (Ordinance) applies to all construction sites, regardless of the land disturbance size. The Ordinance requires a permit for a construction site with 4,000 square feet or greater of land disturbance. Please refer to 15-2-4A(1)(c) of the Ordinance and 15-2-4A of this Reference Guide for a description of other construction sites that may require a permit.

Construction Site Erosion Control Ordinance								
Site	**Requirements [a]**							
	Sediment (TSS)	**Vehicle Tracking**	**Protect Storm Inlets**	**Protect Waters of State**	**Protect Drainage Ways**	**Dewater Properly**	**Manage Soil Stockpile**	**Manage Building Materials**
Less than 1 Acre	No Numeric Standard [b]	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1 Acre or More	5 tons / acre / year	Yes	Yes	Yes	Yes	Yes	Yes	Yes

[a] Summary of Section 15-2-7 Performance Standards of the Erosion & Sediment Control Ordinance. See Ordinance and this Reference Guide for specific requirements, exemptions and prohibitions.

[b] Construction sites regulated by the Wisconsin Department of Safety and Professional Services are required to comply with a numeric performance standard, regardless of the size of land disturbance. See SPS 360.20(3) and SPS 321.125(3) for specific requirements. The local municipality may also be acting as an agent of the Wisconsin Department of Safety and Professional Services.

15-2-1 AUTHORITY

15-2-2 FINDINGS OF FACT

15-2-3 PURPOSE

15-2-4 APPLICABILITY AND JURISDICTION

A. APPLICABILITY

Pursuant to 15-2-4A(1)(c), the administering authority may require a permit for construction sites with less than 4,000 square feet of land disturbance. Currently, the administering authority's policy is to require a permit for the following construction sites with less than 4,000 square feet of land disturbance:

- Installation, replacement, or maintenance of underground pipes, cables, fiber optics, or wires with 100 linear feet or greater of length.
- Routine ditch maintenance with 100 linear feet or greater of length.
- Land disturbing activities located in waters of the state, wetlands, or protective areas. Wetlands shall be delineated in accordance with s. NR 103.08(1m), Wis. Adm. Code.

B. JURISDICTION

C. EXCLUSIONS

The Wisconsin Department of Transportation (WisDOT) has entered into a memorandum of understanding with the Wisconsin Department of Natural Resources that satisfies s. 281.33 (2), Wis. Stats., such that activities directed and supervised by WisDOT are exempt from this Ordinance.

Activities directed and supervised by the local municipality are covered by this Ordinance.

15-2-5 DEFINITIONS

15-2-6 TECHNICAL STANDARDS

A. DESIGN CRITERIA, STANDARDS AND SPECIFICATIONS

Below is a list of Technical Standards and Guidance Documents that shall be used to satisfy Performance Standards contained in the ordinance. Technical Standards specify the minimum criteria for a best management practice (BMP). Guidance Documents contain recommendations and additional "how to" guidance. Performance Standards take precedence over Technical Standards and Technical Standards take precedence over Guidance Documents.

(a) **Technical Standards**: The following are applicable Wisconsin Department of Natural Resources (DNR) Conservation Practice Standards or Technical Standards. These standards may be found on the DNR website (http://dnr.wi.gov/topic/stormwater/standards/const_standards.html).

- 1050 Land Application of Additives for Erosion Control
- 1051 Water Application of Additives for Sediment Control
- 1052 Non-Channel Erosion Mat
- 1053 Channel Erosion Mat
- 1054 Vegetative Buffer for Construction Sites
- 1055 Sediment Bale Barrier (Non-Channel)
- 1056 Silt Fence
- 1057 Stone Tracking Pad and Tire Washing
- 1058 Mulching for Construction Sites
- 1059 Seeding for Construction Site Erosion Control
- 1060 Storm Drain Inlet Protection for Construction Sites
- 1061 De-watering
- 1062 Ditch Check (Channel)
- 1063 Sediment Trap
- 1064 Sediment Basin
- 1065 Rip-rap / Stabilized Outlet (pending completion)
- 1066 Construction Site Diversion
- 1067 Temporary Grading Practices for Erosion Control
- 1068 Dust Control on Construction Sites
- 1069 Turbidity Barrier
- 1070 Silt Curtain
- 1071 Interim Manufactured Perimeter Control & Slope Interruption Products

(b) **Local Modifications to Technical Standards:** The following are local requirements that are intended to supplement, clarify, or supersede DNR Technical Standards.

(c) **Guidance Documents**: The following are the applicable Guidance Documents. Many of these Guidance Documents can be found on the DNR website (http://dnr.wi.gov/topic/stormwater/standards/const_standards.html).

- Guidance for the Establishment of Protective Areas for Wetlands
- "Construction Site" Definition – "Common Plan of Development"
- Meeting New State Standards: Construction Erosion Control Workshops (http://dnr.wi.gov/topic/Stormwater/construction/practices.html)
- Estimating Residue Using the Line Transect Method (UW-Extension A3533).
- Wisconsin Department of Transportation - Erosion Control Product Acceptability Lists (PAL) for Multi-Modal Applications
- Wisconsin Department of Transportation - Facilities Development Manual
- Wisconsin DOT Standard Specifications for Highway and Structure Construction
- Other National Publications

B. OTHER STANDARDS

15-2-7 PERFORMANCE STANDARDS

A. NON-PERMITTED SITES

Construction sites with less than 4,000 square feet of land disturbance are required to satisfy a numeric performance standard if the construction site is regulated by the Wisconsin Department of Safety and Professional Services. Please refer to SPS 360.20(3) and SPS 321.125(3) for specific requirements.

Pursuant to 15-2-7A(5) of the Ordinance, the administering authority may establish more stringent erosion and sediment control requirements for non-permitted sites if the administering authority determines than an added level of protection is needed.

B. PERMITTED SITES

Construction sites with 1 acre or more of land disturbance are required to meet the ordinance's numeric performance standards.

Construction sites with less than 1 acre of land disturbance are required to satisfy a numeric performance standard if the construction site is regulated by the Wisconsin Department of Safety and Professional Services. Please refer to SPS 360.20(3) and SPS 321.125(3) for specific requirements.

Pursuant to 15-2-7B(6) or (7) of the Ordinance, the administering authority may establish more stringent erosion and sediment control requirements for permitted sites if the administering authority determines than an added level of protection is needed.

Computer Models:

The Wisconsin Department of Natural Resources (DNR) developed a USLE spreadsheet tool for construction site erosion control and determining compliance with the 5 tons/acre/year requirement. The USLE spreadsheet model can be found on the DNR website at http://dnr.wi.gov/topic/stormwater/standards/const_standards.html.

C. CLARIFICATIONS:

Erosion Control Practices - Erosion control practices are used to prevent sediment particles from becoming dislodged and suspended in runoff. Erosion control practices include land application of polyacrylamide, mulching, seeding, and erosion mats. Grading practices can be used to supplement these practices.

Sediment Control Practices - Sediment control practices are used to remove sediment particles that are suspended in runoff and being transported. Sediment control practices used for sheet flow conditions include vegetative buffers, sediment bale barriers (non-channel), silt fence, and perimeter control / slope interruption products. Sediment control practices used for concentrated flow conditions include storm drain inlet protection (< 1 acre), ditch checks (< 1 acre), sediment traps (< 5 acres), sediment basins (< 100 acres), and polymers. Sediment control practices used for lakes, rivers, and streams include turbidity barriers and silt curtains.

Construction Site Diversions - Construction site diversions are used to divert clear-water runoff away from disturbed areas. Construction site diversions are also designed to convey sediment-laden runoff from disturbed areas to sediment control practices such as ditch checks, sediment traps, and sediment basins.

Dust Control Practices - Dust control practices are used to prevent wind erosion.

Dewatering - Dewatering practices are used to remove sediment from ponding surface water or groundwater. A DNR permit is required for pumping 70 gpm or more (http://dnr.wi.gov/topic/wells/highcapacity.html). The discharge must be sampled in accordance with DNR requirements.

Non-Erosive Flows - Velocity dissipation devices shall be placed at outfall locations and

along the length of any channel, as necessary, to provide a non-erosive flow so that the natural, physical, and biological characteristics and functions are maintained and protected. Velocity dissipation devices could include erosion mat (channel), rip-rap, drop structures, stilling basins, and other energy dissipation devices.

Maximum Permissible Velocities for Channels			
Channel Cover	Slope Range %	Erosion-resistant soils	Easily eroded soils
Bare Soil	0-5	3-6 fps*	1.5-2 fps*
	Do not use on slopes steeper than 5%, except for side slopes in a combination channel.		
Bermuda Grass	0-5	8 fps	6 fps
	5-10	7 fps	5 fps
	>10	6 fps	4 fps
Buffalo grass, Kentucky bluegrass, Smooth brome, blue grama	0-5	7 fps	5 fps
	5-10	6 fps	4 fps
	>10	5 fps	3 fps
Grass mixture	0-5	5 fps	4 fps
	5-10	4 fps	3 fps
	Do not use on slopes steeper than 10%, except for side slopes in a combination channel.		
Lespedeza sericea, weeping love grass Ischaemum (yellow bluestem), kudzu, alfalfa, crabgrass	0-5	3.5 fps	2.5 fps
	Do not use on slopes steeper than 5%, except for side slopes in a combination channel.		
Annuals – used on mild slopes or as temporary protection until permanent covers are established, common lespedeza, Sudan grass	0-5	3.5 fps	2.5 fps
	Use on slopes steeper than 5% is not recommended		

* Maximum permissible velocities depend on specific soil properties and shear stress. Typically, the maximum velocity for sand = 1.5 fps, silt and loam = 1.7 to 2.5 fps, fine gravel = 2.5 fps, clay = 3.7 fps, coarse gravel = 4.0 fps, cobbles = 3.7 to 5.0 fps, and shale / hard pan = 6.0 fps.
Source – Chow Open Channel Hydraulics & Civil Engineering Reference Manual for the PE Exam, Ninth Edition

Materials - No sediment or solid materials, including building materials, may be discharged in violation of the following federal, state, and local regulations:

- Navigation, Dams, & Bridges (Chapter 30 and 31, Stats.)
- Wetland Water Quality Standards (NR 103)
- Wetlands (US Army Corps of Engineers Section 404 regulations)
- Shoreland Management (NR 115, NR 425, & local regulations)
- Floodplain Management (NR 116 & local regulations).

Wastewaters - Wastewaters, such as from concrete truck washout, need to be properly managed to limit the discharge of pollutants to the municipal separate storm sewer system or waters of the state. A separate permit may be needed form the DNR where a wastewater discharge has the potential to adversely impact waters of the state. The appropriate DNR wastewater specialist should be contacted to determine if wastewater permit coverage is needed where wastewater will be discharged to the municipal separate storm sewer system or waters of the state.

Wetland Delineations - Wetland delineations shall be performed by a professional soil scientist, professional hydrologist, or other qualified individual approved by the administering authority. The individual performing the delineation shall classify the wetland as a less susceptible wetland, highly susceptible wetland, exceptional resource water, or outstanding resource water.

Protective Areas - Protective areas may be disturbed as part of a construction project, if necessary. Disturbed areas must be stabilized from erosion and restored with an adequate sod or self-sustaining vegetative cover. Best Management Practices (ponds, swales, etc.) may be located in protective areas.

Type of Vegetation - It is recommended that seeding of non-invasive vegetative cover be used in the protective areas. Vegetation that is flood and drought tolerant and can provide long-term bank stability because of an extensive root system is preferable. Vegetative cover can be measured using the line transect method described in the University of Wisconsin Extension publication number A3533, titled “Estimating Residue Using the Line Transect Method”.

Adjacent Property Owners - If a stream or channel is permanently placed or relocated along a property line, an easement or letter of permission is required from any property owners impacted by the protective area’s new location. Also, if a stormwater facility or structure is proposed within an onsite stream or channel, 100-year flood elevations shall be evaluated to determine if offsite property owners are impacted by backwater or a flood elevation increase. An easement or letter of permission is required from any property owners impacted by backwater. Changes to a stream, wetland, or channel should be discussed during the pre-design meeting. Changes to a navigable stream, wetland or other waters of the state will require permits from the DNR, Army Corps of Engineers, and local municipality.

Agricultural Activity Areas - Agricultural Activity Areas (i.e. farm fields and other cropland areas) are exempt from the ordinance.

Agricultural Production Areas - Agricultural Production Areas (i.e. farm buildings, structures, and other impervious surfaces) are not exempt from the ordinance. The County Land Conservation Department (LCD) may be available to prepare Erosion & Sediment Control Plans for farm structures and disturbances in the Agricultural Production Areas. Construction of farm structures and disturbances in Agricultural Production Areas of one acre or greater must also be covered by an NR 216 permit.

Regional Wet Detention Ponds - A regional wet detention pond (post-construction site) may be used as a sediment basin (construction site) until final stabilization of the wet detention pond and expiration of the erosion control permit associated with construction of the regional wet detention pond. While regional stormwater management facilities are appropriate for control of post-construction pollutants, they should not be used for construction site sediment removal at other construction sites located within the wet detention pond’s watershed.

15-2-8 PERMITTING REQUIREMENTS, PROCEDURES AND FEES

A. PERMIT REQUIRED

B. PERMIT APPLICATION AND FEES

C. REVIEW AND APPROVAL OF PERMIT APPLICATION

Meetings between the permit applicant, designer, and plan reviewer are encouraged during the pre-design, design, and plan review process. The meetings are used to educate each other about regulatory requirements, environmentally sensitive areas, and design challenges. The number of meetings held is typically commensurate with the size and complexity of the project. Meetings can be face-to-face or via telephone.

A pre-construction conference is encouraged before the start of all construction projects. For sites with 1 acre or more of land disturbance, a pre-construction conference is required. The permit applicant, designer, plan reviewer, contractor, and inspector are encouraged to attend. The purpose of the meeting is to exchange contact information, review the Erosion & Sediment Control Plan, and identify individuals responsible for permit compliance, plan amendments, and weekly inspection reports.

D. FINANCIAL GUARANTEE

Construction sites with 1 acre or more of land disturbance are required to have a financial guarantee. The financial guarantee includes the cost associated with erosion and sediment control BMPs, site inspections, project administration, and contingencies.

Construction sites with less than 1 acre of land disturbance are not typically required to have a financial guarantee.

Portions of the financial guarantee may be released as the construction project progresses. The last portion of the financial guarantee is not released until the municipal inspector performs a final inspection and the permit applicant pays final inspection fees.

E. PERMIT REQUIREMENTS

The permit applicant is required to post the “Certificate of Permit Coverage” in a conspicuous place at the construction site.

F. PERMIT CONDITIONS

G. PERMIT DURATION

H. MAINTENANCE

I. ALTERNATE REQUIREMENTS

15-2-9 EROSION AND SEDIMENT CONTROL PLAN

A. PLAN REQUIREMENTS

Sites With Less Than 1 Acre of Land Disturbance:

The erosion and sediment control plan for construction sites with less than 1 acre of land disturbance shall contain, at a minimum, the following information unless other municipal ordinances or state regulations require more detailed information:

(a) The name, contact person, title, mailing address, e-mail address, telephone number, and fax number of the following individuals or organizations: permit applicant, landowner, consultant or plan preparer, and contractor (if known).
(b) Anticipated project start date and projected project end date.
(c) Total area of the construction site and the total area of the construction site that is expected to be disturbed by land disturbing activities.
(d) Sufficient detail so as to document ordinance compliance.
(e) Location of all BMPs to be employed.
(f) Pre-construction ground surface contour lines at intervals appropriate for conditions present within the proposed disturbed areas.
(g) Identify the initial downstream receiving water of the state.

Sites With 1 Acre or More of Land Disturbance:

The erosion and sediment control plan for construction sites with 1 acre or more of land disturbance shall contain, at a minimum, the following information:

(a) The name, contact person, title, mailing address, e-mail address, telephone number, and fax number of the following individuals or organizations: permit applicant, landowner, consultant or plan preparer, and contractor (if known).
(b) Anticipated project start date and projected project end date.
(c) Description of the construction site and the nature of the land disturbing construction activity, including representation of the limits of land disturbance on a USGS 7.5-minute series topographical map.
(d) Description of the intended sequence of major land disturbing construction activities for major portions of the construction site, including clearing; stripping topsoil; rough grading; installation of erosion and sediment controls; construction of utilities, streets, and buildings; finish grading; and permanent stabilization.
(e) Total area of the construction site and the total area of the construction site that is expected to be disturbed by land disturbing activities.
(f) Available data describing the surface soil as well as sub-soils, including representation of the limits of land disturbance on a NRCS soils map.
(g) Wherever permanent infiltration devices will be employed or were evaluated, the depth to the nearest seasonal high groundwater elevation or top of bedrock shall be identified.
(h) Name of the immediate named receiving water from the United States Geological Service 7.5 minute series topographic maps.
(i) Calculations demonstrating compliance with the 5 tons per acre per year sediment performance standard (calculations may not be feasible until RUSLE2 is completed).

The erosion and sediment control plan for construction sites with 1 acre or more of land disturbance shall include a site map. The site map shall include the following items and shall be at a scale not greater than 100 feet per inch and at a contour interval not to exceed two feet:

(a) Existing topography, vegetative cover, impervious surfaces, natural and engineered drainage systems, roads, surface waters, and 100-year floodplains. Identify slopes of 20% or more that are to be disturbed.
(b) Boundaries of the construction site.
(c) Drainage patterns and approximate slopes anticipated after grading activities. Identify drainage ways that flow off the site.
(d) Areas of soil disturbance, including soil stockpile locations.
(e) Location of major structural and non-structural controls identified in the erosion and sediment control plan, including standard detail drawings and specifications where appropriate.

(f) Location of areas where stabilization practices will be employed.
(g) Areas that will be vegetated following land disturbing construction activities.
(h) Area and location of wetland acreage on the construction site and locations where stormwater is discharged to a surface water or wetland within one-quarter mile downstream of the construction site.
(i) Areas used for infiltration of post-construction stormwater runoff.
(j) An alphanumeric or equivalent grid overlying the entire construction site.

The erosion and sediment control plan for construction sites with 1 acre or more of land disturbance shall include a description of appropriate erosion and sediment control best management practices that will be installed and maintained at the construction site to prevent pollutants from reaching waters of the state. The erosion and sediment control plan shall clearly describe the appropriate erosion and sediment control best management practices for each major land disturbing construction activity and the timing during the period of land disturbing construction activity that the erosion and sediment control best management practices will be implemented. The description of erosion controls shall include, when appropriate, the following minimum requirements:

(a) Description of any interim and permanent stabilization practices, including a schedule for implementing the practices. The erosion and sediment control plan shall ensure that existing vegetation is preserved where attainable and that disturbed portions of the construction site are stabilized.
(b) Description of any structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the construction site. Unless otherwise specifically approved in writing by the local municipality, structural measures shall be installed on upland soils.
(c) Management of overland flow at all areas of the construction site, unless otherwise controlled by outfall controls.
(d) Trapping of sediment in channelized flow.
(e) Staging land disturbing activities to limit exposed soil areas subject to erosion. Soil stockpiles exposed for more than 7 days shall be stabilized.
(f) Protection of downslope drainage or storm water inlets where they occur.
(g) Minimization of tracking at all vehicle and equipment entry and exit locations of the construction site.
(h) Clean up of off-site sediment deposits by the end of each work day.
(i) Proper disposal and management of onsite chemicals, cement, and other building compounds and materials.
(j) Stabilization of drainage ways, including consideration of erosive flows at outlets and in downstream channels.
(k) Installation of permanent stabilization as soon as possible after final grading.
(l) Minimization of dust to the maximum extent practicable.
(m) Dewatering activities.
(n) Control of untreated wash water from vehicle and wheel washing into waters of the state or offsite separate storm sewers.
(o) Spill prevention and response procedures.
(p) Implementation of BMPs.

For construction sites with 1 acre or more of land disturbance, prepare a narrative describing the following: site location, total site area and disturbed area, purpose of project, drainage system and outfalls, drainage area for each outfall, stream and wetland locations, topsoil and subsoils, depth to groundwater and bedrock, erosion and sediment controls, sequence of construction, BMP inspection and maintenance responsibilities, weekly inspection reports, and plan amendments.

For construction sites with 1 acre or more of land disturbance, the erosion and sediment control plan shall include a statement or narrative which includes the following: (a)

erosion and sediment control practices shall be repaired or replaced within 24 hours of an inspection; and (b) when the failure of erosion or sediment control practices results in an immediate threat of sediment entering waters of the state or an offsite drainage system, procedures shall be implemented immediately to repair or replace the practices.

B. AMENDMENTS

C. ALTERNATE REQUIREMENTS

15-2-10 FEE SCHEDULE

15-2-11 INSPECTION

15-2-12 ENFORCEMENT

15-2-13 APPEALS

A. BOARD OF APPEALS

B. WHO MAY APPEAL

APPENDIX G

Post-Construction Stormwater Management

Post-Construction Stormwater Permit

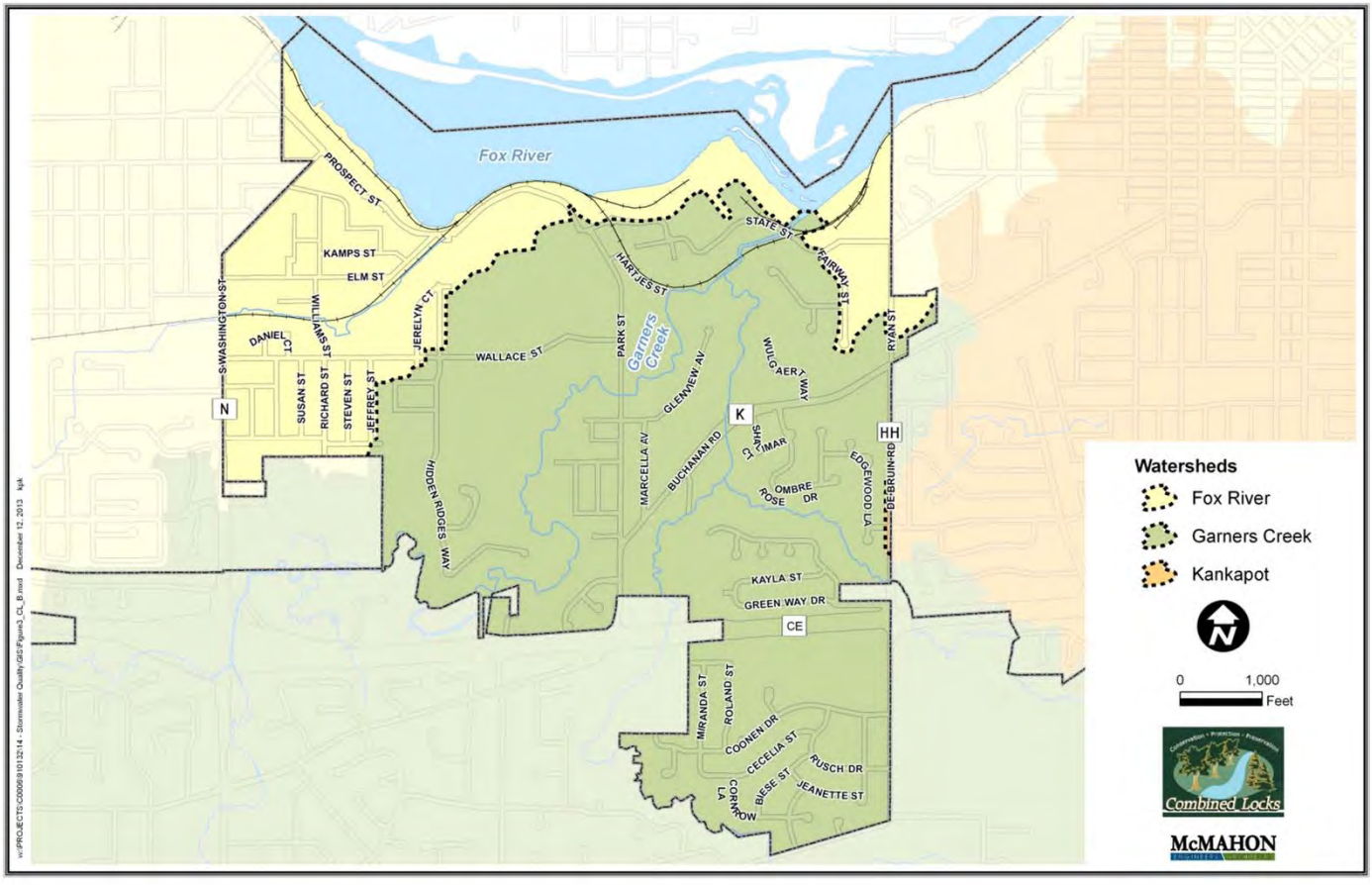
Protecting Our Lakes, Rivers & Streams

FOX RIVER: ALGAE & POOR WATER CLARITY

The Village of Combined Locks is required by the Wisconsin Department of Natural Resources to reduce the amount of stormwater pollutants discharging into the Fox River, Garners Creek and Kankapot Creek. Stormwater pollutants include sediment, phosphorus, bacteria, heavy metals, motor oil, toxins, solvents, pesticides, litter and other pollutants.

Decreasing the amount of sediment and phosphorus is anticipated to improve water clarity and reduce algae blooms in the Fox River, Garners Creek and Kankapot Creek. Reduced algae will increase the amount of oxygen available for fish and aquatic species survival. Also, greater water clarity and decreased algae will improve recreational opportunities and scenic beauty.

The Village's storm sewer system is a network of underground pipes and catch basins that carry stormwater pollutants directly to the Fox River, Garners Creek and Kankapot Creek. The below Watershed Map depicts the drainage divide for the Village's storm sewer system. As shown on the Watershed Map, the majority of the Village discharges to the Fox River and Garners Creek. The Village's Post-Construction Stormwater Ordinance requires a different amount of pollutant reduction depending on which watershed the post-construction site is located within (see watershed map).



Frequently Asked Questions:

When is compliance required?

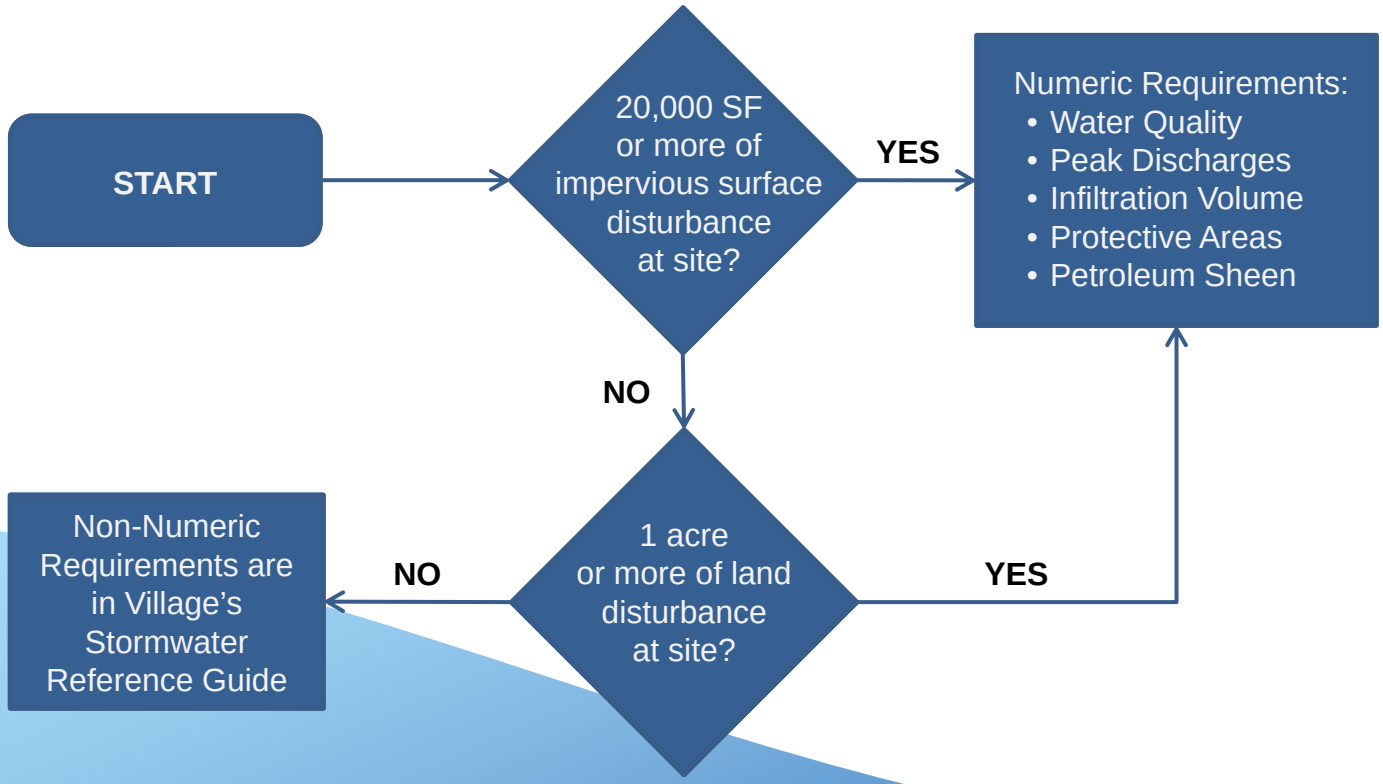
Ordinance compliance is required for all post-construction sites located within the Village.

Who is responsible for compliance?

Landowners, developers, builders, contractors, subcontractors, landscapers, utility companies and other persons involved with the post-construction site are responsible for ordinance compliance.

What is required by the ordinance?

The Village's Post-Construction Stormwater Management Ordinance requires design, installation and maintenance of best management practices (BMPs). The Village's permit application, ordinance and Technical Reference Guide can be downloaded from the website. Please refer to the ordinance for specific requirements and exemptions. Generally, the below flow chart describes when a permit applicant needs to satisfy the ordinance's numeric or non-numeric requirements.



FOR ADDITIONAL INFORMATION:

Village of Combined Locks
300 Park Street
Combined Locks, WI 54113
PH 920.788.7744 FAX 920.788.7742
www.combinedlocks.org

FEE SCHEDULE

For The

POST-CONSTRUCTION STORM WATER MANAGEMENT PROGRAM
VILLAGE OF COMBINED LOCKS, WISCONSIN

Effective Date: May 1, 2006

Application Fee:

Permit application fees are as follows:

- Sites with less than 20,000 sq. ft. of disturbed impervious area = **$200** (**fixed fee**)
- Sites with 20,000 sq. ft. or more of disturbed impervious area = **$500** plus **$0.0025** / sq.ft. of disturbed impervious area (**estimate**). The estimated fee encourages applicants to reduce the size of impervious surfaces. The estimated fee is paid when the permit application is initially submitted to the Village. The final fee includes the actual cost of design meetings, plan and financial guarantee reviews, and permit issuance. The application fee can be reduced if the site discharges to a regional stormwater facility. The final application fee is typically paid in full before the permit is issued.

Inspection Fee:

Permit inspection fees are as follows:

- Sites with less than 20,000 sq. ft. of disturbed impervious area = **$0** (**fixed fee**)
- Sites with 20,000 sq. ft. or more of disturbed impervious area = **$500** (**estimate**). The estimated fee is paid before the permit is issued. The final fee includes the actual cost of construction meetings, a municipal site inspection, release of financial guarantee, record drawings review, and posting information on the website. The inspection fee can be reduced if the site discharges to a regional stormwater facility. The final fees are paid in full before the financial guarantee is released.

Forfeitures / Fines:

Forfeitures / fines vary from **$25** to **$500** for each day of non-compliance and each occurance. Issuance of forfeitures / fines will depend on if the violator is non-responsive or if the violation is blatant, intentional, repetitive or severe. The forfeitures / fines are as follows:

Notice of Violation	< 20,000 sq.ft.	≥ 20,000 sq.ft.
Failure to apply for and obtain a storm water management permit	**$50**	**$500**
Failure to develop & implement a storm water management plan	**$50**	**$500**
Failure to prepare a maintenance agreement or record drawings	**n/a**	**$250**
Failure to post the “Certificate of Permit Coverage” at the site	**$25**	**$250**
Failure to retain plans, maintenance logs, inspection reports	**$25**	**$250**
Failure to inspect and monitor storm water management BMPs	**$30**	**$300**
Failure to repair, replace or maintain storm water management BMPs	**$50**	**$500**
Failure to amend a storm water management plan, as needed	**$50**	**$500**
Failure to implement an amended storm water management plan	**$50**	**$500**

Village of Combined Locks
405 Wallace Street
Combined Locks, WI 54113
Phone: 920.788.7740

EROSION CONTROL AND STORMWATER MANAGEMENT PERMIT APPLICATION

Applicant Information

Applicant Name (Indiv., Org. or Entity)	Authorized Representative	Title	
Mailing Address	City	State	Postal Code
E-mail Address	Telephone (include area code)	Fax (include area code)	

Landowner Information (if different than Applicant)

Name (Organization or Entity)	Contact Person	Title	
Mailing Address	City	State	Postal Code
E-mail Address	Telephone (include area code)	Fax (include area code)	

Other Contact Information (check one): ☐ Engineer / Consultant ☐ Contractor / Builder ☐ Agent / Other

Name (Organization or Entity)	Contact Person	Telephone (include area code)	
Mailing Address	City	State	Postal Code

Project or Site Location

Site Name (Project):		Parcel Numbers:	
Address / Location:		Plat / CSM / Lot No.:	
Quarter: ☐ NW ☐ NE ☐ SW ☐ SE	Section:	Township: N	Range: E

Permit Type & Fees (check all that apply)

☐ Erosion Control < 1 acre or 43,560 sq.ft. Disturbed Area (EC1)
☐ Erosion Control ≥ 1 acre or 43,560 sq.ft. Disturbed Area (EC2)
☐ Stormwater Management < 20,000 sq.ft. Impervious Area (SM1)
☐ Stormwater Management ≥ 20,000 sq.ft. Impervious Area (SM2)

Total Disturbed Area ……..... _____ sq.ft. x $0.0002 / sq.ft. (EC2) = $ _____

Disturbed Impervious Area ……. _____ sq.ft. x $0.0025 / sq.ft. (SM2) = $ _____

Base Fee: $200 (EC1), $250 (EC2), $200 (SM1), $500 (SM2) = $ _____

Total Application Fee = $ _____

Duration of Land Disturbance ……. _____ weeks x $25 / week (EC1, EC2) = $ _____

Start Date…… _____ Base Fee: $250 (EC2), $500 (SM2) = $ _____

End Date……. _____ **Total Inspection Fee** = $ _____

Certification & Permission

Certification: I hereby certify that I am the landowner of the property which is the subject of this Permit Application. I certify that the information contained in this form and attachments is true and accurate. I understand that failure to comply with any or all of the provisions of the ordinances and/or permit may result in notices, fines / forfeitures, stop work orders, permit revocation, and cease & desist orders.

Permission: As landowner of the property, I hereby give the permit authority permission to enter and inspect the property to evaluate this permit application, to determine compliance with the ordinances, and to perform corrective actions after issuing proper notice to the landowner.

Applicant Signature	Date Signed
Landowner Signature (required)	Date Signed

LEAVE BLANK – FOR MUNICIPAL USE ONLY

Date Application Received:	Fee Received $	Receipt No:
Construction Site ID / Permit No:	Date Issued:	Issued By:

CERTIFICATE OF PERMIT COVERAGE

FOR

EROSION CONTROL AND/OR STORMWATER MANAGEMENT PERMIT

Under Chapter(s) 2 and 9 of Title 15 of the Village of Combined Locks Cod of Ordinances, landowners of construction sites are required to post this certificate in a conspicuous place at the construction site. This certifies that the site has been granted Erosion Control and/or Stormwater Management Permit coverage by the Village of Combined Locks. The permit requires the landowner to implement and maintain erosion and/or sediment control practices to limit/reduce the amount of sediment being transported off-site and into streets, storm sewers, ditches, streams, rivers, lakes and wetlands.

EROSION CONTROL COMPLAINTS

Should be reported to the Village of Combined Locks Tip Line at

(920) 788-7740

Please provide the following information to the Tip Line:

Construction Site I.D. No.:
Site Name (Project):
Address/Location:

Additional Information:

Landowner Name:
Landowner's Contact Person:
Contact Telephone Number:
Permit Start Date:

Village of Combined Locks
405 Wallace Street
Combined Locks, WI 54113
Phone: 920.788.7740

INFORMATION SUBMITTED BY THE PUBLIC

Complaint Submitted By:		
Name:	☐ Anonymous	Date:
Address:		
Telephone:	E-Mail:	
Should we contact you? ☐ Yes ☐ No		
Location of Complaint:		
Site Name (Project):		Construction Site ID No:
Address / Location:		
Landowner Name:		

Description of Complaint: (check all that apply)

☐ Automobiles (fluid leak, car washing)	☐ Storm Water Management (flooding, pond maintenance)
☐ Pet Waste	☐ Illicit Discharge (spill / hazardous material)
☐ Household Hazardous Waste (dumping)	☐ Illicit Discharge (improper waste disposal)
☐ Household Practices (garbage, recycling)	☐ Illicit Discharge (dry weather flow / discharge)
☐ Fertilizers & Pesticides	☐ Illicit Discharge (illegal plumbing connection)
☐ Leaves & Grass Clippings	☐ Illicit Discharge (failing lateral / septic system)
☐ Stream & Shoreline Management (erosion)	☐ Street Sweeping / Catch Basin Cleaning
☐ Residential (downspouts, sump pump)	☐ Municipal Road Salt & Other Deicers
☐ Construction Site Erosion Control	☐ Other: _____

Describe complaint:

Description of Follow-Up Actions:

Describe follow-up actions:

Chapter 9. Post-Construction Stormwater Management

§ 15-9-1. Authority.

(a) **Statutory Authority.** This chapter is adopted by the Combined Locks Village Board of Trustees under the authority granted by § 61.354, Wis. Stats. This chapter supersedes all provisions of an ordinance previously enacted under § 61.35, Wis. Stats., that relate to stormwater management regulations, except as otherwise specified in § 61.354, Wis.

(b) **Applicability of Statutes.** Stats., § 61.35, Wis. Stats., applies to this chapter and to any amendments to this chapter.

(c) **Other Regulations.** The provisions of this chapter are deemed not to limit any other lawful regulatory powers of the same governing body.

(c) **Administration.** The Village Board hereby designates the Director of Public Works to administer and enforce the provisions of this chapter. Any powers granted or duties imposed upon the Director of Public Works may be delegated in writing by the Director of Public works to person or entities acting in the beneficial interest of or in the employ of the agency.

(d) **Applicability of Requirements.** The requirements of this chapter do not pre-empt more stringent stormwater management requirements that may be imposed by any of the following:

(1) Wisconsin Department of Natural Resources administrative rules, permits or approvals including those authorized under §§ 281.16 and 283.33, Wis. Stats.

(2) Targeted performance standards promulgated in rules by the Wisconsin Department of Natural Resources under § NR 151.004, Wis. Adm. Code.

§ 15-9-2. Findings of Fact.

The Combined Locks Village Board finds that uncontrolled, post-construction runoff has a significant impact upon water resources and the health, safety and general welfare of the community and diminishes the public enjoyment and use of natural resources. Specifically, uncontrolled post-construction runoff can:

(a) Degrade physical stream habitat by increasing stream bank erosion, increasing streambed scour, diminishing groundwater recharge, diminishing stream base flows and increasing stream temperature.

(b) Diminish the capacity of lakes and streams to support fish, aquatic life, recreational and water supply uses by increasing pollutant loading of sediment, suspended solids, nutrients, heavy metals, bacteria, pathogens and other urban pollutants.

(c) Alter wetland communities by changing wetland hydrology and by increasing pollutant loads.

(d) Reduce the quality of groundwater by increasing pollutant loading.

(e) Threaten public health, safety, property and general welfare by overtaxing storm sewers, drainage ways, and other minor drainage facilities.

(f) Threaten public health, safety, property and general welfare by increasing major flood peaks and volumes.

(g) Undermine floodplain management efforts by increasing the incidence and levels of flooding.

§ 15-9-3. Purpose and Intent.

(a) **Purpose.** The general purpose of this chapter is to establish long-term, post-construction runoff management requirements that will diminish the threats to public health, safety, welfare and the aquatic environment. Specific purposes are to:

(1) Further the maintenance of safe and healthful conditions.

(2) Prevent and control the adverse effects of stormwater; prevent and control soil erosion; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses; preserve ground cover and scenic beauty; and promote sound economic growth.

(3) Control exceedance of the safe capacity of existing drainage facilities and receiving water bodies; prevent undue channel erosion; control increases in the scouring and transportation of particulate matter; and prevent conditions that endanger downstream property.

(b) **Intent.** It is the intent of the Combined Locks Village Board that this chapter regulates post-construction stormwater discharges to waters of the state. This chapter may be applied on a site-by-site basis. The Village Board recognizes, however, that the preferred method of achieving the stormwater performance standards set forth in this chapter is through the preparation and implementation of comprehensive, systems-level stormwater management plans that cover hydrologic units, such as watersheds, on a municipal and regional scale. Such plans may prescribe regional stormwater devices, practices or systems, any of which may be designed to treat runoff from more than one site prior to discharge to waters of the state. Where such plans are in conformance with the performance standards developed under § 281.16, Wis. Stats., for regional stormwater management measures and have been approved by the Village Board, it is the intent of this chapter that the approved plan be used to identify post-construction management measures acceptable for the community.

§ 15-9-4. Applicability and Jurisdiction.

(a) **Applicability.**

(1) Where not otherwise limited by law, this chapter applies to all post-construction sites, unless the site is otherwise exempt under Subsection (a)(2).

(2) A post-construction site that meets any of the following criteria is exempt from the requirements of this chapter.

a. One- and two-family residential dwellings that are not part of a larger common plan of development or sale and that result in less than one acre of disturbance.

b. Non-point discharges from agricultural activity areas.

c. Non-point discharges from silviculture activities.

d. Mill and crush operations.

(3) Notwithstanding the applicability requirements in Subsection (a)(1), this chapter applies to post-construction sites of any size that, in the opinion of the administering authority, is likely to result in runoff that exceeds the safe capacity of the existing drainage facilities or receiving body of water, that causes undue channel erosion, that increases water pollution by scouring or the transportation of particulate matter or that endangers property or public safety.

(b) **Jurisdiction.** This chapter applies to post-construction sites within the boundaries and jurisdiction of the Village of Combined Locks.

(c) **Exclusions.** This chapter is not applicable to activities conducted by a state agency, as defined under § 227.01 (1), Wis. Stats., but also including the office of district attorney, which is subject to the state plan promulgated or a memorandum of understanding entered into under § 281.33 (2), Wis. Stats.

(d) **Maintenance of effort.** For a redevelopment site where the redevelopment will be replacing older development that was subject to post−construction performance standards of this chapter in effect on or after October 1, 2004, the responsible party shall meet the water quality, peak discharge, infiltration, protective area, and petroleum sheen standards applicable to the older development or meet the redevelopment standards of this chapter, whichever are more stringent.

§ 15-9-5. Definitions.

(a) **Definitions Established.** The following definitions shall be applicable in this chapter:

(1) **Adequate Sod of Self-Sustaining Vegetative Cover.** Maintenance of sufficient vegetation types and densities such that the physical integrity of the streambank or lakeshore is preserved. Self-sustaining vegetative cover includes grasses, forbs, sedges and duff layers of fallen leaves and woody debris.
(2) **Administering Authority.** A governmental employee or their designees empowered under s. 61.354, Wis. Stats., to administer this chapter.
(3) **Agricultural Activity Area.** The part of the farm where there is planting, growing, cultivating and harvesting of crops for human or livestock consumption and pasturing or outside yarding of livestock, including sod farms and silviculture. Practices in this area may include waterways, drainage ditches, diversions, terraces, farm lanes, excavation, filling and similar practices. The agricultural activity area does not include the agricultural production area.
(4) **Agricultural Production Area.** The part of the farm where there is concentrated production activity or impervious surfaces. Agricultural production areas include buildings, driveways, parking areas, feed storage structures, manure storage structures, and other impervious surfaces. The agricultural production area does not include the agricultural activity area.
(5) **Atlas 14.** The National Oceanic and Atmospheric Administration (NOAA) Atlas 14 Precipitation-Frequency Atlas of the United States, Volume 8 (Midwestern States), published in 2013.
(6) **Average Annual Rainfall.** A typical calendar year of precipitation as determined by the Wisconsin DNR for users of models such as SLAMM, P8, or equivalent methodology. The average annual rainfall is chosen from a Wisconsin DNR publication for the location closest to the municipality.
(7) **Best Management Practices or BMP.** Structural or non-structural measures, practices, techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to waters of the state.
(8) **Business Day.** A day the office of the administering authority is routinely and customarily open

for business.

(9) **Cease and Desist Order.** A court-issued order to halt land disturbing construction activity that is being conducted without the required permit.

(10) **Combined Sewer System.** A system for conveying both sanitary sewerage and stormwater runoff.

(11) **Common Plan of Development or Sale.** A development or sale where multiple separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan. A common plan of development or sale includes, but is not limited to, subdivision plats, certified survey maps, and other developments.

(12) **Connected Impervious.** An impervious surface connected to the waters of the state via a separate storm sewer, an impervious flow path, or a minimally pervious flow path.

(13) **Construction Site.** An area upon which one or more land disturbing construction activities occur, including areas that are part of a larger common plan of development.

(14) **Design Storm.** A hypothetical discrete rainstorm characterized by a specific duration, temporal distribution, rainfall intensity, return frequency and total depth of rainfall. The TP-40, Type II, 24-hour design storms for Village of Combined Locks are: 1-year, 2.2 inches; 2-year, 2.5 inches; 5-year, 3.3 inches; 10-year, 3.8 inches; 25-year, 4.4 inches; 50-year, 4.9 inches; and 100-year, 5.3 inches. The Atlas 14, MSE4, 24-hour design storms for the Village of Combined Locks are: 1-year, 2.14 inches; 2-year, 2.45 inches; 5-year, 3.01 inches; 10-year, 3.51 inches; 25-year, 4.24 inches; 50-year, 4.85 inches; and 100-year, 5.50 inches.

(15) **Development.** Residential, commercial, industrial, institutional, or other land uses and associated roads.

(16) **Direct Conduits to Groundwater.** Wells, sinkholes, swallets, fractured bedrock at the surface, mine shafts, nonmetallic mines, tile inlets discharging to groundwater, quarries, or depressional groundwater recharge areas over shallow fractured bedrock.

(17) **Division of Land.** The creation from one or more parcels or building sites of additional parcels or building sites where such creation occurs at one time or through the successive partition within a 5 year period.

(18) **Effective Infiltration Area.** The area of the infiltration system that is used to infiltrate runoff and does not include the area used for site access, berms or pretreatment.

(19) **Erosion.** The process by which the land's surface is worn away by the action of wind, water, ice or gravity.

(20) **Exceptional Resource Waters.** Waters listed in § NR 102.11, Wis. Adm. Code.

(21) **Existing Development**. Development in existence on October 1, 2004 or development for which a stormwater permit in accordance with Subch. III of Ch. NR 216, Wis. Adm. Code, was received on or before October 1, 2004.

(22) **Extraterritorial.** The unincorporated area within 3 miles of the corporate limits of a first, second, or third class city, or within 1.5 miles of a fourth class city or village.

(23) **Filtering Layer.** Soil that has at least a 3-foot deep layer with at least 20 percent fines; or at least a 5-foot deep layer with at least 10 percent fines; or an engineered soil with an equivalent level of protection as determined by the administering authority for the site.

(24) **Final Stabilization.** Means that all land disturbing construction activities at the construction site have been completed and that a uniform perennial vegetative cover has been established, with a density of at least 70 percent of the cover, for the unpaved areas and areas not covered by permanent structures, or that employ equivalent permanent stabilization measures.

(25) **Financial Guarantee.** A performance bond, maintenance bond, surety bond, irrevocable letter of credit, or similar guarantees submitted to the administering authority by the responsible party to assure that requirements of the article are carried out in compliance with the stormwater management plan.

(26) **Governing Body.** Village board of supervisors, county board of supervisors, city council, village board of trustees or village council.

(27) **Groundwater.** Waters of the state, as defined in § 281.01 (18), Wis. Stats., occurring in a saturated subsurface geological formation of rock or soil.

(28) **High Groundwater Level or Subsurface Saturation**. Higher of either the elevation to which the soil is saturated as observed as a free water surface in an unlined hole, or the elevation to which the soil has been seasonally or periodically saturated as indicated by soil color patterns throughout the soil profile, as defined in Technical Standard 1002, Site Evaluation for Stormwater Infiltration.

(29) **Highway**. Has the meaning given in § 340.01 (22), Wis. Stats.

(30) **Highway Reconditioning**. Has the meaning given in § 84.013 (1)(b), Wis. Stats.

(31) **Highway Reconstruction**. Has the meaning given in § 84.013(1)(c), Wis. Stats.

(32) **Highway Resurfacing**. Has the meaning given in § 84.013(1)(d), Wis. Stats.

(33) **Impervious Surface**. An area that releases as runoff all or a large portion of the precipitation that falls on it, except for frozen soil. Rooftops, sidewalks, driveways, parking lots and streets are examples of surfaces that typically are impervious. Gravel surfaces are considered impervious, unless specifically designed to encourage infiltration.

(34) **Impervious Surface Disturbance**. Any land disturbing construction activity in which any new impervious surfaces are created or existing impervious surfaces are redeveloped.

(35) **In-Fill**. An undeveloped area of land or new development area located within an existing urban sewer service area, surrounded by development or development and natural or man-made features where development cannot occur. "In-fill" does not include any undeveloped area that was part of a larger new development for which a stormwater permit in accordance with Subch. III of Ch. NR 216, Wis. Adm. Code, was required to be submitted after October 1, 2004 to the Wisconsin Department of Natural Resources or Wisconsin Department of Safety and Professional Services (formerly Department of Commerce).

(36) **Infiltration**. The entry and movement of precipitation or runoff into or through soil.

(37) **Infiltration System**. A device or practice such as a basin, trench, rain garden or swale designed specifically to encourage infiltration, but does not include natural infiltration in pervious surfaces such as lawns, redirecting of rooftop downspouts onto lawns or minimal infiltration from practices, such as swales or road side channels designed for conveyance and pollutant removal only.

(38) **Land Disturbing Construction Activity or Disturbance.** Any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non-vegetative soil cover, that may result in runoff and lead to an increase in soil erosion and movement of pollutants into the municipal separate storm sewer or waters of the state. Land disturbing construction activity includes clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities, and soil stockpiling.

(39) **Maintenance Agreement.** A legal document that provides for long-term maintenance of stormwater management and best management practices.

(40) **Maximum Extent Practicable or MEP.** The highest level of performance that is achievable but is not equivalent to a performance standard identified within this chapter. Maximum extent practicable applies when the permit applicant demonstrates to the administering authority's satisfaction that a performance standard is not achievable and that a lower level of performance is appropriate. In making the assertion that a performance standard is not achievable and that a level of performance different from the performance standard is the maximum extent practicable, the permit applicant shall take into account the best available technology, cost effectiveness, geographic features, and other competing interests such as protection of public safety and welfare, protection of endangered and threatened resources, and preservation of historic properties.

(41) **Minor Reconstruction of a Highway.** Reconstruction of a highway that is limited to 1.5 miles in continuous or aggregate total length of realignment and that does not exceed 100 feet in width of roadbed widening, and that does not include replacement of a vegetated drainage

system with a non-vegetated drainage system except where necessary to convey runoff under a highway or private road or driveway.

(42) **MSE4 Distribution.** A specific precipitation distribution developed by the USDA, NRCS, using precipitation data from Atlas 14.

(43) **Navigable Waters and Navigable Waterway.** Has the meaning given in § 30.01(4m), Wis. Stats.

(44) **New Development.** That portion of a post-construction site where impervious surfaces are being created or expanded. Any disturbance where the amount of impervious area for the post-development condition is greater than the pre-development condition is classified as new development. For purposes of this article, a post-construction site is classified as new development, redevelopment, routine maintenance, or some combination of these three classifications as appropriate.

(45) **Off-Site.** Located outside the property boundary described in the permit application.

(46) **On-Site.** Located within the property boundary described in the permit application.

(47) **Ordinary High-Water Mark.** Has the meaning given in § NR 115.03(6), Wis. Adm. Code.

(48) **Outstanding Resource Waters.** Waters listed in § NR 102.10, Wis. Adm. Code.

(49) **Percent Fines.** The percentage of a given sample of soil, which passes through a # 200 sieve.

(50) **Performance Standard.** A narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

(51) **Permit.** A written authorization made by the administering authority to the applicant to conduct land disturbing construction activity or to discharge post-construction runoff to waters of the state.

(52) **Permit Administration Fee.** A sum of money paid to the administering authority by the permit applicant for the purpose of recouping the expenses incurred by the authority in administering the permit.

(53) **Pervious Surface.** An area that releases as runoff a small portion of the precipitation that falls on it. Lawns, gardens, parks, forests or other similar vegetated areas are examples of surfaces that typically are pervious.

(54) **Pollutant.** Has the meaning given in § 283.01 (13), Wis. Stats.

(55) **Pollution.** Has the meaning given in § 281.01 (10), Wis. Stats.

(56) **Post-Construction Site**. A construction site following the completion of land disturbing construction activity and final site stabilization.

(57) **Post-Development**. The extent and distribution of land cover types present after the completion of land disturbing construction activity and final site stabilization.

(58) **Pre-Development.** The extent and distribution of land cover types present before the initiation of land disturbing construction activity, assuming that all land uses prior to development activity are managed in an environmentally sound manner.

(59) **Preventative Action Limit**. The meaning given in § NR 140.05(17), Wis. Adm. Code.

(60) **Redevelopment**. That portion of a post-construction site where impervious surfaces are being reconstructed, replaced, or reconfigured. Any disturbance where the amount of impervious area for the post-development condition is equal to or less than the pre-development condition is classified as redevelopment. For purposes of this article, a post-construction site is classified as new development, redevelopment, routine maintenance, or some combination of these three classifications as appropriate.

(61) **Responsible Party.** Any entity holding fee title to the property or performing services to meet the performance standards of this chapter through a contract or other agreement.

(62) **Routine Maintenance.** That portion of a post-construction site where pre-development impervious surfaces are being maintained to preserve the original line and grade, hydraulic capacity, drainage pattern, configuration, or purpose of the facility. Remodeling of buildings and resurfacing of parking lots, streets, driveways, and sidewalks are examples of routine maintenance, provided the lower ½ of the impervious surface's granular base is not disturbed.

The disturbance shall be classified as redevelopment if the lower ½ of the granular base associated with the pre-development impervious surface is disturbed or if the soil located beneath the impervious surface is exposed. For purposes of this article, a post-construction site is classified as new development, redevelopment, routine maintenance, or some combination of these three classifications as appropriate.

(63) **Runoff.** Stormwater or precipitation including rain, snow or ice melt or similar water that moves on the land surface via sheet or channelized flow.

(64) **Sediment.** Settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.

(65) **Separate Storm Sewer.** A conveyance or system of conveyances including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:

a. Is designed or used for collecting water or conveying runoff.
b. Is not part of a combined sewer system.
c. Is not part of a publicly owned wastewater treatment works that provides secondary or more stringent treatment.
d. Discharges directly or indirectly to waters of the state.

(66) **Silviculture Activities.** Activities including tree nursery operations, tree harvesting operations, reforestation, tree thinning, prescribed burning, and pest and fire control. Clearing and grubbing of an area of a construction site is not a silviculture activity.

(67) **Site.** The entire area included in the legal description of the land on which the land disturbing construction activity is proposed in the permit application.

(68) **Stop Work Order.** An order issued by the administering authority which requires that all construction activity on the site be stopped.

(69) **Stormwater Management System Plan.** Is a comprehensive plan designed to reduce the discharge of runoff and pollutants from hydrologic units on a regional or municipal scale.

(70) **Targeted Performance Standard.** A performance standard that will apply in a specific area, where additional practices beyond those contained in this chapter, are necessary to meet water quality standards. A total maximum daily load is an example of a targeted performance standard.

(71) **Technical Standard.** A document that specifies design, predicted performance and operation and maintenance specifications for a BMP, material, device or method.

(72) **Top of Channel.** An edge, or point on the landscape, landward from the ordinary high-water mark of a surface water of the state, where the slope of the land begins to be less than 12% continually for at least 50 feet. If the slope of the land is 12% or less continually for the initial 50 feet, landward from the ordinary high-water mark, the top of the channel is the ordinary high-water mark.

(73) **Total Maximum Daily Load or TMDL.** The amount of pollutants specified as a function of one or more water quality parameters, that can be discharged per day into a water quality limited segment and still ensure attainment of the applicable water quality standard.

(74) **TP-40.** The Technical Paper No. 40, Rainfall Frequency Atlas of the United States, published in 1961.

(75) **TR-55**. The United States department of agriculture, natural resource conservation service (previously soil conservation service), Urban Hydrology for Small Watersheds, Second Edition, Technical Release 55, June 1986, which is incorporated by reference for this chapter.

(76) **Transportation Facility.** A public street, a public road, a public highway, a railroad, a public mass transit facility, a public-use airport, a public trail, or any other public work for transportation purposes such as harbor improvements under § 85.095(1)(b), Wis. Stats. "Transportation facility" does not include building sites for the construction of public buildings and buildings that are places of employment that are regulated by the Wisconsin Department of Natural Resources pursuant to § 281.33, Wis. Stats.

(77) **Type II Distribution.** A rainfall type curve as established in the "United States Department of Agriculture, Soil Conservation Service, Technical Paper 149, published 1973", which is incorporated by reference for this chapter. The Type II curve is applicable to all of Wisconsin and represents the most intense storm pattern.

(78) **Waters of the State.** Has the meaning given in § 283.01 (20), Wis. Stats.

§ 15-9-6. Technical Standards.

The following methods shall be used in designing and maintaining the water quality, peak discharge, infiltration, protective area, fueling / vehicle maintenance, and swale treatment components of stormwater practices needed to meet the water quality standards of this chapter:

(a) Technical standards identified, developed or disseminated by the Wisconsin Department of Natural Resources under Subchapter V of Chapter NR 151, Wis. Adm. Code.

(b) Technical standards and guidance identified within the Village of Combined Locks Stormwater Reference Guide.

(c) Where technical standards have not been identified or developed by the Wisconsin Department of Natural Resources, other technical standards may be used provided that the methods have been approved by the administering authority.

(d) In this chapter, the following year and location has been selected as average annual rainfall(s): Green Bay, 1969 (Mar. 29-Nov. 25).

§ 15-9-7. Performance Standards.

(a) **Responsible party.** The responsible party shall develop and implement a post-construction stormwater management plan that incorporates the requirements of this section.

(b) **Plan.** A written stormwater management plan shall be developed and implemented by the responsible party in accordance with § 15-9-9. The stormwater management plan shall meet all of the applicable requirements contained in this chapter.

(c) **Requirements.** The stormwater management plan shall meet the following minimum requirements to the maximum extent practicable:

(1) Water quality. BMPs shall be designed, installed and maintained to control pollutants carried in runoff from the post-construction site. The design shall be based on the average annual rainfall, as compared to no runoff management controls.

a. The following is required for a post-construction site with one or more of the following: a site with 20,000 square feet or more of impervious surfaces disturbance, or a site with one acre or more of land disturbance.

1. Except as provided in § 15-9-7(c)(1)a.2., a pollutant reduction is required as follows:

	Total Suspended Solids (TSS) & Total Phosphorus (TP) Reduction					
	New Development		Redevelopment		Routine Maintenance	
Watershed	TSS	TP	TSS	TP	TSS	TP

Garners Creek	80%	69%	60%	69%	60%	69%
Fox River	80%	41%	72%	41%	72%	41%

2. A pollutant reduction is not required for routine maintenance areas that are part of a post-construction site with less than five acres of disturbance.

b. A pollutant reduction is not required for a post-construction site adding less than 4,000 square feet of new impervious surface.

c. Sites, including common plan of development sites, with a cumulative addition of 20,000 square feet or greater of impervious surfaces after October 1, 2004 are required to satisfy the performance standards within § 15-9-7(c)(1)a.1. and 2.

d. The amount of pollutant control previously required for the site shall not be reduced as a result of the proposed development or disturbance.

e. When designing BMPs, runoff draining to the BMP from offsite areas shall be taken into account in determining the treatment efficiency of the practice. Any impact on the BMP efficiency shall be compensated for by increasing the size of the BMP accordingly. The pollutant load reduction provided by the BMP for an offsite area shall not be used to satisfy the required onsite pollutant load reduction, unless otherwise approved by the administering authority in accordance with § 15-9-7(e).

f. If the design cannot meet the water quality performance standards of § 15-9-7(c)(1)a. through e., the stormwater management plan shall include a written, site specific explanation of why the water quality performance standard cannot be met and why the pollutant load will be reduced only to the maximum extent practicable. Except as provided in § 15-9-7(f), the administering authority may not require any person to exceed the applicable water quality performance standard to meet the requirements of maximum extent practicable.

(2) Peak discharge. BMPs shall be designed, installed and maintained to control peak discharges from the post-construction site.

a. The following is required for a post-construction site with one or more of the following: a site with 20,000 square feet or more of impervious surfaces disturbance, or a site with one acre or more of land disturbance.

1. The peak post-development discharge rate shall not exceed the peak pre-development discharge rate for the 1-year, 2-year, 10-year, and 100-year, 24-hour design storms. These peak discharge requirements apply to new development and redevelopment areas, unless runoff from the routine maintenance area discharges into a proposed peak flow control facility.

2. Peak discharge calculations shall use TR-55 methodology. Atlas 14 rainfall depths and the MSE4 rainfall distribution shall be used unless the site is to be served by a previously constructed peak discharge facility. At the permittee's discretion, the TP-40 rainfall depths and the Type II rainfall distribution can be used for sites that are to be served by a previously constructed peak discharge facility. The meaning of "hydrologic soil group" and "runoff curve number" are as determined in TR-55. Unless

the site is currently woodland, peak pre-development discharge rates shall be determined using the following runoff curve numbers for a “meadow” vegetative cover:

Maximum Pre-Development Runoff Curve Numbers				
	Hydrologic Soil Group			
Vegetative Cover	A	B	C	D
Meadow	30	58	71	78
Woodland	30	55	70	77

b. Peak discharge control is not required for a post-construction site with less than 20,000 square feet of impervious surfaces disturbance.

c. Sites with a cumulative addition of 20,000 square feet or greater of impervious surfaces after October 1, 2004 are required to satisfy the performance standards within § 15-9-7(c)(2)a.1. and 2.

d. The amount of peak discharge control previously required for the site shall not be reduced as a result of the proposed development or disturbance.

e. When designing BMPs, runoff draining to the BMP from offsite areas shall be taken into account in determining the performance of the practice. Any impact on the BMP performance shall be compensated for by increasing the size of the BMP accordingly. The peak discharge reduction provided by the BMP for an offsite area shall not be used to satisfy the required onsite peak discharge reduction, unless otherwise approved by the administering authority in accordance with § 15-9-7(e).

f. An adequate outfall shall be provided for each point of concentrated discharge from the post-construction site and shall:

1. Consist of non-erosive discharge velocities and reasonable downstream conveyance.

2. Discharge to the municipal separate storm sewer system, waters of the state, or an appropriate drainage easement. If a site is not able to meet this requirement, the adequate outfall may be permitted if it diffuses the outfall within the site boundary.

g. *Exemptions.* The peak discharge performance standards do not apply to the following:

1. A transportation facility where the discharge is directly into a lake over 5,000 acres or a stream or river segment draining more than 500 square miles.

2. Except as provided under § 15-9-7(c)(2)d. to f., a highway reconstruction site.

3. Except as provided under § 15-9-7(c)(2)d. to f., a transportation facility that is part of a redevelopment project.

(3) Infiltration. BMPs shall be designed, installed, and maintained to infiltrate runoff from the post-construction site, except as provided in § 15-9-7(c)(3)i. through m..

a. The following is required for post-construction sites with one acre or more of land disturbance.

1. *Low Imperviousness.* For development up to 40 percent connected imperviousness, such as parks, cemeteries, and low density residential development, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 90 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than one percent of the post-construction site is required as an effective infiltration area.

2. *Moderate imperviousness.* For development with more than 40 percent and up to 80 percent connected imperviousness, such as medium and high density residential, multi-family development, industrial and institutional development, and office parks, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 75 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2 percent of the post-construction site is required as an effective infiltration area.

3. *High imperviousness.* For development with more than 80 percent connected imperviousness, such as commercial strip malls, shopping centers, and commercial downVillages, infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 60 percent of the pre-development infiltration volume, based on an average annual rainfall. However, when designing appropriate infiltration systems to meet this requirement, no more than 2 percent of the post-construction site is required as an effective infiltration area.

b. Pre-development condition shall assume "good hydrologic conditions" for appropriate land covers as identified in TR-55 or an equivalent methodology approved by the administering authority. The meaning of "hydrologic soil group" and "runoff curve number" are as determined in TR-55. The actual pre-development vegetative cover and the following pre-development runoff curve numbers shall be used:

Maximum Pre-Development Runoff Curve Numbers				
	Hydrologic Soil Group			
Vegetative Cover	A	B	C	D
Woodland	30	55	70	77
Grassland	39	61	71	78
Cropland	55	69	78	83

c. For post-construction sites with less than 20,000 square feet of new impervious surfaces, infiltrate runoff volume using BMPs from the Village of Combined Locks Stormwater Reference Guide or other practices approved by the administering authority. These sites are not required to satisfy a numeric performance standard.

d. Sites with a cumulative addition of 20,000 square feet or greater of impervious surfaces after October 1, 2004 are required to satisfy the performance standards within § 15-9-7(c)(3)a. and b.

e. The amount of infiltration previously required for the site shall not be reduced as a result of the proposed development or disturbance.

f. Agricultural production areas shall infiltrate runoff volume using BMPs from the Village of Combined Locks Stormwater Reference Guide.

g. When designing BMPs, runoff draining to the BMP from offsite areas shall be taken into account in determining the performance of the practice. Any impact on the BMP performance shall be compensated for by increasing the size of the BMP accordingly. The runoff volume reduction provided by the BMP for an offsite area shall not be used to satisfy the required onsite runoff volume reduction, unless otherwise approved by the administering authority in accordance with § 15-9-7(e).

h. *Pretreatment.* Before infiltrating runoff, pretreatment shall be required for parking lot runoff and for runoff from road construction in commercial, industrial and institutional areas that will enter an infiltration system. The pretreatment shall be designed to protect the infiltration system from clogging prior to scheduled maintenance and to protect groundwater quality in accordance with § 15-9-7(c)(3)o. Pretreatment options may include, but are not limited to, oil/grease separation, sedimentation, biofiltration, filtration, swales or filter strips.

i. *Source area prohibitions.* Runoff from the following areas may not be infiltrated and may not qualify as contributing to meeting the requirements of § 15-9-7(c)(3) unless demonstrated to meet the conditions of § 15-9-7(c)(3)o.

    1. Areas associated with a tier 1 industrial facility identified in § NR 216.21(2)(a), Wis. Adm. Code, including storage, loading, and parking. Rooftops may be infiltrated with the concurrence of the administering authority.

    2. Storage and loading areas of a tier 2 industrial facility identified in § NR 216.21(2)(b), Wis. Adm. Code.

    3. Fueling and vehicle maintenance areas. Rooftops of fueling and vehicle maintenance areas may be infiltrated with the concurrence of the administering authority.

    4. Agricultural production areas that contain livestock, animal waste, or feed storage.

j. *Source area exemptions.* Runoff from the following areas may be credited toward meeting the requirement when infiltrated, but the decision to infiltrate runoff from these sources is optional:

    1. Parking areas and access roads less than 5,000 square feet for commercial development.

    2. Parking areas and access roads less than 5,000 square feet for industrial development not subject to the prohibitions under § 15-9-7(c)(3)i.

    3. Except as provided under § 15-9-7(c)(3)e., redevelopment and routine maintenance areas.

    4. In-fill development areas less than five acres.

    5. Roads in commercial, industrial and institutional land uses, and arterial residential roads.

6. Except as provided under § 15-9-7(c)(3)e., transportation facility highway reconstruction and new highways.

k. *Prohibitions.* Infiltration practices may not be located in the following areas:

1. Areas within 1,000 feet upgradient or within 100 feet downgradient of direct conduits to groundwater.

2. Areas within 400 feet of a community water system well as specified in § NR 811.16(4), Wis. Adm. Code, or within the separation distances listed in § NR 812.08, Wis. Adm. Code, for any private well or non-community well for runoff infiltrated from commercial, including multi-family residential, industrial, and institutional land uses or regional devices for one- and two-family residential development.

3. Areas where contaminants of concern, as defined in § NR 720.03(2), Wis. Adm. Code, are present in the soil through which infiltration will occur.

l. *Separation distances.* Infiltration practices shall be located so that the characteristics of the soil and the separation distance between the bottom of the infiltration system and the elevation of seasonal high groundwater or the top of bedrock are in accordance with the following:

Separation Distances and Soil Characteristics		
Source Area	Separation Distance	Soil Characteristics
Industrial, Commercial, Institutional Parking Lots and Roads	5 feet or more	Filtering Layer
Residential Arterial Roads	5 feet or more	Filtering Layer
Roofs Draining to Subsurface Infiltration Practices	1 foot or more	Native or Engineered Soil with Pchapters Finer than Coarse Sand
Roofs Draining to Surface Infiltration Practices	Not Applicable	
All Other Impervious Source Areas	3 feet or more	Filtering Layer

Notwithstanding § 15-9-7(c)(3)l., applicable requirements for injection wells classified under Ch. NR 815, Wis. Adm. Code, shall be followed.

m. *Infiltration rate exemptions.* Infiltration practices located in the following areas may be credited toward meeting the requirement under the following conditions, but the decision to infiltrate under these conditions is optional:

1. Where the infiltration rate of the soil measured at the proposed bottom of the infiltration system is less than 0.6 inches per hour using a scientifically credible field test method.

2. Where the least permeable soil horizon to five feet below the proposed bottom of the infiltration system using the U.S. Department of Agriculture method of soils analysis is one of the following: sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.

n. *Alternate uses.* Where alternate uses of runoff are employed, such as for toilet flushing, laundry or irrigation or storage on green roofs where an equivalent portion of the runoff is captured permanently by rooftop vegetation, such alternate use shall be given equal credit toward the infiltration volume required by § 15-9-7C(3).

o. *Groundwater standards.*

1. Infiltration systems designed in accordance with this § 15-9-7C(3) shall, to the extent technically and economically feasible, minimize the level of pollutants infiltrating to groundwater and shall maintain compliance with the preventive action limit at a point of standards application in accordance with Ch. NR 140, Wis. Adm. Code. However, if site specific information indicates that compliance with a preventive action limit is not achievable, the infiltration BMP may not be installed or shall be modified to prevent infiltration to the maximum extent practicable.

2. Notwithstanding § 15-9-7(c)(3)o.1., the discharge from BMPs shall remain below the enforcement standard at the point of standards application.

p. Where the conditions of § 15-9-7(c)(3)i. through m. limit or restrict the use of infiltration practices, the performance standard of § 15-9-7(c)(3) shall be met to the maximum extent practicable.

(4) Protective areas.

a. "Protective area" means an area of land that commences at the top of the channel of lakes, streams and rivers, or at the delineated boundary of wetlands, and that is the greatest of the following widths, as measured horizontally from the top of the channel or delineated wetland boundary to the closest impervious surface. However, in § 15-9-7(c)(4), "protective area" does not include any area of land adjacent to any stream enclosed within a pipe or culvert, such that runoff cannot enter the enclosure at this location.

1. For outstanding resource waters and exceptional resource waters, 75 feet.

2. For perennial and intermittent streams identified on a United States geological survey 7.5-minute series topographic map, or a county soil survey map, whichever is more current, 50 feet.

3. For lakes, 50 feet.

4. For wetlands not subject to § 15-9-7(c)(4)a.5. or 6., 50 feet.

5. For highly susceptible wetlands, 75 feet. Highly susceptible wetlands include the following types: calcareous fens, sedge meadows, open and coniferous bogs, low prairies, coniferous swamps, lowland hardwood swamps, and ephemeral ponds.

6. For less susceptible wetlands, 10 percent of the average wetland width, but no less than 10 feet nor more than 30 feet. Less susceptible wetlands include: degraded wetlands dominated by invasive species such as reed canary grass; cultivated hydric soils; and any gravel pits, or dredged material or fill material disposal sites that take on the attributes of a wetland.

7. In § 15-9-7(c)(4)a.4. to 6., determinations of the extent of the protective area adjacent to wetlands shall be made on the basis of the sensitivity and runoff susceptibility of the wetland in accordance with the standards and criteria in § NR 103.03, Wis. Adm. Code.

8. Wetlands shall be delineated. Wetland boundary delineations shall be made in accordance with § NR 103.08(1m), Wis. Adm. Code. § 15-9-7(c)(4) does not apply to wetlands that have been completely filled in compliance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in compliance with all applicable state and federal regulations shall be measured from the wetland boundary delineation after fill has been placed. Where there is a legally authorized wetland fill, the protective area standard need not be met in that location.

9. For concentrated flow channels with drainage areas greater than 130 acres, 10 feet.

10. Notwithstanding § 15-9-7(c)(4)a.1. to 9., the greatest protective area width shall apply where rivers, streams, lakes, and wetlands are contiguous.

b. § 15-9-7(c)(4) applies to all post-construction sites located within a protective area, except those areas exempted pursuant to § 15-9-7(c)(4)e.

c. The following requirements shall be met:

1. Impervious surfaces shall be kept out of the protective area entirely or to the maximum extent practicable. If there is no practical alternative to locating an impervious surface in the protective area, the stormwater management plan shall contain a written, site-specific explanation.

2. Where land disturbing construction activity occurs within a protective area, adequate sod or self-sustaining vegetative cover of 70 percent or greater shall be established and maintained where no impervious surface is present. The adequate sod or self-sustaining vegetative cover shall be sufficient to provide for bank stability, maintenance of fish habitat, and filtering of pollutants from upslope overland flow areas under sheet flow conditions. Non-vegetative materials, such as rock riprap, may be employed on the bank as necessary to prevent erosion, such as on steep slopes or where high velocity flows occur.

3. Best management practices such as filter strips, swales, or wet detention ponds, that are designed to control pollutants from non-point sources, may be located in the protective area.

d. A protective area established or created after October 1, 2004 shall not be eliminated or reduced, except as allowed in § 15-9-7(c)(4)e.2., 3., or 4.

e. *Exemptions.* The following areas are not required to meet the protective area requirements of § 15-9-7(c)(4):

1. Redevelopment and routine maintenance areas provided the minimum requirements within § 15-9-7(c)(4)d. are satisfied.

2. Structures that cross or access surface waters such as boat landings, bridges and culverts.

3. Structures constructed in accordance with § 59.692(1v), Wis. Stats.

4. Areas of post-construction sites from which the runoff does not enter the surface water, including wetlands, without first being treated by a BMP to meet the requirements of § 15-9-7(c)(1) and (2), except to the extent that vegetative ground cover is necessary to maintain bank stability.

(5) Fueling and vehicle maintenance areas. Fueling and vehicle maintenance areas shall have BMPs designed, installed and maintained to reduce petroleum within runoff, so that the runoff that enters waters of the state contains no visible petroleum sheen, or to the maximum extent practicable.

(6) Swale treatment for transportation facilities. This § 15-9-7(c)(6) is not applicable to transportation facilities that are part of a larger common plan of development or sale.

a. *Requirement.* Except as provided in § 15-9-7(c)(6)b., transportation facilities that use swales for runoff conveyance and pollutant removal are exempt from the requirements of § 15-9-7(c)(1), (2), and (3), if the swales are designed to do all of the following or to the maximum extent practicable:

1. Swales shall be vegetated. However, where appropriate, non-vegetative measures may be employed to prevent erosion or provide for runoff treatment, such as rock riprap stabilization or check dams.

2. Swales shall comply with the Wisconsin Department of Natural Resources Technical Standard 1005, “Vegetated Infiltration Swale”, except as otherwise authorized in writing by the Wisconsin Department of Natural Resources.

b. *Other Requirements.* Notwithstanding § 15-9-7(c)(6)a., the administering authority may, consistent with water quality standards, require that other requirements, in addition to swale treatment, be met on a transportation facility with an average daily traffic rate greater than 2,500 and where the initial surface water of the state that the runoff directly enters is any of the following:

1. An outstanding resource water.

2. An exceptional resource water.

3. Waters listed in section 303(d) of the federal clean water act that are identified as impaired in whole or in part, due to nonpoint source impacts.

4. Waters where targeted performance standards are developed pursuant to § NR 151.004, Wis. Adm. Code.

(7) Exemptions. The following areas are not required to meet the performance standards within § 15-9-7(c):

a. Underground utility construction such as water, sewer, gas, electric, telephone, cable television, and fiber optic lines. This exemption does not apply to the construction of any above ground structures associated with utility construction.

b. The following transportation facilities are exempt, provided the transportation facility is not part of a larger common plan of development or sale.

1. A transportation facility post-construction site with less than 10 percent connected imperviousness, based on the area of land disturbance, provided the cumulative area of all impervious surfaces is less than one acre. Notwithstanding this exemption, the protective area requirements of § 15-9-7(c)(4) still apply.

2. Reconditioning or resurfacing of a highway.

3. Minor reconstruction of a highway. Notwithstanding this exemption, the protective area requirements of § 15-9-7(c)(4) apply to minor reconstruction of a highway.

4. Routine maintenance for transportation facilities that have less than five acres of land disturbance if performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility.

5. Routine maintenance if performed for stormwater conveyance system cleaning.

(d) **General considerations for on-site and off-site stormwater management measures.** The following considerations shall be observed in managing runoff:

(1) Natural topography and land cover features such as natural swales, natural depressions, native soil infiltrating capacity, and natural groundwater recharge areas shall be preserved and used, to the extent possible, to meet the requirements of this section.

(2) Emergency overland flow for all stormwater facilities shall be provided to prevent exceeding the safe capacity of downstream drainage facilities and prevent endangerment of downstream property or public safety.

(e) **BMP location and credit.**

(1) General. To comply with § 15-9-7(c) performance standards, the BMPs may be located on-site or off-site as part of a regional stormwater device, practice or system.

(2) Offsite or regional BMP.

a. The amount of credit that the administering authority may give an offsite or regional BMP for purposes of determining compliance with the performance standards of § 15-9-7(c) is limited to the treatment capability or performance of the BMP.

b. The administering authority may authorize credit for an off-site or regional BMP provided all of the following conditions are satisfied:

1. The BMP received all applicable permits.

2. The BMP shall be installed and operational before the construction site has undergone final stabilization.

3. The BMP shall be designed and adequately sized to provide a level of stormwater control equal to or greater than that which would be afforded by on-site BMPs meeting the § 15-9-7(c) performance standards.

4. The owner of the BMP has entered into a § 15-9-10 maintenance agreement with the Village of Combined Locks, or another municipal entity, such that the BMP has a legally obligated entity responsible for its long-term operation and maintenance. Legal authority exists if a municipality owns, operates and maintains the BMP.

5. The owner of the BMP has provided written authorization which indicates the permit applicant may use the BMP for § 15-9-7(c) performance standard compliance.

6. Where an off-site or regional BMP option exists such that the administering authority exempts the applicant from all or part of the minimum on-site stormwater management requirements, the applicant shall be required to pay a fee in an amount determined in negotiation with the administering authority. In determining the fee for post-construction runoff, the administering authority shall consider an equitable distribution of the cost for land, engineering design, construction, and maintenance of the off-site or regional BMP.

(3) BMP in non-navigable waters. For purposes of determining compliance with the performance standards of § 15-9-7(c), the administering authority may give credit for BMPs that function to provide treatment for runoff from existing development and post-construction runoff from new development, redevelopment, and routine maintenance areas and that are located within non-navigable waters.

(4) BMP in navigable waters.

a. *New Development Runoff.* Except as allowed under § 15-9-7(e)(4)b., BMPs designed to treat post-construction runoff from new development areas may not be located in navigable waters and, for purposes of determining compliance with the performance standards of § 15-9-7(c), the administering authority may not give credit for such BMPs.

b. *New Development Runoff Exemption.* BMPs to treat post-construction runoff from new development areas may be located within navigable waters and may be creditable by the administering authority under § 15-9-7(c), if all the following are met:

1. The BMP was constructed prior to October 1, 2002 and received all applicable permits.

2. The BMP functions or will function to provide runoff treatment for the new development area.

c. *Existing Development & Post-Construction Runoff From Redevelopment, Routine Maintenance, & Infill Development Areas.* Except as provided in § 15-9-7(e)(4)d., BMPs designed to treat post-construction runoff for existing development and post-construction runoff from redevelopment, routine maintenance and infill development areas may not be located in navigable waters and, for purposes of determining compliance with the performance standards of § 15-9-7(c), the administering authority may not give credit for such BMPs.

d. *Existing Development & Post-Construction Runoff From Redevelopment, Routine Maintenance, & Infill Development Areas Exemption.* BMPs that function to provide treatment of runoff from existing development and post-construction runoff from redevelopment, routine maintenance and infill development areas may be located within navigable waters and, for purposes of determining compliance with the performance standards of § 15-9-7(c), the administering authority may give credit for such BMPs, if any of the following are met:

1. The BMP was constructed, contracts were signed or bids advertised and all applicable permits were received prior to January 1, 2011.

2. The BMP is on an intermittent waterway and all applicable permits are received.

(5) Water quality trading. To comply with § 15-9-7(c)(1) performance standards, the administering authority may authorize credit for water quality trading provided all of the following conditions are satisfied:

a. The treatment practices associated with a water quality trade shall be in place, effective and operational before credit can be authorized.

b. The water quality trade shall comply with applicable trading ratios established by the Wisconsin Department of Natural Resources or the Village of Combined Locks.

c. The water quality trade shall comply with applicable regulations, standards, and guidance developed by the Wisconsin Department of Natural Resources or the Village of Combined Locks.

d. The responsible party shall furnish a copy of executed water quality trading agreements or other related information deemed necessary by the administering authority in order to authorize credit.

(f) **Targeted performance standards.** The administering authority may establish numeric water quality requirements that are more stringent than those set forth in § 15-9-7(c) in order to meet targeted performance standards, total maximum daily loads, and/or water quality standards for a specific water body or area. The numeric water quality requirements may be applicable to any permitted site, regardless of the size of land disturbing construction activity.

(g) **Alternate requirements.** The administering authority may establish stormwater management requirements more stringent than those set forth in this section if the administering authority determines that an added level of protection is needed to protect sensitive resources. Also, the administering authority may establish stormwater management requirements less stringent than those set forth in this section if the administering authority determines that less protection is needed to protect sensitive resources and provide reasonable flood protection. However, the alternative requirements shall not be less stringent than those requirements promulgated in rules by Wisconsin Department of Natural Resources under NR 151 Wisconsin Administrative Code. The established additional requirements shall be provided to the applicant in writing.

§ 15-9-8. Permitting Requirements, Procedures and Fees.

(a) **Permit required.** No responsible party may undertake a land disturbing construction activity without receiving a post-construction runoff permit from the administering authority prior to commencing the proposed activity.

(b) **Permit application and fees.** Unless specifically excluded by this chapter, any responsible party desiring a permit shall submit to the administering authority a permit application made on a form provided by the administering authority for that purpose.

(1) Unless otherwise excepted by this chapter, a permit application must be accompanied by a stormwater management plan, a maintenance agreement and a non-refundable permit administration fee.

(2) The stormwater management plan shall be prepared to meet the requirements of § 15-9-7 and § 15-9-9, the maintenance agreement shall be prepared to meet the requirements of § 15-9-10, the financial guarantee shall meet the requirements of § 425-23, and fees shall be those established by the Combined Locks Village Board as set forth in § 15-9-12.

(c) **Review and approval of permit application.** The administering authority shall review any permit application that is submitted with a stormwater management plan, maintenance agreement, and the required fee. The following approval procedure shall be used:

(1) Within 20 business days of the receipt of a complete permit application, including all items as required by § 15-9-8(b), the administering authority shall inform the applicant whether the application, plan and maintenance agreement are approved or disapproved based on the requirements of this chapter.

(2) If the stormwater permit application, plan and maintenance agreement are approved, or if an agreed upon payment of fees in lieu of stormwater management practices is made pursuant to § 15-9-7(e), the administering authority shall issue the permit.

(3) If the stormwater permit application, plan or maintenance agreement is disapproved, the administering authority shall detail in writing the reasons for disapproval.

(4) The administering authority may request additional information from the applicant. If additional information is submitted, the administering authority shall have 20 business days from the date the additional information is received to inform the applicant that the plan and maintenance agreement are either approved or disapproved.

(5) Failure by the administering authority to inform the permit applicant of a decision within 20 business days of a required submittal shall be deemed to mean approval of the submittal and the applicant may proceed as if a permit had been issued.

(d) **Permit requirements.** All permits issued under this chapter shall be subject to the following conditions, and holders of permits issued under this chapter shall be deemed to have accepted these conditions. The administering authority may suspend or revoke a permit for violation of a permit condition, following written notification of the responsible party. An action by the administering authority to suspend or revoke this permit may be appealed in accordance with § 15-9-14.

(1) Compliance with this permit does not relieve the responsible party of the responsibility to comply with other applicable federal, state, and local laws and regulations.

(2) The responsible party shall design and install all structural and non-structural stormwater management measures in accordance with the approved stormwater management plan and this permit.

(3) The responsible party shall notify the administering authority at least 10 business days before commencing any work in conjunction with the stormwater management plan, and within 10 business days upon completion of the stormwater management practices. If required as a special condition under § 15-9-8(e), the responsible party shall make additional notification according to a schedule set forth by the administering authority so that practice installations can be inspected during construction.

(4) Practice installations required as part of this chapter shall be certified "as built" by a licensed professional engineer. Completed stormwater management practices must pass a final inspection by the administering authority or its designee to determine if they are in accordance with the approved stormwater management plan and chapter. The administering authority or its designee shall notify the responsible party in writing of any changes required in such practices to bring them into compliance with the conditions of this permit.

(5) The responsible party shall notify the administering authority of any significant modifications it intends to make to an approved stormwater management plan. The administering authority may require that the proposed modifications be submitted to it for approval prior to incorporation into the stormwater management plan and execution by the responsible party.

(6) The responsible party shall inspect BMPs annually and after runoff events in accordance with the stormwater management plan and maintenance agreement. The responsible party shall have a licensed professional submit a stamped written inspection report to the administering authority for review and approval every five years. All written inspection reports prepared by the responsible party shall accompany the stamped report prepared by the licensed professional.

(7) The responsible party shall maintain all stormwater management practices in accordance with the stormwater management plan until the practices either become the responsibility of the Village of Combined Locks, or are transferred to subsequent private owners as specified in the approved maintenance agreement.

(8) The responsible party authorizes the administering authority to perform any work or operations necessary to bring stormwater management measures into conformance with the approved stormwater management plan, and consents to a special assessment or charge against the property as authorized under Subch. VII of Ch. 66, Wis. Stats., or to charging such costs against the financial guarantee posted under § 425-23.

(9) If so directed by the administering authority, the responsible party shall repair at the responsible party's own expense all damage to adjoining municipal facilities and drainage ways caused by runoff, where such damage is caused by activities that are not in compliance with the approved stormwater management plan.

(10) The responsible party shall permit property access to the administering authority or its designee for the purpose of inspecting the property for compliance with the approved stormwater management plan and this permit.

(11) Where site development or redevelopment involves changes in direction, increases in peak rate and/or total volume of runoff from a site, the administering authority may require the responsible

party to make appropriate legal arrangements with affected property owners concerning the prevention of endangerment to property or public safety.

(12) The responsible party is subject to the enforcement actions and penalties detailed in § 15-9-13, if the responsible party fails to comply with the terms of this permit.

(13) The permit applicant shall post the "Certificate of Permit Coverage" in a conspicuous location at the construction site.

(e) **Permit conditions.** Permits issued under this subsection may include conditions established by administering authority in addition to the requirements needed to meet the performance standards in § 15-9-7 or a financial guarantee as provided for in § 15-9-11.

(f) **Permit duration.** Permits issued under this section shall be valid from the date of issuance through the date the administering authority notifies the responsible party that all stormwater management practices have passed the final inspection required under § 15-9-8(d)(4).

(g) **Alternate requirements.** The administering authority may prescribe alternative requirements for applicants seeking an exemption to on-site stormwater management performance standards under § 15-9-7(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

§ 15-9-9. Stormwater Management Plan.

(a) **Plan requirements.** The stormwater management plan required under § 15-9-7(b) and § 15-9-8(b) shall comply with the Village of Combined Locks Stormwater Reference Guide and contain at a minimum the following information:

(1) Name, address, and telephone number of the landowner and responsible parties.

(2) A legal description of the property proposed to be developed.

(3) Pre-development site map with property lines, disturbed limits, and drainage patterns.

(4) Post-development site map with property lines, disturbed limits, and drainage patterns.

a. Total area of disturbed impervious surfaces within the site.

b. Total area of new impervious surfaces within the site.

c. Performance standards applicable to site.

d. Proposed best management practices.

e. Groundwater, bedrock, and soil limitations.

f. Separation distances. Stormwater management practices shall be adequately separated from wells to prevent contamination of drinking water.

(5) Inspection and maintenance schedules for stormwater BMPs.

(b) **Alternate requirements.** The administering authority may prescribe alternative submittal requirements for applicants seeking an exemption to on-site stormwater management performance standards under § 15-9-7E or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

§ 15-9-10. Maintenance Agreement.

(a) **Maintenance agreement required.** The maintenance agreement required under § 15-9-8(b) for stormwater management practices shall be an agreement between the Village of Combined Locks and the responsible party to provide for maintenance of stormwater practices beyond the duration period of this permit. The maintenance agreement shall be filed with the County Register of Deeds as a property deed restriction so that it is binding upon all subsequent owners of the land served by the stormwater management practices.

(b) **Agreement provisions.** The maintenance agreement shall contain the following information and provisions and be consistent with the plan required by § 15-9-8(b):

(1) Identification of the stormwater facilities and designation of the drainage area served by the facilities.

(2) A schedule for regular maintenance of each aspect of the stormwater management system consistent with the stormwater management plan required under § 15-9-8(b)

(3) Identification of the responsible party(s), organization or city, county, Village or village responsible for long term maintenance of the stormwater management practices identified in the stormwater management plan required under § 15-9-8(b)

(4) Requirement that the responsible party(s), organization, or city, county, Village or village shall maintain stormwater management practices in accordance with the schedule included in § 15-9-10(b)(2).

(5) Authorization for the administering authority to access the property to conduct inspections of stormwater management practices as necessary to ascertain that the practices are being maintained and operated in accordance with the agreement.

(6) A requirement on the administering authority to maintain public records of the results of the site inspections, to inform the responsible party responsible for maintenance of the inspection results, and to specifically indicate any corrective actions required to bring the stormwater management practice into proper working condition.

(7) Agreement that the party designated under § 15-9-10(b)(3), as responsible for long term maintenance of the stormwater management practices, shall be notified by the administering authority of maintenance problems which require correction. The specified corrective actions shall be undertaken within a reasonable time frame as set by the administering authority.

(8) Authorization of the administering authority to perform the corrected actions identified in the inspection report if the responsible party designated under § 15-9-10(b)(3) does not make the required corrections in the specified time period. The administering authority shall enter the amount due on the tax rolls and collect the money as a special charge against the property pursuant to Subch. VII of Ch. 66, Wis. Stats.

(c) Alternate requirements. The administering authority may prescribe alternative requirements for applicants seeking an exemption to on-site stormwater management performance standards under § 15-9-7(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

§ 15-9-11. Financial Guarantee.

(a) **Establishment of the guarantee.** The administering authority may require the submittal of a financial guarantee, the form and type of which shall be acceptable to the administering authority. The financial guarantee shall be in an amount determined by the administering authority to be the estimated cost of construction and the estimated cost of maintenance of the stormwater management practices during the period which the designated party in the maintenance agreement has maintenance responsibility. The financial guarantee shall give the administering authority the authorization to use the funds to complete the stormwater management practices if the responsible party defaults or does not properly implement the approved stormwater management plan, upon written notice to the responsible party by the administering authority that the requirements of this chapter have not been met.

(b) **Conditions for release.** Conditions for the release of the financial guarantee are as follows:

(1) The administering authority shall release the portion of the financial guarantee established under this section, less any costs incurred by the administering authority to complete installation of practices, upon submission of "as built plans" by a licensed professional engineer. The administering authority may make provisions for a partial pro-rata release of the financial guarantee based on the completion of various development stages.

(2) The administering authority shall release the portion of the financial guarantee established under this section to assure maintenance of stormwater practices, less any costs incurred by the administering authority, at such time that the responsibility for practice maintenance is passed on to another entity via an approved maintenance agreement.

(c) **Alternate requirements.** The administering authority may prescribe alternative requirements for applicants seeking an exemption to on-site stormwater management performance standards under § 15-9-7(e) or for applicants seeking a permit for a post-construction site with less than 20,000 square feet of impervious surface disturbance.

§ 15-9-12. Fee schedule.

The fees referred to in other sections of this chapter shall be established by the Combined Locks Village Board and may from time to time be modified by resolution. A schedule of the fees established by the Village Board shall be available for review in the Village Hall.

§ 15-9-13. Enforcement.

(a) Any land disturbing construction activity or post-construction runoff initiated after the effective date of this chapter by any person, firm, association, or corporation subject to the chapter provisions shall be deemed a violation unless conducted in accordance with the requirements of this chapter.

(b) The administering authority shall notify the responsible party by certified mail of any non-complying land disturbing construction activity or post-construction runoff. The notice shall describe the nature

of the violation, remedial actions needed, a schedule for remedial action, and additional enforcement action which may be taken.

(c) Upon receipt of written notification from the administering authority under Subsection B, the responsible party shall correct work that does not comply with the stormwater management plan or other provisions of this permit. The responsible party shall make corrections as necessary to meet the specifications and schedule set forth by the administering authority in the notice.

(d) If the violations to a permit issued pursuant to this chapter are likely to result in damage to properties, public facilities, or waters of the state, the administering authority may enter the land and take emergency actions necessary to prevent such damage. The costs incurred by the administering authority plus interest and legal costs shall be billed to the responsible party.

(e) The administering authority is authorized to post a stop work order on all land disturbing construction activity that is in violation of this chapter, or to request the Village Attorney to obtain a cease and desist order in any court with jurisdiction.

(f) The administering authority may revoke a permit issued under this chapter for non-compliance with chapter provisions.

(g) Any permit revocation, stop work order, or cease and desist order shall remain in effect unless retracted by the administering authority or by a court with jurisdiction.

(h) The administering authority is authorized to refer any violation of this chapter, or of a stop work order or cease and desist order issued pursuant to this chapter, to the Village Attorney for the commencement of further legal proceedings in any court with jurisdiction.

(i) Any person, firm, association, or corporation who does not comply with the provisions of this chapter shall be subject to a forfeiture as provided in the Uniform Forfeiture and Bond Schedules per offense, together with the costs of prosecution. Each day that the violation exists shall constitute a separate offense.

(j) Compliance with the provisions of this chapter may also be enforced by injunction in any court with jurisdiction. It shall not be necessary to prosecute for forfeiture or a cease and desist order before resorting to injunctional proceedings.

(k) When the administering authority determines that the holder of a permit issued pursuant to this chapter has failed to follow practices set forth in the stormwater management plan, or has failed to comply with schedules set forth in said stormwater management plan, the administering authority or a party designated by the administering authority may enter upon the land and perform the work or other operations necessary to bring the condition of said lands into conformance with requirements of the approved plan. The administering authority shall keep a detailed accounting of the costs and expenses of performing this work. These costs and expenses shall be deducted from any financial security posted pursuant to § 15-9-11 of this chapter. Where such a security has not been established, or where such a security is insufficient to cover these costs, the costs and expenses shall be entered on the tax roll as a special charge against the property and collected with any other taxes levied thereon.

§ 15-9-14. Appeals.

(a) **Board of Appeals.** The Board of Appeals created pursuant to § 14-2 of this Code, pursuant to § 61.354(4)(b), Wis. Stats., shall hear and decide appeals where it is alleged that there is error in any order, decision or determination made by the administering authority in administering this chapter. The Board of Appeals shall also use the rules, procedures, duties, and powers authorized by statute in hearing and deciding appeals. Upon appeal, the Board may authorize variances from the provisions of this chapter that are not contrary to the public interest, and where owing to special conditions a literal enforcement of the chapter will result in unnecessary hardship.

(b) **Who may appeal.** Appeals to the Plan Commission may be taken by any aggrieved person or by an officer, department, board, or bureau of the Village of Combined Locks affected by any decision of the administering authority.

§ 15-9-15. Severability.

If any section, clause, provision or portion of this chapter is judged unconstitutional or invalid by a court of competent jurisdiction, the remainder of the chapter shall remain in force and not be affected by such judgement.

§ 15-9-16. Effective Date.

This chapter shall in force and effect from and after its adoption and posting.

§ 15-9-17 Limitations on Municipal Responsibility.

Nothing in this chapter creates or imposes, nor shall be construed to create or impose, any greater obligation or responsibility on the municipality which has adopted this chapter than those minimum requirements specifically required by State of Wisconsin Statutes and Department of Natural Resources regulations.

STORMWATER REFERENCE GUIDE

FOR THE:

POST-CONSTRUCTION STORMWATER MANAGEMENT ORDINANCE

DATE:
March 1, 2021

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Village's Stormwater Reference Guide (Reference Guide) has been created to act as a companion to the Village's Post-Construction Stormwater Management Ordinance (Ordinance). The Ordinance cites the Reference Guide as the resource for details that were omitted from the Ordinance. Items in the Reference Guide can be changed without the public hearing process as the changes are typically administrative and/or technical and do not affect the Ordinance's intent and requirements. The Reference Guide is organized similar to the Post-Construction Stormwater Management Ordinance for ease of relating the Reference Guide to the appropriate sections in the ordinance.

Post-Construction Stormwater Management Ordinance						
Site		**Requirements [a]**				
		Water Quality	**Peak Discharge**	**Infiltration**	**Protective Area**	**Fueling & Vehicle Maintenance Areas**
< 20,000 ft^2 Impervious Surface [b]		No Numeric Standard	No Numeric Standard	No Numeric Standard	Width Varies	No Visible Petroleum Sheen
> 20,000 ft^2 Impervious Surface	**New Development**	Numeric Standard Varies [d]	1, 2, 10 & 100-year	90% to 60% of pre-development infiltration volume	Width Varies	No Visible Petroleum Sheen
	Redevelopment	Numeric Standard Varies [d]	1, 2, 10 & 100-year	Exempt	Potentially Exempt	No Visible Petroleum Sheen
	Routine Maintenance Area	Numeric Standard Varies [d]	None, unless discharging into a BMP	Exempt	Potentially Exempt	No Visible Petroleum Sheen
Transportation Facilities [c]		- Grass swales comply with Technical Standard 1005 "Vegetated Infiltration Swale". - Other requirements may apply if discharging to ORW, ERW, 303(d) water body, etc.				

[a] Summary of Section 15-9-7 Performance Standards of the Post-Construction Stormwater Management Ordinance. See Ordinance and this Reference Guide for specific requirements, exemptions and prohibitions.

[b] The impervious surface areas created after the adoption date of the Ordinance are cumulative. For example, if a landowner first adds 18,000 ft^2 of parking and then adds a 2,001 ft^2 building the following year, the site is held to the >20,000 ft^2 performance standards at the time of the 2,001 ft^2 building addition.

[c] Provides alternative criteria for transportation facilities with grass swale drainage systems. The alternative criteria may be used by the applicant to satisfy the Water Quality, Peak Discharge, and Infiltration Performance Standards. The alternative criteria may not be used for transportation facilities that are part of a larger common plan of development.

[d] Please refer to the Post-Construction Storm Water Management Ordinance for the required water quality reductions. Water quality reductions and pollutants of concern may vary by watershed.

15-9-1 AUTHORITY

15-9-2 FINDINGS OF FACT

15-9-3 PURPOSE AND INTENT

A. PURPOSE

B. INTENT

15-9-4 APPLICABILITY AND JURISDICTION

A. APPLICABILITY

B. JURISDICTION

C. EXCLUSIONS

The Wisconsin Department of Transportation (WisDOT) has entered into a memorandum of understanding with the Wisconsin Department of Natural Resources that satisfies s. 281.33 (2), Wis. Stats., such that activities directed and supervised by WisDOT are exempt from this Ordinance.

Activities directed and supervised by the local municipality are covered by this Ordinance.

15-9-5 DEFINITIONS

"Biofiltration system" means a bioretention system which does not qualify for any infiltration credit pursuant to 15-9-7C(3) of the Post-Construction Stormwater Management Ordinance.

"Structural height" means the difference in elevation in feet between the point of lowest elevation of the top of the embankment before overtopping and the lowest elevation of the downstream toe of embankment.

15-9-6 TECHNICAL STANDARDS

Below is a list of Technical Standards and Guidance Documents that shall be used to satisfy Performance Standards contained in the ordinance. Technical Standards specify the minimum criteria for a best management practice (BMP). Guidance Documents contain recommendations and additional "how to" guidance. Performance Standards take precedence over Technical Standards and Technical Standards take precedence over Guidance Documents.

(a) **Technical Standards**: The following are applicable Wisconsin Department of Natural Resources (DNR) Conservation Practice Standards or Technical Standards. These standards may be found on the DNR website (http://dnr.wi.gov/topic/stormwater/standards/postconst_standards.html).

- 1001 Wet Detention Pond
- 1002 Site Evaluation for Stormwater Infiltration
- 1003 Infiltration Basin
- 1004 Bioretention For Infiltration
- 1005 Vegetated Swale
- 1006 Method for Predicting the Efficiency of Proprietary Storm Water Sedimentation Devices
- 1007 Infiltration Trench
- 1008 Permeable Pavement

- S100 Compost
- 1100 Interim Turf Nutrient Management

(b) **Local Modifications to Technical Standards:** The following are local requirements which are intended to supplement, clarify, or supersede DNR Technical Standards.

1001 - Wet Detention Pond

Dry Detention Pond-

- Dry detention ponds shall be designed to meet requirements in Technical Standard 1001, except criteria contained in Sections V.B.1.a. through g., V.B.2.c., and V.B.2.k.
- Dry detention ponds shall be designed to meet the local modifications provided below for Technical Standard 1001, except permanent pool and water quality criteria.
- Dry detention ponds shall not receive any water quality credit, unless written approval is obtained from the DNR. The approval letter must specifically indicate the amount of water quality credit provided by the dry pond.
- Dry detention pond shall have a minimum bottom slope to the principal outlet of 1%. The applicant may request a waiver from the administering authority if site characteristics create a hardship.
- As part of the Operation & Maintenance Plan, sediment accumulation in the dry pond shall be monitored. In lieu of criteria contained in Section VI.B. of Technical Standard 1001, accumulated sediment in a dry detention pond shall be removed when 5% to 10% of the storage volume is lost for the 2-year, 24-hour design storm. At a minimum, include details in the Operation & Maintenance Plan for inspecting sediment depths, frequency of accumulated sediment removal, and disposal locations for accumulated sediment.

Pond Watershed-

- Wet ponds are not recommended for small watersheds (< 15 acres in clay soil). A wet pond located in a small watershed may develop stagnation problems within the permanent pool and become a public nuisance. Public acceptance of stormwater BMPs is important to the success of a local stormwater program. Dry ponds, biofiltration, proprietary devices, and other BMPs are recommended for small watersheds.

100-Year Floodplain-

- Wet and dry detention ponds shall not be located in a 100-year floodway or 100-year flood storage area unless a hydrologic and hydraulic study is conducted in accordance with NR 116. Easements will be required if the flood study indicates the 100-year floodway or flood storage area is impacted by the pond or its embankment. Ponds shall not impede 100-year flood conveyance along navigable streams and non-navigable channels.

Permanent Pool-

- Pool Shape- A minimum length to width ratio of 3:1 is required between the principal inlet and principal outlet of the wet detention pond. The applicant may request a waiver if site characteristics create a hardship. Redevelopment and

pond retrofit projects may be eligible for a waiver. Typically, new development is not eligible for a waiver.

Water Quality-

- If the wet pond's pollutant removal is not determined with SLAMM or P8, the 1-year, 24-hour design storm shall be released from the wet pond using the criteria contained in Section V.B.1.a. and b. of Technical Standard 1001.

Peak Flow Control-

- Do not use Table 1 in Technical Standard 1001. Use the maximum pre-development runoff curve numbers contained in the Post-Construction Stormwater Management Ordinance.
- It is recommended that the developer and designer contact the local municipality to discuss peak discharge requirements for the site early in the design process. The local municipality may have adopted alternative peak discharge requirements for the site which are different than the Post-Construction Stormwater Management Ordinance. At a minimum, the peak discharge requirements contained in NR 151 shall be met.

Inflows-

- Pipe inlets shall be protected from soil washouts due to seepage along the pipe's granular bedding and backfill. Rip-rap or other protection shall be placed around the entire pipe perimeter.
- Other inflow points shall be protected from scour and erosion.

Principal Outlet-

- All flows shall pass through the principal outlet during the 1-year, 2-year and 10-year, 24-hour design storms. The principal outlet shall consist of one or more flow control structures and discharge pipes.
- Pipes- Generally concrete, PVC, or CMP are the preferred pipe materials. Corrugated PE will tend to jack-up due to frost heave and flotation. The minimum recommended pipe diameter is 12-inches.
- Orifices- Orifices smaller than 4 inches are not recommended due to the potential for clogging. Consider using a 6-inch perforated drain pipe and restrictor plate (refer to Section V.B.8 of Technical Standard 1004 for guidance). The total opening area of all perforation holes combined shall be sufficient to allow the drain pipe to discharge at full capacity, as would occur if there were no orifice restriction. Backfilling the drain pipe with 1-inch washed stone provides protection from clogging.
- Trash racks or other equivalent litter control devices are required for all outlet openings that control the 1-year and 2-year, 24-hour design storm. The maximum bar spacing shall be less than 2-inches and less than ½ the smallest opening dimension, whichever is more restrictive. The minimum surface area for the trash rack shall be 5 to 10 times the outlet's cross sectional area to prevent clogging. Trash racks keep litter and debris in the pond and prevent it from discharging into streams, rivers, and lakes.
- Trash racks are also required for other outlet openings that have a width, height, or diameter less than 12-inches. The maximum bar spacing shall be less than ½ the smallest opening dimension. The minimum surface area for the trash rack shall be at 5 to 10 times the outlet's cross sectional area to prevent clogging.

- Reverse-sloped pipes and other underwater outlets may impact a wet pond's pollutant removal efficiency. Outlets that draw water from below the permanent pool's surface elevation reduce the effective surface area and depth of the permanent pool. If reverse-sloped pipes and other underwater outlets are used, special consideration is required for SLAMM, DETPOND & P8 modeling to ensure accurate water quality results. Also, underwater outlets may freeze during winter.

Flap Gates-

- Flap gates are required if the 1-year, 2-year or 10-year, 24-hour design storm flows backward through the principal outlet. Backwater from a down slope conveyance system may impact a pond's water quality and/or flood control performance.
- Flap gates shall not impede flow in down slope pipes, channels or streams.
- Ice accumulation within the down slope conveyance system shall be considered during flap gate and principal outlet design.

Tailwater-

- Tailwater conditions shall be evaluated at the pond outlet.
- Tailwater conditions along lakes, rivers, and streams may be obtained from available 100-year floodplain studies.
- Tailwater conditions may require that 1, 2, 10, and/or 100-year, 24-hour runoff volumes be held in the pond, without release, until the down slope hydrograph allows the pond and flap gate to discharge flow.
- It is recommended that the designer contact the local municipality to discuss tailwater conditions early in the design process. The local municipality may have information available to assist with the tailwater evaluation.

Emergency Spillway-

- The routed 1-year, 2-year and 10-year, 24-hour design storm may not pass through the emergency spillway. The routed 100-year, 24-hour design storm may not pass through the emergency spillway if the pond is designed to have a:
    - Structural height > 6 feet and flood storage capacity > 50 acre-feet, or
    - Structural height > 25 feet and flood storage capacity > 15 acre-feet.
- Backwater from a down slope conveyance system may not pass through the emergency spillway during the 1-year, 2-year or 10-year, 24-hour design storm. Also, backwater may not pass through the emergency spillway during the 100-year, 24-hour design storm, unless a hydrologic and hydraulic evaluation indicates the site's peak discharge requirements are still satisfied, despite the backwater.
- When feasible, the emergency spillway should not be constructed on an embankment or over fill material. Spillways constructed on an embankment or over fill material are more prone to failure.
- The emergency spillway shall be constructed of permanent materials (i.e. poured concrete, riprap, articulated concrete block, etc.) if the spillway is constructed on an embankment. The permanent material shall extend from the top of embankment to the down slope toe of embankment. The permanent material shall be shaped to contain flows and reduce potential for erosion and embankment failure.

Topsoil & Seeding-

- Topsoil is required in the safety shelf to encourage wetland plant growth (12-inch minimum thickness).
- When feasible, install a wetland seed mix or mature plants in the safety shelf to improve pond safety, reduce wave erosion along the shoreline, improve pollutant removal, and discourage geese residence. Use non-invasive species.
- When feasible, maintain a high grass buffer around the permanent pool's perimeter. The high grass buffer will further improve pond safety and geese control. Also, the perimeter of the permanent pool is typically the most difficult area to mow due to saturated soil conditions.

Record Drawings-

- Surveyed record drawings certified by a Professional Engineer shall be submitted upon completion of construction of all wet and dry ponds. As part of the record drawings, the Professional Engineer may need to verify BMP performance using computer modeling. Refer to record drawing checklist for requirements.

1002 - Site Evaluation for Stormwater Infiltration

- A site layout should not be developed until Step B is complete. Information obtained from Step B is used to:
  - Identify soil textures within the site.
  - Identify infiltration exclusions and exemptions.
  - Develop a site layout and identify potential infiltration device locations.
- For Step B, the minimum number of initial test pits or soil borings required for a new development area are as follows:
  - Two for the initial 10 acres, plus one per 10 acres thereafter.
  - One per soil unit. Soil units are depicted on NRCS Soil Survey Maps.
  - Example calculations:
    - 4 acres with 1 soil unit = min. of 2 test pits or soil borings
    - 20 acres with 2 soil units = min. of 3 test pits or soil borings.
    - 20 acres with 5 soil units = min. of 5 test pits or soil borings.
    - 34 acres with 3 soil units = min. of 4 test pits or soil borings.
- Upon completion of Step B, it is recommended that the developer and designer meet with the municipality to discuss infiltration requirements for the development to avoid redesign during permit submittal.
- Information obtained from Step C is used to design each infiltration device. As part of Step C, a second set of test pits or soil borings are required. Refer to Table 1, Technical Standard 1002 for test pit or soil boring requirements.

1003 - Infiltration Basin

- SLAMM, P8 or an equivalent methodology shall be used if the designer desires pollutant reduction credit for the infiltration basin. Pursuant to Technical Standard 1003, pretreatment is required for an Infiltration Basin.
- *Record Drawings*- Surveyed record drawings certified by a Professional Engineer shall be submitted upon completion of construction of all infiltration basins. As part of the record drawings, the Professional Engineer may need to verify BMP performance using computer modeling. Refer to record drawing checklist for requirements.

1004 - Bioretention For Infiltration

- Biofiltration systems shall be designed to meet requirements in Technical Standard 1004, except for the storage layer and sand/native soil interface layer.
- Rain Gardens shall be designed to meet requirements in Technical Standard 1004, except for the engineered soil planting bed, storage layer, underdrain, and sand/native soil interface layer. Rain Gardens are typically used in residential areas. Rain Gardens are primarily intended for roof runoff, but may also be used for lawn, sidewalk and driveway runoff.
- SLAMM, P8 or an equivalent methodology shall be used to evaluate the pollutant reduction associated with a bioretention, biofiltration, or rain garden BMP.
- *Record Drawings*- Surveyed record drawings certified by a Professional Engineer shall be submitted upon completion of construction of all bioretention and biofiltration facilities. As part of the record drawings, the Professional Engineer may need to verify BMP performance using computer modeling. Also, as part of the record drawings, the contractor shall certify the bioretention or biofiltration device was constructed in accordance with the approved construction plans and that the installed engineered soil complies with the material specifications. Refer to record drawing checklist for requirements.

1005 – Vegetated Infiltration Swale

- Grass swales shall meet the following design criteria if the applicant plans to take credit for pollutant reductions calculated by SLAMM or P8.
    - The grass swale infiltration rate used in SLAMM or P8 shall be obtained from Table 2, Technical Standard 1002. The design infiltration rate shall be based on the least permeable soil horizon to 5 feet below the grass swale's bottom elevation.
    - Minimum longitudinal slope for a grass swale is 1%. The applicant may request a waiver if site characteristics create a hardship. If a longitudinal slope less than 1% is requested by the applicant, the stormwater management plan shall contain a written, site-specific explanation of how soil compaction, standing water, and poor soil drainage will be remedied by the responsible party or landowner such that water quality requirements are still satisfied. Drainage or standing water problems may develop along grass swales with a longitudinal slope less than 1%, particularly in sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay or clay soils. Concrete ditch liners and underdrain pipes installed between driveway culvert openings can remedy a standing water problem, but do not provide any water quality credit.
    - Grass swales shall be designed for a maximum 2-inch lawn height. If an alternative height is desired, it is recommended that the developer and designer contact the local municipality early in the design process to obtain approval. The local municipality may have ordinances or other design criteria which dictate the allowable mowing height.
    - Driveway culverts shall be considered when the swale length (density) is determined for purposes of SLAMM or P8 modeling. The maximum allowable culvert length for each lot shall be specified on the plans.
    - Minimize or mitigate soil compaction during grading activities.
    - Grassed swales shall be designed for the proper drainage area. Generally, it will be best to have one or two sizes to be used wherever needed throughout the development. The design shall be based on the largest drainage area served.

- Grassed swales shall be designed according to the planned vegetation type and maintenance that will be provided. Generally, grassed channels will be designed to have stable velocities when the vegetation is shortest and adequate capacity when the vegetation is longest.

1006 - Method for Predicting the Efficiency of Proprietary Storm Water Sedimentation Devices

- *Record Drawings*- Surveyed record drawings certified by a Professional Engineer shall be submitted upon completion of construction of all proprietary devices. As part of the record drawings, the Professional Engineer may need to verify BMP performance using computer modeling. Refer to record drawing checklist for requirements.

1007 - Infiltration Trench

- SLAMM, P8 or an equivalent methodology shall be used if the designer desires pollutant reduction credit for the infiltration trench. Pursuant to Technical Standard 1007, pretreatment is required for an Infiltration Trench.
- *Record Drawings*- Surveyed record drawings certified by a Professional Engineer shall be submitted upon completion of construction of all infiltration trenches. As part of the record drawings, the Professional Engineer may need to verify BMP performance using computer modeling. Refer to record drawing checklist for requirements.

(c) **Guidance Documents**: The following are the applicable Guidance Documents (http://dnr.wi.gov/topic/Stormwater/standards/postconst_standards.html):

- The Wisconsin Stormwater Manual
- S100 Compost
- Technical Note for Sizing Infiltration Basins and Bioretention Devices
- Rain Gardens: A How-To Manual for Homeowners (see above local modifications to Technical Standard 1004).
- Updates to Post-Construction Standards: Errata
- Errata to swale guidance
- Internally Drained Area Guidance
- Modeling Post-Construction Storm Water Management Treatment
- Storm Water Detention Ponds Site Safety Design
- Establishment of Protective Areas for Wetlands
- NR 528 Technical Guidance: Management of Accumulated Sediment from Storm Water Structures (http://dnr.wi.gov/topic/waste/nr528.html)
- Artificial recharge of groundwater: hydrogeology and engineering (http://dnr.wi.gov/topic/Stormwater/standards/gw_mounding.html)
- "Construction Site" Definition – "Common Plan of Development" (http://dnr.wi.gov/topic/stormwater/construction/overview.html)
- Technical Note for Sizing Infiltration Basins and Bioretention Devices
- Meeting New State Regulations: Post-Construction Stormwater Management Workshops (http://dnr.wi.gov/topic/Stormwater/construction/practices.html)
- Estimating Residue Using the Line Transect Method (UW-Extension A3533).
- Wisconsin Department of Transportation (DOT) - Facilities Development Manual
- Wisconsin DOT Standard Specifications for Highway and Structure Construction
- Other National Publications

(d) **Local Easement Requirements:**

- Easements are typically required for BMPs and conveyance systems that serve more than one property owner or lot. Conveyance systems include storm sewers, grass swales, channels, streams, and overland relief paths. Easement widths will vary.
- An ingress / egress easement or direct access to a public street is typically required for BMPs that serve more than one property owner or lot.
- It is recommended that the developer and designer contact the local municipality early in the design process to discuss easements and width requirements.

15-9-7 PERFORMANCE STANDARDS

A. RESPONSIBLE PARTY

B. PLAN

C. REQUIREMENTS

(1) WATER QUALITY

Post-construction sites with 20,000 sq.ft. or more of impervious surface disturbance and post-construction sites with 1 acre or more of land disturbance are required to meet the ordinance's numeric performance standards. All other post-construction sites are not required to meet a numeric performance standard. BMP design guidance is provided below in Section (h) for sites with less than 20,000 sq.ft. of impervious surface disturbance.

Computer Models:

Pollutant loading models such as SLAMM, DETPOND, P8 or an approved equivalent methodology may be used to evaluate the efficiency of the design in removing pollutants. Information on how to access SLAMM and P8 is available at http://dnr.wi.gov/topic/stormwater/standards/slamm.html or contact the stormwater coordinator in the runoff management section of the bureau of watershed management at (608) 267-7694.

Use the most recent version of SLAMM, DETPOND and P8. The applicant may request a waiver of this requirement.

Design Clarifications:

No Controls - "No Controls" is the baseline condition for each site. No water quality credit is provided for meeting the baseline condition. The baseline condition is defined as follows:

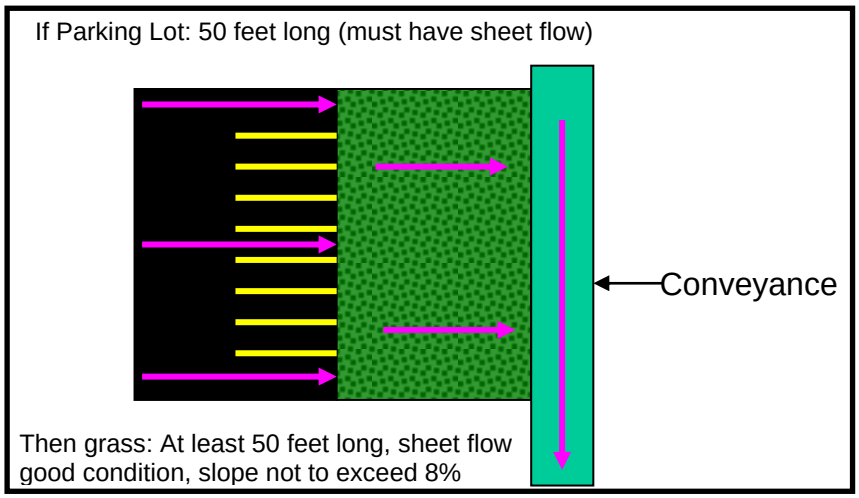
- Assume site is stabilized (no erosion).
- Assume proposed impervious surfaces are in place. Impervious surface reductions (e.g. reduced street width) cannot be used to claim water quality credit; however, impervious surface reductions will lower runoff volumes which will reduce the required size for stormwater management BMPs.
- Assume no stormwater management BMPs.
- Assume curb and gutter / storm sewer drainage system in fair condition.
- If the applicant intends to claim water quality credit for disconnecting an impervious surface, the "No Controls" condition shall be based on the "typical" percent connected impervious values established by the DNR:

LAND USE	% CONNECTED
Open space / undeveloped	5
Suburban Residential	7
Park	10
Cemetery	12

Low Density Residential	14
Medium Density Residential – With Alley	25
Medium Density Residential – No Alley	28
Schools - Institutional	39
High Density Residential – With Alley	42
High Density Residential – No Alley	42
Mobile Home Residential	47
Freeway	51
Multi-Family Residential	51
Miscellaneous Institutional	59
Medium Industrial	64
High Rise Residential	65
Light Industrial	71
Office Park – Commercial	74
Hospital – Institutional	76
Commercial Strip Mall	91
Shopping Center – Commercial	91
Commercial DownVillage	96

Disconnection - Water quality credit is provided for runoff volume reductions associated with disconnecting impervious surfaces beyond the "typical" percent connected impervious values established by the DNR. In order to consider an impervious surface as "disconnected", the following criteria shall be met:

- Residential Roofs: Discharge runoff over a minimum 20-foot long pervious surface that is in good condition and graded for sheet flow.
- Other Impervious Surfaces:
  - Source area flow length may not exceed 75 feet.
  - Source area and pervious area must be graded for sheet flow.
  - Pervious area must be in good condition, have a slope less than 8%, and have a flow length at least as long as the contributing impervious area's length (but never less than 20 feet).



Source: DNR Post-Construction Stormwater Management Workshops

Street Sweeping & Catch Basin Cleaning - No water quality credit is provided for street sweeping, catch basin cleaning, or other management type BMPs in new development areas.

Infiltration Rate - The design infiltration rate for a BMP shall be based on the least permeable soil horizon to 5 feet below the BMP's bottom elevation. Infiltration rates shall be obtained from Table 2, Technical Standard 1002.

Grass Swale - The grass swale infiltration rate used in SLAMM or P8 shall be obtained from Table 2, Technical Standard 1002. For SLAMM, the typical swale geometry shall be entered in lieu of using the "Wetted Width" option. SLAMM will calculate the "Wetted Width" for each rain event based on the typical swale geometry.

Uncontrolled Areas - The performance standard for water quality is a site standard, not a BMP standard. Often, a site contains uncontrolled areas that do not flow through a BMP (e.g. wet pond, grass swale). Typically, it is necessary to increase the water quality reduction provided by other onsite BMPs in order to offset or over compensate for these uncontrolled areas.

Routine Maintenance Areas – No performance standard or water quality reduction is required for routine maintenance areas that are part of a post-construction site with less than 5 acres of disturbance. However, the applicant is responsible for proper performance of onsite BMPs. In order to ensure proper BMP performance, the applicant has two options:

- Divert the routine maintenance area around onsite BMPs, or
- Include runoff volumes from the routine maintenance area in onsite BMP calculations. However, no water quality credit is provided for the routine maintenance area unless it is reclassified as redevelopment.

Offsite Drainage Areas – The applicant is not responsible for satisfying water quality performance standards for offsite areas that drain into the project site. However, the applicant is responsible for proper performance of onsite BMPs. In order to ensure proper onsite BMP performance, the applicant has two options:

- Divert offsite runoff around onsite BMPs, or
- Include offsite runoff volumes in onsite BMP calculations. The amount of onsite water quality credit is determined by multiplying the BMP's percent pollutant reduction by the "no controls" baseline pollutant load for the onsite area.

Example Calculation #1:

The development site currently contains 30 acres of institutional land uses and 70 acres of agricultural land uses. The entire 100 acre site will be disturbed as part of the proposed project. Within the 100 acre site, the developer plans to:

- Redevelop 20 acres (existing institutional) into a new commercial area.
- Conduct routine maintenance on 10 acres of existing asphalt parking lot (existing institutional). Parking lot will be part of new commercial area.
- Develop 70 acres (existing agriculture) into a new residential area.

The "No Controls" or base TSS load is computed as follows:

- Onsite Commercial = (20 + 10) acres x 600 lbs/acre = 18,000 lbs
  (water quality reductions are required for routine maintenance areas that are part of a post-construction site with > 5 acres of disturbance)
- Onsite Residential = 70 acres x 400 lbs/acre = 28,000 lbs
- "No Controls" TSS Load = 18,000 + 28,000 = 46,000 lbs

The "TSS Reduction Required" is computed as follows:

- Onsite Commercial = 18,000 lbs x 40% (redevelopment) = 7,200 lbs
- Onsite Residential = 28,000 lbs x 80% (new development) = 22,400 lbs
- "TSS Reduction Required" = (7,200 + 22,400) / 46,000
  = 0.64 or 64%

A wet pond is proposed for the site. The pond achieves an 80% TSS reduction for its 130 acre watershed. The 130 acre watershed includes 20 acres of commercial area, 10 acres of commercial parking lot, 60 acres of residential area, and 40 acres of offsite residential area.

- Onsite Commercial (30 acres) = 18,000 lbs x 80% (wet pond) = 14,400 lbs
- Onsite Residential (60 acres) = 24,000 lbs x 80% (wet pond) = 19,200 lbs
- Offsite Residential (40 acres) = 16,000 lbs x 80% (wet pond) = 12,800 lbs
- Pond TSS Reduction = (14,400 + 19,200 + 12,800) / 58,000
  = 0.80 or 80%

The "TSS Reduction Provided" is computed as follows:

- Onsite Commercial = 18,000 lbs x 80% (wet pond) = 14,400 lbs
- Onsite Residential (60 acres) = 24,000 lbs x 80% (wet pond) = 19,200 lbs
- Onsite Residential (10 acres) = 4,000 lbs x 0% (uncontrolled) = 0 lbs
- "TSS Reduction Provided" = (14,400 + 19,200 + 0) / 46,000
  = 0.73 or 73%

73% > 64%, therefore the TSS requirement is satisfied.

In Example #1, the 40 acre offsite residential area could have been included in the "TSS Reduction Required" and "TSS Reduction Provided" calculations if it was a regional pond, as opposed to an onsite pond. A regional pond would have allowed the owner of the 40 acre offsite residential area to take credit for the TSS reduction provided by the wet pond.

Example Calculation #2:

The development site currently contains 1.5 acres of commercial land use and 3 acres of agricultural land use. The entire 4.5 acre site will be disturbed as part of the proposed project. Within the 4.5 acre site, the developer plans to:

- Develop 3 acres of existing agriculture into a new commercial area.
- Redevelop 1 acre of existing commercial into a new commercial area.
- Conduct routine maintenance on 0.5 acres of existing commercial parking lot. Existing parking lot will be part of new commercial area.

The "No Controls" or base TSS load is computed as follows:

- Onsite Commercial (new development) = 3 acre x 600 lbs/ac = 1,800 lbs
- Onsite Commercial (redevelopment) = 1 acre x 600 lbs/ac = 600 lbs
- Onsite Commercial (routine maintenance) = 0.5 acres x 0 lbs/ac = 0 lbs (water quality reductions are not required for a routine maintenance area if the post-construction site has < 5 acres of disturbance)
- "No Controls" TSS Load = 1,800 + 600 + 0 = 2,400 lbs

The "TSS Reduction Required" is computed as follows:

- Onsite Commercial (new development) = 1,800 lbs x 80% = 1,440 lbs
- Onsite Commercial (redevelopment) = 600 lbs x 40% = 240 lbs
- "TSS Reduction Required" = (1,440 + 240) / 2,400
  = 0.70 or 70%

Four biofilters and a dry detention pond are proposed for the site. The biofilters achieve a 72% TSS reduction for 4.9 acres. The 4.9 acres includes 4 acres of onsite commercial (new and redevelopment), 0.5 acres of onsite commercial parking lot (routine maintenance) and 0.4 acres of offsite commercial.

- Onsite Commercial (3 acres) = 1,800 lbs x 72% (biofilters) = 1,296 lbs
- Onsite Commercial (1 acre) = 600 lbs x 72% (biofilters) = 432 lbs
- Onsite Parking Lot (0.5 acres) = 300 lbs x 72% (biofilters) = 216 lbs
- Offsite Commercial (0.4 acres) = 240 lbs x 72% (biofilters) = 173 lbs
- Biofilter TSS Reduction = (1,296 + 432 + 216 + 173) / 2,940
  = 0.72 or 72%

The "TSS Reduction Provided" is computed as follows:

- Onsite Commercial (4 acres) = 2,400 lbs x 72% (biofilters) = 1,728 lbs
- "TSS Reduction Provided" = 1,728 / 2,400
  = 0.72 or 72%

72% > 70%, therefore the TSS requirement is satisfied.

In Example #2, the 0.5 acre onsite commercial parking lot could have been included in the "TSS Reduction Required" and "TSS Reduction Provided" calculations if it was reclassified as redevelopment, as opposed to routine maintenance. The reclassification would have allowed the applicant to plan for future reconstruction of the 0.5 acre onsite commercial parking lot.

In Example #2, the 0.4 acre offsite commercial area could have been included in the "TSS Reduction Required" and "TSS Reduction Provided" calculations if it was a regional BMP, as opposed to an onsite BMP. A regional BMP would have allowed the owner of the 0.4 acre offsite commercial area to take credit for the TSS reduction provided by the onsite BMP.

(2) PEAK DISCHARGE

Post-construction sites with 20,000 sq.ft. or more of impervious surface disturbance and post-construction sites with 1 acre or more of land disturbance are required to meet the ordinance's numeric performance standards. All other post-construction sites are not required to meet these numeric performance standards. BMP design guidance is provided below in Section (h) for sites with less than 20,000 sq.ft. of impervious surface disturbance.

Computer Models:

Peak discharge rates shall be evaluated using TR-55 methodology and a computer model. NRCS released a new Windows version of TR-55 referred to as WinTR-55. Unfortunately, WinTR-55 has some unacceptable restrictions in computing Tc and the computations for outlet structures are too approximate to be useable. Therefore, WinTR-55 is not acceptable software.

Other software packages are acceptable if they match the results and methodology of TR-55 (DOS version). There are multiple hydrology/pond routing computer programs available. They must be approved by the administering authority. Examples of common computer programs are HEC-HMS, XPSWMM, HydroCAD, HydraFlow, PondPack, etc.

Each pre-development watershed or site outfall shall be evaluated for peak discharge. It is not accurate or necessary to "link" all of the pre-development watersheds to determine the ultimate allowable discharge for the site. The allowable discharge for each outfall shall be determined based on the individual pre-development watershed as discussed below in "TR-55 Methodology Clarifications".

TR-55 Methodology Clarifications:

Time of Concentration (T_c) -

<u>Pre-Development Requirements</u>

- The T_c route shall be the route that takes the longest time to reach the outfall and not necessarily the furthest point in the watershed.
- The T_c route shall be shown to scale on the pre-development contours with each flow segment labeled.

- The pre-development T_c should typically be at least 30 minutes in NE Wisconsin. This may not apply to small sites.
- A Manning's "n" value of 0.24 shall be used for sheet flow "meadow" conditions. For redevelopment areas, assume impervious surfaces do not exist.
- The sheet flow length before development in NE Wisconsin is usually 250' to 300'. This may not apply to small sites.
- For shallow concentrated flow, "unpaved" or "paved" shall be used to represent vegetated swales and paved swales, respectively.

Post-Development Requirements

- The T_c route shall incorporate and represent the development. If the development is large, consider dividing the development into multiple watersheds.
- T_c will almost always be shorter after development.
- The T_c route shall be shown to scale on the post-development drainage plan with each flow segment labeled.
- The sheet flow length after development will seldom be greater than 50' to 100' due to the grading around homes and buildings. A sheet flow length of greater than 100 feet requires approval from the reviewing authority (except for large paved parking areas).
- A Manning's "n" value of 0.24 is appropriate for sheet flow "lawn" conditions.
- The minimum sheet flow slope shall be 2% for residential lawns.
- For shallow concentrated flow, "unpaved" or "paved" shall be used to represent vegetated swales and paved swales, respectively.
- The T_c flow path stops when it reaches the inflow of a wet or dry detention basin.
- The post-development T_c is important for determining the correct storage volume required. See the Storage Volume for Detention Basins section below.

Runoff Curve Numbers (CN) -

Pre-Development Requirements

- Unless the site is currently woodland, peak pre-development discharge rates shall be determined using the following runoff curve numbers for a "meadow" vegetative cover:

Maximum Pre-Development Runoff Curve Numbers				
Vegetative Cover	**Hydrologic Soil Group**			
	A	**B**	**C**	**D**
Meadow	**30**	**58**	**71**	**78**
Woodland	**30**	**55**	**70**	**77**

- Soil units can be found in the applicable County Soil Survey (or, if provided, on the Village's website.)
- The appropriate hydrologic soil groups are located at the following website: http://soildatamart.nrcs.usda.gov/County.aspx?State=WI

  To get an online soils report, do the following:
  1. Select the appropriate County.
  2. Select the "Generate Reports" button.
  3. Select the appropriate soils for the site (hold the ctrl key for multiple).

4. Select the report type (RUSLE2 Related Attributes or Water Features) below to get the Hydrologic Group(s) for the site.
5. Select the "Generate Report" button.

**Notice that a number of soils have different hydrologic soil groups than those shown in the original County USDA Soils book. The Internet groups are the ones to use.

Post-Development Requirements

- The Runoff Curve Number for lawns shall be used for developed areas that will be vegetated. Woods, wetland, or prairie areas preserved with a recorded document may be modeled as such.

Pre/Post-Development Curve Number Determination for Permeable Soils

- Refer to the Site Evaluation for Infiltration Report to verify that soils mapped in hydrologic groups A or B are well drained. If not well drained use the County USDA Soils Books hydrologic group explanation to determine the appropriate hydrologic group.
- If the existing site consists of multiple hydrologic groups, especially a combination of highly permeable and non-permeable, consideration shall be given to the proposed site balance cut/fill. See Appendix A of TR-55 for discussion on disturbed soil profiles as a result of urbanization.

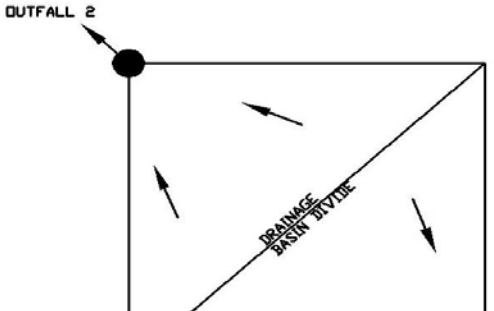
  Example: The site consists of 30% Hydrologic Group A soils and 70% Hydrologic Group C soils. The following scenarios shall be handled as noted:
  1. If the site earthwork does not balance within the respective Hydrologic Group and it is anticipated that the "C" soils will be filled on the "A" soils, the "C" soil RCN shall be used.
  2. If the site earthwork balances within each respective Hydrologic Group and it is anticipated that offsite fill will be required to achieve the desired dwelling elevations, the "C" soil RCN shall be used.
  3. If the site balances within each respective Hydrologic Group and no or minimal fill is anticipated on the "A" soils, compaction mitigation shall be provided.

Drainage Area -

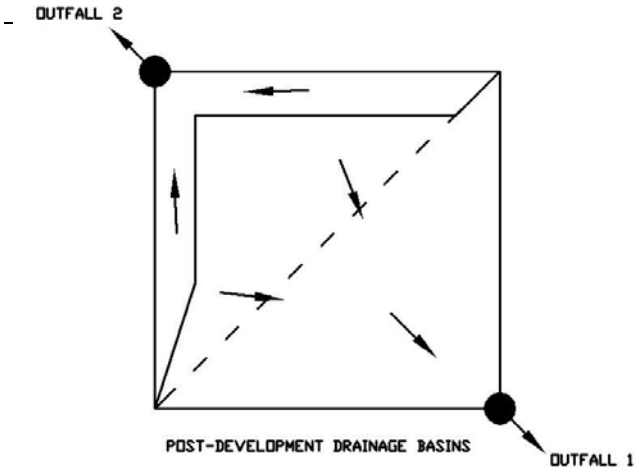
Pre-Development Requirements

- Determine the total contributing drainage area to the development, including offsite properties.
- If the pre-developed site consists of multiple drainage areas, each outfall shall be evaluated for peak discharge.

Example:
The pre-development site shown below is 40 acres and consists of 2 drainage areas, each 20 acres. Each outfall has a peak discharge of 2, 4, 8, and 12 cfs for the 1, 2, 10, and 100-year design storms, respectively.



The post-development site shown below is the same 40 acres; however, Outfall 1 now has 30 acres draining to it and Outfall 2, 10 acres.



The post-development discharges for Outfall 2 are 1, 3, 6, and 9 cfs for the 1, 2, 10, and 100-year design storms, respectively. Outfall 2 meets the peak discharge requirements of the Ordinance because the post-development peak discharges are below the pre-development discharges for Outfall 2.

The post-development discharges for Outfall 1 are 6, 12, 24, and 36 cfs for the 1, 2, 10, and 100-year design storms, respectively. Outfall 1 does not meet the peak discharge requirements of the Ordinance. As such, stormwater facilities are required to lower the post-development peak discharges to the pre-development discharges of 2, 4, 8, and 12 cfs for the 1, 2, 10, and 100-year design storms, respectively.

Below is an example of appropriate Stormwater Management Plan summary tables as required:

Pre-Development Peak Discharges				
Location	**1-year**	**2-year**	**10-year**	**100-year**
Outfall 1	2 cfs	4 cfs	8 cfs	12 cfs
Outfall 2	2 cfs	4 cfs	8 cfs	12 cfs

Post-Development Peak Discharges				
Location	**1-year**	**2-year**	**10-year**	**100-year**
Outfall 1 (undetained)	1.8 cfs (6 cfs)	3.6 cfs (12 cfs)	7.5 cfs (24 cfs)	10.9 cfs (36 cfs)
Outfall 2	1.5 cfs	3 cfs	6 cfs	9 cfs

Post-Development Requirements

- The design of stormwater runoff control facilities shall be based on the total contributing drainage area, not just the area being developed. Any off-site drainage area must be included in the plan facilities or safely diverted around the planned facilities.
- Off-site contributing areas that are not diverted must use the meadow condition runoff curve number for pre-development flow computations whether the off-site area is presently developed or not.
- Offsite contributing areas that are diverted shall use the highest anticipated runoff curve number for the offsite area for a safe design. Also, the diversion shall provide 0.3' of freeboard and assume 10% settlement for the 100-year flow. The conveyance shall be contained within an easement. The discharge location for the diversion shall be at the pre-developed outfall or at a stable location.
- If more than 30% of the drainage area will be impervious, it will often be necessary to divide the drainage area into a pervious sub-area and impervious sub-area for correct computation of peak flow.

Peak Discharge Method -

- For Wisconsin, use the Type II, 24-hour rainfall distribution for design storms.
- Natural depressions shall be evaluated or considered when determining peak discharge rates for the predevelopment condition.

Storage Volume for Detention Ponds (TR-55) -

- The approximate storage-routing curves should not be used if the adjustment for ponding (discussed above in the peak discharge section) is used.
- This manual method is good for determining quick estimates of the effects of temporary detention on peak discharges. Computer programs that utilize TR-20 provide more accurate methods of analysis and routing.
- The procedure should not be used to perform final design if an error in storage of 25 percent cannot be tolerated. Figure 6-1 may significantly overestimate the required storage capacity.
- When the peak outflow discharge is too close to post-development peak inflow discharge, parameters that affect the rate of rise of a hydrograph become especially significant.

Design Clarifications:

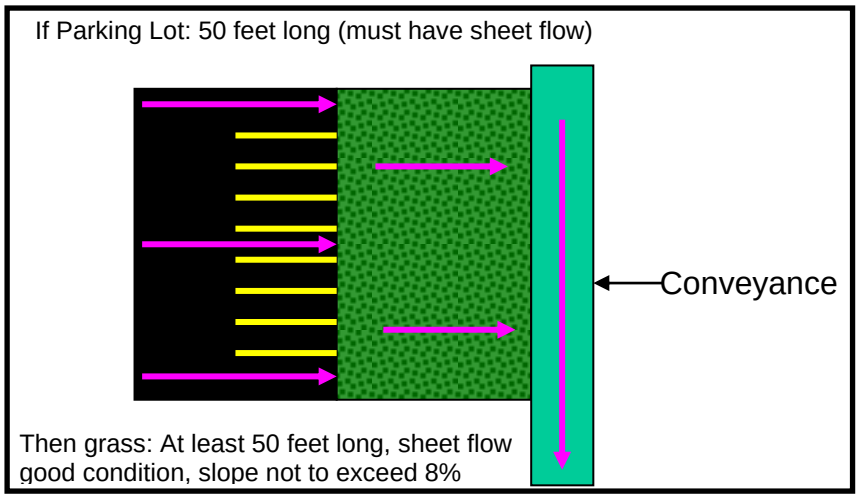
It is recommended that the developer and designer contact the local municipality to discuss peak discharge requirements for the site early in the design process. The local municipality may have adopted alternative peak discharge requirements for the site which are different than the Post-Construction Stormwater Management Ordinance. At a minimum, the peak discharge requirements contained in NR 151 shall be met.

Outfalls - Performance standards for peak discharge shall be satisfied at each outfall associated with the site. Written approval is required from down slope property owners if post-development peak discharge rates are not less than or equal to pre-development peak discharge rates at each outfall.

Disconnection - Disconnecting impervious surfaces can help achieve the peak discharge requirement. Disconnecting impervious surfaces not only reduces

runoff volumes, but also increases time of concentrations. In order to consider an impervious surface as "disconnected", the following criteria shall be met:

- Residential Roofs: Discharge runoff over a minimum 20 foot long pervious surface that is in good condition and graded for sheet flow.
- Other Impervious Surfaces:
  - Source area flow length may not exceed 75 feet.
  - Source area and pervious area must be graded for sheet flow.
  - Pervious area must be in good condition, have a slope less than 8%, and have a flow length at least as long as the contributing impervious area's length (but never less than 20 feet).



Source: DNR Post-Construction Stormwater Management Workshops

Uncontrolled Areas - The performance standard for peak discharge is an outfall standard. Often, a site contains an uncontrolled area for each outfall that does not flow through a BMP (e.g. wet pond). Typically, it is necessary to increase the peak discharge control provided by the onsite BMP in order to offset or over compensate for the uncontrolled area.

Routine Maintenance Areas – No performance standard or peak discharge reduction is required for routine maintenance areas. However, the applicant is responsible for proper performance of onsite BMPs. In order to ensure proper BMP performance, the applicant has two options:

- Divert the routine maintenance area around onsite BMPs, or
- Include runoff volumes from the routine maintenance area in onsite BMP calculations. For the predevelopment condition, routine maintenance areas shall be modeled as a meadow land use. For the post-development condition, routine maintenance areas shall be modeled using the post- construction conditions.

Offsite Drainage Areas – The applicant is not responsible for satisfying peak discharge performance standards for offsite areas that drain into the project site. However, the applicant is responsible for proper performance of onsite BMPs. In order to ensure proper onsite BMP performance, the applicant has two options:

- Divert offsite runoff around onsite BMPs, or
- Include offsite runoff volumes in onsite BMP calculations. Use a meadow vegetative cover for the off-site pre-development runoff curve number, regardless of whether the off-site area is currently developed or undeveloped. Use the current or future vegetative cover / impervious surface coverage for the off-site post-development runoff curve number.

(3) INFILTRATION

Post-construction sites with 20,000 sq.ft. or more of impervious surface disturbance and post-construction sites with 1 acre or more of land disturbance are required to meet the ordinance's numeric performance standards. All other post-construction sites are not required to meet these numeric performance standards. BMP design guidance is provided below in Section (h) for sites with less than 20,000 sq.ft. of impervious surface disturbance.

Computer Models:

A model that calculates runoff volume, such as RECARGA, SLAMM, P8, TR-55, or an approved equivalent methodology may be used to evaluate the efficiency of the infiltration design. Information on how to access RECARGA, SLAMM, or P8 is available at http://dnr.wi.gov/topic/stormwater/standards/slamm.htm or contact the stormwater coordinator in the runoff management section of the bureau of watershed management at (608) 267-7694.

Use the most recent version of RECARGA, SLAMM, and P8. The applicant may request a waiver of this requirement.

Depending on the type of infiltration device, groundwater mounding may need to be evaluated. Refer to Table 1, Technical Standard 1002 for groundwater mounding requirements. A model that calculates groundwater mounding is available at http://dnr.wi.gov/topic/stormwater/standards/gw_mounding.html or contact the stormwater coordinator in the runoff management section of the bureau of watershed management at (608) 267-7694.

Design Clarifications:

Maximum required Effective Infiltration Area (EIA) is calculated as follows:

- Prohibited and exempted areas located within the post-construction site are included in the EIA cap calculation.
- The maximum required EIA cap may be voluntarily exceeded.

Prohibitions - Runoff from prohibited areas does not have to be included in calculating the infiltration goal. However, if runoff from a prohibited area flows through an infiltration BMP, the following is required:

- Use caution. These source areas and locations are excluded from the ordinance's infiltration requirement due to groundwater contamination concerns. The municipality is not responsible for the applicant's decision to infiltrate this runoff. The applicant is solely responsible for NR 140 compliance and groundwater protection.
- The BMP design must take runoff from prohibited areas into account to assure the device can safely handle the additional flow and volume.

Exemptions - Infiltration from exempted areas is not required. Despite the ordinance, the applicant may choose to infiltrate exempted runoff. If exempted runoff is infiltrated, credit will be given toward achieving the infiltration requirement. Runoff from exempted areas does not have to be included in calculating the infiltration goal. However, if runoff from an exempted area flows through an infiltration BMP, the BMP design must take it into account to assure the device can safely handle the additional flow and volume.

Groundwater Protection - It is the applicant's sole responsibility to protect groundwater. Compliance with Preventative Action Limits (PAL) contained in NR 140 must be maintained. Also, infiltration system discharges must remain below Enforcement Standards (ES) contain in NR 140. DNR Technical Standards should meet these groundwater protection requirements.

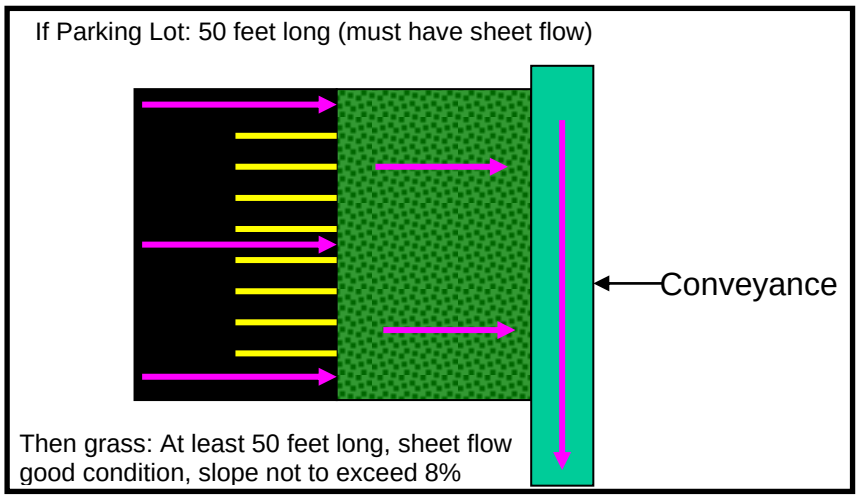
Maximum Extent Practicable (MEP):

- Definition takes into consideration best available technology, cost-effectiveness, natural resource protection, historic preservation, human safety & welfare, and site conditions (see ordinance).
- Topography- To achieve the infiltration requirement, maximum extent practicable should not be interpreted to require significant topography changes that create an excessive financial burden. Two feet or less of elevation change is considered reasonable and to the MEP.
- Pumping- To achieve the infiltration requirement, maximum extent practicable should not be interpreted to require stormwater pumping.

Roof Runoff - To minimize potential groundwater impacts, it is desirable to infiltrate the cleanest runoff. To achieve this, a design may propose greater infiltration of runoff from low pollutant sources such as roofs, and less from higher pollutant source areas such as parking lots.

Disconnection - Disconnection of impervious surfaces can be used to help achieve the infiltration requirement. However, disconnection is not considered to be part of an infiltration system. Therefore, disconnected areas do not count toward the maximum effective infiltration area calculation. In order to consider an impervious surface as "disconnected", the following criteria shall be met:

- Residential Roofs: Discharge runoff over a minimum 20 foot long pervious surface that is in good condition and graded for sheet flow.
- Other Impervious Surfaces:
  - Source area flow length may not exceed 75 feet.
  - Source area and pervious area must be graded for sheet flow.
  - Pervious area must be in good condition, have a slope less than 8%, and have a flow length at least as long as the contributing impervious area's length (but never less than 20 feet).



Source: DNR Post-Construction Stormwater Management Workshops

Routine Maintenance Areas – No performance standard or infiltration requirement is provided for routine maintenance areas. However, the applicant is responsible for proper performance of onsite BMPs. In order to ensure proper BMP performance, the applicant has two options:

- Divert the routine maintenance area around onsite BMPs, or
- Include runoff volumes from the routine maintenance area in onsite BMP calculations. The applicant will receive credit for infiltrating runoff from the routine maintenance area provided it is not a prohibited area.

Offsite Drainage Areas – The applicant is not responsible for satisfying infiltration performance standards for offsite areas that drain into the project site. However, the applicant is responsible for proper performance of onsite BMPs. In order to ensure proper onsite BMP performance, the applicant has two options:

- Divert offsite runoff around onsite BMPs, or
- Include offsite runoff volumes in the onsite BMP calculations. The amount of onsite credit is determined by prorating the infiltration volume. The applicant will not receive credit for infiltrating offsite runoff, unless the BMP is a regional facility.

Alternative Uses - The volume of runoff used for alternative uses will be credited towards the infiltration requirement. Alternative uses may include toilet flushing, laundry, and irrigation (e.g. cisterns, rain barrels, green roofs). In addition to the stormwater benefits, these alternative uses may also reduce municipal invoices for drinking water.

Example Calculations:

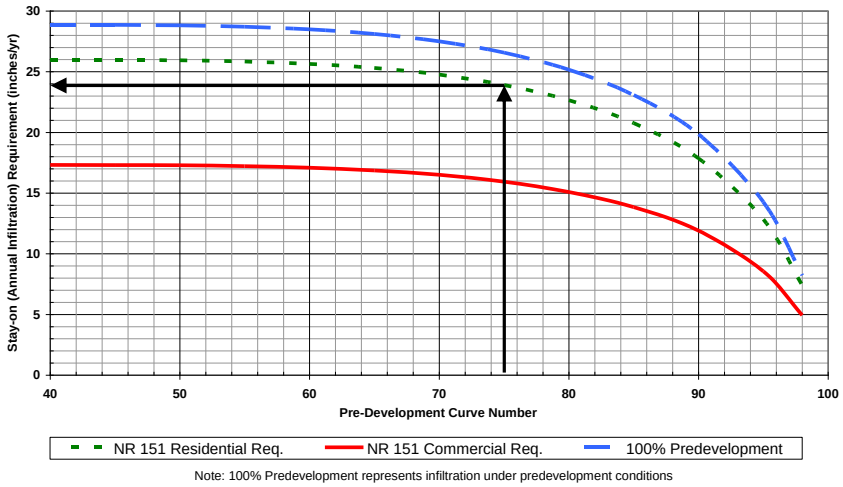
The site is currently 100 acres of cropland. Following development, the site will be 30 acres medium residential, 20 acres commercial, and 50 acres cropland. Native soils in the area to be developed are sandy loams, silt loams and silty clay loams. Hydrologic soil groups are B and C with an average pre-development curve number of 75. A site investigation using Step B of the DNR Technical Standard 1002, Site Evaluation for Stormwater Infiltration, determined that 10 of the acres to be developed into medium residential have an infiltration rate of 0.10 in/hr and are therefore exempt from the infiltration requirements. The site investigation also determined that 10 acres to be developed into commercial are excluded from the infiltration requirements. The post-development curve number for the pervious portions of the residential and commercial components will be 80, based on TR-55. The residential component will contain up to 40% connected imperviousness. The commercial component will contain more than80% connected imperviousness.

The residential and commercial components will meet the infiltration requirements using two infiltration basins. Upon completion of a preliminary site layout, two locations were chosen for investigation using Step C of Technical Standard 1002. The first location investigated was in the residential area that is not exempt from the infiltration requirements. The soil texture at the residential infiltration basin site is a sandy loam with a design infiltration rate of 0.5 in/hr. The second location investigated was in the commercial area that is not excluded from the infiltration requirements. The soil texture at the commercial infiltration basin site is a loamy sand with a design infiltration rate of 1.63 in/hr.

<u>Step 1: Determine Infiltration Basin Size - Residential Component</u>

<u>Step 1A: Determine Target Stay-on Depth – Residential</u>
Using Chart 1, the target stay-on depth is 24 inches/year.

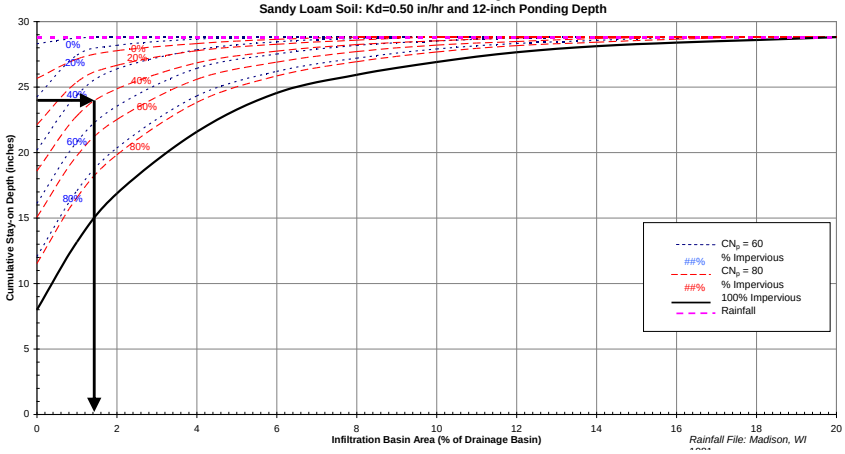
CHART 1 - TARGET STAY-ON (ANNUAL INFILTRATION) REQUIREMENT
Based on the annual 1981 Rainfall for Madison, WI



Note: 100% Predevelopment represents infiltration under predevelopment conditions

Step 1B: Determine Preliminary Effective Infiltration Area – Residential
Using Chart 4, the preliminary effective infiltration area needed for the infiltration basin is 12,197 square feet (43,560 * 20 acres * 1.4%).

Chart 4: Infiltration Basin Design Curve
Sandy Loam Soil: Kd=0.50 in/hr and 12-inch Ponding Depth



Step 1C: Maximum Required Effective Infiltration Area – Residential

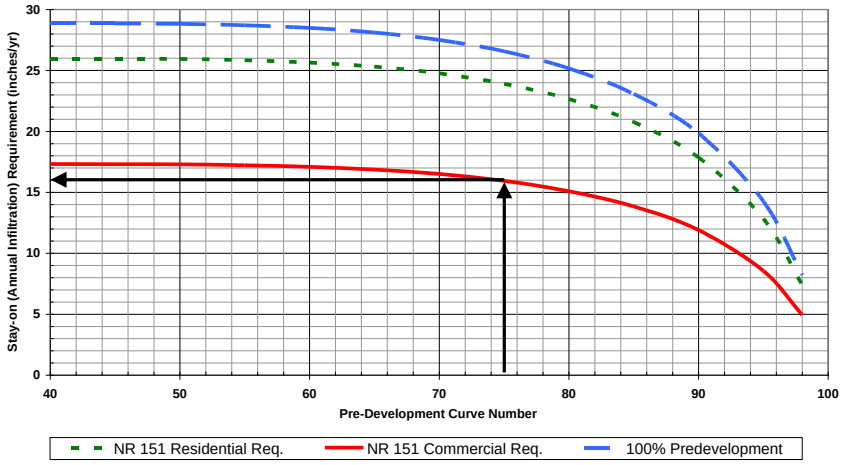
- Residential Land Disturbance (30 acres total)
  - Building roof 5 acres
  - Driveway & sidewalk 2 acres
  - Street 5 acres
  - Lawn / landscaping 18 acres
- Maximum Required EIA = 13,068 sq.ft. (43,560 * 30 acres * 1%)

Step 1D: Determine Final Effective Infiltration Area – Residential
Using Technical Standard 1003, the preliminary effective infiltration area of 12,197 sq.ft. needs to be adjusted (depth, slope, cell configuration) to determine the final effective infiltration area. Groundwater mounding also needs to be checked. The maximum EIA cap does not appear to impact the infiltration basin's size (12,197 sq.ft. < 13,068 sq.ft.).

Step 2: Determine Infiltration Basin Size – Commercial Component

Step 2A: Determine Target Stay-on Depth – Commercial
Using Chart 1, the target stay-on depth is 16 inches/year.

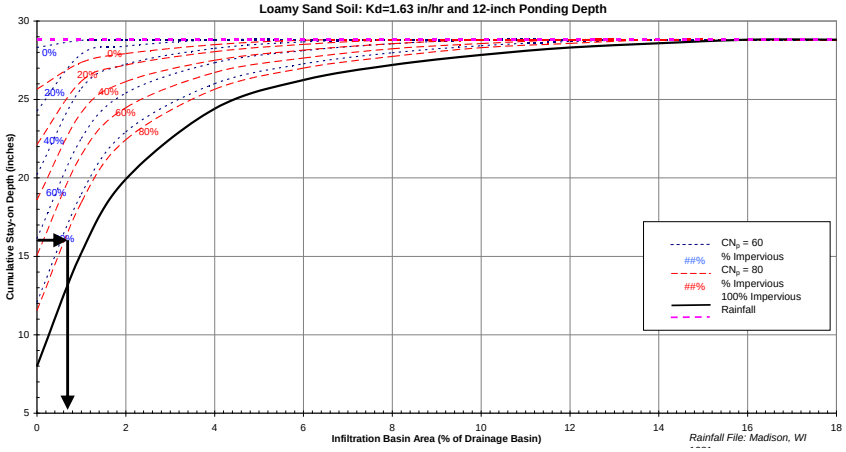
CHART 1 - TARGET STAY-ON (ANNUAL INFILTRATION) REQUIREMENT
Based on the annual 1981 Rainfall for Madison, WI



Note: 100% Predevelopment represents infiltration under predevelopment conditions

<u>Step 2B: Determine Preliminary Effective Infiltration Area – Commercial</u>
Using Chart 6, the preliminary effective infiltration area needed for the infiltration basin is 2,614 square feet (43,560 * 10 acres * 0.6%).

Chart 6: Infiltration Basin Design Curve
Loamy Sand Soil: Kd=1.63 in/hr and 12-inch Ponding Depth



<u>Step 2C: Maximum Required Effective Infiltration Area – Commercial</u>

- Commercial Land Disturbance (20 acres total)
  - Building roof 6 acres
  - Parking lot 7 acres
  - Street 3 acres
  - Lawn / landscaping 4 acre
- Maximum Required EIA = 17,424 sq.ft. (43,560 * 20 acres * 2%)

<u>Step 2D: Determine Final Effective Infiltration Area – Commercial</u>
Using Technical Standard 1003, the preliminary effective infiltration area of 2,614 sq.ft. needs to be adjusted (depth, slope, cell configuration) to determine the final effective infiltration area. Groundwater mounding also needs to be checked. The maximum EIA cap does not appear to impact the infiltration basin's size (2,614 sq.ft. < 17,424 sq.ft.).

(4) PROTECTIVE AREAS

All post-construction sites are required to meet the ordinance's protective area performance standards.

Design Clarifications:

Adjacent Property Owners - If a stream or channel is placed or relocated along a property line, an easement or letter of permission is required from any property owners impacted by the protective area's new location. Also, if a stormwater facility or structure is proposed within an onsite stream or channel, 100-year flood elevations shall be evaluated to determine if offsite property owners are impacted by backwater or a flood elevation increase. An easement or letter of permission is required from any property owners impacted by backwater.

Wetland Delineations - Wetland delineations shall be performed by a professional soil scientist, professional hydrologist, or other qualified individual approved by the administering authority. The individual performing the delineation shall classify the wetland as a less susceptible wetland, highly susceptible wetland, exceptional resource water, or outstanding resource water.

Disturbances - Protective areas may be disturbed as part of a project, if necessary. Disturbed areas must be stabilized from erosion and restored with a self-sustaining vegetation.

Type of Vegetation - It is recommended that seeding of non-invasive vegetative cover be used in the protective areas. Vegetation that is flood and drought tolerant and can provide long-term bank stability because of an extensive root system is preferable. Vegetative cover can be measured using the line transect method described in the University of Wisconsin Extension publication number A3533, titled "Estimating Residue Using the Line Transect Method".

Best Management Practices -

- BMPs may be located in protective areas (ponds, swales, etc.)
- Other state and local regulations may apply to BMPs located in protective areas and waters of the state, including the following:
  - Navigation, Dams, & Bridges (Chapter 30 and 31, Stats.)
  - Wetland Water Quality Standards (NR 103)
  - Wetlands (US Army Corps of Engineers Section 404 regulations)
  - Shoreland Management (NR 115, NR 117, & local regulations)
  - Floodplain Management (NR 116 & local regulations).
- For purposes of section 15-9-7C(4)(e)[4] of the ordinance, a vegetated protective area to filter runoff pollutants from post-construction sites is not necessary since runoff is not entering the surface water at that location. Other practices, necessary to meet the requirements of this section, such as a swale or pond, will need to be designed and implemented to reduce runoff pollutants before the runoff enters a surface water of the state.

(5) FUELING AND VEHICLE MAINTENANCE AREAS:

All post-construction sites are required to meet the ordinance's no visible petroleum sheen performance standard.

Design Clarifications:

The following BMPs are recommended to meet the performance standards contained within section 15-9-7C(5) of the ordinance:

- Enclose vehicle maintenance areas in a building or under a roof.
- Install a roof or canopy over fueling areas.
- Divert runoff away from fueling and vehicle maintenance areas.
- Keep adsorbent spill cleanup materials onsite at all times.
- Install an oil / water separator and/or biofiltration device.

- Post the spill response phone numbers in conspicuous onsite locations. The municipality's Illicit Discharge Ordinance requires reporting of hazardous spills. The local municipality's spill response phone number is 911 and the DNR's 24-hour spill response phone number is 1-800-943-0003.

(6) SWALE TREATMENT FOR TRANSPORTATION FACILITIES

Post-construction sites with 20,000 sq.ft. or more of impervious surface disturbance and post-construction sites with 1 acre or more of land disturbance are required to meet the ordinance's numeric performance standards. All other post-construction sites are not required to meet these numeric performance standards. BMP design guidance is provided below in Section (h) for sites with less than 20,000 sq.ft. of impervious surface disturbance.

Design Clarifications:

For purposes of section 15-9-7C(6)(a)[1] of the ordinance, it is preferred that tall and dense vegetation be maintained within the swale due to its greater effectiveness at enhancing runoff pollutant removal. However, the local municipality may have ordinances or other design criteria which dictate the allowable mowing height for grass swales.

For purposes of section 15-9-7C(6)(a)[2] of the ordinance, check dams may be included in the swale design to slow runoff flows and improve pollutant removal. Transportation facilities with continuous features such as curb and gutter, sidewalks or parking lanes do not comply with the design requirements of section 15-9-7C(6)(a)[2] of the ordinance. However, a limited amount of structural measures such as curb and gutter may be allowed as necessary to account for other concerns such as human safety or resource protection.

For purposes of section 15-9-7C(6)(b) of the ordinance, the Department of Natural Resource's regional stormwater staff can determine if additional BMPs, beyond a water quality swale, are needed.

(7) EXEMPTIONS FOR 15-9-7C PERFORMANCE STANDARDS

Projects that consist of only the construction of bicycle paths or pedestrian trails generally meet the exception found under section 15-9-7C(7)(b)[1] of the ordinance, as these facilities have minimal connected imperviousness.

(8) SITES WITH LESS THAN 20,000 SQ.FT. OF IMPERVIOUS SURFACE DISTURBANCE

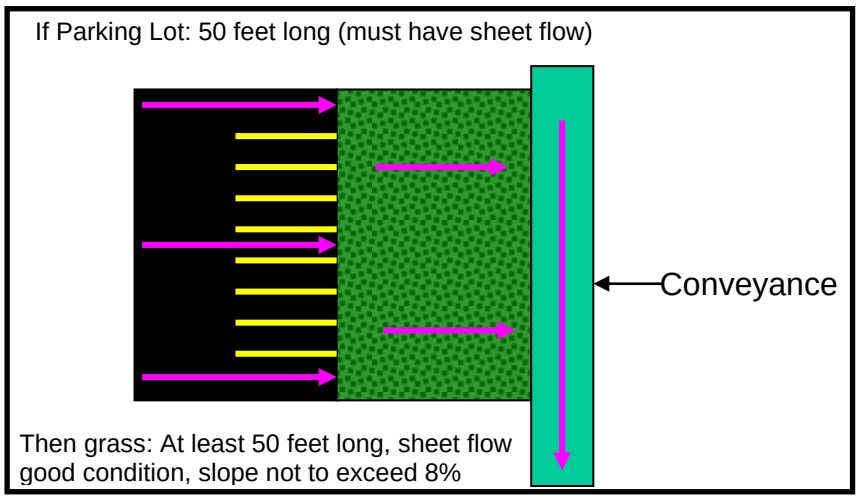
Pursuant to 15-9-7G of the ordinance, the municipality may establish stormwater management requirements more stringent than those set forth in this section if the municipality determines than an added level of protection is needed.

Design Clarifications:

For a post-construction site with less than 20,000 sq.ft. of impervious surface disturbance, the applicant shall comply with the protective area requirements in section 15-9-7C(4) of the ordinance, petroleum sheen requirements in section 15-9-7C(5) of the ordinance, and one of the two requirements provided below. It is recommended that the developer and designer contact the local municipality early in the design process to discuss which requirement must be complied with:

1. Disconnect impervious surfaces. 90% or more of disturbed impervious surfaces must be disconnected. In order to consider an impervious surface as "disconnected", the following criteria shall be met:

- Roofs: Discharge runoff over a minimum 20 foot long pervious surface that is in good condition and graded for sheet flow.
- Other Impervious Surfaces:
  - Source area flow length may not exceed 75 feet.
  - Source area and pervious area must be graded for sheet flow.
  - Pervious area must be in good condition, have a slope less than 8%, and have a flow length at least as long as the contributing impervious area's length (but never less than 20 feet).



Source: DNR Post-Construction Stormwater Management Workshops

2. Use the following best management practices and good housekeeping practices to improve water quality, reduce peak flow rates, and encourage infiltration:

   - Vehicle and equipment maintenance shall be performed inside buildings when feasible. Used fluids / batteries shall be stored and disposed of properly. Repair any vehicle leaks as soon as possible.
   - Outdoor trash bins are required for fast food restaurants, convenience stores, and gas stations. Litter shall be cleaned up daily and disposed of properly.
   - Fertilizers shall be used sparingly for lawn areas. Fertilizers shall be immediately swept off streets, parking lots, driveways, and sidewalks. Soil testing and compliance with Technical Standard 1100 (Turf Nutrient Management) is also encouraged.
   - Stream, shoreline, swale, and other erosion problems shall be repaired as part of the development project when feasible.
   - Roof downspouts, parking lots, driveways, and sidewalks shall discharge stormwater runoff to lawn or other pervious areas when feasible. Rain barrels are also encouraged at roof downspouts to store water for irrigation and watering landscaped areas (reduces municipal water invoice).
   - Create depressions in lawn areas and other landscape areas to temporarily store and treat stormwater runoff from roofs, parking lots, driveways and sidewalks when feasible. Grass swales, biofiltration devices, bioretention devices, and rain gardens are also encouraged when feasible.
   - Filter baskets shall be installed in parking lot catch basins when feasible.
   - Preserve wooded areas, trees, shrubs, and other native vegetation that are in good condition when feasible.

(9) OTHER DESIGN REQUIREMENTS

- Topographic surveys and plans shall be on municipality's vertical datum.
- Grass swales shall be designed with a minimum longitudinal slope of 1%.
- Storm sewers shall be designed for a 10-year design storm. A copy of storm sewer design calculations, time of concentration paths, tailwater conditions, and watershed maps shall be submitted.
- Culverts shall be designed for a 25, 50 or 100-year design storm, depending on location. Contact the municipality for more specific design guidance. A copy of culvert design calculations, time of concentration paths, tailwater conditions, and watershed maps shall be submitted.
- Overland flow paths shall be designed for a 100-year design storm. Flow paths shall be provided for street low points and other depressions. The location of overland flow paths shall be shown on the plans. The 100-year design storm shall be contained within the street right-of-way whenever feasible and ideally, the maximum depth of ponding at street low points shall be 6-inches. The 6-inch depth is measured at the street centerline.
- Minimum finished ground elevations shall be provided for buildings if deemed necessary to provide reasonable flood protection. The minimum finished ground elevation shall be > 1 foot above the 100-year flood elevation and extend at least 15 feet beyond the building. Minimum elevations may need to be specified for lakes, rivers, streams, ponds, and overland flow paths.
- A letter of permission may be required from down slope property owners if a post-development "point discharge" was "sheet flow" during the pre-development condition.
- The applicant may request a waiver or lesser design standard if site characteristics create a hardship.

Maximum Permissible Velocities for Channels			
Channel Cover	Slope Range %	Erosion-resistant soils	Easily eroded soils
Bermuda Grass	0-5	8 fps	6 fps
	5-10	7 fps	5 fps
	>10	6 fps	4 fps
Buffalo grass, Kentucky bluegrass, Smooth brome, blue grama	0-5	7 fps	5 fps
	5-10	6 fps	4 fps
	>10	5 fps	3 fps
Grass mixture	0-5	5 fps	4 fps
	5-10	4 fps	3 fps
	Do not use on slopes steeper than 10%, except for side slopes in a combination channel.		
Lespedeza sericea, weeping love grass Ischaemum (yellow bluestem), kudzu, alfalfa, crabgrass	0-5	3.5 fps	2.5 fps
	Do not use on slopes steeper than 5%, except for side slopes in a combination channel.		
Annuals – used on mild slopes or as temporary protection until permanent covers are established, common lespedeza, Sudan grass	0-5	3.5 fps	2.5 fps
	Use on slopes steeper than 5% is not recommended		

Source – Chow Open Channel Hydraulics

D. CONSIDERATIONS FOR ONSITE / OFFSITE STORMWATER MANAGEMENT MEASURES

All proposed land development activities should be planned, designed, and implemented:

1. In a manner that best fits the terrain of the site, avoiding steep slopes and other environmentally sensitive areas;

2. According to the unique resource conditions at, around, and downstream from a given site;

3. According to the principles of Low Impact Development**.** Use source controls rather than end-of-pipe treatment. Reduce, prevent and mitigate the adverse impacts of development by maintaining infiltration, reducing frequency and volume of discharges, reducing peak flows, and maintaining groundwater recharge. These goals can be accomplished by using:
   - Reduced impervious surfaces
   - Functional grading to slow runoff and thereby lengthen the time of concentration
   - Vegetated channels rather than paving or pipes
   - Disconnection of impervious surfaces; drain to vegetated areas
   - Bioretention (rain gardens) and filtration (buffer) landscape areas
   - Any other techniques that reduce the runoff curve number (RCN) or increase the time of concentration (Tc)
   - Use wet detention ponds after all source area practices and techniques have been employed

   Overall, the goal is to design the site as an integral, living part of the environment with careful use of principles and practices that are both low impact on runoff and simple for people to maintain and live with.

4. To maintain groundwater recharge areas and the infiltration capacity of native soils by avoiding the unnecessary filling of large natural depressions or compaction of upper soil horizons by construction equipment;

5. To maintain soil infiltration by keeping all topsoil on site;

6. To provide the protective area, shoreland, wetland, and environmentally sensitive area setback along all water courses; and

7. According to the sequence in the “Treatment Train”:
   a. First do source controls:
      - Reduce impervious areas to the maximum extent possible
      - Maintain undisturbed soil
      - Maintain existing trees, shrubs and vegetation
   b. Next do lot controls
      - Grade lots to create long areas of overland flow rather than channels
      - Minimize directly connected impervious areas by such practices as directing roof water to vegetated areas and draining driveways to grass rather than the street
      - Include “rain gardens” (undrained areas that will pond water)
   c. Then do site controls
      - Use grassed waterways and diversions rather than paved channels
      - Maintain wetlands
      - Use vegetated road ditches rather than curb and gutter
      - Use wet detention ponds. They can have pools 5 or more feet deep or may be designed as wetlands, but existing wetlands cannot be incorporated into stormwater facilities.

- Use off line detention basins

d. Finally, do Regional controls such as regional detention basins.

E. BMP LOCATION AND CREDIT

When using the regional treatment option, a letter is required from the owner of the regional facility. At a minimum, the letter shall state the following:

- Regional facility complies with ordinance requirements,
- Site can use regional facility for ordinance compliance, and
- Maintenance agreement for regional facility has been recorded at the County Register of Deeds.

F. TARGETED PERFORMANCE STANDARDS

G. ALTERNATE REQUIREMENTS

15-9-8 PERMITTING REQUIREMENTS, PROCEDURES AND FEES

A. PERMIT REQUIRED

B. PERMIT APPLICATION AND FEES

C. REVIEW AND APPROVAL OF PERMIT APPLICATION

D. PERMIT REQUIREMENTS

The permit applicant is required to post the permit in a conspicuous place at the construction site.

Record Drawings -

- Post-construction sites with 20,000 sq.ft. or more of impervious surface disturbance and post-construction sites with 1 acre or more of land disturbance are required to have record drawings. Record drawings shall be signed by a licensed Professional Engineer. Agricultural land uses, unless they are exceptionally large or special in some other way, are not required to have record drawings. Typically, agricultural land uses will not need anything more than review and acceptance by the administering authority.
- Post-construction sites with less than 20,000 sq.ft. of impervious surface disturbance are not typically required to have record drawings. Typically, sites with less than 20,000 sq.ft. of impervious surface disturbance will not need anything more than review and acceptance by the administering authority.

E. PERMIT CONDITIONS

F. PERMIT DURATION

G. ALTERNATE REQUIREMENTS

15-9-9 STORMWATER MANAGEMENT PLAN

A. PLAN REQUIREMENTS

Sites With Less Than 20,000 Square Feet of Impervious Surface Disturbance:

The stormwater management plan for post-construction sites with less than 20,000 square feet of impervious surface disturbance shall contain, at a minimum, the following

information unless other municipal ordinances or state regulations require more detailed information:

(a) Name, address, and telephone number for the following or their designees: landowner; developer; project engineer for practice design and certification; person(s) responsible for installation of stormwater management practices; and person(s) responsible for maintenance of stormwater management practices prior to the transfer, if any, of maintenance responsibility to another party.
(b) A description and installation schedule for the stormwater management practices needed to meet the performance standards in 15-9-7.
(c) Total area of impervious surface disturbance at the post-construction site. Total area of the post-construction site and the total area of the post-construction site that is expected to be disturbed by land disturbing activities.
(d) Sufficient detail so as to document ordinance compliance.
(e) Location of all BMPs to be employed.
(f) Pre-construction ground surface contour lines at intervals appropriate for conditions present within the proposed disturbed areas.
(g) Identify the initial downstream receiving water of the state.

Sites With 20,000 Square Feet or More of Impervious Surface Disturbance:

The stormwater management plan for post-construction sites with 20,000 sq.ft. or more of impervious surface disturbance and post-construction sites with 1 acre or more of land disturbance shall contain, at a minimum, the following information.

(a) Name, address, and telephone number for the following or their designees: landowner; developer; project engineer for practice design and certification; person(s) responsible for installation of stormwater management practices; and person(s) responsible for maintenance of stormwater management practices prior to the transfer, if any, of maintenance responsibility to another party.
(b) A proper legal description of the property proposed to be developed, referenced to the U.S. Public Land Survey system or to block and lot numbers within a recorded land subdivision plat.
(c) Total area of impervious surface disturbance at the post-construction site. Total area of the post-construction site and the total area of the post-construction site that is expected to be disturbed by land disturbing activities.
(d) Sufficient detail so as to document ordinance compliance.
(e) Location of all BMPs to be employed.
(f) Identify the initial downstream receiving water of the state.
(g) Pre-development site conditions, including:
    1. One or more site maps at a scale of not less than 1 inch equals 100 feet. The site maps shall show the following: site location and legal property description; predominant soil types and hydrologic soil groups; existing cover type and condition; one or two foot topographic contours of the site; topography and drainage network including enough of the contiguous properties to show runoff patterns onto, through, and from the site; watercourses that may affect or be affected by runoff from the site; flow path and direction for all stormwater conveyance sections; watershed boundaries used in hydrology determinations to show compliance with performance standards; lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the site; limits of the 100 year floodplain; location of wells and wellhead protection areas covering the project area and delineated pursuant to s. NR 811.16, Wis. Adm. Code.
    2. Hydrology and pollutant loading computations as needed to show compliance with performance standards. All major assumptions used in developing input parameters shall be clearly stated. The geographic areas used in making the calculations shall be clearly cross-referenced to the required map(s).
(h) Post-development site conditions, including:

1. Explanation of the provisions to preserve and use natural topography and land cover features to minimize changes in peak flow runoff rates and volumes to surface waters and wetlands.
2. Explanation of any restrictions on stormwater management measures in the development area imposed by wellhead protection plans and ordinances.
    a. Stormwater infiltration systems and ponds shall be located at least 400 feet from a well serving a community water system unless the Wisconsin Department of Natural Resources and municipality concur that a lesser separation distance would provide adequate protection of a well from contamination.
    b. Stormwater management practices shall be located with a minimum separation distance from any well serving a non-community or private water system as listed within s. NR 812.08.
3. One or more site maps at a scale of not less than 1 inch equals 100 feet showing the following: post-construction pervious areas including vegetative cover type and condition; impervious surfaces including all buildings, structures, and pavement; post-construction one or two foot topographic contours of the site; post-construction drainage network including enough of the contiguous properties to show runoff patterns onto, through, and from the site; locations and dimensions of drainage easements; locations of maintenance easements specified in the maintenance agreement; flow path and direction for all stormwater conveyance sections; location and type of all stormwater management conveyance and treatment practices, including the onsite and offsite tributary drainage area; location and type of conveyance system that will carry runoff from the drainage and treatment practices to the nearest adequate outlet such as a curbed street, storm drain, or natural drainage way; watershed boundaries used in hydrology and pollutant loading calculations and any changes to lakes, streams, wetlands, channels, ditches, and other watercourses on and immediately adjacent to the site.
4. Hydrology and pollutant loading computations as needed to show compliance with performance standards. The computations shall be made for each discharge point in the development, and the geographic areas used in making the calculations shall be clearly cross-referenced to the required map(s).
5. Results of investigations of soils and groundwater required for the placement and design of stormwater management measures. When permanent infiltration systems are used, appropriate onsite testing shall be conducted to determine if seasonal groundwater elevation or top of bedrock is within 5 feet of the proposed infiltration system. Detailed drawings including cross-sections and profiles of all permanent stormwater conveyance and treatment practices.

(i) A description and installation schedule for the stormwater management practices needed to meet the performance standards in 15-9-7.

(j) A maintenance plan developed for the life of each stormwater management practice including the required maintenance activities and maintenance activity schedule.

(k) Cost estimates for the construction, operation, and maintenance of each stormwater management practice.

(l) Other information requested in writing by the administering authority to determine compliance of the proposed stormwater management measures with the provisions of this ordinance.

(m) All site investigations, plans, designs, computations, and drawings shall be certified by a licensed professional engineer to be prepared in accordance with accepted engineering practice and requirements of this ordinance.

B. ALTERNATE REQUIREMENTS

15-9-10 MAINTENANCE AGREEMENT

A. MAINTENANCE AGREEMENT REQUIRED

Post-construction sites with 20,000 sq.ft. or more of impervious surface disturbance and post-construction sites with 1 acre or more of land disturbance are required to have a maintenance agreement. The applicant shall use the municipality's standard forms for the maintenance agreement. The local municipality is responsible for recording the signed maintenance agreement at the County Register of Deeds.

Post-construction sites with less than 20,000 sq.ft. of impervious surface disturbance are not typically required to have a maintenance agreement.

Sites utilizing the regional treatment option are not typically required to have a maintenance agreement. However, a maintenance agreement is required for the regional facility.

B. AGREEMENT PROVISIONS

C. ALTERNATE REQUIREMENTS

15-9-11 FINANCIAL GUARANTEE

A. ESTABLISHMENT OF GUARANTEE

Post-construction sites with 20,000 sq.ft. or more of impervious surface disturbance and post-construction sites with 1 acre or more of land disturbance are required to have a financial guarantee. The financial guarantee includes the cost associated with stormwater BMPs, record drawings, project administration, and contingencies.

Post-construction sites with less than 20,000 sq.ft. of impervious surface disturbance are not typically required to have a financial guarantee.

Sites utilizing the regional treatment option are not typically required to have a financial guarantee.

B. CONDITIONS FOR RELEASE

The financial guarantee shall not be released until the applicant conducts a final inspection with a municipal representative, submits "record drawings" certified by a licensed Professional Engineer, completes punch list items, and pays fees.

C. ALTERNATE REQUIREMENTS

15-9-12 FEE SCHEDULE

15-9-13 ENFORCEMENT

15-9-14 APPEALS

A. APPEALS

B. WHO MAY APPEAL

APPENDIX H

Municipal Pollution Prevention

WET DETENTION POND
Inspection Form

This is a general inspection form. Items on this form are to be checked at different times and frequencies. Complete this form in accordance with the Operation & Maintenance Plan.

Pond Name:_____ Location: _____

Pond Inspected by: _____ Date: _____

POND

Sediment Levels in the Pond (mark approximate Location on pond site plan). Depth is from Water surface to bottom.

Location No.	Depth (feet)

WETLAND VEGETATION

	Yes/No	Date/ Action Taken
Invasive Species	☐ / ☐	

SEDIMENT REMOVAL

	Yes/No	Date/ Action Taken/ Company Used
Wet Pond	☐ / ☐	
Drainage Ditches	☐ / ☐	
Sweep Street	☐ / ☐	
Other	☐ / ☐	

EMBANKMENTS

	Yes	No	Date/ Action Taken
Slumping \ Stability	☐	☐	
Erosion	☐	☐	
Burrow Holes	☐	☐	
Woody Plants	☐	☐	
Invasive Species	☐	☐	
Mowing	☐	☐	
Waterfowl Nests	☐	☐	

INLET PIPES / OUTLET STRUCTURES

	Yes	No	Date/ Action Taken
Clogging/Debris/Litter	☐	☐	
Erosion	☐	☐	
Structural Integrity			
Excellent ☐	Good	☐	
Fair ☐	Poor	☐	
Other Damage			

STORM SEWER SYSTEM

	Yes	No	Date/ Action Taken
Clogging/Debris/Litter	☐	☐	
Televise & Cleaning	☐	☐	
Structural Integrity			
Excellent ☐	Good	☐	
Fair ☐	Poor	☐	
Other Damage			

ADDITIONAL COMMENTS

_____

_____

_____

BIOFILTER FACILITY

INSPECTION FORM

This is a general inspection form. Items on this form are to be checked at different times and frequencies. Complete this form in accordance with the Operation & Maintenance Plan.

Facility Name: _____ Location: _____

Biofilter Inspected By: _____ Date: _____

BIOFILTER FACILITY

Water Levels in the bed or perforated cleanout. Cleanout water depth is from water surface to rim of cleanout.

Date/Time after rain event	Depth (feet)

BIOFILTER VEGETATION

	Yes	No	Date/ Action Taken
Invasive Species	☐	☐	
Replacement?	☐	☐	

ENGINEERED SOIL

Date/Action Taken/Company Used

_____

_____

_____

_____

_____

EMBANKMENTS

	Yes	No	Date/ Action Taken
Slumping\Stability	☐	☐	
Erosion	☐	☐	
Burrow Holes	☐	☐	
Woody Plants	☐	☐	
Invasive Species	☐	☐	
Mowing	☐	☐	
Other Damage			

INLET PIPES / OUTLET STRUCTURES

	Yes	No	Date/ Action Taken
Clogging/Debris/Litter	☐	☐	
Erosion	☐	☐	
Structural Integrity			
Excellent ☐ Good ☐			
Fair ☐ Poor ☐			
Other Damage			

STORM SEWER SYSTEM & UNDERDRAIN

	Yes	No	Date/ Action Taken
Clogging/Debris/Litter	☐	☐	
Televise & Cleaning	☐	☐	
Structural Integrity			
Excellent ☐ Good ☐			
Fair ☐ Poor ☐			
Other Damage			

ADDITIONAL COMMENTS

_____

_____

_____

_____

_____

STORMWATER SYSTEM
Maintenance Checklist

Maintenance tasks denoted with an asterisk (*****) should also be performed after each 0.5-inch rainfall event or greater.

MONTHLY MAINTENANCE:

- Check pond inflow rate, outflow rate and water surface elevation. *
- Remove accumulated debris and litter from pond inlets, outlets and trash racks. *
- Remove debris and litter from storm inlets and culverts. *
- Remove debris and litter from detention ponds and drainage ditches.

QUARTERLY MAINTENANCE:

- Repair eroded areas within pond and along drainage ditches; apply seed mixture in conformance with original specifications. Install erosion blankets and rip-rap within eroded areas as deemed necessary.
- Repair animal burrow holes within pond embankments.
- Check other areas for erosion. Repair as necessary.

SEASONAL MAINTENANCE:

- Spring
  - Check pond inflow rate, outflow rate and water surface elevation. *
  - Remove accumulated debris and litter from pond inlets, outlets and trash racks. *
  - Remove debris and litter from storm inlets and culverts. *
  - Remove debris and litter from detention ponds and drainage ditches.
  - Check and repair pond outlet structure for cracks or other undesirable condition.
  - Remove invasive plants such as Reed Canary Grass, Purple Loosestrife and Willow Trees. Control by hand pulling, herbicide application and/or mowing.
  - Plant additional wetland plants in bare spots or areas with dead wetland vegetation.
  - Check pond's upland areas for waterfowl nests and eggs (April 1 thru May 15).

- Summer
  - A qualified biologist, botanist or ecologist should conduct a vegetation inspection at least once every other year and recommend control techniques for invasive species.
  - At least once every other year, remove invasive plants such as Reed Canary Grass, Purple Loosestrife, and Willow Trees. Control by hand pulling, herbicide application, and/or mowing.
  - Maintain vegetation along pond side slopes and drainage ditches as appropriate.
  - At least once every other year, measure sediment levels within pond's permanent pool of water, particularly at pond inlets and sediment forebays. When the water depth within the permanent pool is 3-feet deep or less, sediment should be removed and disposed. Remove sediment during late fall or winter to minimize damage to wetland vegetation.

- Late Fall
  - Remove brush and other unwanted woody vegetation from pond embankments and drainage ditches. Remove by hand pulling, brushing and/or mowing. Undesirable woody vegetation can be mowed. Paint stumps with an herbicide as needed.
  - Maintain vegetation along pond side slopes and drainage ditches as appropriate.

1.0 Appropriate Use of De-icing Agents

De-icing agents are used under appropriate winter maintenance conditions to: 1) prevent the formation of ice (anti-icing); 2) prevent the formation of a bond between accumulated snow, ice or slush and the pavement and keep the accumulation "plowable"; 3) de-ice, which is the melting of bonded ice or snow; and 4) keep abrasive material free flowing in freezing conditions. Plowing or other mechanical means available to achieve our service objectives are an important part of an overall strategy, and are preferable to the use of de-icing agents for snow removal, de-icing, or cleanup. In general, we will maximize the use of mechanical tools in order to control the use of chemical tools, subject to the specific storm or roadway situation.

It is essential that careful consideration be given to the appropriate use of any de-icing agent for winter operations. Use of these de-icing agents on state highways shall be limited to the amount needed to provide the established level of service or “bare/wet pavement” expectation. This special attention to controlling the use of these de-icing agents is important to minimize any adverse environmental impacts that may result from the material. As concerned stewards of the environment, we have a keen interest in preserving and protecting our environment in the accomplishment of our work.

In addition to our interests in reducing negative impacts or effects of using de-icing agents, we also have a responsibility to provide cost effective service and operate within budgetary constraints. Budget allocations provide for winter service based on standard costs for labor, materials, and equipment. The choice of tools to provide the winter service should be consistent with this guideline to provide for uniformity of service and the objectives of limiting de-icing agent use and providing cost effective service. Achieving the established service level while reducing the use of de-icing agents can free up dollars that might have been spent for salt to be used for other operations activities. The balancing of these goals requires each service provider to exercise discretion on how to best respond to winter maintenance needs.

Environmental concerns associated with materials used for winter operations include impacts on soil, vegetation, and water, as well as the influence of residues on the behavior of animals. Corrosive impacts on steel in automobiles, bridges and concrete reinforcing bars are also a concern. Even use of abrasives (sand) generates concerns for negative environmental impacts related to residue and particulates that may impair air quality. Careful use of these materials is important to minimize negative impacts on the environment. We must insist on careful use to retain the public's confidence that we are prudent users of salt and other de-icing agents used for winter operations. Without this trust, we risk losing the tools needed to provide the mobility, safety, and quality of service the public has come to expect of Wisconsin's highway system. Effective control of the use of these materials is also important to efficient operation and cost considerations.

Appropriate uses include:

1. Anti-icing by applying a light application of de-icing agents when snow begins to fall or just prior to the expected freeze point of the precipitation on the pavement. Anti-icing helps prevent the formation of a bond at the pavement interface. Failure to prevent the bond may result in a hazardous driving condition and the energy required to break the bond requires substantially more de-icing agent to be used. Timing, traffic and weather conditions are critical to successful anti-icing. Use of the winter weather forecasts is critical when using this application. Anti-icing is best accomplished using direct liquid de-icing agent applications onto a dry roadway surface.

2. Bond prevention by applying de-icing agents during the storm to prevent the bond of accumulated precipitation and to keep the snow in a plowable condition.

   Failure to keep the bond from forming during the storm can result in a thick snow pack on the pavement that can only be removed by extraordinary and expensive de-icing measures such as heavy salt application, additional de-icing agents, and heavy equipment. Bond prevention is preferable to de-icing because it may take 5 to 10 times more de-icing agent to remove ice than to prevent it.

1.0 Proper Applications and Temperature Ranges for De-icing Agents and Abrasives

1. Application rates for de-icing agents are provided in HMM 06-20-20 (anti-icing) and HMM 06-20-25 (de-icing). The rates contained in these sections are guidelines because conditions for a given storm may require that other measures be taken. Discretion must be exercised in responding to each winter maintenance situation. Data from winter storm reports, required per HMM 06-10-20, will be collected to make comparisons and evaluations of the amount of de-icing agents used for winter maintenance.

2. The appropriate material to use is dependent on the specific storm conditions and forecast. De-icing agents are not always necessary and in some situations may create a more hazardous situation than if no de-icing agents were used. Winds, temperatures of both the pavement and air, and drifting conditions should be considered when choosing to apply de-icing agents, since chemically wet pavements may capture drifting snow and lead to ice and snow accumulations.

3. Prewetted sodium chloride may be the most effective material during and after the storm when the pavement temperature is 15°F or higher. However, below 15°F, the prewetted salt becomes less effective and therefore the service provider should consider a plow only strategy or switch to a deicing agent other than sodium chloride such as Magnesium Chloride or Calcium Chloride, etc. Even though these de-icing agents will lower the melting range of sodium chloride, it should be noted that below 15°F the effectiveness of all agents is greatly reduced. Additional monitoring may be required when using these liquid agents because re-freeze may occur.

4. Prewetting of dry salt with salt brine, liquid magnesium chloride solutions, or other approved liquids should be done to reduce the loss of de-icing materials that are blown or bounce off the pavement as a result of traffic or the act of dispensing the material from a moving truck.

5. Anti-icing should be performed using only materials specifically designed for anti-icing applications. The materials selection process should be a joint effort between the service provider, region maintenance staff, and the bureau of highway maintenance. Salt brine applied using a spray bar with controls to provide uniform application is the preferred method of anti-icing. Dry or prewetted salt should not be used for anti-icing because of the likelihood that most of the material will not remain on the pavement to provide effective control.

6. Locally available abrasive materials, usually sand (see HMM 06-20-15), can be employed when pavement temperatures are 10°F or less or when de-icing agents are ineffective because of high winds or other storm conditions. However, it is recommended that abrasives be pre-wetted and only used in low speed trouble spots and intersections. Abrasives should not be used on roadways where speeds in the sanded locations exceed 45 mph. Special consideration should be taken in urban areas where there are storm sewers. Abrasive products should be scrutinized for their effects on the environment. Under no circumstance shall any abrasive material that contains an environmentally sensitive substance be used on the state highway system. It is unacceptable to use rock salt as an abrasive. Prewetting abrasives may be appropriate or necessary to aide in securing or imbedding the abrasive into the ice or snow pack.

7. De-icing agents should be applied with appropriate equipment to provide the most effective benefit from the material. The material should be spread only to the width necessary to achieve the “bare/wet pavement” expectation, keeping in mind the effects of traffic and wind on the material. Chutes and spinners placed close to the roadway, and specialized velocity negating spreaders are some of the devices available to aide in keeping the material spread on the pavement where it can be most effective. When spinners are used, operators should be instructed about their use and asked to limit the speed of the spinner to prevent the material from being cast beyond the area to be treated.

1.0 General

County highway departments are responsible for the purchase of liquid anti-icing/de-icing agents. The bureau of highway maintenance (BHM) will not mandate the types of anti-icing/de-icing agents that are to be used for winter maintenance on the state trunk highway system. BHM does not endorse or recommend any one liquid anti-icing/de-icing product.

2.0 Liquid Anti-icing/De-icing Agents

A current list of available agents can be found on the Pacific Northwest Snowfighter's Group website.

3.0 Charging Anti-icing/De-icing Agents

The cost of the anti-icing/de-icing agents purchased for use on the state trunk highway system shall be invoiced to the Department as part of routine winter maintenance.

4.0 References for Information on Anti-icing/De-icing Agents

1. Pacific Northwest Snowfighter's Group http://www.wsdot.wa.gov/partners/pns/
2. AASHTO "Guide for Snow and Ice Control", 1999 (available from District SPO offices)
3. FHWA "Manual of Practice for an Effective Anti-icing Program", Publication #FHWA-RD-95-202, June, 1996. http://www.fhwa.dot.gov/reports/mopeap/eapcov.htm
4. "Managing Snow and Ice Control" – UW Madison Engineering Extension Course, contact Benjamin J. Jordan, P.E., 800-462-0876.

1.0 Abrasives

Locally available materials, particularly sand and by-products of commercial operations suitable for such purposes may be employed to enhance traffic safety when conditions preclude salt or use of other remedies.

(a) Use

Abrasives pre-wetted with a de-icing agent may be employed when the pavement temperatures are low enough that the sodium chloride is not effective. When abrasives are used it is recommended that they be pre-wetted and only used in low speed trouble spots and intersections. Sand should not be used on roadways where speeds in the sanded locations exceed 45 mph.

(b) Gradation

Abrasives should be of a fairly uniform size. All particles should essentially be less than ¼ inch in size. It is best to have abrasives with as high fractured particle content as possible. The following gradation gives optimum results.

Sieve Size	% Passing
#4	96-100
#10	60-80
#40	30% Max.
#200	0-5

(c) Application (Typically 600-1000 pounds per lane mile when mixed with 5% salt. If mixed with more salt the application rate should be reduced appropriately.)

Abrasives may be applied to predetermined areas when conditions warrant. Abrasives should be applied in quantities and at intervals necessary to provide suitable traction. Predetermined areas may include certain grades, curves, intersections, structures, and isolated areas where hazards exist. Such areas should be identified by joint cooperation and consultation of field maintenance personnel prior to or under actual storm conditions. When conditions warrant using abrasives, they should be pre-wet with a de-icing agent to assure better adherence to the roadway.

(d) Preparation

A stockpile of chloride treated abrasives may be prepared in advance of winter conditions. The TRANS 277 requires that a sand/salt stockpile that contains more than 5% salt must be under a waterproof cover (or inside a building). Sand/salt stockpiles containing 5% or less salt must be under a waterproof cover from April 1st through October 31st.

Stockpiles should be placed at strategic locations, within a maintenance facility, where contamination of ground water and surface water is prevented. Sighting of stockpiles is subject to the Department of Natural Resources Administrative Rules for groundwater protection. (Refer to TRANS 277.)

Guidelines

Anti-Icing

PREDICTED PRECIPITATION EVENT	Recommended Locations	Rate *Application* Liquid (gal/lane-mi.)	Rate *Application* Pre-wetted Salt (lb/lane-mi)	*COMMENTS*
Frost or Black Ice	Bridge Decks and Trouble Spots	20-30 (frost) 30-40 (Black Ice)	50-150	1) Consider treating approaches as well as bridge decks. 2) Treat ice patches, if needed, with pre-wetted salt at 100 lb/lane-mi.
Sleet	Bridge Decks and Trouble Spots and Intersections	20 Recommended 30 Maximum	200-400(1) 100-300(2)	1) Consider treating approaches as well as bridge decks.2) Treat ice patches, if needed, with pre-wetted salt at 100 lb/lane-mi.
Freezing Rain	Any area of concern	Not Recommended	200-400(1) 100-300(2)	It is not recommended to apply liquid de-icing agents in an anti-icing mode prior to freezing rain events.
Light Snow (< 1/2" in./hr.)	Trouble Spots and Intersections	30 Recommended 40 Maximum	100-200	If anti-icing is performed prior to a snow event, re-application may be necessary to prevent re-freeze. It also may be necessary to switch to a de-icing mode.
Moderate or Heavy Snow (≥ 1/2 in./hr)	Trouble Spots and Intersections	40 Recommended 50 Maximum	100-300	1) Do not apply liquid anti-icing agents onto heavy snow accumulation or packed snow. 2) Applications will need to be more frequent at lower temperatures and higher snowfall rates. 3) If anti-icing is performed prior to a snow event, re-application may be necessary to prevent re-freeze. It also may be necessary to switch to a de-icing mode.

Notes:

- Anti-icing operations typically should be conducted during normal, non-overtime working hours and low traffic volume periods.
- It is not recommended to apply de-icing agents in an anti-icing mode when the pavement temperature is below 15ºF or drifting is a problem.
- Time initial anti-icing agent applications and subsequent de-icing agent applications to prevent deteriorating conditions or development of packed and bonded snow.

(1) 4-Lanes and Greater
(2) 2 Lanes

1.0 De-icing Application Rates (4-lanes and greater)

See page 2 of 3

2.0 De-icing Application Rates (2-lanes)

See page 3 of 3

DE-ICING APPLICATION RATES FOR PRE-WETTED SALT – (4-LANES AND GREATER)

This guide is not meant to be a substitute for the use of judgment and the observation of the result of treatments on existing conditions. It is meant to show variables that usually occur together and the treatment that has proven to be the most successful. This guide should then be used to assist in deciding on the best course of action depending on existing conditions. This table assumes the salt is pre-wetted. (Allow de-icing agents time to begin working before making additional plowing passes.)

4-lane Highways Application Guidelines #/LM **Pre-wetted** Salt	Pave. Temp. 28° to 32° F		Pave. Temp. 23° to 28° F		Pave. Temp. 15° to 23° F		Pave. Temp. Less than 15° F	
	Initial	Subsequent	Initial	Subsequent	Initial	Subsequent	Initial	Subsequent
Frost	100	50-100	100-150	50-150	100-200[2]	100-150[1]	100-300[1,2]	100-200[1,2]
Black Ice	200	100-200	100-300	100-200	100-400[2]	100-300[1]	200-400[1,2]	100-300[1,2]
Sleet/Freezing Drizzle	200	100-200	100-300	100-200	200-400[2]	100-300[1]	200-300[1,2]	100-300[1,2]
Freezing Rain	100-300	100-200	200-400	100-200	200-400[2]	200-300[1]	300-400[1,2]	200-300[1,2]
Dry Snow	100-200	100-200	100-300	100-200	Plow Only[1]	Plow Only[1]	Plow Only[1]	Plow Only[1]
Wet Snow	200	100-200	100-300	100-200	200-400[2]	100-300[1]	200-400[1,2]	200-400[1,2]

- Mechanical means of snow removal is the preferred method. Before applying any de-icing agents, the surface should be cleared of as much snow and ice as possible by mechanical means.
- Application rates are "MAXIMUM RECOMMENDED RATES". **Only apply the amount of pre-wetted salt necessary to accomplish the desired level of service.** Rates may vary with regard to pavement temperature, type of roadway surface, and weather conditions.
- Abrasives should not be used on roadways where speeds in the sanded areas exceed 45 mph.
- When wind speed is over 15 mph, use caution when salting and applying moisture drawing de-icing agents.
- [1] Intersections and **low** speed hazardous areas may be treated with pre-wetted abrasives when warranted.
- [2] If necessary, use alternate de-icing agents like calcium chloride and magnesium chloride in combination with a **lower application rate** of salt. 11/08

DE-ICING APPLICATION RATES FOR PRE-WETTED SALT – (2-LANES)

This guide is not meant to be a substitute for the use of judgment and the observation of the result of treatments on existing conditions. It is meant to show variables that usually occur together and the treatment that has proven to be the most successful. This guide should then be used to assist in deciding on the best course of action depending on existing conditions. This table assumes the salt is pre-wetted. (Allow de-icing agents time to begin working before making additional plowing passes.)

2-lane Highways Application Guidelines #/LM **Pre-wetted** Salt	Pave. Temp. 28° to 32° F		Pave. Temp. 23° to 28° F		Pave. Temp. 15° to 23° F		Pave. Temp. Less than 15° F	
	Initial	Subsequent	Initial	Subsequent	Initial	Subsequent	Initial	Subsequent
Frost	100	50-100	100-150	50-150	100-200[2]	100-150[1]	100-300[1,2]	100-200[1,2]
Black Ice	200	100-200	100-300	100-200	100-300[2]	100-300[1]	100-300[1,2]	100-300[1,2]
Sleet/Freezing Drizzle	200	100-200	100-300	100-200	100-300[2]	100-200[1]	100-300[1,2]	100-300[1,2]
Freezing Rain	100-300	100-200	100-300	100-200	100-300[2]	100-300[1]	200-300[1,2]	100-300[1,2]
Dry Snow	100-200	100-200	100-300	100-200	Plow Only[1]	Plow Only[1]	Plow Only[1]	Plow Only[1]
Wet Snow	200	100-200	100-300	100-200	100-300[2]	100-200[1]	100-300[1,2]	100-300[1,2]

- Mechanical means of snow removal is the preferred method. Before applying any de-icing agents, the surface should be cleared of as much snow and ice as possible by mechanical means.
- Application rates are "MAXIMUM RECOMMENDED RATES". **Only apply the amount of pre-wetted salt necessary to accomplish the desired level of service.** Rates may vary with regard to pavement temperature, type of roadway surface, and weather conditions.
- Abrasives should not be used on roadways where speeds in the sanded areas exceed 45 mph.
- When wind speed is over 15 mph, use caution when salting and applying moisture drawing de-icing agents.
- [1] Intersections and **low** speed hazardous areas may be treated with pre-wetted abrasives when warranted.
- [2] If necessary, use alternate de-icing agents like calcium chloride and magnesium chloride in combination with a **lower application rate** of salt. 11/08

United States Environmental Protection Agency | Office of Water Washington, D.C. | EPA 832-F-99-010 September 1999

Storm Water Management Fact Sheet
Employee Training

DESCRIPTION

In-house employee training programs are established to teach employees about storm water management, potential sources of contaminants, and Best Management Practices (BMPs). Employee training programs should instill all personnel with a thorough understanding of their Storm Water Pollution Prevention Plan (SWPPP), including BMPs, processes and materials they are working with, safety hazards, practices for preventing discharges, and procedures for responding quickly and properly to toxic and hazardous material incidents.

APPLICABILITY

Typically, most industrial facilities have employee training programs. Usually these address such areas as health and safety training and fire protection. Training on storm water management and BMPs can be incorporated into these programs.

Employees can be taught through 1) posters, employee meetings, courses, and bulletin boards about storm water management, potential contaminant sources, and prevention of contamination in surface water runoff, and 2) field training programs that show areas of potential storm water contamination and associated pollutants, followed by a discussion of site-specific BMPs by trained personnel.

ADVANTAGES AND DISADVANTAGES

Advantages of an employee training program are that the program can be a low-cost and easily implementable storm water management BMP. The program can be standardized and repeated as necessary, both to train new employees and to keep its objectives fresh in the minds of more senior employees. A training program is also flexible and can be adapted as a facility's storm water management needs change over time.

Obstacles to an employee training program include:

- Lack of commitment from senior management.
- Lack of employee motivation.
- Lack of incentive to become involved in BMP implementation.

KEY PROGRAM COMPONENTS

Specific design criteria for implementing an employee training program include:

- Ensuring strong commitment and periodic input from senior management.
- Communicating frequently to ensure adequate understanding of SWPPP goals and objectives.
- Utilizing experience from past spills to prevent future spills.
- Making employees aware of BMP monitoring and spill reporting procedures.
- Developing operating manuals and standard procedures.

- Implementing spill drills.

IMPLEMENTATION

An employee training program should be an on-going, yearly process. Meetings about SWPPPs should be held at least annually, possibly in conjunction with other training programs. Figure 1 illustrates a sample employee training worksheet. Worksheets such as these can be used to plan and track employee training programs. Program performance depends on employees' participation and on senior management's commitment to reducing point and nonpoint sources of pollution; therefore, performance will vary among facilities. To be effective these programs need senior management's support

COSTS

Costs for implementing an employee training program are highly variable. Most storm water training program costs will be directly related to labor and associated overhead costs. Trainers can reduce costs by using free educational materials available on the subject of storm water quality.

Figure 2 can be used to estimate the annual costs for an in-house training program. Table 1 provides an example of how this worksheet can be used to estimate annual costs.

REFERENCES

1. U.S. EPA, 1979. *NPDES BMP Guidance Document.*

2. U.S. EPA, Pre-print, 1992. *Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices*. EPA 832-R-92-006.

ADDITIONAL INFORMATION

Center for Watershed Protection
Tom Schueler
8391 Main Street
Ellicott City, MD 21043

City of Coral Gables, Florida
Tim Clark
285 Aragon Avenue
Coral Gables, FL 33134

Hillsborough County, Florida
Jose Rodriguez
Hillsborough County Public Works
601 East Kennedy Boulevard
Tampa, FL 33601

King County, Washington
Dave Hancock
Department of Natural Resources, Water and Land Resources Division, Drainage Services Section
700 5th Avenue, Suite 2200
Seattle, WA 98104

Mitchell Training, Inc.
Barbara Mitchell
5414 SW 177th Street
Archer, FL 32618

Southeastern Wisconsin Regional Planning Commission
Bob Biebel
916 N. East Avenue, P.O. Box 1607
Waukesha, WI 53187

The mention of trade names or commercial products does not constitute endorsement or recommendation for the use by the U.S. Environmental Protection Agency.

EMPLOYEE TRAINING			Worksheet Completed by: _____ Title: _____ Date: _____
Instructions: Describe the employee training program for your facility below. The program should, at a minimum, address spill prevention and response, good housekeeping, and material management practices. Provide a schedule for the training program and list the employees who attend the training sessions.			
Training Topics	**Brief Description of Training Program/Materials (e.g., film, newsletter, course)**	**Schedule for Training (list dates)**	**Participants**
Spill Prevention and Response			
Good Housekeeping			
Material Management Practices			
Other Topics			

Source: U. S. EPA, 1992.

FIGURE 1 SAMPLE WORKSHEET FOR TRACKING EMPLOYEE TRAINING

TABLE 1 EXAMPLE OF ANNUAL EMPLOYEE TRAINING COSTS

Title	Number		Average Hourly Rate ($)		Overhead* Multiplier		Estimated Yearly Hours on SW Training		Estimated Annual Cost ($)
Stormwater Engineer	1	x	15	x	2.0	x	20	=	600
Plant Management	5	x	20	x	2.0	x	10	=	2,000
Plant Employees	100	x	10	x	2.0	x	5	=	10,000
							Total Estimated Annual Cost		**$12,600**

*Note: Defined as a multiplier (typically ranging between 1 and 3) that takes into account those costs associated with costs other than salary of employing a person, expenses, etc

Title	Number	Average Hourly Rate ($)	Overhead Multiplier	Estimated Yearly Hours on SW Training	Estimated Annual Cost ($)	
_____	_____	x _____	x _____	x _____	= _____	(A)
_____	_____	x _____	x _____	x _____	= _____	(B)
_____	_____	x _____	x _____	x _____	= _____	(C)
_____	_____	x _____	x _____	x _____	= _____	(D)
				Total Estimated Annual Cost (Sum of A+B+C+D)		_____

Source: U.S. EPA, 1992.

FIGURE 2 SAMPLE ANNUAL TRAINING COST WORKSHEET

For more information contact:

Municipal Technology Branch
U.S. EPA
Mail Code 4204
401 M St., S.W.
Washington, D.C., 20460

OW/MTB
Excellence in compliance through optimal technical solutions
MUNICIPAL TECHNOLOGY BRANCH

Municipal Pollution Prevention

Stormwater Quality

NICK VANDE HEY, PE
3/1/2021

1

Federal Clean Water Act

US Environmental Protection Agency requires each state to identify water bodies that are not 'fishable or swimmable'

Each state also needs to identify the pollutants causing the water body impairment

2

Pollutants Causing Impairment

Sediment

Phosphorus

McMAHON ENGINEERS ARCHITECTS

COMBINED LOCKS

3

Total Maximum Daily Load (TMDL)

Lower Fox River Basin TMDL for phosphorus and sediment pollutants was approved by US Environmental Protection Agency on May 18, 2012

McMAHON ENGINEERS ARCHITECTS

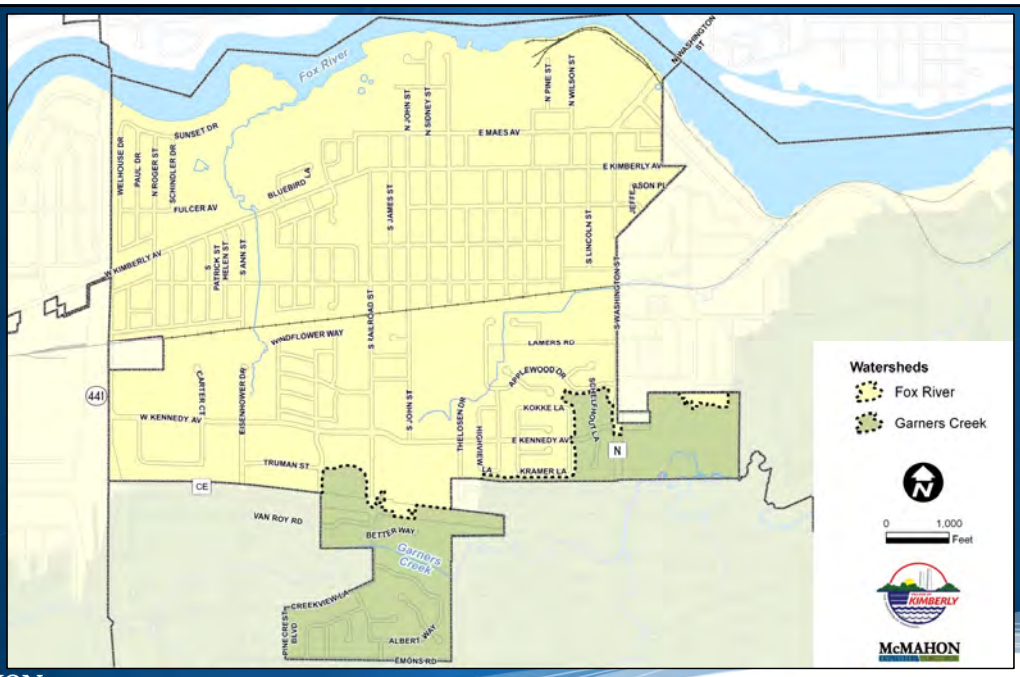
COMBINED LOCKS

4

Municipal Stormwater Permit

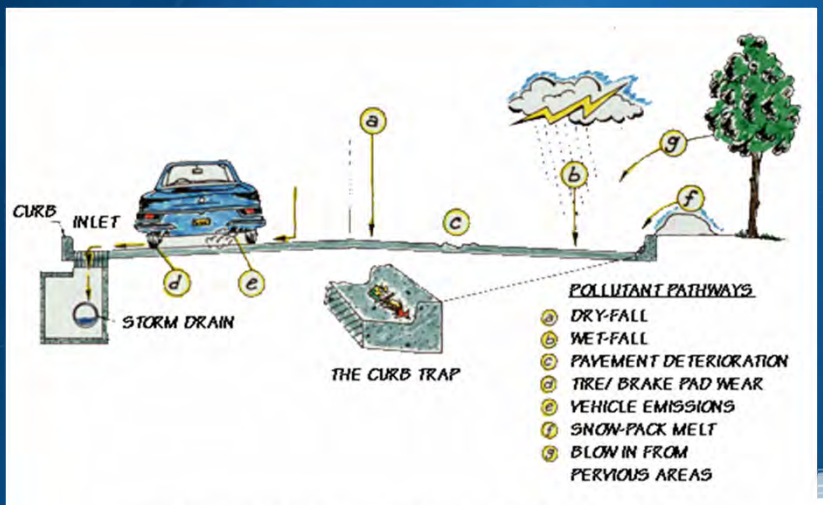
- Village received its initial Municipal Stormwater Permit from Wisconsin DNR in late 2006
- Wisconsin DNR renewed the Village's Municipal Stormwater Permit in 2019
- TMDL phosphorus and sediment allocations implemented thru Municipal Stormwater Permit

5



6

Stormwater Pollutant Pathways



KEY POLLUTANT DEPOSITION PATHWAYS ON THE STREET SURFACE

McMAHON ENGINEERS ARCHITECTS

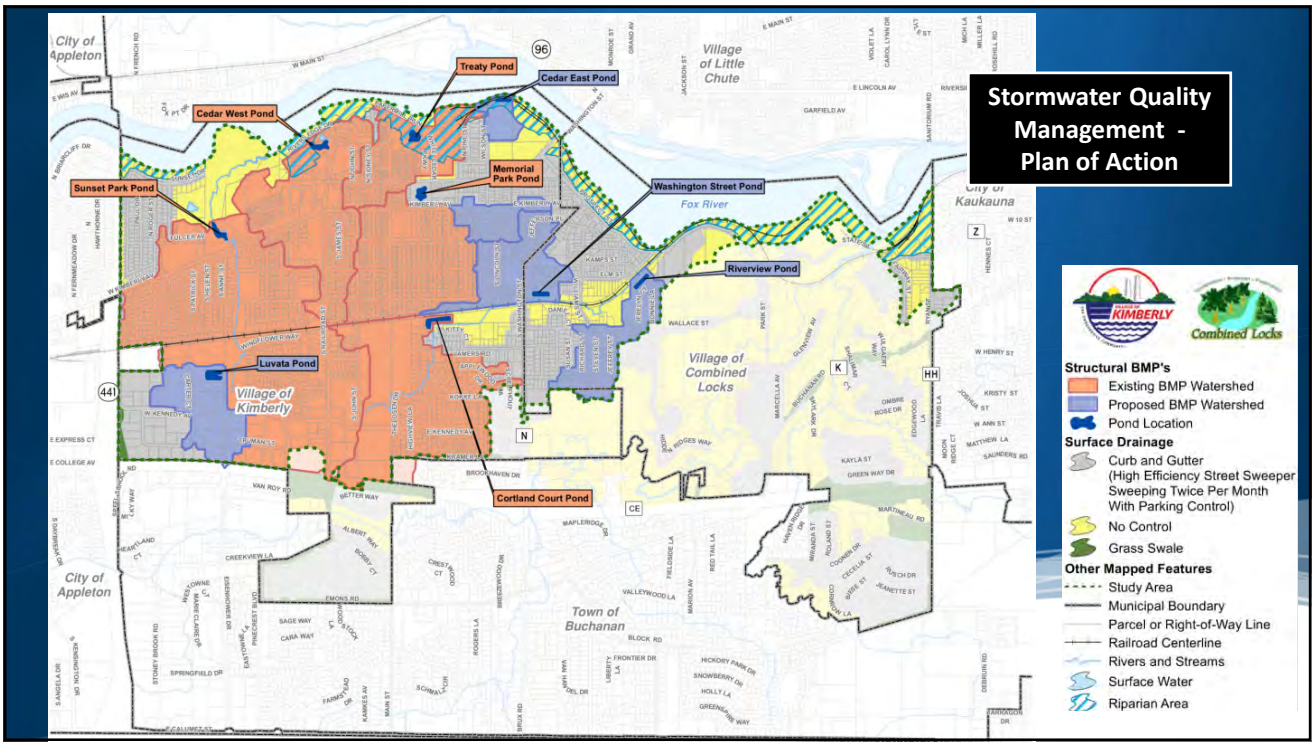
7

Permit Requirements

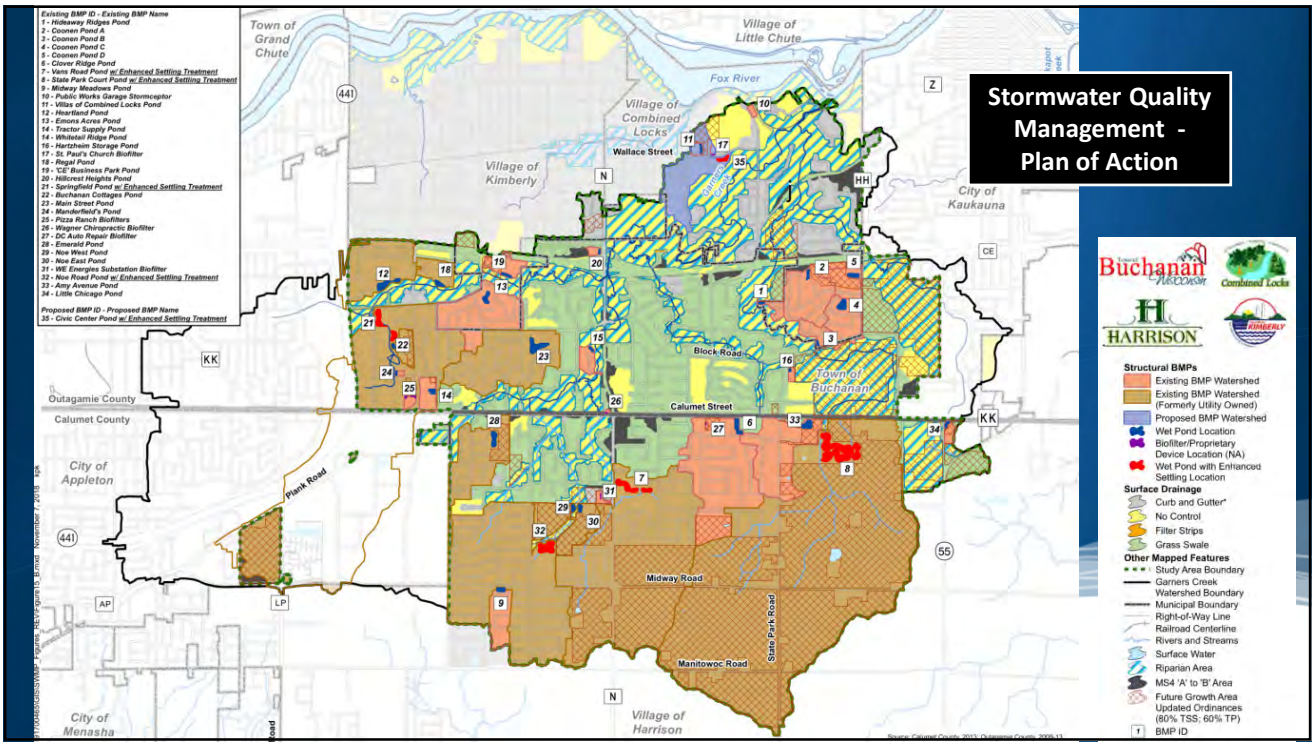
Public Education
Public Involvement
Illicit Discharge Detection & Elimination
Construction Site Pollutant Control
Post-Construction Stormwater Management
Municipal Pollution Prevention
Stormwater Quality Management

McMAHON ENGINEERS ARCHITECTS

8


Stormwater Quality Management - Plan of Action
Treaty Pond
Cedar East Pond
Cedar West Pond
Memorial Park Pond
Sunset Park Pond
Washington Street Pond
Riverview Pond
Luvata Pond
Cortland Court Pond
Village of Little Chute
Village of Combined Locks
Village of Kimberly
City of Appleton
City of Kaukauna
Town of Buchanan
Fox River
Structural BMP's
Existing BMP Watershed
Proposed BMP Watershed
Pond Location
Surface Drainage
Curb and Gutter (High Efficiency Street Sweeper Sweeping Twice Per Month With Parking Control)
No Control
Grass Swale
Other Mapped Features
Study Area
Municipal Boundary
Parcel or Right-of-Way Line
Railroad Centerline
Rivers and Streams
Surface Water
Riparian Area

9


Stormwater Quality Management - Plan of Action
Existing BMP ID - Existing BMP Name
1 - Hideaway Ridges Pond
2 - Coonen Pond A
3 - Coonen Pond B
4 - Coonen Pond C
5 - Coonen Pond D
6 - Clover Ridge Pond
7 - Vans Road Pond w/ Enhanced Settling Treatment
8 - State Park Court Pond w/ Enhanced Settling Treatment
9 - Midway Meadows Pond
10 - Public Works Garage Stormceptor
11 - Villas of Combined Locks Pond
12 - Heartland Pond
13 - Emons Acres Pond
14 - Tractor Supply Pond
15 - Whitetail Ridge Pond
16 - Hartzheim Storage Pond
17 - St. Paul's Church Biofilter
18 - Regal Pond
19 - 'CE' Business Park Pond
20 - Hillcrest Heights Pond
21 - Springfield Pond w/ Enhanced Settling Treatment
22 - Buchanan Cottages Pond
23 - Main Street Pond
24 - Mandenfield's Pond
25 - Pizza Ranch Biofilters
26 - Wagner Chiropractic Biofilter
27 - DC Auto Repair Biofilter
28 - Emerald Pond
29 - Noe West Pond
30 - Noe East Pond
31 - WE Energies Substation Biofilter
32 - Noe Road Pond w/ Enhanced Settling Treatment
33 - Amy Avenue Pond
34 - Little Chicago Pond
Proposed BMP ID - Proposed BMP Name
35 - Civic Center Pond w/ Enhanced Settling Treatment
Town of Grand Chute
Village of Little Chute
Fox River
Village of Combined Locks
Village of Kimberly
City of Kaukauna
Town of Buchanan
Outagamie County
Calumet County
City of Appleton
City of Menasha
Village of Harrison
Wallace Street
Block Road
Calumet Street
Plank Road
Midway Road
Manitowoc Road
State Park Road
Structural BMPs
Existing BMP Watershed
Existing BMP Watershed (Formerly Utility Owned)
Proposed BMP Watershed
Wet Pond Location
Biofilter/Proprietary Device Location (NA)
Wet Pond with Enhanced Settling Location
Surface Drainage
Curb and Gutter*
No Control
Filter Strips
Grass Swale
Other Mapped Features
Study Area Boundary
Garners Creek Watershed Boundary
Municipal Boundary
Right-of-Way Line
Railroad Centerline
Rivers and Streams
Surface Water
Riparian Area
MS4 'A' to 'B' Area
Future Growth Area Updated Ordinances (80% TSS; 60% TP)
BMP ID

10


Thank You for inviting us to present today!
Questions?
THE McMAHON Way
• FOR OVER 100 YEARS •
Values. Culture. Relationships

11


COMBINED LOCKS
Est. 1920
Municipal Pollution Prevention
Fleet Maintenance & Municipal Garage
NICK VANDE HEY, PE
3/1/2021
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General Guidelines

Conduct vehicle and equipment maintenance at designated locations, preferably inside shop or outdoors beneath a canopy.

Park damaged, leaking, or dirty vehicles beneath a covered surface, if possible, to prevent exposure to rainfall.

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General Guidelines

Keep maintenance areas clean by promptly disposing of trash, debris, old parts, fluids that are collected in drip pans and absorbent materials that are used to cleanup a spill.

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Fueling

Don't top off fuel tanks to prevent spills due to overfilling.

Be aware of the emergency pump shut-off button location.

Keep absorbent materials on site for spill cleanup.

Consider containment device, canopy, fence/lock and camera.

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Fueling

Periodically clean fueling areas using approved methods to remove accumulated fuel and grease.

When possible, transport equipment to a designated fueling area rather than using mobile fueling.

If mobile fueling is used, keep a spill kit on the fuel truck.

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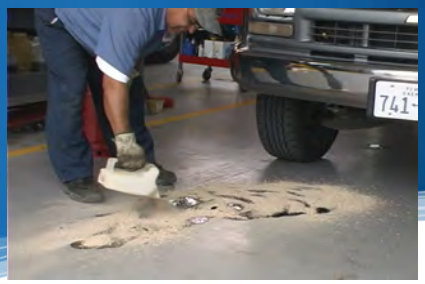
Leaks & Spills

Clean up spills immediately to minimize safety hazards and deter spreading. Use a drip pan or absorbent material.

Inspect for leaks or stains around vehicles and equipment. Locate source of leak and then repair leak or drain the fluid.

Store cracked batteries in a leak proof container.



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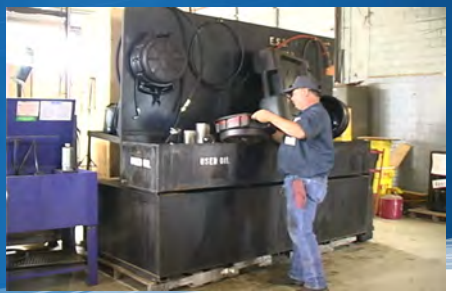
Fluid & Hazardous Disposal

Collect used anti-freeze, motor oil, transmission fluid, hydraulic fluid and hazardous fluids. Store in separate containers by type.

Properly label storage containers.

Do not mix different types of fluids.



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Fluid & Hazardous Disposal

Recycle used fluids, oil, hydraulic filters and batteries.

Do not dispose of used fluids, filters, batteries or other hazardous materials in the trash.

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Parts Cleaning

Clean parts indoors and properly dispose of fluids, grease, dirt, and other debris cleaned from parts.

Allow parts to fully drain before removing from cleaning sink to reduce dripping of cleaning fluid to the floor.

Keep lids closed on parts cleaning sinks when not in use.

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Garage & Pavement Cleaning

Use dry methods (sweeping, wiping, absorbents) to clean work areas as much as possible.

Dispose of mop water properly, usually by pouring down a sanitary sewer drain. Do not dispose of mop water by pouring into storm drain or onto outdoor pavement, gravel or turf area.

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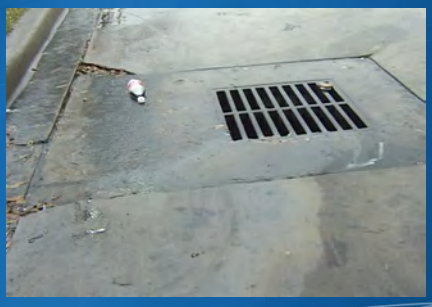
Garage & Pavement Cleaning

Don't hose down outside work areas.

In addition to routine cleaning, clean outside work and storage areas when rain is forecast.



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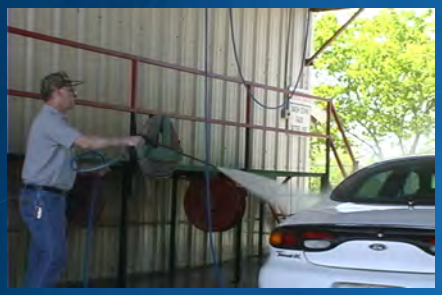
Washing

Wash equipment and vehicles ONLY in designated facilities where the wash water drains to the sanitary sewer system or is collected and recycled.



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Municipal Pollution Prevention

Material Storage & Spill Cleanup

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3/1/2021

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Store & Handle Materials Safely

- Read and follow label / MSDS instructions and local procedures.
- Store materials in original containers if possible. If not, clearly label replacement containers.
- Store materials away from high traffic areas to prevent accidents that might cause a spill or cause spilled materials to be spread by traffic.

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Store & Handle Materials Safely

Keep containers closed or sealed, except when filling or emptying container.

Keep materials and waste containers in good condition.

Replace containers with a leak.

Routinely inspect containers for corrosion or signs of leaks.

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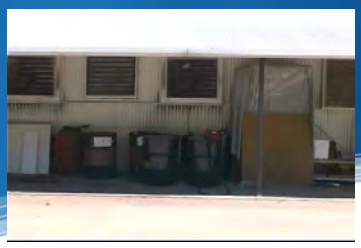
Store & Handle Materials Safely

Store materials and containers as follows:

- Best: Indoors in sealed containers.
- Good: Outdoors in sealed containers on a paved surface and beneath a canopy.
- Acceptable: Outdoors in sealed containers on a paved surface, but no canopy.



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Store & Handle Materials Safely

Spill trapping devices are recommended:

- Indoors: Store barrels on a spill containment base.
- Outdoors: Storage areas should be bordered by a curb, berm or containment device to contain spills.

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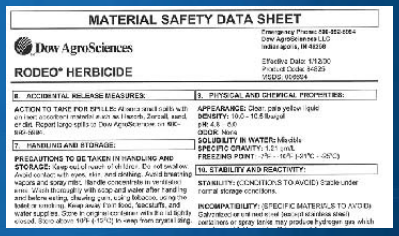
Cleanup Spills Properly

Follow cleanup instructions specified on MSDS and local procedures.

Contain the spill:

- Use a drip pan or absorbent material.
- If a liquid spill might enter a storm drain, use a drain mat or pipe plug.

Report large spills or spills of hazardous materials to your supervisor. Refer to local spill response procedures.


MATERIAL SAFETY DATA SHEET

Dow AgroSciences

RODEO® HERBICIDE

8. ACCIDENTAL RELEASE MEASURES:

9. PHYSICAL AND CHEMICAL PROPERTIES:

7. HANDLING AND STORAGE:

10. STABILITY AND REACTIVITY:

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Cleanup Spills Properly

Locate the source of the spill and take steps to stop further spillage.

Clean up spills immediately to minimize safety hazards and deter spreading.

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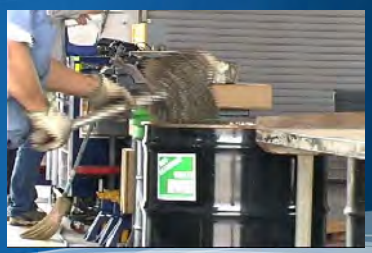
Cleanup Spills Properly

Liquid Spills:

Use absorbent materials or mop up small liquid spills. Do not hose the spill to a storm drain.

Remove the absorbent materials promptly and follow procedures for proper disposal.



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Cleanup Spills Properly

Dry Material Spills:

- Cover a powder spill with plastic sheeting to keep it from blowing until the spill can be cleaned up.
- Do not hose the spill to a storm drain.
- If usable, place the spilled material into the original or properly marked container.
- Follow procedures for disposal of spilled material that cannot be reused.

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Municipal Pollution Prevention

Street & Drainage System Maintenance

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3/1/2021

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Pavement Repair

- Require concrete trucks to wash out in a designated location so wash water does not get into a storm drain, ditch or stream.
- Locate stockpiles of asphalt patching material on a paved surface.
- Sweep up and properly dispose of left over or uncompacted patching material.

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Pavement Repair

Rather than diesel, use less harmful products for cleanup activities.

Clean trucks, equipment and tools in a wash facility where wash water will not get into a storm drain, ditch or stream.

If no wash facility is available, clean equipment over a layer of absorbent material spread on a paved surface and/or heavy plastic sheeting.

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Paint Striping

Don't apply paint when rain is likely or during high winds.

Waste handling for water-based (latex) paint:

- Pour small quantities of unused paint in open barrels and allow to dry. Dispose of dried paint in trash.
- Contain wash water used for equipment cleaning and dispose in sanitary sewer.

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Paint Striping

Waste handling for oil-based paint:

- Unused oil-based paint must be disposed in accordance with established procedures.
- Dispose of solvents used for equipment cleaning in accordance with established procedures.

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Storm Drain Inlet Cleaning

Dispose of trash and debris removed from inlets in a sanitary landfill.

Report suspected dumping or pollution problems to supervisory personnel.

Consider applying markers with NO DUMPING message to inlets where there is evidence of dumping.

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Street Sweeping

Dispose of trash and debris removed from streets in a sanitary landfill.

Report suspected dumping or pollution problems to supervisory personnel.

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Ditch Maintenance

Sample and analyze material that has been removed from ditches if it appears to be contaminated with oil or other pollutants.

Contaminated sediments must be disposed in accordance with established procedures.

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Ditch Maintenance

Uncontaminated soil may be used onsite (shaped into ditch) or stockpiled and used as fill or other land application.

Cover soil stockpiles to prevent erosion and/or install silt fence to capture sediment.

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Ditch Maintenance

Apply grass seed to exposed soils. A compost/mulch mixture applied with seed speeds vegetation growth and prevents erosion.

If the channel experiences high velocities, turf reinforcement mats and/or check dams should be used to protect the channel until vegetation is established.

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Report Pollution & Dumping

Look for signs of pollution at the jobsite and during travel:

- Oil sheen on water surface
- Excess trash and debris
- Odor
- Colored or cloudy water
- Dead or dying fish

Report suspected pollution problems or illegal dumping to supervisor.

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Municipal Pollution Prevention

Parks & Grounds Maintenance

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3/1/2021

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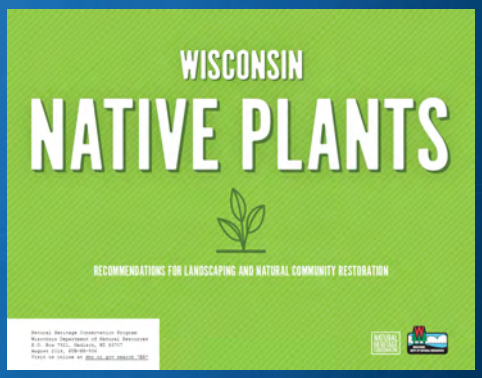
Plant Selection

Utilize native perennial vegetation to reduce water, fertilizer and pesticide needs.

Consider using Wisconsin Native Plant list as a plant selection tool.



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Watering

Avoid over watering to prevent excess runoff.

Avoid runoff by adjusting watering time and spray head direction / volume.

Check soil moisture and consider watering only when the top few inches of soil is dry.

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Grass Clippings & Leaves

Mow grass as high as possible and leave clippings on the lawn.

Collect and compost leaves for use as a soil amendment or shred and add to flower beds as mulch.

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Grass Clippings & Leaves

Sweep paved surfaces or blow clippings and trimmings onto grass rather than hosing down.

Do not dispose of grass clippings, leaves or other debris into storm drain.

Remove accumulated litter and debris from storm drain inlets.

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Fertilizers & Soil Management

- Follow local nutrient management plan.
- Test soils well before the application season to determine fertilizer needs.
- Aerate and add compost to the soil to reduce fertilizer needs, improve drainage, and promote root growth.
- Limit soil erosion by planting vegetation on bare areas and using mulch or matting for landscaped areas.

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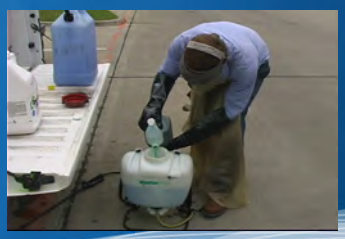
Fertilizers, Pesticides & Herbicides

- Follow safety, storage and disposal procedures for fertilizer, pesticides and herbicides.
- Follow label directions precisely when mixing or applying fertilizers, pesticides or herbicides.
- Mix fertilizers, pesticides and herbicides where spills will not soak into the ground or runoff into the storm drainage system.



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Fertilizers, Pesticides & Herbicides

- Use fertilizers, pesticides and herbicides only as needed.
- Use non-toxic substitutes for chemicals when possible.
- Carefully select the most appropriate product for the problem to be treated.
- Apply pesticides and herbicides to the problem area only, versus application over a wider area.

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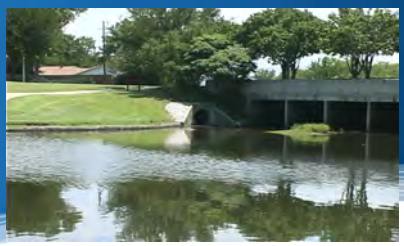
Fertilizers, Pesticides & Herbicides

Avoid stray product from being deposited on streets or other paved surfaces where it may be washed into the storm drain system.

Don't apply chemicals near sensitive areas including streams, lakes, wetlands, drainageways or storm inlets.



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Fertilizers, Pesticides & Herbicides

Follow label instructions and local procedures.

Do not apply during windy conditions or when rain is predicted.

Report suspected problems during applications.

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Village of Combined Locks
405 Wallace Street
Combined Locks, WI 54113
Phone: 920.788.7740

INFORMATION SUBMITTED BY THE PUBLIC

Complaint Submitted By:		
Name:	☐ Anonymous	Date:
Address:		
Telephone:	E-Mail:	
Should we contact you? ☐ Yes ☐ No		
Location of Complaint:		
Site Name (Project):		Construction Site ID No:
Address / Location:		
Landowner Name:		

Description of Complaint: (check all that apply)

☐ Automobiles (fluid leak, car washing)	☐ Storm Water Management (flooding, pond maintenance)
☐ Pet Waste	☐ Illicit Discharge (spill / hazardous material)
☐ Household Hazardous Waste (dumping)	☐ Illicit Discharge (improper waste disposal)
☐ Household Practices (garbage, recycling)	☐ Illicit Discharge (dry weather flow / discharge)
☐ Fertilizers & Pesticides	☐ Illicit Discharge (illegal plumbing connection)
☐ Leaves & Grass Clippings	☐ Illicit Discharge (failing lateral / septic system)
☐ Stream & Shoreline Management (erosion)	☐ Street Sweeping / Catch Basin Cleaning
☐ Residential (downspouts, sump pump)	☐ Municipal Road Salt & Other Deicers
☐ Construction Site Erosion Control	☐ Other: _____

Describe complaint:

Description of Follow-Up Actions:

Describe follow-up actions:

APPENDIX I

Dedicated Funding Sources

VILLAGE OF COMBINED LOCKS
RESOLUTION 2005-17

ESTABLISH ERU RATE

WHEREAS, The Village of Combined Locks is a member of the Garners Creek Basin Storm Water Utility; AND

WHEREAS, the Garners Creek Basin Storm Water Utility has imposed a charge of $99,120.00 upon the Village of Combined Locks as its share of the storm water utility's operational costs for the 2005 calendar year; AND

WHEREAS, the Village Board of Combined Locks did adopt ordinance section 3-2-15 regarding the imposition of special charges on all properties within the village, based on the total number of equivalent runoff units (ERU's) assigned to all properties within the village, AND

WHEREAS, special charges imposed under section 3-2-15 are for the purpose of making payment of costs apportioned to the village by the storm water utility; AND

WHEREAS, THE Village of Combined Locks is required to meet the requirements of NR216 relating to storm water management; and has obtained a DNR grant to offset the costs of preparing a storm water management plan & conducting storm water planning activities ; AND

WHEREAS, the local share of the costs for these required planning activities will be $16,740. Said costs to be funded equally among all properties in the Village of Combined Locks utilizing ERU methodology.

NOW THEREFORE, BE IT RESOLVED by the Village Board of the Village of Combined Locks that the amount of monies to fund these storm water utility related costs totals $115,860, and that an ERU Rate of $74.00 is established, and is to be imposed on all properties within the Village for the 2005 property tax year.

Approved by the Village Board of Combined Locks on November 1, 2005

ATTEST: Mark Van Thiel, Administrator

Resolution 2005-17.doc

Chapter 4

Storm Water and Surface Water Regulations

Sec. 9-4-1 Necessity for Regulation.

(a) The Village of Combined Locks finds that the management of storm water and other surface water discharge within and beyond the Fox River is a matter that affects the health, safety and welfare of the area, its citizens and businesses and others in the surrounding area. Failure to effectively manage storm water affects the sanitary sewer utility operations of the area by, among other things, increasing the likelihood of infiltration and inflow in the sanitary sewer. In addition, surface water runoff may create erosion of lands, threaten businesses and residences with water damage, and create sedimentation and other environmental damage in the Fox River. Those elements of the system, which provide for the collection of and disposal of storm water and regulation of groundwater, are of benefit and provide services to all property within the area.

(b) The Village of Combined Locks further finds that those portions of the Village that are located within the Garner's Creek Basin are in need of such regulation. The regulations adopted by this Chapter are established in conformity with the contract that has established the Garner's Creek Communities Storm Water Utility Commission and are further adopted to uniformly regulate all properties within said basin.

(c) The Village of Combined Locks further finds and determines in order to protect the health, safety and welfare of the public, it was necessary to establish a regulatory authority to effectuate uniform storm water and surface water management and further that the cost of operating and maintaining the storm water management system and financing necessary repairs, replacements, improvements and extension thereof should, to the extent practicable, be allocated in relationship to the benefits enjoyed and services received therefrom and should be assessed to those properties in each community enjoying the benefit thereof.

Sec. 9-4-2 Regulations Applicable to Storm and Surface Water Within the Garner's Creek Basin Enacted.

(a) **Regulations Adopted by Reference.** The Village of Combined Locks, for the benefit of those residents lying within the Garner's Creek Basin and in cooperation with the Town of Buchanan and the Town of Harrison, hereby enacts the following regulations applicable to all lands within the Garner's Creek Basin as defined, mapped and described by the Storm Water Management Services Ordinance passed by the Garner's Creek Communities Storm Water Utility Commission to be effective January 1, 1999 and incorporates and adopts by reference, as if set forth in full herein, all storm and surface water regulations contained in said ordinances as established and adopted and amended from time to time.

(b) **Definitions.** For the purpose of this Chapter, and for the purposes of the Garner's Creek Storm Water Management Services Ordinance, the following definitions shall apply: words used in the singular shall include the plural, and the plural, the singular; words used in the present tense shall include the future tense; the word "shall" is mandatory and not discretionary; the word "may" is permissive. Words not defined herein shall be construed to have the meaning given by common and ordinary use as defined in the latest edition of Webster's Dictionary:

(1) ***Equivalent Runoff Unit (ERU).*** The statistical average horizontal impervious area of "single family homes" (single family and mobile homes) within the Garner's Creek Communities Storm Water Utility on the date of adoption of this Chapter. The horizontal impervious area includes, but is not limited to, all areas covered by structures, roof extensions, patios, porches, driveways and sidewalks.

(2) ***Impervious Area or Impervious Surface.*** A horizontal surface, which has been compacted or covered with a layer of material so that it is highly resistant to infiltration by rainwater. It includes, but is not limited to, semi-impervious surfaces such as compacted clay, as well as streets, roofs, sidewalks, parking lots and other similar surfaces.

(3) ***Duplex Unit.*** Any residential space identified for habitation by members of the same family attached to only one other residential space.

(4) ***Dwelling Unit.*** Any residential space identified for habitation by members of the same family. A dwelling unit includes, but is not limited to, all duplexes, apartments, residential condominiums and townhouse living units.

(5) ***Multi-Family Unit.*** Any residential space identified for habitation by members of different families attached to three (3) or more residential spaces.

(6) ***Residential Property.*** Any lot or parcel developed exclusively for residential purposes including, but not limited to, single family homes, manufactured homes, multi-family apartment buildings and condominiums.

(7) ***Non-Residential Property.*** Any developed lot or parcel not exclusively residential as defined herein, including, but not limited to, transient rentals (such as hotels and motels), commercial, industrial, institutional, governmental property and parking lots.

(8) ***Undeveloped Property.*** Property which has not been altered from its natural state by the addition of any improvements such as a building, structure, impervious surface, change of grade or landscaping. For new construction, a property shall be considered developed pursuant to this Chapter:

a. Upon issuance of a certificate of occupancy, or upon completion of construction or final inspection if no such certificate is issued; or

b. Where construction is at least fifty percent (50%) complete and construction is halted for a period of three (3) months.

(9) ***Agricultural Property.*** Lands used for the planting, growing, cultivating, and harvesting of crops and/or trees; or grazing of livestock.

(10) ***District.*** The properties within the boundaries of the Garner's Creek Communities Storm Water Utility.

(11) ***Area of Control.*** The term "Area of Control" means the waterways within the District where the estimated peak at any given point is twenty percent (20%) or greater than the total estimated peak flow of the entire reach. The area of control extends upstream to the next property line, road or through the next upstream detention pond, whichever extends the area of control farthest upstream. Where a detention pond determines the farthest upstream point of the area of control, the inlet to the detention pond shall be deemed the end of the area of control, as shown on the Area of Control map adopted by the Commission. The width of the area of control shall include property within an area extending away from the waterway on both sides of the waterway beginning at the ordinary high water mark and extending for the distance designated for each segment of Garners Creek and its tributaries as specified below:

a. ***Seventy-Five (75) Feet Within The Following Described Area:***

1. Garners Creek from the Fox River to the confluence of two (2) tributaries in the southeast quadrant of the interchange of CTH CE and CTH N.
2. A tributary to Garners Creek from its confluence with Garners Creek to the confluence of two (2) tributaries to Garners Creek south of Buchanan Road and east of Skylark Lane.
3. A tributary to Garners Creek from the confluence of two (2) tributaries in the southwest quadrant of the interchange of CTH CE and CTH N to Eisenhower Drive.
4. A tributary to Garners Creek from the confluence of two (2) tributaries in the southeast quadrant of the interchange of CTH CE and CTH N to the confluence of two (2) tributaries to Garners Creek west of CTH N and north of CTH KK.

b. ***Fifty (50) Feet Within The Following Described Area:***

1. A tributary to Garners Creek from the confluence of two (2) tributaries to Garners Creek south of Buchanan Road and east of Skylark Lane to the City of Kaukauna border south of CTH CE.

2. A tributary to Garners Creek from the confluence of two (2) tributaries to Garners Creek south of Buchanan Road and east of Skylark Lane to Block Road.
3. A tributary to Garners Creek from the confluence of two (2) tributaries to Garners Creek west of CTH N and north of CTH KK to the confluence of two (2) tributaries to Garners Creek north of CTH KK and east of Main Street.
4. A tributary to Garners Creek from Eisenhower Drive to the City of Appleton border.
5. A tributary to Garners Creek from the confluence of two (2) tributaries to Garners Creek southwest of the intersection of Creekview Lane and Stoney Brook Road to the retention pond southeast of the interchange of STH 441 and CTH KK.

c. ***Thirty (30) Feet Within The Following Described Area:***

1. A tributary to Garners Creek from Block Road to the State Park Court retention pond west of CTH N and north of CTH KK.
2. A tributary to Garners Creek from its confluence with Garners Creek north of CTH CE and east of CTH N to CTH KK.
3. A tributary to Garners Creek from its confluence with a tributary to Garners Creek west of CTH N and north of CTH KK to the Van's Road retention pond.
4. A tributary to Garners Creek from the confluence of two (2) tributaries to Garners Creek north of CTH KK and east of Main Street to the confluence of two (2) tributaries to Garners Creek north of CTH KK and east of Noe Road.
5. A tributary to Garners Creek from the confluence of two (2) tributaries to Garners Creek south of CTH KK and east of Noe Road to Hearthstone Drive east of Crystal Court (commonly referred to as Crystal Creek).
6. A tributary to Garners Creek from the confluence of two (2) tributaries to Garners Creek south of CTH KK and east of Noe Road to Hearthstone Drive west of Noe Road.
7. A tributary to Garners Creek from the confluence of two (2) tributaries to Garners Creek north of CTH KK and east of Main Street to Coop Road south of CTH KK.

[**Note:** The area of control is shown on a map on file with the Garners Creek Communities Storm Water Utility and may be revised from time to time].

(c) **Additional Regulations.** The following regulations, in addition to being adopted above, are hereby adopted and set forth below:

(1) ***Surface Water Drainage.***

a. Drainage requirements meeting the criteria within the Garner's Creek Storm Water Services Ordinance, Division 4 — "Design Criteria, Standards and

Specifications" apply to subdivisions, certified survey maps, multi-family development and any non-residential development or additions within the basin.

b. Permits will be required from the Garner's Creek Communities Storm Water Utility for properties described in Subsection (b)(2)a above.

c. The permit form shall be adopted by the Commission and shall contain instructions for the required submission of information necessary to allow for an engineering determination whether such permit should be issued and/or any required conditions (i.e., detention, etc.) necessary to meet the criteria set forth in Division 4 of the Storm Water Services Ordinance. No person shall submit information that the person knew or should have known through reasonable diligence was false or misleading.

d. Drainage plans meeting the requirements of the Storm Water Services Ordinance, Division 4 — "Design Criteria, Standards and Specifications" shall be submitted with the preliminary plat.

(2) ***Area of Control.***

a. Permits will be required from the Garner's Creek Communities Storm Water Utility for any channel change, encroachment, filling, grading, excavating, or construction of any structure on properties within the area of control.

b. Existing structures within the area of control will be considered non-conforming structures and a permit will be required for any addition or alteration of these structures.

c. The permit form shall be adopted by the Commission and shall contain instructions for the required submission of information necessary to allow for an engineering determination as to whether such permit should be issued and/or any required conditions (i.e., detention, etc.) necessary to meet the criteria set forth in Division 4 of the Storm Water Services Ordinance. No person shall submit information that the person knew or should have known through reasonable diligence was false or misleading.

d. Drainage plans meeting the requirements of the Storm Water Services Ordinances, Division 4 — "Design Criteria, Standards and Specifications" shall be submitted with the preliminary plat.

(3) ***New Construction.***

a. The property owner shall be responsible for completing the Storm Water Utility service application form before any building permit is issued, or a site plan review is conducted. The form shall be provided by the Secretary of the Commission or the Building Inspector with each application for a building permit or application for site plan review. Failure to submit a completed Storm Water Utility service application form or providing false information on said form, shall result in a penalty. No building permit shall be issued until the permit has been obtained from the Storm Water Utility.

b. The owner shall also be liable for storm water charges, under this Chapter, for the improvement from the date construction of the improvement began.

(4) ***Permits.***

a. The Village Building Inspector shall not issue a permit for the construction of any building or other structure within the Garner's Creek Basin unless or until a surface water permit has been obtained from the Garner's Creek Communities Storm Water Utility. Permits will be required for:
   1. Any work within the area of control.
   2. Any proposed subdivision or certified survey map within the District.
   3. Any alteration or addition to non-residential property.
   4. Any multi-family development.
   5. Any single family residential or duplex building permit.

b. When a person requests a building permit from the Town of Buchanan, Town of Harrison, or the Village of Combined Locks for properties within the District, the Building Inspector or Clerk shall inform that person that a permit will be required from the Garner's Creek Communities Storm Water Utility before any building permit may be issued.

c. The granting of a permit from the Garner's Creek Communities Storm Water Utility does not eliminate the requirements for permits from local government agencies, counties, Wisconsin Department of Natural Resources, or U.S. Army Corps of Engineers.

d. The Building Inspector of the Village shall forward a copy of any building permit to the offices of the Garner's Creek Communities Storm Water Utility within ten (10) days after said permit for any building or structure has been issued by said Building Inspector.

Sec. 9-4-3 Design Criteria, Standards and Specifications.

Design Criteria, Standards and Specifications established by the Garner's Creek Storm Water Utility Commission are hereby adopted and enforced as set forth in Division 4 of the Garner's Creek Communities Storm Water Utility Storm Water Management Services Ordinance. Unless prior authorization is given by the Garner's Creek Communities Storm Water Utility, those methods and criteria set forth in Division 4 shall be used in meeting the requirements of this Chapter.

Sec. 9-4-4 Assessments, Rates and Charges.

(a) Assessments, rates and charges will be established by the Garner's Creek Communities Storm Water Utility setting a rate or charge on each parcel within the Garner's Creek Basin.

The Village of Combined Locks hereby adopts the rates as established by the Commission and the appeal and credit regulations established in conjunction with said assessments, rates, and charges. The Village annually shall pay to the Utility all sums as established by the record of charges from the Garner's Creek Storm Water Utility Commission to the Village.

(b) The Village may, by special charge or assessment, or by other method, collect said sums from its residents for payment to the Commission. The Village shall, by resolution, establish the method of payment, the date of payment and establish a system and penalties for unpaid assessments. Appeals of assessments levied against any property may be taken as provided in Section 9-4-5, which also adopts the methods of appeal set forth in the Storm Water Services Ordinance.

Sec. 9-4-5 Method of Appeal of Assessments, Rates or Charges.

(a) The Storm Water Utility charge may be appealed as follows:
   (1) A written appeal shall be filed with the individual community, sanitary district or utility district prior to the utility charge due date; or
   (2) Within thirty (30) days of written appeal to the individual community, sanitary district or utility district, a written challenge to the storm water charge must be filed with the Secretary on behalf of, or by the customer, specifying all reasons for the challenge and the amount of the storm water charge the customer asserts is appropriate. Failure to file a challenge within thirty (30) days of payment waives all rights to later challenge the charge.

(b) The Storm Water Utility Commission will determine whether the storm water charge is fair and reasonable or whether a refund is due the customer. The Storm Water Utility Commission will act during an open session, and will inform the customer in writing of its decision.

(c) The customer has thirty (30) days from the decision of the Storm Water Utility Commission to file a written appeal to the Circuit Court.

(d) If the Circuit Court determines that a refund is due the customer, the refund will be applied as a credit on the customer's next annual storm water billing, if the refund will not exceed the customer's next storm water billing, or will be refunded at the discretion of the Commission.

Sec. 9-4-6 Penalty Provisions.

(a) Any person violating any provision of this Chapter may be prosecuted for said violation before the Municipal Court of the Village where such violation occurred or in the Circuit Court of the County where such violation occurred. Violations for failure to obtain permits or the submission of information or permits which is known to be false or misleading shall

be deemed to have occurred at the Commission's place of business in the Village of Combined Locks.

(b) Any person violating any provision of this Chapter shall be required to forfeit not less than Fifty Dollars ($50.00) nor more than Five Hundred Dollars ($500.00) upon the first conviction and not less than One Hundred Dollars ($100.00) nor more than One Thousand Dollars ($1,000.00) upon the second and each subsequent violation occurring within one (1) year. Each day of a continuing violation shall constitute a separate offense.

(c) In addition to the penalties set forth in Subsection (b), the Municipal Court shall require that the person pay the court costs of the proceeding and may further require payment of all actual costs necessary to return the drainage status to the condition existing before the violation.

(d) Failure to pay any fine or cost imposed by the Court shall constitute contempt of the Court order punishable by incarceration in the County Jail until paid, but not to exceed thirty (30) days for each violation.