

# University of Wisconsin- Stevens Point

## Stormwater Management Plan



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University of Wisconsin – Stevens Point

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# University of Wisconsin - Stevens Point

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## Executive Summary

This plan has been developed to assist the University of Stevens Point to meet the current stormwater regulations and help in the planning for any future development to meet the requirements set forth by the EPA and Wisconsin DNR. The report will explain the new regulations that recently went into effect and the MS4 permit requirements the University of Stevens Point will need to fulfill to be in compliance by 2008 and 2012. DNR regulations such as NR 151, NR 216, NR 116 and various technical standards that the University must follow are explained in this report. This report also lists the current Best Management Practices (BMP's) being used on campus and how they can be incorporated into the new stormwater regulation requirements. Various BMP's are discussed stating pros and cons and whether they can be implemented into the campus's overall development plan. Based on the campus' 6-year improvement plan, recommendations were made based on what BMP's should be used for the future development and associated costs with each one. Existing drainage problems are identified and various recommendations are stated to help reduce the existing drainage problems on campus.

Since the passage of the Clean Water Act there has been an increased awareness in water pollution. Recently, due to phase II regulations sent down by the EPA, an emphasis has been placed on non-point source pollution generated by urban stormwater runoff. This emphasis includes regulations such as NR 151 and NR 216 at the state level. These regulations govern the rate of stormwater runoff that can leave a site, along with the quality of water that can be discharged from an area. The regulations were put in place to help curb adverse impacts that can occur from urban stormwater runoff, such as, increased flooding and reduced water quality.

In brief, this plan explains the following recommendations:

- UW- Stevens Point needs to implement BMP's to existing structures to achieve the 20% and 40% sediment removal requirements
- The University of Wisconsin – Stevens Points should work the City of Stevens Point and State Facilities Department to create guidelines to comply with the current WPDES permit requirements such as:
  - Public Education and Outreach
  - Public Involvement and Outreach
  - Illicit Discharge Detection and Elimination
  - Construction Site Pollutant Control
  - Post-Construction Storm Water Management
  - Pollution Prevention
  - Storm Water Quality Management

Many these activities require management plans and enforcement procedures; therefore we recommend UW-Stevens Point working together with outside agencies to work out any maintenance and enforcement issues and determine the main entity who have authority over the recommended plans that are to be implemented.

## 1.0 Introduction

Many people enjoy using lakes, rivers, and streams for activities such as swimming fishing, boating, and other types of recreation. In addition there is also a significant amount of businesses that depend on the use of waterbodies. Pollution caused by urban stormwater runoff is the leading source of impairment to lakes, rivers, streams, and wetlands. Problems that can occur because of stormwater runoff include fish kills, destruction of habitat and spawning areas, reduction in aquatic biodiversity, increased amounts of algae and pollutants, and increased erosion and sedimentation of waterbodies.

Stormwater affects waterbodies in several ways including thermal pollution, the deposition of sediments in waterways, and the introduction of various pollutants to waterways. Thermal pollution is caused by large amounts of warm water from summertime storms entering a waterway that causes the water temperature to increase, which in some cases can cause fish kills. Sediment enters waterways by being washed off of surfaces and carried by stormwater runoff into waterbodies. Sediment can be produced by a variety of land uses including parking lots, driveways, streets, roofs, and lawns. A parking lot can generate as much as 500 pounds of sediment each year. Stormwater runoff also frequently carries various types of pollutants along with sediment, including phosphorus, nitrogen, copper, lead, and zinc. These pollutants can be linked to increased algae blooms in lakes and rivers, and the depression of dissolved oxygen levels. Dissolved oxygen is needed by fish and other aquatic insects to survive, thus if oxygen levels are reduced, fish kills can result. Algae blooms discolor water and can create odors. High amounts of certain types of algae have also been linked to diseases in fish and could possibly be harmful to humans. There are several sources of these pollutants including; fertilizers, deposition from cars and other motor vehicles, industrial processes, and various agricultural practices.

Stormwater runoff can also cause an increase in the risk of flooding. During a rain event some of the rain naturally infiltrates into pervious surfaces. The amount of water that infiltrates is linked to the type of soils and also whether any compaction or degradation of the area has occurred. As the amount of impervious surfaces increase so does the amount of stormwater runoff. This increase in runoff can raise downstream water levels and result in flooding, as well as the reduction in groundwater levels, and cause an increase in downstream channel erosion.

The use of best management practices (BMPs) to decrease the amount of pollution in stormwater runoff and peak flows, as well as, to prevent erosion can be costly and/or land intensive. However, it is easier and less costly to prevent and control erosion and pollution nears its source before it reaches larger receiving waters. The use of stormwater BMPs can help prevent the need for costly cleanup and remediation projects in the future.

## 1.1 Regulatory Background

This Stormwater Management Plan (SWMP) is required under the U.S. Environmental Protection Agency (EPA) Phase II stormwater regulations, promulgated under the federal Clean Water Act (CWA). These regulations require the University of Wisconsin, Stevens Point (UWSP) to obtain coverage under the Wisconsin Pollutant Discharge Elimination System (WPDES). A Notice of Intent should have been filed by UWSP with the WDNR in March of 2003 requesting coverage under the WPDES. The Wisconsin Department of Natural Resources (WDNR) will require resubmittal of the Notice of Intent likely in 2006. The final permit will require the University of Wisconsin, Stevens Point to develop a SWMP and report annual progress. This SWMP outlines activities required for implementation.

In response to the 1987 Amendments to the CWA, the EPA developed Phase I of the federal stormwater management rules promulgated in 1990 that created a stormwater discharge permit system. Phase I relies on the National Pollution Discharge Elimination System (NPDES) permit as a means of controlling the amount of pollution generated by certain dischargers from stormwater runoff. The Stormwater Phase II rule was promulgated on December 8, 1999 as the next step in the EPA's effort to further reduce adverse impacts to the Nation's water resources and aquatic habitat by instituting the use of controls on the unregulated sources of stormwater discharges. The Phase II rule addresses stormwater discharges from certain regulated small municipal separate storm sewer systems (MS4s) and from construction sites that disturb one to five acres.

In 1974 the EPA delegated the authority for issuing permits in Wisconsin to the Wisconsin Department of Natural Resources (WDNR), which exercises its permitting authority through the Wisconsin Pollutant Discharge Elimination System (WPDES). Phase II regulations require certain municipalities including cities, villages, towns, and counties to obtain WPDES permit coverage. There are also other storm sewer systems that are classified as MS4s (e.g. certain universities, correction facilities, national defense facilities) that will require permit coverage. The WPDES permit will include conditions required by s. NR 216.07, Wis. Adm. Code, which consists of the following six categories:

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Pollution Control
- Post-Construction Stormwater Management
- Pollution Prevention

All six categories must be addressed by a program that is developed and implemented with measures of compliance in accordance with the permit's compliance schedule. For university permittees, it may be that a certain permit requirement may not be applicable or are already addressed. The university will need to justify to the WDNR why a permit requirement is not applicable or already addressed.



## 1.2 Purpose

The purpose of this study is to provide a plan, which can be used to guide the University of Stevens Point to address current drainage problems, recommend BMP's and practice to solve these problems along with recommendations to meet the requirements set forth in the WPDES Permit and for future development. The resulting report will outline the necessary steps to follow to meet current and future stormwater regulations including NR 151, NR 216, local ordinances, as well as EPA Phase II WPDES requirements.

## 1.3 Scope

The scope of this project is to document existing stormwater facilities and potential stormwater management facilities on the UWSP campus. Maps will be provided as visual references in support of the text. A written guide will be provided to assist with meeting local and DNR (NR116/120/151/216) stormwater requirements; along with identifying actions required to meet current/local/state/federal codes. If necessary future modeling will be included to solve existing drainage problems, accompanied with recommended system improvements and providing opinions of probable cost. Finally a project website will be established to post the final report online along with maps and other documents.

This plan will address a broad range of factors that are involved in the management of stormwater on the University of Wisconsin – Stevens Point campus. The following are the major components of the study:

- Description of Pertinent Code
  - This includes a description of state and local stormwater regulations that affect the UW-Stevens Point campus.
- Evaluation of the Existing Campus and Stormwater Efforts
  - This includes the acquisition of needed data and materials to analyze the current state of campus. It includes the generation of maps and figures needed to describe the information. The focus will be on the current state of campus in the area of stormwater management and any problems that are currently occurring.
  - It also includes an evaluation of the current stormwater practices that occur on the campus, their effectiveness and any changes that could be made to benefit the campus.
- Evaluation of Proposed Campus Development
  - This included an analysis of the plan for developments on campus over the next six years.
  - It also includes an evaluation of the proposed development for what stormwater efforts will be needed under the current regulations for these projects.
- Anticipated Stormwater Efforts

- This section will focus on the efforts that will be needed to solve existing stormwater problems.
- Any efforts that may be needed to avoid future stormwater problems.
- And, what will need to be done to comply with the current stormwater regulations so that the campus will be compliant under the WPDES General Permit.

#### **1.4 Definitions**

**“Best Management Practice”** – means structural or non-structural measures, practices, and techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to receiving waters.

**“Construction Site”** – means an area upon which one or more land disturbing construction activities occur, including areas that are part of a larger common plan of 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 long-range planning document that describes separate construction projects is not a common plan of development.

**“Erosion”** – means the process by which the land’s surface is worn away by wind, water, ice, or gravity.

**“Illicit Discharge”** – means any discharge to a municipal separate storm sewer that is not composed entirely of runoff, except discharges authorized by a WPDES permit or any other discharge not requiring a WPDES permit such as water line flushing, landscape irrigation, individual residential car washing, fire fighting, and similar discharges.

**“Impervious Surface”** – means 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.

**“In-fill Area”** – mean an undeveloped area of land located within the existing urban sewer service areas, surrounded by already existing development or existing development and natural or man-made features where development cannot occur.

**“Infiltration”** – means the entry and movement of precipitation or runoff into or through soil.

**“Infiltration System”** – means 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 practices, such as swales or road side channels designed for conveyance and pollutant removal only.

**“Karst Feature”** – means an area or surficial geologic feature subject to bedrock dissolution so that it is likely to provide a conduit to groundwater, and may include caves, enlarged fractures, mine features, exposed bedrock surfaces, sinkholes, springs, seeps, or swalles.

**“Major Outfall”** – means a municipal separate storm sewer system outfall that meets one of the following criteria:

- A single pipe with an inside diameter of 36 inches or more, or equivalent conveyance which is associated with a drainage area of more than 50 acres.
- A municipal separate storm sewer system that receives storm water runoff from lands zoned industrial activity that is associated with a drainage area of more than 2 acres or from other lands with 2 or more acres of industrial activity, but not land zoned for industrial activity that does not have any industrial activity present.

**“Maximum Extent Practicable”** – means a level of implementing best management practices in order to achieve a performance standard specified by the WDNR which takes into account the best technology, cost effectiveness, and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features. Maximum Extent Practicable allows flexibility in the way to meet the performance standard and site conditions.

**“New Development”** – means development resulting from the conversion of previously undeveloped land or agricultural land uses.

**“Outfall”** – means the point at which storm water is discharged to water of the state or to a storm sewer.

**“Performance Standard”** – means a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

**“Pervious Surface”** – means an area that releases as runoff a small portion of the precipitation that falls on it. Lawns, gardens, parks, forests or similar vegetated areas are examples of surfaces that typically are pervious.

**“Point Source”** – means a discernible, confined and discrete conveyance of storm water for which a permit is required.

**“Pollution Prevention”** – means taking measures to eliminate or reduce pollution.

**“Redevelopment”** – means areas where development is replacing older development.

**“Runoff”** – means stormwater or precipitation including rain, snow, ice melt or similar water that moves on the land surface via sheet or channelized flow.

**“Sediment”** – means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.

**“Separate Storm Sewer”** – means 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:

- Is designed or used for collecting water or conveying runoff.
- Is not part of a combined sewer system.
- Is not draining to a storm water treatment device or system.
- Discharges directly or indirectly to waters of the state.

**“Storm Water Management Plan”** – means a comprehensive plan designed to reduce the discharge of pollutants from storm water, after the site has undergone final stabilization, following completion of the construction activity.

**“Technical Standard”** – means a document that specifies design, predicted performance and operation and maintenance specifications for a material, device or method.

**“Two-year, Ten-year, and One hundred-year Storms”** – are those rainstorms of varying durations and intensities that have a 50 percent, 10 percent, and 1 percent chance respectively, to occur in any given year.

## **1.5 Abbreviations**

BMP	-	Best Management Practice
CWA	-	Clean Water Act
EPA	-	Environmental Protection Agency
MEP	-	Maximum Extent Practicable
MS4	-	Municipal Separate Storm Sewer System
NEWSC	-	Northeast Wisconsin Stormwater Consortium
NOI	-	Notice of Intent
NPDES	-	National Pollution Discharge Elimination System
SWMP	-	Storm Water Management Plan
TSS	-	Total Suspended Solids
USDA	-	United States Department of Agriculture
WDNR	-	Wisconsin Department of Natural Resources
WPDES	-	Wisconsin Pollution Discharge Elimination System

## 2.0 Pertinent Code

### 2.1 Description of Pertinent Code

In this report an analysis will be provided of four different WDNR codes, NR151, NR216, NR120 and NR116. The two primary codes dealing with post-construction runoff management, erosion control during construction, and sediment removal for MS4s (municipal separate storm sewer systems) are NR151 and NR216. State facilities, with the University of Wisconsin – Stevens Point included, are not required to meet these ordinances. However, the State tries to work cooperatively with local jurisdictions as a good neighbor. Stormwater regulations are generally divided into two categories; water quality and water quantity. Water quality requirements pertain to sediment and pollutant control. Current water quality requirements deal with the removal of total suspended solids (TSS). Water quantity requirements regulate stormwater infiltration and the peak discharge rate from a site.

In general 80% of all sediment must be prevented during the construction process. This applies to all construction sites. In the post-construction scenario 80% of sediment must be removed for new development and 40% of sediment must be removed for redevelopment or infill construction sites. These sediment removal rates are required for all construction sites except for a few exemptions. The most common exemptions are that less than 1 acre of land is disturbed during construction on the site, or there is no increase in pavement after construction. The amount of sediment removal in the post-construction scenario is modeled using computer software that will be discussed in a later section. NR151 also requires stormwater infiltration where appropriate. It is likely infiltration will be required on the UW-Stevens Point campus based on the soils located on campus. To determine whether infiltration is required a soil investigation in accordance with WDNR Technical Standard 1002 must be completed. In addition to the sediment removal and infiltration requirements the WDNR requires peak runoff rate control. NR 151 requires that the peak flow rate of the 2-yr, 24-hr rainfall event from any post-construction site must be equal to or less than the pre-development flow rate. Additional information pertaining to construction site and post-construction stormwater regulations under WDNR Code NR 151 can be found in Appendix E.

In NR 216 it is required that all MS4's obtain a Municipal Storm Water Discharge Permit. There are six requirements that must be met to obtain a permit. The requirements are; public education and outreach, public involvement and participation, illicit discharge detection and elimination, construction site pollutant control, post-construction site stormwater management, and pollution prevention. NR 216 pertains to obtaining the WPDES permit that this Stormwater Management Plan pertains to. Thus this code will be described further in the following sections.

NR120 deals with priority watersheds and associated grants. This campus is not in a priority watershed and thus is not subject to this ordinance. NR116 deals with

development in floodplains, flood fringes and floodways. Also, Wisconsin Statute Chapter 30 regulates Navigable Waters, Harbors, and Navigation. For various types of work that occurs in or near waterways including lakes, streams, and wetlands permits must be obtained from the WDNR. If development is to occur near any wetlands or navigable waterways the WDNR should be consulted as to any permits that must be obtained. All in all, NR151 and NR216 are the two most important stormwater ordinances regulating runoff from existing and future development at the UW-Stevens Point.

## 2.2 NR151 – Runoff Management

NR 151 states the requirements needed to be achieved for new and redevelopment. A table below summarizes this conditions and requirements:

Development Type	Qualifications	City of Stevens Point/University of Stevens Point	WDNR
Redevelopment	0.5 to 1 acre of Disturbed Area	None	None
Redevelopment	1 to 5 acres of Disturbed Area and an increase in pavement	None	40% TSS Removal
Redevelopment	> 5 acres of Disturbed Area and an increase in pavement	None	40% TSS Removal
New Development	0.5 to 1 acre of Disturbed Area	None	None
New Development	> 1 acre of Disturbed Area	None	80% TSS Removal 2-yr 24 hr Storm Peak Reduction

Table 2-1 - Development Requirements

## 2.3 NR216 – Stormwater Discharge Permit

According to NR 216.001, the purpose for requiring stormwater discharge permits is to establish criteria defining those storm water discharges needing WPDES storm water permits, and to implement the appropriate performance standards set forth in NR 151. The goal is to minimize the discharge of pollutants carried by stormwater runoff from certain industrial facilities, construction sites and municipal separate storm sewer systems.

The University of Wisconsin – Stevens Point will be involved in fulfilling the requirements of two of three storm water discharge permits under NR 216, Municipal Storm Water Discharge Permits and Construction Site Storm Water Discharge Permits. Requirements for both permits are stated below.

### ***Municipal Stormwater Discharge Permits***

According to NR 216.01, the purpose of the Municipal Storm Water Discharge Permit is to identify municipalities that are required to obtain WPDES municipal stormwater permits, and to establish the application and permit requirements for municipal stormwater discharge permits. The goal is to address stormwater quality concerns associated with urban runoff and prevent to the maximum extent practicable, the discharge of pollutants from municipal separate storm sewer systems.

As stated earlier this Storm Water Management Plan is required under the U.S. Environmental Protection Agency Phase II stormwater regulations, promulgated under the federal Clean Water Act. These regulations require the University of Wisconsin, Stevens Point to obtain coverage under the Wisconsin Pollutant Discharge Elimination System permit. The permit requires the UWSP to develop a SWMP and report annual progress. The WPDES permit will include conditions required by s. NR 216.07, Wis. Adm. Code, which consists of the following requirements:

- Public Education and Outreach -
- Public Involvement and Participation -
- Illicit Discharge Detection and Elimination -
- Construction Site Pollutant Control -
- Post-Construction Site Storm Water Management -
- Pollution Prevention -
- Storm Sewer System Map -
- Annual Report -
- Schedule of Compliance –

### ***Public Education and Outreach***

According to NR 216.07.1, the purpose of Public Education and Outreach is to fulfill two goals:

- A public education and outreach program to distribute materials to the public or conduct equivalent public outreach to increase awareness of storm water impacts on waters of the state. The program shall at a minimum be designed to achieve all of the following:
  - Promote detection and elimination of illicit discharges or water quality impacts associated with discharges from municipal separate storm sewer systems.
  - Inform and educate the public to facilitate the proper management of materials and encourage the public to change their behavior that may cause storm water pollution from sources including automobiles, pets, household hazardous waste and household practices.
  - Promote beneficial onsite reuse of leaves and grass clippings and proper use of lawn and garden fertilizers and pesticides.

- Promote the management of stream banks and shorelines by riparian landowners to minimize erosion, and restore and enhance the ecological values of the waterway.
- Promote infiltration of residential storm water runoff from rooftop downspouts, driveways and sidewalks.
- A program that includes elements to achieve all of the following:
  - Inform and educate those responsible for the design, installation or maintenance of construction site erosion control and storm water management practices on how to design, install and maintain the practices.
  - Target businesses and activities that may pose a storm water contamination concern, and where appropriate, educate specific audiences such as lawn care companies and restaurants on methods of storm water pollution prevention.
  - Promote environmentally sensitive land development designs by developers and designers.

To satisfy the minimum control measures, the operator of a regulated small MS4 needs to:

- Implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of storm water discharges on local water bodies and the steps that can be taken to reduce storm water pollution.
- Determine the appropriate best management practices and measurable goals for this minimum control measure. Some program implementation approaches, BMP's (i.e., the program actions/activities), and measurable goals are suggested below.

There are three main action areas of importance stated by the EPA for a successful implementation of a public education and outreach program:

- Forming Partnerships: Operators of regulated small MS4s are encouraged to enter into partnerships with other governmental entities to fulfill minimum control measure's requirements. It is normally more cost effective to partner with an already existing program or work jointly with many groups to form a regional or statewide plan. You can also work with non-government groups, since many private organizations (i.e., environmental, civic, an industrial organizations) already have educational materials and perform outreach activities.
- Using Educational Materials and Strategies: Operators of regulated small MS4s may use storm water educational information provided by their State, Tribe, EPA Region, or environmental, public interest, or trade organizations instead of developing their own materials. Operators should strive to make their materials



and activities relevant to local situations and issues, and incorporate a variety of strategies to ensure maximum coverage. Some examples include:

- Brochures or fact sheets
- Recreational guides
- Alternative information sources (bumper stickers, refrigerator magnets, etc.)
- Library or educational materials
- Volunteer citizen educators to staff a public education task force
- Event participation with educational displays at home shows or community festivals
- Educational programs for school-age children
- Storm drain stenciling on storm drains
- Tributary signage to increase public awareness of local water resources
- Reaching Diverse Audiences: The public education program should use a mix of appropriate local strategies to address the viewpoints and concerns of a variety of audiences and communities. Directing materials or outreach programs toward specific student bodies likely to have significant storm water impacts is also recommended.

### ***Public Involvement and Participation***

According to NR216.07.2, the purpose of the public involvement and participation is to notify the public of activities required by the municipal storm water discharge permit required under this subchapter and to encourage input and participation from the public regarding these activities. The implementation of this program shall comply with all applicable state and local public notice requirements.

The EPA believes the public can provide valuable input and assistance to a regulated small MS4's municipal storm water management program and, suggests that the public be given opportunities to play an active role in both the development and implementation of the program. An active and involved community is crucial to the success of a storm water management program because it allows for:

- Broader public support since citizens who participate in the development and decision making process are partially responsible for the program and, therefore, may be less likely to raise legal challenges to the program and more likely to take an active role in its implementation;
- Shorter implementation schedules due to fewer obstacles in the form of public and legal challenges and increased sources in the form of citizen volunteers;
- A broader base of expertise and economic benefits since the community can be a valuable, and free, intellectual resource; and

- A conduit to other programs as citizens involved in the stormwater program development process provide important cross-connections and relationships with other community and government programs. This benefit is particularly valuable when trying to implement a storm water program on a watershed basis, as encouraged by the EPA.

To satisfy the minimum control measures, the operator of a regulated small MS4 needs to:

- Comply with applicable State, Tribal, and local public notice requirements; and
- Determine the appropriate best management practices and measurable goals for this minimum control measure. Possible implementation approaches, BMP's (i.e., the program actions and activities), and measurable goals are described below.

Operators of regulated small MS4s should include the public in developing, implementing, and reviewing their storm water management programs. The public participation process should make every effort to reach out and engage all economic and ethnic groups. EPA recognizes that there are challenges associated with public involvement. Nevertheless, EPA strongly believes that these challenges can be addressed through an aggressive and inclusive program. Challenges and example practices that can help ensure successful participation are discussed below.

### ***Illicit Discharge Detection and Elimination***

The university, in consultation with the WDNR, will be required to develop and implement a program to detect and remove illicit discharges and improper disposal of wastes into its MS4, or require an identified discharger to obtain a separate WPDES permit.

The EPA recommends that a program detect and address illicit discharges that include the following components: Procedures for locating priority areas likely to have illicit discharges; procedures for tracing the source of an illicit discharge; procedures for removing the source of the discharge; and procedures for program evaluation and assessment.

The University is required to implement policies and procedures to the extent of its legal authority to control discharges to and from those portions of the MS4 that it owns or operates. The University is also required, to the extent of its legal authority, to put in place appropriate enforcement procedures and actions. If the University lacks legal authority to control discharges, they may be required to develop and implement additional policies and procedures. At a minimum, the policies or other regulatory mechanisms should:

- Prohibit the discharge, spilling or dumping of non-storm water substances or material into waters of the state or the storm sewer system,

- Identify non-storm water discharges or flows that are not considered illicit discharges, and
- Establish inspection and enforcement authority.

The University should develop and/or update a set of drawings for the campus storm sewer system. The drawings will need to identify waters of the state, watershed boundaries, and storm water drainage basin boundaries. The drawings also need to identify the locations of:

- All known municipal storm sewer system outfalls discharging to waters of the state or other MS4s,
- All known discharge to the MS4s that has been issued a WPDES permit,
- Structural storm water management facilities including detention basins, infiltration basins, and manufactured treatment devices,
- Publicly owned parks, recreational areas and other open lands,
- Municipal garages and other public works facilities, and
- Streets.

### ***Storm Sewer System Map***

The storm sewer system map is meant to demonstrate a basic awareness of the intake and discharge areas of the system. It is needed to help determine the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the particular water bodies these flows may be affecting. An existing map, such as a topographical map, on which the location of major pipes and outfalls can be shown, demonstrates such awareness.

The EPA recommends collecting all existing information on outfall locations (e.g., review city records, drainage maps, storm drain maps), and then conducting field surveys to verify locations. It probably will be necessary to walk (i.e., wade through small receiving waters or use a boat for larger waters) the streambanks and shorelines for visual observation. More than one trip may be needed to locate all outfalls.

### ***Construction Site Pollutant Control***

A program to implement and maintain erosion and sediment control BMP's that reduces pollutants in storm water runoff from construction sites with one acre or more of land disturbance, and sites of less than one acre if they are part of a larger common plan of development or sale is required. The program shall include the following:

- The implementation and enforcement of a legal authority to comply with NR 151.11 and NR 151.23
- Procedures for site planning which incorporate consideration of potential water quality impacts
- Requirements for erosion and sediment control BMP's

- Procedures for identifying priorities for inspecting sites and enforcing control measures which consider the nature of the construction activity, topography, the characteristics of soil and receiving water quality
- Procedures for receipt and consideration of information submitted by the public

### ***Post-Construction Site Stormwater Management***

Develop a program to, implement and enforce controls on discharges from new development and redevelopment projects that disturb one acre or more of land, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into the MS4. This program shall encompass any adjacent developing area that are planned to have a minimum density of 500 people per square mile, the urbanized area and developing areas whose runoff will connect to the MS4. The program shall include the following:

- The implementation and enforcement of a legal authority to comply with NR 151.12 and NR 151.24
- Procedures for site planning which incorporate consideration of potential water quality impacts
- Requirements for source area control and regional BMP practices
- Procedures for inspecting and enforcing maintenance of BMP's

### ***Pollution Prevention***

This storm water management program and an operation and maintenance program that includes a training component with the ultimate goal of preventing or reducing pollutant runoff are required as part of NR 216. This program shall achieve compliance with the developed urban area performance standards of NR 151.13 for those areas that were not subject to the post-construction performance standards of NR 151.12 or NR 151.24. The total suspended solids control requirements of NR 151.13 may be achievable on a regional basis. The program shall include all of the following activities:

- Installation and maintenance of source area controls and regional BMP's
- Roadway maintenance including street sweeping and de-icer management
- If appropriate, collection and management of leaf and grass clippings
- Management of municipal garages, storage areas and other municipal sources of pollution
- Management of application of lawn and garden fertilizers on municipally controlled properties in accordance with NR 151.13
- Inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions
- Adequate legal authority to require compliance with conditions in ordinances, permits, contracts or orders

The performance standards set forth in NR 151.13 are such that; to a maximum extent practicable, a 20% reduction in total suspended solids in runoff that enters waters of the state as compared to no controls by March 10, 2008. Furthermore, by March 10, 2013, to the maximum extent practicable, a 40% reduction in total suspended solids must be achieved.

### ***Annual Report***

For the permittee's first term of 5 years, submission of an annual report to the WDNR. After the term of the first permit, the department may reduce annual reporting frequency but annual reports shall be filed in the 2<sup>nd</sup> and 4<sup>th</sup> years of the subsequent permit terms. The municipal governing body, interest groups and the general public shall be encouraged to review and comment on the annual report. The annual report shall include the following:

- The status of implementing the permit requirements and compliance with permit schedules
- A summary of activities to comply with "Pollution Prevention"
- A fiscal analysis, which includes the annual expenditures and budget for the reporting year, and the budget for the next year
- A summary of the number and nature of enforcement actions, and actions, and inspections conducted to comply with the required legal authorities
- Identification of water quality improvements or degradations

### ***Schedule of Compliance***

A compliance schedule for the permittee to fully develop, implement and enforce the listed requirements stated above under NR 216.

## **2.4 NR 116 – Wisconsin's Floodplain Management Program**

The Wisconsin River is in a flood hazard Zone A2 and Zone B near the University boundary based on the Flood Insurance Rate Map (FIRM). The University however, is located outside of the floodplain boundary.

### 3.0 Existing Campus Features

#### 3.1 Physical Layout

The UW - Stevens Point campus boundary consists of approximately 425 acres of land. The academic core is located near the center of campus and is bound by Isadore Street to the west, Portage Street to the South, Reserve Street to the East and the Health Enhancement Center, which is also included in the academic core. North of the academic core is the student housing and athletic fields, along with the 280 acre Schmeekle Reserve, and Lake Joanis. Facility Services is located between student housing and Schmeekle Reserve. The southeast end of campus is the location of Student Services and Administrative buildings. The campus consists of 33 buildings that take up approximately 130 acres.



Figure 3-1 - Wisconsin River

Source:

<http://muskyguidemikelazers.com/wisconsinriversecrets.html>

The UW of Stevens Point also owns a 275 acre nature preserve call Schmeekle Reserve. Figure 3-2 shows a picture of Joanis Lake located within Schmeekle Reserve.



Figure 3-2 - Schmeekle Reserve



Figure 3-3 - Campus Layout

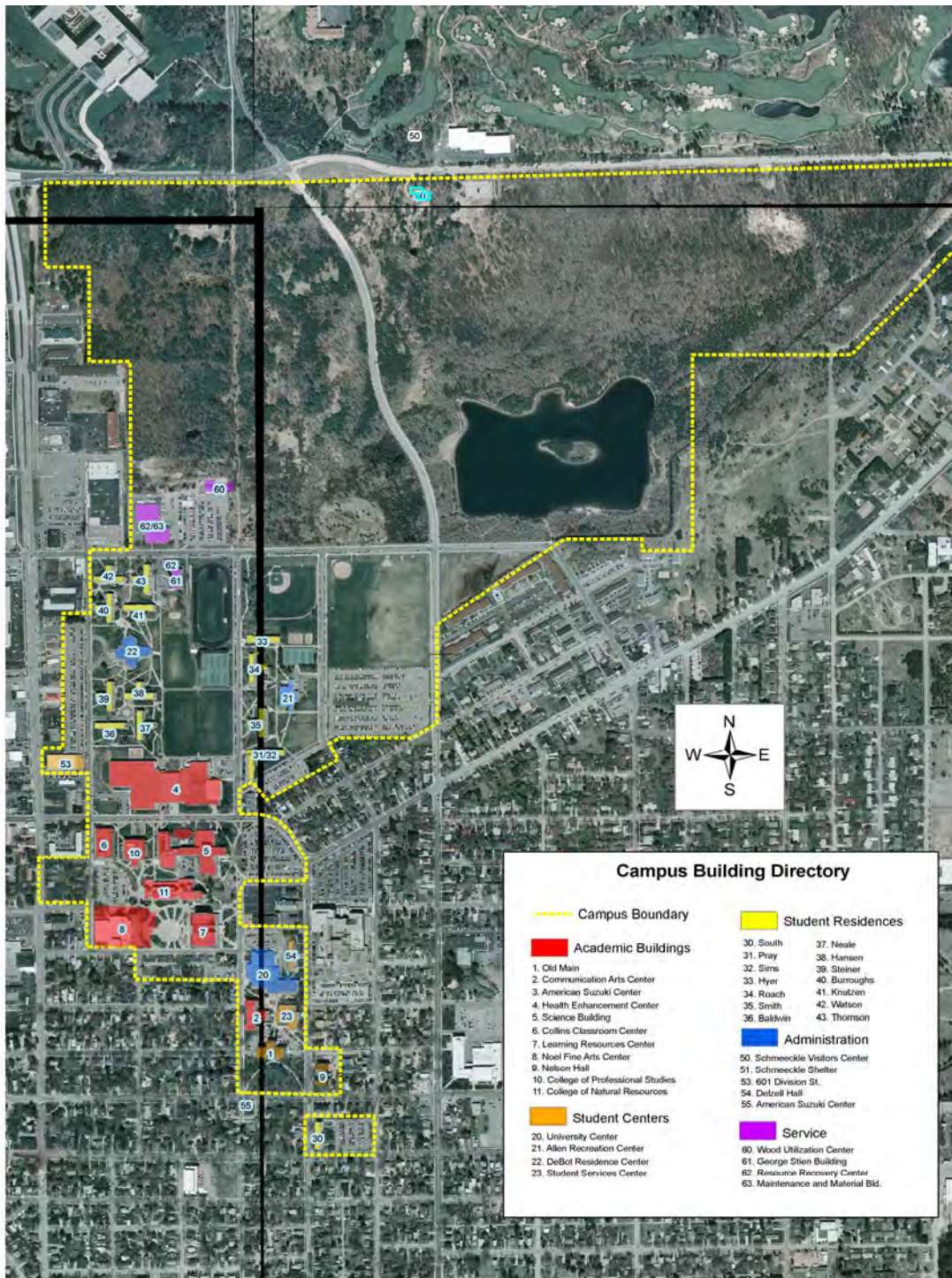


Figure 3-4 - Campus Building Directory

### 3.2 Satellite Facilities

UWSP maintains and operates several off-campus, non-contiguous properties. This consists of approximately 2,200 acres located throughout central Wisconsin. This acreage is associated with the College of Natural Resources (CNR) and provides field experience opportunities for students. These areas are not included in this SWMP.

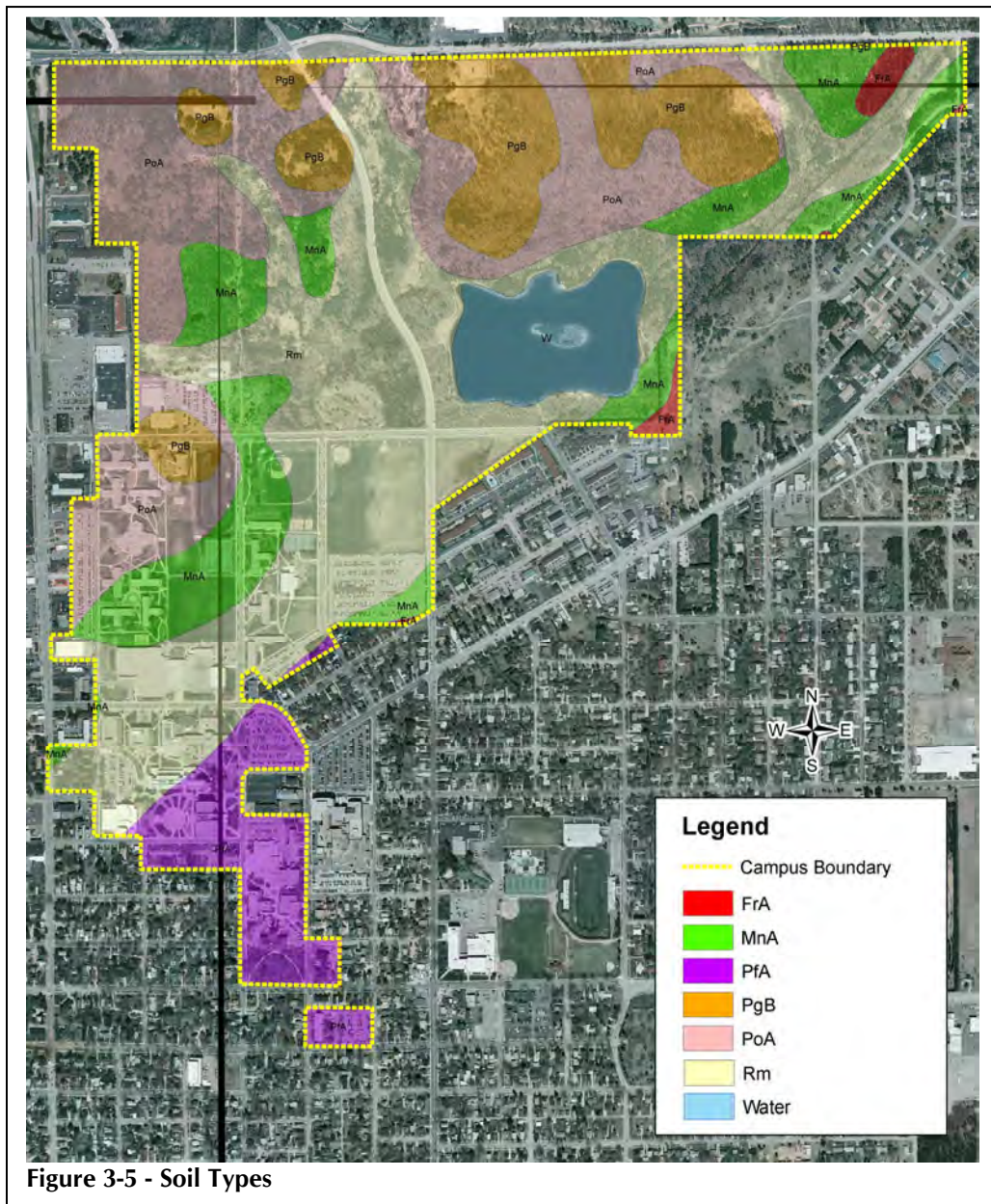


### 3.3 Geography

The campus is located approximately 1.3 miles to the east of the Wisconsin River. The main Stevens Point campus is relatively flat with natural drainage of the land flowing from the northeast to the west/southwest to the Wisconsin River. UW-Stevens Point is located at the high point of this drainage area where all drainage enters Moses creek and drains to the West and discharges into the Wisconsin River.

### 3.4 Existing Soils

Based on the USDS Soil Survey of Portage County, soils within the campus site consist of Friendship, Meehan, Plainfield, Point, and Roscommon Series. Below each series is identified. Table 3-1 describes each soil type and its properties relative to stormwater management.



<b>Soil Series</b>	<b>USDA Texture</b>	<b>Description</b>	<b>Hydrologic Group</b>	<b>Permeability Rate, (in/in)</b>
<b>Friendship Series,</b>	Loamy Sand (FrA)		A	6.0-20.0
<b>Meehan Series</b>	Loamy sand, 0 to 3 percent slopes (MnA)	The Meehan series consists of deep, nearly level, somewhat poorly drained soils. These soils formed in medium and coarse sand on plains and river terraces. Permeability is rapid, and available water capacity is low.	B	6.0-20.0
<b>Plainfield Series</b>	Plainfield loamy sand, 0 to 2 percent slopes (PfA)	The Plainfield series consists of deep, nearly level to very steep, excessively drained soils. These soils are on sand plains and river terraces. They formed in deep medium to coarse sand. Permeability is rapid, and available water capacity is low. Bedrock is at a depth of more than 10 feet.	A	6.0-20.0
	Plainfield loamy sand, granite substratum, 2 to 6 percent slopes (PgB)		A	6.0-20.0
<b>Point Series</b>	Point sandy loam, 1 to 3 percent slopes (PoA)	The Point series consists of deep, nearly level, somewhat poorly drained soils. These soils are on uplands. They formed in loamy deposits and the underlying residuum from igneous rock. Permeability is moderately rapid in the surface layer and upper part of the subsoil and moderately slow below.	C	2.0-6.0
<b>Rusommon Series</b>	Roscommon Muck (Rm)	The Roscommon series consists of deep, nearly level, poorly drained soils. These soils are in major drainageways and depressions on sand plains. They formed in deep medium and coarse sand. Permeability is rapid, and available water capacity is low.	A/D	2.0-20.0

**Table 3-1 - Soil Description**

There are four hydrologic soil groups; A, B, C, and D. The hydrologic soil group gives an estimate for the infiltrative capacity of the soil. Hydrologic soil group A is for soils with the highest infiltrative capacity, while soils in hydrologic group D have the least capacity for infiltration. Hydrologic soil groups are used in hydrology and hydraulic calculations to determine the amount of stormwater runoff that occurs from a soil type.

The majority of soils found on the UW-Stevens Point campus are in the A and B soil group. A further analysis of the USDA soil classification shows that the predominant classification of the soil types found on campus are loamy sand and sandy loam. Based on the DNR Technical Standard, these soil would need to meet the infiltration requirement set forth in NR 151.

### 3.5 Land Use

The 425 acres of campus is made up of a mix of natural land use and developed land use. Schmeckle Reserve, located at north of the campus is a mix of forest, swamp and wetlands, prairie and grasslands that totals approximately 275 acres. Parking surfaces and roads cover approximately 33 and 25 acres respectively. Buildings cover approximately 21 acres and sidewalks about 18 acres.. Joanis Lake is located in Schmeckle Reserve and covers approximately 24 acres. The pervious and impervious percentage break down is as follows: Pervious = 82.3% Impervious = 17.7%.

### 3.6 Surface Water Features

Joanis Lake is located in the middle of Schmeckle reserve. This is a man-made lake.



Figure 3-8 - Joanis Lake



Figure 3-6 - Schmeckle Reserve Welcome Sign



Figure 3-7 - Moses Creek

Drainage that enters the Reserve is routed by one prominent stream, Moses Creek. Moses Creek picks up majority of the offsite drainage from the Sentry Insurance property and the Kmart shopping center. Moses creek then drains to the North portion of the campus where it enters the underground storm sewer sytem that drains under campus and through the City of Stevens

Point and eventually discharges into the Wisconsin River. Figure 3-8 is a picture of Joanis Lake located in Schmeekle Reserve and Figure 3-7 shows a picture of Moses Creek before it enters the underground storm system.

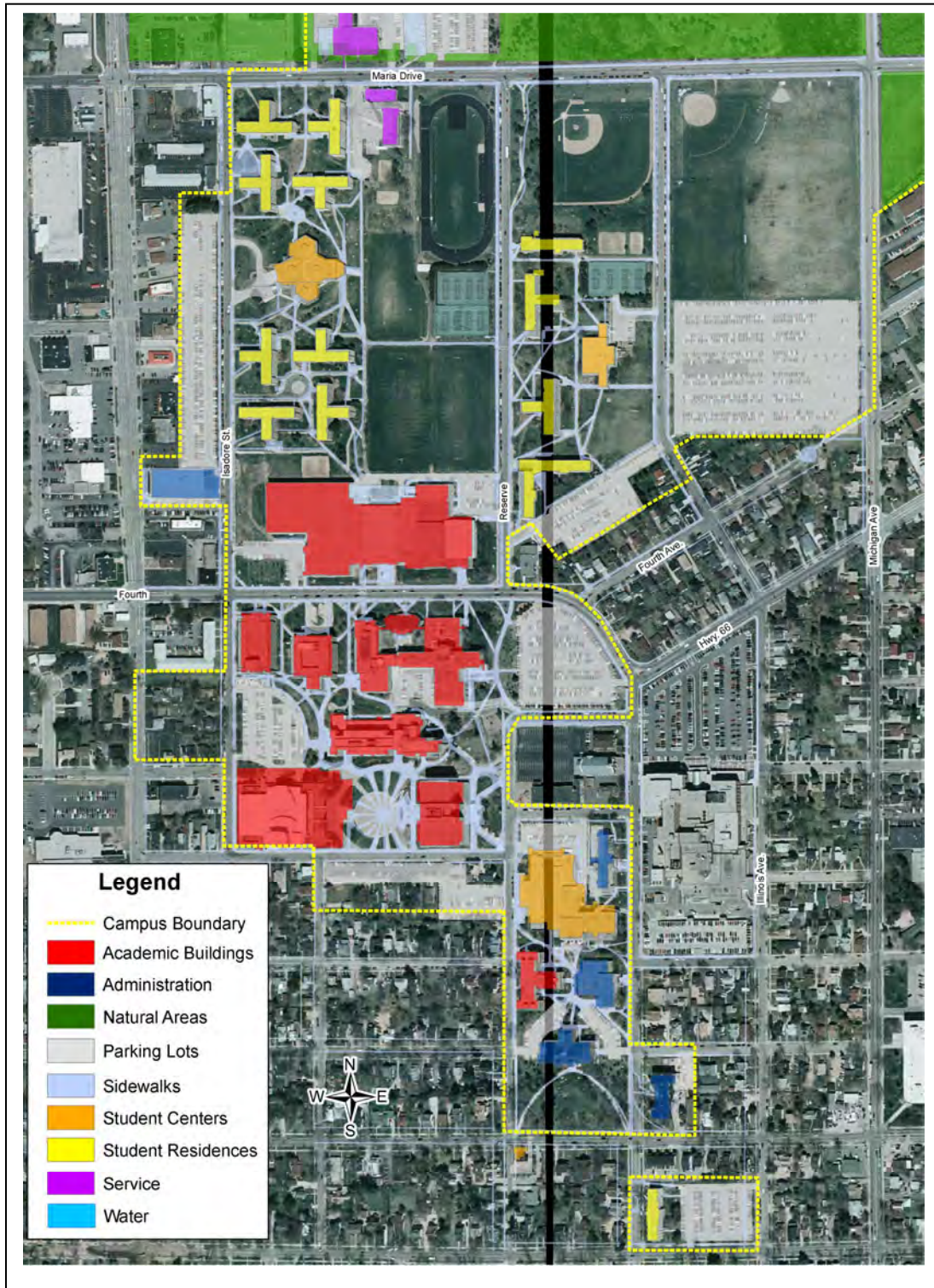


Figure 3-9 - Campus Land Use

### 3.7 Storm Sewer System

The University of Wisconsin - Stevens Point storm sewer system relies completely on the City of Stevens Point's storm sewer system. Because UWSP relies on the city for their storm sewer they do not have any true control over the actual storm sewer system that runs through their campus. The vast majority of the universities' drainage from impervious surfaces such as roofs, driveways, streets, and parking lots are routed to inlets that are directly connected into the cities storm sewer.

### 3.8 Offsite Stormwater Sources/Sewers

Moses Creek consist of drainage from northeast of campus and drains southwest where it then enters an underground system through campus. The water is conveyed through a 72" storm sewer through campus until it eventually discharges into the Wisconsin River.

No contour data was available however; it is understood that a large drainage area from off-site areas in the City of Stevens Point eventually enters the storm sewer system that



**Figure 3-10 - Culvert where Moses Creek enters the underground system**

serves the University of Stevens Point. This area includes the Kmart shopping center that drains into Schmeekle Reserve and enter Moses creek. Another large drainage area includes the Sentry Insurance property and also drains through the Reserve and enters Moses Creek. These areas enter Moses upstream from the campus. Figure 3-10 illustrates where Moses Creek enters the underground drainage system that flows under

campus.

Majority of the runoff from the University structures are directly connected to this system. As this system leaves the University grounds, additional drainage contributes to this system from the City of Stevens Point.

Efforts have been completed to reduce the flood plain in this area around campus. This included rerouting the main 72" storm sewer that discharged north of the dam on the Wisconsin River to discharge downstream of the dam. Existing conditions caused the storm sewer network to back up and flood when there are high water levels in the Wisconsin River. In result, flooding occurrences have reduced.

### 3.9 Campus Drainage Problems

There are areas of concern throughout the University showing current or potential



**Figure 3-11 - Downstream area where backups occur that flood the Maintenance and Materials Building parking lot**



**Figure 3-12 – Culvert flowing from the Kmart shopping center (left)**

drainage problems. One of the main problem areas is located north of the Maintenance and Material Buildings. A 42" storm sewer located on the southwest border of the Reserve drains half of the Holiday Inn complex and all of the Kmart shopping center. All the surface water currently flows

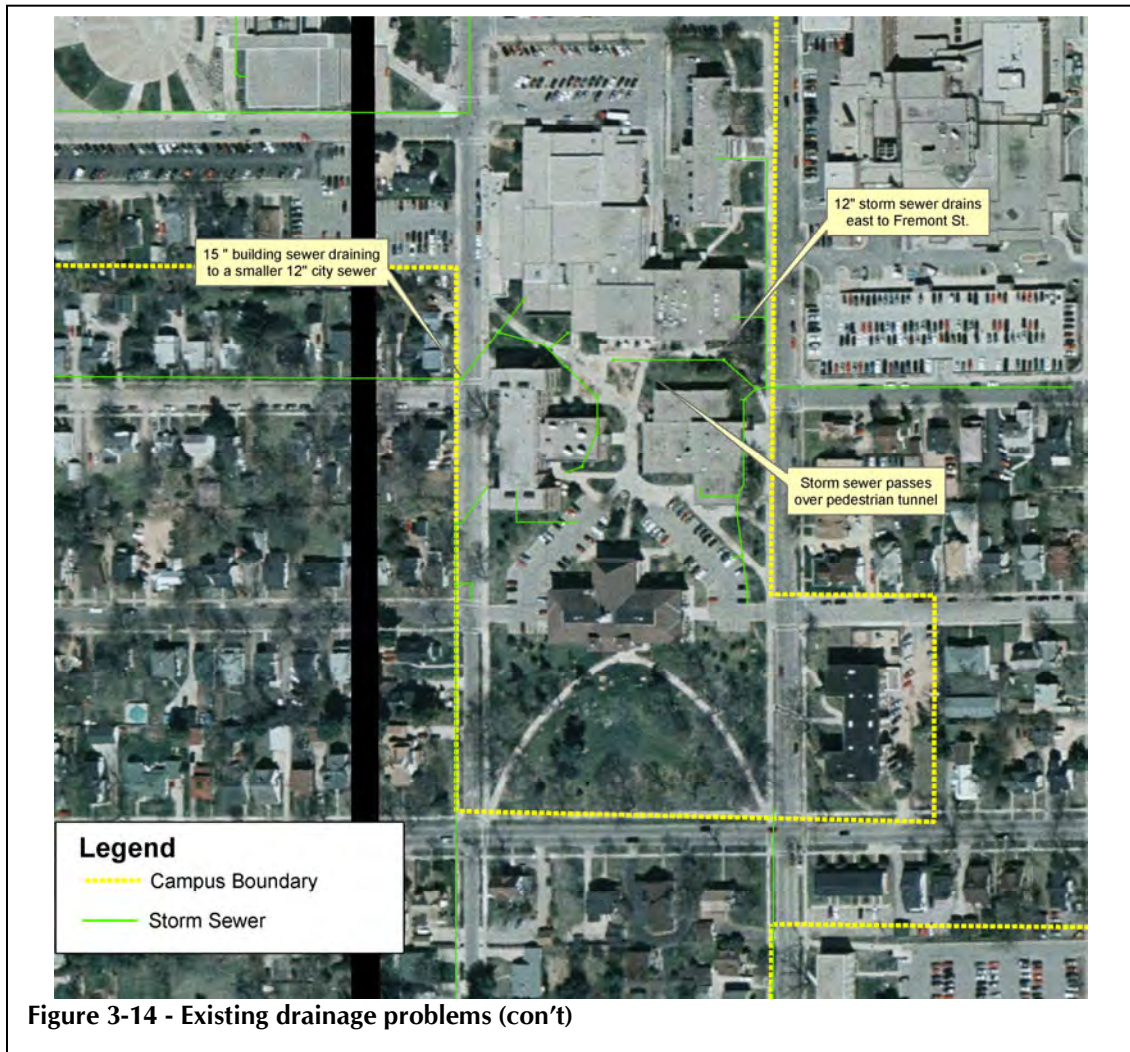
into the wetlands in Schmeekle Reserve. During large rain events water backs up and floods the parking lot. Future development upstream that discharges directly to this system would have the potential for more frequent flooding due to an increase in peak flows unless some measures are in place to prevent this.

Backups in the storm sewer network may also be directly related to the fact that majority of all impervious areas on campus are directly connected to the storm



**Figure 3-13 - Existing drainage problems**

sewer. BMPs such as swales, detention ponds, and rain gardens could be used that would potentially help in reducing the volume of water entering the storm sewer network.



In Figure 3-13 above, the drainage from the Kmart parking lot currently drains to the East and has in the past flooded portions of the Maintenance and Facilities Parking lot. Maintenance of existing ditch would help with drainage past the parking lot. The drainage eventually enters into Moses Creek with then is routed underground under campus. Also, there is an abandoned road where the culvert has been taken out. Proper sizing for a new culvert would also help in existing drainage problems. Figure 3-14 also shows areas that have had drainage problems in the past. Currently, a 15" storm sewer is coming off campus and connecting to the 12" City storm. During large rain events, the 12" storm can not handle the capacity and backs-ups occur in the 15" storm. Also, the pedistian tunnel has flooded in the past but landscaping and reducing the drainage area that flows to this area has eliminated this problem.

## 4.0 Existing Stormwater Management Practices

### 4.1 Permits

UW-Stevens Point will be required to apply for an MS4 general permit that will be covered by the WPDES permit. The University currently is not covered by a WPDES permit. This plan will outline the recommended activities need to be implemented to be in accordance with its requirements.



**Figure 4-1 - Detention Pond along Moses Creek**

### 4.2 Best Management Practices

The University of Wisconsin - Stevens Point conduct various best management practices to control pollution and help reduce harmful substances that could enter stormwater runoff entering receiving waters. Currently known practices include:

#### Detention Basin

The University constructed a detention area around Moses Creek before it enters the underground storm system. This prevents a backup in the storm sewer when large rain events occur. The detention area will store water until the water levels have lowered. Figure 4-1 shows the detention area.

Another detention pond was constructed for the parking lot at the Schmeekle Reserve's visitor center. The drainage enters this pond and then is discharged into Moses Creek.

There is also an overflow pump with a valve to prevent flooding from Moses Creek. This can be used to pump water into Joanis Lake if Moses Creek's water level rises to a level that will cause flooding.

#### Spill Prevention, Control, and Countermeasures' Plan

The University's Environmental Health and Safety Officer completes monthly and quarterly Spill Prevention, Control, and Countermeasures Plan inspections and makes comments. All inspections and any future follow-ups are also documented. The University conducts annual training for all personnel who handle and manage all types of oils. Spill kits are also strategically located in several locations throughout the campus.



In a case where a harmful spill may occur, the University has a contract with WRR Environmental to respond to any emergency spills. Past practices for clean-up include vacuuming of the storm sewers and manholes.

### Salt Storage Management

the University uses a salt storage facility that meets all the requirements for being registered under WI DOT 277.

### Rain Gardens

The Facility Service Department has established two rain gardens systems. The first is located off of the Old Main building. This rain garden collects water from a section of this building roof to help reduce runoff and for water quality benefits. The second collects runoff from a parking lot located north of the CNR building. Both rain gardens retain water for plant use to reduce the amount of water reaching the storm sewer network.

### Porous Sidewalk

Figure 4-2 shows porous walkways currently installed on the campus.

### Recycling and Compost Program

The University of Stevens Point has a very strong recycling program. Items that are recycled include waste oil, antifreeze, oil filters, and batteries. The University also effectively recycles all of its leaves, grass clippings, and sod. All this is composted on-site and stored until matured. Once matured, the material is screened and then spread on the common grounds for fertilizer.

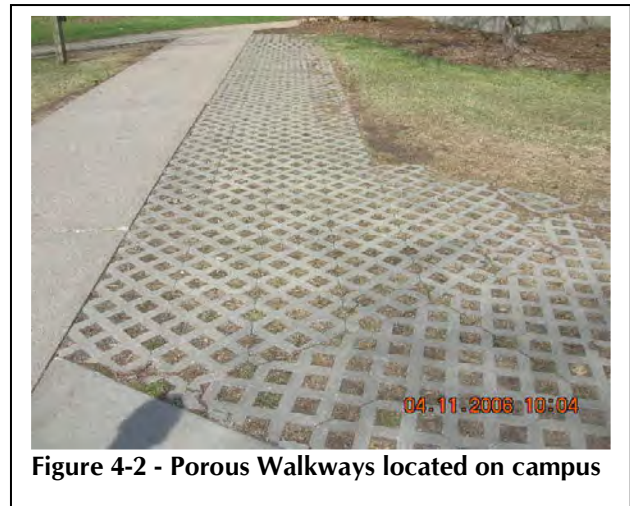


Figure 4-2 - Porous Walkways located on campus

### Street and Parking Lot Sweeping

The University has the parking lots and streets swept at least annually by the City. This is paid for by the University with funds available through the Public Municipal Services program.

### Green Roof

UW-Stevens Point has about 7,000 square feet of green roof on the Learning Resource Center.

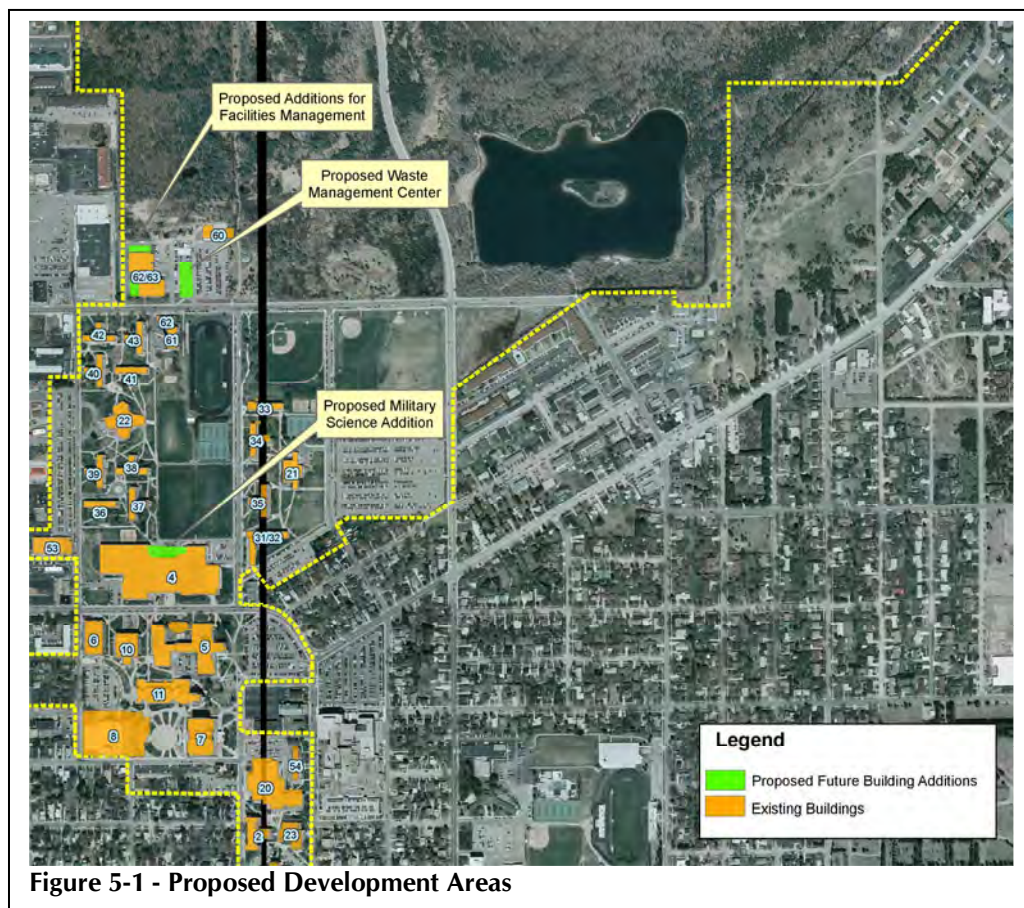
Trash and Litter Control

The University picks up trash and litter collected in the lawn areas and parking lots on a regular daily basis.

## 5.0 Proposed/Anticipated Campus Development

### 5.1 6-Year Plan Improvements

The Facilities Planning Committee is a group that provides general oversight for University campus planning and development. One of the responsibilities for this committee is developing and maintaining a six-year plan for the physical development of the campus. A complete Campus Physical Development Plan is conceptually a statement of the campus long-range goals and the six-year building program to work



toward achieving long-range goal.

In achieving these goals the University will have to provide additional stormwater management facilities. All new impervious surfaces will need stormwater management planning and facilities. These facilities will be more significant than providing storm sewer that discharges to a safe outlet. The addition of DNR code NR 151, as described previously, has placed added burden on the developer to provide stormwater management practices to prevent water quality and quantity problems.

UW-Stevens Point six-year capital improvement projects that would be required to meet these requirements are listed below:

**Anticipated year: 2005-2007**

- Military Science Relocation – This project would take place at a site on the north side of the HEC facility for an appropriate 2-story addition. This would create approximately 6000 square foot addition of office, training and secure storage space.
- Waste Management Center – This project would provide a new Waste Management Laboratory integrated with the campus resource recovery (recycling) center on the north end of campus. The proposed lab would feature a wastewater pilot plant, a composting lab, a microbiology lab and integrated resource recovery materials handling center.
- Maintenance and Material Building Remodeling and Addition – An expansion and internal remodeling is needed for the Maintenance and Material building to meet the organizational, safety, and space needs.

**Anticipated year: 2007 – 2009**

- Planning for South Campus Aging Buildings Project - Because of the age of Nelson Hall, Delzell Hall, and Park Student Services, a combined response to all three buildings with a single capital renewal and addition to the Student Services Center is considered to be most appropriate.
- 1 to 2 lot Residential Halls suite style housing – The project will involve the development of new residential halls.
- Sport and Recreation field restrooms, storage, and vending facilities – this would include new buildings along the recreation field for restrooms, storage and vending facilities.

**Anticipated year: 2009 – 2011**

- South Campus Aging Buildings Project – The project will follow the space assignment and remodeling recommendations of a still developing South Campus Space Needs Assessment targeting space and capital renewal needs in Park Students Services Building.
- Academic and Office Buildings – this would include the addition of new academic and office buildings on campus. Locations have not been determined at this time.
- Schmeekle Visitor’s Center replacement – This will project a complete reconstruction of the current Visitor’s Center.

Refer to Appendix B for the University of Wisconsin – Stevens Point Campus Physical Development Plan.

## **5.2 Utility Improvements**

The system of utilities on the UWSP includes heating/cooling/ventilation, electrical, water and sewer and telecommunications infrastructure. 1151 feet of ducted concrete and 1509 feet of direct buried steam distribution pipe are scheduled for replacement in 2005. Additional components to the campus chillers were made along with the Fine Arts Addition project and will be installed for full use by spring 2005. The heating plant requires regular maintenance, equipment and replacement and technology upgrades to meet the needs of the University. Upgrades to the campus fiber optic lines have been completed in phases beginning in 1993. Future upgrades to the fiber optic lines are required to meet the campus needs. Other utility extensions from existing utilities to service new buildings or building expansions will be required, no new utilities are planned.

## **5.3 Storm Sewer System Improvements**

The University of Stevens Point currently has no authority over the storm sewer network because it is owned and maintained by the City of Stevens Point. It is understood that the City of Stevens Point will be improving utilities along Reserve Street to connect to the 15" storm serving the University. This has been a problem in the past where the 15" storm coming off campus connect to 12" city storm as shown in Figure 3-14. This improvement will alleviate any back up problems that occurred in the past.

## **5.4 Offsite Stormwater**

All of the campus drains to the City storm sewer system. There are no known off-site developments at this time that would affect the stormwater drainage through campus. Any future development that should occur upstream from the University and discharges into the Moses creek system should be in compliance with it's own WPDES permit if over 1 acre.

## **6.0 Anticipated Stormwater Management Efforts**

### **6.1 NR 116 – Wisconsin’s Floodplain Management Program**

The University of Wisconsin-Stevens Point is located just outside the Wisconsin’s Flood Plain Zone A2, B, and C. According to National Flood Insurance Program’s Flood Insurance Rate Map (FIRM), each zone is described as:

<b>Zone</b>	<b>Description</b>
A2	- Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
B	- Areas between limits of the 100-year flood elevations and flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood.
C	- Areas of minimal flooding.

This general area from the campus is located directly west-southwest of the campus. If any future land acquisition are planned for future development and is located with these zone designations, constructions procedures will have to be in accordance with NR 116. If any new buildings constructed in these areas, all buildings should be at least two (2) feet above the based flood elevation at the adjacent floodplain elevation shown on the FIRM. Also, fill should extend 15’ away from the building at a minimum of one (1) foot above the base flood elevation. The FIRM map can be found in Appendix A.

### **6.2 Requirements for the Current State of Campus**

It is required that the University of Wisconsin – Stevens Point obtain a WPDES permit under WDNR code NR 216. This permit is titled “General Permit to Discharge Under the Wisconsin Pollutant Discharge Elimination System,” and a copy can be found in Appendix C. In order to comply with NR 216, two stages of requirements must be met. Prior to March 10, 2008 a 20% reduction in TSS in stormwater runoff must be achieved. Also within 18 months to 24 months of the start date of the permit several goals must be met regarding the implementation of public education and illicit discharge programs. The second stage must be implemented prior to March 10, 2013. The requirements for this stage include a 40% reduction in TSS. The following sections will provide guidance of what actions should be taken to fulfill the needed WPDES permit requirements.

### **6.3 Public Education and Outreach**

There are two reasons why public education and outreach is necessary. Once you have educated and informed the community for the reasons behind the stormwater management practices, they normally offer greater support for the program as the public gains understanding of the reasons why it is necessary and important. Public support is

particularly beneficial when operators of small MS4's attempt to institute new funding initiatives for the program or seek volunteers to help implement the program. Secondly once public is educated, there is normally a greater compliance with the program as the public becomes aware of the personal responsibilities expected of them and others in the community, including the individual actions they can take to protect or improve the quality of area waters.

To satisfy the minimum control measures, the operator of a regulated small MS4 needs to:

- Implement a public education program to distribute educational materials to the community, or conduct equivalent outreach activities about the impacts of storm water discharges on local waterbodies and the steps that can be taken to reduce storm water pollution.
- Determine the appropriate best management practices (BMP's) and measurable goals for this minimum control measure. Some program implementation approaches, BMP's (i.e., the program actions/activities), and measurable goals are suggested below.

There are three main action areas of importance stated by the EPA for a successful implementation of a public education and outreach program:

- Forming Partnerships: Operators of regulated small MS4s are encouraged to enter into partnerships with other governmental entities to fulfill this minimum control measure's requirements. It is normally more cost effective to partner with an already existing program or work jointly with many groups to form a regional or statewide plan. You can also work with non-government groups, since many private organizations (i.e., environmental, civic, an industrial organizations) already have educational materials and perform outreach activities.
- Using Educational Materials and Strategies: Operators of regulated small MS4s may use storm water educational information provided by their State, Tribe, EPA Region, or environmental, public interest, or trade organizations instead of developing their own materials. Operators should strive to make their materials and activities relevant to local situations and issues, and incorporate a variety of strategies to ensure maximum coverage. Some examples include:
  - Brochures or fact sheets
  - Recreational guides
  - Alternative information sources (bumper stickers, refrigerator magnets, etc.)
  - Library or educational materials
  - Volunteer citizen educators to staff a public education task force
  - Event participation with educational displays at home shows or community festivals
  - Educational programs for school-age children

- Storm drain stenciling on storm drains
- Tributary signage to increase public awareness of local water resources
- Reaching Diverse Audiences: The public education program should use a mix of appropriate local strategies to address the viewpoints and concerns of a variety of audiences and communities. Directing materials or outreach programs toward specific student bodies likely to have significant storm water impacts.

Goals are required for each minimum control measure, and are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMP's, should reflect the needs and characteristics of the operator and the area served by the it small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measures.

Currently the University has no public education and outreach program in place. Because of the unique nature of a university and their educational system, they are presented with multiple options. They could create classes around stormwater management, post signs saying where the water for every inlet goes, hand out flyers to the students in packets during specific times of the year (earth day for example), or they could hold public forums concerning the issue. Since the University is a place of learning and forward thinking there is the opportunity to confront the issues of stormwater on the ground floor, before the students gain habits and opinions associated with stormwater prevention practices. They could help instill in students a sense of duty and vigilance concerning these issues, ultimately creating a means of prevention on the micro scale (home dwelling) instead of on the macro scale (city/village wide).

Attached in the appendix you will multiple options for instituting an education program along with pamphlets and signage ideas

#### **6.4 Public Involvement and Participation**

The best way to handle common notification and recruitment challenges is to know the audience and think creatively about how to gain its attention and interest. Traditional methods of soliciting public input are not always successful in generating interest, and subsequent involvement, in all sectors of the community. For example, municipalities often rely solely on advertising in local newspapers to announce public meetings and other opportunities for public involvement. Since there may be large sectors of the population who do not read the local press, the audience reached may be limited. Therefore, alternative advertising methods should be used whenever possible, including radio or television spots, postings at bus stops, announcements in campus newsletters, announcements at civic organization meetings, distribution of flyers, mass campus mailings, door-to-door visits, telephone notifications, and multilingual announcements. These efforts, of course, are tied closely to the efforts for the public education and outreach minimum control measure.

The goal is to involve a diverse cross-section of people who can offer a multitude of concerns, ideas, and connections during the program development process.



There are a variety of BMP practices that could be incorporated into a public participation and involvement program, such as:

- Public meetings/student panels allow students to discuss various viewpoints and provide input concerning appropriate storm water management policies and BMP's;
- Volunteer water quality monitoring gives students firsthand knowledge of the quality of local water bodies and provides a cost-effective means of collecting water quality data;
- Volunteer educators/speakers who can conduct workshops, encourage public participation, and staff special events;
- Storm drain stenciling is an important and simple activity that concerned students can do;
- Community clean-ups along local waterways, beaches, and around storm drains;
- Student watch groups can aid local enforcement authorities in the identification of polluters; and
- "Adopt a Storm Drain" programs encourage individuals or groups to keep storm drains free of debris and to monitor what is entering local waterways through storm drains.

Goals are required for each minimum control measure, and are intended to gauge permit compliance and program effectiveness. The measurable goals, as well as the BMP's, should reflect the needs and characteristics of the operator and the area served by the small MS4. Furthermore, they should be chosen using an integrated approach that fully addresses the requirements and intent of the minimum control measures.

By involving all of the student activity groups on campus, UW-Stevens Point will meet the EPA's requirements to have a diverse and active council. Because of the numerous student activity groups on campus, there already is the groundwork for a diverse student council concerning stormwater management. If UW-STEVEN'S POINT could approach the student groups during the beginning of the school year you could work out a schedule for meetings and possibly a timeline for meeting the EPA's goal system.

Since most on-campus organizations already have activity groups UW-Stevens Point should try to incorporate these groups into your public involvement and participation activity plan. By incorporating these groups, UW-Stevens Point already has an established and involved student body that will help spread the stormwater plan to other students helping the University reach its goals faster and more successfully.

## **6.5 Illicit Discharge Detection and Elimination**

The University will need to conduct initial field screening at all major outfalls during dry weather periods. Field screening will need to be documented. Documentation should include both visual observations and field analysis.

- Visual observations include color, odor, turbidity, oil screen or surface scum, flow rate and any other relevant observations regarding the potential presence of non-storm water discharges or illegal dumping.
- Field analysis should include sampling for pH, total chlorine, total copper, total phenol and detergents. The University can modify the sampling analysis based on potential contaminants with prior approval of the WDNR.

An on-going dry weather field-screening program for all outfalls needs to be established. Outfalls that will be evaluated on an on-going basis and the field screen frequency will need to be identified in a field screening program, which is to be submitted to the WDNR.

The University should develop procedures for responding to known or suspected illicit discharges. These procedures need to include:

- Investigating portions of the MS4 that, based on field screening or other information, indicate a reasonable potential for containing illicit discharges.
- Preventing, containing, and responding to reports of spills that may discharge into the MS4.
- Notifying the WDNR in accordance with NR 706, Wis. Adm. Code, in the event the University identifies a spill or release of a hazardous substance, which results in the discharge of pollutants into waters of the state.
- Eliminating detected leakage from sanitary conveyance systems to the MS4.
- Eliminating illicit connections or discharges to the MS4 following detection.

As part of the public education and outreach program the University should inform University employees, facility, students, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

An annual report documenting the status of implementing the permit requirements and compliance with the permit schedules, including the illicit discharge program, is required. Documentation for the illicit discharge portion of the report should include: the number and nature of inspections and enforcement actions; results of field screening; and follow-up corrective actions or enforcement actions taken as a result of field screening findings or complaints. The University, interest groups, and the general public should be encouraged to review and comment on the annual report.

## **6.6 Construction Site Pollutant Control**

To be in compliance with the WPDES Permit the UW - Stevens Point will be required to develop, implement and enforce a program to reduce the discharge of sediment and construction materials from construction sites. This will be an adopted erosion and sediment control plan approved by the DNR. Items that need to be included in this plan pertain to and must include:

- Applies to all construction sites greater than one (1) acre; or a site less than one (1) acre if is a part of a larger common plan of development

- Does not apply to construction sites that are listed under s.NR 216.42(2) to (11), Wis. Adm. Code, except that it shall apply to construction sites listed under NR 216.42(4) and (9) where erosion control authority has been delegated to the permittee by the Wis. Dept. of Commerce.
- Erosion and Sediment Control criteria, standards and specifications approved by the DNR.
- Construction site performance standards equivalent to or more restrictive than those of in NR 151.11 and NR 151.23, Wis. Adm. Code.
- Erosion and sediment control plan requirements for landowners of construction sites equivalent to those in NR 216.46, Wis. Adm. Code.
- Inspection and enforcement authority.
  - Procedures for inspection and enforcement of erosion and sediment control shall establish:
    - Department or staff responsible for inspections and enforcement
    - Construction Site inspection frequency
    - Enforcement techniques that will be used
- Requirements for construction site operator to manage waste such as discarded building materials, concrete truck washout, chemicals, litter and sanitary waste at the construction site

Because UW- Stevens Point's construction is managed by the state's Department of Administration, some form of agreement/understanding may have to be developed to address the construction activity and who will have authority to enforce the requirements.

## **6.7 Post-Construction Storm Water Management**

According to the WPDES, UW-Stevens Point will need to develop, implement, and enforce a program to require control of the quality of discharges from areas of new development and redevelopment, after construction is complete. This plan applies to and shall establish measurable goals such as:

- Applies to construction sites with one acre or more of land disturbance, and sites less than one acre if they are part of a larger common plan of development or sale under the jurisdiction of the permittee.
- Design criteria, standards and specifications equivalent to technical standards or the Wisconsin Storm Water Manual approved by the DNR. Note: The DNR technical standards take precedence over the Wisconsin Storm Water Manual.

The standards are available at  
<http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm>

- Post-construction performance standards equivalent to or more restrictive than those in NR 151.12 and NR 151.24, Wis Adm. Code.
- Long-term maintenance requirements for landowners and other persons responsible for long-term maintenance of post construction storm water control measures.
- Inspection and enforcement authority
- Procedures that will be used to ensure the long-term maintenance of stormwater management facilities.

## **6.8 Pollution Prevention**

The University will need to develop and implement a pollution prevention program that establishes measurable goal for pollution prevention. To meet the permits requirements, this plan shall include:

- Routine inspections and maintenance of University owned or operated structural storm water management facilities to maintain their pollutant removal efficiency. The following recommendation could be implemented:
  - Create an inspection schedule for all structural BMPs. An example schedule would be as follows:
    - Spring – Inspect all stormwater facilities for structural damage, sediment accumulation, etc. Perform any needed maintenance
    - Fall – Perform Annual Maintenance that is needed on BMPs. A maintenance plan should be created for each BMP. As maintenance is performed also perform an Inspection.
    - After 10-yr Storm Event (4.0 inches of Rain) – Perform an Inspection to ensure the BMP has not been damaged and is functioning properly
  - There should be an inspection form that can be used to document the inspection of all BMPs and any maintenance that is required. An example inspection form can be found in Appendix N.
  -
- Routine street sweeping and cleaning of catch basins with sumps.
  - The campus currently does not perform any street sweeping. In order to be effective, street sweeping must occur along roads with a curb and gutter drainage system. Thus, street sweeping would not be needed on

the roads throughout campus without curb and gutter. Currently, UW-Stevens Point hires the City of Stevens Point to do all the street sweeping.

- Proper disposal of street sweeping and catch basin cleaning waste.
  - It is the directive of the WDNR that street sweeping and catch basin waste should be disposed of in a landfill.
- If road salt or other deicers are applied, no more shall be applied than necessary to maintain public safety.
  - The Wisconsin DOT has published guidelines for the application of deicers to roadways. It is recommended that UW-Stevens Point follows these guidelines in the creation of a deicer management plan.
- Proper Management of leaves and grass clippings, which may include on-site beneficial reuse as opposed to collection.
  - UW-Stevens Point currently has a program for using leaves and grass clipping for mulch and is re-applied back on campus grounds.
- Stormwater pollution prevention planning for municipal garages, storage areas, and other sources of stormwater pollution from municipal (University) facilities.
  - UW - Stevens Point already has a pollution prevention plan and training program. This program is located in Appendix M.
- Application of lawn and garden fertilizers on municipally controlled properties, with pervious surfaces over 5 acres each, in accordance with a site-specific nutrient application schedule based on appropriate soil tests.
  - The UW-Stevens Point campus needs to generate a fertilizer and pesticide application plan/schedule for areas larger than 5 acres. The plan should be based on soil tests and the types of plants present.
  - It is recommended that if fertilizers and pesticides are used widespread across campus that a plan, which breaks the campus into two sections, be generated.
    - Due to the make up and nature of golf course management, this area should have a separate fertilizer and pesticide plan from the rest of campus.
- Education of appropriate municipal and other personnel involved in implementing this program.
  - It is required that staff members be educated about the pollution prevention plans put in place. It is recommended that an information sheet regarding important components of the plan be distributed to personnel working in the affected jobs. For instance, people involved in the groundskeeping duties should be given information regarding the fertilizer and pesticide plans.

- A brief meeting should also be held with affected employees to inform them of the plan and its components, and how this pertains to their jobs. Any questions can also then be answered.
- Measures to reduce municipal sources of stormwater contamination within source water protection areas.
  - Because of this, measures should be taken to prevent and reduce stormwater pollution generated by municipally owned properties.
  - Measures that could be taken include the installation of BMPs at municipal facilities to treat stormwater runoff.
  - Other strategies could be to reduce the exposure of pollutant sources from stormwater – for instance covering fueling areas and preventing their exposure to rain.

UW-Stevens Point currently practices many pollution prevention techniques such as spill prevention, street sweeping, road salt storage and applications, and leave and grass clipping management. These current practices can be implemented into this plan along with other required practices required set forth in Section 2.6 of the WPDES Permit.

## **6.9 Storm Water Quality Management**

It is required that the University of Wisconsin – Stevens Point reduce the amount of TSS coming off of the campus by 20% before March 10, 2008 and 40% before March 10, 2013. In order to accomplish this goal it is likely that additional BMPs will need to be installed on the campus. To determine the extent of additional stormwater practices needed a level of additional modeling, planning, and design will have to be completed. The following sections describe the additional effort that will be needed to meet the 20% and 40% reduction goals.

### ***Modeling***

The 20% and 40% TSS reductions are determined using water quality modeling software. The water quality modeling software determines the average annual load of TSS that is created and runs off of the area being modeled, in this case the UW-Stevens Point campus. At the current time there are two modeling programs accepted by the WDNR, they are WinSLAMM and P8. Equivalent software may be used but it must be approved by the WDNR. SLAMM is an acronym for “Sediment Loading and Management Model” and P8 stands for “Program for Predicting Polluting Particle Passage thru Pits, Puddles, & Ponds”. WinSLAMM runs in Windows and is commercially available from PV & Associates <http://www.winslamm.com/>. WinSLAMM is regularly updated including the latest version 9.2.1 updated January 2006. P8 is a DOS based program and is available free online at <http://www.walker.net/p8/>. P8 is currently undergoing an upgrade to become a windows program, however it is not known when the upgrade will be completed.

To use each model it is necessary to enter information pertaining to the UW-Stevens Point campus into the model. Model parameters that must be inputted include a series

of data files general to all uses of the model. These data files include a rainfall file that contains local rainfall information for a typical year, a pollutant distribution file, a runoff file, a particulate solids concentration file, a particulate residue file, and a street delivery file. These files provide the model with information that is needed to analyze the campus' specific information that must be entered next. Campus specific information includes source areas, which is the amount of area covered by a certain land use such as sidewalk, roofs, parking, etc. Further information about the source area must be entered such as whether it is connected to storm sewer and what type of soils (sand, silt, or clay) it is placed on. Information regarding the drainage system (i.e. ditches/swales or curb and gutter/storm sewer) of the campus must also be entered.

The first scenario that must be modeled is using a "No Controls" basis. This will give a baseline from which it can be determined what amount of TSS must be removed. There are several guidelines for setting up the "No Controls" model. This first model does not account for any existing BMPs or stormwater management practices. It assumes a storm sewer drainage system with curb and gutter on all roads. To complete the "No Controls" model a Standard Land Use file as created by the United States Geological Survey (USGS) can be used. These files were created for various types of land uses and makes assumptions for all areas based on field surveys done in Milwaukee, Wisconsin and can be found at <http://wi.water.usgs.gov/slamm/>. It is recommended that UW-Stevens Point does not rely on a Standard Land Use file for their model. There are no Standard Land Use files that have already been created that would accurately model the campus. Also due to the relatively small area of the UW-Stevens Point campus allows it to be more accurately modeled by entering actual campus information into the model.

Without using Standard Land Use files, actual information regarding the various land uses on campus will need to be entered. It would also be beneficial to breakdown the campus down and model each drainage area separately. This will allow for analysis to see where the largest sediment producing areas of campus are. There should be a drainage area for each outfall. The model will give an output, which is the average annual load, in pounds, of TSS that comes from the UW-Stevens Point campus. The annual load for each drainage area can be added together to get the total output for the entire campus.

The second scenario to be modeled is the "With Controls" model. For this case information regarding *EXISTING STORMWATER PRACTICES and BMPs* is entered into the model. Information from the UW-Stevens Point campus that would be included in the model is the design information for the rain gardens, and any drainage swales used to convey runoff on the campus. This should again be modeled on a drainage area basis. A second average annual load of TSS will be determined from this model. The amount from the "With Controls" model will reflect the theoretical amount that is actually leaving the UW-Stevens Point campus. This amount can be compared to the "No Controls" average annual load to determine the current percent reduction from the existing control practices.

From this percent reduction that currently exists it can be determined what extent of additional stormwater BMPs need to be constructed. To plan and size the BMPs that will be installed, the modeling software used previously can be used. Based upon the soil types exhibited in the SCS Soil Survey Map for Portage County, majority of the soils characterize sufficient infiltration rates which will reduce the runoff volume. Modeling will have to complete first to determine how close the 20% and 40% requirement the University as currently at. From there, planning for new BMP's can be completed to meet the requirements.

### **6.10 Storm Sewer Network Map**

It is required that each MS4 must develop and maintain a map showing all receiving water and any classifications of those waters, any known threatened or endangered species, wetlands, and historical properties that may be affected, identification of all known outfalls, location of any known discharges into the MS4 that hold its own WPDES permit, location of any storm sewer, stormwater management practices, and publicly owned parks, recreational areas, and other open lands, and University owned garages, storage areas, and public works facilities, and the identification of streets.

### **6.11 Annual Report**

The WDNR requires that an annual report must be filed that updates the progress of program implementation under the regulations of the WPDES permit. The report does not need to be filed after the first calendar year of the permit. However, the report should be submitted by March 31<sup>st</sup> of each subsequent year.



## 6.12 Compliance Schedule

The following is a schedule that states the due date for activities required under the WPDES permit. All time lengths start from the date on which the permit is issued.

Permit Condition	Activity	Time from Permit Issuance When Action is Due To WDNR:	Activity is Implemented Within:
Public Education and Outreach	Submit Education and Outreach Program	18 months	24 months
Illicit Discharge Detection and Elimination	Submit Illicit Discharge Ordinance and Response Procedures	24 months	30 months
	Complete Initial Screening		36 months
	Submit On-going Screening	36 months	48 months
Construction Site Pollutant Control	Submit Ordinance and Enforcement Procedures	18 months	24 months
Post-Construction Storm Water Management	Submit Ordinance	18 months	24 months
	Submit Maintenance Procedures	18 months	24 months
Pollution Prevention	Submit Program	24 months	30 months
Storm Water Quality Management	Evaluation of Flood Control Structures	March 10, 2008 or Within 24 months	
	TSS Reduction Compliance	March 10, 2008 or Within 24 months	
Storm Sewer System Map	Storm Sewer Map	24 months	
Annual Report	Annual Report	March 31 of each year	
Reapplication for Permit	Submit Reapplication	March 31, 2009	

Table 6-1 - Schedule for Compliance with WPDES Permit

## 7.0 Best Management Practices for UW-Stevens Point

Best Management Practices (BMP's) are used to achieve the required performance standard for storm water runoff. Several BMP's can be used to achieve a specific goal. The main goals set forth in this plan are to reduce the Total Suspended Solids (TSS) in runoff, reduce the peak discharge, and help in maintaining groundwater quality and levels. Below is a list of several different BMP's and their uses.

Some of most popular BMP's include; infiltration basins, detention/retention ponds, biofiltration/bioretenion devices and rain gardens, underground storage systems, porous pavement, green roofs, dry ponds, swales, and proprietary devices. However, in each circumstance there are one or two BMP's that are the best fit for each site. Due to the make-up of each system some BMP's aren't suited for certain situations. The following is a list of BMP's that would provide the needed improvements in water quality. Many of them also provide water quantity improvements. Included in each description is a list of positives and negatives associated with each BMP. Costs for each type of BMP will be addressed in the section following.

### Planning

Not all BMP's are recommended for the UW - Stevens Point based on the soil type and amount of available space. When planning for future BMP's that will reduce runoff and

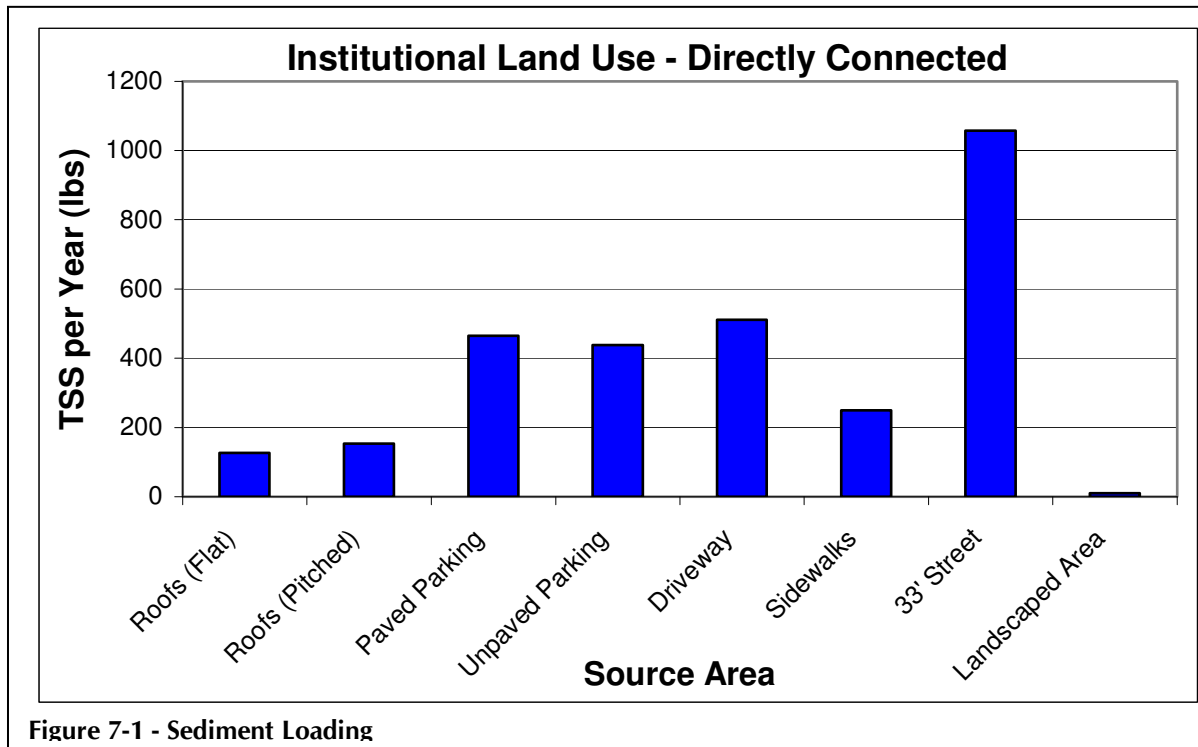


Figure 7-1 - Sediment Loading

prevent pollution, a close look at the existing problem areas and the areas of future development need to be closely studied to determine what would be the most beneficial BMP. Figure 7-1 illustrated the land use that produces the most sediment. If

such areas are closely studied, sign applications to so specific area can be very beneficial. For example, more sediment would be reduce if a biofilter were constructed off an existing parking lot rather than from a roof. The charts show more sediment being produced from a parking lot then from a roof so more emphasis should be given to the parking lot areas. The following sections of this report will outline stormwater planning recommendations made for the UW-Stevens Point campus. They will give a format that will allow the campus to become compliant with the 20% and 40% sediment reduction requirements as well as to handle stormwater management for future growth and development on the campus. However, when future projects occur there will need to be an additional level of planning and design so that all stormwater features are placed and sized properly.

Due to the layout of the UW-Stevens Point campus there are a few BMPs that may fit into the campus's development. Below is a list of appropriate BMP's and the pro's and con's for each BMP.

**Infiltration basins** and/or trenches are a BMP that will likely be practical if space is available. This is due to the fact that they depend on the soils above which they are located to allow stormwater to flow (infiltrate) into the ground. The UW-Stevens Point campus is located on an area that contains soils that have a high infiltration rates.

**Positives**

- Prevents flooding
- Reduces peak flows by decreasing runoff volume
- Recharges groundwater

**Negatives**

- High failure rate
- Construction sequencing very important for proper future performance
- Takes up valuable space

If space permits for an infiltration basin, this BMP will reduce the volume of water entering the City storm sewer and recharge the groundwater. Groundwater levels must be determined first to prevent groundwater contamination if too shallow and groundwater mounding. Runoff needs to be pretreated before entering the infiltration basin. The main concern for infiltration basin is the high risk of failure. If not construction properly, voids within the soil can be compacted and/or plugged resulting in a failure of the system.

**Dry Detention ponds** can be used as a BMP for the UW-Stevens Point campus for area of concerns for flooding and can slowly release the water back into the storm sewer system. A Dry pond is a pond that does not permanently hold water, runoff is detained in



**Figure 7-2 - Dry Pond**  
Source: [www.altamonte.org](http://www.altamonte.org)

the pond during a rain event and is then released through a permanent outlet designed to reduce the flows at or below a specific discharge.

### **Positives**

- Prevents flooding
- Reduces peak flows

### **Negatives**

- Can only be used for peak flow reduction
- Take up valuable space
- Maintenance of outlet structures need to be conducted

Dry ponds function for flow control only ( rate and volume). They can not be used to provide water quality treatment (TSS reduction). Dry ponds also require a significant area, which may be better served with a different BMP depending on the specific goal of that BMP.

An **underground storage system** is essentially a wet or dry pond placed underground. This can be accomplished using a network of connected pipes or clear stone lined with a geotextile fabric to account for the required storage area. Since UW-Stevens Point has sandy soils, runoff will be required to be pretreated before entering the system and infiltrating into the existing soils.



**Figure 7-3 - Underground Storage System**

Source:

[www.ent.ohiou.edu/~stormbmp/index.htm](http://www.ent.ohiou.edu/~stormbmp/index.htm)

### **Positives**

- For space limited areas. Doesn't take up surface space

### **Negatives**

- Only accounts for volume and flow control and not water quality.
- Requires pretreatment

**Wet ponds** have a permanent pool of water and are used to both control the peak flow rate of stormwater as well as provide for water quality improvements. Water is captured in the pond and released at a slower rate. While the water is being detained in the pond, the suspended solids in the stormwater runoff are allowed to settle out.

### **Positives**

- Provide a High Rate of TSS Removal
- Reduce the Peak Flow Rate of Runoff
- Can be Created in a Natural, Park-like Setting
- Little Maintenance Required

### **Negatives**

- Can Attract Nuisance Wildlife (geese, ducks, etc)

- Require Significant Space – About 2% of Drainage Area for 80% TSS Reduction
- Safety Concerns (Can be Avoided with Proper Design)

### ***Biofiltration/Bioretention Areas and Rain Gardens***

Biofiltration, also called bioretention or biofiltration devices, and rain gardens, is a surface depression that collects stormwater and utilizes an engineered soil layer and vegetation to treat stormwater. In areas with soils that allow it, a bioretention area promotes infiltration into the soil beneath the system. Biofiltration systems are constructed where infiltration capacity is limited and is only being used to remove sediment. For all applications, in events where the rate of runoff is higher than the infiltration capacity, runoff is collected through an underdrain system that carries the water to a safe outlet.



**Figure 7-4 - Rain Garden**  
Source: [www.madison.k12.wi.us/springharbor](http://www.madison.k12.wi.us/springharbor)

#### **Positives**

- Provide for Landscaping Opportunities
- High TSS Removal Rate – 90% TSS Reduction in Runoff that Travels Through Engineered Soil Layer

#### **Negatives**

- Require Significant Maintenance
- Only Support Small Drainage Areas (< 2 acres)
- Have not been Studied Over Long Time Periods - Lifetime is Not Known

In more detailed planning it will be necessary to design and size the biofiltration/rain garden areas throughout the parking lots. The treatment of several parking lot areas will help significantly in achieving the 40% TSS removal goal, parking lots generate a large amount of sediment when compared to other source areas present on campus. Since the parking lots already have a storm sewer system in place this storm sewer can be used as an outlet for overflow and underdrain collection systems in the biofilters and rain gardens. A practical schedule for implementation of parking lot biofiltration would be as parking lots are scheduled for repaving, expansion, or reconfiguration. It should be planned as to when a parking lot will be repaved and during this time it should be retrofitted with biofiltration areas.

### **Porous Pavements**

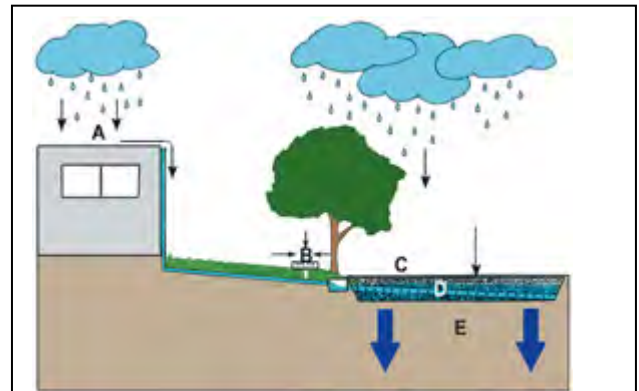
Porous pavements is a pavement design that includes a cementitious or asphaltic mix of stone with limited fines followed by a layer of clear stone separated by a geotextile layer between the clear stone and the native soils. The clear stone layer acts like a storage area for the runoff until it is infiltrated or released slowly from an outlet.

#### **Positives**

- Reduce Peak Flow and Runoff Volume
- No Land Required to Construct
- Reduction in TSS
- Reduces areas for potential erosion problems
- Reduces Storm Sewer required
- Eliminates need for curb and gutter and inlets
- Maintain natural drainage pattern
- Reduces ponding in parking lots
- Better ground water recharge

#### **Negatives**

- Increased Construction Cost for pavement
- Can't be used where high ground water table
- Increased Maintenance
- Not suitable for heavy traffic



**Figure 7-5 - Porous Pavement Application**  
Source: Wisconsin Asphalt Pavement Assoc.



**Figure 7-6 - Porous Pavement Application**  
Source: Wisconsin Asphalt Pavement Assoc.



**Figure 7-8 - Green Roof**  
Source – UW- Stevens Point

### **Green Roofs**

Green roofs are multi-beneficial structural components that help to mitigate the effects of urbanization of water quality by filtering, absorbing or detaining rainfall. They are constructed of a lightweight soil media, underlain by a drainage layer, and a high quality impermeable membrane that



**Figure 7-7 - Green Roof being constructed at UWSP**  
Source: UW – Stevens Point

protects the building structure. The soil is planted with a specialized mix of plants that can thrive in the harsh, dry, high temperature condition of the roof and tolerate short periods of inundation from storm events. When a rain event occurs much of the precipitation is collected and used by the plants, which reduces the runoff volume and the peak flow. While roofs are not a large producer of TSS, there is no TSS or pollutants produced by a green roof.

### **Positives**

- Reduce Peak Flow and Runoff Volume
- No Land Required to Construct
- Reduction in TSS
- Protect Conventional Roof and Increase Life of Roof

### **Negatives**

- Increased Construction Cost of Building

### ***Swales***

A swale is essentially a drainage ditch that provides a flat bottom to promote stormwater infiltration. The biggest limiting factor in the effectiveness of a swale is the soil below the swale and the capability of that soil to infiltrate water. As previously stated previously the soils below the UW-Stevens Point campus are conducive to infiltration. Swales are an inexpensive BMP that requires a small amount of land. Using a wide flat bottom, using dense vegetation inside the channel, and using a mild slope along the direction of flow can increase the amount of infiltration created by a swale.

### **Positives**

- Cheaper Drainage System than Storm Sewer and Curb and Gutter
- Small Amount of Land Required

### **Negatives**

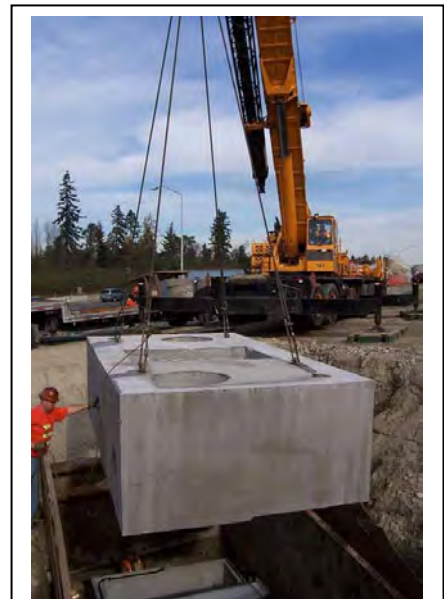
- Effectiveness is Controlled by the Soil Types
- To Gain Maximum Benefit From Swales they Need to be Used in Place of Storm Sewer

### ***Proprietary Devices***

Recently there has been the introduction of numerous manufactured devices that can be used to provide stormwater treatment. There are two main classes of proprietary devices; filtration systems and manhole/settling chambers. Filtration systems vary from



**Figure 7-9 - Drainage Swale**  
Source - [www.altamonte.org](http://www.altamonte.org)



**Figure 7-10 - Proprietary Device being installed**  
Source - [www.wsdot.wa.gov](http://www.wsdot.wa.gov)

inserts into catch basins that filter incoming water to screens/filters that are placed in pipes to filter the water to manhole structures that contain a series of filters. The settling chambers use either baffles walls or swirl chambers that are supposed to increase the amount of water that settles out. They are sized slightly larger than manholes.

### **Positives**

- Require Little Space

### **Negatives**

- The Water Quality Improvements are Debatable
- Do Not Provide Peak Flow Reduction
- Require Regular Maintenance
- Cost

### ***Native Vegetation***

Native Vegetation plays a large role in both stormwater quality and quantity. Because of these diverse plant species, root depths vary from 10 to 20 deeper than the common Kentucky bluegrass used in most lawns and landscapes. By using native vegetation, these roots act as capillary veins in dense soils that increase the infiltration capacity of that soil therefore reduce runoff quantity drastically. The initial installation is the most crucial for plant establishment however after the second year; these plants are virtually maintenance free.

There has not been any research known at this time to determine the amount of water these plants can absorb so at this time there is not model to use to determine sediment removal or runoff reduction they can have.

It is recommended that all biofilters and bioretention devices, rain gardens and infiltration trenches at the UW-Stevens Point be planted with a wide variety of different native plant species. The reason of a diverse variety is because some plants thrive better in dry conditions and some better in wet conditions. During dry periods of time, them specific plants will thrive and then during long wet conditions, the other plants will thrive preventing a total loss of that application. Because of the performance and maintenance of these plants they can play large role in storm water quality.

### ***BMP Cost***

There are many factors affecting the costs of different BMPs. One factor is the overall size of the BMP – cost tends to decrease per unit area as the overall size increases. Other factors that could affect the construction cost include outlet structure design, abnormal soil conditions, or specialized design specifications. The following table is meant to be a general estimate of the construction and maintenance costs for various structural BMPs that are practical on the UW-Stevens Point campus. It should be used to estimate costs for projects in the planning phase. After a detailed design of the project has occurred a more specific of opinion of cost can be obtained.



Device	Function	Cost	Maintenance Cost
Wet Pond	Peak Reduction	\$45,000 for 1 acre-ft	\$2000 each Pond
	TSS Removal	\$100000 for 3.5 acre-ft	\$3000 each Pond
Biofiltration/Rain Gardens	TSS Removal	\$10 to \$20 per sq. ft.	\$2,000 each per year
Porous Pavement	TSS Removal Peak Reduction	\$40,000 per Acre	\$1000 per year
Green Roofs	Peak Reduction	\$10 to \$30 per sq. ft.	\$1 to \$2 per sq. ft. per year
Swales	TSS Removal	\$15 to \$25 per LF	\$1 per LF per year
Proprietary Devices	TSS Removal	\$25000 for 1-acre Drainage Area – about 50% TSS Removal	\$1000 per year

**Table 7-1 - BMP Costs**

While these are cost estimates for constructing and maintaining various BMPs there should be other costs considered into the selection of a BMP. For instance, a green roof can reduce energy consumption and maintenance of the normal roof is no longer needed. Also, part of the cost of biofiltration is the cost of plants and maintenance of these plants. In many cases, biofiltration can be placed in areas that would be landscaped and need to be maintained even if the biofilter was not in that location.

***Maintenance and Inspection***

All of the BMPs listed previously will require some maintenance and regular inspections. Each BMP should be inspected in the spring and fall and after a large rain event – larger than the 10-yr storm of 4.0 inches. An inspection of a BMP consists of a visual inspection of the BMP including inlet and outlet structures, banks, vegetation, slopes, and any other components. A check for upstream and downstream erosion should also be made. A brief inspection checklist can be filled out and if any problems are noted corrective action should then be taken. A sample inspection checklist has been included in Appendix N. Maintenance of all BMPs is needed. Maintenance for all forms of BMPs includes the collection and removal of any trash or debris that has accumulated in BMPs or the outlet structures. Some BMPs such as biofiltration and proprietary devices need additional maintenance. Maintenance has been accounted into the stormwater management plan as it has been noted that budgetary constraints make regular maintenance a luxury that cannot be afforded.

**7.1 Existing Stormwater System Improvement Recommendations**

As was recommended previously additional stormwater modeling will be required to more accurately determine the amount of TSS removal that existing stormwater practices are achieving and to determine the additional level of effort that will be required to meet the 20% and 40% TSS reduction goals. It is recommended that the

campus then implement the following strategies to achieve the remaining TSS removal. It will be necessary to have an additional level of design for these facilities to allow them to be sized and designed properly.

A list of recommended practices to achieve the 20% and 40% removal goal include:

- Create Rain Gardens/Biofiltration Device off the existing parking lots and roof drains. Figure 7-12 shows Parking Lot E where the drainage is already flowing toward the street where a bioretention device could be installed. Also the island areas could be constructed as bioretention devices. This can also be done to roof, parking, and sidewalk areas throughout campus where the natural drainage flows to low areas. Figure 7-11 shows an area where concrete could be removed to create a rain garden around the existing inlet. The drainage from the large concrete area already is currently draining to this area.
- Construct vegetative swales off parking lots that routes water to



Figure 7-11 - Parking Lot E – UW-Stevens Point



Figure 7-12 - Sun Dial area at UW-Stevens Point

inlets instead of directly connecting the parking lots to storm inlets.

- Pre-treat any runoff before entering the storm sewer system with the use of vegetative buffers.
- Construct more green roofs on campus buildings

## 7.2 BMP Recommendations for New Development

With plans to the University of Wisconsin – Stevens Point is expecting to experience growth in the near future. Growth will include the construction of new parking lots, buildings, and roads. In order to best meet the stormwater management requirements for the new growth early planning is needed. It would benefit the University to combine the planning efforts for new growth into the stormwater management efforts that will be needed to meet NR 216 requirements. In order to reduce the amount of stormwater features it would be beneficial to create stormwater treatment areas that have the ability to treat stormwater from several new developments.

- Areas such as parking lots, sidewalks and roof that drain to landscape areas.
- Constructing drainage swales for new development for the football field.

For the projects listed in Table 7-1 that are redevelopment projects either biofilters, rain gardens, porous sidewalk and/or trails are recommended for stormwater quality treatment. It should be first evaluated whether any existing BMPs, such as the rain gardens, already provide treatment or can be used to provide treatment for these projects. Otherwise, it is recommended that these BMPs should be sized and used to achieve the 40% TSS removal required by the WDNR. Since the redevelopment projects are located in already developed areas of the campus a proprietary device, if acceptable, would be an ideal treatment device for these projects. Because of the high potential for infiltration based on the soil type, rain gardens, biofilters/bioretention devices, and porous pavements are ideal BMP's to reduce runoff and sediment.

Treating new development projects requires the removal of 80% of TSS as well as reducing the peak flow of the 2-yr storm according to NR 151. Because the proposed development is scattered throughout campus it may not be possible to route drainage to a detention pond. Another option would be to direct water from new development projects to existing BMPs that have adequate capacity, or can be modified, to provide the treatment needed for the new development. A series of recommendations of specific BMP placement follows in the next section.

<u>Future Development</u>	<u>Development Type</u>	<u>Anticipated Schedule</u>	<u>Required Action</u>	<u>Recommended BMP</u>
Military Science Relocation	Redevelopment	2005-2007	40% TSS Reduction	- Rain Garden - Biofiltration Device
Waste Management Center	New Development	2005-2007	- 80% TSS Reduction - Peak Flow Reduction - Infiltration	- Swales - Rain Gardens - Biofiltration Device - Dry Ponds /Infiltration Basin - Green Roof
Maintenance and Materials Building	Redevelopment	2005-2007	- 40% TSS Reduction	- Swales - Rain Gardens - Biofiltration Device
Student Services Center	Redevelopment	2007-2009	- 40% TSS Reduction	- Swales - Rain Gardens - Biofiltration Device
1 to 2 Residential Halls – suite style housing	New Development	2007-2009	- 80% TSS Reduction - Peak Flow Reduction - Infiltration	- Swales - Rain Gardens - Biofiltration Device - Dry Ponds /Infiltration Basin - Green Roof
Sport and Recreation Field restrooms, storage, and vending	New Development	2007-2009	- 80% TSS Reduction - Peak Flow Reduction - Infiltration	- Swales - Rain Gardens - Biofiltration Device - Dry Ponds /Infiltration Basin

Park Students Services Building	Redevelopment	2009-2011	- 40% TSS Reduction	- Swales - Rain Gardens - Biofiltration Device
Academic and Office Buildings	New Development	2009-2011	- 80% TSS Reduction - Peak Flow Reduction - Infiltration	- Swales - Rain Gardens - Biofiltration Device - Dry Ponds /Infiltration Basin - Green Roof
Schmeekle Visitor's Center	Redevelopment	2009-2011	- 40% TSS Reduction	- Swales - Rain Gardens - Biofiltration Device

**Table 7-2 - Recommended BMP Applications for Anticipated Development**

### 7.3 Overall Stormwater Recommendations

The following recommendations are made using the information that is available about future development plans at the time of this writing. If these plans change, the Stormwater Management Plan should also be evaluated to determine whether the recommendations made are still practical and beneficial. This plan should evolve as campus development plans evolve themselves.

- Addition of Biofiltration/Bioretention and Rain Garden Areas to Parking Lots, Sidewalks, and Roof areas; Drainage swales to route runoff to inlets instead of directly connected.
  - Goals – Treat runoff from parking lots, sidewalks and roofs throughout campus for TSS removal to help meet 20% and 40% TSS removal requirements.

Implementation Plan – As parking lots are planning for repaving include reconfiguration and installation of biofilters in the plans. Some parking lots do not need to be reconfigured in order to install biofilter or bioretention devices such as Parking Lot E.

A list of potential BMP's was included in the previous section. Those along with future developments in stormwater should be used to meet the average annual sediment removals of 20% and 40% by 2008 and 2013 respectively.

Several of the BMP's listed in Section 7.0 may not be practicable for UW-SP such as underground detention. This can be used to reduce peak flows but are generally ineffective for removing sediment. Porous pavement for parking lots requires street sweeping to remove the sediment on a regular basis.

Proprietary devices are currently being tested by the USGS and DNR to determine their ability to remove sediment in the field. The results of this testing is pending but the DNR has released some preliminary sediment removal data. The results to date have not been encouraging. For example they have been monitoring a 10' diameter Stormceptor device on a 4.3 acre site. Based on 15 summer storms, the device removed 8% of the incoming sediment. The DNR completed additional modeling

using SLAMM and found that 20, 10' diameter devices would be required to remove 40% of the sediment. At an installation cost of approximately \$10,000 each the total cost would very high. Regular maintenance is also an issue with an estimated annual maintenance cost of \$500 per year for each device.

Wet ponds require a surface area of about 1% to remove 40% of the sediment with approximately 2.5% total area for construction. Using the DNR technical standard, NR 1001 to design a wet pond requires a minimum width of 75' based on typical sideslopes, freeboard and berm widths. NR 1001 also recommends a 3:1 length to width ratio. So a typical installation might be 225' long by 75' wide. It is unlikely that a pond of this dimension could be constructed on campus given the highly developed urban areas. This type of pond cannot be easily located in landscape areas like biofiltration areas. Also, wet ponds will not work given the sandy soil and would require artificial or clay liners

Futhermore, the campus has enough green space to create less costly device to achieve the required goal as follows.

Green roofs have been proven effective for a number of situations including reducing the amount of runoff, however, sediment still needs to be removed from the residual runoff even if the volume is less requiring addition devices.

Infiltration devices are likely to work in the sandy soils indicated in section 3.4 of this report. However, infiltration devices should not be used for sediment removal, since they will clog preventing infiltration. If infiltration devices were to be used for parking lots, the water must be pre-treated before entering the system to prevent it from clogging otherwise they could be used onsite for relatively clean roof water.

Bioretention/biofiltration devices generally require a surface effective settling surface equaling 1% of the impervious area to achieve 40% sediment removal. 2% of the impervious area is required for the complete construction of biofiltration areas including associated berms. Biofiltration areas can be located immediately adjacent to buildings and parking lots with widths less than 20'. They can also be located in interior landscape islands and other small landscape areas.

Based on the three available options biofiltration for sediment removal, bioretention for infiltration, rain gardens, and infiltration areas are the most appropriate BMP's given the available space, soil types and associated cost factors. We have included a map showing potential biofiltration/bioretention areas that could be located on campus.

### ***Design & Construction***

The BMPs previously recommended will need an additional level of planning, modeling, and design. This master plan gives recommendations of placement, drainage area, and type of BMPs to use, however it does not give exact area requirements, outlet structure details, exact drainage areas, or any construction specifications. If practical, the design and construction of a BMP can be grouped with a separate construction project. such as the resurfacing and reconstruction of parking lots or when a building

expansion takes place. During the planning process of BMP implementation it is important to consider the TSS reduction requirements of 20% TSS removal by March 10, 2008 and 40% TSS removal by March 10, 2013.

### ***Project Funding***

There are several programs that have been developed to aid communities and landowners in the construction of erosion prevention and stormwater quality projects. The WDNR offers two grant programs for stormwater quality projects, they are; Targeted Runoff Management Grants and Urban Nonpoint Source and Stormwater Grant Program. Both programs provide cost sharing on projects that target the reduction in stormwater pollution. Grants are awarded based on a points ranking system that awards points to a grant application for a variety of factors including; fiscal accountability, water quality, extent of pollutant control, local support, and likelihood of project success. More information on these grants can be found in a WDNR handout found in Appendix H. Grants are available for both construction and planning projects; however, the amount of money that is available each year varies depending on the state budget. Examples of projects that have received grant funding in the past include the construction of stormwater quality ponds and stormwater quality modeling and planning.

The WDNR also has a grant program to provide fund for flood control projects. Since there is some large scale flooding concerns it is may be likely that these grants would be available for UW-Stevens Point. More information can be found on the flood control grants from the WDNR at <http://dnr.wi.gov/org/caer/cfa/EF/flood/grants.html>.

### **7.4 Associated Budgetary Costs**

The following figures show an implementation schedule and a cost estimate for becoming compliant under the WPDES General Permit. The schedule indicates when specific tasks need to be completed and when work on those tasks should be planned. The cost estimate shows costs for the implementation of the various required programs, as well as, the construction of BMPs to meet the required TSS removal rates. The costs of planned BMPs are preliminary at this time based on the anticipated campus development plan. Improved cost estimates should be provided when the additional stormwater planning and modeling is completed, and when a construction design for a BMP is completed.

## WPDES Compliance Cost Estimate

Task	2006	2007	2008	2009	2010	2011	2012	2013
<b>File NOI Permit</b>								
Completed within 90 days of Receipt	\$ 500							
<b>Public Education and Outreach</b>								
Design Program		\$ 2,000						
Implement Program			\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000
<b>Public Involvement and Participation</b>								
Design Program		\$ 2,000						
Implement Program			\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000
<b>Illicit Discharge Detection and Elimination</b>								
Create Procedures			\$ 1,000					
Implement Procedures			\$ 1,000	\$ 500				
Create Response Procedures			\$ 1,000					
Implement Response Procedures				\$ 500				
Complete Initial Field Screening				\$ 5,000				
Complete On-Going Field Screening					\$ 3,000	\$ 3,000	\$ 3,000	\$ 3,000
<b>Post Construction Stormwater Management</b>								
Maintenance of Existing BMPs								
<b>Pollution Prevention</b>								
Update/Revise Existing Program	\$ 5,000							
<b>Stormwater Quality Management</b>								
Evaluation of Flood Control Structures		\$ 5,000						
Complete Water Quality Modeling and Planning		\$ 15,000						
Construct Parking Lot and Roof Biofilters		\$ 75,000	\$ 75,000					
Construction of Infiltration Devices for future development		\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000	\$ 15,000
Constuction of Biofilter/Bioretention Device and Rain Gardens for future development		\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000	\$ 30,000
<b>Storm Sewer System Map</b>								
Prepare and Submit Map			\$ 5,000					
Annual Updates				\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000	\$ 1,000
<b>Annual Report</b>								
Prepare Annual Report			\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000
<b>Totals</b>	\$ 5,500	\$ 144,000	\$ 134,000	\$ 58,000	\$ 55,000	\$ 55,000	\$ 55,000	\$ 55,000

Table 7-3 - WPDES Cost Compliance Estimate

Task	2006												2007												2008												2009												2010												Future Date			
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
<b>Task</b>																																																																
<b>File NOI Permit</b>																																																																
Completed within 30 days of Receipt																																																																
<b>Public Education and Outreach</b>																																																																
Design Program																																																																
Implement Program																																																																
Submit Program																																																																
<b>Public Involvement and Participation</b>																																																																
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Submit Program																																																																
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<b>Stormwater Quality Management</b>																																																																
Submit Evaluation of Flood Control Structures																																																																
Complete Modeling and Planning																																																																
Design and Construct BMPs for 20% TSS Removal																																																																
Reduce 20% of TSS Produced Annually																																																																
Design and Construct BMPs for 40% TSS Removal																																																																
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Work by UW-SP Staff and/or Consultants  
 Due to WDNR  
 Implemented

Table 7-4 - Implementation Schedule



## 8.0 Conclusions and Recommendations

The main goals of this plan are to provide a guide to meet stormwater regulations for the current state of the UW-Stevens Point campus as well as the proposed growth. The regulations that will be of concern for the UW-Stevens Point campus are NR 116, NR 151, and NR 216.

NR 116 governs future development in floodplain areas. UW-Stevens Point is not currently in a floodplain zone however, if future land acquisitions occur within this boundary, development must be in compliance with NR 116.

NR 151 governs stormwater requirements for future building projects including reconstruction projects and new buildings.

NR 216 requires the UW-Stevens Point campus to obtain a WPDES permit which requires that criteria be met in six categories:

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Pollution Control
- Post-Construction Stormwater Management
- Pollution Prevention

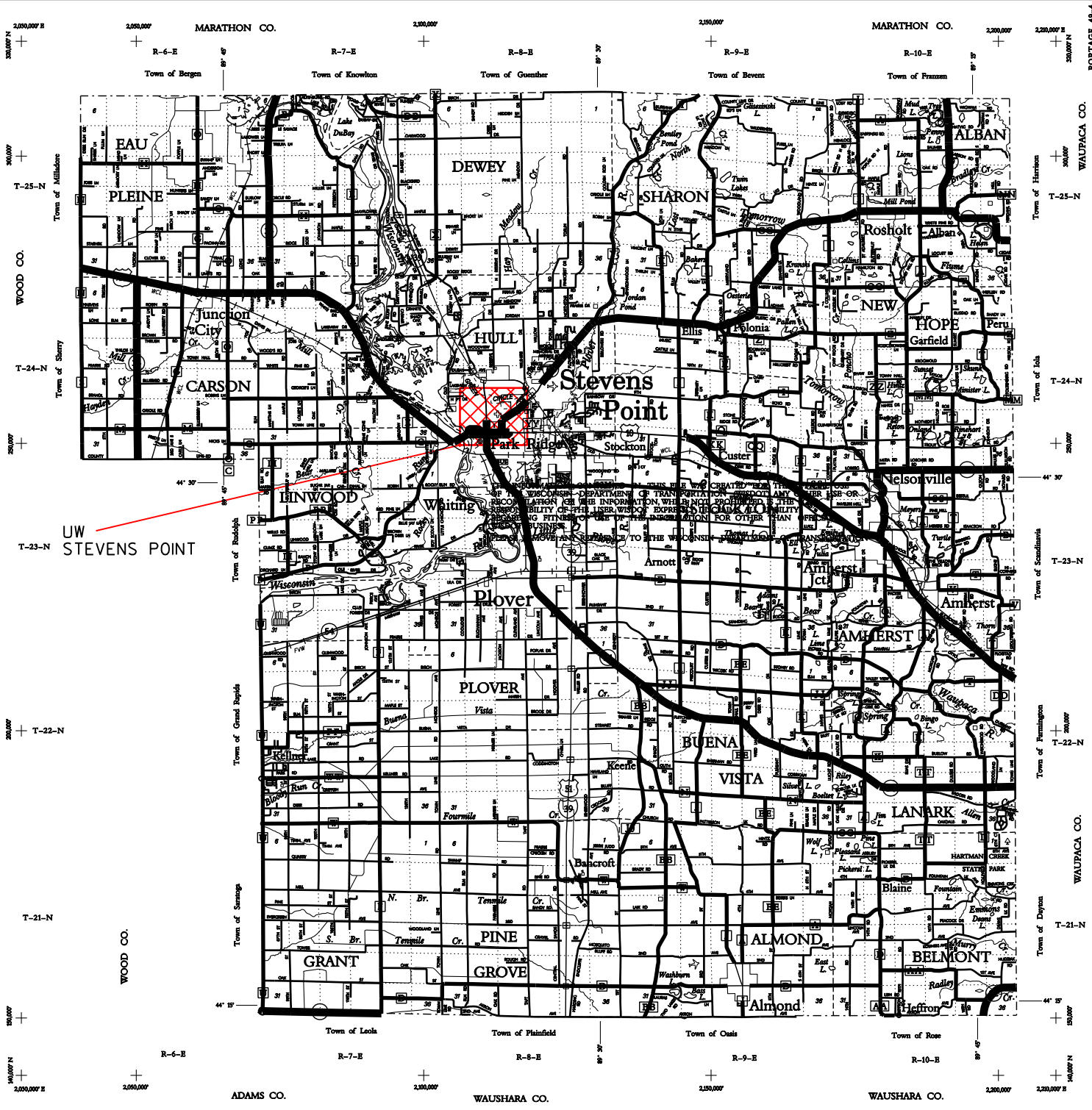
In order to meet the requirements of NR 151 new building projects will be required to have stormwater management efforts that remove TSS and in some instances reduce peak flow rates. To the above requirements it is recommended that biofilters/bioretention device, rain gardens or proprietary devices be used in close proximity to the construction project to help meet the NR 216 requirements.

In order to meet NR 216 requirements programs that incorporate public education and outreach, public involvement and participation, and illicit discharge detection and elimination will need to be implemented.

The most intensive area of NR 216 to meet will be the need to ultimately reduce the TSS runoff by 40% on an average annual basis by the year 2013. In order to meet these requirements the following recommendations have been made:

- Construction of biofilters throughout existing parking lots, sidewalk areas and roofs
- Construction of drainage swales with native vegetation to route drainage instead of having direct connections to storm sewer from impervious surfaces.

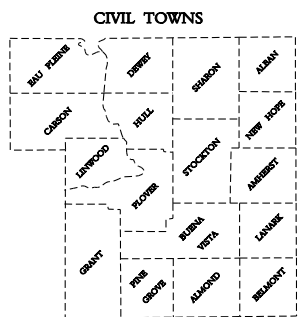
Because of the large areas of green space, the most cost effective BMPs would be biofilters/bioretention devices, rain gardens and drainage swales to treat water instead of ponds, porous pavements, and proprietary devices to meet the 20% and 40% TSS removal requirement. However, these BMP's may be a valid option for future development governed by NR 151 requirements.



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T-23-N  
STEVENS POINT

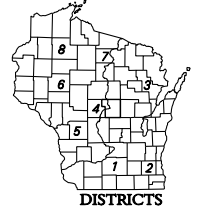
**LEGEND**

- Freeway .....
- Multiline Divided .....
- U.S. or State Hwy .....
- County Trunk Hwy .....
- Town Road .....
- Firelane .....
- Railroad .....
- State Trail .....
- Interchange .....
- Highway Separation .....
- Interstate Highway No. .....
- U.S. Highway No. .....
- State Highway No. .....
- County Highway Letter .....
- State Boundary .....
- County Boundary .....
- Civil Town Boundary .....
- Section Line .....
- Dam .....
- Hospital .....
- Schools .....
- Airport .....
- County Seat .....
- Unincorporated Village .....
- Fish Hatchery .....
- Game Farm .....
- Public Hunt. or Fish. Grds. .....
- Public Camp & Picnic Grds. .....
- Ranger Station .....
- State Park .....
- County Park .....
- Without Facilities .....
- Modern Facilities .....
- Rustic Facilities .....
- University of Wisconsin - Stevens Point .....



**SECTION NUMBERING OF A TOWNSHIP**

6	5	4	3	2	1
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36



**MILES OF HIGHWAY**  
as of Jan. 1, 1996

STATE ..... 255  
COUNTY ..... 436  
LOCAL ROADS ..... 242  
OTHER ROADS ..... 4  
TOTAL FOR COUNTY ..... 937

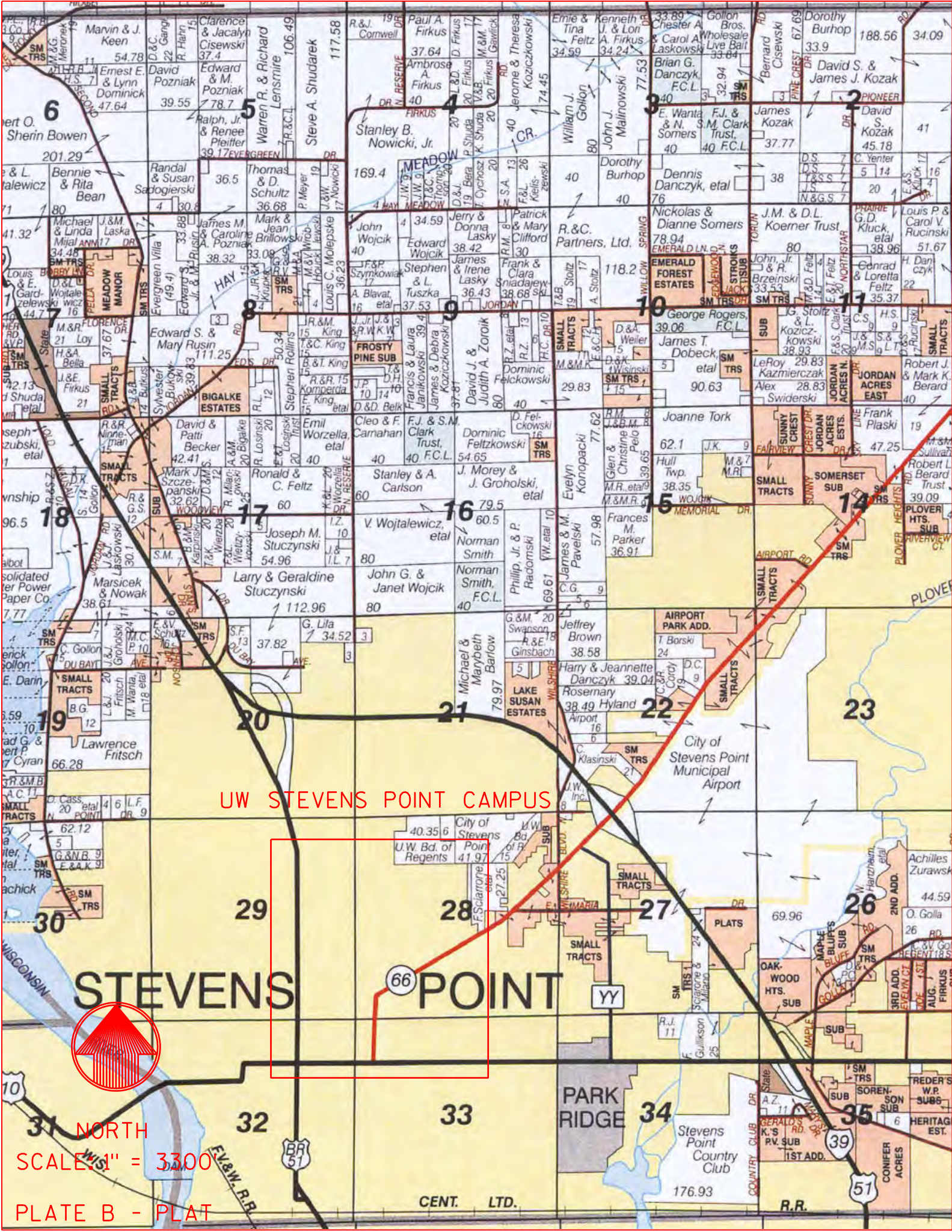
Land Area (1990 Census) ..... 856 sq. mi.  
Population (1990 Census) ..... 46,043  
County Seat ..... Stevens Point

**PORTAGE CO.**  
DEPARTMENT OF TRANSPORTATION  
STATE OFFICE BUILDING  
Madison, Wisconsin

+ Grid based on the state plane coordinate system central zone and the NAD 27  
- For boundaries of public hunting and fishing grounds please contact the Department of Natural Resources

JAN. 1999

Map compiled from U.S.G.S. Quadangles  
1:50,000 Scale



UW STEVENS POINT CAMPUS



NORTH  
SCALE: 1" = 3300'

PLATE B - PLAT

STEVENS POINT

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PARK RIDGE

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CENT. LTD.

R.R.

Stevens Point  
Country Club

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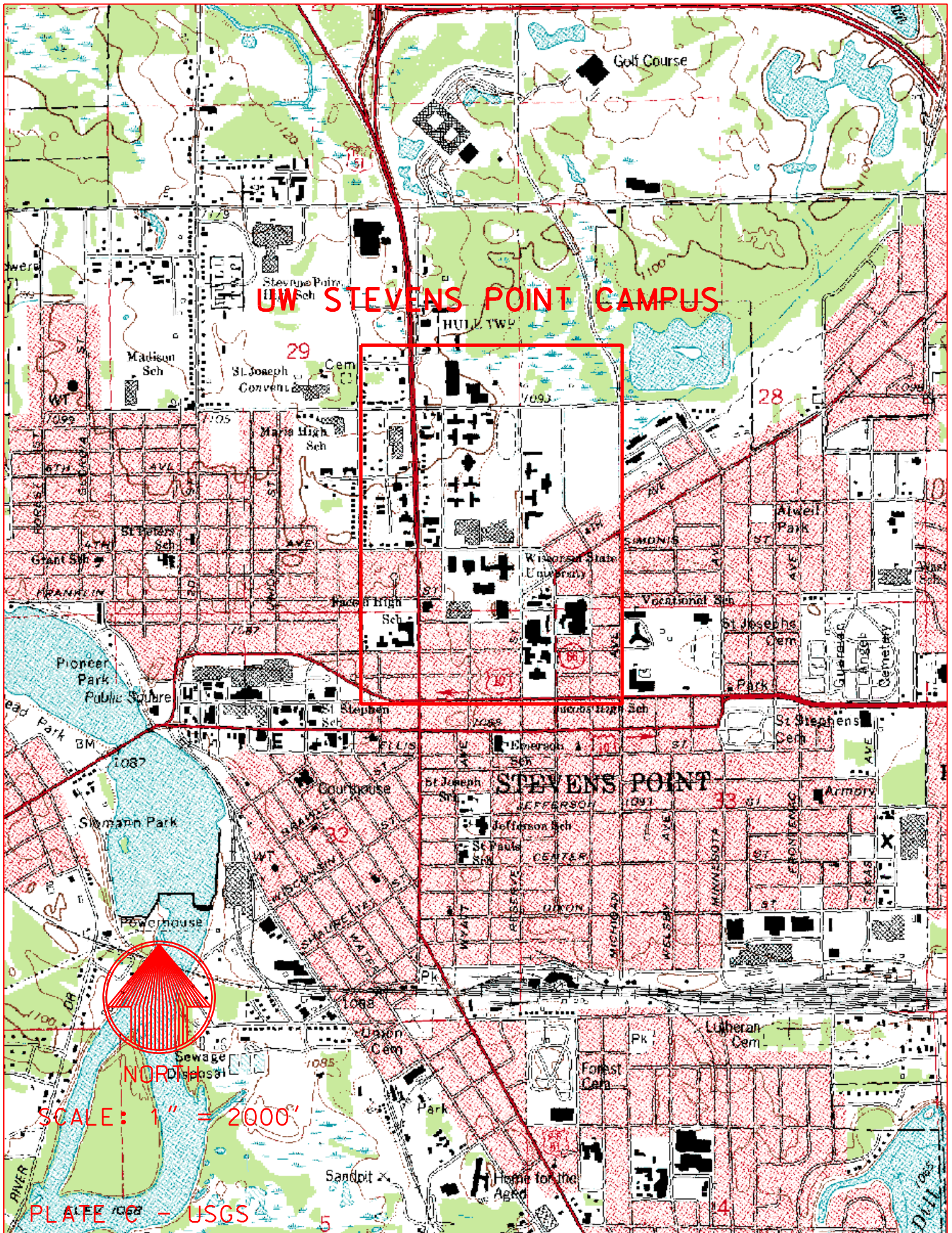
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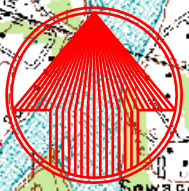
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# UW STEVENS POINT CAMPUS



NORTH

SCALE: 1" = 2000'

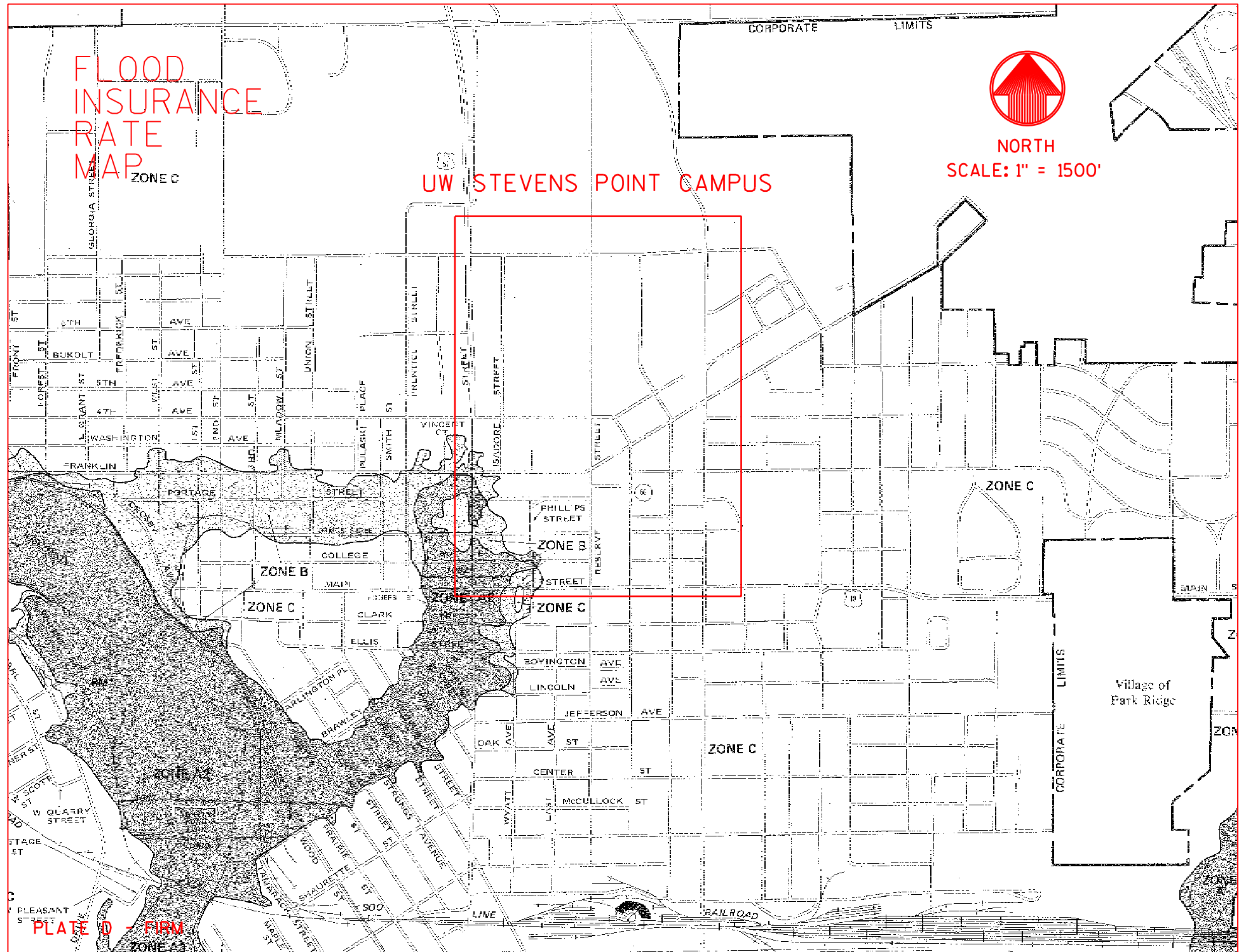
PLATE C - USGS 5

# FLOOD INSURANCE RATE MAP



NORTH  
SCALE: 1" = 1500'

UW STEVENS POINT CAMPUS





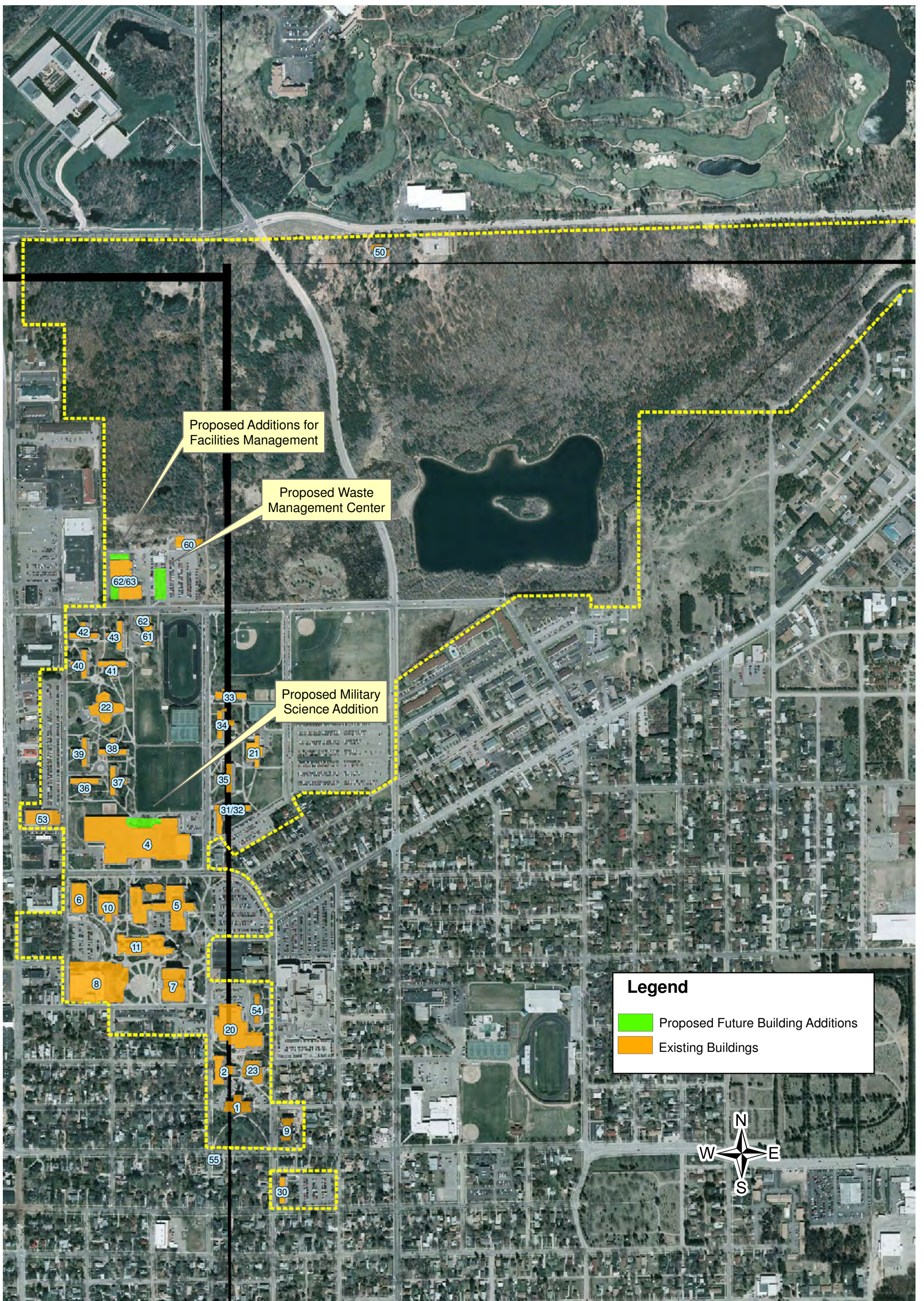
UW STEVENS POINT CAMPUS



NORTH

SCALE: 1" = 1500'

PLATE E - SOILS



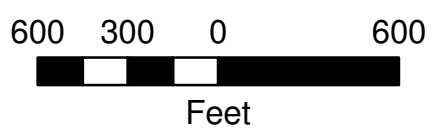
Proposed Additions for Facilities Management

Proposed Waste Management Center

Proposed Military Science Addition

**Legend**

- Proposed Future Building Additions
- Existing Buildings



**OMNI**  
ASSOCIATES

ONE SYSTEMS DRIVE PHONE (920) 735-6900  
APPLETON, WI 54914 FAX (920) 830-6100

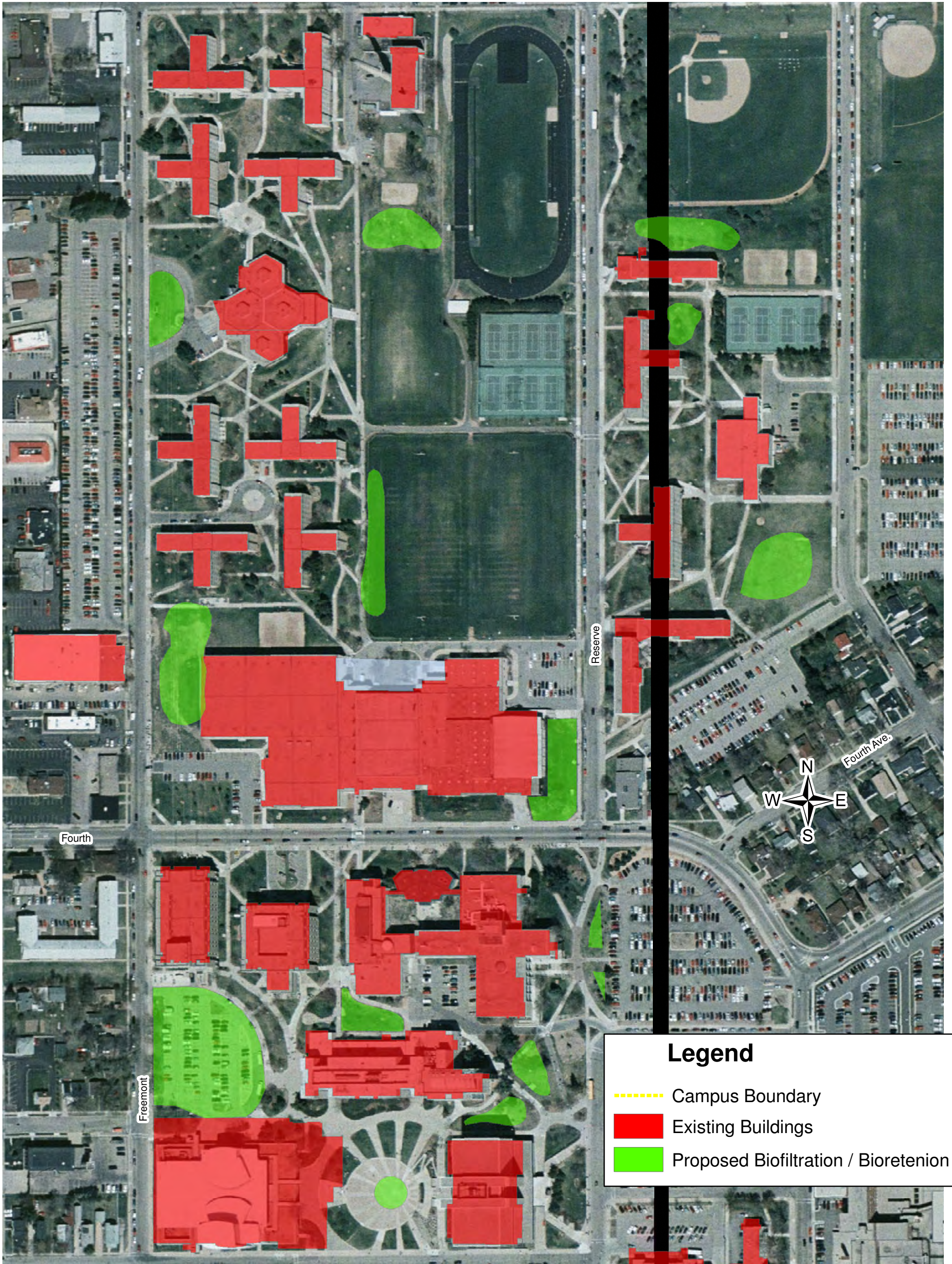
UNIVERSITY OF WISCONSIN SYSTEM  
NORTHEAST CAMPUS STORMWATER  
MANAGEMENT PLANNING

STATE OF WISCONSIN  
DEPT. OF ADMINISTRATION

PO BOX 7866  
MADISON, WI 53707  
(920) 294-4026

FUTURE CAMPUS  
DEVELOPEMENT

M1147A04



**Legend**

- - - - - Campus Boundary
- Existing Buildings
- Proposed Biofiltration / Bioretention

DATE: FEBRUARY, 2006

LOCATION: F:\Municipal\Jobs\M1147A04\Data\UWSP\GIS\Biofiltration.mxd



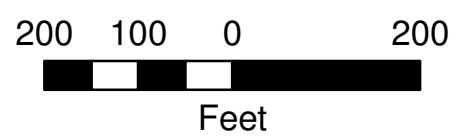
**OMNI**  
ASSOCIATES

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APPLETON, WI 54914 FAX (920) 830-6100

UNIVERSITY OF WISCONSIN SYSTEM  
NORTHEAST CAMPUS STORMWATER  
MANAGEMENT PLANNING

STATE OF WISCONSIN  
DEPT. OF ADMINISTRATION

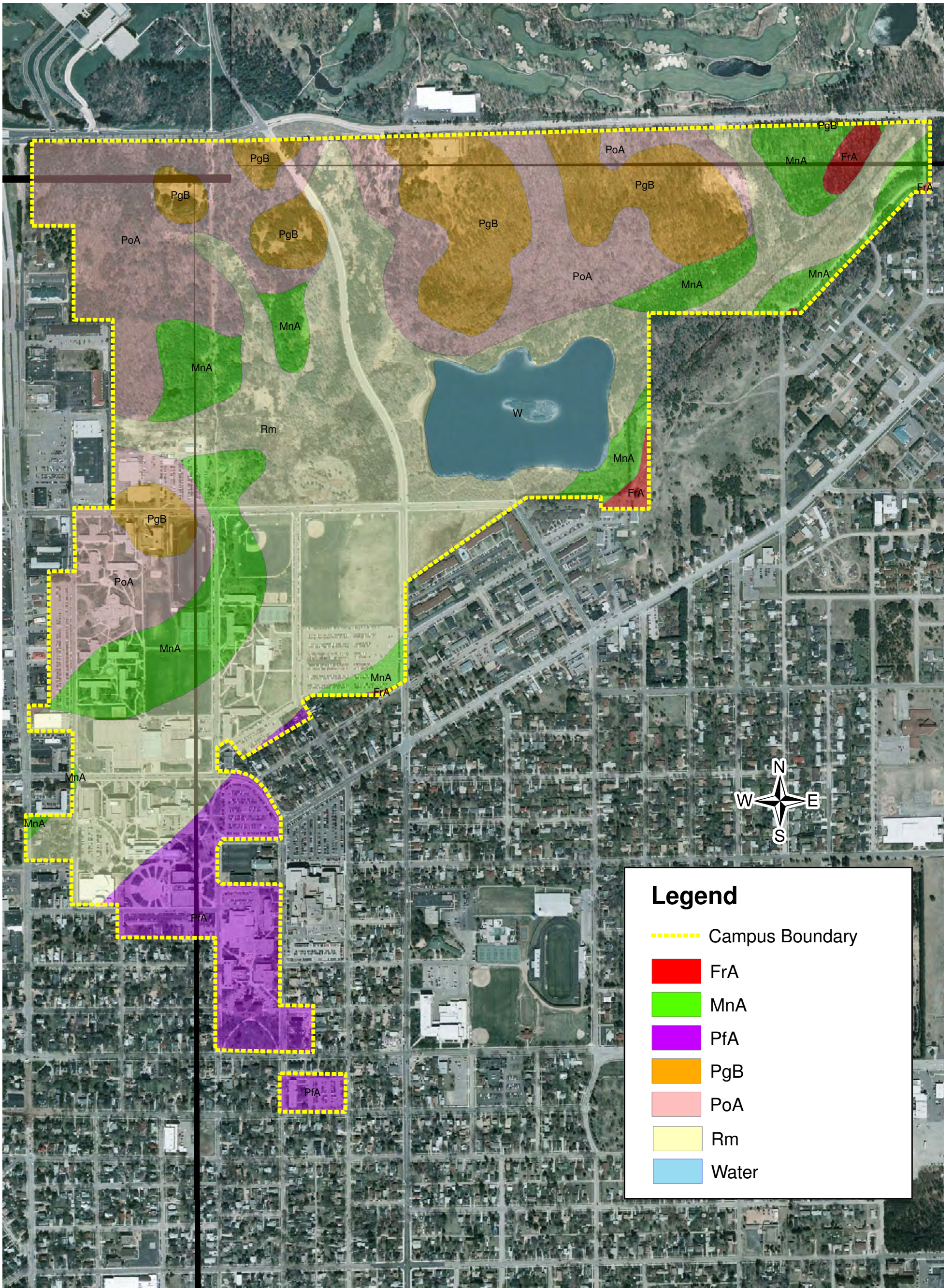
PO BOX 7866  
MADISON, WI 53707  
(920) 294-4026











M1147A04

EXISTING LAND USE





**Legend**

-  Campus Boundary
-  FrA
-  MnA
-  PfA
-  PgB
-  PoA
-  Rm
-  Water

DATE: FEBRUARY, 2006  
 SOURCE: NRCS SOILS OF PORTAGE COUNTY

LOCATION: F:\Municipal\Jobs\M1147A04\Data\UWSP\GIS\Campus\_Soils.mxd

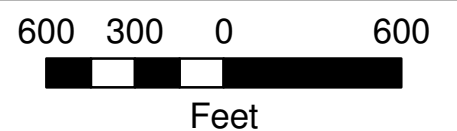


ONE SYSTEMS DRIVE PHONE (920) 735-6900  
 APPLETON, WI 54914 FAX (920) 830-6100

**UNIVERSITY OF WISCONSIN SYSTEM  
 NORTHEAST CAMPUS STORMWATER  
 MANAGEMENT PLANNING**

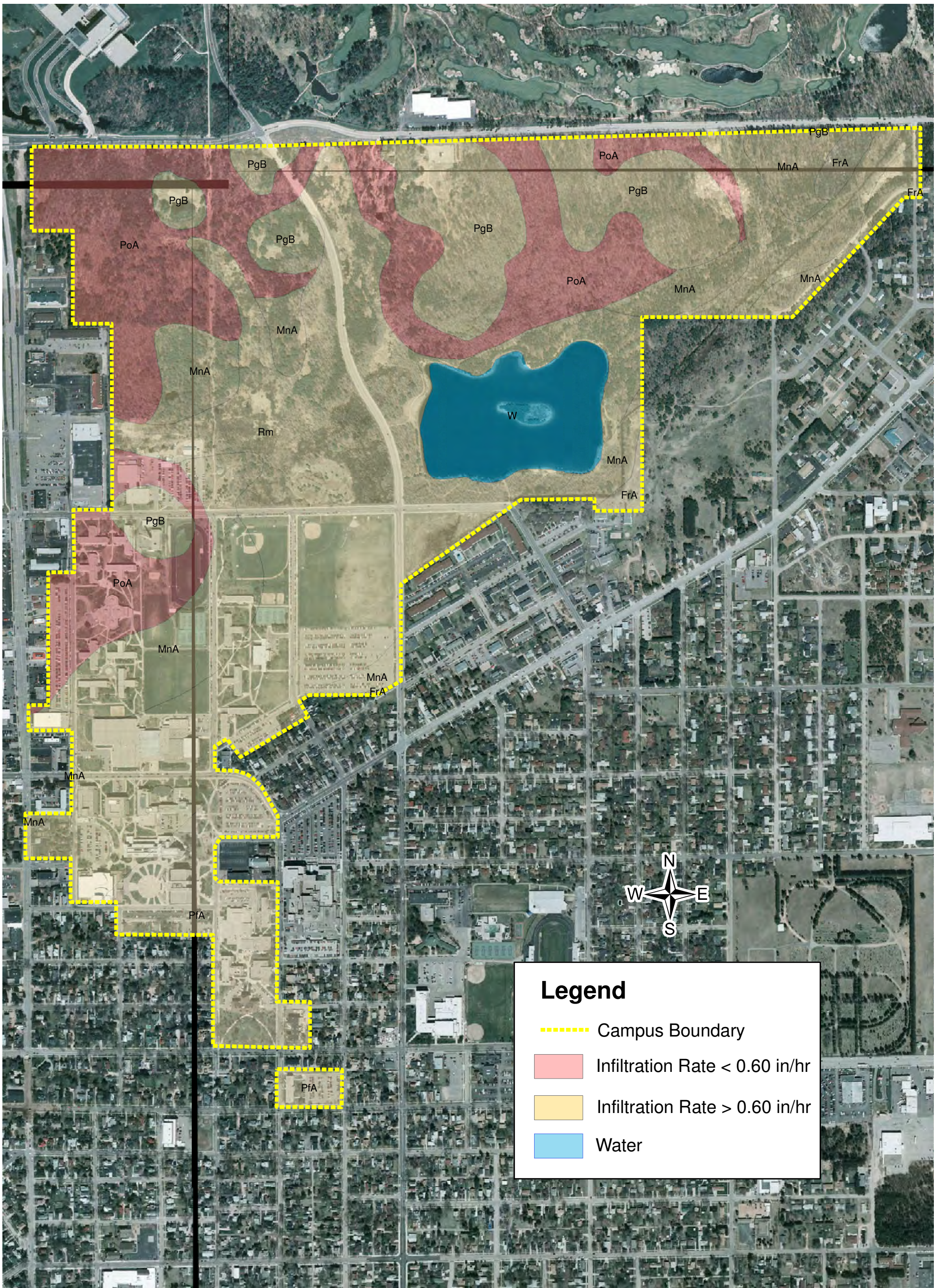
STATE OF WISCONSIN  
 DEPT. OF ADMINISTRATION

PO BOX 7866  
 MADISON, WI 53707  
 (920) 294-4026



M1147A04

**CAMPUS  
 SOULS**



DATE: FEBRUARY, 2006  
 SOURCE: NRCS SOILS OF PORTAGE COUNTY

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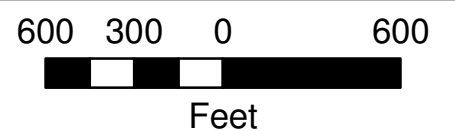


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 NORTHEAST CAMPUS STORMWATER  
 MANAGEMENT PLANNING

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CAMPUS SOIL  
 PERMEABILITY



Inadequately sized culvert is causing water to backup

Culvert outfall from Kmart parking lot

Flooding of Maintenance and Facilities Parkinglot



DATE: FEBRUARY, 2006  
 SOURCE: NRCS SOILS OF PORTAGE COUNTY

LOCATION: F:\Municipal\Jobs\M1147A04\Data\UWSP\GIS\Campus\_SW\_Problems\_Areas.mxd

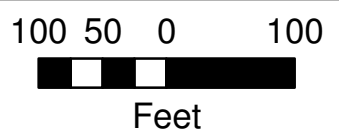


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 NORTHEAST CAMPUS STORMWATER  
 MANAGEMENT PLANNING

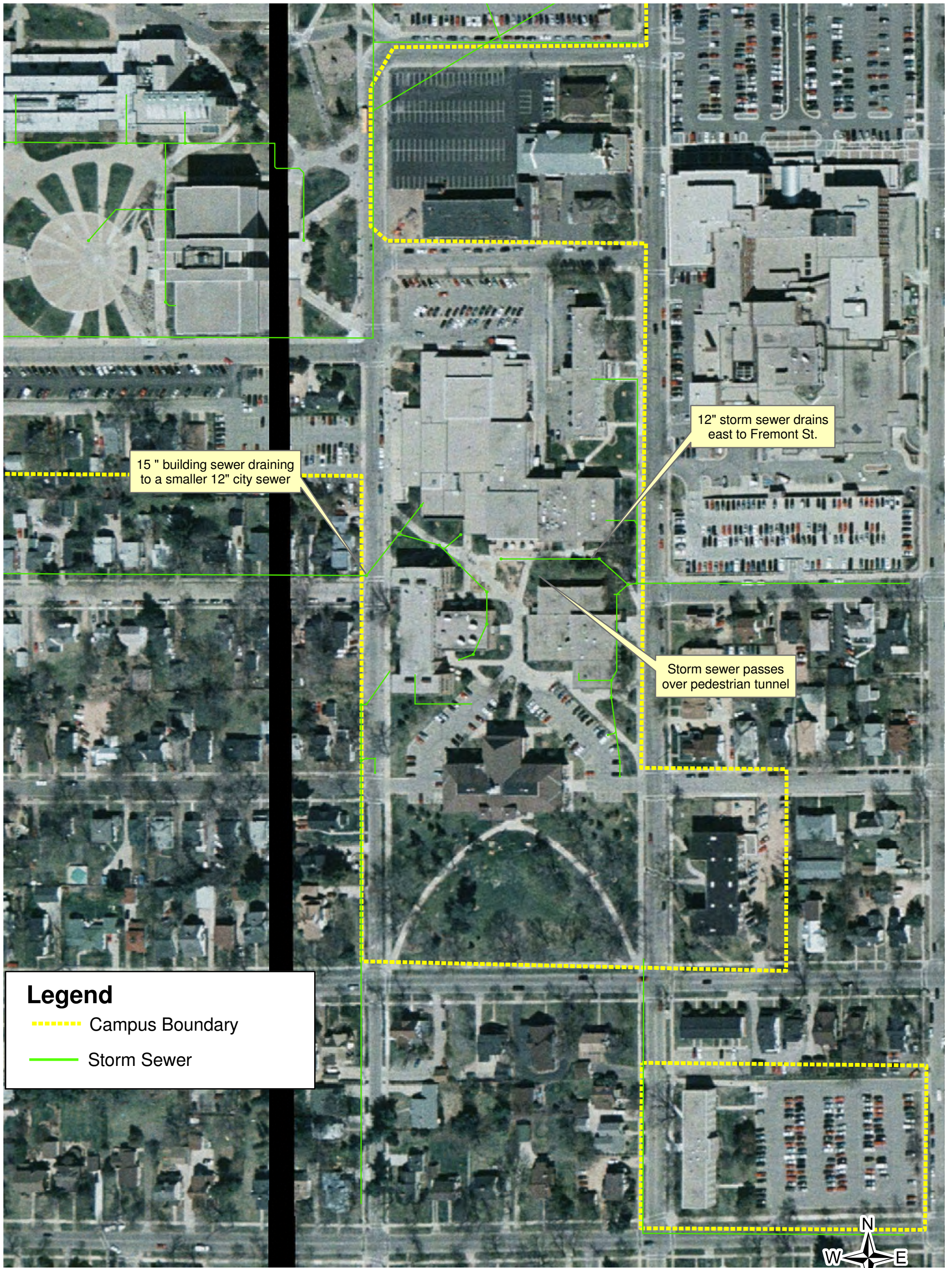
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M1147A04

STORMWATER  
 PROBLEM AREA



**Legend**

- - - - - Campus Boundary
- Storm Sewer



DATE: FEBRUARY, 2006  
 SOURCE: NRCS SOILS OF PORTAGE COUNTY

LOCATION: F:\Municipal\Jobs\M1147A04\Data\UWSP\GIS\Campus\_SW\_Problem\_Areas2.mxd

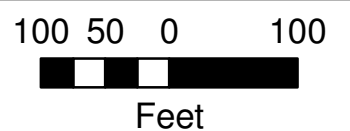


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**UNIVERSITY OF WISCONSIN SYSTEM  
 NORTHEAST CAMPUS STORMWATER  
 MANAGEMENT PLANNING**

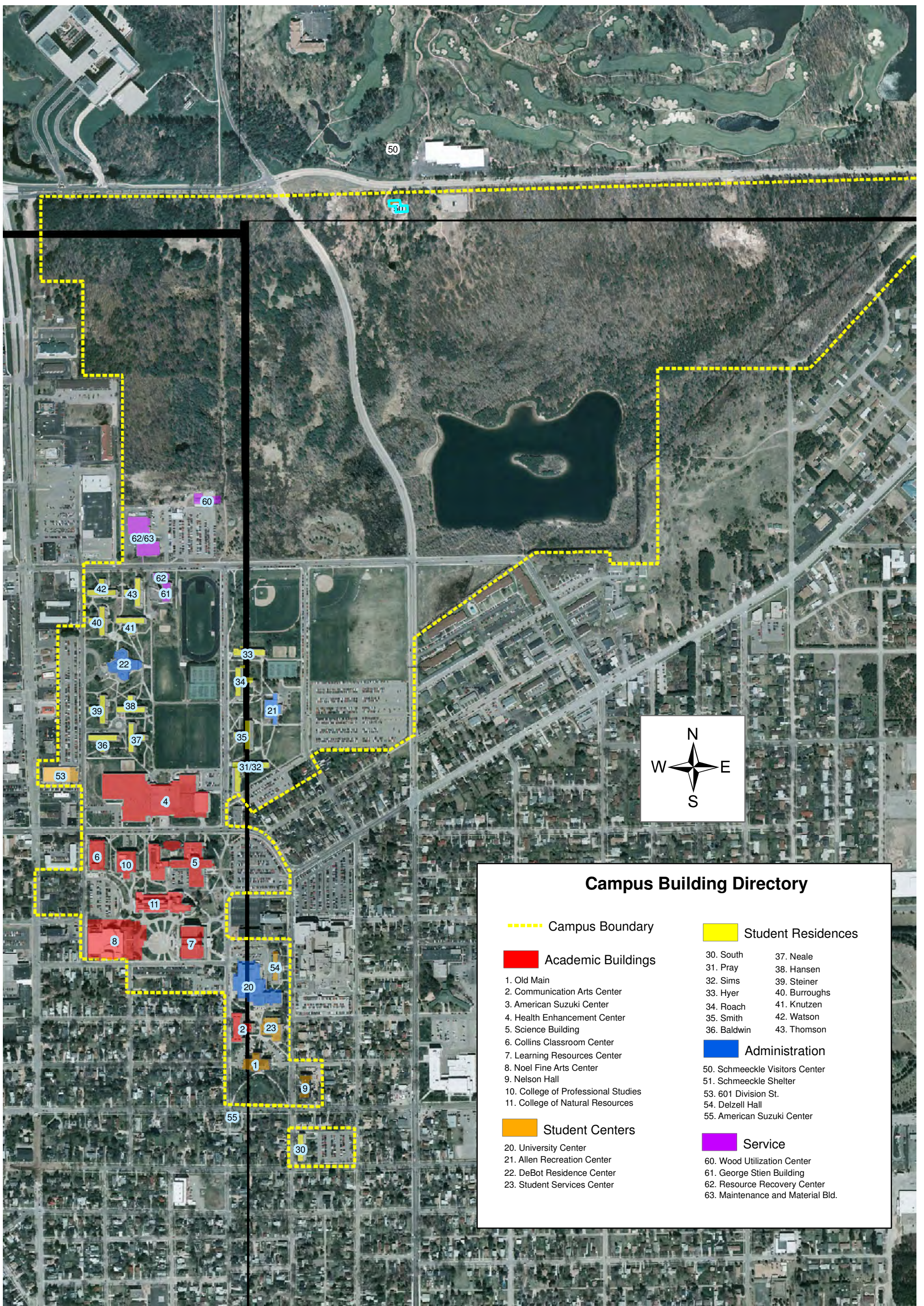
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**STORMWATER  
 PROBLEM AREA**

M1147A04



### Campus Building Directory

----- Campus Boundary

■ Academic Buildings

- 1. Old Main
- 2. Communication Arts Center
- 3. American Suzuki Center
- 4. Health Enhancement Center
- 5. Science Building
- 6. Collins Classroom Center
- 7. Learning Resources Center
- 8. Noel Fine Arts Center
- 9. Nelson Hall
- 10. College of Professional Studies
- 11. College of Natural Resources

■ Student Centers

- 20. University Center
- 21. Allen Recreation Center
- 22. DeBot Residence Center
- 23. Student Services Center

■ Student Residences

- 30. South
- 31. Pray
- 32. Sims
- 33. Hyer
- 34. Roach
- 35. Smith
- 36. Baldwin
- 37. Neale
- 38. Hansen
- 39. Steiner
- 40. Burroughs
- 41. Knutzen
- 42. Watson
- 43. Thomson

■ Administration

- 50. Schmeckle Visitors Center
- 51. Schmeckle Shelter
- 53. 601 Division St.
- 54. Delzell Hall
- 55. American Suzuki Center

■ Service

- 60. Wood Utilization Center
- 61. George Stien Building
- 62. Resource Recovery Center
- 63. Maintenance and Material Bld.

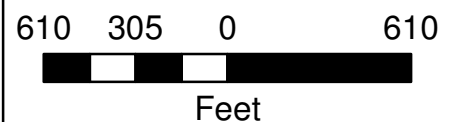


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## UNIVERSITY OF WISCONSIN SYSTEM NORTHEAST CAMPUS STORMWATER MANAGEMENT PLANNING

STATE OF WISCONSIN  
 DEPT. OF ADMINISTRATION

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### CAMPUS BUILDING DIRECTORY

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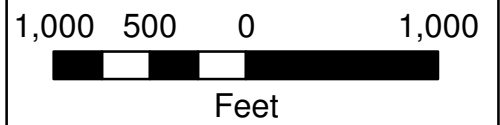
**OMNI**  
ASSOCIATES

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UNIVERSITY OF WISCONSIN SYSTEM  
NORTHEAST CAMPUS STORMWATER  
MANAGEMENT PLANNING

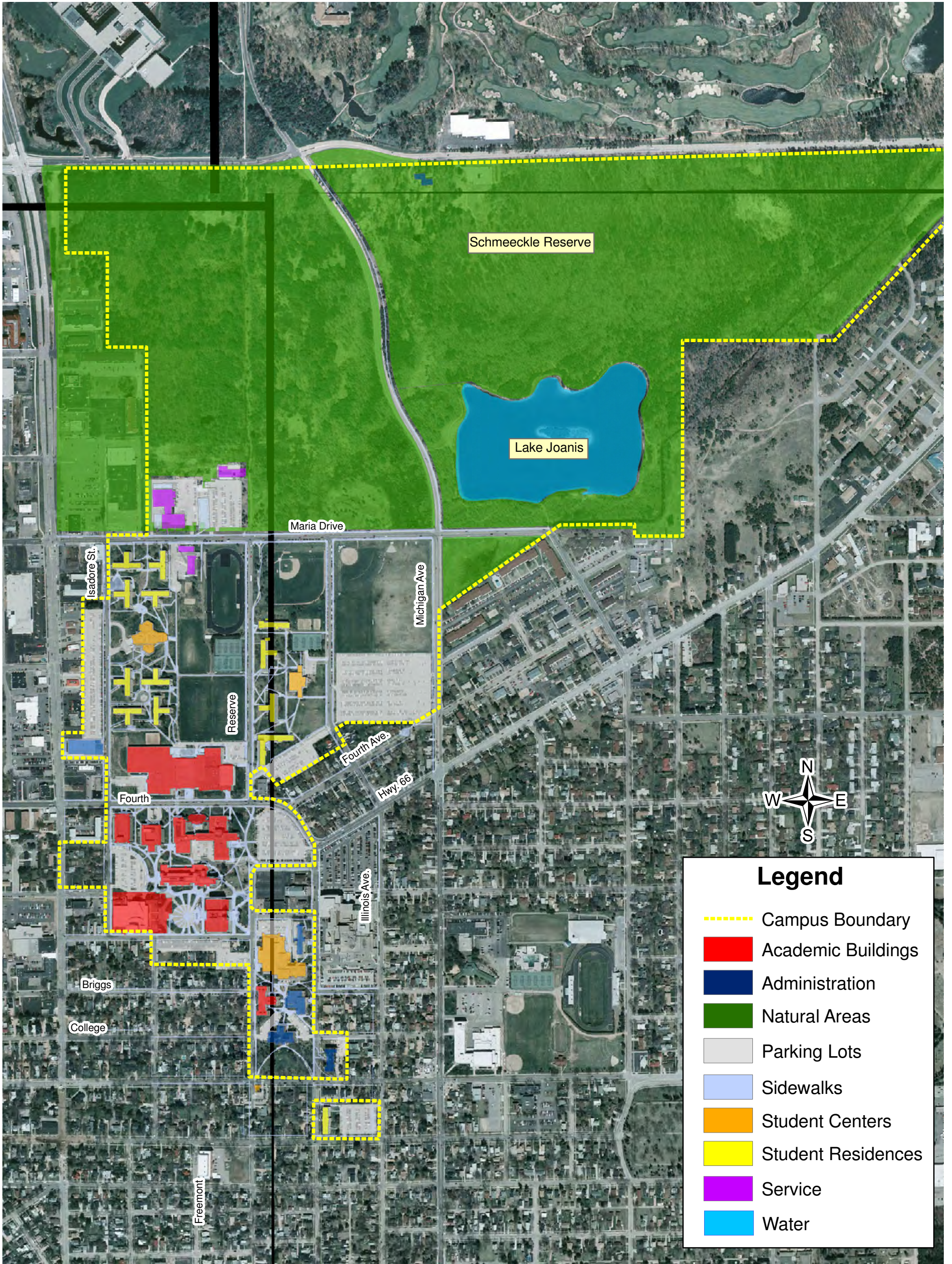
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UWSP CAMPUS  
LAYOUT

M1147A04



**Legend**

- - - - - Campus Boundary
- Academic Buildings
- Administration
- Natural Areas
- Parking Lots
- Sidewalks
- Student Centers
- Student Residences
- Service
- Water

DATE: FEBRUARY, 2006

LOCATION: F:\Municipal\Jobs\M1147A04\Data\UWSP\GIS\Existing\_Land\_Use.mxd



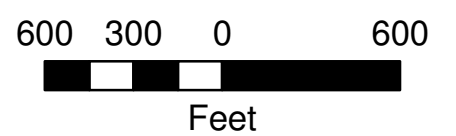
**OMNI**  
ASSOCIATES

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APPLETON, WI 54914 FAX (920) 830-6100

UNIVERSITY OF WISCONSIN SYSTEM  
NORTHEAST CAMPUS STORMWATER  
MANAGEMENT PLANNING

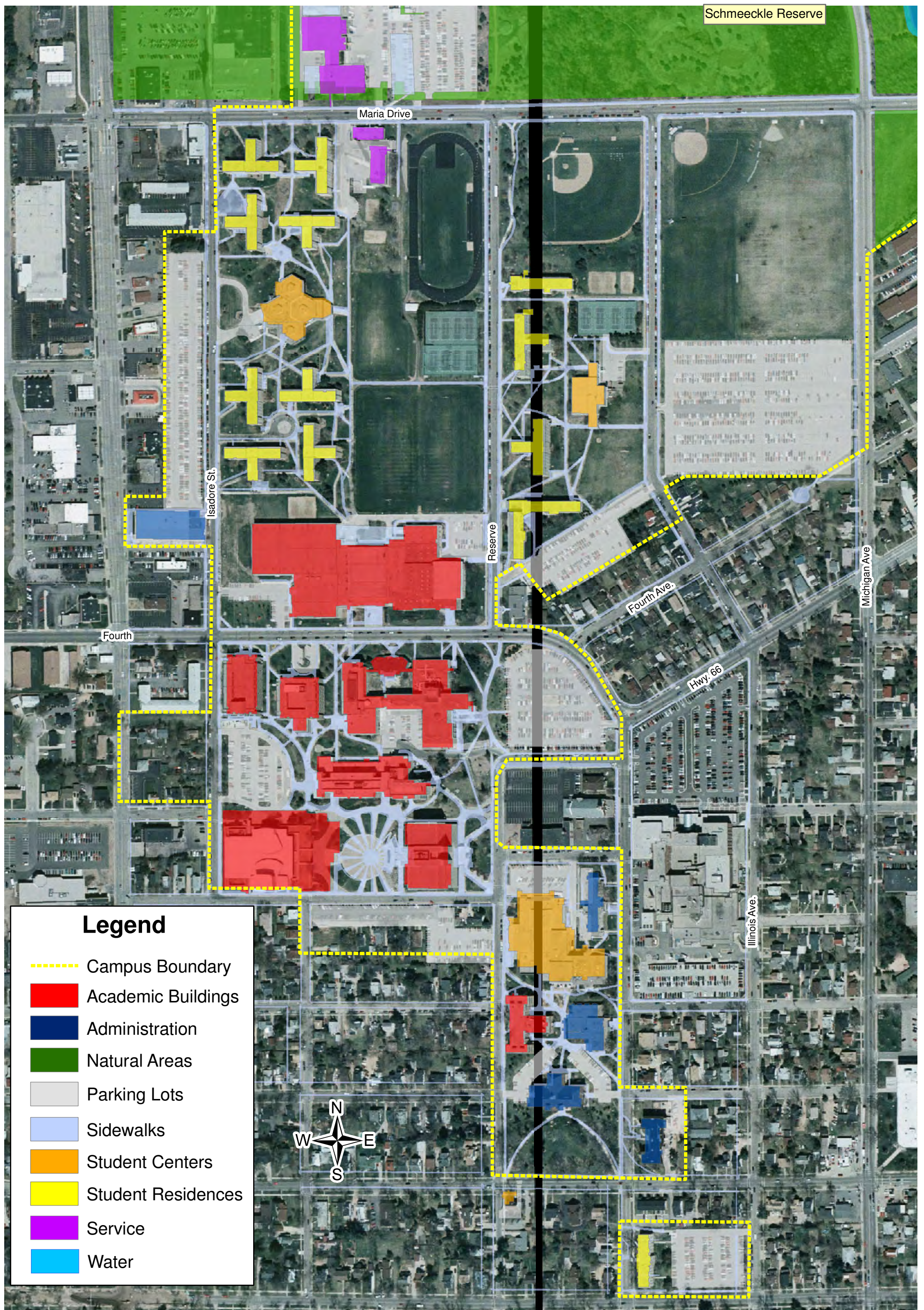
STATE OF WISCONSIN  
DEPT. OF ADMINISTRATION

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M1147A04

EXISTING LAND USE



**Legend**

- Campus Boundary
- Academic Buildings
- Administration
- Natural Areas
- Parking Lots
- Sidewalks
- Student Centers
- Student Residences
- Service
- Water



DATE: FEBRUARY, 2006

LOCATION: F:\Municipal\Jobs\M1147A04\Data\UWSP\GIS\Existing\_Land\_Use\_Inlarged.mxd



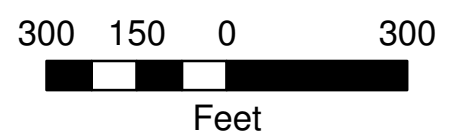
ONE SYSTEMS DRIVE  
APPLETON, WI 54914

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FAX (920) 830-6100

**UNIVERSITY OF WISCONSIN SYSTEM  
NORTHEAST CAMPUS STORMWATER  
MANAGEMENT PLANNING**

STATE OF WISCONSIN  
DEPT. OF ADMINISTRATION

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MADISON, WI 53707  
(920) 294-4026



EXISTING LAND USE

M1147A04





**STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES**

**GENERAL PERMIT TO DISCHARGE UNDER THE  
WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM  
WPDES PERMIT NO. WI-S050075-1**


In compliance with the provisions of ch. 283, Wis. Stats., and chs. NR 151 and 216, Wis. Adm. Code, owners and operators of municipal separate storm sewer systems are permitted to discharge storm water from all portions of the

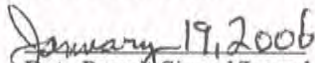
**MUNICIPAL SEPARATE STORM SEWER SYSTEM**

owned or operated by the municipality to waters of the state in accordance with the conditions set forth in this permit.

The **Start Date** of coverage under this permit shall be included in the Department letter sent to the municipality authorizing coverage under this general permit. The Department is required to charge an annual permit fee to owners and operators authorized to discharge under this permit in accordance with s. NR 216.08, Wis. Adm. Code.

State of Wisconsin Department of Natural Resources  
For the Secretary

By   
Russell A. Rasmussen, Director  
Bureau of Watershed Management  
Division of Water

  
Date Permit Signed/Issued

**PERMIT EFFECTIVE DATE: Jan. 19, 2006**

**EXPIRATION DATE: Dec. 31, 2010**

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## 1. APPLICABILITY CRITERIA

### 1.1 Permitted Area

This permit covers all areas under the ownership, control or jurisdiction of the permittee that contribute to discharges from a "municipal separate storm sewer system" or "MS4" that receives runoff from any of the following:

1.1.1 An "urbanized area", adjacent developing areas and areas whose runoff will connect to a municipal separate storm sewer regulated under subch. I of NR 216; or

1.1.2 An area associated with a municipal population of 10,000 or more and a population density of 1,000 or more per square mile, adjacent developing areas and areas whose runoff will connect to a MS4 regulated under subch. I of NR 216; or

1.1.3 An area that drains to a MS4 that is designated for permit coverage pursuant to s. NR 216.02(2) or 216.025, Wis. Adm. Code.

Note: "MS4" and "urbanized area" are defined in section 5 of this permit.

### 1.2 Authorized Discharges

This permit authorizes storm water point source discharges from the MS4 to waters of the state in the permitted area. This permit also authorizes the discharge of storm water co-mingled with flows contributed by process wastewater, non-process wastewater, and storm water associated with industrial activity, provided the discharges are regulated by other WPDES permits or are discharges which are not considered illicit discharges.

### 1.3 Water Quality Standards

1.3.1 This permit specifies the conditions under which storm water may be discharged to waters of the state for the purpose of achieving water quality standards contained in chs. NR 102 through 105 and NR 140, Wis. Adm. Code. For the term of this permit, compliance with water quality standards will be addressed by adherence to general narrative-type storm water discharge limitations and implementation of storm water management programs and practices.

1.3.2 This permit does not authorize water discharges that the Department, prior to authorization of coverage under this permit, determines will cause or have reasonable potential to cause or contribute to an excursion above any applicable water quality standards. Where such determinations have been made prior to authorization, the Department may notify the municipality that an individual permit application is necessary. However, the Department may authorize coverage under this permit where the storm water management programs required under this permit will include appropriate controls and implementation procedures designed to bring the storm water discharge into compliance with water quality standards.

### 1.4 Outstanding and Exceptional Resource Waters

1.4.1 The permittee shall determine whether any part of its MS4 discharges to an outstanding resource water (ORW) or exceptional resource water (ERW). ORWs and ERWs are listed in ss. NR 102.10 and 102.11, Wis. Adm. Code. An unofficial list of ORWs and ERWs may be found on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/>.

**1.4.2** The permittee may not establish a new MS4 discharge of pollutants to an outstanding resource water (ORW) or an exceptional resource water (ERW) unless the storm water management programs required under this permit are designed to ensure that any new MS4 discharge of pollutants to an ORW or ERW will not exceed background levels within the ORW or ERW.

**1.4.2.1** "New MS4 discharge of pollutants" means an MS4 discharge that would first occur after the permittee's start date of coverage under this permit to a surface water to which the MS4 did not previously discharge storm water, and does not include an increase in an MS4's discharge to a surface water to which the MS4 discharged on or before coverage under this permit.

**1.4.3** If the permittee has an existing MS4 discharge to an ERW, it may increase the discharge of pollutants if the increased discharge would not result in a violation of water quality standards.

**1.4.4** If the permittee has an existing MS4 discharge to an ORW, it may increase the discharge of pollutants provided all of the following are met:

**1.4.4.1** The pollutant concentration within the receiving water and under the influence of the existing discharge would not increase as compared to the level that existed prior to coverage under this permit.

**1.4.4.2** The increased discharge would not result in a violation of water quality standards.

### **1.5 Impaired Water Bodies and Total Maximum Daily Load Requirements**

**1.5.1** The permittee shall determine whether any part of its MS4 discharges to an impaired water body listed in accordance with section 303(d)(1) of the federal Clean Water Act, 33 USC §1313(d)(1)(C), and the implementing regulation of the US Environmental Protection Agency, 40 CFR §130.7(c)(1). Impaired waters are those that are not meeting applicable water quality standards. A list of Wisconsin impaired water bodies may be found on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/wqs/303d/303d.html>.

**1.5.2** If the permittee's MS4 discharges to an impaired water body, the permittee shall include a written section in its storm water management program that discusses the management practices and control measures it will implement as part of its program to reduce, with the goal of eliminating, the discharge of pollutant(s) of concern that contribute to the impairment of the water body. This section of the permittee's program shall specifically identify control measures and practices that will collectively be used to try to eliminate the MS4's discharge of pollutant(s) of concern that contribute to the impairment of the water body and explain why these control measures and practices were chosen as opposed to other alternatives. Pollutant(s) of concern means a pollutant that is causing impairment of a water body.

**1.5.3** After the permittee's start date of coverage under this permit, the permittee may not establish a new MS4 discharge of a pollutant of concern to an impaired water body or increase the discharge of a pollutant of concern to an impaired water body unless the new or increased discharge causes the receiving water to meet applicable water quality standards, or the Department has approved a total maximum daily load (TMDL) for the impaired water body.

**1.5.4** The permittee shall determine whether its MS4 discharges to an impaired water body for which the Department has approved a TMDL. If so, the permittee shall assess whether the TMDL wasteload allocation for the MS4 is being met through the existing storm water management controls or whether additional control measures are necessary. The permittee's assessment of whether the TMDL wasteload allocation is being met shall focus on the adequacy of the permittee's storm water controls (implementation and maintenance). Approved TMDLs are listed on the Department Internet site at:  
<http://dnr.wi.gov/org/water/wm/wqs/303d/index.html>.

**1.5.5** The storm water management program developed under section 2 of this permit shall be revised as necessary to achieve and maintain compliance with any Department approved-TMDL wasteload allocation for an impaired water to which the MS4 discharges. The redesigned storm water management programs shall be implemented as soon as possible.

#### **1.6 Wetlands**

The permittee's MS4 discharge shall comply with the wetland water quality standards provisions in ch. NR 103, Wis. Adm. Code.

#### **1.7 Endangered and Threatened Resources**

The permittee's MS4 discharge shall comply with the endangered and threatened resource protection requirements of s. 29.604, Wis. Stats., and ch. NR 27, Wis. Adm. Code.

#### **1.8 Historic Property**

The permittee's MS4 discharge may not affect any historic property that is listed property, or on the inventory or on the list of locally designated historic places under s. 44.45, Wis. Stats., unless the Department determines that the MS4 discharge will not have an adverse effect on any historic property pursuant to s. 44.40 (3), Wis. Stats.

#### **1.9 General Storm Water Discharge Limitations**

The permittee may not discharge the following substances from the MS4 in amounts that have an unreasonable effect on receiving water quality or aquatic life:

1. Solids that may settle to form putrescence or otherwise objectionable sludge deposits.
2. Oil, grease, and other floating material that form noticeable accumulations of debris, scum, foam, or sheen.
3. Color or odor that is unnatural and to such a degree as to create a nuisance.
4. Toxic substances in amounts harmful to aquatic life, wildlife, or humans.
5. Nutrients conducive to the excessive growth of aquatic plants and algae to the extent that such growth is detrimental to desirable forms of aquatic life, creates conditions that are unsightly, or is a nuisance.
6. Any other substances that may impair, or threaten to impair, beneficial uses of the receiving water.

#### **1.10 Obtaining Permit Coverage**

**1.10.1** In order to obtain coverage under this permit, the owner or operator of an MS4 shall submit a complete Notice of Intent (NOI) to the Department. The Department will make an NOI form available on its Internet site or a copy may be obtained by contacting the storm water

program at (608) 267-7694. The NOI shall be mailed to Wisconsin DNR, Storm Water Program – WT/2, PO Box 7921, Madison, WI 53707-7921 or as otherwise directed by the Department.

**1.10.2** Coverage under this permit does not become effective until the Department sends the owner or operator a letter expressly authorizing coverage under this permit.

**1.11 Public Access to Information including Notices of Intent**

The Department will list on its storm water Internet site, for a period of at least 30 days, the NOIs that are received by the Department requesting coverage under this permit. This list will be accessible via: <http://dnr.wi.gov/org/water/wm/nps/stormwater/muni.htm>. Official Department records for individual municipalities are typically maintained in the office of the Department's regional storm water contact. To gain access to facility records, you should contact the appropriate regional contact, who is listed at: <http://dnr.wi.gov/org/water/wm/nps/stormwater/contact>. Or you may contact the Department's storm water program coordinator for assistance at (608) 267-7694.

**1.12 Public Comment and Request for Public Hearing on Notices of Intent**

All written comments received by the Department within 30 days of the NOI being initially listed on the Internet site will be considered along with the NOI and any other information on file to determine if coverage under this permit is appropriate. A public informational hearing may also be held if significant public interest is expressed. Requests for a public informational hearing must be filed within 30 days of the NOI being initially listed on the Department's Internet site, and must indicate the interest of the party filing the request and the reasons why a hearing is warranted. Comments and requests for public hearing must be mailed to: Wisconsin DNR, Storm Water Program – WT/2, P.O. Box 7921, Madison, WI 53707. The Department will evaluate comments and requests for public hearing to determine if there is sufficient interest to hold a public hearing prior to authorizing coverage under this permit.

**1.13 Transfers**

Coverage under this permit is not transferable to another municipality without the express written approval of the Department. If the permittee's MS4 is annexed into another municipality, the permittee shall immediately notify the Department by letter of such change. If the permittee ceases to own or operate any MS4 regulated under this permit, the Department may terminate its coverage under this permit.

**1.14 Exclusions**

The following are excluded from coverage (i.e. are not authorized) under this permit:

**1.14.1 Combined Sewer and Sanitary Sewer Systems**

Discharges of water from a sanitary sewer or a combined sewer system conveying both sanitary and storm water. These discharges are regulated under s. 283.31, Wis. Stats, and require an individual permit.

**1.14.2 Agricultural Facilities and Practices**

Discharges from "agricultural facilities" and "agricultural practices". "Agricultural facility" means a structure associated with an agricultural practice. "Agricultural practice" means beekeeping; commercial feedlots; dairying; egg production; floriculture; fish or fur farming; grazing; livestock raising; orchards; poultry raising; raising of grain, grass, mint and seed crops; raising of fruits, nuts and berries; sod farming; placing land in federal programs in return for payments in kind; owning land, at least 35 acres of which is enrolled in the conservation reserve

program under 16 USC 3831 to 3836; and vegetable raising.

#### **1.14.3 Other Excluded Discharges**

Storm water discharges from industrial operations or land disturbing construction activities that require separate coverage under a WPDES permit pursuant to subchs. II or III of ch. NR 216, Wis. Adm. Code. For example, while storm water from industrial or construction activity may discharge from an MS4, this permit does not satisfy the need to obtain any other permits for those discharges. This exclusion does not apply to the permittee's responsibility to regulate construction sites within its jurisdiction in accordance with sections 2.4 and 2.5 of this permit.

#### **1.14.4 Indian Country**

Storm water discharges within Indian Country. The federal Clean Water Act requires that owners and operators of storm water discharges within Indian Country in Wisconsin to obtain permit coverage directly from the United States Environmental Protection Agency.

#### **1.14.5 Non-MS4 Discharge**

Storm water discharges that do not enter an MS4.

## **2. PERMIT CONDITIONS**

The permittee shall establish written, measurable goals for achieving compliance with the programs developed under sections 2.1 through 2.6 in accordance with the compliance schedule contained in section 3 of this permit. The following permit conditions apply to the permittee, unless the Department issues a written determination that a condition is not appropriate under the circumstances. For example, where the permittee owns all of the land that drains to its MS4, it may be unnecessary to develop erosion control and storm water management ordinances since they are used to enforce against other landowners of construction and post-construction sites.

### **2.1 Public Education and Outreach**

The permittee shall implement a public education and outreach program to increase the awareness of storm water pollution impacts on waters of the state to encourage changes in public behavior to reduce such impacts. The program shall establish measurable goals and, at a minimum, include the following elements:

**2.1.1** Promote detection and elimination of illicit discharges and water quality impacts associated with such discharges from municipal separate storm sewer systems.

**2.1.2** Inform and educate the public about the proper management of materials that may cause storm water pollution from sources including automobiles, pet waste, household hazardous waste and household practices.

**2.1.3** Promote beneficial onsite reuse of leaves and grass clippings and proper use of lawn and garden fertilizers and pesticides.

**2.1.4** Promote the management of streambanks and shorelines by riparian landowners to minimize erosion and restore and enhance the ecological value of waterways.

**2.1.5** Promote infiltration of residential storm water runoff from rooftop downspouts, driveways and sidewalks.

**2.1.6** Inform and where appropriate educate those responsible for the design, installation, and maintenance of construction site erosion control practices and storm water management facilities on how to design, install and maintain the practices.

**2.1.7** Identify businesses and activities that may pose a storm water contamination concern, and where appropriate, educate specific audiences on methods of storm water pollution prevention.

**2.1.8** Promote environmentally sensitive land development designs by developers and designers.

## **2.2 Public Involvement and Participation**

The permittee shall implement a program to notify the public of activities required by this permit and to encourage input and participation from the public regarding these activities. This program shall include measurable goals for public involvement and participation and comply with applicable state and local public notice requirements.

## **2.3 Illicit Discharge Detection and Elimination**

The permittee shall develop, implement and enforce a program to detect and remove illicit connections and discharges to the MS4. The program shall include measurable goals and include all of the following:

**2.3.1** An ordinance or other regulatory mechanism to prevent and eliminate illicit discharges and connections to the MS4. At a minimum, the ordinance or other regulatory mechanism shall:

**2.3.1.1** Prohibit the discharge, spilling or dumping of non-storm water substances or materials into waters of the state or the MS4.

**2.3.1.2** Identify non-storm water discharges or flows that are not considered illicit discharges. Non-storm water discharges that are not considered illicit discharges include water line flushing, landscape irrigation, diverted stream flows, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, fire fighting and discharges authorized under a WPDES permit unless identified by the permittee as significant source of pollutants to waters of the state.

**2.3.1.3** Establish inspection and enforcement authority.

**Note:** Chapter NR 815, Wis. Adm. Code, regulates injection wells including storm water injection wells. Construction or use of a well to dispose of storm water directly into groundwater is prohibited under s. NR 815.11(5), Wis. Adm. Code.

**2.3.2** Initial field screening at all major outfalls during dry weather periods. At a minimum, field screening shall be documented and include:

**2.3.2.1** Visual Observation - A narrative description of visual observations including color, odor, turbidity, oil sheen or surface scum, flow rate and any other relevant observations



regarding the potential presence of non-storm water discharges or illicit dumping.

**2.3.2.2 Field Analysis** - If flow is observed, a field analysis shall be conducted to determine the presence of illicit non-storm water discharges or illicit dumping. The field analysis shall include sampling for pH, total chlorine, total copper, total phenol and detergents, unless the permittee elects instead to use detergent, ammonia, potassium and fluoride as the indicator parameters. Other alternative indicator parameters may be authorized by the Department in writing.

Note: Detergent, ammonia, potassium and fluoride indicator parameters provide a better screening tool to identify whether the flow is contaminated with sanitary or wastewater, and also whether the source is a tap water or a natural source of water. The Center for Watershed Protection (CWP) has illicit discharge identification and elimination guidance available at [http://www.cwp.org/idde\\_verify.htm](http://www.cwp.org/idde_verify.htm). The CWP guidance includes illicit discharge field sampling guidance developed by Robert Pitt from the University of Alabama on how best to detect illicit discharges including recommended indicator parameters and associated levels of detection.

**2.3.2.2.1** Field screening points shall, where possible, be located downstream of any source of suspected illicit activity.

**2.3.2.2.2** Field screening points shall be located where practicable at the farthest manhole or other accessible location downstream in the system. Safety of personnel and accessibility of the location shall be considered in making this determination.

**2.3.3** On-going dry weather field screening of outfalls during the term of the permit. Outfalls that will be evaluated on an on-going basis and the field screening frequency shall be identified. Consideration shall be given to hydrological conditions, total drainage area of the site, population density of the site, traffic density, age of the structures or buildings in the area, history of the area and land use types. A description of this on-going field screening program shall be submitted to the Department in accordance with section 3.3.4.

**2.3.4** Procedures for responding to known or suspected illicit discharges. At a minimum, procedures shall be established for:

**2.3.4.1** As soon as possible, investigating portions of the MS4 that, based on the results of field screening or other information, indicate a reasonable potential for containing illicit discharges or other sources of non-storm water discharges.

**2.3.4.2** Responding to spills that discharge into and/or from the MS4 including tracking and locating the source of the spill if unknown.

**2.3.4.3** Preventing and containing spills that may discharge into or are already within the MS4.

**2.3.4.4** Notifying the Department immediately in accordance with ch. NR 706, Wis. Adm. Code, in the event that the permittee identifies a spill or release of a hazardous substance, which has resulted or may result in the discharge of pollutants into waters of the state. The Department shall be notified via the 24-hour toll free spill hotline at 1-800-943-0003. The

permittee shall cooperate with the Department in efforts to investigate and prevent such discharges from polluting waters of the state.

**2.3.4.5** To the maximum extent practicable, eliminating leakage from sanitary conveyance systems into the MS4.

**2.3.4.6** Providing the Department with advance notice of the time and location of dye testing within a MS4. (Because the dye may get reported to the Department as an illicit discharge or spill, the Department requires prior notification of dye testing.)

**2.3.5** The permittee shall take appropriate action to remove illicit discharges from its MS4 system as soon as possible. If it will take more than 30 days to remove an illicit connection, the Department shall be contacted to discuss an appropriate action and/or timeframe for removal.

**2.3.6** In the case of an illicit discharge that originates from the permittee's permitted area and that discharges directly to a municipal separate storm sewer or property under the jurisdiction of another municipality, the permittee shall notify the affected municipality within one working day.

**2.3.7** The name, title and phone number of the individual(s) responsible for responding to reports of illicit discharges and spills shall be included in the illicit discharge response procedure and submitted to the Department in accordance with section 3.3.2.

#### **2.4 Construction Site Pollutant Control**

Each permittee shall develop, implement and enforce a program to reduce the discharge of sediment and construction materials from construction sites. The program shall establish measurable goals and include:

**2.4.1** An ordinance or other regulatory mechanism to require erosion and sediment control at construction sites and establish sanctions to ensure compliance. Note that Appendix A of ch. NR 152, Wis. Adm. Code, contains a construction site model ordinance. At a minimum, the ordinance or other regulatory mechanism shall establish or include:

**2.4.1.1** Applicability and jurisdiction.

**2.4.1.1.1** It shall apply to all construction sites with one acre or more of land disturbance, and to sites of less than one acre if they are part of a larger common plan of development or sale under the jurisdiction of the permittee.

**2.4.1.1.2** It does not have to apply to construction sites that are listed under s. NR 216.42(2) to (11), Wis. Adm. Code, except that it shall apply to construction sites listed under s. NR 216.42 (4) and (9) where erosion control authority has been delegated to the permittee by the Wisconsin Department of Commerce.

**2.4.1.1.3** If the permittee is a city, village, county or town and does not have authority from the Wisconsin Department of Commerce (Commerce) to regulate erosion control at public buildings and places of employment, the permittee shall request such authority from Commerce pursuant to s. 101.1205(4), Wis. Stats., **within 18 months after the start date**. If Commerce delegates to the permittee the authority to regulate erosion control at public buildings and places of employment, the permittee shall exercise such

authority as soon as possible.

**2.4.1.2** Erosion and sediment control criteria, standards and specifications equivalent to those approved by the Department. Department erosion and sediment control standards are available through the Department's storm water Internet site at:  
<http://dnr.wi.gov/org/water/wm/nps/stormwater.htm>.

**2.4.1.3** Construction site performance standards equivalent to or more restrictive than those in ss. NR 151.11 and 151.23, Wis. Adm. Code.

**2.4.1.4** Erosion and sediment control plan requirements for landowners of construction sites equivalent to those contained in s. NR 216.46, Wis. Adm. Code.

**2.4.1.5** Inspection and enforcement authority.

**2.4.1.6** Requirements for construction site operators to manage waste such as discarded building materials, concrete truck washout, chemicals, litter and sanitary waste at the construction site so as to reduce adverse impacts to waters of the state.

**2.4.2** Procedures for construction site inspection and enforcement of erosion and sediment control measures. At a minimum, the procedures shall establish:

**2.4.2.1** Municipal departments or staff responsible for construction site inspections and enforcement.

**2.4.2.2** Construction site inspection frequency.

**2.4.2.3** Construction site inspection documentation.

**2.4.2.4** Enforcement mechanisms that will be used to obtain compliance.

**2.4.3** Procedures for receipt and consideration of information submitted by the public.

Note: A town may demonstrate to the Department that an adequate county ordinance that meets the requirements of this permit is administered and enforced within its town and then the town could be excused from having to adopt its own ordinance.

## **2.5 Post-Construction Storm Water Management**

The permittee shall develop, implement and enforce a program to require control of the quality of discharges from areas of new development and redevelopment, after construction is completed. The program shall establish measurable goals and include:

**2.5.1** An ordinance or other regulatory mechanism to regulate post-construction storm water discharges from new development and redevelopment. Note that Appendix B of ch. NR 152, Wis. Adm. Code, contains a post-construction site model ordinance. At a minimum, the ordinance or other regulatory mechanism shall establish or include:

**2.5.1.1** Applicability and jurisdiction that shall apply to construction sites with one acre or more of land disturbance, and sites of less than one acre if they are part of a larger common

plan of development or sale under the jurisdiction of the permittee.

**2.5.1.2** Design criteria, standards and specifications equivalent to technical standards or the Wisconsin Storm Water Manual approved by the Department. The Department-approved technical standards shall take precedence over the Wisconsin Storm Water Manual. The Department-approved technical standards and the Wisconsin Storm Water Manual are available at <http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm>.

**2.5.1.3** Post-construction performance standards equivalent to or more restrictive than those in ss. NR 151.12 and 151.24, Wis. Adm. Code.

**2.5.1.4** Storm water plan requirements for landowners of construction sites equivalent to those contained in s. NR 216.47, Wis. Adm. Code.

**2.5.1.5** Long-term maintenance requirements for landowners and other persons responsible for long-term maintenance of post-construction storm water control measures.

**2.5.1.6** Inspection and enforcement authority.

**2.5.2** Procedures that will be used by the permittee to ensure the long-term maintenance of storm water management facilities.

Note: A town may demonstrate to the Department that an adequate county ordinance that meets the requirements of this permit is administered and enforced within its town and then the town could be excused from having to adopt its own ordinance.

## **2.6 Pollution Prevention**

Each permittee shall develop and implement a pollution prevention program that establishes measurable goals for pollution prevention. The program shall include:

**2.6.1** Routine inspection and maintenance of municipally owned or operated structural storm water management facilities to maintain their pollutant removal operating efficiency.

**2.6.2** Routine street sweeping and cleaning of catch basins with sumps where appropriate.

**2.6.3** Proper disposal of street sweeping and catch basin cleaning waste.

**2.6.4** If road salt or other deicers are applied by the permittee, no more shall be applied than necessary to maintain public safety.

Note: The DOT "Highway Maintenance Manual", chapter 35, contains guidance on application of road salt and other deicers that can be used to determine whether not application is necessary and what application rate is appropriate for deicing and ice prevention. This information is held on a secured server and users must first register with the state of Wisconsin to obtain an ID and password. You can learn more about getting connected to this secured server at: <http://www.dot.wisconsin.gov/business/extranet/>. The Wisconsin Department of Transportation (DOT) highway salt storage requirements are contained in ch. Trans 277, Wis. Adm. Code.

**2.6.5** Proper management of leaves and grass clippings, which may include on-site beneficial

reuse as opposed to collection.

**2.6.6** Storm water pollution prevention planning for municipal garages, storage areas and other sources of storm water pollution from municipal facilities.

**2.6.7** Application of lawn and garden fertilizers on municipally controlled properties, with pervious surfaces over 5 acres each, in accordance with a site-specific nutrient application schedule based on appropriate soil tests.

**2.6.8** Education of appropriate municipal and other personnel involved in implementing this program.

**2.6.9** Measures to reduce municipal sources of storm water contamination within source water protection areas. Wisconsin's source water assessment program information is available at: <http://www.dnr.state.wi.us/org/water/dwg/swap/index.htm>.

## **2.7 Storm Water Quality Management**

The permittee shall develop and implement a municipal storm water management program. This program shall achieve compliance with the developed urban area performance standards of s. NR 151.13(2), Wis. Adm. Code, for those areas of the municipality that were not subject to the post-construction performance standards of s. NR 151.12 or 151.24. The program shall include:

**2.7.1** To the maximum extent practicable, implementation of storm water management practices necessary to achieve a 20% reduction in the annual average mass of total suspended solids discharging from the MS4 to surface waters of the state as compared to implementing no storm water management controls, by March 10, 2008. The permittee may elect to meet the 20% total suspended solids standard on a watershed or regional basis by working with other permittee(s) to provide regional treatment that collectively meets the standard.

Note: Pursuant to s. NR 151.13(2), Wis. Adm. Code, the total suspended solids reduction requirement increases to 40% by March 10, 2013. The 20% and 40% total suspended solids reduction requirements are applied to runoff from areas of urban land use and are not applicable to agricultural or rural land uses and associated roads. Additional MS4 modeling guidance for modeling the total suspended solids control is given on the Department's Internet site at: <http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm>.

**2.7.2** Evaluation of all municipal owned or operated structural flood control facilities to determine the feasibility of retrofitting to increase total suspended solids removal from runoff.

**2.7.3** Assessment of compliance with s. NR 151.13(2), Wis. Adm. Code, by conducting a pollutant-loading analysis using a model such as SLAMM, P8 or equivalent methodology approved by the Department. At a minimum, the average annual total suspended solids and phosphorus loads to the MS4 shall be determined for the cumulative discharge from all outfalls for the controls and no controls conditions. For purposes of evaluating the modeling, pollutant loads from grouped drainage areas as modeled shall be reported. The modeling shall calculate the theoretical annual average mass of total suspended solids generated for the entire area served by a MS4 within the permittee's jurisdiction with no controls or BMPs applied. Modeling to reflect the current state of controls and BMPs shall be judged against the no controls condition to determine the percent of reduction. A storm water infiltration system is considered to be a

control or BMP. Controls and BMPs that exist at the time of permit issuance may be used to achieve this reduction. This pollutant level reduction applies to total suspended solids only.

Note: It is recommended that the pollutant-loading analysis be conducted as soon as possible. This analysis is needed to provide the permittee with information on which BMPs are needed to meet the implementation date of March 10, 2008.

## **2.8 Storm Sewer System Map**

The permittee shall develop and maintain a MS4 map. The municipal storm sewer system map shall include:

- 2.8.1 Identification of waters of the state, name and classification of receiving water(s), identification of whether the receiving water is an ORW, ERW or listed as an impaired water under s. 303(d) of the Clean Water Act, storm water drainage basin boundaries for each MS4 outfall and municipal separate storm sewer conveyance systems.
- 2.8.2 Identification of any known threatened or endangered resources, historical property and wetlands, as defined in sections 1.6 through 1.8 of this permit, which might be affected.
- 2.8.3 Identification of all known MS4 outfalls discharging to waters of the state and other MS4s. Major outfalls shall be uniquely identified.
- 2.8.4 Location of any known discharge to the MS4 that has been issued WPDES permit coverage by the Department. A list of WPDES permit holders in the permittee's area may be obtained from the Department.
- 2.8.5 Location of municipally owned or operated structural storm water management facilities including detention basins, infiltration basins, and manufactured treatment devices. If the permittee will be taking credit for pollutant removal from privately-owned facilities, they must be identified.
- 2.8.6 Identification of publicly owned parks, recreational areas and other open lands.
- 2.8.7 Location of municipal garages, storage areas and other public works facilities.
- 2.8.8 Identification of streets.

## **2.9 Annual Report**

The permittee shall submit an annual report to the Department in accordance with section 3.10 of this permit. The permittee shall invite the municipal governing body, interest groups and the general public to review and comment on the annual report. The annual report shall include:

- 2.9.1 The status of implementing the permit requirements, status of meeting measurable program goals and compliance with permit schedules.
- 2.9.2 A fiscal analysis which includes the annual expenditures and budget for the reporting year, and the budget for the next year.
- 2.9.3 A summary of the number and nature of inspections and enforcement actions conducted

to ensure compliance with the required ordinances.

**2.9.4** Identification of any known water quality improvements or degradation in the receiving water to which the permittee's MS4 discharges. Where degradation is identified, identify why and what actions are being taken to improve the water quality of the receiving water.

**2.9.5** A duly authorized representative of the permittee shall sign and certify the annual report and include a statement or resolution that the permittee's governing body or delegated representatives have reviewed or been apprised of the content of the annual report. A signed copy of the annual report and other required reports shall be submitted to the appropriate Department regional storm water contact or to the Wisconsin DNR, Storm Water Program – WT/2, PO Box 7921, Madison, WI 53707-7921. Section 3.10 of this permit contains the date by which annual reports shall be submitted to the Department.

### **2.10 Cooperation**

The permittee may, by written agreement, implement this permit with another municipality or contract with another entity to perform one or more of the conditions of this permit. For example, if a county is implementing and enforcing an adequate storm water ordinance(s) within a town, the town would then not have to adopt its own ordinance. However, the permittee is ultimately responsible for compliance with the conditions of this permit.

## **3. COMPLIANCE SCHEDULE**

The permittee's programs under section 2 shall be submitted to the Department for review. The Department intends to review the program within the 6-month period prior to implementation to verify compliance with the requirements of this permit. The permittee shall comply with the specific permit conditions contained in section 2 according to following schedule:

### **3.1 Public Outreach and Education**

The permittee shall submit the proposed public education and outreach program to the Department within **18 months of the start date** of permit coverage. The permittee shall implement the public education and outreach program **within 24 months of the start date**.

### **3.2 Public Involvement and Participation**

The permittee shall submit the proposed public involvement and participation program to the Department within **18 months of the start date** of permit coverage. The permittee shall implement the public involvement and participation program **within 24 months of the start date**.

### **3.3 Illicit Discharge Detection and Elimination**

**3.3.1** The permittee shall submit the proposed illicit discharge and elimination ordinance to the Department **within 24 months of the start date** of permit coverage. The permittee shall adopt the illicit discharge and elimination ordinance **within 30 months of the start date**.

**3.3.2** The permittee shall submit the proposed illicit discharge response procedures to the Department **within 24 months of the start date** of permit coverage. The permittee shall implement the illicit discharge response procedures **within 30 months of the start date**.

**3.3.3** The permittee shall complete initial field screening **within 36 months of the start date**

of permit coverage.

**3.3.4** The permittee shall submit the proposed on-going field screening program to the Department **within 36 months of the start date** of permit coverage. The permittee shall implement the on-going field screening program **within 48 months of the start date**.

### **3.4 Construction Site Pollutant Control**

**3.4.1** The permittee shall submit the proposed construction site pollutant control ordinance to the Department **within 18 months of the start date** of permit coverage. The permittee shall adopt the construction site pollutant control ordinance **within 24 months of the start date**. If revision to any existing construction site pollutant control ordinance is necessary, the existing ordinances shall continue to be enforced until the revised ordinance becomes effective.

**3.4.2** The permittee shall submit the proposed construction site inspection and enforcement procedures to the Department **within 18 months of the start date** of permit coverage. The permittee shall implement the construction site inspection and enforcement procedures **within 24 months of the start date**.

### **3.5 Post-Construction Storm Water Management**

**3.5.1** The permittee shall submit the proposed post-construction storm water management ordinance to the Department **within 18 months of the start date** of permit coverage. The permittee shall adopt the post-construction storm water management ordinance **within 24 months of the start date**. If revision to any existing post-construction storm water management ordinance is necessary, the existing ordinances shall continue to be enforced until the revised ordinance becomes effective.

**3.5.2** The permittee shall submit the proposed long-term maintenance procedures to the Department **within 18 months of the start date** of permit coverage. The permittee shall implement the long-term maintenance procedures **within 24 months of the start date**.

### **3.6 Pollution Prevention**

The permittee shall submit the proposed pollution prevention program to the Department **within 24 months of the start date** of permit coverage. The pollution prevention program shall be implemented **within 30 months of the start date**.

### **3.7 Storm Water Quality Management**

The permittee shall complete the evaluation of flood control structures and assessment of compliance and submit the results to the Department **by March 10, 2008 or within 24 months of the start date** of permit coverage.

### **3.8 Storm Sewer System Map**

The permittee shall submit the MS4 map to the Department **within 24 months of the start date** of permit coverage.

### **3.9 Amendments**

The permittee shall amend a program required under this permit as soon as possible if the permittee becomes aware that it does not meet a requirement of this permit. The permittee shall amend its



program if notified by the Department that a program or procedure is insufficient or ineffective in meeting a requirement of this permit. The Department notice to the permittee may include a deadline for amending and implementing the amendment.

**3.10 Annual Report**

The permittee shall submit an annual report for each calendar year by **March 31<sup>st</sup> of the following year**. However, an annual report does not have to be submitted after the initial calendar year of permit coverage. The first annual report sent to the Department shall report on the previous 2 calendar years of permit coverage.

**3.11 Reapplication for Permit Coverage**

To retain authorization to discharge after the expiration date of this permit, the permittee shall apply for reissuance of this permit in accordance with the requirements of s. NR 216.09, Wis. Adm. Code, at least 180 days prior to this permit's expiration date.

**COMPLIANCE SCHEDULE SUMMARY**

PERMIT CONDITION	ACTIVITY	DUE TO DNR	IMPLEMENT
Public Education and Outreach – Section 3.1	Submit public education and outreach program	Within 18 months of the start date	Within 24 months of the start date
Public Involvement and Participation – Section 3.2	Submit public involvement and participation program	Within 18 months of the start date	Within 24 months of the start date
Illicit Discharge Detection and Elimination – Section 3.3	1. Submit illicit discharge ordinance	Within 24 months of the start date	Within 30 months of the start date
	2. Submit illicit discharge response procedures	Within 24 months of the state date	Within 30 months of the state date
	3. Complete initial field screening		Within 36 months of the start date
	4. Submit on-going field screening	Within 36 months of the start date	Within 48 months of the start date
Construction Site Pollutant Control – Section 3.4	1. Submit construction site pollutant control ordinance	Within 18 months of the start date	Within 24 months of the start date
	2. Submit construction site inspection and enforcement procedures	Within 18 months of the start date	Within 24 months of the start date
Post-Construction Storm Water Management – Section 3.5	1. Submit post-construction storm water management ordinance	Within 18 months of the start date	Within 24 months of the start date
	2. Submit long-term maintenance procedures	Within 18 months of the start date	Within 24 months of the start date
Pollution Prevention – Section 3.6	Submit pollution prevention program	Within 24 months of the start date	Within 30 months of the start date
Storm Water Quality Management – Section 3.7	1. Submit evaluation of flood control structures	By March 10, 2008 or within 24 months after start date	
	2. Submit assessment of compliance	By March 10, 2008 or within 24 months after start date	
MS4 Map – Section 3.8	Submit MS4 map	Within 24 months of the state date	
Annual Report – Section 3.10	Submit annual report	By March 31 of each year*	
Reapplication for Permit Coverage – Section 3.11	Submit reapplication	By March 31, 2009	

**\*Note:** An annual report does not have to be submitted after the initial calendar year of permit coverage. The first annual report sent to the Department shall report on the previous 2 calendar years of permit coverage.

#### 4. STANDARD CONDITIONS

The conditions in s. NR 205.07(1) and (3), Wis. Adm. Code, are incorporated by reference in this permit. The permittee shall be responsible for meeting these requirements, except for s. NR 205.07(1)(n), which does not apply to facilities covered under general permits. Some of these requirements are outlined below in sections 4.1 through 4.18. Requirements not specifically outlined below can be found in s. NR 205.07(1) and (3), Wis. Adm. Code.

**4.1 Duty to Comply:** The permittee shall comply with all conditions of the permit. Any act of noncompliance with this permit is a violation of this permit and is grounds for enforcement action or withdrawal of permit coverage under this permit and issuance of an individual permit. If the permittee files a request for an individual WPDES permit or a notification of planned changes or anticipated noncompliance, this action by itself does not relieve the permittee of any permit condition.

**4.2 Enforcement Action:** The Department is authorized under s. 283.89 and 283.91, Wis. Stats., to utilize citations or referrals to the Department of Justice to enforce the conditions of this permit. Violation of a condition of this permit is subject to a fine of up to \$10,000 per day of the violation.

**4.3 Compliance Schedules:** Reports of compliance or noncompliance with interim and final requirements contained in any compliance schedule of the permit shall be submitted in writing within 14 days after the scheduled due date, except that progress reports shall be submitted in writing on or before each schedule date for each report. Any report of noncompliance shall include the cause of noncompliance, a description of remedial actions taken, and an estimate of the effect of the noncompliance on the permittee's ability to meet the remaining scheduled due dates.

#### 4.4 Noncompliance

**4.4.1** Upon becoming aware of any permit noncompliance that may endanger public health or the environment, the permittee shall report this information by a telephone call to the Department regional storm water specialist within 24 hours. A written report describing the noncompliance shall be submitted to the Department regional storm water specialist within 5 days after the permittee became aware of the noncompliance. The Department may waive the written report on a case-by-case basis based on the oral report received within 24 hours. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

**4.4.2** Reports of any other noncompliance not covered under STANDARD CONDITIONS sections 4.3, 4.4.1, or 4.6. shall be submitted with the annual report. The reports shall contain all the information listed in STANDARD CONDITIONS section 4.4.1.

**4.5 Duty to Mitigate:** The permittee shall take all reasonable steps to minimize or prevent any adverse impact on the waters of the state resulting from noncompliance with the permit.

**4.6 Spill Reporting:** The permittee shall immediately notify the Department, in accordance with ch. NR 706, Wis. Adm. Code, in the event of a spill or accidental release of hazardous substances which has resulted or may result in a discharge of pollutants into waters of the state. The Department shall be notified via the 24-hour spill hotline (1-800-943-0003).

**4.7 Proper Operation and Maintenance:** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the municipality to achieve compliance with the conditions of the permit and the storm water management plan. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with conditions of this permit.

**4.8 Bypass:** The permittee may temporarily bypass storm water treatment facilities if necessary for maintenance, or due to runoff from a storm event which exceeds the design capacity of the treatment facility, or during an emergency.

**4.9 Duty to Halt or Reduce Activity:** Upon failure or impairment of storm water management practices identified in the storm water management program, the permittee shall, to the extent practicable and necessary to maintain permit compliance, modify or curtail operations until the storm water management practices are restored or an alternative method of storm water pollution control is provided.

**4.10 Removed Substances:** Solids, sludges, filter backwash or other pollutants removed from or resulting from treatment or control of storm water shall be stored and disposed of in a manner to prevent any pollutant from the materials from entering the waters of the state, and to comply with all applicable federal, state, and local regulations.

**4.11 Additional Monitoring:** If a permittee monitors any pollutant more frequently than required by the permit, the results of that monitoring shall be reported to the Department in the annual report.

**4.12 Inspection and Entry:** The permittee shall allow authorized representatives of the Department, upon the presentation of credentials, to:

**4.12.1** Enter upon the municipal premises where a regulated facility or activity is located or conducted, or where records are required to be maintained under the conditions of the permit;

**4.12.2** Have access to and copy, at reasonable times, any records that are required under the conditions of the permit;

**4.12.3** Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under the permit; and

**4.12.4** Sample or monitor at reasonable times, for the purposes of assuring permit compliance, any substances or parameters at any location.

**4.13 Duty to Provide Information:** The permittee shall furnish the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking or reissuing the permit or to determine compliance with the permit. The permittee shall also furnish the Department, upon request, copies of records required to be kept by the permittee.

**4.14 Property Rights:** The permit does not convey any property rights of any sort, or any

exclusive privilege. The permit does not authorize any injury or damage to private property or an invasion of personal rights, or any infringement of federal, state or local laws or regulations.

**4.15 Other Information:** Where the permittee becomes aware that it failed to submit any relevant facts in applying for permit coverage or submitted incorrect information in any plan or report sent to the Department, it shall promptly submit such facts or correct information to the Department.

**4.16 Records Retention:** The permittee shall retain records of all monitoring information, copies of all reports required by the permit, and records of all data used to complete the notice of intent for a period of at least 5 years from the date of the sample, measurement, report or application.

**4.17 Permit Actions:** Under s. 283.35, Wis. Stats., the Department may withdraw a permittee from coverage under this general permit and issue an individual permit for the municipality if: (a) The municipality is a significant contributor of pollution; (b) The municipality is not in compliance with the terms and conditions of the general permit; (c) A change occurs in the availability of demonstrated technology or practices for the control or abatement of pollutants from the municipality; (d) Effluent limitations or standards are promulgated for a point source covered by the general permit after the issuance of that permit; or (e) A water quality management plan containing requirements applicable to the municipality is approved. In addition, as provided in s. 283.53, Wis. Stats., after notice and opportunity for a hearing this permit may be suspended, modified or revoked, in whole or in part, for cause.

**4.18 Signatory Requirements:** All applications, reports or information submitted to the Department shall be signed by a ranking elected official, or other person authorized by those responsible for the overall operation of the MS4 and storm water management program activities regulated by the permit. The representative shall certify that the information was gathered and prepared under his or her supervision and, based on report from the people directly under supervision that, to the best of his or her knowledge, the information is true, accurate, and complete.

**4.19 Attainment of Water Quality Standards after Authorization:** At any time after authorization, the Department may determine that the discharge of storm water from a permittee's MS4 may cause, have the reasonable potential to cause, or contribute to an excursion of any applicable water quality standard. If such determination is made, the Department may require the permittee to do one of the following:

**4.19.1** Develop and implement an action plan to address the identified water quality concern to the satisfaction of the Department.

**4.19.2** Submit valid and verifiable data and information that are representative of ambient conditions to demonstrate to the Department that the receiving water or groundwater is attaining the water quality standard.

**4.19.3** Submit an application to the Department for an individual storm water discharge permit.

## 5. DEFINITIONS

Definitions for some of the terms found in this permit are as follows:

**5.1 Controls Condition** means a surface-water pollutant-loading analysis that includes pollutant reductions from storm water management practices.

**5.2 Department** means the Wisconsin Department of Natural Resources.

**5.3 Erosion** means the process by which the land's surface is worn away by the action of wind, water, ice or gravity.

**5.4 Hazardous substance** means any substance which may pose a substantial present or potential hazard to human health or the environment because of its quantity, concentration or physical, chemical or infectious characteristics.

**5.5 Illicit Connection** means any man-made conveyance connecting an illicit discharge to a MS4.

**5.6 Illicit Discharge** means any discharge to a MS4 that is not composed entirely of storm water except discharges authorized by a WPDES permit or other discharge not requiring a WPDES permit such as landscape irrigation, individual residential car washing, fire fighting and similar discharges.

**5.7 Infiltration** means the entry and movement of precipitation or runoff into or through soil.

**5.8 Infiltration system** means 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.

**5.9 Jurisdiction** means the area where the permittee has authority to enforce its ordinance(s) or otherwise has authority to exercise control over a particular activity of concern.

**5.10 Land Disturbing Construction Activity** means 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 storm water runoff and lead to increased soil erosion and movement of sediment into waters of the state. Land disturbing construction activity includes, but is not limited to, clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.

**5.11 Maximum Extent Practicable or MEP** means a level of implementing management practices in order to achieve a performance standard or other goal which takes into account the best available technology, cost effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features.

**5.12 Major Outfall** means a municipal separate storm sewer outfall that meets one of the following criteria:

**5.12.1** A single pipe with an inside diameter of 36 inches or more or equivalent conveyance (cross sectional area of 1,018 square inches) which is associated with a drainage area of more than 50 acres.

**5.12.2** A single pipe with an inside diameter of 12 inches or more or equivalent conveyance (cross sectional area of 113 square inches) which receives storm water runoff from land zoned for industrial activity with 2 or more acres of industrial activity, but not land zoned for industrial activity that does not have any industrial activity present.

**5.13 Municipality** means any city, town, village, county, county utility district, town sanitary district, town utility district, school district or metropolitan sewage district or any other public entity created pursuant to law and having authority to collect, treat or dispose of sewage, industrial wastes, storm water or other wastes.

**5.14 Municipal Separate Storm Sewer System or MS4** means a conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:

**5.14.1** Owned or operated by a municipality.

**5.14.2** Designed or used for collecting or conveying storm water.

**5.14.3** Which is not a combined sewer conveying both sanitary and storm water.

**5.15 No Controls Condition** means a surface water pollutant-loading analysis that does not include pollutant reductions from existing storm water management practices including, but not limited to, infiltration systems.

**5.16 Outfall** means the point at which storm water is discharged to waters of the state or leaves one municipality and enters another.

**5.17 Permittee** means the owner or operator of a MS4 authorized to discharge storm water into waters of the state.

**5.18 Permitted Area** refers to the areas of land under the jurisdiction of the permittee that drains into a MS4, which is regulated under a permit issued pursuant to subch. I of NR 216, Wis. Adm. Code.

**5.19 Redevelopment** means areas where development is replacing older development.

**5.20 Riparian Landowners** are the owners of lands bordering lakes and rivers.

**5.21 Sediment** means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.

**5.22 Start Date** is the initial date of permit coverage, which is specified in the Department letter authorizing coverage under this permit.

**5.23 Storm Water Management Practice** means 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.

**5.24 Storm Water Pollution Prevention Planning** refers to the development of a site-specific

plan that describes the measures and controls that will be used to prevent and/or minimize pollution of storm water.

**5.25 Structural Storm Water Management Facilities** are engineered and constructed systems that are designed to provide storm water quality control such as wet detention ponds, constructed wetlands, infiltration basins and grassed swales.

**5.26 Urbanized Area** means a place and the adjacent densely settled surrounding territory that together have a minimum population of 50,000 people, as determined by the U.S. bureau of the census based on the latest decennial federal census.

**5.27 Waters of the State** include surface waters, groundwater and wetlands.

**5.28 WPDES Permit** means a Wisconsin Pollutant Discharge Elimination System permit issued pursuant to ch. 283, Wis. Stats.



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## Chapter NR 216

### STORM WATER DISCHARGE PERMITS

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**Note:** Corrections made under s. 13.93 (2m) (b) 7., Stats., Register, August, 1997, No. 500.

**NR 216.001 Purpose.** The purpose of this chapter is to establish criteria defining those storm water discharges needing WPDES storm water discharge permits, as required by s. 283.33, Stats. The goal of this chapter is to eliminate to the maximum extent practicable the discharge of pollutants carried by storm water runoff into waters of the state from certain industrial facilities as identified in this chapter, construction sites over 5 acres and municipal storm water runoff as identified in this chapter.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.002 Definitions.** For the purposes of this chapter the following definitions are applicable:

(1) “Best management practices” or “BMPs” means schedules of activities, prohibitions of practices, maintenance procedures, structural controls, source area controls, treatment requirements, operating procedures, outdoor storage containment and other management practices to prevent or reduce pollutants in runoff entering waters of the state.

(2) “Construction site” means an area upon which one or more land disturbing construction activities occur that in total will disturb 5 or more acres of land, including areas that are part of a larger common plan of 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 such that the total disturbed area is 5 or more acres.

(3) “Contaminated storm water” means storm water that comes into contact with material handling equipment or activities, raw materials, intermediate products, final products, waste materials, byproducts, or industrial machinery in the source areas listed in s. NR 216.27 (3) (e).

(4) “Department” means the department of natural resources.

(5) “Discharge” means the discharge of any pollutant into the waters of the state from any point source.

(6) “Erosion” means the detachment and movement of soil, sediment or rock fragments by water, wind, ice or gravity.

(7) “Event mean concentration” means the flow-weighted concentration over the duration of a single runoff event.

(8) “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% of the cover for the unpaved areas and areas not covered by permanent structures or that employ equivalent permanent stabilization measures.

(9) “General WPDES permit” means a permit for the discharge of pollutants issued by the department under s. 283.35, Stats.

(10) “Illicit discharge” means any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges authorized by a WPDES permit or other discharge not requiring a WPDES permit.

(11) “Infiltration system” means a device or practice that encourages surface water to percolate or penetrate into underlying soil, including but not limited to infiltration trenches, grassed waterways and infiltration basins.

(12) “Land disturbing construction activity” means any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non-vegetative soil cover, which may result in storm water runoff and lead to increased soil erosion and movement of sediment into waters of the state. Land disturbing construction activity includes clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities, but does not include agricultural land uses or silviculture activities or routine maintenance for project sites that involve under 5 acres of land disturbance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

(13) “Landowner” means any person holding fee title, an easement or other interest in property which allows the person to undertake land disturbing construction activity on the property.

(14) “Municipal separate storm sewer” means a conveyance or system of conveyances including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets the following criteria:

- (a) Owned or operated by a municipality.
- (b) Designed or used for collecting or conveying storm water.

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(c) Which is not a combined sewer conveying both sanitary and storm water.

(d) Which is not part of a publicly owned wastewater treatment works which provides secondary or more stringent treatment.

(15) "Municipality" means any city, town, village, county, county utility district, town sanitary district, town utility district, school district or metropolitan sewage district or any other public entity created pursuant to law and having authority to collect, treat or dispose of sewage, industrial wastes, storm water or other wastes.

(16) "Outfall" means the point at which storm water is discharged to waters of the state or to a storm sewer.

(17) "Person" means an individual, owner, operator, corporation, partnership, association, municipality, interstate agency, state agency or federal agency.

(18) "Phase one municipality" means the cities of Madison and Milwaukee.

(19) "Point source" means a discernible, confined and discrete conveyance of storm water for which a permit is required under s. 283.33, Stats.

(20) "Pollutant" means any dredged spoil, solid waste, incinerator residue, sewage, garbage, refuse, oil, sewage sludge, munitions, chemical wastes, biological materials, radioactive substance, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal and agricultural waste discharged into water.

(21) "Pollution" means man-made or man-induced alteration of the chemical, physical, biological or radiological integrity of water.

(22) "Runoff coefficient" means the fraction of total precipitation that will leave a site as storm water runoff based on land use, soil and drainage characteristics.

(23) "Section 313 water priority chemical" means a chemical or chemical categories which:

(a) Is listed at 40 CFR 372.65 pursuant to 42 USC 11023;

**Note:** 42 USC 1023 is also known as the emergency planning and community right-to-know act (EPCRA), or as Section 313 of title III of the superfund amendments and reauthorization act (SARA) of 1986.

(b) Is present at or above threshold levels at a facility subject to EPCRA s. 313 reporting requirements; and

(c) Is listed in appendix D of 40 CFR 122 on either table II, table III or table V or is listed as a hazardous substance pursuant to 33 USC 1321 (b) (2) (A) of the clean water act at 40 CFR 116.4.

(24) "SIC" means standard industrial classification. SIC codes cited in this chapter are from the 1987 edition of the *Standard Industrial Classification Manual*.

(25) "Significant contributor" means a person who discharges to waters of the state pollutants which contribute to or have the reasonable potential to contribute to an exceedence of a water quality standard.

(26) "Significant materials" means materials related to industrial activity that may contaminate storm water, including, but not limited to: raw materials; fuels; materials such as solvents, detergents and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under 42 USC 9601 to 9675; any chemical the facility is required to report pursuant to 42 USC 11023; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

**Note:** 42 USC 9601 to 9675 is also known as the comprehensive environmental response, compensation and liability act (CERCLA). 42 USC 11023 is also known as the emergency planning and community right-to-know act (EPCRA), or as Section 313 of title III of the superfund amendments and reauthorization act (SARA) of 1986.

(27) "Source area control BMP" means best management practices intended to prevent storm water runoff from contacting materials that can potentially contaminate it.

(28) "Stabilize" means the process of making a site steadfast or firm, minimizing soil movement by the use of such practices as mulching and seeding, sodding, landscaping, paving, graveling or other appropriate measures.

(29) "Storm water" means storm water runoff, snow or ice melt runoff, and surface runoff and drainage.

(30) "Storm water outfall" means the point where a municipal separate storm sewer discharges to waters of the state, or leaves one municipality and enters another.

(31) "SWPPP" means storm water pollution prevention plan.

(32) "Treatment BMP" means a storm water treatment system, works, or practice that is designed to reduce or remove pollutants from contaminated storm water.

(33) "Urban storm water planning area" means the boundary defined by a phase one municipality, great lakes area of concern municipality, or a municipality over 50,000 in a priority watershed which serves as the appropriate planning area for the abatement of storm water runoff pollution into waters of the state.

(34) "Waters of the state" means those portions of Lake Michigan and Lake Superior within the boundaries of Wisconsin, all lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, water courses, drainage systems and other surface water or groundwater, natural or artificial, public or private within the state or under its jurisdiction, except those waters which are entirely confined and retained completely upon the property of a person.

(35) "WPDES" means Wisconsin pollutant discharge elimination system.

(36) "Working day" means any day except Saturday and Sunday and holidays designated in s. 230.35 (4) (a), Stats.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; **CR 00-035: am. (2), (8), (10), (12) Register September 2002 No. 561, eff. 10-1-02.**

**NR 216.003 General permit conditions.** In addition to the terms and conditions listed under this chapter, if a general permit is issued, it may require compliance with the terms and conditions identified in s. NR 205.08. The term of the permit shall be the maximum period of time provided by federal law.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.004 Noncompliance. (1)** Any act of noncompliance with the provisions of any storm water permit issued under this chapter is a violation of the permit and is grounds for enforcement action or denial of continued coverage under a general permit.

(2) Permittees shall submit reports of noncompliance with requirements contained in a compliance schedule of the permit in writing within 14 days after the compliance schedule deadline. Reports of noncompliance shall include: a description of the noncompliance; its cause; the steps taken or planned to reduce, eliminate and prevent reoccurrence of the noncompliance; and the effect of the noncompliance on the permittee's ability to meet remaining deadlines.

(3) The permittee shall immediately notify the department or the designated statewide 24-hour emergency number provided by the division of emergency government in accordance with ch. NR 706, in the event that a spill or accidental release of any hazardous material or substance results in the discharge of pollutants to waters of the state or creates a condition that may contaminate storm water discharged to waters of the state.

(4) The permittee shall take all reasonable steps to minimize or prevent any adverse impacts on the waters of the state resulting from noncompliance with a storm water permit.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

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**Subchapter I — Municipal Storm Water Discharge Permits**

**NR 216.01 Purpose.** The purpose of this subchapter is to establish the requirements for municipal storm water discharge permits, as required by s. 283.33, Stats. The goal of this subchapter is to eliminate to the maximum extent practicable the discharge of pollutants into waters of the state from municipal storm water runoff from municipalities identified in s. NR 216.02. The department shall consider the other environmental problems facing municipalities and emphasize cost effective pollution prevention solutions when determining what is practicable.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.02 Applicability.** The following municipal storm water dischargers shall obtain a WPDES storm water discharge permit under this subchapter because of water quality concerns associated with urban runoff:

**(1) PHASE ONE MUNICIPALITIES.** Municipal separate storm sewer systems serving incorporated areas with a population of 100,000 or more shall obtain a permit.

**Note:** The phase one municipalities are the cities of Madison and Milwaukee. They have already completed the permit application process in accordance with the EPA regulations in 40 CFR part 122.26 (d), prior to the promulgation of ch. NR 216.

**(2) GREAT LAKES AREAS OF CONCERN.** Municipalities in the great lakes areas of concern shall obtain a permit.

**Note:** There are 5 great lakes areas of concern in Wisconsin. Areas of concern have persistent water quality problems impairing beneficial uses. Remedial action plans for reacting to the pollutants are being developed for the areas of concern. The department is designating the great lakes areas of concern for storm water permitting because of the significance of storm water runoff as a pollutant source. Municipalities in remedial action plans, except for the city of Milwaukee which is required to apply under s. NR 216.02 (1), include the following:

Area of Concern	Municipality
Lower Green Bay and Fox River	Green Bay, Allouez, Ashwaubenon, DePere
Menominee River	Marinette
Sheboygan River	Sheboygan
St. Louis River and Duluth-Superior Harbor	Superior

**(3) PRIORITY WATERSHEDS.** Municipalities in priority watersheds with a population of 50,000 or more, based on the most recent census data for the incorporated area, shall obtain a permit.

**Note:** Priority watersheds associated with municipalities with a population of 50,000 or more, except for municipalities required to apply under s. NR 216.02 (1) or (2), are listed below. Clean-up and protection of water resources through control of runoff sources of pollution are needed to improve water quality in priority watersheds. The department is designating these priority watersheds for storm water permitting because of the significance of storm water runoff as a pollutant source. Municipalities in these priority watersheds include the following:

Priority Watershed	Municipality
Duncan Creek and Lowes Creek	Eau Claire
Root River	Racine
Menomonee and Kinnickinnic Rivers	West Allis
Upper Fox River (Illinois)	Waukesha

**(4) DESIGNATED MUNICIPALITIES.** Discharges from a municipal separate storm sewer system which either contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the state shall obtain a permit. All designations shall be guided by consistent statewide application of technical criteria. The department may designate discharges from municipal separate storm sewer systems on a system wide, jurisdiction wide or watershed basis. A designation for storm water permitting may be initiated by the following:

(a) The department may identify a municipality for permitting. To assist in making this determination, the department may request information from the municipality. The department shall consider the following factors when making a designation:

1. Physical interconnections between the municipal separate storm sewers of a permitted municipality and a designated municipality.
2. Location of the discharge from a designated municipality relative to a permitted municipal separate storm sewer system.
3. The quantity and nature of pollutants discharged to waters of the state.
4. The nature of the receiving water.
5. Protection of the watershed or basin drainage area receiving the municipal discharge.
6. Population of the municipality.
7. Other relevant factors.

(b) Phase one municipalities, great lakes areas of concern municipalities, priority watershed municipalities with a population of 50,000 or more, and the public may petition the department to designate additional municipalities for permitting. The petition shall contain information to assist the department in making a determination in accordance with the factors outlined in s. NR 216.02 (4) (a).

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.03 Method of application.** The owner or operator of a discharge from a municipal separate storm sewer system may either apply individually or as a co-applicant. Permit applications may be made by the following methods:

**(1) GROUP APPLICATION.** Municipalities may be co-applicants and submit a group application with one or more other owners or operators of discharges from municipal separate storm sewer systems.

**(2) REGIONAL AUTHORITY.** A regional authority, which would administer the co-applicants for an entire urban storm water planning area, may submit a permit application.

**(3) INDIVIDUAL APPLICATION.** A municipality may submit an individual permit application which only covers discharges from the municipal separate storm sewer system it is responsible for.

**Note:** The department encourages the filing of group or regional authority applications because of the possible benefits, including: economy of size, an additional 12 months to prepare the permit application, reduced permit fees, and enhanced cooperation between municipalities to achieve the same water quality goals. During the preapplication period municipalities can pursue forming groups or regional authorities. Formation of a storm water utility district may be a mechanism for applying as a group or regional authority, and could be a source for funding.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.04 Issuance of permits. (1) TYPES OF PERMITS.** The department may issue a permit to a group of co-applicants, a permit to a regional authority, or individual permits. Permits will be issued by the department for the type of application made. The department may exclude co-applicants from coverage under a group or regional authority permit, and instead issue an individual permit to each excluded co-applicant if coverage is necessary to ensure compliance with this subchapter.

**(2) CO-PERMITTEES.** A co-permittee is only responsible for permit conditions relating to discharges from the municipal separate storm sewers for which it is the owner or operator.

**(3) CONDITIONS.** Permits may specify different conditions for different discharges covered by a permit, including distinctive management programs for different storm water drainage areas.

**(4) PRIORITIES.** The following criteria shall be used by the department to determine the order of permitting municipalities:

(a) Phase one municipalities. These permits shall be issued beginning August 1, 1994.

(b) Municipalities designated by phase one municipalities and approved by the department. Beginning July 1, 1995, the depart-

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ment shall notify these municipalities they are required to apply for a storm water permit.

(c) Municipalities in great lakes areas of concern. Beginning July 1, 1996, the department shall notify these municipalities they are required to apply for a storm water permit.

(d) Municipalities in priority watersheds with a population of 50,000 or more. Beginning July 1, 1997, the department shall notify these municipalities they are required to apply for a storm water permit.

(e) Other municipalities designated under s. NR 216.02 (4).

**(5) PREAPPLICATION DEADLINES.** The following time frames apply:

(a) The department shall notify a municipality when application for a storm water permit is required. Preapplication information as described in s. NR 216.05 shall be submitted by the notified municipality within 6 months of this notification.

(b) The department shall review the urban storm water planning area required in s. NR 216.05 (3), and any petition to designate other municipalities for permitting in accordance with s. NR 216.05 (4). If the department intends to designate any municipalities in the watersheds of an applicant, according to s. NR 216.02 (4), it shall do so in the process of approving the preapplication. However, the department may later designate any municipality for permitting based on that municipality having a significant change in discharge to waters of the state. The following time frame applies to the petition and designation process.

1. The department shall notify municipalities named in a petition, or which the department designates under s. NR 216.02 (4), within 30 days of receipt.

2. The department shall notify municipalities within 90 days of the department's ruling on the petition.

3. A municipality can appeal the department's designation decision by demonstrating why they are not [a] contributor to a violation of a water quality standard or a significant contributor of pollutants to waters of the state for either all or a portion of their jurisdiction. Municipalities shall appeal the department's decision within 90 days.

4. The department shall rule on an appeal within 90 days.

5. If there is no appeal of the department's designation decision, approval of the preapplication shall occur when the department issues its ruling under subd. 2. If there is an appeal of the department's designation decision, approval of the preapplication shall occur when the department issues its ruling on the appeal under subd. 4.

**(6) APPLICATION DEADLINES.** Permit applications shall be submitted according to the following time frames after the preapplication is approved by the department:

(a) Within 24 months for an individual applicant.

(b) Within 36 months for a group or regional authority applicant.

**Note:** The department's goal is to issue a permit within 12 months after receipt of a substantially complete application.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; **CR 00-035: am. (5) (b) (intro.) Register September 2002 No. 561, eff. 10-1-02.**

**NR 216.05 Preapplication requirements.** The following information shall be submitted to the department prior to applying for a municipal storm water permit:

**(1) GENERAL INFORMATION.** The applicant's name, address, telephone number of contact person, ownership status and status as a government entity. For the purpose of establishing the responsibilities of each municipality in a group or regional authority application, co-applicants shall provide an intermunicipal agreement or a proposed agreement with a schedule for execution of the agreement.

**(2) LEGAL AUTHORITY.** A description of existing local ordinances to control discharges to the municipal separate storm

sewer system. When existing legal authority is not sufficient to meet the criteria in s. NR 216.06 (1), the description shall list additional authorities necessary to meet the criteria, and shall include a commitment and schedule to obtain additional authority.

**(3) URBAN STORM WATER PLANNING AREA.** A map showing the urban storm water planning area boundary, which shall take into consideration the storm water drainage basin and affected watersheds, the sewer service area and urban development area.

**(4) DESIGNATED MUNICIPALITIES.** A petition in accordance with s. NR 216.02 (4), to designate for storm water permitting any surrounding municipalities within the urban storm water planning area.

**(5) FISCAL RESOURCES.** A description of the financial resources currently available to the municipality to complete a permit application, the budget for existing storm water management programs, and sources of funds for storm water management programs.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.06 Application requirements.** Municipalities subject to the requirements of this subchapter shall apply for a storm water permit by submitting the necessary application information to the department. The municipal storm water permit application shall consist of:

**(1) ADEQUATE LEGAL AUTHORITY.** A demonstration that the applicant has legal authority established by statute, ordinance or series of contracts to, at a minimum:

(a) Control the contribution of pollutants to the municipal separate storm sewer system from storm water discharges associated with industrial activity.

(b) Prohibit illicit discharges to the municipal separate storm sewer system.

(c) Control the discharge of spills, dumping or disposal of materials other than storm water to the municipal separate storm sewer system.

(d) Control through intermunicipal agreements among co-applicants the contribution of pollutants from one municipal separate storm sewer system to another.

(e) Require compliance with conditions in ordinances, permits, contracts or orders.

(f) Carry out all inspections, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions including the prohibition on illicit discharges to the municipal separate storm sewer system.

**Note:** Construction site erosion control and storm water management model ordinances that may be adopted voluntarily by a municipality are available within ch. NR 152.

**(2) STORM SEWER SYSTEM MAP.** A compilation of data on the municipal separate storm sewer system and identification of potential sources of pollutants. Provide on a sufficiently sized and detailed map, such as a U.S. geological survey 7.5 minute topographic map or equivalent map with a scale suited for the level of detail, the following information:

(a) Identification and outline of the storm water drainage basins, the watersheds and municipal separate storm sewer systems. Other major municipal, government or privately owned storm water conveyance systems lying within, but not owned or operated by the permittee shall also be identified.

(b) A boundary defining the final urban storm water planning area as determined during the preapplication and all municipal borders in the area.

(c) A list and location of all known municipal storm sewer system outfalls discharging to waters of the state. Indicate the pipe size and identify those outfalls which are considered major. A major outfall means a municipal separate storm sewer outfall which meets one of the following criteria:

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1. A single pipe with an inside diameter of 36 inches or more, or from an equivalent conveyance (cross sectional area of 1,018 inch<sup>2</sup>) which is associated with a drainage area of more than 50 acres.

2. A municipal separate storm sewer that receives storm water runoff from land zoned for industrial activity and discharges from a single pipe with an inside diameter of 12 inches or more, or from an equivalent conveyance (cross sectional area of 113inch<sup>2</sup>) which is associated with a drainage area of more than 2 acres.

(d) The location and a description of each currently operating or closed municipal landfill or other treatment, disposal or storage facility for municipal waste.

(e) The location and permit number of any known discharge to the municipal separate storm sewer system that has been issued a WPDES permit, or has filed a permit application with the department.

(f) The location of major structural controls for storm water discharges including retention basins, detention basins and major infiltration devices.

(g) Identification of publicly owned parks, recreational areas and other open lands.

**(3) EXISTING MANAGEMENT PROGRAMS.** Identification of existing management programs to control pollutants from municipal separate storm sewer systems. Provide the following information:

(a) A description of any existing source area controls and structural best management practices, including operation and maintenance measures. Programs may include construction site erosion control practices, floodplain management controls, wetland protection measures, roadway management, emergency spill response, best management practices for new developments and recommendations in regional water quality management plans.

(b) A description of any existing programs to identify illicit connections to the municipal separate storm sewer system. Include inspection procedures, methods for detecting and preventing illicit discharges, areas where this program has been implemented and a summary of results.

**Note:** Existing management programs that affect storm water quality may be a starting point for improving and expanding a storm water management program.

**(4) INDUSTRIAL SOURCE IDENTIFICATION.** An inventory, organized by watershed, of industrial facilities which are likely to discharge storm water runoff to the municipal separate storm sewer system. Include the name and address of each industrial facility, and a description such as a standard industrial classification which best reflects the principal products or services provided by the industry.

**Note:** The department can assist in obtaining information on industrial facilities.

**(5) DISCHARGE CHARACTERIZATION.** A characterization of the quality and quantity of storm water runoff and effects of this runoff on receiving water bodies. This information shall be used to estimate potential storm water flows and to evaluate water quality. Using existing data and conditions, provide the following information:

(a) Monthly mean rain and snow fall estimates, or summary of weather bureau data, and the monthly average number of storm events.

(b) The location and description of land use activities, with divisions indicating undeveloped, residential, commercial, agricultural and industrial uses. For each land use type, estimate the average runoff coefficient. Estimate population densities and projected growth for a 10 year period within the drainage area served by a municipal separate storm sewer system.

(c) If available, quantitative data describing the volume and quality of discharges from the municipal separate storm sewer system, including a description of the outfalls sampled, sampling procedures, and analytical methods used.

(d) A list of water bodies that receive discharges from the municipal separate storm sewer system and the locations in these water bodies, where pollutants from storm water discharges may

accumulate and cause water quality degradation. Briefly describe known water quality impacts, by providing the following information on whether the water bodies have been:

1. Assessed and reported in a water quality inventory report, required under 33 USC 1315 (b). Applicants shall reference the report as to the designated use of the water body, attainment of the goals of 33 USC 1251 to 1376, and causes of pollution which prevent attainment of goals.

2. Listed in an individual control strategies toxic pollutant report, required under 33 USC 1314 (l), as a water body that is not expected to meet water quality standards or water quality goals due to toxic pollutants.

3. Listed in a nonpoint source assessment required under 33 USC 1329 (a), indicating that without additional action to control nonpoint sources of pollution, the water body cannot reasonably be expected to meet water quality standards due to significantly polluted storm water runoff.

4. Listed as a publicly owned lake and classified according to the level of eutrophication, required under 33 USC 1324 (a).

5. Recognized as a highly valued or sensitive water, classified as an exceptional or outstanding resource water by the department in ch. NR 102, or included in a priority watershed.

6. Defined by the department or U.S. fish and wildlife service's national wetlands inventory as wetlands.

7. Found to have pollutants in bottom sediments, fish tissue or biosurvey data.

8. Identified as contaminated groundwater, because of impacts from storm water infiltration on groundwater quality, especially drinking water supplies.

**Note:** The department can assist in obtaining some of the water resources information.

**(6) POLLUTANT LOADINGS.** A proposed schedule to provide pollutant loadings to receiving water bodies and the event mean concentrations, in accordance with s. NR 216.07 (4).

**(7) PROPOSED MONITORING PROGRAM.** A proposed monitoring program for data collection for the term of the permit, in accordance with s. NR 216.07 (5).

**(8) PROPOSED MANAGEMENT PROGRAM.** A schedule to provide a proposed storm water management program that shall be developed and initiated during the term of the permit, in accordance with s. NR 216.07 (7) and (7m).

**(9) FISCAL ANALYSIS.** For each fiscal year to be covered by the permit, a fiscal analysis of the estimated capital and operation and maintenance expenditures necessary to implement the proposed management programs. The analysis shall include a description of the source of funds, including any restrictions on the use of the funds.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; **CR 00-035: am. (2) (a) and (8) Register September 2002 No. 561, eff. 10-1-02.**

**NR 216.07 Permit requirements.** The department shall issue permits using the information provided by the applicant and other pertinent information when developing permit conditions. Permits shall include, but are not limited to, the following requirements (subject to the exemptions in s. NR 216.08):

**(1) APPLICATION DEFICIENCIES.** Orders to assure compliance with the permit application requirements in s. NR 216.06, if an incomplete application was submitted.

**(2) SCHEDULE OF COMPLIANCE.** A compliance schedule for the development and implementation of the storm water management program and any other requirements specified in the permit.

**(3) FIELD SCREENING.** A field screening analysis for illicit connections and illegal dumping at all major outfalls identified in the permit application, plus any additional selected field screening point designated by the municipality or the department. At a minimum, a screening analysis shall include a narrative description of visual observations made during dry weather periods. If any flow is observed, 2 grab samples shall be collected during a 24 hour

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period with a minimum period of 4 hours between samples. For all samples, provide a narrative description of the color, odor, turbidity and the presence of an oil sheen or surface scum as well as any other relevant observations regarding the potential presence of non-storm water discharges or illegal dumping. In addition, summarize the field analysis results for pH, total chlorine, total copper, total phenol, and detergents or surfactants, along with a description of the flow rate. Additional field analysis may be conducted using other parameters, like ammonia, to enhance the detection of illicit discharges. Where the field analysis does not involve analytical methods approved under 40 CFR 136 or by the department, the applicant shall provide a description of the method used including the name of the manufacturer of the test method along with the detection levels and accuracy of the test. The field screening points shall be established using the following guidelines:

- (a) Field screening points shall, where possible, be located downstream of any sources of suspected illegal or illicit activity.
- (b) Field screening points shall be located where practicable at the farthest manhole or other accessible location downstream in the system. Safety of personnel and accessibility of the location shall be considered in making this determination.
- (c) Consideration shall be given to hydrological conditions, total drainage area of the site, population density of the site, traffic density, age of the structures or buildings in the area, history of the area and land use types.

**(4) POLLUTANT LOADING.** A calculation of the event mean concentration, and the annual and seasonal pollutant loadings from each major outfall and the cumulative discharges from all known municipal separate storm sewer system outfalls to waters of the state. This information will be used to monitor trends in pollutant loadings. Calculations shall be provided for the following pollutants: BOD, COD, total suspended solids, total dissolved solids, total Kjeldahl nitrogen, nitrate plus nitrite nitrogen, ammonia nitrogen, total phosphorus, dissolved phosphorus, cadmium, copper, lead, zinc, and any other pollutant of significance detected in the storm water characterization. Provide a description of the procedures for calculating pollutant concentrations and loadings, including any modelling analysis with this calculation.

**(5) MONITORING PROGRAM.** A storm water monitoring program that considers the program proposed in the application, and may include changes required by the department. The program shall include information on the purpose and goals of the monitoring, the location of outfalls or field screening points for sampling, why the location is representative, the frequency of sampling, parameters to be sampled, and type of sampling equipment. The monitoring program may consider 3 components:

- (a) Characterization of storm water by monitoring the pollutants identified in sub. (6) (f), from locations representative of various land uses and water quality concerns. This information shall be used to calculate pollutant loadings and event mean concentrations.
- (b) Program assessment using water quality analysis and in-stream monitoring of the biological community and habitat conditions in the receiving water, to determine the effectiveness and adequacy of best management practices.
- (c) Wet weather screening of storm water quality to identify areas that may be significant contributors of pollutants to the municipal separate storm sewer system.

**(6) SAMPLING PROCEDURES.** Procedures for storm water sampling. When characterization data as described in sub. (5) (a) is required by the permit, sampling is subject to the following procedures:

- (a) Outfalls monitored shall be representative of the commercial, residential, and industrial land use activities in the drainage area contributing to the municipal separate storm sewer system. The number and location of outfalls monitored shall be designated

by the applicant in the proposed monitoring program. No more than 5 outfalls per municipality need to be monitored.

- (b) Samples shall be collected from storms which are preferably at least 50% of the average rainfall amount, but no less than 0.1 inch. The runoff event sampled shall be at least 72 hours after any previous measurable storm greater than 0.1 inch rainfall. Runoff events sampled shall be at least 4 weeks apart whenever possible. The entire runoff event shall be sampled whenever possible, or at least the first 3 hours of a lengthy runoff. There is no minimum time criteria for the duration of the runoff.

(c) Samples collected shall be flow weighted composite samples using a continuous auto sampler, or using a combination of a minimum of 3 sample portions taken manually each hour of the runoff with each sample portion separated by a minimum period of 15 minutes. A grab sample shall be collected within the first 30 minutes of the runoff for those parameters being analyzed that require a grab sample, which include: pH, cyanide, total phenols, oil and grease, fecal coliform, fecal streptococcus and volatile organic compounds.

(d) A narrative description shall be provided of each storm event which is sampled, including the date and duration of the storm, rainfall amount and the interval between the storm sampled and the end of the previous measurable storm of greater than 0.1 inch rainfall.

(e) Approved analytical methods shall be used, in accordance with ch. NR 219. When no analytical method is approved, a suitable method may be used provided a description of the method is submitted to the department for concurrence prior to sampling.

(f) Quantitative data shall be provided for the pollutants listed in the following table, plus the organic priority pollutants listed in Table II (organic, toxic pollutants) and the toxic metals, cyanide and total phenols listed in table III (metals, cyanide and total phenols) of appendix D of 40 CFR 122. The number of pollutants to be analyzed may be reduced if there is reason to believe some pollutants are unlikely to be present, or if initial analysis shows some pollutants were not detected at a level of concern.

Total Suspended Solids	Total Kjeldahl Nitrogen
Total Dissolved Solids	Nitrate plus Nitrite
COD	Ammonia Nitrogen
BOD <sub>5</sub>	Dissolved Phosphorus
Oil and Grease	Total Phosphorus
Fecal Coliform	Alkalinity
Fecal Streptococcus	Chloride
pH	Color
Hardness	Odor

(g) The department may require that quantitative data be provided for additional parameters on a case-by-case basis, and may establish sampling conditions such as the location, season of sample collection, form of runoff such as snow melt, rainfall amount and other conditions necessary to insure a representative sample.

**(7) STORM WATER MANAGEMENT PROGRAM.** A storm water management program that considers the program proposed in the application, and may include changes required by the department. The program shall include a comprehensive planning process which involves public participation and, where necessary, inter-governmental coordination and a description of staff and equipment available, and priorities for implementation. The discharge of pollutants shall be reduced to the maximum extent practicable using appropriate best management practices. The program shall be consistent with the recommendations in regional water quality management plans. Separate proposed programs may be submitted by each co-applicant. Proposed programs may impose controls on a system wide basis, a watershed basis, a jurisdiction basis, or on individual outfalls. Management programs may include the following requirements:

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(a) Source area controls and structural best management practices to reduce pollutants in runoff from commercial and residential areas that discharge into the municipal separate storm sewer system. An estimate of the expected reduction of pollutant loading and schedule for implementation shall be provided. The controls shall include:

1. Maintenance activities and a maintenance schedule for source area controls and structural best management practices.
2. Planning procedures including a comprehensive master plan to develop, implement and enforce controls on discharges from areas of new development and significant redevelopment, after construction is completed.
3. Practices for operating and maintaining roadways including deicing activities.
4. Procedures to assure that flood management projects assess impacts on the water quality, and that existing structural flood control devices have been evaluated to determine the feasibility of a retrofit device to provide pollutant removal from storm water.
5. A program to reduce pollutants associated with the application of pesticides, herbicides and fertilizer. The program may include educational activities, permits, certification of commercial applicators and distributors, and controls for application in public right-of-ways and at municipal facilities.

6. A program to promote the management of stream banks and shorelines by riparian land owners to minimize erosion, and restore or enhance the ecological values of the waterway.

(b) A program to detect and remove illicit discharges and improper disposal of wastes into the municipal separate storm sewer system, or require the discharger to obtain a separate WPDES permit. The program shall include:

1. A schedule to implement and enforce an ordinance, orders or similar means to prevent illicit discharges.
2. A strategy to address all types of illicit discharges. The following non-storm water discharges or flows are not considered illicit discharges: water line flushing, landscape irrigation, diverted stream flows, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool water, street wash water and fire fighting. However, these discharges need to be included in the strategy when identified by the municipality as significant sources of pollutants to waters of the state.
3. Procedures to conduct on-going field screening activities during the term of the permit, including areas or locations of storm sewers that will be evaluated.
4. Procedures to be followed to investigate portions of the municipal separate storm sewer system that, based on the results of field screening or other information, indicate a reasonable potential for containing illicit discharges or other sources of non-storm water. Procedures may include sampling for the field screening parameters identified in sub. (3), testing with fluorometric dyes or conducting inspections inside storm sewers where safety and other considerations allow.
5. Procedures to prevent, contain and respond to spills that may discharge into the municipal separate storm sewer system.
6. A program to promote public reporting of the presence of illicit discharges or water quality impacts associated with discharges from municipal separate storm sewers.
7. Information and education programs to facilitate the proper management of materials and behaviors that may pollute storm water, including: used oil, toxic materials, yard waste, lawn care and car washing.
8. Controls to limit infiltration of leakage from municipal sanitary sewers into municipal separate storm sewer systems.

(c) A program to monitor and control pollutants in industrial and high risk runoff discharges to municipal separate storm sewer systems. These sources include landfills; hazardous waste treatment, disposal, storage and recovery facilities; industrial facilities subject to 42 USC 11023; and industrial facilities that the municipal permit applicant determines are contributing a substantial pollutant loading to the municipal separate storm sewer system. The program shall include:

1. Priorities and procedures for inspections and implementing control measures.
2. A monitoring program for storm water discharges associated with the industrial facilities and high risk runoff, to be implemented during the term of the permit. Monitoring may include the submission of quantitative data on the following constituents: any pollutants limited in effluent guideline subcategories where applicable, any pollutant listed in an existing WPDES permit for a facility, oil and grease, COD, pH, BOD, total suspended solids, total phosphorus, total Kjeldahl nitrogen, nitrate plus nitrite nitrogen, and any other pollutant known or believed to be present. This monitoring program can be done in conjunction with the wet weather screening described in sub. (5) (c).

**Note:** If the industrial facility has a WPDES permit, storm water monitoring data may be available from the department.

(d) A program to implement and maintain source area controls and structural best management practices to reduce pollutants in storm water runoff from construction sites to the municipal separate storm sewer system. The program shall include:

1. Procedures for site planning which incorporate consideration of potential water quality impacts.
2. Requirements for source area controls and structural best management practices.
3. Procedures for identifying priorities for inspecting sites and enforcing control measures which consider the nature of the construction activity, topography, the characteristics of soil and receiving water quality.
4. Information and education programs for construction site operators.

**(7m) PERFORMANCE STANDARDS.** The storm water management program required in sub. (7) shall meet the performance standards in ss. NR 151.11, 151.12 and 151.13.

**(8) ASSESSMENT OF CONTROLS.** An assessment of the storm water management program and the effectiveness and adequacy of the best management practices implemented shall be reviewed annually. The assessment shall include the following:

- (a) Review the results of the monitoring program.
- (b) Estimate expected reductions in pollutant loadings discharged from the municipal separate storm sewer system.
- (c) Identify known impacts of storm water controls on both surface water and groundwater.
- (d) Propose modifications to the storm water management program to correct deficiencies and to improve the program.

**(9) ANNUAL REPORT.** An annual report for the preceding calendar year shall be submitted by March 31 of the next year. The municipal governing body, interest groups, and the general public shall be encouraged to review and comment on the annual report. Permittees shall consider the comments in the storm water management program. The annual report shall include the following information:

- (a) The status of implementing the storm water management program and compliance with permit schedules.
- (b) A summary of the monitoring data accumulated through the reporting year.
- (c) A summary of the assessment of controls.
- (d) Proposed modifications to the storm water management program in response to the assessment of controls.
- (e) A fiscal analysis which includes the annual expenditures and budget for the reporting year, and the budget for the next year.

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(f) A summary of the number and nature of enforcement actions, inspections, and public information and education programs.

(g) Identification of water quality improvements or degradation.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; CR 00-035: cr. (7m) Register September 2002 No. 561, eff. 10-1-02.

**NR 216.08 Exemptions.** The department shall have flexibility in determining application and permit requirements. When an applicant demonstrates a requirement will take more time to complete, is not practicable or applicable, or the information is not necessary for the permit, the department may give an exemption to exclude or modify the following:

(1) **DESIGNATED MUNICIPALITIES.** A petition designating additional municipalities for permitting required under s. NR 216.05 (4).

(2) **INDUSTRIAL INVENTORY.** An inventory of each industrial discharger required under s. NR 216.06 (4).

(3) **DISCHARGE CHARACTERIZATION.** Characterization data required under s. NR 216.06 (5).

(4) **POLLUTANT LOADINGS.** Calculation of event mean concentrations and pollutant loadings required under s. NR 216.07 (4).

(5) **MONITORING.** Monitoring programs for storm water data collection under s. NR 216.07 (5).

(6) **SAMPLING.** Sampling procedures for storm water characterization under s. NR 216.07 (6).

(7) **STORM WATER MANAGEMENT PROGRAM.** Management programs required under s. NR 216.07 (7).

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.09 Permit fees.** A storm water permit fee shall be paid annually by each permittee under this subchapter, or by permittees whose WPDES permit incorporates storm water management requirements under this subchapter. Permit fees are due by June 30th each year. The fees shall be assessed according to the following schedule:

(1) \$10,000 for permits serving populations of 100,000 or more.

(2) \$5,000 for permits serving populations less than 100,000.

(3) \$1,000 for state and federal permits.

**Note:** The permit fee for a group permit or regional authority permit can be shared between the co-permittees by a method determined to be equitable by the co-permittees. For example, a group permit representing 10 co-permittees with a total population of 200,000, could divide the \$10,000 fee 10 ways proportionally based on the ratio of each co-permittee's population to the total population.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.10 Permit reissuance.** Permits shall be issued for a term of no more than 5 years. Application for reissuance of a permit shall be filed at least 180 days prior to the expiration date of the permit. If the permit is not reissued by the time the existing permit expires, the existing permit remains in effect. The following information shall be submitted as the reissuance application:

(1) **APPLICABILITY.** Proposed modifications to permit applicability including the permitted area, co-permittees and storm sewer system map.

(2) **MONITORING PROGRAM.** Proposed modifications to the storm water monitoring program for the term of the next permit.

(3) **MANAGEMENT PROGRAM.** Proposed modifications to the storm water management program for the term of the next permit.

(4) **OTHER.** Any other information pertinent to permit reissuance to update the permit.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.11 Trading.** If watershed planning occurs in Wisconsin which allows the trading of pollutant discharge loadings, this trading process can be used to meet the substantive requirements of the storm water discharge permit program. Municipalities

shall be allowed to demonstrate compliance with the requirements of this subchapter by meeting the requirements of an enforceable watershed management plan approved by the department. Municipalities may be allowed to discharge a quantity or quality of storm water which, taken alone, does not assure attainment and maintenance of water quality standards, if the receiving water is part of a watershed management unit for which an enforceable management plan has been approved by the department. Implementation of storm water management practices recommended in department approved watershed plans may constitute compliance with this chapter and issuance of a storm water permit may be unnecessary.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

## Subchapter II — Industrial Storm Water Discharge Permits

**NR 216.20 Purpose.** The purpose of this subchapter is to:

(1) **PERMITTING CRITERIA.** Establish the criteria for identifying non-construction related storm water discharges associated with industrial activity for which permits are required under s. 283.33 (1) (a) and (d), Stats.;

(2) **APPLICATION REQUIREMENTS.** Establish the requirements for filing applications for storm water discharge permits for non-construction related activities defined in s. 283.33 (1) (a) and (d), Stats.;

(3) **PERMITS.** Establish the requirements and conditions for storm water individual and general permits for discharges associated with industrial activity; and

(4) **PRIORITY.** Establish a system for prioritizing the issuance of permits based on the relative impact of the discharges on water quality.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.21 Applicability and exclusions.** (1) **POINT SOURCES.** This subchapter is applicable to point sources which discharge storm water associated with industrial activity to the waters of the state, either directly or via a separate storm sewer system.

(2) **CATEGORIES.** This subchapter is applicable to discharges originating from the industrial facilities belonging to categories identified in pars. (a) to (c).

(a) Tier 1 categories:

1. Heavy manufacturers defined by their primary Standard Industrial Classification (SIC) Code, which represents the primary income-producing activity at the facility, listed in Table 1:

**Table 1**  
**Tier 1 Heavy Manufacturers**

SIC	Description
-24	Lumber & Wood Products
-26	Paper & Allied Products
-28	Chemicals & Allied Products
-29	Petroleum Refining & Related Industries
-311	Leather Tanning & Finishing
-32	Stone, Clay, Glass & Concrete Products
-33	Primary Metal Industries
-3441	Fabricated Structural Metal
-373	Ship & Boat Bldg. & Repair

**Note:** Facilities in SIC Codes 2434, 265, 267, 283, 285, 2951, 323, 3271, 3272 and 3273 are included in s. NR 216.21 (2) (b).

2. Facilities involved in the recycling of materials such as metal scrap yards, battery reclaimers, salvage yards and automobile junk yards, including but not limited to those classified in SIC Codes 5015 and 5093.

3. Facilities with bulk storage piles for coal, metallic and non-metallic minerals and ores, and scrap not otherwise covered under



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this subchapter, such as those associated with freight transportation, SIC Code 44, and wholesale trade, SIC Code 5052.

(b) Tier 2 categories:

1. Manufacturing facilities defined by Table 2, not to include their access roads and rail lines, but only if contaminated storm water results from the operation of these facilities:

**Table 2  
Tier 2 Light Manufacturers**

SIC	Description
-20	Food & Kindred Products
-21	Tobacco Products
-22	Textile Mill Products
-23	Apparel & Other Textile Products
-2434	Wood Kitchen Cabinets
-25	Furniture & Fixtures
-265	Paperboard Containers & Boxes
-267	Misc. Converted Paper Products
-27	Printing, Publishing, & Allied Industries
-283	Drugs
-285	Paints & Allied Products
-30	Rubber & Misc. Plastics Products
-31	Leather & Leather Products
-323	Products of Purchased Glass
-34	Fabricated Metal Products
-35	Industrial & Commercial Machinery & Computer Equipment
-36	Electronic & Other Electrical Equipment & Components
-37	Transportation Equipment
-38	Instruments & Related Products
-39	Misc. Manufacturing Industries
-4221	Farm Product Warehousing & Storage
-4222	Refrigerated Warehousing & Storage
-4225	General Warehousing & Storage

**Note:** Facilities in SIC Codes 311, 3441 and 373 are included in s. NR 216.21 (2) (a) 1.

2. Transportation facilities defined by Table 3 that have vehicle maintenance shops, equipment cleaning operations or airport de-icing operations. This subchapter only applies to those portions of these facilities that are either involved in vehicle maintenance including rehabilitation, mechanical repairs, painting, fueling, lubrication and associated parking areas, or involved in cleaning operations or de-icing operations, or that are listed as source areas under s. NR 216.27 (3) (e):

**Table 3  
Tier 2 Transportation Facilities**

SIC	Description
-40	Railroad Transportation
-41	Local & Interurban Passenger Transit
-42	Trucking & Warehousing
-43	U.S. Postal Service
-44	Water Transportation
-45	Transportation By Air
-5171	Petroleum Bulk Stations & Terminals

**Note:** Facilities in SIC Codes 4221-4225 are included in s. NR 216.21 (2) (b) 1.

3. Facilities defined by Table 4, including active and inactive mining operations and oil and gas exploration, production, processing or treatment operations or transmission facilities. This subchapter only applies where storm water runoff has come into contact with any overburden, raw material, intermediate product, finished product, by-product or waste material.

**Table 4  
Tier 2 Mining, Oil and Gas Operations**

SIC	Description
-10	Metal Mining
-12	Coal Mining
-13	Oil & Gas Extraction
-14	Non-metallic Minerals, except fuels

This subchapter does not apply to non-coal mining operations which have been released from applicable state or federal reclamation requirements after December 17, 1990; nor to coal mining operations released from the performance bond issued to the facility by the appropriate surface mining control and reclamation act authority under 30 USC 1201 et seq. and 16 USC 470 et seq. Production, processing or treatment operations or transmission facilities associated with oil and gas extraction are included only if there has been a discharge of storm water after November 16, 1987 containing a quantity of a pollutant reportable pursuant to 40 CFR 110.64, CFR 117.21 or 40 CFR 302.6, or if a storm water discharge contributed to a violation of a water quality standard.

4. Facilities subject to storm water effluent limitation guidelines, new or existing source performance standards or toxic pollutant effluent standards under 33 USC 1251, 1311, 1314 (b) and (c), 1316 (b) and (c), 1317 (b) and (c), 1326 (c), except Table 2 facilities, in this subparagraph, that do not discharge contaminated storm water.

5. Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage, treatment, recycling and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of one million gallons per day or more, or required to have an approved pretreatment program. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and which are not physically located in the confines of the facility, or areas that are in compliance with 33 USC 1345.

6. Hazardous waste treatment, storage and disposal facilities, including those operating under interim status or a permit under subtitle C of the resource conservation and recovery act (RCRA) under 42 USC 6921 et seq.

7. Landfills, land application sites, and open dumps that receive or have received any industrial waste from any of the facilities identified in this section, including those subject to regulation under subtitle D of RCRA, under 42 USC 6901 et seq.

8. All steam electric power generating facilities, including coal handling sites but not including off-site transformer or electric substations.

9. Facilities described in SIC code 2951 for asphalt paving mixes and block, and facilities described in SIC codes 3271, 3272 and 3273 for cement products.

10. Facilities previously classified as tier one dischargers which are subsequently classified as tier 2 under s. NR 216.23 (6) or (9).

11. Discharges determined by the department to be significant contributors of pollutants to waters of the state.

(c) 1. Tier 3 categories shall include facilities that have certified to the department that they have no discharges of contaminated storm water and for which the department has concurred with the certification.

2. Facilities that have certified to the department, and the department concurs with the certification, that their storm water discharges contain only earthen materials from non-metallic mining operations, and that this stormwater is discharged to onsite seepage basins that effectively remove the contaminants prior to discharge to the groundwater.

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**(3) OTHER ENVIRONMENTAL PROGRAMS.** If one of the following conditions is met, the department may deem that a facility is in compliance with coverage required under s. 283.33, Stats., and will not be required to hold a separate permit under s. 283.33, Stats.:

(a) The storm water discharge is in compliance with a department permit or approval which includes storm water control requirements that are at least as stringent as regulations under this subchapter; or

(b) The storm water discharge is in compliance with a memorandum of understanding with another agency of the state that implements regulations including storm water control requirements that are at least as stringent as regulations under this subchapter.

**(4) EXCLUSIONS.** This subchapter does not apply to any of the following:

(a) Diffused surface drainage or agricultural storm water discharges.

(b) Non-storm water discharges to the outfall covered under an individual or general WPDES permit, including contact cooling water, non-contact cooling water, other process wastewaters, sewage, spills or leaks.

(c) Non-storm water discharges to the outfall for which coverage under an individual or general WPDES permit is not necessary, including water line flushing, landscape irrigation, diverted stream flows, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, dechlorinated swimming pool water, street wash water, and fire fighting.

(d) Inactive, closed or capped landfills which have no potential for contamination of storm water. The department shall make a determination of contamination potential on a case-by-case basis.

(e) Remedial action discharges or discharges authorized by a general permit for discharging contaminated or uncontaminated groundwater.

(f) Discharges of hazardous materials that are required to be reported under ch. NR 706.

(g) Areas located on plant lands which are segregated from the industrial activities of the plant, such as office buildings and accompanying parking lots, if the drainage from the segregated areas is not mixed with contaminated storm water drainage.

(h) Storm water discharges from industrial activities owned or operated by municipalities which are not required to apply for a municipal storm water discharge permit, not including airports, power plants or uncontrolled sanitary landfills.

(i) Storm water discharges into a municipal combined sewer system.

**(5) EXEMPTION.** Storm water discharges at facilities that are regulated by permits containing storm water effluent limitations may be exempt from the need for coverage under a general storm water permit.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; **CR 00-035: am. (2) 10. and (c) Register September 2002 No. 561, eff. 10-1-02.**

**NR 216.22 Certification program. (1) VOLUNTARY.** The department may establish or approve a voluntary certification program.

**(2) PURPOSE.** The purpose of the program is to provide storm water pollution prevention training for persons designated by permitted facilities to act as the storm water pollution prevention managers. Certification is intended to provide storm water pollution prevention managers with a minimum level of competence. The department may not require facilities to have certified storm water pollution prevention managers.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.23 Permit coverage. (1) STATEWIDE TIER ONE TYPE GENERAL PERMIT.** The department may issue a statewide general permit to cover all tier one type storm water discharges where the discharges are not covered by an industry-specific general permit issued pursuant to s. NR 216.24, or by an individual permit issued pursuant to s. 283.31 or 283.33, Stats.

**(2) STATEWIDE TIER 2 TYPE GENERAL PERMIT.** The department may issue a statewide general permit to cover all tier 2 type storm water discharges where the discharges are not covered by an industry-specific general permit issued pursuant to s. NR 216.24, or by an individual permit issued pursuant to s. 283.31 or 283.33, Stats.

**(3) STATEWIDE TIER 3 TYPE GENERAL PERMIT.** The department may issue a statewide general permit to cover all tier 3 type storm water discharges where the discharges are not covered by an industry-specific general permit issued pursuant to s. NR 216.24, or by an individual permit issued pursuant to s. 283.31 or 283.33, Stats.

**(4) APPLICABILITY OF PERMIT COVERAGE.** Conditions of an individual permit issued under s. 283.31 or 283.33, Stats., may not be more stringent than similar conditions in general storm water permits and, specifically, individual permittees shall have the right to develop and implement their own SWPPP and BMPs in accordance with s. NR 216.27.

**(5) MONITORING AND REPORTING REQUIREMENTS.** The owner or operator of a facility subject to a:

(a) Tier one general permit issued under this subchapter or an individual permit issued under s. 283.31, Stats., containing tier one general permit requirements, or individual storm water permits issued under s. 283.33 (1) (a) and (d), Stats., shall be required to submit to the department annual chemical specific monitoring results for the first 2 years following SWPPP implementation and annual facility site compliance inspection (AFSCI) reports under s. NR 216.28 (2).

(b) Tier 2 general permit or an individual permit issued under s. 283.31 or 283.33, Stats., containing tier 2 general permit requirements shall be required by the general or individual permit to maintain the annual facility site compliance inspection reports on the site of the discharge. Facilities subject to this paragraph may be subject to fewer conditions and requirements than facilities covered by a tier one general permit and may not be required by the general permit to undertake chemical specific monitoring.

(c) Tier 3 general permit shall be required by the general permit to maintain the annual reports required under s. NR 216.28 (6) on the site of the discharge. Facilities subject to this paragraph are not required to develop or implement a SWPPP, conduct chemical specific monitoring or conduct annual site compliance and quarterly inspections.

**(6) CHANGING COVERAGE TO TIER 2.** A permittee covered by a tier one general permit issued under this section, or a permit issued under s. NR 216.24, may request that the department consider converting its coverage to a tier 2 category general storm water permit if all of the following occur:

(a) The process or operation has changed so that no storm water is contaminated with any of the pollutants identified in s. NR 216.27 (3) (i);

(b) The permittee certifies that there is no unpermitted non-storm water discharge in the outfall; and

(c) The permittee has completed a minimum of 3 years of industrial activity under a SWPPP, with no confirmed problems identified by public complaint or the AFSCI reports required under s. NR 216.28 (2).

**(7) CHANGING COVERAGE TO TIER 3.** A facility covered by a tier one or 2 general permit or a general permit issued under s. NR 216.24 may request at the time of permit reissuance that the department convert its coverage to a tier 3 general permit under s. NR 216.21 (2) (c).

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**(8) EFFLUENT LIMITATIONS.** A facility covered by an individual storm water permit under s. 283.33 (1) (d), Stats. may be subject to an effluent limitation for a point source discharge, as defined in s. 283.01 (6), Stats., for storm water discharge.

**(9) MOVEMENT TO TIER 2.** The department may make the determination that a facility or an industrial activity covered under a tier 1 general permit has no significant exposure of pollutants listed under s. NR 216.27 (3) (i) and is more appropriately covered by a tier 2 general permit.

**(10) MOVEMENT TO TIER ONE.** In the event that the department makes the determination that a facility or an industrial activity, defined by the 4 digit SIC code, covered under a tier 2 permit may be discharging storm water contaminated with pollutants listed in s. NR 216.27 (3) (i), the department may determine that the facility or activity is more appropriately covered by a tier one general permit.

**(11) DISCONTINUING TIER 3 COVERAGE.** The department may revoke coverage of a tier 3 permitted facility if the department determines that the facility is not in compliance with s. NR 216.21 (2) (c). In this case, the permittee shall reapply for tier one or tier 2 general permit coverage.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; CR 00-035: am. (9) Register September 2002 No. 561, eff. 10-1-02.

**NR 216.24 Industry-specific general permits.**

**(1) INDUSTRY SPECIFIC PERMITS.** In addition to statewide general permits issued under s. NR 216.23 (1) to (3), the department may issue industry-specific general permits to one or more categories of industries identified in s. NR 216.21 (2).

**(2) REQUIREMENTS.** Industry-specific storm water general permits shall differ from the statewide storm water general permits by factoring in characteristics common to the industry. The primary distinguishing characteristic shall be the requirements of the SWPPPs. Industry-specific storm water permits may contain all of the requirements of a statewide tier one general permit.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.25 Movement out of a storm water general permit.** **(1) APPLICABILITY.** The department may make the determination that a facility covered under a tier 2 or tier 3 general permit no longer needs to be covered under a storm water general permit if all of the following conditions are met:

(a) The industry is described in s. NR 216.21 (2) (b) 1.; and

(b) There are no discharges of storm water that has come into contact with material handling equipment or activities, raw materials, intermediate products, final products, waste materials, byproducts or industrial machinery in any of the source areas listed in s. NR 216.27 (3) (e); and

(c) The permit holder certifies that there are no unpermitted non-storm discharges in the outfall.

**(2) RENEWED COVERAGE.** Any facility described in s. NR 216.21 (2) (b) 1. that has been dropped from general permit coverage by the department shall reapply for a storm water general permit whenever there are changes in activities or site drainage patterns which could result in contamination of storm water.

**(3) INDIVIDUAL PERMIT COVERAGE.** If one or more of the following conditions are met, the department may make the determination that a storm water general permit holder is more appropriately covered by an individual WPDES permit under s. 283.31 or 283.33, Stats.:

(a) The storm water discharge is a significant source of pollution and more appropriately regulated by an individual WPDES storm water discharge permit; or

(b) The storm water discharger is not in compliance with the terms and conditions of this chapter, or the general storm water permit issued under this subchapter; or

(c) Effluent limitations or standards are promulgated for a storm water discharge.

**(4) PETITION.** Any person may submit a written request to the department that it take action under this section.

**(5) REVOCATION OF GENERAL PERMIT.** If the department determines that a general permit holder is more appropriately covered by an individual WPDES permit, the department shall explain its decision in writing to the permittee prior to revoking the general permit and issuing an individual WPDES permit.

**(6) NON-STORM WATER DISCHARGES.** If a permittee identifies an unpermitted non-storm water discharge into their outfall and is unable to remove the discharge, the permittee shall notify the department and apply for a permit, under s. 283.31 or 283.35, Stats.

**(7) NOTICE OF TERMINATION.** If a facility no longer claims coverage under any general or individual permit for the discharge of storm water from industrial activity under this subchapter, the permittee shall submit a signed notice of termination to the department.

(a) A notice of termination shall be submitted on forms supplied by the department. Data submitted in the notice of termination forms shall be used as [a] basis for terminating coverage under this subchapter.

(b) Notice of termination forms may be obtained from the district offices of the department or by writing to the Department of Natural Resources, WPDES Permit Section, Box 7921, Madison, WI 53707-7921.

(c) Notice of termination forms shall be filed with the Department of Natural Resources, WPDES Permit Section, Box 7921, Madison, WI 53707-7921.

(d) The notice of termination form shall be signed in accordance with the signature requirements in s. NR 216.26 (7).

(e) Termination of coverage under this subchapter shall be effective upon submittal of written confirmation by the department to the permittee.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.26 Application requirements.** **(1) APPLICABILITY.** Facility types listed in s. NR 216.21 (2), except for Table 2 facilities that discharge no contaminated storm water, shall apply for a storm water discharge permit. Application for a storm water discharge permit shall be made within the time frames specified in sub. (2), using department forms specified in sub. (3).

**(2) DATE OF APPLICATION.** Persons proposing to discharge storm water shall submit to the department a complete storm water permit application at least 6 months prior to the commencement of activities at the site.

**(3) FORMS.** Applications forms can be obtained from the following address: Department of Natural Resources, WPDES Permit Section, Box 7921, Madison, WI 53707-7921. The following application forms are acceptable:

(a) Prior to November 1, 1994;

1. Group storm water permit application which has been submitted to the United States environmental protection agency and a duplicate copy sent to the department.

2. DNR Form 3400-151, DNR Form 3400-152 or DNR Form 3400-163 which the applicant has completed and submitted to the department for consideration. The applicant shall also submit a copy of this completed form to the owner of any separate municipal storm sewer receiving the facility's storm water discharge if the municipal separate storm sewer serves an area for which a WPDES municipal storm water discharge permit is required.

(b) Following November 1, 1994, DNR Form 3400-151 and DNR Form 3400-152 may not be used as application for a permit to discharge storm water associated with industrial activity.

**(4) PERMIT TYPE CRITERIA.** The department shall evaluate the information submitted on the application form to determine whether a facility is covered under a storm water general permit

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or an individual permit under s. 283.31 or 283.33, Stats.; or whether coverage under a permit should be denied. The criteria for the department's determination of coverage under a storm water general permit, coverage under an individual WPDES permit, or denial of coverage, are specified in pars. (a), (b) and (c), respectively. The criteria for determination of tier type are specified in par. (d). All permit issuances shall be accompanied by a cover letter justifying the permit type or reason for denial of coverage. The cover letter shall also indicate the date upon which coverage under the permit becomes effective at the facility.

(a) The basis for determining coverage under a storm water general permit shall be a comparison of application information on SIC code, industrial activity and the discharge of contaminated storm water, to the categories identified in s. NR 216.21 (2).

(b) If a facility has an existing WPDES permit, the department may choose to regulate storm water discharges under that permit.

(c) If the SIC code or description of industrial activity stated on the application is any of the categories defined in Table 2 of s. NR 216.21 (2), and the application states that the facility discharges no contaminated storm water, the department shall determine that no permit coverage is required under this subchapter.

(d) The basis for determining the tier type of general permit shall be a comparison of application information on SIC code, industrial activity and the discharge of contaminated storm water, to the descriptions or categories identified in s. NR 216.21 (2) (a) to (c).

**(5) ADDITIONAL INFORMATION.** The department may require more information than what is provided in the completed application in order to make a determination if coverage under a general permit is appropriate. The applicant shall provide the additional information requested by the department within 30 days from receipt of notification by the department.

**(6) FORMS.** Permit application forms shall be filed with the Department of Natural Resources, WPDES Permit Section, Box 7921, Madison, WI 53707-7921.

**(7) SIGNATURE.** The permit application form shall be signed as follows:

(a) In the case of a corporation, by a principal executive officer of at least the level of vice-president, or by an authorized representative responsible for the overall operation of the site for which a permit is sought;

(b) In the case of a partnership, by a general partner;

(c) In the case of a sole proprietorship, by the proprietor.

**(8) DEFICIENT APPLICATION.** The department may require an applicant to submit data necessary to complete any deficient permit application or may require the applicant to submit a complete new permit application where the deficiencies are extensive or the appropriate form has not been used. The department may take enforcement action against anyone who fails to submit a timely application or to provide requested information in a timely manner.

**(9) REAPPLICATION.** At such time that a storm water general permit is reissued, the department may require a covered facility to submit a complete new permit application in order to determine continued applicability of the permit.

**(10) LATE APPLICATION.** An operator of a storm water discharge associated with industrial activity is not precluded from submitting an application for an existing facility after October 1, 1992. In such instance, the department may bring appropriate enforcement actions.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; CR 00-035: am. (2) Register September 2002 No. 561, eff. 10-1-02.

**NR 216.27 Storm water pollution prevention plan.**

**(1) APPLICABILITY.** Any person covered by a storm water general or individual permit, excluding coverage described in s. NR 216.21 (2) (c), shall prepare and implement a SWPPP.

**(2) INCORPORATION BY REFERENCE.** When plans, the permit application or activities developed and conducted in compliance with this chapter or other federal, state or local regulatory programs meet the requirements of this section, the plans or activities may be incorporated into the SWPPP by reference to avoid unnecessary duplication of regulatory requirements.

**(3) PLAN REQUIREMENTS.** The SWPPP shall contain, at a minimum, the following items and provisions:

(a) The SWPPP shall identify by job title the specific individual that has responsibility for all aspects of SWPPP development and implementation. The individual acting in that job title shall have the responsibility to develop, evaluate, maintain and revise the SWPPP; carry out the specific management actions identified in the SWPPP, including maintenance practices; conduct or provide for monitoring activities; prepare and submit reports; and serve as facility contact for the department.

(b) The SWPPP shall contain a short summary of the major activities conducted at various locations throughout the facility.

(c) The SWPPP shall include a drainage base map depicting how storm water drains on, through and from the facility to either groundwater, surface water or wetlands. The drainage base map shall show the facility property; a depiction of the storm drainage collection and disposal system including all known surface and subsurface conveyances, with the conveyances named; any secondary containment structures; the location of all outfalls, including outfalls recognized as permitted outfalls under another WPDES permit, numbered for reference, that discharge channelized flow to surface water, ground water or wetlands; the drainage area boundary for each outfall; the surface area in acres draining to each outfall, including the percentage that is impervious such as paved, roofed or highly compacted soil and the percentage that is pervious such as grassy areas and woods; existing structural storm water controls; the name and location of receiving waters. The location of activities and materials that have the potential to contaminate storm water shall also be depicted on the drainage base map.

(d) The SWPPP shall summarize any results of available storm water sampling data or other observations that could be useful in characterizing the quality of storm water discharges or identifying sources of storm water contamination. Available data that characterizes the quality of storm drainage discharges under dry weather flow conditions shall also be included, except when the data has or will be reported to the department under another WPDES permit.

(e) The SWPPP shall identify all potential source areas of storm water contamination including but not limited to:

1. Outdoor manufacturing areas;
2. Rooftops contaminated by industrial activity;
3. Industrial plant yards;
4. Storage and maintenance areas for material handling equipment;
5. Immediate access roads and rail lines;
6. Material handling sites (storage, loading, unloading, transportation, or conveyance of any raw material, finished product, intermediate product, by-product or waste);
7. Storage areas (including tank farms) for raw materials, finished and intermediate products;
8. Disposal or application of wastewater;
9. Areas containing residual pollutants from past industrial activity;
10. Areas of significant soil erosion;
11. Refuse sites;
12. Vehicle maintenance and cleaning areas;
13. Shipping and receiving areas;
14. Manufacturing buildings;
15. Residual treatment, storage and disposal sites; and

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16. Any other areas capable of contaminating storm water runoff.

(f) The SWPPP shall identify any significant polluting materials or activities associated with the storm water contamination from source areas identified in par. (e). When possible, specific pollutants likely to be present in storm water as a result of contact with specific materials shall also be listed.

(g) The SWPPP shall identify all known contaminated and uncontaminated sources of non-storm water discharges to the storm sewer system and indicate which are covered by WPDES permits. The SWPPP shall contain the results of the non-storm water discharge monitoring required by s. NR 216.28. If monitoring is not feasible due to the lack of suitable access to an appropriate monitoring location, the SWPPP shall include a statement that the monitoring could not be conducted and an explanation of the reasons why.

(h) The SWPPP shall rely to the maximum extent practicable, and to the extent it is cost effective, on the use of source area control best management practices that are designed to prevent storm water from becoming contaminated at the site. Source area control best management practices that are either proposed or in place at the facility shall be indicated on the facility drainage base map. The SWPPP shall provide for the use of the following applicable source area control best management practices:

1. Practices to control significant soil erosion;
2. Good house-keeping measures, preventive maintenance measures, visual inspections, spill prevention and response measures and employee training and awareness;
3. Covering or enclosing salt storage piles so that neither precipitation nor storm water runoff can come into contact with the stored salt; or, for facilities that use brine and have salt storage piles on impervious curbed surfaces, a means of diverting contaminated storm water to a brine treatment system for process use;
4. Use of a combination of precipitation control, containment, drainage controls or diversions to control section 313 water priority chemicals potentially discharged through the action of storm water runoff, leaching or wind.

(hm) The SWPPP shall meet the performance standards in s. NR 151.12 for those areas that are described in s. NR 151.12 (2).

(i) The SWPPP shall identify storm water pollutants that are likely to contaminate storm water discharges to waters of the state following implementation of source area control best management practices. Past sampling data collected at the facility or at sufficiently similar outfalls at other facilities may be used in making this determination. At a minimum, the following pollutants shall be considered for their potential to contaminate storm water:

1. Any pollutant for which an effluent limitation is contained in any discharge permit issued to the facility by the department;
2. Any pollutant contained in a categorical effluent limitation or pre-treatment standard to which the facility is subject;
3. Any section 313 water priority chemical for which the facility has reporting requirements and which has the potential for contaminating storm water;
4. Any other toxic or hazardous pollutants from present or past activity at the site that remain in contact with precipitation or storm water and which could be discharged to the waters of the state and which are not regulated by another environmental program;
5. Any of the following parameters which might be present in significant concentrations: oil and grease; pH; total suspended solids; 5-day biological oxygen demand; chemical oxygen demand.

(j) When source area control best management practices are not feasible, not cost effective or are inadequate to control storm water pollution, or when the department determines source area control best management practices are inadequate to achieve a water quality standard, the SWPPP shall prescribe appropriate

storm water treatment practices as needed to reduce the pollutants in contaminated storm water prior to discharge to waters of the state. Proposed or existing storm water treatment practices shall be shown on the facility drainage basin map. The SWPPP shall provide for the following types of storm water treatment practices:

1. Storm water significantly contaminated with petroleum products shall be treated for oil and grease removal by an adequately sized, designed and functioning wastewater treatment device. Coverage under a separate individual or general permit is required for discharges of storm water from oil/water treatment devices.

2. Point source discharges of storm water contaminated by significant amounts of sediment from eroding areas, including bare earth industrial lots and ongoing industrial processes, shall be treated by filtration or sedimentation type practices.

(k) The SWPPP shall include provisions for complying with the monitoring requirements specified in s. NR 216.28. The SWPPP shall include a checklist of inspections to be made during the annual facility site inspection described in s. NR 216.28 (2). The SWPPP shall also identify for each outfall the type of monitoring that will be conducted, such as non-storm discharge monitoring; storm water discharge quality inspections; or chemical pollutant monitoring for facilities covered under a tier one permit. The following are requirements for facilities covered under a tier one permit:

1. A list of chemical parameters proposed for testing at each outfall shall be included along with the analytic sample testing procedures from ch. NR 219 that will be used to determine pollutant concentrations.

2. The list of chemical parameters shall include each of the residual pollutants identified in par. (i), or an explanation of why the pollutant should not be included in the chemical testing.

(L) The SWPPP shall include an implementation schedule that is consistent with the compliance schedule in the storm water general permit.

(m) The SWPPP shall be signed in accordance with s. NR 216.26 (7) prior to submittal to the department.

**(4) PLAN AMENDMENT.** A permittee shall amend a SWPPP if any of the following circumstances occur:

(a) When expansion, production increases, process modifications, changes in material handling or storage or other activities are planned which will result in significant increases in the exposure of pollutants to storm water discharged either to waters of the state or to storm water treatment devices. The amendment shall contain a description of the new activities that contribute to the increased pollutant loading, planned source control activities that will be used to control pollutant loads, an estimate of the new or increased discharge of pollutants following treatment and, when appropriate, a description of the effect of the new or increased discharge on existing storm water treatment facilities.

(b) The facility finds through its comprehensive annual facility site compliance inspection, quarterly visual inspection of storm water quality, annual chemical storm water sampling or other means that the provisions of the SWPPP are ineffective in controlling storm water pollutants discharged to waters of the state.

(c) Upon written notice that the department finds the SWPPP to be ineffective in achieving the conditions of the storm water permit issued to the facility.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; CR 00-035: cr. (3) (hm) Register September 2002 No. 561, eff. 10-1-02.

**NR 216.28 Monitoring requirements. (1) NON-STORM WATER DISCHARGES.** The permittee shall evaluate all outfalls for non-storm water discharges into the storm drainage system. Evaluations shall take place during dry periods. The following are additional requirements for evaluating non-storm water discharges:

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(a) Any monitoring shall be representative of non-storm water discharges from the facility.

(b) Either of the following monitoring procedures are acceptable:

1. End of pipe screening shall consist of visual observations made at least twice per year at each outfall of the storm sewer collection system. Observations shall be made at times when non-storm water discharges from the facility are considered most likely to occur. Instances of dry weather flow, stains, sludges, color, odor or other indications of a non-storm water discharge shall be recorded; or

2. A detailed testing of the storm sewer collection system may be performed. Testing methods include dye testing, smoke testing or video camera observation. Should the permittee use detailed testing as an alternative, the department shall require a re-test after 5 years or a lesser period as deemed necessary by the department.

(c) Tier one and tier 2 facilities shall include the results of the non-storm water evaluations in their SWPPP. Tier 3 facilities shall maintain the results of their non-storm water evaluations on site. Information reported shall include: date of testing, test method, outfall location, testing results and potential significant sources of non-storm water discovered through testing. The department may provide a standard form for recording the information.

(d) Any permittee, excluding tier 3 permittees, unable to evaluate outfalls for non-storm water discharges shall sign a statement certifying that this requirement could not be complied with, and include a copy of the statement in the SWPPP. In this case, the entire SWPPP shall be submitted to the department.

(e) Any tier 3 permittee unable to evaluate outfalls for non-storm water discharges shall sign a statement certifying that this requirement could not be complied with, and shall submit the statement to the department.

**(2) ANNUAL SITE INSPECTION.** Facilities, except facilities covered under a tier 3 general permit, shall perform and document the results of an annual facility site compliance inspection (AFSCI). The inspection shall be adequate to verify that the site drainage conditions and potential pollution sources identified in the SWPPP remain accurate, and that the best management practices prescribed in the SWPPP are being implemented, are being properly operated and are being adequately maintained. Information reported shall include: the inspection date, inspection personnel, scope of the inspection, major observations and revisions needed in the SWPPP.

**(3) QUARTERLY VISUAL INSPECTION.** Facilities, except facilities covered under a tier 3 general permit, shall perform and document quarterly visual inspections of storm water discharge quality at each outfall. Inspections shall be conducted within the first 30 minutes or as soon thereafter as practical, but not to exceed 60 minutes, after runoff begins discharging to the outfall. The inspections shall include any observations of color, odor, turbidity, floating solids, foam, oil sheen or other obvious indicators of storm water pollution. Information reported shall include: the inspection date, inspection personnel, visual quality of the storm water discharge and probable sources of any observed storm water contamination.

**(4) STORM WATER SAMPLING AND ANALYSIS.** Unless an alternative monitoring plan is required as part of the SWPPP, facilities covered under a tier one permit shall perform annual chemical storm water sampling at each outfall for those residual pollutants listed in the permittee's SWPPP as required by s. NR 216.27 (3) (i). The following are specific requirements for chemical storm water monitoring:

(a) The list of pollutants to be tested in the outfall shall be identified in the facility monitoring plan portion of the SWPPP.

(b) When a facility has more than one outfall which have storm water discharges substantially similar based on consideration of industrial activity, significant materials, and management, one

outfall may be selected to represent the group of similar outfalls provided that this strategy has been clearly stated in the facility monitoring plan and that the representative outfall is clearly identified as such on the drainage base map. No more than 5 outfalls with discharges representative of storm water discharged from the facility need to be sampled. A permittee may voluntarily collect and analyze additional samples, and may at the permittee's discretion submit this information to the department.

(c) After review of the facility monitoring plan portion of the SWPPP, the department may add additional pollutants to the monitoring list if it has cause to do so based on a reasonable probability that the pollutants will be present in storm water discharges from the facility. The department may also remove pollutants from the monitoring list if it determines that continued monitoring for the pollutant serves no further purpose. Chemical monitoring may be discontinued after submitting the second annual facility site compliance inspection report.

(d) Storm water samples shall be collected during the period of March through November from rainfall events that produce greater than 0.1 inch of rainfall and occur at least 72 hours after a previous rainfall of 0.1 inch or greater.

(e) Storm water samples shall be representative of either:

1. The "first flush" of storm water runoff from the outfall. Composite samples are required for all pollutants except those for which analytic techniques require grab samples. The composite sample shall be collected during the first 30 minutes of runoff. At least 3 separate samples shall be collected for compositing, and the collection of samples shall be evenly spaced throughout the sampling period, or

2. The storm water discharged from a detention pond that has greater than a 24 hour holding time for a representative storm. A grab sample is required for all pollutants. The grab sample shall be representative of the storm water discharge from the pond outfall.

(f) Monitoring samples shall be representative of the volume and nature of the monitored discharge. Analytic testing shall be in conformance with ch. NR 219, unless an alternate procedure is approved by the department prior to the initiation of sampling.

(g) For each storm water measurement or sample taken, the permittee shall record and submit the following information to the department. This information shall be included in the annual facility site compliance inspection reports described in s. NR 216.29 (2):

1. The date, exact place, method and time of sampling or measurements;
2. The individual who performed the sampling or measurements;
3. The date the analysis was performed;
4. The name of the certified laboratory which performed the analysis;
5. The analytical techniques or methods used;
6. The results of the analysis;
7. The estimated duration of the rainfall event, in hours, and the estimated total amount of precipitation falling during the rainfall event, in inches.

**(5) SAMPLING EXCEPTIONS.** The department may waive specific monitoring requirements for the following reasons:

(a) The permittee indicates that either an employee could not reasonably be present at the facility at the time of the snow-melt or runoff event, or that attempts to meet the monitoring requirement would endanger employee safety or well-being.

(b) The permittee indicates that there were no snow melt or runoff events large enough to conduct a quarterly visual inspection at an outfall.

(c) The facility is inactive or remote, such as inactive mining operations where monitoring and inspection activities are impractical or unnecessary. At a minimum, the department shall establish

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an alternative requirement that the facilities make site inspections by a qualified individual at least once in every 3 year period.

(d) The permittee can demonstrate to the department's satisfaction that the sources of storm water contamination are outside of the facility's property boundary and are not associated with the facility's activities. The demonstration shall be presented in the SWPPP and submitted to the department for evaluation.

**(6) TIER 3 INSPECTION.** Tier 3 facilities shall perform and maintain for 3 years the results of an annual facility source exposure inspection (FSEI). The inspection shall be adequate to verify that storm water discharged from the facility is not contaminated by industrial activity in the source areas identified in s. NR 216.27 (3) (e).

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.29 Compliance and reporting requirements.**

**(1) REQUIREMENTS.** Facilities covered under s. NR 216.23 (1) and (2) shall be subject to the following requirements:

(a) Existing facilities shall develop a SWPPP and submit a SWPPP summary to the department within 12 months from the effective date of coverage under the storm water general permit.

(b) Facilities constructed on or after November 1, 1994 shall develop a SWPPP and submit a SWPPP summary to the department prior to initiating construction.

(c) The SWPPP shall conform to the requirements specified in s. NR 216.27 (3).

(d) The SWPPP shall be kept at the facility and made available to the department upon request.

(e) The SWPPP summary shall be submitted on a standardized department form, which the department shall provide with the permit.

(f) If a SWPPP summary is incomplete, the department shall notify the permittee, and may request to review the complete SWPPP.

(g) The SWPPP summary shall include the results of the non-storm water discharge testing, under s. NR 216.28 (1), and shall indicate whether the SWPPP includes a storm water treatment practice. If a SWPPP includes a storm water treatment practice, the department may require the submittal of plans and specifications for review and approval pursuant to s. 281.41 (1), Stats.

**(2) FIRST ANNUAL SITE INSPECTION.** The first annual facility site compliance inspection shall be conducted by the permittee within 24 months of the effective date of coverage under the general permit. Facilities covered under a tier one permit shall submit their first inspection report to the department within 30 months of the effective date of coverage under the permit. The report shall be written on department forms, and shall contain information from the inspection, the quarterly visual inspection and the annual chemical monitoring. Facilities covered under the tier 2 permit shall keep the results of their AFSCI and quarterly visual inspections on site for department inspection. Facilities covered under a tier one permit are not required to submit inspection reports after submittal of the second inspection report, unless so directed by the department. However, these inspections and quarterly visual inspections shall still be conducted; and results shall be kept on site for department inspection.

**(3) INSPECTION DATES.** The first quarterly visual inspection of storm water discharge quality shall be conducted within 24 months of the effective date of coverage under the permit.

**(4) SAMPLING DATES.** Facilities covered under the tier one permit shall submit their first annual chemical monitoring results with their first inspection report. The monitoring results shall include all of the information specified in s. NR 216.28 (4) (g).

**(5) BMP IMPLEMENTATION.** Unless an alternate implementation schedule is required as part of the SWPPP, the BMPs identified in the SWPPP shall be implemented within 24 months of the effective date of coverage under the permit. Facilities constructed

on or after November 1, 1994 shall implement the BMPs identified in the SWPPP within 12 months of the effective date of coverage under the permit, unless an alternate implementation schedule is required as part of the SWPPP.

**(6) SWPPP AMENDMENTS.** The permittee shall keep the SWPPP current to correct deficiencies in the original SWPPP. The permittee shall amend the SWPPP and notify the department in the event of any facility operational changes that could result in additional significant storm water contamination.

**(7) RECORD RETENTION.** Records required under this subchapter shall be retained for 5 years beyond the date that the report was made and shall be made available to the department upon request.

**(8) SIGNATURE.** Reports required under this subchapter shall be signed in accordance with s. NR 216.26 (7).

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; **CR 00-035: am. (7) Register September 2002 No. 561, eff. 10-1-02.**

**NR 216.30 Industrial storm water discharge permit fees.**

A storm water discharge permit fee shall be paid annually by each industrial facility holding a permit under this chapter or a wastewater discharge permit that incorporates storm water management requirements under this chapter. Permit fees are due June 30 of each year. The fee shall be:

**(1)** \$200 for coverage under a tier 1 industrial general permit under s. NR 216.21 (2) (a), an industry-specific general permit under s. NR 216.24 with tier 1 requirements, or an individual WPDES permit under s. 283.31, Stats., with tier 1 requirements; or

**(2)** \$100 for coverage under a tier 2 industrial general permit under s. NR 216.21 (2) (b), an industry-specific general permit under s. NR 216.24 or an individual WPDES under s. 283.31, Stats., with tier 2 requirements; or

**(3)** \$0 for coverage under a tier 3 industrial general permit under s. NR 216.21 (2) (c); or

**(4)** \$500 for coverage under an individual WPDES permit issued under s. 283.33 (1), Stats.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; corrections in (1) to (4) made under s. 13.93 (2m) (b) 1., Stats., Register, November, 1999, No. 527; **CR 00-035: am. Register September 2002 No. 561, eff. 10-1-02.**

**Subchapter III — Construction Site Storm Water Discharge Permits**

**NR 216.41 Purpose.** The purpose of this subchapter is to establish criteria defining those construction site activities that constitute discharges needing a WPDES storm water discharge permit for landowners of construction sites that require coverage under a WPDES permit for storm water discharges; and the requirements for filing a WPDES permit application for a construction site as required by s. 283.33, Stats.; to prescribe the form of the WPDES permit application pursuant to s. 283.37, Stats.; to specify the number of working days within which the department will indicate its intended action on a WPDES permit application or request for modification, pursuant to s. 227.116 (1), Stats., and to specify the storm water erosion control and management that is required at construction sites regulated under this subchapter.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; **CR 00-035: am. Register September 2002 No. 561, eff. 10-1-02.**

**NR 216.42 Applicability. (1) CONSTRUCTION SITES.** Except as provided in subs. (2) to (4), a notice of intent shall be filed by any landowner who intends to create a point source discharge of storm water associated with a construction site activity to the waters of the state.

**(2) AGRICULTURE.** Storm water discharges from agricultural land uses, including use of land for planting, growing, cultivating and harvesting of crops for human or livestock consumption and

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pasturing or yarding of livestock, including sod farms and tree nurseries are not covered by this subchapter.

**(2m) SILVICULTURE.** Storm water discharges from silviculture activities, including tree nursery operations, tree harvesting road construction and maintenance, tree harvesting site preparation, tree harvesting operations, reforestation, tree thinning, prescribed burning and pest control are not covered by this subchapter. Clearing and grubbing of an area of a construction site is not considered a silviculture activity.

**Note:** Certain lumber, wood and paper product manufacturers may require coverage under an industrial general WPDES permit for storm water discharges pursuant to subch. II. A silviculture activity may require approval pursuant to ch. 30 or 31, Stats., or an U.S. army corps of engineers section 404 permit.

**(3) COMMERCIAL BUILDINGS.** Storm water discharges from commercial building sites regulated by chs. Comm 61 to 65 in a manner which is in compliance with this chapter shall be deemed to hold a WPDES permit and shall be in compliance with this chapter. The department of commerce shall notify the department of projects covered under this subsection which shall constitute the notice of intent for these projects. Storm water discharges which occur after November 1, 1994 from commercial building sites prior to the adoption of the erosion control requirements in s. Comm 61.115 shall require coverage under a permit issued pursuant to this chapter.

**(4) DEPARTMENT OF TRANSPORTATION PROJECTS.** Storm water discharges from projects administered by the department of transportation, regulated by ch. Trans 401, and subject to the department of transportation and department of natural resources liaison cooperative agreement, if in compliance with ch. Trans 401 and the liaison cooperative agreement shall be deemed to be in compliance with s. 283.33, Stats., and the requirements of this chapter. The department of transportation shall notify the department of projects covered under this subsection which shall constitute the notice of intent for these projects.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; corrections in (3) made under s. 13.93 (2m) (b) 7., Stats., Register, November, 1999, No. 527; CR 00-035: cr. (2m) Register September 2002 No. 561, eff. 10-1-02; correction in (3) made under s. 13.93 (2m) (b) 7., Stats., Register September 2002 No. 561.

**NR 216.43 Notice of intent requirements. (1) FORMS.** A notice of intent shall be submitted on forms supplied by the department. Data submitted in the notice of intent forms shall be used as the basis for conferring coverage under the general WPDES permit for storm water discharges.

**(2) OBTAINING FORMS.** Notice of intent forms may be obtained from the regional offices of the department or by writing to the Department of Natural Resources, Storm Water Program – WT/2, Box 7921, Madison, WI 53707-7921.

**(3) REQUIRED INFORMATION.** The notice of intent shall include at a minimum the following information:

(a) The name and mailing address of the construction site landowner;

(b) The name and telephone number of the contact person;

(c) The mailing address and location of the construction site for which the notification is submitted;

(d) When known, the name, address and telephone number of the general contractor;

(e) Proposed start and end dates for construction; and

(f) The following certification: "I certify under penalty of law that this document and attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that the provisions of the permit, including development and implementation of the construction site erosion

control and storm water management plans, will be complied with."

**(4) APPLICATION FEE.** A storm water construction site application fee of \$200 shall be paid to the department with the notice of intent, excluding notices filed under s. NR 216.42 (3) or (4).

**(6) FILING.** Notice of intent forms shall be filed with the regional office of the department in which the construction site activity is located or with the Department of Natural Resources, Storm Water Program – WT/2, Box 7921, Madison, WI 53707-7921.

**Note:** It is intended that when these forms are changed, input from affected individuals and parties will be sought.

**(7) SIGNATURE REQUIREMENTS.** The notice of intent form shall be signed as follows:

(a) In the case of a corporation, by a principal executive officer of at least the level of vice-president, or by his or her authorized representative responsible for the overall operation of the site for which a permit is sought;

(b) In the case of a partnership, by a general partner;

(c) In the case of a sole proprietorship, by the proprietor.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; CR 00-035: am. (1), (2), (4) and (6) Register September 2002 No. 561, eff. 10-1-02.

**NR 216.44 Notice of intent deadlines.** Persons required to obtain coverage for storm water discharge associated with land disturbing construction activity under a general WPDES permit shall submit a completed notice of intent, via certified or registered mail, in accordance with the requirements of this chapter prior to commencing any land disturbing construction activities. Unless notified by the department to the contrary, applicants who submit a notice of intent in accordance with the provisions of this subchapter are authorized to discharge storm water from construction sites under the terms and conditions of the general WPDES permit 14 working days after the date that the department receives the notice of intent. The department may require the landowner to submit plans and specifications for approval of storm water treatment practices, pursuant to s. 281.41, Stats.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.45 Incomplete notice of intent and time limit for department decision. (1)** Within 14 working days after the date the department receives the notice of intent, the department may require an applicant to submit data the department has identified as being necessary to complete any deficient notice of intent or may require the applicant to submit a complete new notice of intent when the deficiencies are extensive or the appropriate form has not been used.

**(2)** The department shall refund to the applicant the stormwater construction site permit application fee paid under s. NR 216.43 (4) if the department does not make a determination on the permit application within 45 business days of receipt of the information required under sub. (1). In this subsection, "business day" means any day except Saturday, Sunday and state holidays as designated in s. 230.35 (4) (a), Stats. This subsection does not apply to permits issued under this chapter related to mining, as defined in s. 293.01(9), Stats., prospecting, as defined in s. 293.01(18), Stats., or nonmetallic mining, as defined in s. 295.11(3), Stats. This subsection applies only to complete responses that are received by the department on or after September 1, 2000.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; renum. to be (1) and am., cr. (2), Register, August, 2000, No. 536, eff. 9-1-00; correction in (2) made under s. 13.93 (2m) (b) 7., Stats., Register September 2002 No. 561.

**NR 216.46 Erosion control plan requirements.**

**(1) SITE SPECIFIC PLAN.** The permittee shall develop a construction site erosion control plan for each site covered by this subchapter and shall perform all activities required by the plan and shall maintain compliance with the plan thereafter. The construction site erosion control plan shall address pollution caused by soil erosion and sedimentation during construction, and up to final sta-



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bilization of the site. The construction site erosion control plan shall be prepared in accordance with good engineering practices and the design criteria, standards and specifications outlined in the *Wisconsin Construction Site Best Management Practice Handbook* (WDNR Pub. WR-222 November 1993 Revision).

**(1m) PERFORMANCE STANDARDS.** The construction site erosion control plan shall meet the applicable performance standards in either s. NR 151.11 or 151.23.

**Note:** Section NR 151.11 applies to construction sites that are not transportation facilities and s. NR 151.23 applies to transportation facility construction sites.

**(2) HANDBOOK.** The *Wisconsin Construction Site Best Management Practice Handbook* (WDNR Pub. WR-222 November 1993 Revision) contains limitations on suitable conditions where best management practices can be applied. Tributary area limitations on the use of practices for trapping sediment in channelized flow conflict with the practices suggested in the January 7, 1987 version of the State Model Construction Site Erosion Control Ordinance. Also, best management practices within ch. NR 154 may conflict with the *Wisconsin Construction Site Best Management Practice Handbook*. Where this occurs, the specifications contained in the *Wisconsin Construction Site Best Management Practice Handbook* shall take precedence over erosion and other pollutant control requirements contained in the State Model Construction Site Erosion Control Ordinance and in ch. NR 154.

**Note:** The *Wisconsin Construction Site Best Management Practice Handbook* is available through WI Department of Administration, Document Sales, 202 S. Thornton Ave., Madison, WI 53707.

**(3) PLAN COMPLETION.** The plan shall be completed prior to the submittal of a notice of intent to be covered by a permit and shall be updated as appropriate pursuant to s. NR 216.50.

**(4) REQUIRED INFORMATION.** The construction site erosion control plan shall include, at a minimum, the following items:

(a) Description of the site and the nature of the construction activity, including representation of the limits of land disturbance on a USGS 7.5-minute series topographic map.

(b) Description of the intended sequence of major activities which disturb soils for major portions of the site, such as grubbing, excavation or grading;

(c) Estimates of the total area of the site and the total area of the site that is expected to be disturbed by construction activities;

(d) Estimates, including calculations, if any, of the runoff coefficient of the site before and after construction activities are completed;

(e) Existing data describing the surface soil as well as subsoils;

(f) Depth to groundwater, as indicated by natural resources conservation service soil information where available, except when permanent infiltration systems are used, the depth to groundwater shall be identified as outlined in sub. (5); and

(g) Name of immediate named receiving water from the United States geological service 7.5 minute series topographic maps.

**(5) GROUNDWATER LIMITATIONS.** When permanent infiltration systems are used, appropriate on-site testing shall be conducted to determine if seasonal high water is within 5 feet of the bottom of the proposed practice. If permanent infiltration structures are to be used and there is a municipal well within 400 feet or a non-public well within 100 feet, the groundwater flow shall be identified in accordance with the provisions specified in either ch. NR 110 or 214.

**(6) SITE MAP REQUIREMENTS.** Each site map shall include a map showing the following items:

(a) Existing topography and drainage patterns, roads and surface waters;

(b) Boundaries of the construction site;

(c) Drainage patterns and approximate slopes anticipated after major grading activities;

(d) Areas of soil disturbance;

(e) Location of major structural and non-structural controls identified in the plan;

(f) Location of areas where stabilization practices will be employed.

(g) Areas which will be vegetated following construction; and

(h) Wetlands, area extent of wetland acreage on the site and locations where storm water is discharged to a surface water or wetland.

(i) Locations of all surface waters and wetlands within one mile of the construction site.

(j) An alphanumeric or equivalent grid overlying the entire construction site.

**(7) CONTROL MEASURES.** Each plan shall include a description of appropriate controls and measures that will be performed at the site to prevent pollutants from reaching waters of the state. The plan shall clearly describe the appropriate control measures for each major activity identified in the notice of intent and the timing during the construction process that the measures will be implemented. The description of erosion controls shall include, when appropriate, the following minimum requirements:

(a) Description of interim and permanent stabilization practices, including a schedule for implementing the practices. Site plans shall ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized;

(b) Description of structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the site. Unless otherwise specifically approved in writing, structural measures shall be installed on upland soils;

(c) Management of overland flow at all sites, unless otherwise controlled by outfall controls;

(d) Trapping of sediment in channelized flow;

(e) Staging construction to limit bare areas subject to erosion;

(f) Protection of downslope drainage inlets where they occur;

(g) Minimization of tracking at all sites;

(h) Clean up of off-site sediment deposits;

(i) Proper disposal of building and waste material at all sites;

(j) Stabilization of drainage ways;

(k) Installation of permanent stabilization practices as soon as possible after final grading; and

(L) Minimization of dust to the maximum extent practicable.

**(8) No solid materials, including building materials, may be discharged in violation of chs. 30 and 31, Stats., or U.S. army corps of engineers section 404 permit requirements.**

**(9) PROHIBITED DISCHARGES.** Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected.

**(10) PROOF OF PERMIT COVERAGE.** A copy of the notice of intent or other indication that storm water discharges from the site are covered under a general WPDES permit shall be kept with building plans on the construction site and with the landowner. Where appropriate, notification under s. Comm 61.115 or ch. Trans 401 or a county, city, village or town ordinance in effect prior to January 1, 1994 that establishes standards for erosion control at commercial building sites may be used in lieu of the department's notice of intent.

**(11) PERMIT MODIFICATION.** The department may, upon request of a permittee or upon finding of just cause, grant modifications to the compliance and reporting schedules or any requirements of a storm water discharge permit.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; correction in (10) made under s. 13.93 (2m) (b) 7., Stats., Register, November, 1999, No. 527; **CR 00-035: cr. (1m), (6) (i) and (j), am. (2), (4) (a), (f) and (g) Register September**

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2002 No. 561, eff. 10-1-02; correction in (10) made under s. 13.93 (2m) (b) 7., Stats., Register September 2002 No. 561.

**NR 216.47 Storm water management plan requirements.** Pollution caused by storm water discharges from the site after construction is completed, including, but not limited to, rooftops, parking lots, roadways and the maintenance of grassed areas shall be addressed by a storm water management plan. Inclusion in the plan of post construction management may not bind either future owners of the property nor any municipalities to implement the management practices. A storm water management plan is not required for projects that do not alter runoff volumes or runoff quality from existing conditions and that do not include new development or redevelopment.

**Note:** Projects that may be excluded from the storm water management plan primarily involve highway maintenance projects related to ditching.

**(1) PRACTICES DURING CONSTRUCTION.** The plan shall include a description of the management practices that will be installed during the construction process to control peak flow, pollutants and runoff volume that will occur after construction operations have been completed. Storm water management practices shall be in accordance with applicable state and local regulations. To the extent feasible, the plan shall consider efforts to increase on-site infiltration through conveyance, depression storage and reduction of impervious area, consistent with any site or local development standards.

**(2) LONG TERM PRACTICES.** For any permanent structures, provisions shall be made for long-term maintenance. Long term maintenance provisions for storm water management structures should be made with the local municipality. If the local municipality agrees to take over long term maintenance responsibilities, a copy of the agreement shall be attached to the notice of termination. If the local municipality will not make such an agreement, alternative provisions that will be made for long-term maintenance of storm water management structures shall be identified, and a copy of the document mechanism by which it shall be enacted attached to the notice of termination.

**Note:** These are interim measures only. In the future, the department will be working to address this issue more fully.

**(3) MANAGEMENT PRACTICES.** Storm water management practices to control impacts from runoff volume and pollutants may include, but are not limited to: infiltration systems, flow attenuation, constructed wetlands, temporary or permanent ponds, combinations of these practices, or other methods which do not cause significant adverse impact on the receiving surface water or groundwater. The plan shall include an explanation of the technical basis used to select the practices to control pollution where flows exceed predevelopment levels.

**(4) PERFORMANCE STANDARDS.** The storm water management plan shall meet the applicable performance standards in either s. NR 151.12 or 151.24.

**Note:** Section NR 151.12 applies to sites that are not transportation facilities and s. NR 151.24 applies to transportation facility sites.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; **CR 00-035:** cr. (4) Register September 2002 No. 561, eff. 10-1-02.

**NR 216.48 Reporting and monitoring requirements.**

**(1) RECORDS.** The permittee shall retain records of all monitoring information, copies of all reports and plans required by the permit, and records of all data used to obtain coverage under the permit. Minimum periods of retention are as follows:

(a) The construction site erosion control and storm water management plan, and amendments to the construction site erosion control and storm water management plan shall be retained at the site until construction is completed, the site has undergone final stabilization and permit coverage is terminated.

(b) All reports required by this subchapter or information submitted to obtain coverage under this subchapter, including the construction site erosion control and storm water management plan, amendments and background information used in their preparation, shall be kept by the permittee for a period of at least 3 years from the date of notice of termination.

(2) LOCAL APPROVALS. Persons operating a construction site under approved local sediment and erosion plans, grading plans or storm water management plans shall also submit signed copies of the notice of intent to the local agency approving the plans. If storm water from the construction site discharges to a separate storm sewer system that is operating pursuant to a general WPDES permit, then a signed copy of the notice of intent shall also be sent to the operator of the system.

(3) ADDITIONAL INFORMATION. Upon request by the department, the permittee shall provide a copy of the plan, and any additional data requested, within 5 working days to the department, to the operator of the storm sewer system which receives the discharge, and any local agency approving sediment and erosion plans, grading plans or storm water management plans. The additional information shall be submitted in accordance with s. NR 200.09. Additional information may be requested by the department for resource waters that require additional protection such as outstanding or exceptional resource waters, or other sensitive water resources.

(4) PERMITTEE RESPONSIBILITIES. For the purposes of monitoring, the permittee shall:

(a) Conduct the following inspections:

1. Weekly inspections of implemented erosion and sediment controls; and

2. Inspections of erosion and sediment controls within 24 hours after a precipitation event 0.5 inches or greater which results in runoff during active construction periods.

(b) Maintain weekly written reports of all inspections conducted by or for the permittee that include:

1. The date, time and exact place of the inspection;

2. The name of the individual who performed the inspection;

3. An assessment of the condition of erosion and sediment controls;

4. A description of any erosion and sediment control implementation and maintenance performed; and

5. A description of the present phase of construction at the site.

(5) SUBMITTAL OF INFORMATION. The information maintained in accordance with sub. (4) shall be submitted, upon request of the department.

Wisconsin Department of Natural Resources  
Bureau of Watershed Management  
101 South Webster P.O. Box 7921  
Madison, WI 53707-7921

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.49 Conformance with other applicable plans.**

**(1) LOCAL COMPLIANCE.** The plan shall document other applicable county and local regulatory provisions, compliance with which will also meet the requirements of the permit. If these additional provisions are more stringent than those provisions appearing in a permit issued pursuant to this subchapter, the plan shall include a description of how it will comply with these provisions.

**(2) SANITARY REGULATIONS.** The plan shall ensure and demonstrate compliance with applicable state and local waste disposal, sanitary sewer or septic system regulations.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.50 Amendments. (1) APPLICABILITY.** The permittee shall amend the plan if either of the following occur:

(a) There is a change in design, construction, operation or maintenance at the site which has the reasonable potential for the discharge of pollutants to waters of the state and which has not otherwise been addressed in the plan; and

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(b) The actions required by the plan fail to reduce the impacts of pollutants carried by construction site storm water runoff.

(2) DEPARTMENT NOTIFICATION. If the department notifies the permittee of changes needed in the plan, the permittee shall submit, within the date specified in the notice, the changes in the plan.

(3) SUBMITTAL REQUIREMENTS. For those projects for which there has been earlier department review of the project, if the permittee identifies changes needed in the plan, the permittee shall notify the department within 5 days of an intent to change the plan.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.51 Department actions.** (1) INADEQUATE PLANS. The department may notify the permittee at any time that the plan does not meet one or more of the minimum requirements of this subchapter, or a permit issued pursuant to this subchapter, for reducing and preventing soil erosion. The notification shall identify those provisions which are not being met by the plan, and identify which provisions of the plan require modifications in order to meet the minimum requirements.

(2) REQUIRED PLAN REVISIONS. Within the time frame identified by the department in its notice, the permittee shall make the required changes to the plan, perform all actions required by the revised plan, and submit to the department a written certification that the requested changes have been made and implemented, and such other information as the department requires. Failure to comply shall terminate authorization to discharge pollutants under the general WPDES permit program.

(3) OTHER STORM WATER DISCHARGERS. The department may require the landowner of any storm water discharge to apply for and obtain a storm water permit if the storm water discharge is determined to be a significant contributor of pollution.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.52 Use of information.** All information contained in the notice of intent other than that specified as confidential shall be available to the public for inspection and copying. All confidential information, so identified, shall be in separate documents. Effluent data is not confidential information. Confidential treatment will be considered only for that information identified as confidential in documents separate from nonconfidential information which meets the requirements of s. 283.55 (2) (c), Stats., and for which written application for confidentiality has been made pursuant to s. NR 2.19.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.53 Time periods for action on permit applications and modification requests.** (1) EFFECTIVE DATE OF PERMIT. Unless notified by the department to the contrary, applicants who submit a notice of intent in accordance with the provisions of this subchapter are authorized to discharge storm water from construction sites under the terms and conditions of the general WPDES permit 14 working days after the date that the department receives the notice of intent. The department may require the landowner to submit plans and specifications for approval of storm water treatment practices, pursuant to s. 281.41, Stats.

(2) DENIAL OR REVOCATION OF GENERAL PERMIT. The department may deny or revoke coverage under a general WPDES permit and require submittal of an application for an individual WPDES storm water discharge permit based on a review of the completed notice of intent or other information.

(3) INDIVIDUAL PERMIT. The department may require the landowner of any storm water discharge covered by a general WPDES permit issued pursuant to this subchapter to apply for and obtain an individual WPDES storm water discharge permit if any of the following occur:

(a) The storm water discharge is determined to be a significant source of pollution and more appropriately regulated by an individual WPDES storm water discharge permit;

(b) The storm water discharge is not in compliance with the terms and conditions of this chapter, or of a general WPDES permit issued pursuant to this chapter;

(c) A change occurs in the availability of demonstrated technology or practices for the control or abatement of pollutants from the storm water discharge; or

(d) Effluent limitations or standards are promulgated for a storm water discharge that are different than the conditions contained in this chapter.

(4) PETITION. Any person may submit a written request to the department that it take action under sub. (3).

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.54 Transfers.** A person who has submitted a completed notice of intent and does not intend to control the permitted activities on the site may transfer authorization under a general WPDES permit to the person who will control the permitted activities. The transfer shall occur upon written notification, signed by both the transferor and transferee and sent via certified or registered mail to the department. Unless the permittee is notified to the contrary by the department, the department will recognize this permit coverage transfer upon receipt of written notification. The department may require additional information to be filed prior to granting coverage under the general WPDES permit. The department may, if appropriate, require an application for an individual WPDES storm water discharge permit to be submitted.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 216.55 Notice of termination.** When a site has undergone final stabilization and all storm water discharges associated with construction site activities that were required to have a general WPDES permit under this subchapter have ceased, the permittee shall submit a signed notice of termination to the department.

(1) FORMS. A notice of termination shall be submitted on forms supplied by the department. Data submitted in the notice of termination forms shall be used as [a] basis for terminating coverage of a storm water discharge permit. Different notice of termination forms are used to provide information from different sources of storm water discharge.

(2) OBTAINING FORMS. Notice of termination forms shall be obtained from the regional offices of the department or by writing to the Department of Natural Resources, Storm Water Program – WT/2, Box 7921, Madison, WI 53707-7921.

(3) FILING. Notice of termination forms shall be filed with the regional office of the department in which the construction site activity is located or to the Department of Natural Resources, Storm Water Program – WT/2, Box 7921, Madison, WI 53707-7921.

**Note:** It is intended that when these forms are changed, input from affected individuals and parties will be sought.

(4) SIGNATURE REQUIREMENTS. The notice of termination form shall be signed as follows:

(a) In the case of a corporation, by a principal executive officer of at least the level of vice-president, or by his or her authorized representative responsible for the overall operation of the site for which a permit is sought;

(b) In the case of a partnership, by a general partner; or

(c) In the case of a sole proprietorship, by the proprietor.

(5) REQUIRED INFORMATION. The notice of termination shall include the following information:

(a) The mailing address and location of the construction site for which the notification is submitted.

(b) The name, address, telephone number of the current permittee, as well as any transferee;

(c) The name, address and telephone number of the general contractor; and

(d) The following signed certification:

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"I certify under penalty of law that disturbed soils at the identified site have undergone final stabilization and temporary erosion and sediment control measures have been removed or that all storm water discharges associated with construction activity that are authorized by a general WPDES permit have otherwise been eliminated. I understand that by submitting this notice of termination, I am no longer authorized to discharge storm water associated with construction activity by the general WPDES per-

mit, and that discharging pollutants in storm water associated with construction activity to waters of Wisconsin is unlawful where the discharge is not authorized by a general WPDES permit."

**(6) EFFECTIVE DATE.** Termination of coverage under the permit shall be effective upon submittal of written confirmation of final stabilization by the department to the permittee.

**History:** Cr. Register, October, 1994, No. 466, eff. 11-1-94; **CR 00-035: am. (2) and (3) Register September 2002 No. 561, eff. 10-1-02.**

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## Chapter NR 151

### RUNOFF MANAGEMENT

#### Subchapter I – General Provisions

- NR 151.001 Purpose.  
NR 151.002 Definitions.  
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#### Subchapter I – General Provisions

**NR 151.001 Purpose.** This chapter establishes runoff pollution performance standards for non-agricultural facilities and transportation facilities and performance standards and prohibitions for agricultural facilities and practices designed to achieve water quality standards as required by s. 281.16 (2) and (3), Stats. This chapter also specifies a process for the development and dissemination of department technical standards to implement the non-agricultural performance standards as required by s. 281.16 (2) (b), Stats. If these performance standards and prohibitions do not achieve water quality standards, this chapter specifies how the department may develop targeted performance standards in conformance with s. NR 151.004.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

#### NR 151.002 Definitions.

In this chapter:

(1) “Adequate sod, or self-sustaining vegetative cover” means 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) “Agricultural facilities and practices” has the meaning given in s. 281.16 (1), Stats.

(3) “Average annual rainfall” means a calendar year of precipitation, excluding snow, which is considered typical.

(4) “Best management practices” or “BMPs” means 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.

(5) “Combined sewer system” means a system for conveying both sanitary sewage and stormwater runoff.

(6) “Connected imperviousness” means an impervious surface that is directly connected to a separate storm sewer or water of the state via an impervious flow path.

(7) “Construction site” means an area upon which one or more land disturbing construction activities occur, including areas that are part of a larger common plan of 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 long-range planning document that

describes separate construction projects, such as a 20-year transportation improvement plan, is not a common plan of development.

(8) “DATCP” means the department of agriculture, trade and consumer protection.

(9) “Department” means the department of natural resources.

(10) “Design storm” means a hypothetical discrete rainstorm characterized by a specific duration, temporal distribution, rainfall intensity, return frequency and total depth of rainfall.

(11) “Development” means residential, commercial, industrial or institutional land uses and associated roads.

(12) “Effective infiltration area” means 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.

(13) “Erosion” means the process by which the land’s surface is worn away by the action of wind, water, ice or gravity.

(14) “Exceptional resource waters” means waters listed in s. NR 102.11.

(15) “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% of the cover for the unpaved areas and areas not covered by permanent structures or that employ equivalent permanent stabilization measures.

(16) “Illicit discharge” means any discharge to a municipal separate storm sewer that is not composed entirely of runoff, except discharges authorized by a WPDES permit or any other discharge not requiring a WPDES permit such as water line flushing, landscape irrigation, individual residential car washing, fire fighting and similar discharges.

(17) “Impervious surface” means 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.

(18) “In-fill area” means an undeveloped area of land located within existing urban sewer service areas, surrounded by already existing development or existing development and natural or man-made features where development cannot occur.

(19) “Infiltration” means the entry and movement of precipitation or runoff into or through soil.

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**(20)** “Infiltration system” means 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.

**(21)** “Karst feature” means an area or surficial geologic feature subject to bedrock dissolution so that it is likely to provide a conduit to groundwater, and may include caves, enlarged fractures, mine features, exposed bedrock surfaces, sinkholes, springs, seeps or swallets.

**(22)** “Land disturbing construction activity” means 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 sediment into waters of the state. Land disturbing construction activity includes clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.

**(23)** “Landowner” means any person holding fee title, an easement or other interest in property, which allows the person to undertake cropping, livestock management, land disturbing construction activity or maintenance of storm water BMPs on the property.

**(24)** “Local governmental unit” has the meaning given in s. 92.15 (1) (b), Stats.

**(25)** “MEP” or “maximum extent practicable” means a level of implementing best management practices in order to achieve a performance standard specified in this chapter which takes into account the best available technology, cost effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features. MEP allows flexibility in the way to meet the performance standards and may vary based on the performance standard and site conditions.

**(26)** “Municipality” has the meaning given in s. 281.01 (6), Stats.

**(27)** “Navigable waters” and “navigable waterway” has the meaning given in s. 30.01 (4m), Stats.

**(28)** “New development” means development resulting from the conversion of previously undeveloped land or agricultural land uses.

**(29)** “NRCS” means the natural resources conservation service of the U.S. department of agriculture.

**(30)** “Ordinary high water mark” has the meaning given in s. NR 115.03 (6).

**(31)** “Outstanding resource waters” means waters listed in s. NR 102.10.

**(32)** “Percent fines” means the percentage of a given sample of soil, which passes through a # 200 sieve.

**Note:** Percent fines can be determined using the “American Society for Testing and Materials”, volume 04.02, “Test Method C117–95 Standard Test Method for Materials Finer than 75–µm (No. 200) Sieve in Material Aggregates by Washing”. Copies can be obtained by contacting the American society for testing and materials, 100 Barr Harbor Drive, Conshohocken, PA 19428–2959, or phone 610–832–9585, or on line at: “<http://www.astm.org/>”.

**(33)** “Performance standard” means a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

**(34)** “Pervious surface” means an area that releases as runoff a small portion of the precipitation that falls on it. Lawns, gardens, parks, forests or similar vegetated areas are examples of surfaces that typically are pervious.

**(35)** “Pollutant” has the meaning given in s. 283.01 (13), Stats.

**(36)** “Pollution” has the meaning given in s. 281.01 (10), Stats.

**(37)** “Population” has the meaning given in s. 281.66 (1) (c), Stats.

**(38)** “Preventive action limit” has the meaning given in s. NR 140.05 (17).

**(39)** “Redevelopment” means areas where development is replacing older development.

**(40)** “Runoff” means storm water or precipitation including rain, snow, ice melt or similar water that moves on the land surface via sheet or channelized flow.

**(41)** “Sediment” means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.

**(42)** “Separate storm sewer” means 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 draining to a storm water treatment device or system.

(d) Discharges directly or indirectly to waters of the state.

**(43)** “Storm water management plan” means a comprehensive plan designed to reduce the discharge of pollutants from storm water, after the site has undergone final stabilization, following completion of the construction activity.

**(44)** “Targeted performance standard” means 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.

**(45)** “Technical standard” means a document that specifies design, predicted performance and operation and maintenance specifications for a material, device or method.

**(46)** “Top of the channel” means 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.

**(47)** “TR–55” means the United States department of agriculture, natural resources 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.

**Note:** Copies of this document may be inspected at the offices of the department’s bureau of watershed management, NRCS, the secretary of state and the revisor of statutes, all in Madison, WI. Copies may be obtained from the DNR bureau of watershed management, P.O. Box 7921, Madison, WI 53707.

**(48)** “Transportation facility” means a 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 s. 85.095 (1) (b), 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 department of commerce pursuant to s. 101.1205, Stats.

**(49)** “Type II distribution” means 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.

**Note:** Copies of this document may be inspected at the offices of the department’s bureau of watershed management, NRCS, the secretary of state and the revisor of statutes, all in Madison, WI. Copies may be obtained from the DNR bureau of watershed management, P.O. Box 7921, Madison, WI 53707.

**(50)** “Waters of the state” has the meaning given in s. 283.01 (20), Stats.

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**(51)** “WPDES permit” means a Wisconsin pollutant discharge elimination system permit issued under ch. 283, Stats.

**History:** CR 00–027: cr. Register September 2002 No. 561, eff. 10–1–02.

**NR 151.003 Regional treatment exclusion. (1)** Post-construction runoff within a non-navigable surface water that flows into a BMP, such as a wet detention pond, is not required to meet the performance standards of subchs. III and IV. Post-construction BMPs may be located in non-navigable surface waters.

**(2)** Except as allowed under sub. (3), post-construction runoff from new development shall meet the post-construction performance standards prior to entering a navigable surface water.

**(3)** Post-construction runoff from any development within a navigable surface water that flows into a BMP is not required to meet the performance standards of subchs. III and IV if:

(a) The BMP was constructed prior to October 1, 2002, and the BMP either received a permit issued under ch. 30, Stats., or the BMP did not require a ch. 30, Stats., permit; and

(b) The BMP is designed to provide runoff treatment from future upland development.

**(4)** Runoff from existing development, redevelopment and in-fill areas shall meet the post-construction performance standards in accordance with pars. (a) and (b).

(a) To the maximum extent practicable, BMPs shall be located to treat runoff prior to discharge to navigable surface waters.

(b) Post-construction BMPs for such runoff may be located in a navigable surface water if allowable under all other applicable federal, state and local regulations such as ch. NR 103 and ch. 30, Stats.

**Note:** This allows the location of BMPs in navigable surface waters where necessary to augment management practices upstream of the navigable surface water to meet the performance standards.

**(5)** The discharge of runoff from a BMP, such as a wet detention pond, or after a series of such BMPs is subject to this chapter.

**Note:** This section does not supersede any other applicable federal, state or local regulation such as ch. NR 103 and ch. 30, Stats.

**History:** CR 00–027: cr. Register September 2002 No. 561, eff. 10–1–02.

**NR 151.004 State targeted performance standards.** For some areas, implementation of the statewide performance standards and prohibitions in this chapter may not be sufficient to achieve water quality standards. In those cases, the department shall determine if a specific waterbody will not attain water quality standards after substantial implementation of the performance standards and prohibitions in this chapter, using actual or predicted modeling or monitoring. If the department finds that water quality standards will not be attained using statewide performance standards and prohibitions but the implementation of targeted performance standards would attain water quality standards, the department shall promulgate the targeted performance standards by rule.

**Note:** Pursuant to s. 281.16 (2) (a) and (3) (a), Stats., the performance standards shall be designed to meet state water quality standards.

**History:** CR 00–027: cr. Register September 2002 No. 561, eff. 10–1–02.

## **Subchapter II – Agricultural Performance Standards and Prohibitions**

**NR 151.01 Purpose.** The purpose of this subchapter is to prescribe performance standards and prohibitions in accordance with the implementation and enforcement procedures contained in ss. NR 151.09 and 151.095 for agricultural facilities, operations and practices.

**History:** CR 00–027: cr. Register September 2002 No. 561, eff. 10–1–02.

**NR 151.015 Definitions.** In this subchapter:

**(1)** “Agricultural land use” means the use of land for agricultural practices.

**(3)** “Conservation practice” means a best management practice designed to reduce or prevent soil or sediment loss to the waters of the state.

**(4)** “Crop producer” means an owner or operator of an operation engaged in crop related agricultural practices specified in s. 281.16 (1) (b), Stats.

**(5)** “Cropland practice” means the method, activity or management measure used to produce or harvest crops.

**(6)** “County land conservation committee” means the committee created by a county board under s. 92.06, Stats. “County land conservation committee” includes employees or agents of the committee whom, with committee authorization, act on behalf of the committee.

**(7)** “Direct runoff” means a discharge of a significant amount of pollutants to waters of the state resulting from any of the following practices:

(a) Runoff from a manure storage facility.

(b) Runoff from an animal lot that can be predicted to reach surface waters of the state through a defined or channelized flow path or man-made conveyance.

(c) Discharge of leachate from a manure pile.

(d) Seepage from a manure storage facility.

(e) Construction of a manure storage facility in permeable soils or over fractured bedrock without a liner designed in accordance with s. NR 154.04 (3).

**(8)** “Freeboard” means a protection elevation requirement designed as a safety factor which is usually expressed in terms of a specific number of feet above a storage level or flood level and compensates for the effects of runoff from unexpected storms and other events that may cause a loss of storage volume.

**(9)** “Livestock facility” means a structure or system constructed or established on a livestock operation.

**(10)** “Livestock producer” means an owner or operator of a livestock operation.

**(11)** “Livestock operation” has the meaning given in s. 281.16 (1) (c), Stats.

**(12)** “Manure” means a material that consists primarily of excreta from livestock, poultry or other animals.

**(13)** “Manure storage facility” means an impoundment made by constructing an embankment or excavating a pit or dugout or by fabricating a structure to contain manure and other animal or agricultural wastes.

**(13m)** “Municipality” has the meaning given in s. 281.01 (6), Stats.

**(14)** “NOD” means a notice of discharge issued under s. NR 243.24 (4).

**(15)** “Operator” means a person responsible for the oversight or management of equipment, facilities or livestock at a livestock operation, or is responsible for land management in the production of crops.

**(16)** “Preventive action limit” has the meaning given in s. NR 140.05 (17).

**(17)** “Residual cover” means vegetation, or organic debris that provides soil surface protection from raindrop impact.

**(18)** “Site that is susceptible to groundwater contamination” under s. 281.16 (1) (g), Stats., means any one of the following:

(a) An area within 250 feet of a private well.

(b) An area within 1000 feet of a municipal well.

(c) An area within 300 feet upslope or 100 feet downslope of karst features.

(d) A channel with a cross-sectional area equal to or greater than 3 square feet that flows to a karst feature.

(e) An area where the soil depth to groundwater or bedrock is less than 2 feet.

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(f) An area where the soil does not exhibit one of the following soil characteristics:

1. At least a 2-foot soil layer with 40% fines or greater above groundwater and bedrock.
2. At least a 3-foot soil layer with 20% fines or greater above groundwater and bedrock.
3. At least a 5-foot soil layer with 10% fines, or greater above groundwater and bedrock.

**Note:** See s. NR 151.002 (32) for definition of percent fines.

**(19)** "Stored manure" means manure that is kept in a manure storage facility or an unconfined manure pile.

**(20)** "Substantially altered" means a change initiated by an owner or operator that results in a relocation of a structure or facility or significant changes to the size, depth or configuration of a structure or facility including:

- (a) Replacement of a liner in a manure storage structure.
- (b) An increase in the volumetric capacity or area of a structure or facility by greater than 20%.
- (c) A change in a structure or facility related to a change in livestock management from one species of livestock to another such as cattle to poultry.

**(21)** "Tolerable soil loss" or "T" means the maximum rate of erosion, in tons per acre per year, allowable for particular soils and site conditions that will maintain soil productivity.

**(22)** "Unconfined manure pile" means a quantity of manure that is at least 175 ft<sup>3</sup> in volume and which covers the ground surface to a depth of at least 2 inches and is not confined within a manure storage facility, livestock housing facility or barnyard runoff control facility or covered or contained in a manner that prevents storm water access and direct runoff to surface water or leaching of pollutants to groundwater.

**(24)** "Water quality management area" or "WQMA" means the area within 1,000 feet from the ordinary high water mark of navigable waters that consist of a lake, pond or flowage, except that, for a navigable water that is a glacial pothole lake, the term means the area within 1,000 feet from the high water mark of the lake; the area within 300 feet from the ordinary high water mark of navigable waters that consist of a river or stream; and a site that is susceptible to groundwater contamination, or that has the potential to be a direct conduit for contamination to reach groundwater.

**History:** CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.02 Sheet, rill and wind erosion.** All land where crops or feed are grown shall be cropped to achieve a soil erosion rate equal to, or less than, the "tolerable" (T) rate established for that soil.

**Note:** Soil loss will be calculated according to the revised universal soil loss equation II as referenced in ch. ATCP 50 and appropriate wind loss equations as referenced in ch. ATCP 50.

**History:** CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.05 Manure storage facilities. (1) APPLICABILITY.** All livestock producers building new manure storage facilities, substantially altering manure storage facilities, or choosing to abandon their manure storage facilities shall comply with this section.

**(2) NEW CONSTRUCTION AND ALTERATIONS.** (a) New or substantially altered manure storage facilities shall be designed, constructed and maintained to minimize the risk of structural failure of the facility, minimize leakage of the facility in order to comply with groundwater standards, and maintain one foot of freeboard storage or adequate freeboard storage to the equivalent volume of a 25-year, 24-hour storm, whichever is greater.

(b) A new manure storage facility means a facility constructed after October 1, 2002.

(c) A substantially altered manure storage facility is a manure storage facility that is substantially altered after October 1, 2002.

**(3) CLOSURE.** (a) Closure of a manure storage facility shall occur when an operation where the facility is located ceases

operations, or manure has not been added or removed from the facility for a period of 24 months. Manure facilities shall be closed in a manner that will prevent future contamination of groundwater and surface waters.

(b) The owner or operator may retain the facility for a longer period of time by demonstrating to the department that all of the following conditions are met:

1. The facility is designed, constructed and maintained in accordance with sub. (2).

2. The facility is designed to store manure for a period of time longer than 24 months.

3. Retention of the facility is warranted based on anticipated future use.

**(4) FAILING AND LEAKING EXISTING FACILITIES.** Manure storage facilities in existence as of October 1, 2002, that pose an imminent threat to public health or fish and aquatic life or are causing a violation of groundwater standards shall be upgraded, replaced or abandoned in accordance with this section.

**History:** CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.06 Clean water diversions. (1)** All livestock producers within a water quality management area shall comply with this section.

**(2)** Runoff shall be diverted away from contacting feedlot, manure storage areas and barnyard areas within water quality management areas except that a diversion to protect a private well under s. NR 151.015 (18) (a) is required only when the feedlot, manure storage area or barnyard area is located upslope from the private well.

**History:** CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.07 Nutrient management. (1)** All crop producers and livestock producers that apply manure or other nutrients directly or through contract to agricultural fields shall comply with this section.

**Note:** Manure management requirements for concentrated animal feeding operations covered under a WPDES permit are contained in ch. NR 243.

**(2)** This performance standard does not apply to industrial waste and byproducts regulated under ch. NR 214, municipal sludge regulated under ch. NR 204, septage regulated under ch. NR 113 or manure directly deposited by pasturing or grazing animals on fields dedicated to pasturing or grazing.

**Note:** In accordance with ss. ATCP 50.04, 50.48 and 50.50, nutrient management planners, Wisconsin certified soil testing laboratories and dealers of commercial fertilizer are advised to make nutrient management recommendations based on the performance standard for nutrient management, s. NR 151.07, to ensure that their customers comply with this performance standard.

**(3)** Manure, commercial fertilizer and other nutrients shall be applied in conformance with a nutrient management plan.

(a) The nutrient management plan shall be designed to limit or reduce the discharge of nutrients to waters of the state for the purpose of complying with state water quality standards and groundwater standards.

(b) Nutrient management plans for croplands in watersheds that contain impaired surface waters or in watersheds that contain outstanding or exceptional resource waters shall meet the following criteria:

1. Unless otherwise provided in this paragraph, the plan shall be designed to manage soil nutrient concentrations so as to maintain or reduce delivery of nutrients contributing to the impairment of impaired surface waters and to outstanding or exceptional resource waters.

2. The plan may allow for an increase in soil nutrient concentrations at a site if necessary to meet crop demands.

3. For lands in watersheds containing exceptional or outstanding resource waters, the plan may allow an increase in soil nutrient concentrations if the plan documents that any potential nutrient delivery to the exceptional or outstanding resource waters will not alter the background water quality of the exceptional or outstanding resource waters. For lands in watersheds containing



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impaired waters, the plan may allow an increase in soil nutrient concentrations if a low risk of delivery of nutrients from the land to the impaired water can be demonstrated.

(c) In this standard, impaired surface waters are waters identified as impaired pursuant to 33 USC 1313 (d) (1) (A) and 40 CFR 130.7. Outstanding or exceptional resource waters are identified in ch. NR 102.

**(4)** This section is in effect on January 1, 2005 for existing croplands under s. NR 151.09 (4) that are located within any of the following:

(a) Watersheds containing outstanding or exceptional resource waters.

(b) Watersheds containing impaired waters.

(c) Source water protection areas defined in s. NR 243.03 (29).

**(5)** This section is in effect on January 1, 2008 for all other existing croplands under s. NR 151.09 (4).

**(6)** This section is in effect for all new croplands under s. NR 151.09 (4) on October 1, 2003.

**Note:** The purpose of the phased implementation of this standard is to allow the department sufficient time to work with the department of agriculture, trade and consumer protection and local governmental units to develop and implement an information, education and training program on nutrient management for affected stakeholders.

**History:** CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.08 Manure management prohibitions.**

**(1)** All livestock producers shall comply with this section.

**(2)** A livestock operation shall have no overflow of manure storage facilities.

**(3)** A livestock operation shall have no unconfined manure pile in a water quality management area.

**(4)** A livestock operation shall have no direct runoff from a feedlot or stored manure into the waters of the state.

**(5)** (a) A livestock operation may not allow unlimited access by livestock to waters of the state in a location where high concentrations of animals prevent the maintenance of adequate sod or self-sustaining vegetative cover.

(b) This prohibition does not apply to properly designed, installed and maintained livestock or farm equipment crossings.

**History:** CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.09 Implementation and enforcement procedures for cropland performance standards.** **(1) PURPOSE.** The purpose of this section is to identify the procedures the department will follow in implementing and enforcing the cropland performance standards pursuant to ss. 281.16 (3) and 281.98, Stats. This section will also identify circumstances under which an owner or operator of cropland is required to comply with the cropland performance standards. In this section, "cropland performance standards" means performance standards in ss. NR 151.02 and 151.07.

**(2) ROLE OF MUNICIPALITIES.** The department may rely on municipalities to implement the procedures and make determinations established in this section.

**Note:** In most cases, the department will rely on municipalities to fully implement the cropland performance standards. The department intends to utilize the procedures in this section in cases where a municipality has requested assistance in implementing and enforcing the cropland performance standards or in cases where a municipality has failed to address an incident of noncompliance with the performance standards in a timely manner. The department recognizes that coordination between local municipalities, the department of agriculture, trade and consumer protection and other state agencies is needed to achieve statewide compliance with the performance standards. Accordingly, the department plans on working with counties, the department of agriculture, trade and consumer protection and other interested partners to develop a detailed intergovernmental strategy for achieving compliance with the performance standards that recognizes the procedures in these rules, state basin plans and the priorities established in land and water conservation plans.

**Note:** The department implementation and enforcement procedures for livestock performance standards relating to manure management are included in s. NR 151.095 and ch. NR 243.

**(3) LANDOWNER AND OPERATOR REQUIREMENTS.** (a) *Introduction.* This section identifies compliance requirements for land-

owners and operators based on whether the cropland is existing or new and whether cost sharing is required and made available to the landowner or operator.

(b) *General requirements.* If any cropland is meeting a cropland performance standard on or after the effective date of the standard, the cropland performance standard shall continue to be met by the existing landowner or operator, heirs or subsequent owners or operators of the cropland. If a landowner or operator alters or changes the management of the cropland in a manner that results in noncompliance with the performance standard, the landowner or operator shall bring the cropland back into compliance, regardless of whether cost-sharing is made available. This paragraph does not apply to croplands completing enrollment determined to be existing under sub. (4) (b) 2.

**Note:** The department or a municipality may use conservation plans, cost share agreements, deed restrictions, personal observations or other information to determine whether a change has occurred.

(c) *Existing cropland requirements.* 1. A landowner or operator of an existing cropland, defined under sub. (4) (b), shall comply with a cropland performance standard if all of the following have been done by the department:

a. Except as provided in subd. 2. and 3., a determination is made that cost sharing has been made available in accordance with sub. (4) (d) on or after the effective date of the cropland performance standard.

b. The landowner or operator has been notified in accordance with sub. (5) or (6).

2. A landowner or operator of existing cropland, defined under sub. (4) (b), shall comply with a cropland performance standard, regardless of whether cost sharing is available, in situations where the best management practices and other corrective measures needed to meet the performance standards do not involve eligible costs.

3. A landowner or operator of an existing cropland that voluntarily proposes to construct or reconstruct a manure storage system shall comply with s. NR 151.07, regardless of whether cost sharing is made available, if the nutrient management plan is required pursuant to a local permit for the manure storage system.

**Note:** Although the requirement for the nutrient management plan in this subd. 3 is tied to construction of a new manure storage system, the department intends to implement the nutrient management standard through s. NR 151.09 rather than through s. NR 151.095.

(d) *New cropland requirements.* A landowner or operator of a new cropland, defined under sub. (4) (b), shall comply with the cropland performance standards, regardless of whether cost sharing is available.

**Note:** Under s. 281.16 (3) (e), Stats., a landowner or operator may not be required by the state or a municipality through an ordinance to bring existing croplands into compliance with the cropland performance standards, technical standards or conservation practices unless cost-sharing is available in accordance with this section.

**(4) DEPARTMENT DETERMINATIONS.** (a) *Scope of determinations.* If croplands are not in compliance with a cropland performance standard, the department shall make determinations in accordance with the procedures and criteria in this subsection.

(b) *Cropland status.* The department shall classify non-complying croplands to be either new or existing for purposes of administering this section and s. 281.16 (3) (e), Stats. In making the determination, the department shall base the decision on the following:

1. An existing cropland is one that meets all of the following criteria:

a. The cropland was being cropped as of the effective date of the standard.

b. The cropland is not in compliance with a cropland performance standard in this subchapter as of the effective date of the standard. The reason for non-compliance of the cropland may not be failure of the landowner or operator to maintain an installed best management practice in accordance with a cost-share agreement or contract.

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2. An existing cropland also includes land enrolled on October 1, 2002, in the conservation reserve or conservation reserve enhancement program administered by the United States Department of Agriculture.

3. A new cropland is one that does not meet the definition under subd. 1. or 2., including:

a. Land without a previous history of cropping that is converted to cropland after the effective date of the standard. "Without a previous history of cropping" means land where crops have not been grown and harvested for agricultural purposes in the last 10 years prior to the conversion to cropland.

b. Cropland that is in existence and in compliance with a performance standard on or after the effective date of the standard and that undergoes a change in a cropland practice that results in non-compliance with the performance standards.

**Note:** The department or a municipality may use conservation plans, cost share agreements, deed restrictions, personal observations or other information to determine whether a change has occurred.

4. Change in ownership may not be used as the sole basis for determining whether a cropland is existing or new for purposes of administering this subsection.

(c) *Eligible costs.* 1. If cost sharing is required to be made available under sub. (3) (c), the department shall determine the total cost of best management practices and corrective measures needed to bring a cropland into compliance with performance standards and shall determine which of those costs are eligible for cost-sharing for the purposes of administering this section and s. 281.16 (3) (e), Stats.

2. The cost-share eligibility provisions identified in chs. NR 153 and 154 shall be used in identifying eligible costs for installation of best management practices and corrective measures.

3. The technical assistance eligibility provisions identified in ss. NR 153.15 (1) and 153.16 (1) or ch. ATCP 50 shall be used in identifying eligible costs for planning, design and construction services.

4. If cost sharing is provided by DATCP or the department, the corrective measures shall be implemented in accordance with the BMPs and technical standards specified in ch. NR 154 or subch. VIII of ch. ATCP 50.

**Note:** Under chs. NR 153 and 154, eligible costs typically include capital costs and significant other expenses, including design costs, incurred by the landowner or operator. Eligible costs do not include the value or amount of time spent by a landowner or operator in making management changes.

(d) *Determination of cost-share availability.* 1. For purposes of administering this section and s. 281.16 (3) (e), Stats., if cost sharing is required to be made available under sub. (3), the department shall make a determination as to whether cost sharing has been made available on or after the effective date of the cropland standard to cover the eligible costs for a landowner or operator to comply with the cropland performance standard.

2. Cost sharing under s. 281.65, Stats., shall be considered available when all of the following have been met:

a. Cost share dollars are offered in accordance with either of the following: the department has entered into a runoff management grant agreement under ch. NR 153 or a nonpoint source grant agreement under ch. NR 120, and a notice under sub. (5) has been issued by the department or a municipality; or the department directly offers cost share assistance and issues a notice under sub. (5).

b. The grants in subd. 2. a., alone or in combination with other funding determined to be available under subd. 3., provide at least 70% of the eligible costs to implement the best management practices or other corrective measures for croplands needed to meet a cropland performance standard.

c. In cases of economic hardship determined in accordance with s. NR 154.03 (3), the grants in subd. 2. a., alone or in combination with other funding determined to be available under subd. 3., cover not less than 70% and not greater than 90% of the eligible costs to implement the best management practices or

other corrective measures needed to meet a cropland performance standard.

3. For funding sources other than those administered by s. 281.65, Stats., the department may make a determination of cost share availability after consulting with DATCP and ch. ATCP 50.

**Note:** Under s. 281.16 (3) (e), DATCP is responsible for promulgating rules that specify criteria for determining whether cost-sharing is available from sources other than s. 281.65, Stats., including s. 92.14, Stats. Pursuant to s. 281.16 (3) (e), Stats., a municipality is required to follow the department's definition of cost-share availability if funds are utilized under s. 281.65, Stats. If funds are utilized from any other source, a municipality must defer to DATCP's definition of cost-share availability.

(5) **NOTIFICATION REQUIREMENTS AND COMPLIANCE PERIODS FOR EXISTING CROPLANDS WHEN COST-SHARING IS REQUIRED.** (a) *Landowner notification.* 1. The department shall notify a landowner or operator in writing of the determinations made under sub. (4) and implementation requirements for existing croplands where cost sharing is required for compliance.

2. The notice shall be sent certified mail, return receipt requested or personal delivery.

3. The following information shall be included in the notice:

a. A description of the cropland performance standard being violated.

b. The cropland status determination made in accordance with sub. (4) (b).

c. The determination made in accordance with sub. (4) (c) as to which best management practices or other corrective measures that are needed to comply with cropland performance standards are eligible for cost sharing.

**Note:** Some best management practices required to comply with cropland performance standards involve no eligible cost to the landowner or operator and are not eligible for cost sharing.

d. The determination made in accordance with sub. (4) (d) that cost sharing is available for eligible costs to achieve compliance with cropland performance standards, including a written offer of cost sharing.

e. An offer to provide or coordinate the provision of technical assistance.

f. A compliance period for meeting the cropland performance standard.

g. An explanation of the possible consequences if the landowner or operator fails to comply with provisions of the notice, including enforcement or loss of cost sharing, or both.

h. An explanation of state or local appeals procedures.

(b) *Compliance schedule.* 1. A landowner or operator that receives the notice under par. (a) shall install or implement best management practices and corrective measures to meet the performance standards in the time period specified in the notice, if cost sharing is available in accordance with sub. (4) (d) 2.

2. The compliance period identified in the notice in par. (a) shall be determined by the department as follows:

a. The compliance period shall begin on the postmark date of the notice or the date of personal delivery.

b. The length of the compliance period shall be from 60 days to 3 years unless otherwise provided for in this subdivision.

c. The length of the compliance period may be less than 60 days if the site is an imminent threat to public health, fish and aquatic life.

d. The department may authorize an extension up to 4 years on a case-by-case basis provided that the reasons for the extension are beyond the control of the landowner or operator. A compliance period may not be extended to exceed 4 years in total.

3. Once a landowner or operator achieves compliance with a cropland performance standard, compliance with the standard shall be maintained by the existing landowner or operator and heirs or subsequent owners, regardless of cost sharing.

(6) **NOTIFICATION REQUIREMENTS AND COMPLIANCE PERIODS FOR EXISTING CROPLANDS IN SITUATIONS WHEN NO ELIGIBLE COSTS ARE INVOLVED.** (a) *Landowner notification.* 1. The department

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shall notify a non-complying landowner or operator of existing croplands of the determinations made under sub. (4).

2. The notice shall be sent certified mail, return receipt requested, or via personal delivery.

3. The following information shall be included in the notice:

a. A description of the cropland performance standard that is being violated and the determination that corrective measures do not involve eligible costs under sub. (4) (c).

b. The cropland status determination made in accordance with sub. (4) (b).

c. A compliance period for achieving the cropland performance standard. The compliance period may not exceed the time limits in par. (b).

d. An explanation of the consequences if the landowner or operator fails to comply with provisions of the notice.

e. An explanation of state or local appeals procedures.

(b) *Compliance period.* 1. The compliance period for existing croplands where best management practices and other corrective measures do not involve eligible costs shall be in accordance with the following:

a. The compliance period shall begin on the postmark date of the notice or the date of personal delivery.

b. The length of the compliance period shall be from 60 days to 2 years unless otherwise provided for in this subsection.

c. The length of the compliance period may be less than 60 days if the site is an imminent threat to public health, fish and aquatic life.

2. Once compliance with a cropland performance standard is attained, compliance with the standard shall be maintained by the existing landowner or operator and heirs or subsequent owners.

(c) *Combined notices.* The department may meet multiple notification requirements under par. (a), sub. (5) and s. NR 151.095 within any single notice issued to a landowner or operator.

(7) **ENFORCEMENT.** (a) *Authority to initiate enforcement.* The department may take enforcement action pursuant to s. 281.98, Stats., or other appropriate actions, against the landowner or operator of a cropland for failing to comply with the cropland performance standards in this subchapter or approved variances to the cropland performance standards provided by the department under s. NR 151.097.

(b) *Enforcement following notice and direct enforcement.* The department shall provide notice to the landowner or operator of an existing cropland in accordance with subs. (5) and (6) prior to the department initiating enforcement action under s. 281.98, Stats.

**Note:** The implementation and enforcement procedures in this section are limited to actions taken by the department under s. 281.98, Stats., for noncompliance with a cropland performance standard. Pursuant to other statutory authority, the department may take direct enforcement action without cost sharing against a crop producer for willful or intentional acts or other actions by a landowner or operator that pose an immediate or imminent threat to human health or the environment.

**Note:** An owner or operator of a new cropland is required to meet the cropland performance standards by incorporating necessary management measures at the time the new cropland is created. This requirement shall be met regardless of cost sharing. The department may pursue direct enforcement under s. 281.98, Stats., against landowners or operators of new croplands not in compliance.

(8) **NOTIFICATION TO MUNICIPALITIES.** The department shall notify the appropriate municipality, including a county land conservation committee, prior to taking any of the following actions under this section:

(a) Contacting a landowner or operator to investigate compliance with cropland performance standards.

(b) Issuing a notice under sub. (5) or (6) to a landowner or operator.

(c) Taking enforcement action under s. 281.98, Stats., against a landowner or operator for failing to comply with cropland performance standards in this subchapter.

(d) Notification is not required if the site is an imminent threat to public health or fish and aquatic life.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.095 Implementation and enforcement procedures for livestock performance standards and prohibitions.** (1) **PURPOSE.** The purpose of this section is to identify the procedures the department will follow in implementing and enforcing the livestock performance standards and prohibitions pursuant to ss. 281.16 (3) and 281.98, Stats. If a livestock performance standard is also listed as a cropland performance standard under s. NR 151.09, the department may choose the procedures of either s. NR 151.09 or this section to obtain compliance with the standard. This section will also identify circumstances under which an owner or operator of a livestock facility is required to comply with livestock performance standards and prohibitions. In this section, "livestock performance standards and prohibitions" means the performance standards and prohibitions in ss. NR 151.05, 151.06 and 151.08.

**Note:** The nutrient management standard in s. NR 151.07 should be implemented through the procedures in s. NR 151.09.

(2) **ROLE OF MUNICIPALITIES.** The department may rely on municipalities to implement the procedures and make determinations outlined in this section.

**Note:** In most cases, the department will rely on municipalities to fully implement the livestock performance standards and prohibitions. The department intends to utilize the procedures in this section in cases where a municipality has requested assistance in implementing and enforcing the performance standards or prohibitions or in cases where a municipality has failed to address an incident of noncompliance with the performance standards or prohibitions in a timely manner. The department recognizes that coordination between local municipalities, the department of agriculture, trade and consumer protection and other state agencies is needed to achieve statewide compliance with the performance standards and prohibitions. Accordingly, the department plans on working with counties, the department of agriculture, trade and consumer protection and other interested partners to develop a detailed intergovernmental strategy for achieving compliance with the performance standards and prohibitions that recognizes the procedures in these rules, state basin plans and the priorities established in land and water conservation plans.

**Note:** Additional implementation and enforcement procedures for livestock performance standards and prohibitions are in ch. NR 243, including the procedures for the issuance of a NOD.

(3) **EXEMPTIONS.** The department may follow the procedures in ch. NR 243 and is not obligated to follow the procedures and requirements of this section in the following situations:

(a) If the livestock operation holds a WPDES permit.

(b) If the department has determined that the issuance of a NOD to the owner or operator of the livestock operation is warranted. Circumstances in which a NOD may be warranted include:

1. The department has determined that a livestock facility has a point source discharge under s. NR 243.24.

2. The department has determined that a discharge to waters of the state is occurring and the discharge is not related to noncompliance with the performance standards or prohibitions.

3. The department has determined that a municipality is not addressing a facility's noncompliance with the performance standards and prohibitions in a manner consistent with the procedures and timelines established in this section.

(4) **LIVESTOCK OWNER AND OPERATOR REQUIREMENTS.** (a) *Introduction.* This section identifies compliance requirements for a livestock owner or operator based on whether a livestock facility is existing or new and whether cost sharing is required to be made available to a livestock owner or operator.

(b) *General requirements.* If any livestock facility is meeting a livestock performance standard or prohibition on or after the effective date of the standard or prohibition, the livestock performance standard or prohibition shall continue to be met by the existing owner or operator, heirs or subsequent owners or operators of the facility. If an owner or operator alters or changes the management of the livestock facility in a manner that results in noncompliance with a livestock performance standard or prohibi-

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tion, the owner or operator shall bring the livestock facility back into compliance regardless of cost–share availability.

(c) *Existing livestock facility requirements.* 1. An owner or operator of an existing livestock facility, defined under sub. (5) (b), shall comply with a livestock performance standard or prohibition if all of the following have been done by the department:

a. Except as provided in subd. 2., a determination is made that cost sharing has been made available in accordance with sub. (5) (d) on or after the effective date of the livestock performance standard or prohibition.

b. The owner or operator of the livestock facility has been notified in accordance with sub. (6) or (7).

2. An owner or operator of an existing livestock facility, defined under sub. (5) (b), shall comply with the livestock performance standards and prohibitions, regardless of whether cost sharing is available, in situations where best management practices and other corrective measures needed to meet the performance standards do not involve eligible costs.

(d) *New livestock facility requirements.* An owner or operator of a new livestock facility, defined under sub. (5) (b), shall comply with the livestock performance standards and prohibitions, regardless of whether cost sharing is available.

**Note:** Under s. 281.16 (3) (e), Stats., an owner or operator may not be required by the state or a municipality through an ordinance or regulation to bring existing livestock facilities into compliance with the livestock performance standards or prohibitions, technical standards or conservation practices unless cost–sharing is available in accordance with this section.

**(5) DEPARTMENT DETERMINATIONS.** (a) *Scope of determinations.* If a livestock facility is not in compliance with a livestock performance standard or prohibition, the department shall make determinations in accordance with the procedures and criteria in this subsection.

(b) *Livestock facility status.* The department shall classify a non–complying livestock facility on an operation to be either new or existing for purposes of administering this section and s. 281.16 (3) (e), Stats. In making the determination, the department shall base the decision on the following:

1. An existing livestock facility is one that meets all of the following criteria:

a. The facility is in existence as of the effective date of the livestock performance standard or prohibition.

b. The facility is not in compliance with a livestock performance standard or prohibition in this subchapter as of the effective date of the livestock performance standard or prohibition. The reason for noncompliance of the livestock facility may not be failure of the owner or operator to maintain an installed best management practice in accordance with a cost–share agreement or contract.

2. A new livestock operation or facility is one that does not meet the definition under subd. 1., including:

a. A livestock operation or facility that is established or installed after the effective date of the livestock performance standard or prohibition, including the placement of livestock structures on a site that did not previously have structures, or placement of animals on lands that did not have animals as of the effective date of the livestock performance standard or prohibition, unless the land is part of an existing rotational grazing or pasturing operation.

b. For a livestock operation that is in existence as of the effective date of the livestock performance standard or prohibition that establishes or constructs or substantially alters a facility after the effective date of the livestock performance standard or prohibition, the facilities constructed, established or substantially altered after the effective date of the livestock performance standard or prohibition are considered new, except as specified in subd. 3.

c. A livestock facility that is in existence and in compliance with a livestock performance standard or prohibition on or after the effective date of the livestock performance standard or pro-

hibition and that undergoes a change in the livestock facility that results in noncompliance with the livestock performance standard or prohibition.

3. Pursuant to the implementation procedures in this section, if the department or a municipality directs an owner or operator of an existing livestock facility to construct a facility as a corrective measure to comply with a performance standard or prohibition on or after the effective date of the livestock performance standard or prohibition, or directs the owner or operator to reconstruct the existing facility as a corrective measure on or after the effective date of the livestock performance standard or prohibition, the constructed facilities are not considered new for purposes of installing or implementing the corrective measure.

4. A livestock facility that meets the criteria in subd. 1. and has subsequently been abandoned shall retain its status as an existing livestock facility if livestock of similar species and number of animal units are reintroduced within 5 years of abandonment.

5. Change in ownership may not be used as the sole basis for determining whether a livestock facility is existing or new for purposes of administering this subsection.

(c) *Eligible costs.* 1. If cost sharing is required to be made available under sub. (4) (c), the department shall determine the total cost of best management practices and corrective measures needed to bring a livestock facility into compliance with a livestock performance standard or prohibition and shall determine which of those costs are eligible for cost sharing for the purposes of administering this section and s. 281.16 (3) (e), Stats.

2. The cost–share eligibility provisions identified in chs. NR 153 and 154 shall be used in identifying eligible costs for installation of best management practices and corrective measures.

3. The technical assistance eligibility provisions identified in ss. NR 153.15 (1) and 153.16 (1) or ch. ATCP 50 shall be used in identifying eligible costs for planning, design and construction services.

4. If cost sharing is provided by DATCP or the department, the corrective measures shall be implemented in accordance with the best management practices and technical standards specified in ch. NR 154 or subch. VIII of ch. ATCP 50.

**Note:** Under chs. NR 153 and 154, eligible costs typically include capital costs and significant other expenses, including design costs, incurred by the owner or operator of the livestock operation. Eligible costs do not include the value or amount of time spent by an owner or operator in making management changes.

(d) *Determination of cost–share availability.* 1. For purposes of administering this section and s. 281.16 (3) (e), Stats., if cost sharing is required to be made available under sub. (4) (c), the department shall make a determination as to whether cost sharing has been made available on or after the effective date of the livestock performance standard or prohibition to cover eligible costs for an owner or operator to comply with a livestock performance standard or prohibition.

2. Cost sharing under s. 281.65, Stats., shall be considered available when all of the following have been met:

a. Cost share dollars are offered in accordance with either of the following: the department has entered into a runoff management grant agreement under ch. NR 153 or a nonpoint source grant agreement under ch. NR 120, and a notice under sub. (6) or under s. NR 243.24 (4) has been issued by the department or a municipality; or the department directly offers cost sharing and issues a notice under sub. (6) or s. NR 243.24 (4).

b. The grants in subd. 2. a., alone or in combination with other funding determined to be available under subd. 3., provide at least 70% of the eligible costs to implement the best management practices or other corrective measures needed for a livestock facility to meet a livestock performance standard or prohibition.

c. In cases of economic hardship determined in accordance with s. NR 154.03 (3), the grants in subd. 2. a., alone or in combination with other funding determined to be available under subd. 3., cover not less than 70% and not greater than 90% of the

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eligible costs to implement the best management practices or other corrective measures needed for a livestock facility to meet a livestock performance standard or prohibition.

d. If an existing livestock operation with less than 250 animal units wants to expand at the time it is upgrading a facility to meet a performance standard or prohibition pursuant to a notice in sub. (6) or under s. NR 243.24 (4), the grants in subd. 2. a., alone or in combination with other funding determined to be available under subd. 3., shall also provide at least 70% of eligible costs needed to bring any expansion of facilities of up to 300 animal units into compliance with the performance standard or prohibition. In cases of economic hardship, the grants in subd. 2. a., alone or in combination with other funding determined to be available under subd. 3., shall also provide between 70% and 90% of the eligible costs needed to bring any expansion of facilities of up to 300 animal units into compliance with the performance standards and prohibitions.

**Note:** For livestock operations with less than 250 animal units, that portion of any expansion of facilities to accommodate more than 300 animal units is not eligible for cost sharing under s. NR 153.15 (2) (d) 1. For an existing livestock operation with greater than 250 animal units, but less than the number of animal units requiring a WPDES permit under s. NR 243.12 (1) (a), (b) or (c), cost sharing may be provided under s. NR 153.15 (2) (d) 2., for at least 70% of eligible costs to bring up to a 20% increase in livestock population into compliance with the performance standards and prohibitions; however, cost sharing for eligible costs up to a 20% expansion in livestock population is not required to be made available for compliance.

3. For funding sources other than those administered by s. 281.65, Stats., the department may make a determination of cost share availability after consulting with DATCP and ch. ATCP 50.

**Note:** Under s. 281.16 (3) (e), Stats., DATCP is responsible for promulgating rules that specify criteria for determining whether cost sharing is available from sources other than s. 281.65, Stats., including s. 92.14, Stats. Pursuant to s. 281.16 (3) (e), Stats., a municipality is required to follow the department's definition of cost share availability if funds are utilized under s. 281.65, Stats. If funds are utilized from any other source, a municipality shall defer to DATCP's definition of cost share availability.

**(6) NOTIFICATION REQUIREMENTS AND COMPLIANCE PERIODS FOR EXISTING LIVESTOCK FACILITIES WHEN COST SHARING IS REQUIRED.** (a) *Owner or operator notification.* 1. The department shall notify an owner or operator in writing of the determinations made under sub. (5) and implementation requirements for existing livestock facilities where cost sharing is required for compliance.

2. The notice shall be sent certified mail, return receipt requested or personal delivery.

3. The following information shall be included in the notice:

- a. A description of the livestock performance standard or prohibition being violated.
- b. The livestock facility status determination made in accordance with sub. (5) (b).
- c. The determination made in accordance with sub. (5) (c) as to which best management practices or other corrective measures needed to comply with a livestock performance standard or prohibition are eligible for cost sharing.

**Note:** Some best management practices required to comply with a livestock performance standard or prohibition involves no eligible costs to the owner or operator.

d. The determination made in accordance with sub. (5) (d) that cost sharing is available for eligible costs to achieve compliance with a livestock performance standard or prohibition, including a written offer of cost sharing.

e. An offer to provide or coordinate the provision of technical assistance.

f. A compliance period for meeting the livestock performance standard or prohibition.

g. An explanation of the possible consequences if the owner or operator fails to comply with provisions of the notice, including enforcement or loss of cost sharing, or both.

h. An explanation of state or local appeals procedures.

(b) *Compliance period.* 1. An owner or operator that receives the notice under par. (a) shall install or implement best management practices and corrective measures to meet a performance

standard or prohibition in the time period specified in the notice, if cost sharing is available in accordance with sub. (5) (d) 2.

2. The compliance period identified in the notice in par. (a) shall be determined by the department as follows:

a. The compliance period shall begin on the post-mark date of the notice or the date of personal delivery.

b. The length of the compliance period shall be from 60 days to 3 years unless otherwise provided for in this subdivision.

c. The length of the compliance period may be less than 60 days if the site is an imminent threat to public health or fish and aquatic life.

d. The department may authorize an extension up to 4 years on a case-by-case basis provided that the reasons for the extension are beyond the control of the owner or operator of the livestock facility. A compliance period may not be extended to exceed 4 years in total.

3. Once an owner or operator achieves compliance with a livestock performance standard or prohibition, compliance with the standard or prohibition shall be maintained by the existing owner or operator and heirs or subsequent owners or operators, regardless of cost sharing.

**(7) NOTIFICATION REQUIREMENTS AND COMPLIANCE PERIODS FOR EXISTING LIVESTOCK FACILITIES IN SITUATIONS WHEN NO ELIGIBLE COSTS ARE INVOLVED.** (a) *Owner or operator notification.* 1. The department shall notify a non-complying owner or operator of an existing livestock facility of the determinations made under sub. (5).

2. The notice shall be sent certified mail, return receipt requested or personal delivery.

3. The following information shall be included in the notice:

a. A description of the livestock performance standard or prohibition that is being violated and the determination that corrective measures do not involve eligible costs under sub. (5) (c).

b. The livestock operation status determination made in accordance with sub. (5) (b).

c. A compliance period for meeting the livestock performance standard or prohibition. The compliance period may not exceed the time limits in par. (b).

d. An explanation of the consequences if the owner or operator fails to comply with provisions of the notice.

e. An explanation of state or local appeals procedures.

(b) *Compliance period.* 1. The compliance period for existing livestock facilities where best management practices and other corrective measures do not involve eligible costs shall be in accordance with the following:

a. The compliance period shall begin on the postmark date of the notice or the date of personal delivery.

b. The length of the compliance period shall be from 60 days to 2 years unless otherwise provided for in this subdivision.

c. The length of the compliance period may be less than 60 days if the site is an imminent threat to public health, or fish and aquatic life.

2. Once compliance with a livestock performance standard or prohibition is attained, compliance with the performance standard or prohibition shall be maintained by the existing owner or operator and heirs or subsequent owners or operators.

(c) *Combined notices.* The department may meet multiple notification requirements under par. (a), sub. (6) and s. NR 151.09 within any single notice issued to the owner or operator.

**(8) ENFORCEMENT.** (a) *Authority to initiate enforcement.* The department may take action pursuant s. 281.98, Stats., or other appropriate actions, against the owner or operator of a livestock operation for failing to comply with the livestock performance standards and prohibitions in this subchapter or approved variances to the livestock performance standards provided by the department under s. NR 151.097.

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(b) *Enforcement following notice and direct enforcement.* The department shall provide notice to the owner or operator of an existing livestock facility in accordance with sub. (6) or (7) prior to the department initiating enforcement action under s. 281.98, Stats.

**Note:** The implementation and enforcement procedures in this section are limited to actions taken by the department under s. 281.98, Stats., for noncompliance with a livestock performance standard or prohibition. Pursuant to other statutory authority, the department may take direct enforcement action without cost sharing against a livestock producer for willful or intentional acts or other actions by a producer that pose an imminent or immediate threat to human health or the environment.

**Note:** An owner or operator of a new livestock facility is required to meet the livestock performance standards and prohibitions at the time the new facility is created. This requirement shall be met regardless of cost sharing.

**(9) NOTIFICATION TO MUNICIPALITIES.** The department shall notify the appropriate municipality, including a county land conservation committee, prior to taking any of the following actions under this subsection:

(a) Contacting an owner or operator to investigate compliance with livestock performance standards and prohibitions.

(b) Issuing a notice under sub. (6) or (7) to an owner or operator.

(c) Taking enforcement action under s. 281.98, Stats., against an owner or operator for failing to comply with a livestock performance standard or prohibition in this subchapter.

(d) Notification is not required if the site is an imminent threat to public health or fish and aquatic life.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.096 Local livestock operation ordinances and regulations.** **(1) LOCAL REGULATIONS THAT EXCEED STATE STANDARDS; APPROVAL REQUIRED.** (a) Except as provided in par. (b), a local governmental unit may not enact a livestock operation ordinance or regulation for water quality protection that exceeds the performance standards or prohibitions in ss. NR 151.05 to 151.08 or the related conservation practices or technical standards in ch. ATCP 50, unless the local governmental unit obtains approval from the department under sub. (2), or receives approval from DATCP pursuant to s. ATCP 50.60.

(b) Paragraph (a) does not apply to any of the following:

1. Local ordinances or regulations that address cropping practices that are not directly related to the livestock operation.

2. Local ordinances or regulations enacted prior to October 1, 2002.

**Note:** See s. 92.15, Stats. A person adversely affected by a local livestock regulation may oppose its adoption at the local level. The person may also challenge a local regulation in court if the person believes that the local governmental unit has violated sub. (1) or s. 92.15, Stats. A local governmental unit is responsible for analyzing the legal adequacy of its regulations, and may exercise its own judgment in deciding whether to seek state approval under this section.

**Note:** Subsection (1) does not limit or expand the application of s. 92.15, Stats., to ordinances or regulations enacted prior to October 1, 2002.

**(2) DEPARTMENT APPROVAL.** (a) To obtain department approval under sub. (1) for an existing or proposed regulation, the head of the local governmental unit or the chair of the local governmental unit's governing board shall do all of the following:

1. Submit a copy of the livestock operation ordinance or regulation or portion thereof to the department and to the department of agriculture, trade and consumer protection.

2. Identify the provisions of the regulation for which the local governmental unit seeks approval.

3. Submit supporting documentation explaining why the specific regulatory provisions that exceed the performance standards, prohibitions, conservation practices or technical standards are needed to achieve water quality standards, and why compliance cannot be achieved with a less restrictive standard.

(b) The department shall notify the local governmental unit in writing within 90 calendar days after the department receives the ordinance or regulation as to whether the ordinance or regulation, or portion thereof is approved or denied and shall state the reasons for its decision. Before the department makes its decision, the

department shall solicit a recommendation from DATCP. If the department finds the regulatory provisions are needed to achieve water quality standards, the department may approve the ordinance or regulation or portion thereof.

**(3) LOCAL PERMITS.** Local permits or permit conditions are not subject to the review and approval procedures in this section unless the permit conditions are codified in a local ordinance or regulation.

**Note:** A local permit requirement does not, in and of itself, violate sub. (1), but permit conditions codified in a local ordinance or regulation must comply with sub. (1). If a local governmental unit routinely requires permit holders to comply with uncoded water quality protection standards that exceed state standards, those uncoded requirements may be subject to court challenge for noncompliance with s. 92.15, Stats., and sub. (1) as *de facto* regulatory enactments. A local governmental unit may forestall a legal challenge by codifying standard permit conditions and obtaining any necessary state approval under this section. The department will review codified regulations, but will not review individual permits or uncoded permit conditions under sub. (2).

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.097 Variances.** **(1)** The department may grant a variance to the performance standards, technical standards or other non-statutory requirements in this subchapter.

**(2)** The department may not grant a variance solely on the basis of economic hardship.

**(3)** The department may grant a variance only if all of the following conditions are met:

(a) Compliance with the performance standard or technical standard is not feasible due to site conditions. This condition does not apply to research activities conducted as part of a planned agricultural research and farming curriculum.

(b) The landowner or operator will implement best management practices or other corrective measures that ensure a level of pollution control that will achieve a level of water quality protection comparable to that afforded by the performance standards in this subchapter.

(c) The conditions for which the variance is requested are not created by the landowner or operator or their agents or assigns. This condition does not apply to research activities conducted as part of a planned agricultural research and farming curriculum.

**(4)** The department shall use the following process when administering a variance request:

(a) The landowner or operator shall submit the variance request to the department or governmental unit, including a county land conservation committee within 60 days of receiving the notice.

(b) The governmental unit shall forward any variances that it receives to the department. The department may consider a recommendation from the governmental unit concerning acceptance of the variance request.

(c) The department shall make its determination based on the factors in sub. (3).

(d) The department shall notify the landowner or operator and the governmental unit of its determination. If the variance is granted, the department or governmental unit shall send to the landowner or operator an amended notice.

(e) The period of time required to make a ruling on a variance request does not extend the compliance periods allowed under ss. NR 151.09 and 151.095.

**Note:** The department may consider decisions made by a governmental unit, in accordance with local ordinance provisions, when making its determination whether to accept or deny the variance.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

### Subchapter III – Non-Agricultural Performance Standards

**NR 151.10 Purpose.** This subchapter establishes performance standards, as authorized by s. 281.16 (2) (a), Stats., for non-agricultural facilities and practices that cause or may cause nonpoint runoff pollution. These performance standards are

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intended to limit nonpoint runoff pollution in order to achieve water quality standards. Design guidance and the process for developing technical standards to implement this section are set forth in subch. V.

**History:** CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.11 Construction site performance standard for new development and redevelopment. (1) DETERMINATION OF AVERAGE ANNUAL BASIS.** In this section, average annual basis is calculated using the appropriate annual rainfall or runoff factor, also referred to as the R factor, or an equivalent design storm using a type II distribution, with consideration given to the geographic location of the site and the period of disturbance.

**Note:** The USLE and its successors RUSLE and RUSLE2, utilize an R factor which has been developed to estimate annual soil erosion, averaged over extended time periods. The R factor can be modified to estimate monthly and single-storm erosion. A design storm can be statistically calculated to provide an equivalent R factor as an average annual calculation.

**(2) APPLICABILITY.** Except as provided under sub. (3), this section applies to all the following:

(a) A construction site that has 5 or more acres of land disturbing construction activity, unless any of the following are met:

1. The department has received a notice of intent for the construction project in accordance with subch. III of ch. NR 216 before October 1, 2002.

**Note:** Prior to submitting a notice of intent pursuant to subch. III of ch. NR 216, a construction site erosion control plan in conformance with s. NR 216.46 and a storm water management plan in conformance with s. NR 216.47 must be developed.

2. The department of commerce has received a notice of intent for the construction project in accordance with s. Comm 61.115 before October 1, 2002.

3. A bid is advertised or construction contract signed where no bid is advertised, before October 1, 2002.

(b) After March 10, 2003, any construction site that has at least one acre of land disturbing construction activity, except where bids are advertised, or construction contracts signed where no bids are advertised, before October 1, 2002.

**Note:** The 5- and 1-acre land disturbance thresholds are consistent with subch. III of ch. NR 216 and EPA phase II storm water discharge rules regarding applicability of land disturbing construction permits.

**(3) EXEMPTIONS.** This section does not apply to the following:

(a) Construction projects that are exempted by federal statutes or regulations from the requirement to have a national pollutant discharge elimination system permit issued under 40 CFR 122, for land disturbing construction activity.

(b) Transportation facilities, except transportation facility construction projects that are part of a larger common plan of development such as local roads within a residential or industrial development.

**Note:** Transportation facility performance standards are given in subch. IV.

(c) Nonpoint discharges from agricultural facilities and practices.

(d) Nonpoint discharges from silviculture activities.

(e) Routine maintenance for project sites that have less than 5 acres of land disturbance if performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility.

**(4) RESPONSIBLE PARTY.** The landowner or other person performing services to meet the performance standards of this subchapter, through a contract or other agreement, shall comply with this section.

**Note:** Other persons include anyone responsible for disturbing the land or implementing or maintaining BMPs, such as a general contractor or landscape architect.

**(5) PLAN.** A written plan shall be developed and implemented for each construction site and shall incorporate the requirements of this section.

**Note:** The written plan may be that specified within s. NR 216.46, the erosion control portion of a construction plan or other plan.

**(6) REQUIREMENTS.** The plan required under sub. (5) shall include the following:

(a) Best management practices that, by design, achieve, to the maximum extent practicable, a reduction of 80% of the sediment load carried in runoff, on an average annual basis, as compared with no sediment or erosion controls, until the construction site has undergone final stabilization. No person shall be required to exceed an 80% sediment reduction to meet the requirements of this paragraph. Erosion and sediment control BMPs may be used alone or in combination to meet the requirements of this paragraph. Credit toward meeting the sediment reduction shall be given for limiting the duration or area, or both, of land disturbing construction activity, or other appropriate mechanism.

**Note:** Soil loss prediction tools that estimate the sediment load leaving the construction site under varying land and management conditions, or methodology identified in subch. V., may be used to calculate sediment reduction.

(b) Notwithstanding par. (a), if BMPs cannot be designed and implemented to reduce the sediment load by 80%, on an average annual basis, the plan shall include a written and site-specific explanation why the 80% reduction goal is not attainable and the sediment load shall be reduced to the maximum extent practicable.

(c) Where appropriate, the plan shall include sediment controls to do all of the following to the maximum extent practicable:

1. Prevent tracking of sediment from the construction site onto roads and other paved surfaces.

2. Prevent the discharge of sediment as part of site de-watering.

3. Protect separate storm drain inlet structures from receiving sediment.

(d) The use, storage and disposal of chemicals, cement and other compounds and materials used on the construction site shall be managed during the construction period to prevent their transport by runoff into waters of the state. However, projects that require the placement of these materials in waters of the state, such as constructing bridge footings or BMP installations, are not prohibited by this paragraph.

**(7) LOCATION.** The BMPs used to comply with this section shall be located prior to runoff entering waters of the state.

**Note:** While regional treatment facilities are appropriate for control of post-construction pollutants they should not be used for construction site sediment removal.

**History:** CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.12 Post-construction performance standard for new development and redevelopment. (1) GENERAL.** In this section:

(a) "Post-construction site" means a construction site subject to regulation under this subchapter, after construction is completed and final stabilization has occurred.

(b) Average annual rainfall is determined by the following years and locations: Madison, 1981 (Mar. 12-Dec. 2); Green Bay, 1969 (Mar. 29-Nov. 25); Milwaukee, 1969 (Mar. 28-Dec. 6); Minneapolis, 1959 (Mar. 13-Nov. 4); Duluth, 1975 (Mar. 24-Nov. 19). Of the 5 locations listed, the location closest to a project site best represents the average annual rainfall for that site.

**(2) APPLICABILITY.** This section applies to a post-construction site that is or was subject to the construction performance standards of s. NR 151.11, except any of the following:

(a) A post-construction site where the department has received a notice of intent for the construction project, in accordance with subch. III of ch. NR 216, within 2 years after October 1, 2002.

(b) A post-construction site where the department of commerce has received a notice of intent, in accordance with s. Comm 61.115, within 2 years after October 1, 2002.

(c) A redevelopment post-construction site with no increase in exposed parking lots or roads.

(d) A post-construction site with less than 10% connected imperviousness based on complete development of the post-

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construction site, provided the cumulative area of all parking lots and rooftops is less than one acre.

**Note:** Projects that consist of only the construction of bicycle paths or pedestrian trails generally meet this exception as these facilities have minimal connected imperviousness.

(e) Agricultural facilities and practices.

(f) An action for which a final environmental impact statement was approved before October 1, 2002.

(g) An action for which a finding of no significant impact is made under ch. NR 150 before October 1, 2002.

(h) Underground utility construction such as water, sewer and fiberoptic lines, but not including the construction of any above ground structures associated with utility construction.

**(3) RESPONSIBLE PARTY.** The landowner of the post-construction site or other person contracted or obligated by other agreement to implement and maintain post-construction storm water BMPs shall comply with this section.

**(4) STORM WATER MANAGEMENT PLAN.** A written storm water management plan shall be developed and implemented for each post-construction site and shall incorporate the requirements of this subsection.

**Note:** Examples of storm water management plans that may be used to comply with this section may be that specified within s. NR 216.47 or the municipal storm water management program specified within s. NR 216.07(7).

**(5) REQUIREMENTS.** The plan required under sub. (4) shall include:

(a) *Total suspended solids.* Best management practices shall be designed, installed and maintained to control total suspended solids carried in runoff from the post-construction site as follows:

1. For new development, by design, reduce to the maximum extent practicable, the total suspended solids load by 80%, based on an average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed an 80% total suspended solids reduction to meet the requirements of this subdivision.

2. For redevelopment, by design, reduce to the maximum extent practicable, the total suspended solids load by 40%, based on an average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed a 40% total suspended solids reduction to meet the requirements of this subdivision.

3. For in-fill development under 5 acres that occurs within 10 years after October 1, 2002, by design, reduce to the maximum extent practicable, the total suspended solids load by 40%, based on an average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed a 40% total suspended solids reduction to meet the requirements of this subdivision.

4. For in-fill development that occurs 10 or more years after October 1, 2002, by design, reduce to the maximum extent practicable, the total suspended solids load by 80%, based on an average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed an 80% total suspended solids reduction to meet the requirements of this subdivision.

5. Notwithstanding subs. 1 to 4., if the design cannot achieve the applicable total suspended solids reduction specified, the storm water management plan shall include a written and site-specific explanation why that level of reduction is not attained and the total suspended solids load shall be reduced to the maximum extent practicable.

**Note:** Pollutant loading models such as SLAMM, P8 or equivalent methodology may be used to evaluate the efficiency of the design in reducing total suspended solids. Information on how to access SLAMM and P8 is available at: <http://www.dnr.state.wi.us/org/water/wm/nps/slamm.htm> or contact the storm water coordinator in the runoff management section of the bureau of watershed management at (608) 267-7694.

(b) *Peak discharge.* 1. By design, BMPs shall be employed to maintain or reduce the peak runoff discharge rates, to the maximum extent practicable, as compared to pre-development conditions for the 2-year, 24-hour design storm applicable to the post-

construction site. Pre-development conditions shall assume "good hydrologic conditions" for appropriate land covers as identified in TR-55 or an equivalent methodology. The meaning of "hydrologic soil group" and "runoff curve number" are as determined in TR-55. However, when pre-development land cover is cropland, rather than using TR-55 values for cropland, the runoff curve numbers in Table 2 shall be used.

**Table 2 – Maximum Pre-Development Runoff Curve Numbers for Cropland Areas**

Hydrologic Soil Group	A	B	C	D
Runoff Curve Number	56	70	79	83

**Note:** The curve numbers in Table 2 represent mid-range values for soils under a good hydrologic condition where conservation practices are used and are selected to be protective of the resource waters.

2. This paragraph does not apply to:

a. A post-construction site where the change in hydrology due to development does not increase the existing surface water elevation at any point within the downstream receiving water by more than 0.01 of a foot for the 2-year, 24-hour storm event.

**Note:** Hydraulic models such as HEC-RAS or another methodology may be used to determine the change in surface water elevations.

b. A redevelopment post-construction site.

c. An in-fill development area less than 5 acres.

**Note:** The intent of par. (b) is to minimize streambank erosion under bank full conditions.

(c) *Infiltration.* BMPs shall be designed, installed and maintained to infiltrate runoff to the maximum extent practicable in accordance with the following, except as provided in subs. 5. to 8.:

1. For residential developments one of the following shall be met:

a. Infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 90% 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 1% of the project site is required as an effective infiltration area.

b. Infiltrate 25% of the post-development runoff volume from the 2-year, 24-hour design storm with a type II distribution. Separate curve numbers for pervious and impervious surfaces shall be used to calculate runoff volumes and not composite curve numbers as defined in TR-55. However, when designing appropriate infiltration systems to meet this requirement, no more than 1% of the project site is required as an effective infiltration area.

2. For non-residential development, including commercial, industrial and institutional development, one of the following shall be met:

a. For this subdivision only, the "project site" means the rooftop and parking lot areas.

b. Infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 60% 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% of the project site is required as an effective infiltration area.

c. Infiltrate 10% of the post-development runoff volume from the 2-year, 24-hour design storm with a type II distribution. Separate curve numbers for pervious and impervious surfaces shall be used to calculate runoff volumes and not composite curve numbers as defined in TR-55. However, when designing appropriate infiltration systems to meet this requirement, no more than 2% of the project site is required as an effective infiltration area.

3. Pre-development condition shall be the same as specified in par. (b).

**Note:** A model that calculates runoff volume, such as SLAMM, P8 or an equivalent methodology may be used. Information on how to access SLAMM and P8 is



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available at: <http://www.dnr.state.wi.us/org/water/wm/nps/slamm.htm> or contact the storm water coordinator in the runoff management section of the bureau of watershed management at (608) 267-7694.

4. Before infiltrating runoff, pretreatment shall be required for parking lot runoff and for runoff from new 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 subd. 8. Pretreatment options may include, but are not limited to, oil/grease separation, sedimentation, biofiltration, filtration, swales or filter strips.

**Note:** To achieve the infiltration requirement for the parking lots or roads, maximum extent practicable should not be interpreted to require significant topography changes that create an excessive financial burden. 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.

5. Exclusions. The runoff from the following areas are prohibited from meeting the requirements of this paragraph:

a. Areas associated with tier 1 industrial facilities identified in s. NR 216.21 (2) (a), including storage, loading, rooftop and parking.

b. Storage and loading areas of tier 2 industrial facilities identified in s. NR 216.21 (2) (b).

**Note:** Runoff from tier 2 parking and rooftop areas may be infiltrated but may require pretreatment.

c. Fueling and vehicle maintenance areas.

d. Areas within 1000 feet upgradient or within 100 feet downgradient of karst features.

e. Areas with less than 3 feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock, except this subd. 5. e. does not prohibit infiltration of roof runoff.

f. Areas with runoff from industrial, commercial and institutional parking lots and roads and residential arterial roads with less than 5 feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock.

g. Areas within 400 feet of a community water system well as specified in s. NR 811.16 (4) or within 100 feet of a private well as specified in s. NR 812.08 (4) for runoff infiltrated from commercial, industrial and institutional land uses or regional devices for residential development.

h. Areas where contaminants of concern, as defined in s. NR 720.03 (2), are present in the soil through which infiltration will occur.

i. Any area where the soil does not exhibit one of the following characteristics between the bottom of the infiltration system and the seasonal high groundwater and top of bedrock: at least a 3-foot soil layer with 20% fines or greater; or at least a 5-foot soil layer with 10% fines or greater. This subd. 5. i. does not apply where the soil medium within the infiltration system provides an equivalent level of protection. Subdivision 5. i. does not prohibit infiltration of roof runoff.

**Note:** The areas listed in subd. 5. are prohibited from infiltrating runoff due to the potential for groundwater contamination.

6. Exemptions. The following are not required to meet the requirements of this paragraph:

a. Areas where the infiltration rate of the soil is less than 0.6 inches/hour measured at the bottom of the infiltration system.

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

c. Redevelopment post-construction sites.

d. In-fill development areas less than 5 acres.

e. Infiltration areas during periods when the soil on the site is frozen.

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

7. Where alternate uses of runoff are employed, such as for toilet flushing, laundry or irrigation, such alternate use shall be given equal credit toward the infiltration volume required by this paragraph.

8. a. Infiltration systems designed in accordance with this paragraph 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. 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.

b. Notwithstanding subd. 8. a., the discharge from BMPs shall remain below the enforcement standard at the point of standards application.

(d) *Protective areas.* 1. In this paragraph, "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 this paragraph, "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.

a. For outstanding resource waters and exceptional resource waters, and for wetlands in areas of special natural resource interest as specified in s. NR 103.04, 75 feet.

b. 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.

c. For lakes, 50 feet.

d. For highly susceptible wetlands, 50 feet. Highly susceptible wetlands include the following types: fens, sedge meadows, bogs, low prairies, conifer swamps, shrub swamps, other forested wetlands, fresh wet meadows, shallow marshes, deep marshes and seasonally flooded basins. Wetland boundary delineation shall be made in accordance with s. NR 103.08 (1m). This paragraph does not apply to wetlands that have been completely filled in accordance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in accordance with all applicable state and federal regulations shall be measured from the wetland boundary delineation after fill has been placed.

e. For less susceptible wetlands, 10% 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.

f. In subd. 1. a., d. and e., 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 s. NR 103.03.

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

2. This paragraph applies to post-construction sites located within a protective area, except those areas exempted pursuant to subd. 4.

3. The following requirements shall be met:

a. Impervious surfaces shall be kept out of the protective area to the maximum extent practicable. The storm water management plan shall contain a written site-specific explanation for any parts of the protective area that are disturbed during construction.

b. Where land disturbing construction activity occurs within a protective area, and where no impervious surface is present, adequate sod or self-sustaining vegetative cover of 70% or greater shall be established and maintained. The adequate sod or self-sustaining vegetative cover shall be sufficient to provide for bank

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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.

**Note:** It is recommended that seeding of non-aggressive 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 may 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".

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

**Note:** Other regulations, such as ch. 30, Stats., and chs. NR 103, 115, 116 and 117 and their associated review and approval process may apply in the protective area.

4. Exemptions. This paragraph does not apply to:

a. Redevelopment post-construction sites.

b. In-fill development areas less than 5 acres.

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

d. Structures constructed in accordance with s. 59.692 (1v), Stats.

e. Post-construction sites from which runoff does not enter the surface water, except to the extent that vegetative ground cover is necessary to maintain bank stability.

**Note:** A vegetated protective area to filter runoff pollutants from post-construction sites described in subd. 4. e. 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 basin, will need to be designed and implemented to reduce runoff pollutants prior to runoff entering a surface water of the state.

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

**Note:** A combination of the following BMPs may be used: oil and grease separators, canopies, petroleum spill cleanup materials, or any other structural or non-structural method of preventing or treating petroleum in runoff.

(f) *Location.* To comply with the standards required under this subsection, BMPs may be located on-site or off-site as part of a regional storm water device, practice or system, but shall be installed in accordance with s. NR 151.003.

(g) *Timing.* The BMPs that are required under this subsection shall be installed before the construction site has undergone final stabilization.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.13 Developed urban area performance standard. (1) INFORMATION AND EDUCATION. (a) Applicability.** This section applies to any incorporated municipality with an average density of 1,000 people per square mile or greater, based on the latest decennial census made by the United States census, as well as any commercial and industrial areas contiguous to these areas.

**Note:** The municipality has primary responsibility for complying with this section. However, the general population is expected to follow municipal ordinance requirements and requests to carry out activities such as: proper curbside placement of leaves for collection, relocating vehicles for street sweeping and utilizing proper disposal methods for oils and other chemicals.

(b) *Requirements.* For areas identified under par. (a), all of the following shall be implemented by March 10, 2008:

1. A public information and education program, utilizing materials identified by the department, promoting beneficial on-site reuse of leaves and grass clippings and proper use of lawn and garden fertilizers and pesticides, proper management of pet wastes and prevention of dumping oil and other chemicals in storm sewers. Information and education materials shall include instruction on how to apply fertilizers in accordance with a nutrient application schedule, based on appropriate soil tests, and the application of pesticides in accordance with an integrated pest management plan.

2. A municipal program, as appropriate, for the collection and management of leaf and grass clippings, including public education about this program.

3. The application of lawn and garden fertilizers on municipally controlled properties, with pervious surface over 5 acres each, shall be done in accordance with a site specific nutrient application schedule based on appropriate soil tests. The nutrient application schedule shall be designed to maintain the optimal health of the lawn or garden vegetation.

4. Detection and elimination of illicit discharges to storm sewers.

**(2) PERMITTED MUNICIPALITIES. (a) Applicability.** This section applies to municipalities that are subject to the municipal storm water permit requirements of subch. I of ch. NR 216.

**Note:** A municipal separate storm sewer system could become subject to subch. I of ch. NR 216 if it is designated by the department to be a significant contributor of pollutants to waters of the state under s. NR 216.02 (4).

(b) *Program.* A municipality shall develop and implement a storm water management program, including the adoption and administration of any necessary ordinance, to meet the following requirements:

**Note:** The program to meet the requirements of this section may be the same as the municipal storm water management program required by s. NR 216.07(7) or some other plan.

1. Stage 1 requirements. The municipalities listed under par. (a), shall implement the following by March 10, 2008:

a. All of the requirements contained in sub. (1) (b).

b. To the maximum extent practicable, a 20% reduction in total suspended solids in runoff that enters waters of the state as compared to no controls.

**Note:** It is expected that the municipality will be able to achieve the 20% reduction by municipal street sweeping, using either conventional or high efficiency sweepers, regular catch basin cleaning, de-icer management, and education to change human behavior toward reducing pollution.

2. Stage 2 requirements. To the maximum extent practicable, the municipalities listed under par. (a) shall implement a 40% reduction in total suspended solids in runoff that enters waters of the state as compared to no controls, by March 10, 2013.

**Note:** It is expected that the municipality will be able to achieve the 40% reduction through the use of high efficiency street sweeping or structural BMP retrofit practices. The stage 2 requirements may include application of BMPs to privately owned lands, such as shopping centers.

(c) *Location.* To comply with the standards required under this subsection, BMPs may be located on-site or off-site as part of a regional storm water device, practice or system, but shall be installed in accordance with s. NR 151.003.

(d) *Exclusion.* This section does not apply to areas subject to subch. II of ch. NR 216.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.14 Non-municipal property fertilizer performance standard. (1) APPLICABILITY.** This section applies when all of the following conditions are met:

(a) The property is not owned by a municipality.

(b) The property has over 5 acres of pervious surface where fertilizers are applied.

(c) The property discharges runoff to waters of the state.

**(2) RESPONSIBLE PARTY.** The landowner shall comply with this section.

**(3) REQUIREMENTS.** No later than March 10, 2008, the application of lawn and garden fertilizers on these properties shall be done in accordance with site-specific nutrient application schedules based on appropriate soil tests. The nutrient application schedule shall be designed to maintain the optimal health of the lawn or garden vegetation.

**Note:** The landowner should consider using slow release fertilizers or "spoon feeding" nutrients to reduce the concentration of nitrates reaching groundwater.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

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**(1) IMPLEMENTATION.** This subchapter shall be implemented as follows:

(a) *Construction sites and post-construction sites.* For sites defined in ss. NR 151.11 (2) and 151.12 (1) and (2):

1. The provisions of ss. NR 151.11 and 151.12 shall be implemented through subch. III of ch. NR 216.

2. The department shall make available model ordinances that reflect and implement the performance standards in ss. NR 151.11 and 151.12.

**Note:** These model ordinances are in ch. NR 152. Municipalities are encouraged to adopt the requirements of ss. NR 151.11 and 151.12, into local ordinances that reflect these models. Incentives are included in the grant programs identified in chs. NR 153 and 155, for municipalities that adopt the performance standards into their ordinances, provide an information and education program and track and report their enforcement activity.

(b) *Developed urban areas.* 1. The provisions of ss. NR 151.13 (1) and 151.14 shall be enforced under sub. (2).

2. The provisions of s. NR 151.13 (2) shall be implemented through subch. I of ch. NR 216.

**(2) ENFORCEMENT.** The department shall enforce this subchapter under s. 281.98, Stats.

**Note:** The department may also enforce performance standards implemented through ch. NR 216 under ss. 283.89 and 283.91, Stats.

**History:** CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02.

**Subchapter IV – Transportation Facility Performance Standards**

**NR 151.20 Purpose and applicability.** (1) (a) This subchapter establishes performance standards, as authorized by s. 281.16 (2) (a), Stats., for transportation facilities that cause or may cause runoff pollution, except as provided in sub. (2). These performance standards are intended to limit runoff pollution in order to achieve water quality standards. Design guidance and the process for developing technical standards to implement this subchapter are set forth in subch. V.

(b) Transportation facilities that are directed and supervised by the department of transportation and that are regulated by an administrative rule administered by the department of transportation, where the department determines in writing that the rule meets or exceeds the performance standards of this subchapter and is implemented in accordance with the administrative rule provisions, shall be deemed to meet the requirements of the portions of this subchapter determined by the department.

**(2)** (a) This subchapter does not apply to any of the following:

1. Actions for which a final environmental impact statement is approved before October 1, 2002.

2. Actions for which a finding of no significant impact is made under ch. Trans 400 before October 1, 2002.

3. Actions that are documented in an environmental report, as defined in s. Trans 400.04 (10), completed before October 1, 2002, that fit the criteria or conditions for approval as a categorical exclusion in 23 CFR 771.117, April 1, 2000, or has met the review criteria of paragraph 23.a. of chapter 3 of federal aviation administration order 5050.4A issued on October 8, 1985.

(b) Notwithstanding par. (a), the construction site performance standards under s. NR 151.23 and the protective area requirements under s. NR 151.24 (6) apply to transportation facilities subject to this subchapter.

**(3)** In s. NR 151.23, average annual basis is calculated using the appropriate annual rainfall or runoff factor, also referred to as the R factor, or an equivalent design storm using a type II distribution, with consideration given to the geographic location of the site and the period of disturbance.

**Note:** The USLE and its successors RUSLE and RUSLE2, utilize an R factor which has been developed to estimate annual soil erosion, averaged over extended time periods. The R factor can be modified to estimate monthly and single-storm erosion. A design storm can be statistically calculated to provide an equivalent R factor as an average annual calculation.

**(4)** In s. NR 151.24, average annual rainfall is determined by the following years and locations: Madison, 1981 (Mar. 12–Dec. 2); Green Bay, 1969 (Mar. 29–Nov. 25); Milwaukee, 1969 (Mar. 28–Dec. 6); Minneapolis, 1959 (Mar. 13–Nov. 4); Duluth, 1975 (Mar. 24–Nov. 19). Of the 5 locations listed, the location closest to a project site best represents the average annual rainfall for that site.

**History:** CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.21 Definitions.** In this subchapter:

**(1)** “Airport” means any area of land or water which is used, or intended for use, for the landing and take-off of aircraft, and any appurtenant areas which are used, or intended for use, for airport buildings or other airport facilities or rights-of-way, together with all airport buildings and facilities located thereon.

**(2)** “Borrow site” means an area outside of a project site from which stone, soil, sand or gravel is excavated for use at the project site, except the term does not include commercial pits.

**(3)** “Highway” has the meaning given in s. 340.01 (22), Stats.

**(4)** “Material disposal site” means an area outside of a project site, which is used, for the lawful disposal of surplus materials or materials unsuitable for use within the project site that is under the direct control of the contractor. A municipally owned landfill or private landfill that is not managed by the contractor is excluded from this definition.

**(5)** “Minor reconstruction” means reconstruction 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.

**(6)** “Prime contractor” means a person authorized or awarded a contract to perform, directly or using subcontractors, all the work of a project directed and supervised by the transportation facility authority.

**(7)** “Private road or driveway” has the meaning given in s. 340.01 (46), Stats.

**(8)** “Public-use airport” means either of the following as described in 49 USC 47102(17):

(a) A public airport.

(b) A privately-owned airport used or intended to be used for public purposes that is either:

1. A reliever airport as designated by the secretary of the United States department of transportation to relieve congestion at a commercial service airport and to provide more general aviation access to the overall community.

2. Determined by the secretary of the United States department of transportation to have at least 2,500 passenger boardings each year and to receive scheduled passenger aircraft service.

**(9)** “Public mass transit facility” means any area of land or water which is used, or intended for use, by bus or light rail, and any appurtenant areas which are used, or intended for use, by bus or light rail, including buildings or other facilities or rights-of-way, either publicly or privately owned, that provide the public with general or special service on a regular and continuing basis.

**(10)** “Public trail” means a “state ice age trail area” designated under s. 23.17 (2), Stats., a state trail under s. 23.175 (2) (a), Stats., an “all-terrain vehicle trail” under s. 23.33 (1) (d), Stats., an “off-the-road motorcycle trail” under s. 23.33 (9) (b) 4., Stats., a “recreational trail” under s. 30.40 (12m), Stats., a “walkway” under s. 30.40 (22), Stats., a state trail under s. 84.06 (11), Stats., a “bike-way” under s. 84.60 (1) (a), Stats., a “snowmobile trail” under s. 350.01 (17), Stats., a “public snowmobile corridor” under s. 350.12 (3j) (a) 1., Stats., or any other trail open to the public as a matter of right.

**(11)** “Railroad” means any area of land or water which is used, or intended for use, in operating a railroad as defined in s. 85.01 (5), Stats., and any appurtenant areas which are used, or intended for use, for railroad buildings or other railroad facilities or rights-

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of-way, together with all railroad buildings and facilities located thereon.

**(12)** "Reconditioning" has the meaning given in s. 84.013 (1) (b), Stats.

**(13)** "Reconstruction" has the meaning given in s. 84.013 (1) (c), Stats.

**(14)** "Resurfacing" has the meaning given in s. 84.013 (1) (d), Stats.

**(15)** "Transportation facility authority" means any person or entity that is authorized to approve work on a transportation facility by contract, permit or with its own forces or by force account. A permit or approval granted by the department pursuant to ch. 283, Stats., does not qualify as authorization needed to meet this definition.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.22 Responsible party. (1) TRANSPORTATION FACILITY AUTHORITY.** (a) The transportation facility authority shall develop a design plan to meet the performance standards of ss. NR 151.23 and 151.24 for land disturbing construction activity at the transportation facility construction site.

**Note:** This design plan may be the erosion control plan specified in s. Trans 401.07.

(b) The transportation facility authority, in consultation with the department, shall approve the implementation plan submitted under sub. (2) (a). The transportation facility authority shall incorporate the implementation plan into the contract for project construction.

(c) The transportation facility authority shall administer and enforce the implementation plan submitted by the prime contractor under sub. (2) (a) under the contract for project construction. The transportation facility authority shall ensure that the prime contractor follows and maintains the implementation plan under par. (b). If the prime contractor does not follow the implementation plan incorporated into the contract for project construction, the transportation facility authority shall control erosion and sediment at the construction site consistent with the design plan prepared under par. (a) or implementation plan prepared under sub. (2) (a).

(d) Before accepting the completed project, the transportation facility authority shall verify in writing that the prime contractor has satisfactorily completed the implementation plan pursuant to sub. (2) (b). The transportation authority shall submit the written verification to the prime contractor and to the authority in charge of maintenance of the transportation facility. Upon written verification by the transportation facility authority under this paragraph, the prime contractor is released from the responsibility under this subchapter, except for any responsibility for defective work or materials, damages by its own operations, or as may be otherwise required in the project construction contract.

**(2) PRIME CONTRACTOR.** (a) The prime contractor shall develop and submit to the transportation facility authority an implementation plan that identifies applicable BMPs and contains a schedule for implementing the BMPs in accordance with design plan to meet the performance standards under sub. (1) (a). The implementation plan shall identify an array of BMPs that may be employed to meet the performance standards. The implementation plan shall also address the design and implementation of BMPs required in ss. NR 151.23 and 151.24 for land disturbing construction activity within borrow sites and material disposal sites that are related to the construction project.

**Note:** This implementation plan may be the erosion control implementation plan specified in s. Trans 401.08.

(b) The prime contractor shall implement the implementation plan as required by the contract for project construction prepared pursuant to sub. (1) (b).

(c) A transportation authority that carries out the construction activity with its own employees and resources shall comply with

the prime contractor requirements contained in this subsection, including preparing and carrying out an implementation plan.

**(3) SINGLE PLAN.** For transportation projects that are not administered under ch. Trans 401, the requirements of this subchapter may be developed under one plan instead of 2 separate plans as described under subs. (1) (a) and (2) (a). A plan created under this subsection shall contain both the design components required under sub. (1) (a) and the implementation components required under sub. (2) (a).

**Note:** This single plan may be the erosion control plan specified in s. NR 216.46.

**(4) MAINTENANCE AUTHORITY.** Upon execution of the written verification prepared under sub. (1) (d) by the transportation facility authority, the authority in charge of maintenance of the transportation facility shall maintain the BMPs to meet the performance standards of this subchapter. However, BMPs no longer necessary for erosion and sediment control shall be removed by the maintenance authority.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.23 Construction site performance standard. (1) APPLICABILITY.** Except as provided under sub. (2), this section applies to all of the following:

(a) A transportation facility construction site that has 5 or more acres of land disturbing construction activity, unless any of the following are met:

1. The department has received a notice of intent for the transportation construction project in accordance with subch. III of ch. NR 216 before October 1, 2002.

**Note:** Prior to submitting a notice of intent pursuant to subch. III of ch. NR 216, a construction site erosion control plan in conformance with s. NR 216.46 and a storm water management plan in conformance with s. NR 216.47 shall be developed.

2. A bid is advertised or construction contract signed where no bid is advertised, before October 1, 2002.

(b) After March 10, 2003, any transportation facility construction site that has at least one acre of land disturbing construction activity, except where bids are advertised, or construction contracts signed where no bids are advertised, before October 1, 2002.

**(2) EXEMPTION.** This section does not apply to the following:

(a) Transportation facility construction projects that are exempted by federal statutes or regulations from the requirement to have a national pollutant discharge elimination system permit issued under 40 CFR 122, for land disturbing construction activity.

(b) Transportation facility construction projects that are part of a larger common plan of development, such as a residential or industrial development, and are in compliance with the performance standards of subch. III.

(c) Routine maintenance for transportation facilities that have less than 5 acres of land disturbance if performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility.

**Note:** Construction projects such as installations of utilities within a transportation right-of-way that are not directed and supervised by the department of transportation are subject to the performance standards of subch. III and are not subject to this subchapter.

**(3) PLAN.** (a) A written design plan shall be developed for each construction site and shall incorporate the requirements of this section.

**Note:** The design plan may be the erosion control plan specified in s. NR 216.46 or the design plan in s. NR 151.22 (1) (a).

(b) The plan required under s. NR 151.22 (2) (a) or (3) shall be properly installed to implement the plan under s. NR 151.22 (1) (a).

**(4) REQUIREMENTS.** The design plan required under sub. (3) shall include the following:

(a) BMPs that, by design, achieve, to the maximum extent practicable, a reduction of 80% of the sediment load carried in runoff, on an average annual basis, as compared with no sediment or erosion controls, as specified in s. NR 151.22 (1) (a) or (3), until

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the construction site has undergone final stabilization. No person shall be required to exceed an 80% sediment reduction to meet the requirements of this paragraph. Erosion and sediment control BMPs may be used alone or in combination and shall be installed according to any associated implementation plan to meet the requirements of this paragraph. Credit toward meeting the sediment reduction shall be given for limiting the duration or area, or both, of land disturbing construction activity, or other appropriate mechanism.

**Note:** Soil loss prediction tools that estimate the sediment load leaving the construction site under varying land and management conditions, or methodology identified in subch. V., may be used to calculate sediment reduction.

(b) Notwithstanding par. (a), if BMPs cannot be designed and implemented to reduce the sediment load by 80%, based on an average annual rainfall, the design plan shall include a written and site-specific explanation why the 80% reduction goal is not attainable and the sediment load shall be reduced to the maximum extent practicable.

(c) Where appropriate, the design plan shall include sediment controls to do all of the following to the maximum extent practicable:

1. Prevent tracking of sediment from the construction site onto roads and other paved surfaces.
2. Prevent the discharge of sediment as part of site de-watering.
3. Protect the separate storm drain inlet structure from receiving sediment.

(d) The use, storage and disposal of chemicals, cement and other compounds and materials used on the construction site shall be managed during the construction period to prevent their transport by runoff into waters of the state. However, projects that require the placement of these materials in waters of the state, such as constructing bridge footings or BMP installations, are not prohibited by this paragraph.

**(5) LOCATION.** The BMPs used to comply with this section shall be located prior to runoff entering waters of the state.

**Note:** While regional treatment facilities are appropriate for control of post-construction pollutants, they should not be used for construction site sediment removal.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.24 Post-construction performance standard. (1) APPLICABILITY.** This section applies to a transportation facility that is or was subject to the construction performance standards of s. NR 151.23, except any of the following:

(a) A transportation construction site where the department has received a notice of intent for the construction project in accordance with subch. III of ch. NR 216 within 2 years after October 1, 2002.

(b) A transportation facility construction site that has undergone final stabilization within 2 years after October 1, 2002.

(c) Reconditioning or resurfacing of a highway.

(d) Minor reconstruction of a highway. Notwithstanding the exemption under this paragraph, the protective areas requirements in sub. (6) apply to minor reconstruction of a highway.

(e) A redevelopment transportation facility with no increase in exposed parking lots or roads.

(f) A transportation facility with less than 10% connected imperviousness based on complete development of the transportation facility, provided the cumulative area of all parking lots and rooftops is less than one acre.

**Note:** Projects that consist of only the construction of bicycle paths or pedestrian trails generally meet this exception as these facilities have minimal connected imperviousness.

(g) Protective area requirements under sub. (6) do apply to actions described in s. NR 151.20 (2).

(h) A transportation facility, the construction of which involves activity described in s. NR 151.23 (1) (a) 2. but that has less than one acre of land disturbing construction activity.

(i) Transportation facility construction projects that are part of a larger common plan of development, such as a residential or industrial development, that are in compliance with the performance standards of subch. III.

(j) Routine maintenance for transportation facilities if performed to maintain the original line and grade, hydraulic capacity or original purpose of the facility.

**(2) PLAN.** A written plan shall be developed and implemented for each transportation facility and shall incorporate the requirements of subs. (3) to (10).

**Note:** Examples of plans that may be used to comply with this section may be that specified within s. NR 216.47, the municipal storm water management program specified within s. NR 216.07 (7) or the erosion control plan specified in s. Trans 401.07.

**(3) TOTAL SUSPENDED SOLIDS.** Best management practices shall be designed, installed and maintained to control total suspended solids carried in runoff from the transportation facility as follows:

(a) For new transportation facilities, by design, reduce to the maximum extent practicable, the suspended solids load by 80%, based on an average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed an 80% total suspended solids reduction to meet the requirements of this paragraph.

(b) For highway reconstruction and non-highway redevelopment, by design, reduce to the maximum extent practicable, the total suspended solids load by 40%, based on an average annual rainfall, as compared to no runoff management controls. No person shall be required to exceed a 40% total suspended solids reduction to meet the requirements of this paragraph.

(c) Notwithstanding pars. (a) and (b), if the design cannot achieve the applicable total suspended solids reduction specified, the design plan shall include a written and site-specific explanation why that level of reduction is not attained and the total suspended solids load shall be reduced to the maximum extent practicable.

**Note:** Pollutant loading models such as SLAMM, P8 or equivalent methodology may be used to evaluate the efficiency of the design in reducing total suspended solids. Information on how to access SLAMM and P8 is available at: <http://www.dnr.state.wi.us/org/water/wm/nps/slammm.htm> or contact the storm water coordinator in the runoff management section of the bureau of watershed management at (608) 267-7694.

**(4) PEAK DISCHARGE.** (a) By design, BMPs shall be employed to maintain or reduce the peak runoff discharge rates, to the maximum extent practicable, as compared to pre-development site conditions for the 2-year, 24-hour design storm applicable to the transportation facility. Pre-development conditions shall assume "good hydrologic conditions" for appropriate land covers as identified in TR-55 or an equivalent methodology. The meaning of "hydrologic soil group" and "runoff curve number" are as determined in TR-55. However, when pre-development land cover is cropland, rather than using TR-55 values for cropland, the runoff curve numbers in Table 2 of subch. III shall be used.

**Note:** The curve numbers in Table 2 represent mid-range values for soils under a good hydrologic condition where conservation practices are used and are selected to be protective of the resource waters.

(b) This subsection does not apply to:

1. A transportation facility where the change in hydrology due to development does not increase the existing surface water elevation at any point within the downstream receiving surface water by more than 0.01 of a foot for the 2-year, 24-hour storm event.

**Note:** Hydraulic models such as HEC-RAS or another methodology may be used to determine the change in surface water elevations.

2. A highway reconstruction site.

3. A transportation facility that is part of a redevelopment project.

**Note:** The intent of sub. (4) is to minimize streambank erosion under bank full conditions.

**(5) INFILTRATION.** (a) Except as provided in pars. (d) to (g), BMPs shall be designed, installed and maintained to infiltrate run-

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off to the maximum extent practicable in accordance with one of the following:

1. Infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 60% 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% of the project site is required as an effective infiltration area.

2. Infiltrate 10% of the post-development runoff volume from the 2-year, 24-hour design storm with a type II distribution. Separate curve numbers for pervious and impervious surfaces shall be used to calculate runoff volumes and not composite curve numbers as defined in TR-55. However, when designing appropriate infiltration systems to meet this requirement, no more than 2% of the project site is required as an effective infiltration area.

(b) Pre-development condition shall be the same as specified in sub. (4) (a).

**Note:** A model that calculates runoff volume, such as SLAMM, P8 or an equivalent methodology may be used. Information on how to access SLAMM and P8 is available at: <http://www.dnr.state.wi.us/org/water/wm/nps/slammm.htm> or contact the storm water coordinator in the runoff management section of the bureau of watershed management at (608) 267-7694.

(c) Before infiltrating runoff, pretreatment shall be required for parking lot runoff and for runoff from new 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 par. (g). Pretreatment may include, but is not limited to, oil/grease separation, sedimentation, biofiltration, filtration, swales or filter strips.

**Note:** 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.

(d) The following are prohibited from meeting the requirements of this subsection:

1. Areas associated with tier 1 industrial facilities identified in s. NR 216.21 (2) (a), including storage, loading, rooftop and parking.

2. Storage and loading areas of tier 2 industrial facilities identified in s. NR 216.21 (2) (b).

**Note:** Runoff from tier 2 parking and rooftop areas may be infiltrated but may require pretreatment.

3. Fueling and vehicle maintenance areas.

4. Areas within 1000 feet upgradient or within 100 feet downgradient of karst features.

5. Areas with less than 3 feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock.

6. Areas with runoff from industrial, commercial and institutional parking lots and roads and residential arterial roads with less than 5 feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock.

7. Areas within 400 feet of a community water system well as specified in s. NR 811.16 (4) or within 100 feet of a private well as specified in s. NR 812.08 (4) for runoff infiltrated from commercial, industrial and institutional land uses or regional devices for residential development.

8. Areas where contaminants of concern, as defined in s. NR 720.03 (2), are present in the soil through which infiltration will occur.

9. Any area where the soil does not exhibit one of the following characteristics between the bottom of the infiltration system and seasonal high groundwater and top of bedrock:

a. At least a 3-foot soil layer with 20% fines or greater.

b. At least a 5-foot soil layer with 10% fines or greater.

c. Where the soil medium within the infiltration system does not provide an equivalent level of protection.

**Note:** The areas listed in par. (d) are prohibited from infiltrating runoff due to the potential for groundwater contamination.

(e) Transportation facilities located in the following areas and otherwise subject to the requirements of this subchapter are not required to meet the requirements of this subsection:

1. Areas where the infiltration rate of the soil is less than 0.6 inches/hour measured at the bottom of the infiltration system.

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

3. Redevelopment post-construction sites.

4. In-fill development areas less than 5 acres.

5. Infiltration areas during periods when the soil on the site is frozen.

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

7. Highways.

(f) Where alternate uses of runoff are employed, such as for toilet flushing, laundry or irrigation, such alternate use shall be given equal credit toward the infiltration volume required by this subsection.

(g) 1. Infiltration systems designed in accordance with this subsection 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. However, if site specific information indicates that compliance with a preventive action limit is not achievable, then the infiltration BMP may not be installed or shall be modified to prevent infiltration to the maximum extent practicable.

2. Notwithstanding subd.1., the discharge from BMPs shall remain below the enforcement standard at the point of standards application.

**(6) PROTECTIVE AREAS.** (a) In this subsection, "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 this paragraph, "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, and for wetlands in areas of special natural resource interest as specified in s. NR 103.04, 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 highly susceptible wetlands, 50 feet. Highly susceptible wetlands include the following types: fens, sedge meadows, bogs, low prairies, conifer swamps, shrub swamps, other forested wetlands, fresh wet meadows, shallow marshes, deep marshes and seasonally flooded basins. Wetland boundary delineation shall be made in accordance with s. NR 103.08 (1m). This paragraph does not apply to wetlands that have been completely filled in accordance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in accordance with all applicable state and federal regulations shall be measured from the wetland boundary delineation after fill has been placed.

5. For less susceptible wetlands, 10% 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.

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6. In subds. 1., 4. and 5., 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 s. NR 103.03.

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

(b) 1. Beginning with land acquired within a protective area for a transportation facility on or after October 1, 2002, no impervious surface of a transportation facility may be constructed within a protective area, unless the transportation facility authority determines, in consultation with the department, that there is no practical alternative. If there is no practical alternative to locating a transportation facility within a protective area, the transportation facility may be constructed in the protective area only to the extent the transportation facility authority, in consultation with the department, determines is reasonably necessary, and the transportation facility authority shall state in the design plan prepared pursuant to s. NR 151.22 (1) (a), why it is necessary to construct the transportation facility within a protective area.

2. If a transportation facility is constructed within a protective area, adequate sod or self-sustaining vegetative cover of 70% or greater shall be established and maintained in the area that is the width of the protective area, or the greatest width practical, and throughout the length of the protective area in which the transportation facility is located. The adequate sod or self-sustaining vegetative cover required under this paragraph 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.

**Note:** It is recommended that seeding of non-aggressive 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 may 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".

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

**Note:** Other regulations, such as ch. 30, Stats., and chs. NR 103, 115, 116 and 117 and their associated review and approval process may apply in the protective area.

4. This subsection does not apply to:

- a. Non-highway transportation redevelopment sites.
- b. Transportation facilities that cross or access surface waters, such as boat landings, bridges and culverts.
- c. Structures constructed in accordance with s. 59.692 (1v), Stats.
- d. Transportation facilities from which runoff does not enter the surface water, except to the extent that vegetative ground cover is necessary to maintain bank stability.

**Note:** A vegetated protective area to filter runoff pollutants from transportation facilities described in subd. 4. d. is not necessary since runoff is not entering the surface water at that location. Other practices necessary to meet requirements of this section, such as a swale or basin, will need to be designed and implemented to reduce runoff pollutants prior to runoff entering a surface water of the state.

**(7) FUELING AND VEHICLE MAINTENANCE AREAS.** Fueling and vehicle maintenance areas shall, to the maximum extent practicable, have BMPs designed, installed and maintained to reduce petroleum within runoff, such that the runoff that enters waters of the state contains no visible petroleum sheen.

**Note:** A combination of the following BMPs may be used: oil and grease separators, canopies, petroleum spill cleanup materials, or any other structural or non-structural method of preventing or treating petroleum in runoff.

**(8) LOCATION.** To comply with the standards required under this section, BMPs may be located on-site or off-site as part of a regional storm water device, practice or system, but shall be installed in accordance with s. NR 151.003.

**(9) TIMING.** The BMPs required under this section shall be installed before the construction site has undergone final stabilization.

**(10) SWALE TREATMENT.** (a) *Applicability.* Except as provided in par. (b), transportation facilities that use swales for runoff conveyance and pollutant removal meet all of the requirements of this section, if the swales are designed to the maximum extent practicable to do all of the following:

1. 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.

**Note:** It is preferred that tall and dense vegetation be maintained within the swale due to its greater effectiveness at enhancing runoff pollutant removal.

2. Carry runoff through a swale for 200 feet or more in length that is designed with a flow velocity no greater than 1.5 feet per second for the peak flow generated using either a 2-year, 24-hour design storm or a 2-year design storm with a duration equal to the time of concentration as appropriate. If a swale of 200 feet in length cannot be designed with a flow velocity of 1.5 feet per second or less, the flow velocity shall be reduced to the maximum extent practicable.

**Note:** 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 this subsection. 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.

(b) *Exemptions.* 1. Notwithstanding par. (a), the department may, consistent with water quality standards, require other provisions of this section, in addition to swale treatment, be met on a transportation facility with an average daily traffic rate greater than 2500 and where the initial surface water of the state that the runoff directly enters is any of the following:

- a. An outstanding resource water.
- b. An exceptional resource water.
- c. Waters listed in s. 303 (d) of the federal clean water act that are identified as impaired in whole or in part, due to nonpoint source impacts.
- d. Waters where targeted performance standards are developed pursuant to s. NR 151.004.

2. The transportation facility authority shall contact the department's regional storm water staff or the department's liaison to the department of transportation to determine if additional BMPs beyond a water quality swale are needed under this paragraph.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.25 Developed urban area performance standard.** **(1) APPLICABILITY.** This section applies to transportation facilities under the sole and exclusive jurisdiction of the department of transportation that are located within municipalities regulated under subch. I of ch. NR 216.

**Note:** Transportation facilities that are not under the sole and exclusive jurisdiction of the department of transportation are subject to the performance standards in s. NR 151.13.

**(2) REQUIREMENTS.** (a) The department of transportation shall develop and implement a storm water management plan to control pollutants from transportation facilities described in sub. (1). The plan shall do the following to the maximum extent practicable:

1. Beginning not later than March 10, 2008, by design, implement a storm water management plan that attains a 20% reduction in total suspended solids in runoff that enters waters of the state as compared to no storm water management controls.

2. Beginning not later than March 10, 2013, by design, implement a storm water management plan that attains a 40% reduction in total suspended solids in runoff that enters waters of the state as compared to no storm water management controls.

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(b) The department of transportation shall inform and educate appropriate department of transportation staff and any transportation facility maintenance authority contracted by the department of transportation to maintain transportation facilities owned by the department of transportation regarding nutrient, pesticide, salt and other deicing material and vehicle maintenance management activities in order to prevent runoff pollution of waters of the state.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.26 Enforcement.** This subchapter shall be enforced as follows:

(1) If a transportation facility that is exempted from prohibitions, permit or approval requirements by s. 30.2022, Stats., does not comply with the performance standards of this subchapter, the department shall initiate the conflict resolution process specified in the cooperative agreement between the department of transportation and the department established under the interdepartmental liaison procedures under s. 30.2022 (2), Stats.

(2) The department shall enforce this subchapter where applicable for transportation facilities not specified in sub. (1) under s. 281.98, Stats.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02; corrections in (1) made under s. 13.93 (2m) (b) 7., Stats.

### **Subchapter V – Technical Standards Development Process for Non-Agricultural Performance Standards**

**NR 151.30 Purpose.** This subchapter specifies the process for developing and disseminating technical standards to implement the performance standards in subchs. III and IV, as authorized by s. 281.16 (2) (b), Stats., and establishes the procedures that the department shall use to determine if technical standards adequately and effectively implement, as appropriate, the performance standards in subchs. III and IV. This subchapter applies to technical standards developed or implemented by any agency of the state of Wisconsin.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.31 Technical standards development process.** (1) The department shall develop and revise technical standards to implement the performance standards in ss. NR 151.11, 151.12, 151.13, 151.23, 151.24 and 151.25 through a process outlined as follows:

(a) The department may decide that a new or revised technical standard is necessary to implement a performance standard.

(b) Any person may request the department to develop or revise a technical standard designed to meet a performance standard. The request shall be made in writing to the director of the department's bureau of watershed management and shall include the performance standard for which technical standard development or revision may be needed, and an explanation why a new or revised technical standard is requested.

(c) The department shall evaluate a request submitted pursuant to par. (b), to determine if it is necessary to develop or revise a technical standard to implement a performance standard. If the department determines that a new or revised technical standard is not necessary to implement a performance standard, it shall reply to the requester in writing as to the reasons that a technical standard does not need to be developed or revised.

(d) If the department determines that a new or revised technical standard is necessary to implement a performance standard, it shall:

1. Determine the state agency responsible for the technical standard.

2. If the responsible state agency is not the department, request the responsible state agency to develop or revise a technical standard.

3. If the responsible agency denies the request to develop or revise a technical standard, the department may initiate conflict

resolution procedures outlined under any existing memorandum of understanding or agreement between the department and the responsible agency. If no conflict resolution procedures exist, the department may attempt to resolve the disagreement through stepped negotiations between increasing higher levels of management.

(e) The department shall use the following procedures when it acts to develop or revise technical standards to implement the performance standards in subchs. III and IV.

1. Convene a work group to develop or revise the technical standard that includes agencies and persons with technical expertise and direct policy interest. The work group shall include at least one representative from the agency or person that made an initial request to develop or revise the technical standard.

2. The work group shall publish a class 1 public notice and consider public comments received on the technical standard prior to providing recommendations to the department under subd. 3.

3. The work group shall provide a recommended technical standard to the department within 18 months of its formation unless the director of the bureau of watershed management grants an extension to this deadline.

(f) 1. Notwithstanding other provisions of this section, and acting jointly with the department of transportation and in consultation with other appropriate stakeholders, the department shall:

a. Develop a technical standard that, by design, meets the performance standard established in s. NR 151.23 (3). This technical standard shall address slope erosion and channel erosion and identify BMPs that may be used given a variety of site conditions.

b. Annually review this technical standard.

**Note:** This technical standard is sometimes referred to as the standardized erosion control reference matrix for transportation.

2. For transportation facility construction sites, the technical standard developed under this paragraph shall also indicate any conditions under which it may not be used to implement the performance standard established in s. NR 151.23 (3).

3. This technical standard and future revisions become effective upon signatures from both secretaries of the department and the department of transportation, or their designees.

(2) (a) Upon receipt of a proposed technical standard or technical standard revision, either developed by the department or a responsible state agency, the department shall determine if the technical standard will effectively achieve or contribute to achievement of the performance standards in subchs. III and IV. The department shall provide its determination in writing to the responsible state agency that prepared the proposed technical standard.

(b) If the department determines that a proposed technical standard will not adequately or effectively implement a performance standard in subchs. III and IV, the proposed technical standard may not be used to implement a performance standard in whole or in part.

(c) If the department determines that a proposed technical standard will adequately and effectively implement a performance standard in subchs. III and IV in whole or in part, the new or revised technical standard shall be used in lieu of any existing standards to implement the performance standard beginning with plans developed after the date of this determination.

(d) The department may determine a portion of a technical standard is adequate and effective to implement the performance standards under subch. III or IV.

(3) The department shall accept technical standards and best management practices developed by the department, the department of commerce, the department of transportation or other appropriate state agencies, existing on October 1, 2002, unless the department identifies a technical standard as not adequate or



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effective to implement a performance standard in subchs. III and IV in whole or in part, and informs the responsible state agency of this determination and the basis for it.

(4) Until the processes under subs. (1) and (2) are completed, an existing technical standard identified by the department under sub. (3), or previously accepted by the department as adequate and effective to implement a performance standard under subch. III or IV shall be recognized as appropriate for use under this chapter.

(5) The department may identify technical standards that exist or are developed by qualified groups or organizations as adequate and effective to implement the performance standards under subch. III or IV.

(6) Except as provided in s. NR 151.26, if a technical standard that the department determines is not adequate or effective to implement a performance standard in whole or in part is used to implement a performance standard under subch. III or IV, the

department may initiate enforcement proceedings for failure to meet the performance standard under s. 281.98, Stats.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

**NR 151.32 Dissemination of technical standards.**

(1) Technical standards developed or revised under this section may be made available through the responsible state agency's appropriate rules, manuals or guidance in keeping with normal publication schedules. If the responsible state agency does not publish appropriate manuals or guidance, the department shall request the agency provide the department with a copy of the technical standard. Where provided, the department shall publish or reproduce the technical standard for public use.

(2) The department shall maintain a list of technical standards that it has determined adequate and effective to implement the performance standards under subch. III or IV and make the list available upon request.

**History:** CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02.

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## Chapter NR 116

### WISCONSIN'S FLOODPLAIN MANAGEMENT PROGRAM

NR 116.01	Purpose.	NR 116.14	Development standards in other floodplain areas.
NR 116.02	Applicability.	NR 116.15	Nonconforming uses and nonconforming buildings.
NR 116.03	Definitions.	NR 116.16	Floodproofing.
NR 116.05	Adoption and upgrading of floodplain zoning ordinances.	NR 116.17	Levees, floodwalls and channel improvements.
NR 116.06	Areas to be regulated.	NR 116.18	Procedures for changing floodplain, floodway, floodfringe, shallow depth flooding, flood storage and coastal floodplain district limits.
NR 116.07	Standards for hydrologic and hydraulic studies.	NR 116.19	Appointment and duties of zoning administrator, zoning agency and board of adjustment or appeals.
NR 116.08	Uses downstream of dams.	NR 116.20	Municipal responsibilities.
NR 116.09	Data required to be shown on floodplain zoning maps.	NR 116.21	Permits, special exceptions, conditional uses, variances, appeals and amendments.
NR 116.10	Conflicts between water surface profiles and floodplain zoning maps.	NR 116.22	Department duties.
NR 116.11	Criteria for establishing and rezoning floodplain districts.		
NR 116.12	Development standards in floodway areas.		
NR 116.13	Development standards in floodfringe areas.		

**Note:** Chapter NR 116 as it existed on February 28, 1986 was repealed and a new chapter NR 116 was created effective March 1, 1986.

**NR 116.01 Purpose.** (1) The Wisconsin legislature in enacting chapter 614, laws of 1965, recognized that floodplain zoning is a necessary tool to protect human life, health and to minimize property damages and economic losses. Municipalities are required by s. 87.30 (1), Stats., to adopt reasonable and effective floodplain zoning ordinances within their respective jurisdictions to regulate all floodplains where serious flood damage may occur within one year after hydraulic and engineering data adequate to formulate the ordinance becomes available. If a municipality has a floodplain zoning ordinance already in effect, the provisions in s. NR 116.05 shall apply.

(2) The purpose of these rules is to provide a uniform basis for the preparation and implementation of sound floodplain regulations for all Wisconsin municipalities, to:

- (a) Protect life, health and property;
- (b) Minimize expenditures of public monies for costly flood control projects;
- (c) Minimize rescue and relief efforts, generally undertaken at the expense of the general public;
- (d) Minimize business interruptions;
- (e) Minimize damage to public facilities such as water mains, sewer lines, streets and bridges;
- (f) Minimize the occurrence of future flood blight areas;
- (g) Discourage the victimization of unwary land and home buyers; and
- (h) Prevent increases in the regional flood from occurring which will increase flood damage and may result in conflict and litigation between landowners.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.02 Applicability.** The provisions of this chapter are applicable to all municipalities. Unless otherwise specifically exempted by law, all state agencies are required to obtain permits required by local zoning ordinances if s. 13.48 (13), Stats., applies.

**Note:** Corps of engineers dredged material disposal activities which are authorized pursuant to s. 30.202 (2), Stats., are exempt from the requirements of this chapter.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.03 Definitions.** In this chapter:

(1) "Accessory structure or use" means any facility, structure, building or use which is accessory or incidental to the principal use of a property, structure or building.

(1e) "Campground" means any parcel of land which is designed, maintained, intended or used for the purpose of providing sites for nonpermanent overnight use by 4 or more camping units, or which is advertised or represented as a camping area.

(1s) "Camping unit" means any portable device, no more than 400 square feet in area, used as a temporary shelter, including but

not limited to a camping trailer, motor home, bus, van, pick-up truck or tent.

(2) "Certificate of compliance" means a document that is issued to a property owner by a municipality certifying that the use of land or a building is in conformance with provisions of the floodplain zoning ordinance.

(3) "Channel" means a natural or artificial watercourse with definite bed and banks to confine and conduct the normal flow of water.

(4) "Coastal floodplain" means an area along the coast of Lake Michigan or Lake Superior which is inundated by the regional flood and which is also subject to additional hazards due to wave runup.

(5) "Conditional use" or "special exception" means a use which is not allowed unless certain conditions specified in the zoning ordinance are met and a permit is granted by the board of adjustment or appeals or, where appropriate, the zoning agency.

(6) "Dam" as defined in s. NR 333.03 (2) means any artificial barrier, together with appurtenant works, built across a waterway and which has the primary purpose of impounding or diverting water.

(7) "Department" means the Wisconsin department of natural resources.

(8) "Developed area" means an area within a floodplain designated by a municipality and approved by the department which contains a minimum of 20 potential residential lots or a minimum of 5 acres of land zoned commercial, industrial or institutional wherein existing structures constitute a minimum of 50% of the structures that could be accommodated by the respective zoning density. The limits of the developed area are defined by a line connecting the existing structures on the outer perimeter of the majority of the structures. Vacant lots within that boundary are treated the same as lots with existing structures.

(9) "Development" means any artificial change to improved or unimproved real estate, including, but not limited to, the construction of buildings, structures or accessory structures; the construction of additions or substantial improvements to buildings, structures or accessory structures; the placement of buildings or structures; mining, dredging, filling, grading, paving, excavation or drilling operations; and the storage, deposition or extraction of materials.

(10) "Dryland access" means a vehicular access route which is above the regional flood elevation and which connects land located in the floodplain to land outside the floodplain.

(11) "Erosion" means a wearing away of land by the action of natural forces such as wind or water; on a coastal floodplain, the carrying away of soil by wave action.

(12) "Flood" or "flooding" means a general and temporary condition of partial or complete inundation of normally dry land areas caused by:

- (a) The overflow or rise of inland waters;

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(b) The rapid accumulation or runoff of surface waters from any source;

(c) The inundation caused by waves or currents of water exceeding anticipated cyclical levels along the shore of Lake Michigan or Lake Superior; and

(d) The sudden increase caused by an unusually high water level in a natural body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as a seiche, or by some similarly unusual event.

**(13)** "Flood frequency" means the probability of a flood occurrence. A flood frequency is generally determined from statistical analyses. The frequency of a particular flood event is usually expressed as occurring, on the average, once in a specified number of years or as a percent (%) chance of occurring in any given year.

**Note:** For example, a 100-year flood event is expected to occur, or be exceeded, on the average of once in every 100 years, or which has a 1% chance of occurring or more exceeded in any given year. Any particular flood event could, however, occur more frequently than once in any given year.

**(14)** "Floodfringe" means that portion of the floodplain outside of the floodway, which is covered by flood water during the regional flood. The term, "floodfringe" is generally associated with standing water rather than flowing water.

**(15)** "Flood of record" means the highest known flood, the elevation of which can be determined through the use of physical or photographic data.

**(16)** "Floodplain" means that land which has been or may be covered by flood water during the regional flood. The floodplain includes the floodway, floodfringe, shallow depth flooding, flood storage and coastal floodplain areas.

**(17)** "Floodplain island" means a natural geologic land formation within the floodplain that is surrounded, but not covered, by flood water during the regional flood.

**(18)** "Floodplain management" means the full range of public policy and action for insuring wise use of floodplains. It includes everything from the collection and dissemination of flood data to the acquisition of floodplain lands and the enactment and administration of codes, ordinances and statutes for land use in the floodplain.

**(19)** "Floodproofing" means any combination of structural provisions, changes or adjustments to properties and structures, water and sanitary facilities and contents of buildings subject to flooding, for the purpose of reducing or eliminating flood damage.

**(20)** "Flood protection elevation" means an elevation 2 feet above the regional flood elevation.

**(21)** "Flood storage" means those floodplain areas where storage of flood waters has been taken into account in reducing the regional flood discharge.

**(22)** "Floodway" means the channel of a river or stream, and those portions of the floodplain adjoining the channel required to carry the regional flood discharge.

**(23)** "Freeboard" means a flood protection elevation requirement designed as a safety factor which is usually expressed in terms of a specified number of feet above a calculated flood level. Freeboard compensates for the effects of many factors that contribute to flood heights greater than those calculated. These factors include, but are not limited to, ice jams, debris accumulation, wave action, obstruction of bridge openings and floodways, the effects of urbanization on the hydrology of the watershed, loss of flood storage areas due to development and aggradation of the river or stream bed.

**(24)** "Habitable building" means any building, or portion thereof used for human habitation.

**(25)** "High flood damage potential" means potential damage as a result of flooding that is associated with any danger to life or health or any significant economic loss to a structure or building and its contents.

**(26)** "Human habitation" means a human residence or dwelling.

**(27)** "Hydraulic floodway lines" means those lines that delineate those portions of floodplain including the channel which are required to convey the regional flood discharge without any increase in regional flood heights.

**(28)** "Increase in regional flood height" means a calculated upward rise in the regional flood elevation, equal to or greater than 0.01 foot, resulting from a comparison of existing conditions and proposed conditions which is directly attributable to development in the floodplain but not attributable to manipulation of mathematical variables such as roughness factors, expansion and contraction coefficients and discharge.

**(29)** "Levee" means a continuous dike or embankment of earth constructed to prevent flooding of certain areas of land.

**(30)** "Littoral drift" means the movement of sedimentary material along the Lake Michigan or Lake Superior shoreline due to wave action and water currents.

**(30m)** "Mobile recreational vehicle" means a recreational vehicle that is carried, towed or self-propelled; is licensed for highway use, if registration is required; and is always capable of being driven or towed by a licensed vehicle.

**(31)** "Municipality" or "municipal" means a county, city or village.

**(32)** "NGVD" or "National Geodetic Vertical Datum" means elevations referenced to mean sea level datum, 1929 adjustment.

**(33)** "Nonconforming building" means an existing lawful building which is not in conformity with the dimensional or structural requirements of the floodplain zoning ordinance for the area of the floodplain which it occupies.

**(34)** "Nonconforming use" means an existing lawful use or accessory use of a structure, building or development which is not in conformity with the provisions of the floodplain zoning ordinance for the area of the floodplain which it occupies.

**(35)** "Obstruction to flow" means any development which physically blocks the conveyance of flood waters such that this development by itself or in conjunction with any future similar development will cause an increase in regional flood height.

**(36)** "Official floodway lines" means those lines which have been approved by the department, adopted by the municipality, and which are shown on the official floodplain zoning maps and used for regulatory purposes. The official floodway lines are established assuming that the area landward of the floodway lines will not be available to convey flood flows.

**(37)** "Open space use" means a use which has a relatively low flood damage potential, such as uses associated with agriculture, recreation, parking, storage yards, or certain sand and gravel operations.

**(38)** "Private sewage system" means a sewage treatment and disposal system serving a single structure with a septic tank and soil absorption field located on the same parcel as the structure. This term also means an alternative sewage system approved by the department of industry, labor and human relations including a substitute for the septic tank or soil absorption field, a holding tank, a system serving more than one structure or a system located on a different parcel than the structure.

**(39)** "Public utilities" means those utilities which employ underground or overhead transmission lines such as electric, telephone and telegraph, and distribution and collection systems such as water, sanitary sewer and storm sewer.

**(40)** "Rapidly urbanizing watershed" means a watershed where more than 20% of the land area of the watershed has been developed for residential, commercial or industrial uses or where development of the watershed is projected to grow at a rate of 10% or more in the next 10-year period.

**(41)** "Regional flood" means a flood determined to be representative of large floods known to have occurred in Wisconsin or

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which may be expected to occur on a particular lake, river or stream once in every 100 years.

**Note:** The regional flood is based upon a statistical analysis of lake level or stream-flow records available for the watershed or an analysis of rainfall and runoff characteristics in the watershed or both. The flood frequency of the regional flood is once in every 100 years. In any given year, there is a 1% chance that the regional flood may occur or be exceeded. During a typical 30-year mortgage period, the regional flood has a 26% chance of occurring.

**(42)** “Shallow depth flooding areas” means those areas where the maximum depth of flooding does not exceed one foot in depth nor 6 hours in duration during the regional flood.

**(43)** “Special exception” or “conditional use” has the meaning designated in sub. (5).

**(44)** “Stormwater management” means public policy and action to control stormwater runoff associated with development within a rapidly urbanizing watershed in order to prevent the occurrence of, or an increase in, flood damage potential. It includes, but is not limited to, development of stormwater runoff data, flood profiles and enactment and administration of ordinances regulating land use in a watershed.

**(45)** “Structure” means any man-made object with form, shape and utility, either permanently or temporarily attached to or placed upon the ground, river bed, stream bed or lakebed.

**(46)** “Study” means any analysis that results in the calculation of discharge or elevation of the regional flood or the determination or delineation of boundary lines for any area within a floodplain.

**(47)** “Undeveloped area” means an area which is not a developed area.

**(48)** “Unnecessary hardship” means that circumstance where special conditions affecting a particular property, which were not self-created, have made strict conformity with restrictions governing areas, setbacks, frontage, height or density unnecessarily burdensome or unreasonable in light of the purposes of the ordinance.

**(49)** “Variance” means an authorization by the board of adjustment or appeals under s. NR 116.21 (4), for the construction or maintenance of a building or structure in a manner which is inconsistent with dimensional standards contained in the floodplain zoning ordinance.

**Note:** A variance can only be granted by the board of adjustment or appeals. A variance may not permit a use of property otherwise prohibited by the floodplain zoning ordinance or allow construction not protected to the flood protection elevation; it may, however, permit deviations from dimensional standards.

**(50)** “Watershed” means the entire region or area contributing runoff or surface water to a particular watercourse or body of water.

**(51)** “Water surface profile” means a graphical representation showing the elevation of the water surface of a watercourse for each position along a reach of river or stream at a certain flood flow. A water surface profile of the regional flood is used in regulating floodplain areas.

**(52)** “Well” means an excavation or opening in the ground made by digging, boring, drilling, driving or other methods, for the purpose of obtaining groundwater regardless of its intended use.

**(53)** “Zoning agency” means a commission, board, committee or agency created or designated by the governing body of a municipality which acts on matters pertaining to planning or zoning. Under the provisions of s. 62.23 (7) (d) 2., Stats., the term “zoning agency” also includes the governing body of a city or village.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86; cr. (1e), (1s), (30m), Register, June, 1996, No. 486, eff. 7-1-96.

**NR 116.05 Adoption and upgrading of floodplain zoning ordinances. (1) ADOPTION.** Municipalities shall adopt, administer and enforce reasonable floodplain zoning ordinances for all floodplains where serious flood damage may occur within their respective jurisdictions. These ordinances shall meet or exceed the standards in this chapter.

**(2) INCLUSION IN LOCAL REGULATIONS, CODES AND PROGRAMS.** Where necessary, to insure the effectiveness of floodplain management and zoning objectives, the standards in this chapter shall be included in subdivision regulations, building and sanitary codes, flood insurance regulations, stormwater management regulations and other related programs.

**(3) SUBSTITUTION.** Where the department finds that one or more of the following regulations, codes or programs will accomplish the purpose of s. NR 116.01, these regulations, codes or programs may be substituted in lieu of all or portions of floodplain zoning ordinances:

(a) Zoning, acquisition of flooding easements or purchase of floodplain lands to permit only open space uses in floodplain areas.

(b) Flood warning systems.

(c) Building codes.

(d) Subdivision regulations.

(e) Private sewage system ordinances.

(f) Stormwater management regulations.

**(4) UPGRADING ORDINANCES.** Within 6 months from the time any of the information listed below is made available to a municipality by the department, the municipality shall upgrade its floodplain zoning ordinance, using the amendment procedure in s. NR 116.21, to reflect current floodplain information, including, but not limited to, the following:

(a) Changes in floodplain management statutes.

(b) Changes in floodplain management rules.

(c) Changes in floodplain management case law.

(d) New study data.

(e) Improved technical information and methods.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.06 Areas to be regulated.** Municipalities shall develop floodplain zoning maps, reflecting the best available data, which show the areas to be regulated. They shall also develop floodplain zoning ordinances to define proper uses in those regulated areas. These floodplain maps and zoning ordinances shall regulate all floodplains where serious flood damage may occur. The minimum limits for regulatory purposes shall be all those areas covered by water during the regional flood.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.07 Standards for hydrologic and hydraulic studies. (1) GENERAL.** The standards contained in this section shall be the basis for developing both hydrologic and hydraulic information to be used by municipalities for developing floodplain zoning maps and flood profiles, as defined in s. NR 116.09, and for administration of existing floodplain zoning ordinances as defined in s. NR 116.20 (2). The department shall review and approve all studies performed or completed under this section prior to use by any municipality.

**(2) CERTIFICATION AND RESPONSIBILITY OF THE STUDY CONTRACTOR.** Studies shall be completed under the direct supervision of the study contractor who is a registered professional engineer in the state of Wisconsin. The study contractor shall be responsible for the technical adequacy of the study.

**(3) HYDROLOGIC ANALYSIS – DETERMINATION OF REGIONAL FLOOD DISCHARGE.** (a) *Techniques.* Studies to determine the regional flood flow discharge may use the following techniques, if done in accordance with the requirements of par. (b):

1. The log-Pearson Type III distribution method as described in Bulletin #17B of the Hydrology Committee, U.S. Water Resources Council, entitled “Guidelines For Determining Flood Flow Frequency”, September, 1981.

2. The current USGS empirical equations, developed from regression analysis of stream gaging data. (See USGS publication

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entitled "Technique for Estimating Magnitude and Frequency of Floods in Wisconsin", by Conger, March, 1981.)

3. Synthetic hydrographs, which are combined and routed through the basin to the downstream end of the study area.

4. When using the synthetic hydrograph technique in subd. 3., the results shall be calibrated to past events where such information is available.

5. Technical Release No. 55 (TR55), entitled "Urban Hydrology For Small Watersheds", Engineering Division, SCS, U.S.D.A., January, 1975.

6. Comparison of similar drainage basins at gaged sites.

7. Historic flood data.

8. Other methods with department approval.

(b) *Required use of techniques.* The following shall be the minimum standards for determining the regional flood flow discharge:

1. The techniques to determine skew under par. (a) 1. may not be used if data from a gaging station in the watershed is not available or is available for a period of less than 10 years. In other cases, the technique to determine skew in par. (a) 1. shall be modified as follows:

a. If data from a gaging station in the watershed is available for 10 or more years but less than 26 years, the station skew shall be weighted with zero skew in accordance with Bulletin #17B.

b. If data from a gaging station in the watershed is available for 26 or more years, the station skew shall be used.

c. Skew values differing from those obtained in subd. 1. a. or b. may be used if they are approved by the department.

2. If the difference in the drainage area at the study site and the drainage area at a gaging station on the same watershed is less than or equal to 50%, the regional flood discharge at the study site shall be determined by transferring the calculated regional flood discharge at the gage by using Bulletin #17B techniques to the study site using a drainage area ratio taken to the "n" power, from page 12 of "Techniques for Estimating Magnitude and Frequency of Floods for Wisconsin Streams", U.S.G.S., Open File Report 80-1214, March 1981.

3. If the difference in the drainage area at the study site and the drainage area at a gaging station in the watershed is more than 50%, or if there is no gaging station in the watershed, at least 2 of the techniques described in par. (a) 2. to 7. shall be used to determine a weighted value of the regional flood discharge.

4. Comparison of similar drainage basins under par. (a) 5. shall be based on basin characteristics using Bulletin #17B 100-year discharges.

5. When using USGS empirical equations under par. (a) 2., the results shall be compared with Bulletin #17B 100-year discharges at gaged sites on similar drainage basins.

6. In all cases where dams or reservoirs, floodplain development or land use upstream have significantly altered the storage capacity or runoff characteristics of the watershed so as to affect the validity of any of the techniques listed in par. (a), the synthetic hydrograph technique in par. (a) 3. or the Technical Release No. 55 in par. (a) 4. shall be used for the determination of the regional flood flow discharge.

7. In rapidly urbanizing watersheds, the municipality shall require that computations for regional flood flow discharges reflect increased runoff from all projected future development. These computations shall be made using one of the following techniques:

a. A synthetic hydrograph based upon projected watershed development shall be produced and routed to critical locations within the study limits.

b. A mathematical model shall be developed to determine the effects of all projected future development in the watershed on the regional flood flow discharge. Local units of government shall

project what percentage of watershed development may occur under existing land use or subdivision ordinances and regional flood discharges shall be based upon that data. Where there are no existing land use or subdivision ordinances which control or regulate future development, total projected development shall be assumed to occupy 70% of the watershed. Where watersheds contain more than one municipality, agreements between those municipalities may be necessary to restrict future watershed development. In order to insure that future regional flood flows do not exceed the regional flood flow discharges used in local regulations, changes in existing land use or subdivision ordinances which may allow an increase or decrease in the projected development in the watershed shall be reflected in regional flood flow discharge values.

(4) **HYDRAULIC ANALYSIS – DETERMINATION OF THE REGIONAL FLOOD ELEVATION.** The following criteria shall be the basis for determining the regional flood profile:

(a) *Reconnaissance.* The study contractor is responsible for the collection of all existing data with regard to flooding in the study area. This shall include a literature search of all published reports in the study area and adjacent communities and an information search to obtain all unpublished information on flooding in the immediate and adjacent areas from federal, state and local units of government. This information shall include specific information on past flooding in the area, drainage structures such as bridges and culverts that affect flooding in the area, available topographic maps, available community maps, photos of past flood events and general flooding problems within the community. The study contractor will coordinate the collection of all available data and published reports with the department. A field reconnaissance shall be made by the responsible engineer to determine hydraulic conditions of the study area including type and number of structures, locations of cross sections and other parameters including roughness values which are necessary for the hydraulic analysis.

(b) *Base data.* Cross sections to be used for the hydraulic analysis may be obtained by one of several methods, including surveying or aerial photography. New or previously surveyed cross sections or topographic information obtained from aerial photographs may be used independently or in combination as the base data to be used in hydraulic analysis. The elevation datum of all of the information to be used in the hydraulic model shall be verified. All information used shall be referenced directly to NGVD unless the elevation datum is otherwise approved by the department.

(c) *Methodology.* Flood profiles shall be calculated by the standard step method, using the Corps of Engineers HEC-2 computer model. Other methods may be used with prior department approval provided that any computer models submitted to the department for review are in a form acceptable for entry into the department's floodplain data repository.

(d) *Floodway determination.* The hydraulic floodway lines shall be determined from the limits of effective flow based on the calculated regional flood water surface profile. Transitions shall take into account obstructions to flow such as road approach grades, bridges or natural restrictions. General guidelines for transitions may be found in "HEC-2, Water Surface Profiles—Users Manual, appendix IV, Application of HEC-2 Bridge Routine" published by the Hydrologic Engineering Center, Davis, California. All areas of the floodplain including overbank areas that can be assumed to convey flood waters shall be included in the hydraulic floodway.

(e) *Previous floodplain studies.* If differences exist between a study previously approved by the department and the contractor's calculated hydraulic floodways or flood profiles, the study contractor shall document justification and obtain departmental approval for these differences. Where the contractor's study differs from existing flood profiles or hydraulic floodways for adja-

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cent communities, verification of the differences will be necessary for department approval of the hydraulic analysis.

(f) *Calculation of the regional flood profile.* The regional flood profile and changes to that profile caused by development in the floodplain, as determined by the hydraulic model, shall be calculated to the nearest 0.01 foot.

(g) *Adequacy of the hydraulic model.* The following factors shall be considered by the department to determine the adequacy of the hydraulic model and the regional flood profile. Upon written request by the department the study contractor shall submit written justification for the following factors:

1. Cross section spacing.
2. Differences in energy grade.

**Note:** Significant differences in the energy grade from cross section to cross section are an indication that cross sections should be more closely spaced or that other inaccuracies exist in the hydraulic model.

3. Methods for analyzing the hydraulics of structures such as bridges and culverts.

4. Lack of flow continuity.
5. Use of gradually varied flow model.

**Note:** In certain circumstances, rapidly varied flow techniques shall be used in combination with a gradually varied flow model such as weir flow over a levee or dike, flow through the spillway of a dam or special applications of bridge flow.

6. Manning's "n" values.
7. Calibration of the hydraulic model with past flood events.

(h) *Special applications.* The methods defined in par. (c) shall be used except in special cases, including circumstances where sediment transport, 2 dimensional flow or valley storage affects the accuracy of the hydraulic model. Where the standard step method is unwarranted, the department shall approve the method used for establishing the final water surface profile.

(i) *Base mapping.* In the preparation of a floodplain zoning map to be used by the municipality, the study contractor shall use the best available mapping to delineate floodplain limits.

(j) *Final report.* A narrative report shall accompany the maps and profiles and shall include the following:

1. Purpose of the study and description of the study area.
2. Coordination with other agencies.
3. Data collection.
4. Past flooding.
5. Engineering methods including a detailed description of the methodology used for hydrology, hydraulics and any special applications used in this study.
6. A floodway data table showing cross sections, drainage area, distance between cross sections, floodway top width, discharge, cross sectional area, mean velocity and regional flood elevation.
7. Previous studies on the same watercourse.
8. An appendix which includes:
  - a. Drainage basin maps.
  - b. Precipitation maps.
  - c. Pertinent photographs.
  - d. Soil and vegetation maps.
  - e. Sample calculations of the hydrologic analyses including all unit hydrographs.
  - f. Stream flow records.
  - g. Channel roughness values.
  - h. Any other data required by the department.

(k) *Wave action on the Great Lakes.* Standards used to determine the regional flood elevation for all municipalities adjacent to the Great Lakes shall be those specified in the publication, "Guidelines and Specifications for Study Contractors, Federal Emergency Management Agency, September 1982, appendix 1B, Wave Runup Analysis".

**(5) DOCUMENT AVAILABILITY.** The materials listed in this subsection are incorporated by reference in the corresponding sub-

sections noted. The document referred to in sub. (3) (a) 1. may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (mention title and stock number 052-045-00031-2). The document referred to in sub. (3) (a) 2. is available for inspection at the Geological Survey - Water Resource Division, U.S. Department of the Interior, 1815 University Avenue, Madison, Wisconsin 53706. The document referred to in sub. (3) (a) 5. is available for inspection at the Soil Conservation Service, U.S. Department of Agriculture, 4601 Hammersley Road, Madison, Wisconsin 53711; it may be purchased from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22151 (mention title and appropriate accession number: TR55 = PB 244531/AS). The document described in sub. (4) (c) and (d) is available for inspection at the United States Army Corps' Hydrologic Engineering Center, 609 2nd Street, Davis, California 95616. The document referred to in sub. (4) (k) is available for inspection at the Federal Emergency Management Agency Region V Office, 300 South Wacker Drive, Chicago, Illinois 60606 (mention title, date and appropriate appendix number).

**(6) INSPECTION OF DOCUMENTS.** Copies of the documents referred to in sub. (5) are also available for inspection in the following offices:

(a) The department of natural resources, 101 South Webster Street, Madison, Wisconsin;

(b) The office of the secretary of state, 30 W. Mifflin Street, Madison, Wisconsin;

(c) The office of the revisor of statutes, 131 W. Wilson Street, Madison, Wisconsin.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86; corrections made under s. 13.93 (2m) (b) 6., Stats., Register, September, 1995, No. 477.

**NR 116.08 Uses downstream of dams. (1) GENERAL.** Adequately designed, constructed and maintained dams provide reduced damages and relief from flooding for developed areas. Areas downstream of dams shall be zoned and regulated by municipalities with floodplain zoning ordinances in compliance with the standards in this section, to reduce potential loss of life and property located downstream of the dams. Except as provided in sub. (2), areas downstream of all dams shall be delineated on floodplain maps in accordance with s. NR 116.09 (1) (b) 5. Flood studies and related mapping, completed and adopted prior to August 1, 2001, which calculated flood flow attenuation based on the existence of the dam structures within the contributing basin, may continue to use the dam in-place, no failure, profile.

**(2) EXEMPTIONS.** All dams having a structural height of 6 feet or less, or a storage capacity of 15 acre feet or less, and all dams having a structural height of more than 6 feet but less than 25 feet with a storage capacity of less than 50 acre feet are exempt from the requirements of this section unless the department determines pursuant to s. 31.19, Stats., that the dam is likely to endanger life, health or property.

**(3) COMPLIANT DAMS.** (a) A dam is considered compliant if all the following requirements are met:

1. The dam is structurally adequate to meet the conditions in ss. NR 333.05 (2) (k) and 333.07 (3) (b).

2. The dam is hydraulically adequate to meet the standards in s. NR 333.07 (1).

3. The dam has been certified by a professional engineer, registered in Wisconsin, to meet the requirements of subs. 1. and 2.

4. Written assurance of the dam owner's ability to operate and maintain the dam in good condition is obtained from the dam owner.

5. An emergency action plan to minimize loss of human life has been developed for the area downstream of the dam based on the assumption that the dam fails during the regional flood.

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6. The department reviews and approves the material submitted under subds. 1. to 5.

(b) Developed areas downstream of compliant dams shall be zoned and regulated as follows:

1. For high hazard dams, assuming that the dam is nonexistent during the regional flood.

2. For significant or low hazard dams, assuming the dam fails during the regional flood.

(c) Undeveloped areas downstream of a compliant dam shall be zoned and regulated assuming that the dam fails during the regional flood.

**(4) NONCOMPLIANT DAMS.** (a) If an existing dam does not meet the standards in sub. (3) (a), the dam is considered noncompliant.

(b) Both developed and undeveloped areas downstream of a noncompliant dam shall be zoned and regulated assuming that dam failure occurs during the regional flood.

(c) The regional flood profile of the area downstream of the dam shall be calculated in accordance with s. NR 333.05 (2) (b).

**(5) CONSTRUCTION OF NEW DAMS.** (a) Dams constructed after August 1, 2001, shall be considered compliant if the requirements in sub. (3) (a) are met.

(b) Developed areas downstream of the construction of a new dam shall be zoned and regulated as if the dam does not exist until construction is 100% complete and all the conditions of sub. (3) (a) are met.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86; CR 00-136: am. (1), (2), (3) (a) 1. to 5., (b), (c), (4) (a) and (b) and (5) (a), Register July 2001, No. 547 eff. 8-1-01.

**NR 116.09 Data required to be shown on floodplain zoning maps.** Municipalities shall delineate the entire floodplain on their floodplain zoning maps.

**(1)** If the regional flood profile has been determined, the profile shall be used to develop the floodplain zoning maps which the municipality shall use as the basis for floodplain zoning.

(a) The maps shall show the following:

1. The floodway district;

2. The floodfringe district;

3. The regional flood elevation consistent with the regional flood profile shall be clearly lettered at identifiable positions on the official floodplain zoning maps. If for any reason that elevation is not shown on the maps, the profile shall be attached to and made a part of the maps; and

4. Source and date of study.

(b) In addition to the information in par. (a), the floodplain zoning maps shall include the following information, where applicable:

1. The shallow depth flooding district.

2. The flood storage district.

3. The coastal floodplain district.

4. Floodplain islands.

5. For developed and undeveloped areas downstream of dams, the floodway and floodfringe districts based on 3 conditions:

a. Assuming the dam is in place,

b. Assuming the dam is not in place, and

c. Assuming failure of the dam during the regional flood.

6. For areas adjacent to levees, floodwalls and channel improvements, the floodway and floodfringe districts based on 2 conditions:

a. Assuming the levee, floodwall or channel improvement is not in place, and

b. Assuming the levee, floodwall or channel improvement is in place.

(c) If technical information is available to ascertain the magnitude of floods larger than the regional flood the floodplain limits of these large floods may be reflected on the official floodplain zoning maps and used for either public information purposes or for regulation.

**(2)** If the regional flood profile has not been determined, maps based upon historical floods, flood prone area maps, flood hazard boundary maps, aerial photos or detailed soils maps may initially serve as a basis for floodplain delineation, provided that the associated text of the zoning ordinance provides for a procedure similar to ss. NR 116.20 (2) and 116.21 (3) to ascertain the effects of all development upon flood flows and the regional flood elevation.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.10 Conflicts between water surface profiles and floodplain zoning maps.** Accepted engineering principles and techniques shall govern the transfer of profile elevation for use in delineation of the floodplain limits on the official floodplain zoning maps. If a conflict exists between the floodplain limits illustrated on the maps and the actual field conditions, the elevations from the water surface profile shall be the governing factor in locating the official floodplain limits.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.11 Criteria for establishing and rezoning floodplain districts.** **(1) DELINEATION OF FLOODWAY, FLOODFRINGE AND COASTAL FLOODPLAIN DISTRICTS.** Except as provided in sub. (2), the following criteria shall apply to the delineation of floodway, floodfringe and coastal floodplain districts.

(a) *Floodway district.* The official floodway lines shown on floodplain zoning maps shall be the hydraulic floodway lines. These hydraulic floodway lines shall be determined by studies complying with the standards contained in s. NR 116.07.

(b) *Floodfringe district.* All areas within the floodplain landward of the official floodway lines shall be shown as a "floodfringe district."

(c) *Coastal floodplain district.* All areas adjacent to Lake Superior or Lake Michigan within the regional floodplain shall be designated as a coastal floodplain district.

**(2) REDELINEATION OR REZONING FLOODPLAIN DISTRICTS.** In accordance with the criteria of sub. (3), the following redelineations or rezonings may occur:

(a) *Redelineation or rezoning the floodway district to floodfringe district.* Riverward delineations of the official floodway lines established in accordance with sub. (1) (a) are permissible provided the following criteria are satisfied:

1. Any increase in regional flood height due to the delineation of the official floodway lines riverward from the hydraulic floodway lines shall be approved by the department prior to becoming effective. Increases may only be approved by the department if the provisions of sub. (3) are satisfied.

2. The effects of delineating the official floodway lines riverward from the hydraulic floodway lines shall be calculated by comparing the regional flood profile determined from the hydraulic floodway lines to that profile determined by assuming that the area landward of the revised floodway lines is not available to convey flood flows. Calculations shall conform to the standards contained in s. NR 116.07.

(b) *Redelineation or rezoning floodfringe district to floodway district.* Landward modifications of hydraulic floodway lines to delineate official floodway lines may be permitted provided the following conditions are satisfied:

1. The redelineation of the floodway lines is consistent with other municipal codes, ordinances, and ch. 30, Stats.; and

2. The current hydraulic floodway lines, which reflect the water surface profile used for regulation, shall be kept on file by the municipality.

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(c) *Redelineation or rezoning floodway district to shallow depth flooding district.* For areas subject to shallow depth flooding, the official floodway lines may be delineated riverward of the hydraulic floodway lines, provided all of the criteria in this paragraph are satisfied:

1. The maximum depth of flooding during the regional flood in the shallow depth flooding district may not exceed one foot in depth nor 6 hours in duration. The duration shall be determined by a synthetic hydrograph developed for the watershed and routed through the area;

2. The area is developed complete with existing streets and sewers and is subject to a land use plan, which includes provisions for drainage ways through the area with the capacity to convey that percentage of the regional flood which is flowing through the area under existing conditions;

3. The municipality shall adopt standards outlined in s. NR 116.14 (1) pertaining to shallow depth flooding district;

4. All areas within the hydraulic floodway landward of the official floodway lines shall be designated as "shallow depth flooding district"; and

5. All areas within the floodplain landward of the hydraulic floodway lines shall be delineated as "floodfringe district".

(d) *Redelineation or rezoning floodfringe district to flood storage district.* A "flood storage district" may be established for the area landward of the floodway in lieu of the floodfringe designation where floodplain storage will decrease the calculation of discharge and therefore the regional flood elevation, provided the following criteria are met:

1. The department shall approve the methodology used to analyze floodplain storage to determine revised regional flood elevations.

2. The municipality shall adopt standards outlined in s. NR 116.14 (2) pertaining to the flood storage district.

(e) *Rezoning flood storage district to floodfringe district.* Any proposal to rezone flood storage district to floodfringe district shall comply with the following conditions:

1. Any increase in regional flood height shall be approved by the department prior to becoming effective. Increases in the regional flood elevation may only be approved by the department if the provisions in sub. (3) are satisfied; and

2. The effect of rezoning the flood storage district to the floodfringe district shall be calculated by comparing the regional flood profile used as the basis for zoning to the regional flood profile determined by assuming that the area to be rezoned is not available to store floodwater.

(f) *Rezoning the shallow depth flooding district to floodfringe district.* Any proposal to rezone the shallow depth flooding district to floodfringe district shall comply with the following conditions:

1. Any increase in regional flood height shall be approved by the department prior to the rezoning becoming effective. Increases in the regional flood elevation may only be approved by the department if the provisions in sub. (3) are satisfied;

2. The entire shallow depth flooding district shall be rezoned to floodfringe district; and

3. The effect of rezoning the shallow depth flooding district to the floodfringe district shall be calculated by comparing the regional flood profile determined by the hydraulic floodway lines to the regional flood profile determined by assuming that the entire shallow depth flooding district is not available to convey floodflows. Calculations shall conform to the standards contained in s. NR 116.07.

**(3) CRITERIA FOR REDELINEATION OR REZONING FLOODPLAIN DISTRICTS.** (a) *Initial determinations.* Prior to redelineation or rezoning any floodplain district a municipality shall:

1. Assure that the applicable provisions of sub. (2) are met;

2. Require adequate technical data from the applicant or the municipality and submit such data to the department for review and concurrence in the effect of the proposed amendment on the height of the regional flood;

3. Assure that the proposed amendments meet the purpose of s. NR 116.01;

4. Assure that the appropriate legal arrangements have been made with all property owners affected by the increased flood elevations; and

5. Notify all affected municipalities of increased regional flood elevations.

(b) *Amendment process.* Upon completion of the steps in par. (a), the municipality and any affected municipality shall meet all legal requirements for amending its water surface profiles, floodplain zoning maps and zoning ordinances as established in s. NR 116.21 (6).

(c) *Submission to the department for approval.* If the municipality amends its official floodplain map, it shall also amend its water surface profiles and floodplain zoning ordinance and submit these amendments to the department for approval pursuant to s. NR 116.21 (6). Prior to department approval, all municipalities affected by the increased regional flood elevation shall amend their water surface profiles, floodplain zoning maps and zoning ordinances to reflect the increased regional flood elevations.

**(4) EXCEPTION TO CRITERIA FOR REDELINEATING OR REZONING FLOODPLAIN DISTRICTS.** If, as a result of improved data generated by a revised study approved by the department, and not as a result of changes due to encroachments in the floodplain, the hydraulic floodway line is revised landward of the official floodway lines, the municipality may continue to regulate on the basis of the official floodway lines provided the municipality meets all of the requirements of sub. (3), except the requirement of sub. (3) (a) 4.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.12 Development standards in floodway areas.** (1) **PROHIBITED USES.** Municipalities shall prohibit the following uses in floodway areas:

(a) Except as provided in sub. (2), any development which will cause an obstruction to flood flows or an increase in regional flood discharge or will adversely affect the existing drainage courses or facilities.

(b) A structure is always prohibited in, on or over floodway areas if the structure is:

1. Designed for human habitation;
2. Associated with high flood damage potential; or
3. Not associated with permanent open space uses.

(c) Any storage of materials that are buoyant, flammable, explosive or injurious to human, animal, plant, fish or other aquatic life.

(d) Any use which is not in harmony with, or which may be detrimental to, the uses permitted in the adjoining districts.

(e) Any sewage system, whether public or private, except portable latrines that are removed during flooding, or systems associated with recreational areas that meet the applicable provisions of local ordinances and ch. Comm 83.

(f) Any well, whether public or private, which is used to obtain water for ultimate human consumption, except systems associated with recreational areas that meet the applicable provisions of municipal zoning ordinances and chs. NR 811 and 812.

(g) Any solid or hazardous waste disposal facility.

(h) Any wastewater treatment pond or facility except as permitted in s. NR 110.15 (3) (b).

(i) Any sanitary sewer or water line except those used to service existing development or proposed development located outside of the floodway and which comply with the requirement for the floodplain area on which it is located.



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**(2) PERMITTED USES AND STRUCTURES.** Municipalities, using the appropriate procedure described in s. NR 116.21, may issue permits in floodway areas allowing open space uses having a relatively low flood damage potential, such as those uses associated with agriculture, recreation, surface parking lots, storage yards or certain sand and gravel operations. Permits for the following uses or structures may be allowed only if such uses or structures are consistent with all of the standards contained in this subsection and sub. (3) and such uses or structures are not prohibited in sub. (1) (b) to (i).

(a) Certain structures which are accessory to permitted open space uses or historical areas, if the structures meet all of the following criteria:

1. Are not designed for human habitation;
2. Have a low flood damage potential;
3. Are associated with an open space use or are functionally dependant on a waterfront location:

**Note:** For example, an unloading structure is functionally dependant on a waterfront location to unload boats or barges, but a storage facility is not.

4. Except as provided in sub. (3), are to be constructed and placed on the building site so as to offer no obstruction to flood flows;

5. Are firmly anchored to prevent them from floating away and restricting bridge openings or other constricted sections of the stream or river; and

6. All service facilities, such as electrical and heating equipment, shall be at or above the flood protection elevation for the particular area.

(b) Campgrounds, provided all of the following criteria are met and approval is granted by the department:

1. The character of the river system and the elevation of all portions of the campground are such that 72 hours warning of an approaching flood can be given to all persons using that campground;

2. An adequate flood warning system is in existence which will provide for adequate advance notice to all persons in the campground and make evacuation mandatory. Such a system shall involve an annual renewable written agreement between the campground owner, the emergency government coordinator, the national weather service and the chief municipal law enforcement official which shall specify a flood elevation at which evacuation shall occur;

3. The campground complies with all applicable local and state laws and regulations, including those of the department of health and social services;

4. The campground shall have signs at all entrances warning of the flood hazard involved;

5. Only mobile recreational vehicles with self-contained holding tanks or easily removable tents or camper units are allowable. No other habitable structures or buildings are permitted; and

6. Litter collection facilities shall be placed at or floodproofed to the flood protection elevation or be removed during flooding.

(c) Uses permitted by the department pursuant to chs. 30 and 31, Stats., provided that the necessary permits are obtained from the department and necessary amendments are adopted by the municipality to the official floodway lines, regional flood profiles, floodplain zoning maps and floodplain zoning ordinances.

(d) Public utilities, roads, streets and bridges provided that:

1. Adequate floodproofing measures are provided to the flood protection elevation; and

2. Except as provided in sub. (3), construction may not cause any obstruction to flood flows as reflected in the water surface profile based upon existing conditions.

**(2m) PERMITTED USES, NO PERMIT REQUIRED.** Camping in a camping unit in a floodway area outside of approved campgrounds under sub. (2) (b) is allowed without a permit if the camp-

ing unit consists of nothing more than an easily removable tent or if the following criteria are met:

(a) The camping unit is a mobile recreational vehicle;

(b) The camping unit is on a parcel of land that has less than 4 camping sites and the parcel is not advertised, represented or used as a camping area; and

(c) The camping unit may not occupy the site for a period of more than 180 consecutive days.

**(3) FLOODWAY DEVELOPMENT REQUIRING AMENDMENTS.** Any development in a floodway which will cause an obstruction to flood flows may be authorized by the municipality, but only if amendments are made to the official floodway lines, regional flood profile, floodplain zoning maps and floodplain zoning ordinances in accordance with the criteria established in s. NR 116.11. All such amendments shall meet the provisions of s. NR 116.21 (6).

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86; correction made in (1) (f) made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1995, No. 477; cr. (2m), Register, June, 1996, No. 486, eff. 7-1-96; correction in (1) (e) made under s. 13.93 (2m) (b) 7., Stats., Register July 2001, No. 547.

**NR 116.13 Development standards in floodfringe areas. (1) GENERAL.** (a) Municipalities, using the appropriate procedure described in s. NR 116.21, may issue permits allowing uses in floodfringe areas which are compatible with the criteria in this section.

(b) All floodfringe developments shall be compatible with local land use plans. In the absence of formal plans, development shall be compatible with the uses permitted in adjoining districts.

(c) Floodfringe developments may be permitted only if such developments do not cause an obstruction to flood flows of any tributaries to the main stream, drainage ditches, or any other drainage facilities or systems or if amendments are made to the affected official floodway lines, water surface profiles, floodplain zoning maps and floodplain zoning ordinances in accordance with the provisions of ss. NR 116.11 and 116.21 (6).

(d) Floodfringe developments may be permitted only if such developments do not affect the conveyance capacity by causing an obstruction to flow or storage capacity of the floodplains, such that it causes any increase in the regional flood height or discharge.

**(2) RESIDENTIAL USES.** (a) Any structure or building used for human habitation (seasonal or permanent), which is to be erected, constructed, reconstructed, structurally altered or moved into the floodfringe area shall be placed on fill with the finished surface of the lowest floor, excluding basement or crawlway, at or above the flood protection elevation. If any such structure or building has a basement or crawlway, the surface of the floor of the basement or crawlway shall be at or above the regional flood elevation and shall be floodproofed to the flood protection elevation in accordance with s. NR 116.16. No variance may be granted to allow any floor below the regional flood elevation. An exception to the basement requirement may be granted by the department, but only in those communities granted such exception by the federal emergency management agency (FEMA) on or before March 1, 1986.

(b) For all uses under this subsection:

1. Fill shall be not less than one foot above the regional flood elevation;

2. Fill shall extend at such elevation at least 15 feet beyond the limits of any structure or building erected thereon; and

3. Dryland access shall be provided.

(c) If existing streets or sewer lines are at elevations which make compliance with par. (b) impractical, the department may approve the use of other floodproofing measures or methods in accordance with s. NR 116.16. The structure or building shall be floodproofed to the flood protection elevation.

(d) If existing streets or sewer lines are at elevations which make compliance with par. (b) 3. impractical, the municipality

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may permit new development and substantial improvements where access roads are at an elevation lower than the regional flood elevation, provided:

1. The municipality has an adequate natural disaster plan which has been concurred in by the division of emergency government and approved by the department; or

2. The municipality has written assurance from the appropriate units of police, fire and emergency services that rescue and relief can be provided by wheeled vehicles to the structures during regional flooding, taking into account the anticipated depth, duration and velocity of the regional flood event in the area, thereby protecting human life and health and minimizing property damage and economic loss.

**(3) ACCESSORY USES.** Accessory structures not connected to a principal structure, including nonresidential agricultural structures, shall meet the applicable provisions of s. NR 116.12 (2) (a) 1., 2., 5. and 6. and sub. (6). Any such accessory structure may be constructed at elevations lower than the flood protection elevation. However, no accessory structure may be inundated to a depth greater than 2 feet or subject to flood velocities greater than 2 feet per second upon the occurrence of the regional flood.

**(3m) PERMITTED USES. NO PERMIT REQUIRED.** Camping in a camping unit in a floodfringe area outside of an approved campground under s. NR 116.12 (2) (b) is allowed without a permit if the camping unit consists of nothing more than an easily removable tent or if the following criteria are met:

(a) The camping unit is a mobile recreational vehicle;

(b) The camping unit is on a parcel of land that has less than 4 camping sites and the parcel is not advertised, represented or used as a camping area; and

(c) The camping unit may not occupy the site for a period of more than 180 consecutive days.

**(4) COMMERCIAL USES.** Any commercial structure or building which is to be erected, constructed, reconstructed, altered or moved into the floodfringe area shall meet the requirements of sub. (2). Certain yards, parking lots and other accessory structures or uses may be at elevations lower than the flood protection elevation. However, no such area in general use by the public may be inundated to a depth greater than 2 feet or subjected to flood velocities greater than 2 feet per second upon the occurrence of the regional flood. Inundation to depths greater than 2 feet may be approved provided an adequate warning system exists to protect life and property.

**(5) MANUFACTURING AND INDUSTRIAL USES.** Any manufacturing or industrial structure or building which is to be erected, constructed, reconstructed, altered or moved into the floodfringe district shall be protected to the flood protection elevation utilizing fill, adequate floodproofing measures or any combination thereof. On streams or rivers having protracted flood durations, greater protection may be required to minimize interference with normal plant operations. A lesser degree of protection, compatible with these criteria and the criteria in sub. (4), may be permissible for storage yards, parking lots and other accessory structures or uses.

**(6) STORAGE OF MATERIALS.** Storage of any materials which are buoyant, flammable or explosive, or which in times of flooding could be injurious to property, water quality or human, animal, plant, fish or aquatic life, shall be either floodproofed to or placed at or above the flood protection elevation. Adequate measures shall be taken to assure that these materials will not enter the river or stream during flooding.

**(7) PUBLIC UTILITIES, STREETS AND BRIDGES.** (a) If failure or interruption of public facilities would result in danger to the public health or safety or if such facilities are essential to the orderly functioning of the area, adequate floodproofing measures shall be provided to the flood protection elevation; a lesser degree of protection may be provided for minor or auxiliary roads or utilities if these conditions do not exist.

(b) Public utilities, roads, streets and bridges within the floodfringe shall be designed to be compatible with the local floodplain development plans.

**(8) PRIVATE SEWAGE SYSTEMS.** All private sewage systems shall meet the applicable provisions of the local ordinances and ch. Comm 83.

**(9) WELLS.** All wells, whether public or private, shall be floodproofed to the flood protection elevation and shall meet the applicable provisions of chs. NR 811 and 812.

**(10) SOLID OR HAZARDOUS WASTE DISPOSAL FACILITIES.** All solid or hazardous waste disposal facilities, whether public or private, are prohibited in floodfringe areas.

**(11) DEPOSITION OF MATERIALS.** Any deposition of materials for any purpose may be allowed only if the provisions of this section are met.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86; correction in (9) made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1995, No. 477; cr. (3m), Register, June, 1996, No. 486, eff. 7-1-96; correction in (8) made under s. 13.93 (2m) (b) 7., Stats., Register July 2001, No. 547.

**NR 116.14 Development standards in other floodplain areas.** In cooperation with municipalities, and to insure sound floodplain management, the department may designate or approve the following floodplain districts, in addition to those established in ss. NR 116.12 and 116.13, providing the criteria in s. NR 116.11 are met:

**(1) SHALLOW DEPTH FLOODING DISTRICT.** The standards for permitting development in a floodfringe area under s. NR 116.13 shall be applicable to a shallow depth flooding area except that such development may not result in an obstruction to flood flows. If development does cause an obstruction to flood flows, the development may not be permitted unless the entire shallow depth flooding district is rezoned to floodfringe district according to the criteria established in s. NR 116.11 (2) (f).

**(2) FLOOD STORAGE DISTRICT.** (a) *General.* Municipalities using the appropriate procedure described in s. NR 116.20, may issue permits for development in flood storage areas which are compatible with the criteria for floodfringe areas, as described in s. NR 116.13, providing the provisions of par. (b) are met.

(b) *Flood storage modifications.* When any proposed development would remove flood storage volume, an equal volume of storage, as defined by the ground surface and the regional flood elevation, shall be provided to compensate for the volume of storage which is lost. Excavation below the groundwater table is not considered as providing an equal volume of storage.

(c) *Rezoning of flood storage district.* If compensatory storage cannot be provided, the area may not be developed unless the entire flood storage district is rezoned to floodfringe district utilizing the criteria established in s. NR 116.11 (2) (e).

**(3) COASTAL FLOODPLAIN DISTRICT.** The standards for permitting development in a floodfringe area under s. NR 116.13 shall be applicable in a coastal floodplain area, except that no development may be allowed which:

(a) Will be adversely affected by wave runup along the shore of Lake Michigan or Lake Superior; or

(b) Is associated with a high flood damage potential.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.15 Nonconforming uses and nonconforming buildings.** **(1) GENERAL.** Insofar as the standards in this section are not inconsistent with the provisions of ss. 59.69 (10) and 62.23 (7) (h), Stats., they shall apply to all uses and buildings that do not conform to the provisions contained within a floodplain zoning ordinance. These standards apply to the modification of, or addition to, any building and to the use of any building or premises which was lawful before the passage of the ordinance. The existing lawful use of a building or its accessory use which is not in conformity with the provisions of a floodplain zoning ordinance may be continued subject to the following conditions:

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(a) No extension of a nonconforming use, or modification or addition to any building with a nonconforming use or to any nonconforming building, may be permitted unless they are made in conformity with the provisions of this section. For the purposes of this section, the words "modification" and "addition" shall include, but not be limited to, any alteration, addition, modification, rebuilding or replacement of any such existing building, accessory building or accessory use. Ordinary maintenance repairs are not considered structural repairs, modifications or additions; such ordinary maintenance repairs include internal and external painting, decorating, paneling, the replacement of doors, windows and other nonstructural components; and the maintenance, repair or replacement of existing private sewage systems, water supply systems or connections to public utilities;

(b) If a nonconforming use or the use of a nonconforming building is discontinued for 12 consecutive months, it is no longer permitted and any future use of the building shall conform with the appropriate provisions contained in ss. NR 116.12, 116.13 and 116.14;

(c) No modification or addition to any nonconforming building or any building with a nonconforming use, which over the life of the building would exceed 50% of its present equalized assessed value, may be allowed unless the entire building is permanently changed to a conforming building with a conforming use in compliance with the applicable requirements of this chapter; and

(d) If any nonconforming building or any building with a nonconforming use is destroyed or is so badly damaged that it cannot be practically restored, it cannot be replaced, reconstructed or rebuilt unless the provisions of ss. NR 116.12, 116.13 and 116.14 are met. For the purpose of this subsection, restoration is deemed impracticable where the total cost of such restoration would exceed 50% of the present equalized assessed value of the building.

**(2) FLOODWAY AREAS.** (a) No modifications or addition to any nonconforming building or any building with a nonconforming use in a floodway area may be allowed, unless such modification or addition has been granted by permit, special exception, conditional use or variance and meets all of the requirements of sub. (1) and the following criteria:

1. The modification or addition to a building may not increase the amount of obstruction to flood flows; and

2. Any addition to a building shall be floodproofed in accordance with the requirements of s. NR 116.16, by means other than the use of fill, to the flood protection elevation.

(b) No new private sewage system, or addition to an existing private sewage system, may be allowed in a floodway area. Any maintenance, repair or replacement of a private sewage system in a floodway area shall meet the applicable requirements of all municipal ordinances and ch. Comm 83.

(c) No new well, or modifications to an existing well, which is used to obtain water for ultimate human consumption may be allowed in a floodway area. Any maintenance, repair or replacement of an existing well in a floodway area shall meet the applicable requirements of all municipal ordinances and chs. NR 811 and 812.

**(3) FLOODFRINGE AREAS.** (a) Except as provided in par. (b) or (c), no modification or addition to any nonconforming building or any building with a nonconforming use in the floodfringe area may be allowed unless such modification or addition has been granted by permit, special exception, conditional use or variance and the modification or addition is placed on fill or is floodproofed in compliance with the applicable regulations contained s. NR 116.13 (2).

(b) If compliance with the fill or floodproofing provisions of par. (a) would result in unnecessary hardship, and only if the building will not be used for human habitation and will not be

associated with a high flood damage potential, the county board of adjustment or the city or village board of appeals, using the procedures established in s. NR 116.21 (4), may grant a variance for modifications or additions which are protected to elevations lower than the flood protection elevation if:

1. Human lives will not be endangered;
2. Water or private sewage systems will not be installed;
3. Flood depths will not exceed 2 feet;
4. Flood velocities will not exceed 2 feet per second; and
5. The building will not be used for storage of materials described in s. NR 116.13 (6).

(c) An addition to an existing room in a nonconforming building or a building with a nonconforming use may be allowed in a floodfringe area on a one time basis only if:

1. The addition has been granted by permit, special exception, conditional use or variance;
2. The addition does not exceed 60 square feet in area; and
3. The addition, in combination with other modifications or additions to the building, does not exceed 50% of the present equalized assessed value of the building.

(d) All new private sewage systems, or additions to, maintenance, repair or replacement of a private sewage system, in a floodfringe area shall meet the applicable requirements of all municipal ordinances and ch. Comm 83.

(e) All new wells, or additions to, replacement, repair or maintenance of a well, in a floodfringe area shall meet the applicable provisions of the floodplain zoning ordinance and chs. NR 811 and 812.

**(4) SHALLOW DEPTH FLOODING AREA.** No structural repairs, modifications or additions to an existing building, the cost of which exceeds, over the life of the existing building, 50% of its present equalized assessed value, may be allowed in a shallow depth flooding area unless the entire building is permanently changed to conform with the standards prescribed in s. NR 116.14 (1).

**(5) FLOOD STORAGE AREA.** No structural repairs, modifications or additions to an existing building, the cost of which exceeds, over the life of the existing building, 50% of its present equalized assessed value, may be allowed in a flood storage area unless the entire building is permanently changed to conform with the standards prescribed in s. NR 116.14 (2).

**(6) COASTAL FLOODPLAIN AREA.** No structural repairs, modifications or additions to an existing building, the cost of which exceeds, over the life of the existing building, 50% of its present equalized assessed value, may be allowed in a coastal floodplain area unless the entire building is permanently changed to conform with the standards prescribed in s. NR 116.14 (3).

**(7) MUNICIPAL RESPONSIBILITIES.** (a) Municipal floodplain zoning ordinances shall regulate nonconforming uses and nonconforming buildings in a manner consistent with this section and the applicable state statutes. These regulations shall apply to the modification or addition of any building or to the extension of the use of any building or premises which was lawful before the passage of the floodplain zoning ordinance or any amendment thereto.

(b) As permit applications are received for modifications or additions to nonconforming buildings in the floodplain, municipalities shall develop a list of those nonconforming buildings, their present equalized assessed value and a list of the costs of those activities associated with changes to those buildings enumerated in sub. (2) (a) or (3) (a), (b) and (c).

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86; correction in (2) (c) and (3) (e) made under s. 13.93 (2m) (b) 7., Stats., Register, September, 1995, No. 477; correction in (1) (intro.) was made under s. 13.93 (2m) (b) 7., Stats., Register July 2001, No. 547.

**NR 116.16 Floodproofing. (1) GENERAL STANDARDS.** When floodproofing measures are required by either a municipal

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floodplain zoning ordinance or some other regulation which incorporates by reference the floodproofing requirements of this chapter, such measures shall be designed to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the regional flood, to assure that the structures are watertight and completely dry to the flood protection elevation without human intervention during flooding.

**(2) CERTIFICATION.** (a) Whenever floodproofing measures are required, a registered professional engineer or architect shall certify that the following floodproofing measures will be utilized, where appropriate, and are adequate to withstand the flood depths, pressures, velocities, impact and uplift forces and other factors associated with the regional flood:

1. Anchorage of structures, or addition of mass or weight to structures, to prevent flotation.
2. Reinforcement of walls and floors to resist rupture or collapse caused by water pressures or floating debris.
3. Construction of wells, water supply systems and waste treatment systems so as to prevent the entrance of flood waters into such systems.
4. Subsurface drainage systems to relieve external pressures on foundation walls and basement floors.
5. Cutoff valves on sewer lines or the elimination of gravity flow basement drains.
6. Placement of essential utilities above the flood protection elevation.

(b) Whenever floodproofing measures are required, a permit, special exception, conditional use or variance may not be issued until the certification required in par. (a) is submitted to the municipal zoning administrator.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.17 Levees, floodwalls and channel improvements.** **(1) GENERAL.** The following standards shall apply to municipal floodplain zoning regulations for areas landward of levees, floodwalls and channel improvements.

**(2) LEVEES OR FLOODWALLS.** (a) A levee or floodwall shall be considered adequate if all of the following criteria and the requirements of par. (b) are met:

1. The minimum top elevation of the levee or floodwall shall be calculated using whichever of the following provides the greater protection from floods:

a. The profile of the regional flood with that regional flood confined riverward of the proposed levee or floodwall, plus 3 feet of freeboard; or

b. The standard project flood and/or the 500 year flood confined riverward of the proposed levee or floodwall.

c. Exceptions to the standards in subd. 1. a. and b. may be granted by the department on a case-by-case basis for levees and floodwalls not used to protect human life.

2. U.S. army corps of engineers standards for design and construction of levees and floodwalls shall be the minimum standard for levees and floodwalls.

3. Interior drainage shall be provided using designated ponding areas, pumps or other similar means, in accordance with U.S. army corps of engineers standards.

4. An emergency action plan, concurred in by the division of emergency government and approved by the department, shall be in effect for the area behind the levee or floodwall that would be in the floodplain without the proposed levee or floodwall in place.

5. The municipality shall provide notification to all persons receiving construction permits in the area behind the proposed levee or floodwall that would be in the floodplain without the proposed levee or floodwall in place that they are in an area protected by a levee or floodwall which is subject to flooding if the levee or floodwall is overtopped.

6. The levee or floodwall shall be annually inspected and certified, by a professional engineer registered in Wisconsin, that the levee or floodwall meets the standards in subds. 1. to 5. Annual reports of the inspection and certification shall be sent to the department for review.

7. The department reviews and approves the material submitted under subds. 1. to 5.

(b) No obstruction to flood flows caused by construction of levees or floodwalls may be allowed unless amendments are made to the floodway lines, regional flood profiles, floodplain zoning maps and floodplain zoning ordinances in accordance with the provisions of ss. NR 116.11, 116.12 (3) and 116.21 (6). Calculations of the effect of the levee or floodwall on regional flood heights shall compare existing conditions with the condition of the regional flood confined riverward of the proposed levee or floodwall.

(c) Floodplain areas protected by the adequate levee or floodwall shall be designated as flood fringe but may be regulated as areas outside of the floodplain unless the department determines that the levee or floodwall is no longer adequate.

**(3) INADEQUATE LEVEES OR FLOODWALLS.** If the department determines that an existing levee or floodwall does not meet the criteria of sub. (2) (a), all floodplain areas landward of the inadequate levee or floodwall shall be regulated as if the levee or floodwall does not exist.

**(4) CHANNEL IMPROVEMENTS.** (a) Channel improvements shall be considered to reduce flooding potential provided the following criteria are met:

1. The channel improvements are designed and constructed in accordance with acceptable standards.

2. Velocities resulting from the channel improvements will not increase downstream erosion.

3. An engineer registered in Wisconsin certifies that the criteria in subds. 1. and 2. are met.

4. The municipality submits a plan detailing how the channel improvements will be maintained.

5. The department reviews and approves the material submitted under subds. 1. to 4.

6. The necessary permits under ch. 30, Stats., are obtained for construction of the channel improvements.

(b) Floodplain areas adjacent to channel improvements approved under par. (a) shall be zoned and regulated in accordance with the reduced regional flood profile provided the channel improvements are maintained in accordance with the plan submitted by the municipality under par. (a) 4.

(c) If the department determines that the channel improvements are not being maintained in accordance with the plan submitted by the municipality under par. (a) 4., the floodplain zoning map shall be amended to reflect existing channel conditions.

**(5) NEW CONSTRUCTION OF LEVEES, FLOODWALLS OR CHANNEL IMPROVEMENTS.** No anticipated changes in the flood protection elevations or floodplain and floodway limits, based upon proposed levees, floodwalls or channel improvements, may be effective until the improvements are constructed, operative and approved by the department.

**(6) AGRICULTURAL LEVEES.** (a) Municipalities may permit agricultural levees which meet all applicable provisions of this subsection. For purposes of this subsection, an agricultural levee is one constructed to protect agricultural lands from floods that occur on a 10-year frequency or more often.

(b) Agricultural levees shall be designed and constructed so that the levees will overtop upon the occurrence of the 10-year frequency flood.

(c) Increases in flood heights in the area upstream from agricultural levees may not exceed 0.5 foot (15 cm.) for the 10-year

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frequency flood. No increase is allowed unless the written consent of the affected property owners is obtained prior to construction.

(d) Agricultural levees shall be designed and constructed to be overtopped and to cause no increase in flood elevation during the occurrence of the regional flood.

(e) The municipality's zoning administrator shall notify the department of the construction of any agricultural levees.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.18 Procedures for changing floodplain, floodway, floodfringe, shallow depth flooding, flood storage and coastal floodplain district limits.** Municipalities may not change the limits of the floodplain or the floodway, floodfringe, shallow depth flooding, flood storage or the coastal floodplain district without first amending the applicable portions of the water surface profiles, floodplain zoning maps and floodplain zoning ordinances in accordance with s. NR 116.11 and securing department approval for such amendments. No area in the floodplain may be removed from the floodplain unless it can be shown that the area has been filled to the flood protection elevation and is contiguous to other lands lying outside the floodplain.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.19 Appointment and duties of zoning administrator, zoning agency and board of adjustment or appeals. (1) APPOINTMENT POWERS.** Municipalities shall provide in their floodplain zoning ordinances for the appointment of appropriate boards and staff, and the development of necessary policies and procedures, to administer the floodplain zoning ordinance in accordance with this section. If a zoning administrator, zoning agency or a board of adjustment or appeals has already been appointed to administer a zoning ordinance adopted under s. 59.69, 59.692 or 62.23 (7), Stats., these officials shall also administer the floodplain zoning ordinance.

**(2) ZONING ADMINISTRATOR.** A zoning administrator and such additional staff as needed shall be appointed and given the duties and powers to:

(a) Advise applicants of the provisions of the floodplain zoning ordinance and provide assistance in preparing permit applications and appeals;

(b) Issue permits and inspect properties for compliance with the floodplain zoning ordinance;

(c) Keep the official records of, and any changes to, all water surface profiles, floodplain zoning maps, floodplain zoning ordinances, nonconforming buildings and nonconforming uses and the official records of all permit applications, permits, appeals, variances and amendments related to the floodplain zoning ordinance;

(d) Submit copies of any required data, special exception permits, variances, amendments, case-by-case analyses, annual reports and any other required information to the department. An annual summary showing only the number and types of zoning actions taken by the municipality shall be submitted to the department by the zoning administrator; and

(e) Investigate, prepare reports and report violations of the floodplain zoning ordinance to the appropriate municipal committee and to the municipal attorney, corporation counsel or district attorney, with copies to the appropriate department district office.

**(3) ZONING AGENCY.** (a) A zoning agency shall be appointed and given the duties and powers to:

1. Oversee the functions of the office of the zoning administrator;

2. Review and act upon all proposed amendments to the floodplain zoning ordinance; and

3. Maintain a complete public record of all its proceedings.

(b) In some cases, a zoning agency may act in place of the board of adjustment or appeals, if so designated by the municipal-

ity, to hear and decide special exception or conditional use permits. However, a zoning agency cannot act upon requests for a variance.

**(4) BOARD OF ADJUSTMENT OR APPEALS.** A board of adjustment, in counties or board of appeals, in cities and villages shall be appointed and given the duties and powers in accordance with ss. 59.694 and 62.23 (7), Stats., to:

(a) Hear and decide appeals where there is an alleged error in any interpretation, order, requirement, decision, or determination made by the zoning administrator in the enforcement or administration of the floodplain zoning ordinance;

(b) Hear and decide all requested special exceptions or conditional uses to the terms of the floodplain zoning ordinance, using the criteria found in s. NR 116.21 (3);

(c) Hear and decide all requested variances to the terms of the floodplain zoning ordinance;

(d) Maintain a complete public record of all its proceedings; and

(e) Make all of its decisions within a reasonable time and in the form of a written statement, resolution or order signed by the secretary. The zoning administrator may not be the secretary of the board of adjustment or appeals.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86; corrections in (1) and (4) (intro.) were made under s. 13.93 (2m) (b) 7., Stats., Register July 2001, No. 547.

**NR 116.20 Municipal responsibilities. (1) JURISDICTION.** (a) The floodplain zoning ordinance shall require authorization through permits, special exceptions, variances and amendments, from the appropriate municipality for any of the following activities in floodplain areas:

1. Any new use or change in use of land or water.

2. Any new use or change in use of a structure or building.

(b) The activities in par. (a) include, but are not limited to, the following:

1. Any structure, building or accessory structure or building which is to be erected, constructed, reconstructed, altered or moved into the floodplain area;

2. Any alteration, addition, modification, rebuilding or replacement of any existing structure, building or accessory structure or building;

3. Any deposition of materials for any purpose; and

4. Any sewage disposal system or water supply facilities, both public and private.

**(2) ADMINISTRATIVE PROCEDURES.** The floodplain zoning ordinance shall establish administrative procedures for obtaining all required permits, special exceptions, conditional uses, variances, appeals and amendments. These procedures shall provide for the following:

(a) An application shall be made to the zoning administrator for all zoning permits, special exceptions, conditional uses, variances and amendments. The application shall include, but not be limited to, the following information:

1. The name and address of the applicant and property owner;

2. The legal description of the property and the type of proposed use;

3. A map plan which accurately locates or describes the proposal with respect to the floodway and floodplain, and which provides all pertinent information such as the fill dimensions and elevations, building floor elevations, and floodproofing data; and

4. For all subdivision proposals, as defined in s. 236.02 (8), Stats., and for other land divisions or proposed developments which have a total area that exceeds 5 acres or which have an estimated cost that exceeds \$125,000, the applicant shall provide all of the computations which are required to show the effect of the proposal on flood heights, velocities and floodplain storage. The municipality may transmit this data to the department for review. For the purpose of this paragraph, the cost of the proposal shall be

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estimated to include all structural development and landscaping improvements such as access and road development, electrical and plumbing services development, and other similar items, which can be reasonably applied to the overall development costs, but may not include the cost of the land.

(b) For land divisions and proposed developments which do not exceed 5 acres in area and which have an estimated cost of \$125,000 or less, if the regional flood profile has not been determined and the conditions in par. (a) 4. are not present, the municipality may transmit the information required in par. (a) 1. to 3. to the department for a determination of flood protection elevations and for an evaluation of the effects of the proposal upon flood heights, velocities and floodplain storage. Additional information, such as valley cross sections or survey data, may be required by the department when needed to determine the effects of the proposal; this information shall then be obtained from the applicant by the municipality. The department shall advise the municipality of its findings within 30 days after receiving the data, or within 30 days after receiving all requested additional information. Failure of the department to respond within 30 days shall be construed to mean it has no comment.

(c) Public hearings shall be held by municipalities on all special exceptions, conditional uses, variances, appeals and amendments. Proper notice shall be given of such public hearings in accordance with appropriate statutes; mailed notice of such public hearings and a copy of the application shall be given to the appropriate department district office. Such notice shall specify the time and place of the hearing and give sufficient details concerning the subject matter of the public hearing.

(d) A copy of all decisions granting or denying a special exception, conditional use, variance or amendment to the floodplain zoning ordinance shall be mailed within 10 days to the appropriate department district office.

**(3) CERTIFICATE OF COMPLIANCE.** No vacant land in the floodplain, and no building hereafter erected, altered or moved into the floodplain, may be occupied or used until the applicant obtains a certificate of compliance from the municipality. Municipalities shall require that the certificate be issued only after the applicant has submitted, prior to occupancy, to the municipal zoning administrator or building inspector a certification by a registered professional engineer or architect that the floodproofing requirements in the floodplain zoning ordinance have been met and a certification by a registered professional engineer, architect or registered land surveyor that the following are in compliance with the floodplain zoning ordinance:

- (a) The elevation of fill; and
- (b) The elevation of the lowest floor including basement floor.

**(4) ENFORCEMENT AND PENALTIES.** Each floodplain zoning ordinance shall include a separate section establishing appropriate penalties for violations of various provisions of the ordinance. An appropriate penalty, as reflected in s. 87.30 (2), Stats., may include an injunction for abatement or removal, and a fine or forfeiture. Any violation of the provisions of the floodplain zoning ordinance shall be investigated and reported to the appropriate municipal attorney, corporation counsel or district attorney for the prosecution of the violator.

**(5) PUBLIC INFORMATION.** (a) Where useful, marks on bridges or buildings or other markers may be set to show the depth of inundation during the regional flood at appropriate locations within the floodplain.

(b) All available information in the form of maps, engineering data and regulations shall be readily available and should be widely distributed.

(c) All legal descriptions of property in the floodplain should include information relative to the floodplain zoning classification when such property is transferred.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

**NR 116.21 Permits, special exceptions, conditional uses, variances, appeals and amendments.** **(1) GENERAL.** The floodplain zoning ordinance shall list the specific types of uses which may be authorized by permit, special exception or conditional use, indicating the particular authorization required for each type of use. These authorizations may not be contrary to the provisions of this chapter or other state law, or to applicable municipal ordinances.

**(2) PERMITS.** Municipalities shall issue permits for uses in floodplain areas which are in compliance with the applicable provisions for permitted uses in their floodplain zoning ordinances. These permits shall be issued by the zoning administrator.

**(3) SPECIAL EXCEPTIONS OR CONDITIONAL USES.** Any use requiring a special exception or conditional use permit may be allowed only upon application to the zoning administrator, public hearing and issuance of a special exception or conditional use permit by the board of adjustment or appeals or, where appropriate, the zoning agency. When determining whether to grant or deny a special exception or conditional use permit, the board of adjustment or appeals shall assure compliance of the proposal with:

- (a) The provisions of the floodplain zoning ordinance;
- (b) The purpose and objective of floodplain management, as enumerated in s. NR 116.01; and
- (c) Local land use plans and other land use controls.

**(4) VARIANCES.** Any prohibited deviation from the dimensional standards of the floodplain zoning ordinance, for which a permit has been denied by the zoning administrator, may be allowed only upon written request for a variance submitted to the zoning administrator, public hearing and issuance of a variance by the board of adjustment or appeals. The board of adjustment or appeals may, after a written request for a variance has been submitted and a public hearing has been held, authorize in specific cases such a variance from the dimensional standards of the ordinance which will not be contrary to the public interest if, owing to special conditions and the adoption of the floodplain zoning ordinance, a literal enforcement of the provisions of the ordinance will result in unnecessary hardship. A variance:

- (a) Shall be consistent with the spirit of the floodplain zoning ordinance.
- (b) May not permit a lower degree of flood protection in the floodplain area than the flood protection elevation.
- (c) May not be granted for a use that is common to a group of adjacent lots or premises. In such a case, the zoning ordinance would have to be amended through proper amendment procedures.

(d) May not be granted unless it is shown that the variance will not be contrary to the public interest and will not be damaging to the rights of other persons or property values in the area.

(e) May not be granted for actions which require an amendment to the floodplain zoning ordinance as described in sub. (6).

(f) May not have the effect of granting, increasing or extending a use of property which is prohibited in that zoning district by the floodplain zoning ordinance.

(g) May not be granted solely on the basis of economic gain or loss.

(h) May not be granted for a self-created hardship.

**(5) APPEALS.** Appeals to the board of adjustment or appeals or zoning agency may be taken by any party aggrieved by any decision of the zoning administrator. Requests for special exception or conditional use permits may be considered as appeals. Such appeals shall specify the grounds thereof and be filed within a reasonable period of time with the zoning administrator. The floodplain zoning ordinance shall set forth the time limitations for filing appeals. The zoning administrator shall forthwith transmit to the board of adjustment or appeals or zoning agency all records of the matter concerning the appeal. After public hearing, the board's or agency's decision shall either affirm, reverse, vary or modify in

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whole or in part the order, requirement, decision or determination appealed from. All appeal decisions shall conform to the applicable provisions of the floodplain zoning ordinance. The board's or agency's decision may be appealed to the courts in accordance with applicable state law.

**(6) AMENDMENTS.** (a) Official amendments are required for any changes in the official floodway lines, water surface profiles, floodplain zoning maps or floodplain zoning ordinance. Actions which require an amendment by the municipality include, but are not limited to, the following:

1. Any change in the official floodway lines or in the boundary of the floodplain area;
2. Settlement of conflicts between the water surface profiles and floodplain zoning maps, in accordance with s. NR 116.10;
3. Any fill, encroachment or development into the floodway which will result in obstructing flood flows; and
4. Any upgrading of floodplain zoning ordinances in accordance with s. NR 116.05.

(b) Amendments may be made upon petition of any interested party in accordance with the appropriate provisions of ss. 59.69 (3) and (4) and 62.23 (7) (d), Stats.

(c) All proposed amendments shall be referred to the appropriate municipal zoning agency for a public hearing and recommendation to the governing body which shall approve or disapprove the proposed amendment.

(d) Amendments of official floodway lines shall meet the provisions of s. NR 116.11.

(e) No amendments to official floodway lines, water surface profiles, floodplain zoning maps or floodplain zoning ordinances may become effective until they have been approved by the department.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86; corrections in (6) (b) were made under s. 13.93 (2m) (b) 7., Stats., Register July 2001, No. 547; reprinted to restore dropped copy in (4), Register October 2002 No. 562.

**NR 116.22 Department duties.** **(1) ASSISTANCE TO MUNICIPALITIES.** The department shall provide assistance to municipalities in the development, adoption and administration of their official floodway lines, water surface profiles, floodplain zoning maps and floodplain zoning ordinances. Such assistance shall include, but not be limited to, the activities described in this subsection.

(a) The department shall establish and upgrade standards for local floodplain zoning ordinances.

(b) When requested by a municipality, the department shall evaluate flood hazards and the effects of proposals in floodplain areas upon water surface profiles, floodway limits and flood velocities as provided in s. NR 116.20 (2) (b). Requests for such evaluations shall come from a municipality, not from individual property owners or applicants. Information needed to conduct the evaluation shall be provided by the applicant or the municipality.

(c) The department shall work with federal agencies to provide technical guidance and computer facilities for certain hydrologic, hydraulic and engineering studies. Generally, the necessary topographic and other base maps and field surveys will be the responsibility of the municipality.

(d) The department shall establish priorities for engineering studies to be done in municipalities by federal agencies.

(e) The department shall respond to the requests from municipalities to provide them assistance in enforcement actions against violations of their floodplain zoning ordinances.

(f) The department shall respond to requests from municipalities for assistance in developing hydraulic and official floodway lines.

(g) The department shall review all studies. No studies may be used until department approval has been secured.

**(2) REVIEW AND APPROVAL OF FLOODPLAIN ZONING ORDINANCES.** The department shall issue a certificate of approval to a municipality upon a finding that the adopted floodplain zoning ordinance meets the provisions of this chapter. The department review of floodplain zoning ordinances may include, but is not limited to, determinations that:

(a) The most accurate maps were utilized in delineating the floodplains;

(b) All floodplain zoning maps and floodplain zoning ordinances are compatible with all other shoreland regulations, existing zoning and land use plans;

(c) All water surface profiles, floodplain zoning maps and floodplain zoning ordinances are compatible with those of the adjoining municipalities on the same streams or rivers; and

(d) The floodway and floodplain lines shown on the floodplain zoning maps are accurate.

**(3) MONITORING.** The department shall monitor the administration and enforcement of floodplain zoning ordinances in municipalities. In so doing, the department may:

(a) Establish and upgrade standards for the review and evaluation of the administration and enforcement of floodplain zoning ordinances.

(b) Review and approve or deny proposed amendments to water surface profiles, floodplain zoning maps and floodplain zoning ordinances.

(c) Review floodplain zoning permits and all special exceptions, conditional uses, variances and amendments to floodplain zoning ordinances, to ensure in each instance compliance with the applicable floodplain zoning ordinances and this chapter.

(d) Review state and federal projects to assure that public works proposals in floodplains are compatible with local floodplain zoning ordinances and the provisions of this chapter.

**(4) ENFORCEMENT.** The department shall assist municipalities in achieving a consistent statewide approach to floodplain enforcement. This assistance may include, but is not limited to, the measures listed in this subsection.

(a) The department may request that corrective action be taken by the municipality where construction is occurring in a floodplain area which is either contrary to an existing floodplain zoning ordinance or which would be contrary to an approved floodplain zoning ordinance. Such corrective action may include, where appropriate, the following:

1. Active prosecution of violations of the floodplain zoning ordinance;

2. An injunction to stop construction until an adequate floodplain zoning ordinance can be adopted and approved by the department; and

3. Adoption of an adequate floodplain zoning ordinance and submittal to the appropriate department district office for approval.

(b) The department may seek an injunction to stop construction in the floodplain area until an adequate floodplain zoning ordinance is adopted and approved.

(c) The department may seek an injunction to stop construction in the floodplain area when the construction would violate an approved floodplain zoning ordinance or the provisions of this chapter.

(d) The department may seek adoption of an adequate floodplain zoning ordinance in accordance with the provisions of s. 87.30 (1), Stats., or an upgrading of a floodplain zoning ordinance in accordance with s. NR 116.05.

(e) The department may seek an injunction for abatement or removal or a fine or both for any violation of a floodplain zoning ordinance in accordance with s. 87.30 (2), Stats.

**History:** Cr. Register, February, 1986, No. 362, eff. 3-1-86.

# Public Education Resources

There are numerous resources from which information about public education programs and also documents that have already been published in hopes of educating the public.

The University of Wisconsin – Extension publishes many documents geared towards educated a variety of people on numerous stormwater topics. Hyperlinks to several websites and documents are listed below:

UWEX Natural Resources Education Publications Homepage  
<http://clean-water.uwex.edu/pubs/>

Polluted Urban Runoff  
<http://clean-water.uwex.edu/pubs/sheets/index.html>

Yard Care and Stormwater Runoff – Lawn & Leaf Management  
<http://clean-water.uwex.edu/pubs/yardcare/index.html>

Additional Stormwater Runoff Publications  
<http://clean-water.uwex.edu/pubs/stewards/index.html - anchor338425>

A group representing 19 communities in Dane County has published a document outlining a plan for their information and education plan. This document can be viewed from the hyperlink below.

<http://www.danewaters.com/pdf/stormwater/jointstormwaterpermit.pdf>

The EPA also has information regarding how to put together and implement a public education program as well as fact sheets on various stormwater concerns. They are available at:

Public Outreach and Education  
[http://cfpub.epa.gov/npdes/stormwater/menuofbmps/pub\\_ed.cfm](http://cfpub.epa.gov/npdes/stormwater/menuofbmps/pub_ed.cfm)

Public Involvement and Participation  
[http://cfpub.epa.gov/npdes/stormwater/menuofbmps/pub\\_inv.cfm](http://cfpub.epa.gov/npdes/stormwater/menuofbmps/pub_inv.cfm)



# Grant Applications Available January 13th!

## Wisconsin DNR Runoff Management Grant Programs

***On January 13, 2006, applications will be available for two DNR grant programs that address polluted runoff, one of Wisconsin's (and the nation's) biggest water quality challenges. These two programs are the Targeted Runoff Management (TRM) and the Urban Nonpoint Source & Storm Water Management (UNPS&SW) Grant Programs.***



*Coles Valley Creek in Monroe County*

### GENERAL INFORMATION

#### ***Who can apply for these grants?***

Cities, villages, towns, counties, regional planning commissions, tribal governments, and special purpose districts such as lake, sewerage, and sanitary districts are eligible to apply for (a) TRM grants in an agricultural or urban area, or (b) UNPS&SW grants to fund projects in urban areas.

#### ***Application Deadline***

To be considered for funding, applications must be postmarked no later than April 17, 2006. Projects may begin on January 1, 2007. Both programs are reimbursement programs: applicants must pay 100% of project costs, then request reimbursement from the DNR for a portion of eligible costs.

#### ***Project Selection***

Completed applications are scored based on factors such as fiscal accountability and cost-effectiveness, water quality, extent of pollutant control, extent of local support, and likelihood of project success. The score will be increased if there is a comprehensive implementation or enforcement program in effect in the project area. Both grants are competitive. The level of available funding will be determined by the state's biennial budget process. Highest priority in selecting projects under these grant programs will be given to projects that implement performance standards and prohibitions contained in chapter NR 151, Wis. Adm. Code and/or

that address waterbodies listed on the federal Section 303(d) list of impaired waters.

#### ***Responsibilities of Grant Recipients***

Successful applicants enter into a contractual agreement with the DNR. Grant recipients must comply with program conditions, provide the local portion of the project costs, install all best management practices (BMPs) constructed under these programs and maintain them for 10 years. If applicants are providing these grant funds to private landowners, a similar contractual agreement is required between the applicant and the landowner.

#### ***How do I get an application or request additional information?***

Download the application from the DNR web site: <http://dnr.wi.gov/org/water/wm/nps/financial.htm> or contact Kathy Thompson at (608) 267-7568 or via e-mail: [Kathleen.Thompson@dnr.state.wi.us](mailto:Kathleen.Thompson@dnr.state.wi.us). DNR Regional Nonpoint Source Coordinators are available to answer questions about the grant applications.

The DNR administers these competitive grant programs under chs. NR 153, 154 and 155, Wis. Adm. Code.

Copies of these codes may be obtained at: [dnr.wi.gov/org/water/wm/nps/admrules.htm](http://dnr.wi.gov/org/water/wm/nps/admrules.htm).

## TARGETED RUNOFF MANAGEMENT GRANTS FOR CALENDAR YEAR 2007

### ***What are Targeted Runoff Management Grants?***

Targeted Runoff Management (TRM) grants are provided to control polluted runoff from both urban and agricultural sites. The grants are targeted at high-priority resource problems. Projects funded by TRM grants are site-specific and serve areas generally smaller in size than a subwatershed. The grant period is 2 years, with a possible 1-year extension. The *maximum* cost-share rate available to TRM grant recipients is 70 percent of *eligible* costs, with the total of state funding not to exceed \$150,000.

### ***How can TRM grant money be used?***

TRM grants can fund the construction of agricultural and urban BMPs. In some cases, TRM grants can also fund design of BMPs as part of a construction project. Design services provided by the private sector are cost-shared by the state at the same rate as the BMP installation. Reimbursement by the state for force account work performed by municipal employees may be no more than 5% of the total project reimbursement. Land acquisition and design can be reimbursed provided the design and parcel appraisal are approved by DNR regional staff and the construction project is selected for funding.

Some examples of eligible BMPs include detention ponds, livestock waste management practices, some cropland protection, stream bank protection projects, and wetland construction. These and other practices eligible for funding are listed in ch. NR 153 and s. NR 154.04, Wis. Adm. Code.

### ***What projects are not funded by the TRM Grant Program?***

TRM grants may not be used to fund the following:

- Projects to control pollution regulated under Wisconsin law as a point source. This includes activities to meet permit requirements for large livestock feeding operations regulated under ch. NR 243, Wis. Adm. Code, and municipal or industrial activities to meet permit requirements under ch. NR 216, Wis. Adm. Code.
- Staffing and/or planning activities.
- Construction site erosion control and post-construction structural BMPs for new development.
- Projects that are not water quality based (such as projects to solve drainage or flooding problems) or for dredging projects.
- Agricultural projects within Priority Watershed project areas, unless a showing is made that the Priority Watershed funding is inadequate to cover the entire TRM Project.



*Cattle crossing constructed to minimize streambank erosion and watercourse sedimentation. -photo by Tom Blake*

**URBAN NONPOINT SOURCE & STORM WATER MANAGEMENT GRANTS  
FOR  
CALENDAR YEAR 2007**

***What are Urban Nonpoint Source & Storm Water Management Grants?***

Urban Nonpoint Source & Storm Water Management (UNPS&SW) grant funds are used to control polluted runoff in urban project areas. Funds are typically awarded for either planning or construction projects. However, in CY 2007, funds are only available for planning projects. The grant period is 2 years. Projects funded by these grants are site-specific, serve areas generally smaller in size than a subwatershed, and are targeted to address high-priority problems.

An "urban project area" must meet one of these criteria:

- has a residential population density of at least 1,000 people per square mile;
- has a commercial or industrial land use;
- is a portion of a privately owned industrial site not covered by a WPDES permit issued under ch. NR 216, Wis. Adm. Code; or
- is a municipally-owned industrial site (regardless of ch. NR 216, Wis. Adm. Code, permit requirements).

Governmental units are eligible for a grant even if the governmental unit is covered by a storm water permit under ch. NR 216, Wis. Adm. Code.

***How can UNPS&SW planning grant money be used?***

UNPS&SW planning grants can be used to pay for a variety of planning activities. Eligible activities such as stormwater management planning for existing or new development, related information and education activities, ordinance and utility district development and enforcement are cost shared at 70 percent. This year, the cap on the total state share for UNPS&SW planning projects is \$85,000. For a planning activity to be eligible for funding under this program, the project must currently be in an urban area or an area projected to be urban within 20 years.



*The Wisconsin Department of Natural Resources provides equal opportunity in its employment programs, services, and functions under an Affirmative Action Plan. If you have any questions, please write to Equal Opportunity Office, Department of the Interior, Washington, D.C. 20240.*

*Upon request, this brochure can be made available in other formats, such as Braille, large type, or audio tape. Please call (608) 267-7694 for more information.*

# Wisconsin DNR Regional Nonpoint Source Coordinators

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# Site Evaluation for Stormwater Infiltration (1002)

Wisconsin Department of Natural Resources  
Conservation Practice Standards

## I. Definition

This standard defines site evaluation procedures to:

1. Perform an initial screening of a *development site*<sup>1</sup> to determine its suitability for infiltration.
2. Evaluate each area within a development site that is selected for infiltration.
3. Prepare a site evaluation report.

## II. Purpose

1. Establish methodologies to characterize the site and screen for exclusions and exemptions under Chapter NR 151 Wis. Adm. code.
2. Establish requirements for siting an *infiltration device* and the selection of design infiltration rates.
3. Define requirements for a site evaluation report that insures appropriate areas are selected for infiltration and an appropriate *design infiltration rate* is used.

## III. Conditions where Practice Applies

This standard is intended for development sites being considered for stormwater infiltration devices. Additional site location requirements may be imposed by other stormwater infiltration device technical standards.

## IV. Federal, State and Local Laws

Users of this standard shall be aware of applicable federal, state and local laws, rules, regulations or permit requirements governing infiltration devices. This standard does not contain the text of federal, state or local laws.

## V. Criteria

The site evaluation consists of four steps for locating the optimal areas for infiltration, and properly sizing infiltration devices.

- Step A. Initial Screening.
- Step B. Field Verification of information collected in Step A.
- Step C. Evaluation of Specific *Infiltration Areas*.
- Step D. Soil and Site Evaluation Reporting.

The steps shall coincide, as much as possible, for when the information is needed to determine the following: 1) the potential for infiltration on the site, 2) the optimal locations for infiltration devices, and 3) the design of the infiltration device(s). Steps A and B shall be completed as soon as possible in the approval process. See Consideration VI.M for an example.

### Step A. Initial Screening

The initial screening identifies potential locations for infiltration devices. The purpose of the initial screening is to determine if installation is limited by ss. NR 151.12(5)(c)5. or NR 151.12(5)(c)6., and to determine where field work is needed for Step B. Optimal locations for infiltration are verified in Step B.

Information collected in Step A will be used to explore the potential for multiple infiltration areas versus relying on a regional infiltration device. Smaller infiltration devices dispersed around a development are usually more sustainable than a single *regional device* that is more likely to have maintenance and groundwater mounding problems.

The initial screening shall determine the following:  
Note: Useful references for the existing resource maps and information are listed in Considerations VI.I and J.

1. Site topography and slopes greater than 20%.
2. Site soil infiltration capacity characteristics as defined in NRCS County soil surveys.
3. *Soil parent material*.
4. Regional or local depth to groundwater and bedrock. Use seasonally *high groundwater* information where available.

<sup>1</sup> Words in the standard that are shown in italics are described in VIII. Definitions. The words are italicized the first time they are used in the text.

5. Distance to sites listed on the GIS Registry of Closed Remediation sites within 500 feet from the perimeter of the development site.
6. Distance to sites listed on the Bureau of Remediation and *Redevelopment* Tracking System within 500 feet from the perimeter of the development site.
7. Presence of endangered species habitat.
8. Presence of flood plains and flood fringes.
9. Location of hydric soils based on the USDA County Soil Survey and wetlands from the WDNR Wisconsin Wetland Inventory map.
10. Sites where the installation of stormwater infiltration devices is excluded, due to the potential for groundwater contamination, by chapter NR 151 Wis. Adm. Code.
11. Sites exempted by chapter NR 151 Wis. Adm. Code from the requirement to install infiltration devices.
12. Potential impact to adjacent property.

### Step B. Field Verification of the Initial Screening

- A. Field verification is required for areas of the development site considered suitable for infiltration. This includes verification of Step A.1, 2, 3, 4, 9, 10 and 11.
- B. Sites shall be tested for depth to groundwater, depth to bedrock and *percent fines* information to verify any exemption and exclusion found in Step A.10 and 11. The following is a description of the percent fines expected for each type of soil textural classification.
  1. Several textural classes are assumed to meet the percent fines limitations of Ch. NR 151.12(5)(c)5.i. for both 3 and 5 foot soil layers. These classifications include the sandy loams, loams, silt loams and all the clay textural classifications. *Coarse sand* is the only soil texture that by definition will not meet NR 151.12(5)(c)5.i. limitations for a 3 foot soil layer consisting of 20% fines. Other sand textures and loamy sands may need the percent fines level verified with a laboratory analysis.
  2. Borings and pits shall be dug to verify soil infiltration capacity characteristics and to determine depth to groundwater and bedrock.
- C. The following information shall be recorded for Step B:
  1. The date or dates the data was collected.

2. A legible site plan/map that is presented on paper that is no less than 8 ½ X 11 inches in size and:
  - a. Is drawn to scale or fully dimensional.
  - b. Illustrates the entire development site.
  - c. Shows all areas of planned filling and/or cutting.
  - d. Includes a permanent vertical and horizontal reference point.
  - e. Shows the percent and direction of land slope for the site or contour lines. Highlight areas with slopes over 20%.
  - f. Shows all flood plain information that is pertinent to the site.
  - g. Shows the location of all pits/borings included in the report.
  - h. Location of wetlands as field delineated and surveyed.
  - i. Location of karst features, private wells within 100 feet of the development site, and public wells within 400 feet of the development site.
3. Soil profile descriptions must be written in accordance with the descriptive procedures, terminology and interpretations found in the Field Book for Describing and Sampling Soils, USDA, NRCS, 1998. Frozen soil material must be thawed prior to conducting evaluations for soil color, texture, structure and consistency. In addition to the data determined in Step B, soil profiles must include the following information for each soil horizon or layer:
  - a. Thickness, in inches or decimal feet.
  - b. Munsell soil color notation.
  - c. Soil mottle or redoximorphic feature color, abundance, size and contrast.
  - d. USDA soil textural class with rock fragment modifiers.
  - e. Soil structure, grade size and shape.
  - f. Soil consistence, root abundance and size.
  - g. Soil boundary.
  - h. Occurrence of saturated soil, groundwater, bedrock or disturbed soil.

### Step C. Evaluation of Specific Infiltration Areas

This step is to determine if locations identified for infiltration devices are suitable for infiltration, and to provide the required information to design the device.

A minimum number of borings or pits shall be constructed for each infiltration device (Table 1). The following information shall be recorded for Step C:

1. All the information under Step B.C.3.
2. A legible site plan/map that is presented on paper no less than 8 1/2 X 11 inches in size and:
  - a. Is drawn to scale or fully dimensional.
  - b. Illustrates the location of the infiltration devices.
  - c. Shows the location of all pits and borings.
  - d. Shows distance from device to wetlands.
3. An analysis of groundwater mounding potential is required as per Table 1. The altered groundwater level, based on mounding calculations, must be considered in determining the vertical separation distance from the infiltration surface to the *highest anticipated groundwater elevation* as specified in NR 151. References include but are not limited to Finnemore 1993 and 1995, and Hantush 1967.
4. One of the following methods shall be used to determine the design infiltration rate:
  - a. Infiltration Rate Not Measured - Table 2 shall be used if the infiltration rate is not measured. Select the design infiltration rate from Table 2 based on the least permeable soil horizon five feet below the bottom elevation of the infiltration system.
  - b. Measured Infiltration Rate - The tests shall be conducted at the proposed bottom elevation of the infiltration device. If the infiltration rate is measured with a *Double-Ring Infiltrometer* the requirements of ASTM D3385 shall be used for the field test.

The measured infiltration rate shall be divided by a correction factor selected from Table 3. The correction factor adjusts the measured infiltration rates for the occurrence of less permeable soil horizons below the surface and the potential variability in the subsurface soil horizons throughout the infiltration site.

A less permeable soil horizon below the location of the measurement increases the

level of uncertainty in the measured value. Also, the uncertainty in a measurement is increased by the variability in the subsurface soil horizons throughout the proposed infiltration site.

To select the correction factor from Table 3, the ratio of design infiltration rates must be determined for each place an infiltration measurement is taken. The design infiltration rates from Table 2 are used to calculate the ratio. To determine the ratio, the design infiltration rate for the surface textural classification is divided by the design infiltration rate for the least permeable soil horizon. For example, a device with a loamy sand at the surface and a least permeable layer of loam will have a design infiltration rate ratio of about 6.8 and a correction factor of 4.5. The depth of the least permeable soil horizon should be within five feet of the proposed bottom of the device or to the depth of a limiting layer.

5. To determine if infiltration is not required under NR 151.12(5)(c)6.a., a scientifically credible field test method is required unless the least permeable soil horizon five feet below the bottom of infiltration system is one of the following: sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay. The infiltration rate used to claim the exemption shall be the actual field measurement and shall be used without the correction factors found in Table 3.

### Step D. Soil and Site Evaluation Report Contents

The site's legal description and all information required in Steps B and C shall be included in the Soil and Site Evaluation Report. These reports shall be completed prior to the *construction plan* submittal.

**Table 1: Evaluation Requirements Specific to Proposed Infiltration Devices**

<b>Infiltration Device</b>	<b>Tests Required<sup>1</sup></b>	<b>Minimum Number of Borings/Pits Required</b>	<b>Minimum Drill/Test Depth Required Below the Bottom of the Infiltration System</b>
<i>Irrigation Systems<sup>2</sup></i>	Pits or borings	NA <sup>2</sup>	5 feet or depth to <i>limiting layer</i> , whichever is less.
<i>Rain Garden<sup>2</sup></i>	Pits or Borings	NA <sup>2</sup>	5 feet or depth to limiting layer, whichever is less.
<i>Infiltration Trenches</i> (≤ 2000 sq feet impervious drainage area)	Pits or borings	1 test/100 linear feet of trench with a minimum of 2, and sufficient to determine variability	5 feet or depth to limiting layer, whichever is less.
<i>Infiltration Trenches</i> (> 2000 sq ft of impervious drainage area)	<ul style="list-style-type: none"> <li>• Pits or borings</li> <li>• Mounding potential</li> </ul>	1 pit required and an additional 1 pit or boring/100 linear feet of trench, and sufficient to determine variability	Pits to 5 feet or depth to limiting layer Borings to 15 feet or depth to limiting layer
<i>Bioretention Systems</i>	<ul style="list-style-type: none"> <li>• Pits or borings</li> <li>• Mounding potential</li> </ul>	1 test/50 linear feet of device with a minimum of 2, and sufficient to determine variability	5 feet or depth to limiting layer
<i>Infiltration Grassed Swales</i>	Pits or borings	1 test/1000 linear feet of swale with a minimum of 2, and sufficient to determine variability	5 feet or depth to limiting layer
<i>Surface Infiltration Basins</i>	<ul style="list-style-type: none"> <li>• Pits or borings</li> <li>• Mounding potential</li> </ul>	2 pits required per infiltration area with an additional 1 pit or boring for every 10,000 square feet of infiltration area, and sufficient to determine variability	Pits to 10 feet or depth to limiting layer Borings to 20 feet or depth to limiting layer
<i>Subsurface Dispersal Systems</i> greater than 15 feet in width.	<ul style="list-style-type: none"> <li>• Pits or borings</li> <li>• Mounding potential</li> </ul>	2 pits required per infiltration area with an additional 1 pit or boring for every 10,000 square feet of infiltration area, and sufficient to determine variability	Pits to 10 feet or depth to limiting layer Borings to 20 feet or depth to limiting layer

<sup>1</sup>Continuous soil borings shall be taken using a bucket auger, probe, split-spoon sampler, or shelly tube. Samples shall have a minimum 2-inch diameter. Soil pits must be of adequate size, depth and construction to allow a person to enter and exit the pit and complete a morphological soil profile description.

<sup>2</sup>Information from Step B is adequate to design rain gardens and irrigation systems.



**Table 2: Design Infiltration Rates for Soil Textures Receiving Stormwater**

Soil Texture <sup>1</sup>	Design Infiltration Rate Without Measurement inches/hour <sup>2</sup>
Coarse sand or coarser	3.60
Loamy coarse sand	3.60
Sand	3.60
Loamy sand	1.63
Sandy loam	0.50
Loam	0.24
Silt loam	0.13
Sandy clay loam	0.11
Clay loam	0.03
Silty Clay loam	0.04 <sup>3</sup>
Sandy clay	0.04
Silty clay	0.07
Clay	0.07

<sup>1</sup>Use sandy loam design infiltration rates for fine sand, loamy fine sand, very fine sand, and loamy fine sand soil textures.

<sup>2</sup> Infiltration rates represent the lowest value for each textural class presented in Table 2 of Rawls, 1998.

<sup>3</sup> Infiltration rate is an average based on Rawls, 1982 and Clapp & Hornberger, 1978.

**Table 3: Total Correction Factors Divided into Measured Infiltration Rates**

Ratio of Design Infiltration Rates <sup>1</sup>	Correction Factor
1	2.5
1.1 to 4.0	3.5
4.1 to 8.0	4.5
8.1 to 16.0	6.5
16.1 or greater	8.5

<sup>1</sup>Ratio is determined by dividing the design infiltration rate (Table 2) for the textural classification at the bottom of the infiltration device by the design infiltration rate (Table 2) for the textural classification of the least permeable soil horizon. The least permeable soil horizon used for the ratio should be within five feet of the bottom of the device or to the depth of the limiting layer.

**Required Qualifications**

- A. Site Evaluations - Individuals completing site evaluations shall be a licensed professional acceptable to the authority having jurisdiction and have experience in soil investigation, interpretation and classification.
- B. Soil Evaluations - Individuals completing the soils evaluation shall be a Soil Scientist licensed by the Department of Regulation and Licensing or other licensed professional acceptable to the authority having jurisdiction.

**VI. Considerations**

Additional recommendations relating to design that may enhance the use of, or avoid problems with this practice but are not required to insure its function are as follows:

- A. Groundwater monitoring wells, constructed as per chapter NR 141, Wis. Adm. Code, can be used to determine the seasonal *high groundwater level*. Large sites considered for infiltration basins may need to be evaluated for the direction of groundwater flow.

- B. Karst Inventory Forms on file with the Wisconsin Geological and Natural History Survey should be filled out if a karst feature is located within the site.
- C. Cation Exchange Capacity (CEC) of the soil can indicate the number of available adsorption sites. Sandy soils have limited adsorption capacity and a CEC ranging from 1-10 meq/100g. Clay and organic soils have a CEC greater than 20 and have a high adsorption rate.
- D. Soil organic matter and pH can be used to determine adsorption of stormwater contaminants. A pH of 6.5 or greater is optimal. A soil organic content greater than 1 percent will enhance adsorption.
- E. NR 151 provides for a maximum area to be dedicated for infiltration depending upon land use. This cap can be voluntarily exceeded.
- F. One or more areas within a development site may be selected for infiltration. A development site with many areas suitable for infiltration is a good candidate for a dispersed approach to infiltration. It may be beneficial to contrast regional devices with onsite devices that receive runoff from one lot or a single source area within a lot, such as rooftop or parking lot.
- G. Stormwater infiltration devices may fail prematurely if there is:
  - 1. An inaccurate estimation of the Design Infiltration Rate;
  - 2. An inaccurate estimation of the seasonal high water table;
  - 3. Excessive compacting or sediment loading during construction;
  - 4. No pretreatment for post-development and lack of maintenance.
- H. No construction erosion should enter the infiltration device. This includes erosion from site grading as well as home building and construction. If possible, rope off areas selected for infiltration during grading and construction. This will preserve the infiltration rate and extend the life of the device.
- I. Resources available for completing Step A. Initial screening:
  - 1. Sites listed on the GIS Registry of Closed Remediation sites.  
<http://gomapout.dnr.state.wi.us/org/at/et/geo/gwur/index.htm>
  - 2. Sites listed in the Bureau of Remediation and Redevelopment Tracking System.  
<http://dnr.wi.gov/org/aw/rr/brrts/index.htm>
  - 3. Flood plain areas as regulated under s. 87.30, Wis. Stats. and NR 116, NR 30 and NR 31, Wis. Adm. Code.
  - 4. Wetlands as defined in Ch. NR 103, Wis. Adm. Code.
  - 5. Endangered species habitat as shown on National Heritage Inventory County maps
  - 6. Access points and road setbacks as determined by county or municipal zoning plans.
  - 7. Existing reports concerning the groundwater and bedrock. Examples include: Publications from USGS, NRCS, Regional Planning Commissions, DNR, DATCP, DOT, UW system or WGNHS.
  - 8. The Drinking Water and Groundwater pages of the DNR  
<http://dnr.wi.gov/org/water/dwg/>
  - 9. The Wisconsin Grain Size Database  
<http://www.geology.wisc.edu/~qlab/>
- J. The development site should be checked to determine the potential for archeological sites. This search may be conducted by state staff for projects required or funded by the state.
- K. Slopes 20% or greater are inappropriate for some infiltration devices.
- L. Expect to complete the preliminary design work (Criteria Step A through Step C) before the approval process (platting). Once required information is compiled, the initial design work for an infiltration device can begin.
- M. The approval process requirements for development sites vary across the state and may also vary within a municipality depending on the number of lots being developed. The timing of Steps A, B, and C might have to be adjusted for the type of approval process. The following is an example of when the steps might be completed for a typical development site requiring a plat. The sequence in the example would comply with the criteria for timing of Steps A, B, and C.  
  
Step A should be completed before the preliminary plat and Step B should be completed before the final plat, or CSM is approved. For regional infiltration devices, and for devices constructed on public right-of-ways, public land or jointly owned land, Step C should be completed before the final plat or final CSM approval.

It can be difficult to select the final location and drainage area for an infiltration device before the use of the lot is known. Sometimes it is more desirable to design an infiltration device for an individual lot after the lot is purchased. For this situation Step C would be completed after the final plat is approved. The information for Step C would be collected when the lot is purchased. To give future devices credit towards achieving the infiltration performance standard, the final plat would contain approximate sizing information for each device. Information from Step A and B would be used to determine the approximate sizing information.

- N. The inner ring of the Double-Ring Infiltrometer should be at least 12 inches in diameter.
- O. Section NR 151.12(5)(c)5., is included in the administrative code as a means to discourage infiltration of runoff from or into the listed areas, due to potential concerns of groundwater contamination. Although it is not illegal to infiltrate storm water in areas with the listed limitations, DNR will not give credit for this infiltration towards meeting the infiltration requirements of ss. NR 151.12(5)(c)1. or NR 151.12(5)(c)2. Runoff that is infiltrated must be in compliance with s. NR 151.12(5)(c)8., which requires minimizing infiltration of pollutants so that groundwater quality standards are maintained.

## VII. References

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Tyler, J.E. and Kuns, L. Kramer, Designing with Soil: Development and Use of a Wastewater Hydraulic Linear and Infiltration Loading Rate Table, unpublished.

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## VIII. Definitions

*Bioretention systems* (Table 1): Bioretention is an infiltration device consisting of an excavated area that is back-filled with an engineered soil, covered with a mulch layer and planted with a diversity of woody and herbaceous vegetation. Storm water directed to the device percolates through the mulch and engineered soil, where it is treated by a variety of physical, chemical and biological processes before infiltrating into the native soil.

*Construction Plan* (V.Step D): A map and/or plan describing the built-out features of an individual lot.

*Coarse sand* (V.Step B.B.1): Soil material that contains 25% or more very coarse and coarse sand, and <50% any other one grade of sand.

*Design infiltration rate* (II.3): A velocity, based on soil structure and texture, at which precipitation or runoff enters and moves into or through soil. The design rate is used to size an infiltration device or system. Rates are selected to be minimal rates for the different types of soils. Selection of minimal rates will provide a robust design and maximize the longevity of the device.

*Development site* (I.1): The entire area planned for development, irrespective of how much of the site is disturbed at any one time or intended land use. It can be one lot or multiple lots.

*Double-ring infiltrometer* (V.Step C.4.b): A device that directly measures infiltration rates into a soil surface. The double-ring infiltrometer requires a fairly large pit excavated to depth of the proposed infiltration device and preparation of a soil surface representative of the bottom of the infiltration area.

*High groundwater level* (V.Step A.4): The 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.

*Highest anticipated groundwater elevation* (V.Step C.3): The sum of the calculated mounding effects of the discharge and the seasonal high groundwater level.

*Infiltration areas* (V): Areas within a development site that are suitable for installation of an infiltration device.

*Infiltration basin* (Table 1): An open impoundment created either by excavation or embankment with a flat densely vegetated floor. It is situated on permeable soils and temporarily stores and allows a designed runoff volume to infiltrate the soil.

*Infiltration device* (II.2): A structure or mechanism engineered to facilitate the entry and movement of precipitation or runoff into or through the soil. Examples of infiltration devices include irrigation systems, rain gardens, infiltration trenches, bioretention systems, infiltration grassed swales, infiltration basins, subsurface dispersal systems and infiltration trenches.

*Infiltration trench* (Table 1): An excavated trench that is usually filled with coarse, granular material in which stormwater runoff is collected for temporary storage and infiltration. Other materials such as metal pipes and plastic domes are used to maintain the integrity of the trench.

*Irrigation system* (Table 1): A system designed to disperse stored stormwater to lawns or other pervious areas.

*Limiting layer* (Table 1): A limiting layer can be bedrock, an aquatard, aquaclude or the seasonal high groundwater table.

*Percent fines* (V. Step B.B): the percentage of a given sample of soil, which passes through a # 200 sieve.

*Rain garden* (Table 1): A shallow, vegetated depression that captures stormwater runoff and allows it to infiltrate.

*Regional device* (V.Step A): An infiltration system that receives and stores stormwater runoff from a large area. Infiltration basins are the most commonly used regional infiltration devices.

*Redevelopment* (V.Step A.6): Areas where new development is replacing older development.

*Soil parent material* (V.Step A.3): The unconsolidated material, mineral or organic, from which the solum develops.

*Subsurface dispersal systems* (Table 1): An exfiltration system that is designed to discharge stormwater through piping below the ground surface, but above the seasonal high groundwater table.

# Infiltration Basin

## (Acre-Feet)

### (1003)

Wisconsin Department of Natural Resources  
Conservation Practice Standard

#### I. Definition

An infiltration basin is defined as an open impoundment (greater than 15 feet wide in its minimum dimension) created either by excavation or embankment with a flat, densely vegetated floor dedicated to the infiltration of runoff through the ground surface.

#### II. Purpose

The practice may be applied as part of a structural stormwater management practice system to support one or more of the following purposes:

- Reduce stormwater pollutants
- Increase discharge to groundwater
- Decrease runoff peak flow rates and volumes
- Preserve base flow in streams
- Reduce temperature impacts of runoff.

#### III. Conditions Where Practice Applies

The infiltration basin practice applies to urban areas where increased pollutant loadings, thermal impacts, or increased runoff volumes are a concern and the area is suitable for infiltration. (See NR 151.12(5) (c) 5 and 6 and WDNR Conservation Practice Standard Site Evaluation for Stormwater Infiltration (1002).)

#### IV. Federal, State and Local Laws

Users of this standard shall be aware of applicable federal, state and local laws, rules, regulations or permit requirements governing infiltration basins. This standard does not contain the text of federal, state or local laws.

#### V. Criteria

A. Screening criteria located in the WDNR Conservation Practice Standard Site Evaluation for Stormwater Infiltration (1002) shall be followed. In addition, the following site location criteria shall be met.

1. Building location – The basin shall not be *hydraulically connected*<sup>1</sup> to foundations or pavements, or cause negative impacts to structures. These negative impacts could include: water in basements and foundation instability.
2. 20% Slopes - Infiltration shall not cause seepage, contribute to hill slope failure or increase erosion on down gradient slopes. A minimum horizontal setback distance of 200 feet shall be maintained from down gradient slopes greater than 20% unless slope stability calculations demonstrate that the slope is stable under saturated conditions at a shorter distance from the practice. Note: Berms constructed as part of the practice are not included in this separation distance.

#### B. Design

1. Bypass/Dewatering – The basin shall be designed with a maintenance draw down capability. An example of this device is shown on Figure #3.

When infiltration cells are used, a *draw down device* shall be provided for each cell.

2. Pretreatment Practices – Space must be allotted for pretreatment prior to infiltration to remove the following percentage of total suspended solids, on an average annual basis, based on the following land uses.
  - a. 60% for residential (and associated roads)

<sup>1</sup> Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

- b. 80% for commercial, industrial, institutional (and associated roads)
3. Infiltration Rates - See WDNR Conservation Practice Standard Site Evaluation for Stormwater Infiltration (1002) for design infiltration rates.
4. Dimensions
- a. Depth – Depth is a function of the maximum draw down time of 24 hours (for the infiltration portion of the practice only), using the design infiltration rate, with a not to exceed depth of 24 inches.  
  
The maximum depth of 24 inches applies to all infiltration cells within the practice.
  - b. *Target Stay-on Depth* – The target stay-on depth shall meet the requirements of NR 151. (See Consideration L.)
  - c. Effective Infiltration Area – The maximum depth along with the storage volume of water to be infiltrated can be used to determine the preliminary *effective infiltration area* necessary for the infiltration basin. (See Consideration L.)
  - d. Slopes
    - 1. Longitudinal Slope – If used, the longitudinal slope shall not exceed 1% (0% longitudinal slope is recommended). If any longitudinal slope is specified, “infiltration cells” as described in V.B.4.f. shall be required.
    - 2. Lateral Slopes in the effective infiltration area shall be 0%.

**Example: (This example is a continuation of the 20 acre mixed land use example presented in “Technical Note for Sizing Infiltration Basins and Bioretention Devices to Meet State of Wisconsin Stormwater Infiltration Performance Standards.” See Consideration L. for reference.)**

**This example assumed an average pre-development curve number of 75 for the pre-development soil condition in the drainage basin, sandy loam soils at the infiltration site and a post-development curve number of 70 for the pervious areas in the drainage basin. From that example, the preliminary effective infiltration area is 8,930 square feet or 0.2 acres. Therefore, the storage volume (SV) at a one-foot maximum depth (MD) is 0.2 acre-ft or 8,930 cu. ft.**

**Calculate the dimensions of the basin. Assume a rectangular basin with a length to width ratio of 3:1  
 $SV=MD * L * W$  substitute  $L=3W$   
 $SV=MD * 3W^2$   
 Solve for W:  
 $8,930 \text{ cu. ft.} = 1 \times 3W^2 \quad 2,977 = W^2$   
 $W = 55 \text{ ft}$   
 $L = 3W \text{ so } L = 164 \text{ ft}$**

**If using a longitudinal slope, it is still required that the maximum depth, at any point in the basin, not exceed 24 inches (or in this case 12 inches due to the soil type). This slope results in a 3D triangle of infiltration volume versus the cubic volume created by a basin with a flat floor.**

**To correct for this and to provide the required infiltration volume, the preliminary effective infiltration area originally calculated must be divided by 0.5. This will correct for the triangle of lost volume created by the sloped floor of the basin, the maximum depth and the water surface.**

**8,930 sq. ft. / 0.5 = 17,860 sq. ft.  
The new W and L are now W = 77ft.  
and L = 3W = 231ft.**

**Note: The surface area calculated is the minimum effective infiltration area and does not include slopes or setbacks. Additional site area will be needed to account for berms and slopes.**

- e. Side Slopes – All side slopes for interior and exterior berms shall have a 4:1 slope (horizontal: vertical) or flatter.
- f. Infiltration Cells – To maximize the effective infiltration area utilized and to prevent channelized flow, the effective infiltration area shall be subdivided into multiple smaller “cells” using *level spreaders* (example shown in Figure 1 & 2). These “cells” shall be used if a longitudinal slope is specified or if the length of the flow path exceeds 300 linear feet.

The effective infiltration area shall be divided such that as a downstream cell reaches the depth of its level spreader, the elevation of the water in that cell does not exceed the downstream toe of slope from the next upstream level spreader. The height of any level spreader shall not exceed the maximum ponding depth.

**Example (continued)**

**Given: MD = 12 inches, SA = 17, 860 sq. ft., longitudinal slope = 1%. W = 77 ft. L = 231 ft.**

**With a length of 231 feet and a slope of 1% we know the basin rises 2.3 feet along its length from the outlet to the toe of the pre-treatment area. Given a 12-inch maximum depth of water in the practice for infiltration, the basin needs to be divided into multiple cells with each cell a maximum 300 feet length or a maximum of 12 inches of depth in each cell.**

**As this example has a longitudinal slope of 1% the maximum cell is 100 feet in length ( $100 * 1\% = 1$  feet which is the maximum depth). Had this basin had no longitudinal slope on the floor, a cell up to 300 feet long could have been utilized.**

**The first level spreader should be located 100 feet upstream from the outlet structure. This leaves us with 131 feet to the pretreatment area. At 1% slope, the height of the level spreader should be 1.3 feet, which is greater than allowed. So the second level spreader should be 1 foot in height, with the third being 100 more feet upstream with a height of 0.43 feet.**

**Note: To improve the aesthetics of the basin, the second and third cells may be evened out to two cells of 66 feet each and level spreader heights of 0.66 feet.**

- 5. Basin Inlets and Cell Dividers / Level Spreader – The design shall evenly spread the outflow from the pretreatment device or between cells across the width of the basin. The pretreatment discharge pipes and stone trench shown in Figures 1 & 2 (plan and profile view) provide an example of level spreaders.
- 6. Basin Outlets – The infiltration basin outlet shall safely convey stormwater

from the basin through all of the following mechanisms. An example of outlet pipes is shown in Figures 3 & 4 (front and side view)

- a. Draw Down Device – A means shall be provided to quickly remove standing water from the basins for maintenance and winter diversion.
  - b. Emergency Spillway – A means shall be provided to release discharge in excess of the infiltration volume safely into the downstream stormwater conveyance system. The spillway shall be designed for a 100 year 24-hour storm event.
  - c. Freeboard – One foot of freeboard above the flow depth in the spillway shall be provided.
7. Maintenance Access – Provide a 12 foot wide access route, with a 6:1 slope, to the floor of the basin for sediment and debris removal.
  8. Embankment Construction – Embankments shall conform with WDNR Conservation Practice Standard Wet Detention Basin (1001). A basin embankment may be regulated as a dam under ch. 31 Stats., and further restricted under ch. NR 333, Wis. Adm. Code, which includes regulations for embankment heights and storage capacities.

#### C. Construction

1. Construction shall be suspended during periods of rainfall or snowmelt. Construction shall remain suspended if ponded water is present or if residual soil moisture contributes significantly to the potential for soil smearing, clumping or other forms of compaction.
2. An assessment of the active erosion in the drainage area to the infiltration basin shall be performed to determine when to bring the infiltration basin on-line. The basin shall be brought on-line when the area draining to the basin has achieved 90% build out of all lots in any of the first 3 years or 75% build out in any subsequent year. By 5 years

from the start of construction in the drainage area, all infiltration basins shall be brought on-line. Build out means that the lot has been fully developed and stabilized from erosion. If the infiltration basin area is to also provide peak flow control for the fully built out 5-year, 24-hour event or greater, then a bypass device to divert those flows into the practice will be allowed until the infiltration basin is brought fully on-line. Erosion and sediment control practices shall be implemented for the remaining 10-25% of the undeveloped lots with the goal of preventing any sediment from reaching the infiltration basin.

3. During construction one of the following methods shall be used:
  - a. No disturbance – The infiltration area shall be fenced off to prevent heavy equipment access during development.
  - b. Compaction Mitigation – If the active infiltration area is graded the effects of compaction shall be mitigated using the following methods:
    - (1) Incorporate soil additives consisting of two inches of compost mixed into two inches of topsoil.
    - (2) The soil mix (V.C.3.b.1) shall be incorporated into the existing soil using a chisel plow or rotary device with the capability of reaching to 12 inches below the existing surface.
    - (3) The compost component shall meet the following WDNR Specification S100 Compost.
4. The basin shall be constructed to the grades, elevations, and specifications in the plan. After grading and top soiling, the elevation of the basin shall be surveyed for conformance to design specifications.



#### D. Vegetation Cover

1. Establishment – Cover crops need to be applied in conjunction with the initial seeding of permanent vegetation. When establishing turf type grass, use the criteria contained in the DNR Conservation Practice Standard Seeding for Construction Site Erosion Control (1059). Sod shall not be used.

If turf grass is utilized, the basin cannot be used for recreational purposes due to compaction concerns.

2. Native Seeding – Native vegetation shall be established in conformance with recommendations from a qualified native nursery in the area. If trees are to be used, species shall be selected that will not interfere with the function of the basin, or cause maintenance problems. Section IX References, lists sources that provide suggested seed mixtures.

Native (prairie) seeding shall be completed in the fall (as dormant seeding prior to first snowfall) or in the spring (between May 1 and June 20), or plugs shall be used.

3. Fertilizer – Soil testing shall be used to determine proper applications for nutrients and liming. Fertilizer application shall conform to the criteria located in NRCS Conservation Practice Technical Standard, Critical Area Planting (342) or WDNR Conservation Practice Standard Seeding for Construction Site Erosion Control (1059).
4. Mulch – Mulch shall conform to the criteria located in WDNR Conservation Practice Standard Mulching for Construction Sites (1058).

#### VI. Considerations

- A. Pretreatment Options - See WDNR Conservation Practice Technical Standards Wet Detention Basin (1001), Ditch Check (1062), and Vegetated Infiltration Swale (1005) for guidance. Estimates of pollutant reduction by proprietary devices should be based on monitoring using the EPA

Environmental Testing Verification protocol.

- B. Well Locations - If well locations in relation to the basin are a concern, the site should be evaluated for the direction of ground water flow.
- C. Multiple Uses - Basins can be used for both infiltration and peak shaving as shown on Figure 1 and 2. However, another option is to include a *flow splitter* or diversion prior to pretreatment. By limiting the inflow into a BMP, a flow splitter can enhance the longevity of the BMP by reducing the volumetric rate of treatment, erosion or scour, and vegetation damage. Flow splitters need to be designed to address site conditions and flows.
- D. Drainage Area Size – The drainage area should be between 5 and 50 acres. If the drainage area is more than 50 acres, multiple basins should be provided.
- E. Regulatory Caps - Ch. NR 151 provides for a maximum area to be dedicated for infiltration depending upon land use. This cap can be voluntarily exceeded.
- F. Native Vegetation - The use of prairie grass or other deep-rooted plants is encouraged because these plants can increase the infiltration capacity of the basin. Dense vegetation will also reduce soil erosion on the basin floor.
- G. Level Spreader - Since it is often difficult to construct a level spreader, a combination of a berm and stone trench is recommended. Other methods to disperse flows include irrigation practices such as ridge and furrow irrigation systems. Refer to American Society of Agricultural Engineering Standards for guidelines on construction of irrigation dispersal systems.
- H. Tracked vehicles should be used during construction to lessen compaction.
- I. The final grading should be conducted by the landscape contractor so that the drainage area can be stabilized first.
- J. Snow should not be placed in the effective infiltration area. It may be placed on the

pretreatment area or areas draining into the pretreatment area.

- K. Internally Drained Watersheds – There are unique considerations for watersheds that are closed basins which are internally drained. Infiltration basins constructed in internally drained watersheds shall meet the requirements of NR 151 and this standard. Storms with a recurrence interval greater than a 2-year 24-hour storm must also be considered in the design and engineering judgment may determine that criteria such as draw down time and maximum depth may be exceeded for these larger storms. Infiltration basins in internally drained watershed may have different needs for plants, pretreatment, safety, maintenance or other characteristic that must be considered during design and construction.
- L. The DNR has created a technical note that may be used to size infiltration basins. The “Technical Note for Sizing Infiltration Basins and Bioretention Devices To Meet State Of Wisconsin Stormwater Infiltration Performance Standards” contains an approved method to determine the target stay-on depth and 12 design charts that can be used to size these basins for a variety of conditions. In addition, the technical note contains a reference to an approved infiltration model (RECARGA) that can also be used to determine effective infiltration area requirements. Other models may be used if approved. The Technical Note can be accessed at:  
<http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm#Post>

## VII. Plans and Specifications

Plans and specifications shall be prepared in accordance with the criteria of this standard and shall describe the requirements for applying the practice to achieve its intended use. Plans shall specify the materials, construction processes, location, size and elevations of all components of the practice to allow for certification of construction upon completion.

## VIII. Operations and Maintenance

An operation and maintenance plan shall be developed that is consistent with the purposes of this practice, intended life of the components,

safety requirements, and the criteria for the design. There may be state and local laws that require adequate O&M of public and private facilities and the identification of responsible parties. At a minimum, the plan shall include:

- A. Inspection Intervals – At minimum, quarterly inspections shall occur. Inspection shall include spreader and overflow spillway for indication of failure. Note the condition of vegetation as part of inspection. If standing water is observed over 50% of the basin floor 3 days after rainfall, the basin is clogged and measures should be undertaken to unclog it. (See section VIII.C).
- B. Native Vegetation - Maintenance of Native Vegetation – Mowing (cutting) or burning shall be used to maintain the vegetation.
1. Establishment - The first mowing of newly planted seed shall occur once it reaches a height of 10 to 12 inches.
  2. Mowing
    - a. Mowing shall reduce the height of plants to 5 to 6 inches.
    - b. After establishment, if burning cannot be accommodated, mowing shall occur once in the fall (after November 1). The area shall be mowed to a height of 5 to 6 inches.
  3. Burning
    - a. Routine Maintenance - Beginning the second year, burning shall occur in the early spring (prior to May 1<sup>st</sup>) or in the late fall (after November 1<sup>st</sup>)
    - b. Burning shall be done two consecutive years and then up to three years can pass before the next burning.
    - c. Under no circumstances shall burning occur every other year.
- C. Restoration Procedures – these include removing the top 2 to 3 inches, chisel plowing and adding topsoil and compost. If deep tilling is used, the basin shall be drained and the soils dried to a depth of 8 inches. If the basin was planted in turf grass and clogging again occurs after these restoration procedures have been used, the owner /operator shall replant with prairie

style vegetation using the soil preparation method recommended by the native nursery in the area.

- D. Trash shall be removed as quickly as possible once observed.
- E. Pretreatment – If wet detention is used, see WDNR Conservation Practice Technical Standard Wet Detention Basin (1001) for operations and maintenance requirements.
- F. Winter Maintenance – All draw down devices in the pond shall be opened during winter months to discourage infiltration of runoff water containing high levels of chlorides. If this practice is an enclosed basin, the use of chloride deicers shall be limited in the area draining to the basin to reduce the chance of exceeding the limits in ch. NR 140.

## IX. References

Metropolitan Council, 2003. Urban Small Sites Best Management Practice Manual, Chapter 3, Vegetative Methods 3-85 – 3-91. Minneapolis.

United States Department of Agriculture – Natural Resources Conservation Service. Engineering Field Handbook, Chapters 16 and 18.

UWEX Publication A3434 Lawn and Establishment & Renovation.

WisDOT, 2003. State of Wisconsin Standard Specifications for Highway and Structure Construction. Section 630, Seeding.

## X. Definitions

*Draw down device* (V.B.1): A draw down device can consist of any device that allows for the dewatering of the infiltration basin or the infiltration cells down to the ground elevation. Examples include removable weir plates (shown in Figure 3), pipes with valves, weirs with removable stop logs.

*Effective infiltration area* (V.B.4.c.): An effective infiltration area means 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.

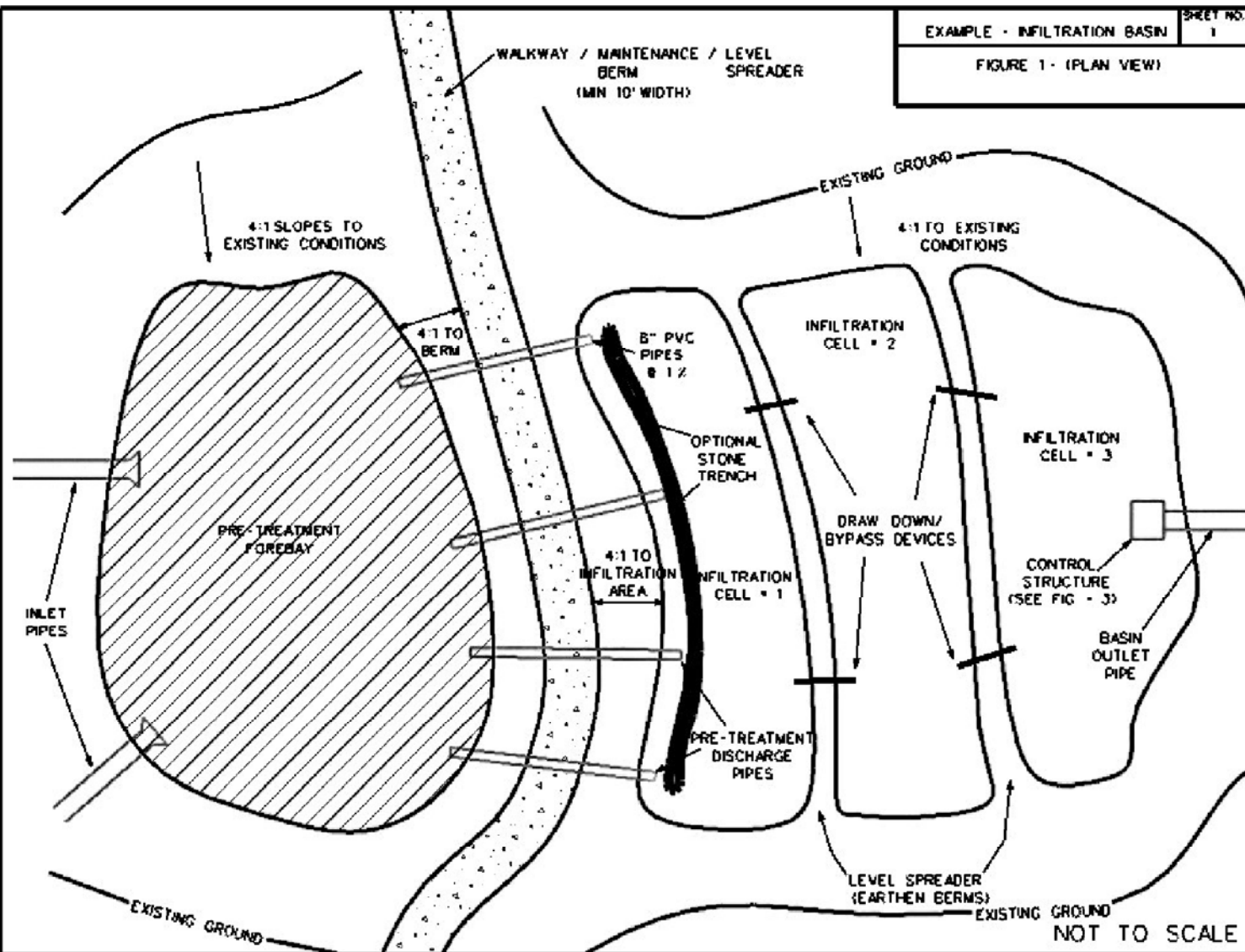
*Flow Splitter* (VI.C): A flow splitter is a device used to direct a fraction of runoff into the BMP facility while bypassing excess flows from larger storm events.

*Hydraulically connected* (V.A.1.): Two entities are said to be hydraulically connected if a surface or subsurface conduit exists between the two such that water is transmitted from one entity to the other.

*Level spreader* (V.B.4.f): A level spreader is a device used to disperse concentrated flows back over a wide area, dissipating the energy of the runoff and promoting sheet flow. Common types of level spreaders include vegetated, earthen or stone berms, weirs and stone trenches.

*Target Stay-on Depth* (IV.B.4.b.): The amount of infiltration required on an average annual basis. It is the portion of the annual rainfall (inches) on the development site that must be infiltrated on an annual basis to meet the infiltration goal.

FIGURE 1 - (PLAN VIEW)



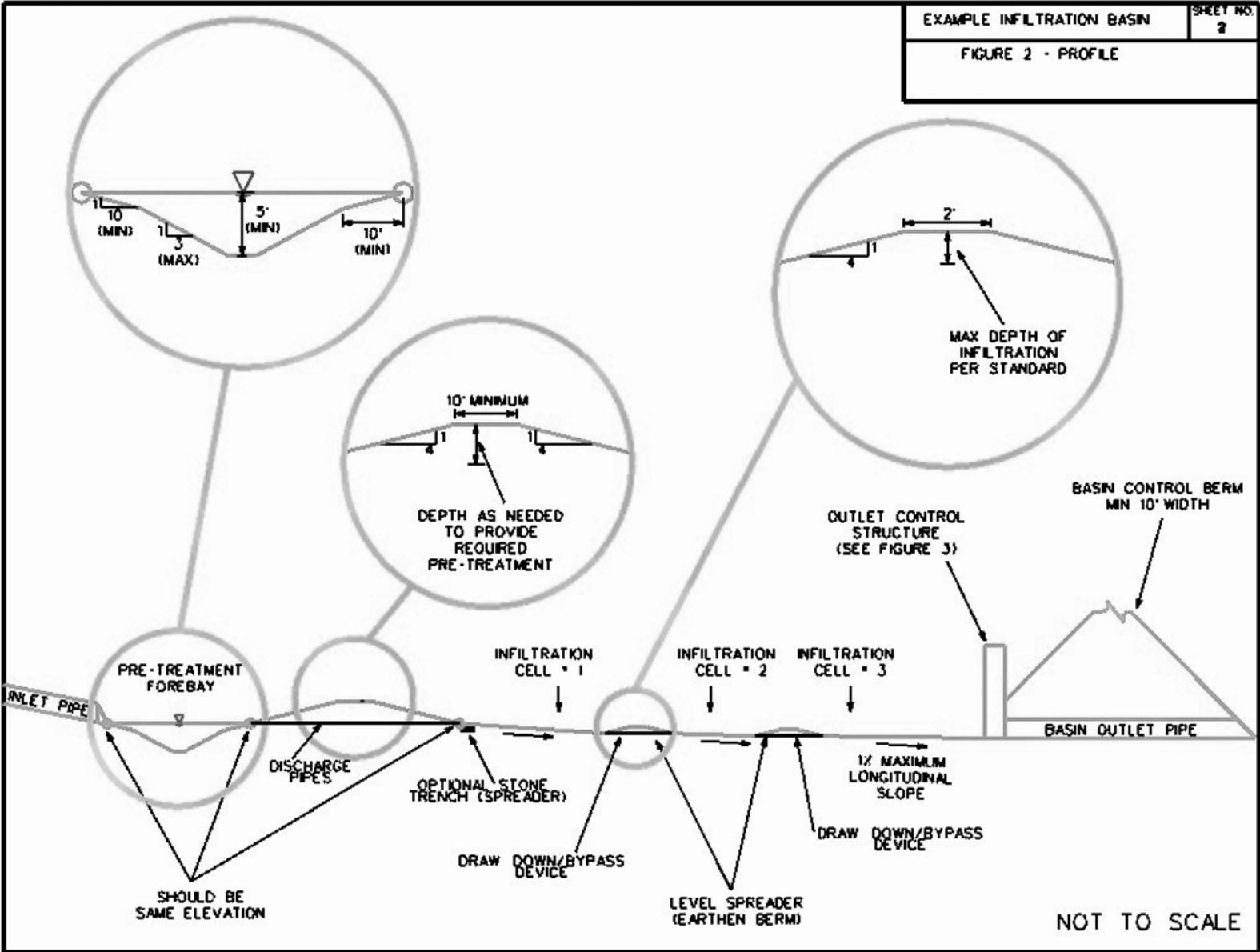
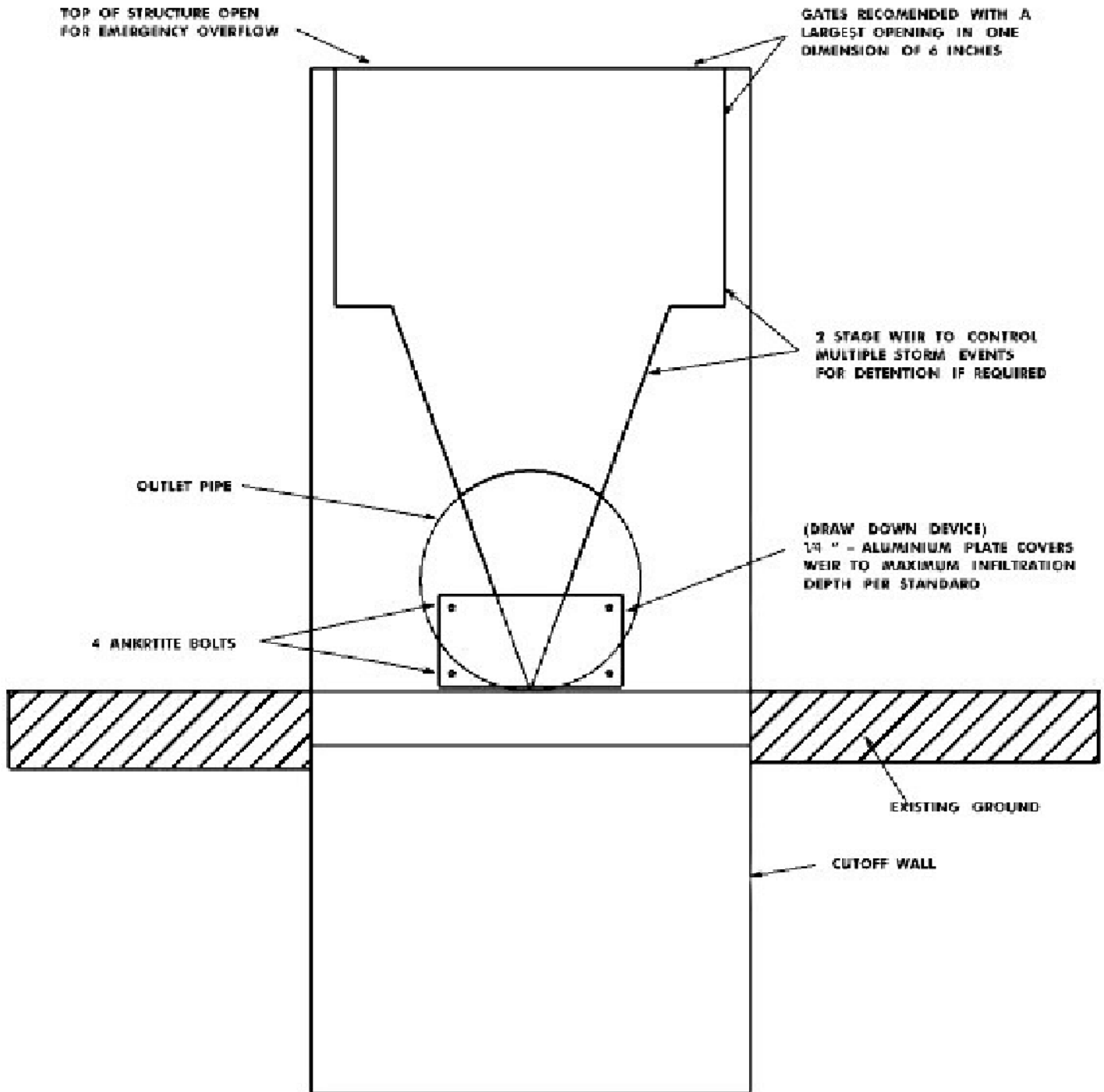
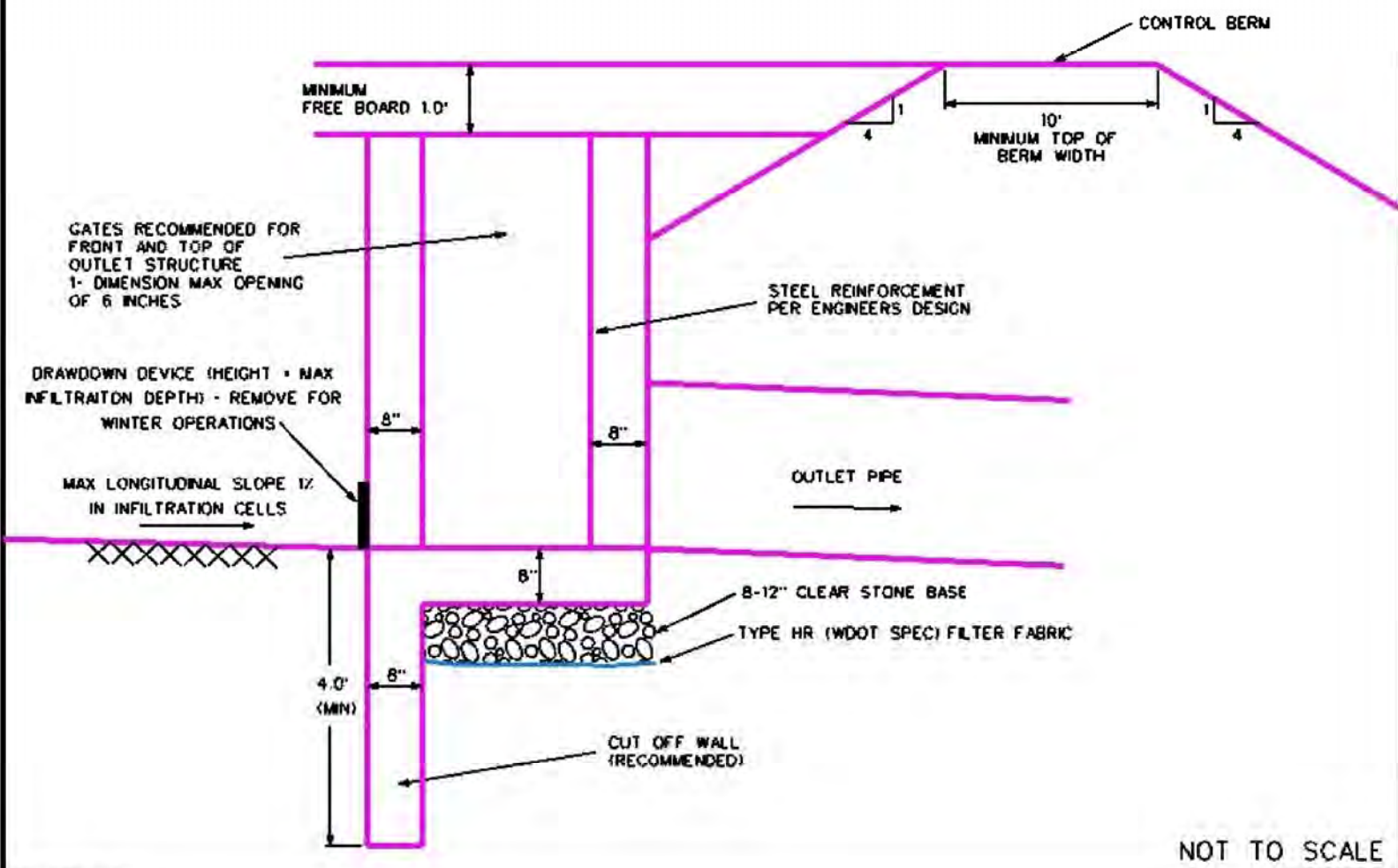


FIGURE 3 - FRONT VIEW



NOT TO SCALE

FIGURE 4 - SIDE VIEW



NOT TO SCALE

# Bioretention For Infiltration (1004)

Wisconsin Department of Natural Resources  
Conservation Practice Standard

## I. Definition

A bioretention device is an *infiltration device*<sup>1</sup> consisting of an excavated area that is back-filled with an engineered soil, covered with a mulch layer and planted with a diversity of woody and herbaceous vegetation. Storm water directed to the device percolates through the mulch and engineered soil, where it is treated by a variety of physical, chemical and biological processes before infiltrating into the *native soil*.

## II. Purpose

A bioretention device may be applied individually or as part of a system of stormwater management practices to support one or more of the following purposes:

- Enhance storm water *infiltration*
- Reduce discharge of storm water pollutants to surface and ground waters
- Decrease runoff peak flow rates and volumes
- Preserve base flow in streams
- Reduce temperature impacts of storm water runoff

## III. Conditions Where Practice Applies

Bioretention devices are suitable for small drainage areas where increased urban storm water pollutant loadings, thermal impacts, runoff volumes and peak flow discharges are a concern and the area is suitable for infiltration. Bioretention devices are best suited to providing on-site stormwater management opportunities adjacent to *source areas* such as landscaped areas, rooftops, parking lots and streets.

Bioretention devices are not suitable for controlling construction site erosion. These devices will not treat chlorides, and will be damaged by heavy loading of salt-based deicers.

## IV. Federal, State and Local Laws

Users of this standard shall be aware of applicable federal, state and local laws, rules, regulations or permit requirements governing bioretention devices. This standard does not contain the text of federal, state or local laws.

## V. Criteria

### A. Site Criteria

1. A site selected for construction of a bioretention device shall be evaluated in accordance with the WDNR Conservation Practice Standard 1002, "Site Evaluation for Stormwater Infiltration" and shall meet the site requirements of that standard.
2. The following site criteria shall also be met:
  - a. Private Onsite Wastewater Treatment System (POWTS) – The bioretention device shall be located a minimum of 50 feet from any POWTS and shall not be *hydraulically connected* to the POWTS dispersal cell or cause negative impacts such as cross contamination.
  - b. Foundations – The bioretention device shall not be hydraulically connected to building or pavement foundations or cause negative impacts to structures.
  - c. Slopes – Sloped areas immediately adjacent to the bioretention device shall be less than 20% but greater than 0.5% for pavement and greater than 1% for vegetated areas to ensure positive flow towards the device.
  - d. Maximum Drainage Area – The area draining to the bioretention device shall not exceed 2 acres. The drainage area shall not contain significant sources of soil erosion.

<sup>1</sup> Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.



- B. Design** – The bioretention device shall be sized using an *approved model*. (See Consideration L.)
1. Configuration - Bioretention components include *pretreatment*, flow regulation, ponding area, planting bed vegetation and surface mulch layer, engineered soil planting bed, storage layer, *underdrain*, sand/native soil interface layer and observation well (See Figures 1 - 3).
  2. *Target Stay-on Depth* – The target stay-on depth shall be determined using an approved model. (See Consideration L.)
  3. Flow Regulation
    - a. Inflow – The flow at the inlet to the bioretention device shall be controlled to prevent erosion and achieve uniform distribution across the surface of the soil planting bed.
    - b. Overflow – The overflow system shall meet the following requirements:
      - (1) A weir or standpipe shall be used to regulate the maximum ponding depth. The invert of the overflow structure shall be at the elevation of the maximum ponding depth of the bioretention device. This component shall meet the ponding requirements of section V.B.4.
      - (2) Water discharged from the overflow shall be conveyed to a stable outlet leading to a suitable conveyance such as a swale, storm drain or surface water.
      - (3) Overflow control structures, such as *curtain drains*, that bypass the soil planting bed and discharge directly to ground water are allowed only if the sole source of stormwater runoff is from rooftops without significant contamination from industrial activity.
    - c. Underdrain – The underdrain shall meet the requirements of section V.B.8.
  4. Ponding Area
    - a. *Maximum Design Ponding Depth* – The design ponding depth shall not exceed 12 inches.
    - b. *Drawdown Time* - In designing the bioretention device, the design ponding depth divided by the *Design Drawdown Rate* shall not exceed 24 hours.
    - c. Side slopes – The side slopes of the berm that forms the ponding area shall be 2H:1V or flatter.
  5. Planting Bed Vegetation and Surface Mulch Layer
    - a. *Vegetation Plan* – A vegetation plan and planting specifications shall be prepared. The following apply:
      - (1) The plan shall identify planting zones based on anticipated depth of water level fluctuations and duration of inundation.
      - (2) Rootstock and plugs shall be used in establishing trees, shrubs and herbaceous perennials. Seed shall not be used to establish vegetation.
      - (3) If the bioretention device receives runoff from non-residential source areas or streets, the plant density at maturity must be low enough to accommodate long-term maintenance or replenishment of the surface mulch layer. If the bioretention device receives runoff only from residential land uses other than streets, the mulch layer can be discontinued at maturity provided that a dense vegetation layer is formed.
      - (4) Plants shall be native to the area and capable of withstanding the environmental conditions of the bioretention device such as insect and disease infestations, drought, water level fluctuations and regional temperature variations. Vegetation shall be salt tolerant when the bioretention device is likely to receive runoff containing salt-based deicers.

- (5) Turf grass shall not be used to vegetate the bioretention device, although it may be used in the pretreatment area. Invasive plants and noxious weeds shall not be used.
- (6) Woody vegetation shall not be specified at inflow locations. Trees and vegetation shall not block flow paths, create traffic or safety issues, or obstruct utilities.
- (7) The planting plan shall cover plant placement, planting sequence, planting time of year, fertilizing, watering and protection from other stresses such as animals, wind and sun to maximize plant growth and survival.
- (8) If the engineered soil will be left to settle prior to planting, the surface shall be mulched.

b. Surface Mulch Layer – Shredded hardwood mulch or chips, aged a minimum of 12 months, shall be placed on the surface of the bioretention area. The mulch shall be 2 to 3 inches in depth. The mulch shall be free of foreign material, including other plant material.

6. Engineered Soil Planting Bed

- a. Surface Area – The surface area shall be determined using an approved model. (See Consideration L.)
- b. Surface Slope – The surface slope of the device shall not exceed 1%.
- c. Engineered Soil Depth – After settling, there shall be sufficient soil to support the rooting depth of the vegetation. If the storage layer (V.B.7.) uses gravel, a lens of pea gravel not to exceed 4 inches shall separate the engineered soil from the storage layer. The soil layer (including the pea gravel lens) shall be at least 3 feet deep.
- d. Engineered Soil Composition– The soil shall be engineered to the following specifications:

- (1) The planting mixture shall consist of a mixture of sand, compost and topsoil.

The mix shall be designed to approximate the percentages in Table 1.

<b>Table 1. Engineered Soil Mix</b>	
Engineered Soil Component	Percentage Composition (by Volume)
Silica Sand	40%
Topsoil	20% if loam texture
	30% if sandy loam or loamy sand texture
Compost	30% - 40%

Note: This mixture meets the equivalency requirements of s. NR 151.12(5)(c)5.i., Wis. Adm. Code.

- (2) The silica sand component shall be USDA coarse sand (0.02 to 0.04 inch diameter), pre-washed to remove clay and silt particles, and well-drained or dry prior to mixing. Calcium carbonated, dolomitic sand, and other substitutions are not allowed.
  - (3) The topsoil component shall be a USDA classified sandy loam, loamy sand or loam texture. The topsoil component textural class shall be verified by a laboratory analysis or a professional acceptable to the jurisdiction having authority.
  - (4) The compost component shall meet the requirements of Wisconsin Department of Natural Resources Specification S100, Compost.
  - (5) The engineered soil mix shall be free of rocks, stumps, roots, brush or other material over 1 inch in diameter. No other materials shall be mixed with the planting soil that may be harmful to plant growth or prove a hindrance to planting or maintenance.
  - (6) The engineered soil mix shall have a pH between 5.5 and 6.5.
  - (7) The engineered soil mix shall have adequate nutrient content to meet plant growth requirements.
7. Storage layer – A sand or gravel storage layer situated beneath the underdrain will facilitate groundwater recharge because water in this storage area can not exit via the underdrain. It can only exit the bioretention device by

infiltration into the native soil. The following requirements shall be met in designing the storage layer.

- a. The storage layer is required when the design infiltration rate of the native soil is less than 3.6 inches/hour, as determined using DNR Technical Standard 1002, "Site Evaluation for Stormwater Infiltration."
  - b. The design thickness of the storage layer shall be that which results in a *total device drain time* of 72 hours, but shall not exceed 48 inches. In calculating the total device drain time, assume that event runoff has ended and the bioretention device is *fully saturated* prior to the initiation of drawdown. (Refer to Section VI.U for guidance in determining the storage layer thickness.)
  - c. Gravel Specifications – The gravel shall meet the coarse aggregate #2 and other specifications of Wisconsin Standards and Specifications for Highway and Structure Construction, Section 501.2.5, 2003 edition, or an equivalent as approved by the administering authority. Gravel shall be double-washed.  
  
Note: Inadequate washing of aggregate may lead to clogging at the native soil interface.
  - d. Sand Specifications – A layer of sand may be used in lieu of gravel to form the storage layer. The sand shall be washed quartz or silica. Sand particles shall be 0.02 to 0.04 inches in diameter (USDA Coarse Sand). Calcium carbonated, dolomitic sand, and other substitutions are not allowed.
8. Underdrain – A perforated underdrain pipe is required unless there is no suitable pipe outlet or the risk of infiltration failure at the native soil interface is minimal. The risk of infiltration failure is assumed to be minimal if the design infiltration rate of the native soil is determined to be at least 3.6 inches/hour, as determined using DNR Technical Standard 1002, "Site Evaluation for Stormwater Infiltration."
- a. Pipe Location - The underdrain pipe shall be placed at the top of the gravel or sand storage layer.
  - b. Size and Material – The pipe shall have a minimum diameter of 6 inches and be made

of flexible pipe or other material approved by the administering authority. The pipe shall be capable of withstanding expected traffic loads over portions of the pipe extending beyond the soil planting bed.

- c. Orifice Diameter – The underdrain orifice shall be restricted as necessary so that the *design infiltration rate* plus the *underdrain flow rate* equals the design draw down rate. The restriction shall be achieved by using an adjustable restrictor plate or valve. The restriction device shall be accessible for adjustment.
- d. Perforations – The total opening area of all perforation holes combined shall be sufficient to allow the underdrain pipe to discharge at full capacity, as would occur if there were no orifice restriction. The amount of perforation shall be increased to provide a margin of safety but shall not be so great as to compromise structural integrity of the pipe material.
- e. Pipe Protection – The underdrain pipe shall be protected from clogging by use of filter fabric or a filter sock. If the storage layer is sand, a filter sock shall be used. A cover of pea gravel may also be used.
  - (1) Pea Gravel – If used, the pea gravel layer shall be at least 4 inches thick. Pea gravel shall be washed. Pea gravel shall be large enough to prevent its falling through the perforations of the under-drain pipe.
  - (2) Filter Fabric – Filter fabric shall cover the underdrain pipe and shall not extend laterally from either side of the pipe more than two feet. The fabric shall meet the specifications of Wisconsin Standards and Specifications for Highway and Structure Construction, Section 645.2.4, Schedule Test B, 2003 edition, or an equivalent approved by the administering authority.
  - (3) Filter Sock - The openings in the fabric shall be small enough to prevent sand particles from entering the underdrain pipe. The flow rate of the fabric shall be capable of passing water at a rate equal to or greater than the flow rate capacity of the total combined perforations in the

underdrain pipe. In addition, the fabric shall meet the other requirements of Wisconsin Standards and Specifications for Highway and Structure Construction, Section 612.2.8(1-3), 2003 edition, or an equivalent approved by the administering authority.

- f. Clean-out Port – The underdrain pipe shall have a vertical, connecting standpipe to serve as a clean-out port for the underdrain pipe. The pipe shall be rigid, non-perforated PVC pipe, a minimum of 6 inches in diameter and covered with a watertight cap that is flush with the ground elevation of the device.
  - g. Outlet – The underdrain pipe shall discharge to an existing drainage system. Examples of drainage systems include swales, storm sewers, subsurface dispersal fields and surface waters.
    - (1) A check valve shall be installed when backflow is possible.
    - (2) Access for maintenance of the check-valve shall be provided.
9. Sand/Native Soil Interface Layer
- a. The interface layer is required when the design infiltration rate of the native soil is less than 3.6 inches/hour, as determined using DNR Technical Standard 1002, “Site Evaluation for Stormwater Infiltration.”
  - b. Three inches of sand shall be placed below the gravel or sand storage layer, and vertically mixed with the native soil interface to a depth of 2-4 inches.
  - c. Sand shall be washed quartz or silica 0.02 to 0.04 inches in diameter (USDA Coarse Sand). Calcium carbonated, dolomitic sand, and other substitutions are not allowed.
10. Design Infiltration Rate – The design infiltration rate of the native soil shall not exceed the rate identified in accordance with WDNR Conservation Practice Standard 1002 “Site Evaluation for Stormwater Infiltration”.
11. Observation Wells – If there is no underdrain, one or more observation wells shall be installed to monitor drainage from the device. There shall

be a minimum of one well per 1,000 square feet of *effective infiltration area*. The wells shall be:

- a. Located at the center of each section being monitored.
- b. A minimum 6 inch diameter slotted PVC pipe, anchored vertically to a footplate at the bottom of the bioretention device. The top of the pipe shall be high enough to prevent the entry of water ponded within the infiltration device.
- c. Have a secured aboveground cap.

**C. Construction Sequencing and Oversight –** A person trained and experienced in the construction, operation and maintenance of infiltration devices shall be responsible for construction of the device. The following apply:

- 1. Construction Site Stabilization – Construction site runoff from disturbed areas shall not be allowed to enter the bioretention device. Runoff from pervious areas shall be diverted from the device until the pervious areas have undergone *final stabilization*.
- 2. Suitable Weather – Construction shall be suspended during periods of rainfall or snowmelt. Construction shall remain suspended if ponded water is present or if residual soil moisture contributes significantly to the potential for soil smearing, clumping or other forms of compaction.
- 3. Compaction Avoidance – Compaction and smearing of the soils beneath the floor and side slopes of the bioretention area, and compaction of the soils used for backfill in the soil planting bed, shall be minimized. During site development, the area dedicated to the bioretention device shall be cordoned off to prevent access by *heavy equipment*. Acceptable equipment for constructing the bioretention device includes excavation hoes, light equipment with turf type tires, marsh equipment or wide-track loaders.
- 4. Compaction Remediation – If compaction occurs at the base of the bioretention device, the soil shall be refractured to a depth of at least 12 inches. If smearing occurs, the smeared areas of the interface shall be corrected by raking or roto-tilling.

5. Placement and Settling of Engineered Soil – The following apply:
  - a. Prior to placement in the bioretention device, the engineered soil shall be pre-mixed and the moisture content shall be low enough to prevent clumping and compaction during placement.
  - b. The engineered soil shall be placed in multiple lifts, each approximately 12 inches in depth.
  - c. Steps may be taken to induce mild settling of the engineered soil bed as needed to prepare a stable planting medium and to stabilize the ponding depth. Vibrating plate-style compactors shall not be used to induce settling.
6. Planting – The entire soil planting bed shall be mulched prior to planting vegetation to help prevent compaction of the planting soil during the planting process. Mulch shall be pushed aside for the placement of each plant.

## VI. Considerations

- A. This infiltration device is especially suitable where other benefits are desired such as shade, windbreak, noise absorption, reduction in reflected light, microhabitat for plants and wildlife and improved aesthetics.
- B. Place the infiltration device in a site that is visible to encourage routine up-keep and maintenance. Choose a site that provides ample room for maintenance access to all parts of the device. Consider traffic visibility and other safety issues when siting the infiltration device.
- C. The bioretention device may be constructed as a filtration and recovery system followed by discharge to a storm sewer or surface outlet. Table 2 shows estimated pollutant removal rates for bioretention when used as a filtration device:

<b>Pollutant</b>	<b>Removal Rate (percent)</b>
Total Suspended Solids	90 <sup>1</sup>
Metals (Cu, Zn, Pb)	> 95 <sup>2</sup>
Total Phosphorus	80 <sup>3</sup>
Total Kjeldahl Nitrogen	65-75 <sup>3</sup>
Ammonium	60-80 <sup>3</sup>
Organics	90 <sup>1</sup>
Bacteria	90 <sup>1</sup>

Source: <sup>1</sup>Prince George's County Department of Environmental Resources, 1993

<sup>2</sup>Davis, et al., 2003.

<sup>3</sup>Davis, et al., 2001.

- D. This infiltration device is not suitable for treating chlorides. Chloride use on source areas tributary to the bioretention device can be reduced or eliminated by minimizing the amount of compound used, using alternative de-icers or using clean sand. Aggressive sweeping in these areas, along with pretreatment sumps and filter strips, will reduce the impact of the sand on the bioretention device.
- E. A maximum drainage area is established to protect the device and reduce risk of failure. Potential problems such as erosion at the inflow points, disruption of the mulch layer, premature clogging of the device and inputs of chlorides and sodium will be reduced. Additionally, numerous smaller bioretention devices are expected to have better long term performance when compared to one large device. For large impervious areas, such as parking lots, dividing the drainage area up into smaller portions (0.5 – 1 acre) is recommended. If the total drainage area to a treatment device must be larger than 2 acres, an alternative practice should be selected.
- F. Longevity of the engineered soil is decreased by clogging, reduced cation exchange capacity and accumulation of sodium. Clogging problems can be reduced by limiting the input of sediment. Cation exchange capacity can be rejuvenated by the replacement of the engineered soil. Sodium accumulation can be countered by adding gypsum to the soil and/or by allowing about 1" of clean water to percolate through the planting bed 3 to 4 times in the spring
- G. Erosion at the inlet to the bioretention device can be reduced by using a sump inlet or gravel bed. Level spreading can be enhanced by the use of a level spreader or by using multiple pipe inlets.

- H. Pretreatment - Pretreatment will extend the life of the bioretention device, particularly when runoff is from parking lots and streets. Alternatives include grass channels, grass filter strips, sumps or forebays. Sumps and forebays should be sized to trap coarse sand (.02 - .04 inches). Table 3 provides sizing guidelines for pretreatment grass channels. Table 4 provides guidelines for sizing filter strips. Pretreatment is not considered part of the effective infiltration area for purposes of section NR 151.12(5)(c) or NR 151.24(5)(a), Wis. Adm. Code.
- I. When possible, the dimensions of the planting bed should have a minimum width of 10 feet, a minimum

length of 15 feet and a width to length ratio of about 2:1.

- J. If no vegetated pretreatment area is provided, snow may be piled upgradient of the bioretention device, preferably upgradient of the pretreatment forebay or sump. If a vegetated pretreatment area, such as a filter strip, is provided, it may be used for snow storage but heavy machinery should not be driven onto or across the vegetated area.

<b>Table 3. Pretreatment Grass Channel Guidance</b>	
The grass channel length should be at least 20 feet long. A level spreader should be used between the grass channel and the bioretention device.	
The channel shape should have:	
<ul style="list-style-type: none"> <li>• A parabolic or a trapezoidal cross-section with a bottom width of 2 to 8 feet.</li> <li>• Channel side slopes that are 3 horizontal:1 vertical or flatter.</li> <li>• Flow velocities under 1 fps for the 1-year, 24-hour design storm.</li> <li>• Flow depth 4 inches or less for the 1-year, 24-hour design storm.</li> </ul>	

<b>Table 4. Pretreatment Filter Strip Sizing Guidance</b>									
Parameter	Stormwater Runoff Inflow Approach From Impervious Parking Lots				Stormwater Runoff Inflow Approach From Lawns/Landscaped Areas				Notes
	35		75		75		150		
Maximum inflow approach length (feet)	35		75		75		150		
Filter strip slope	≤2%	>2%	≤2%	>2%	≤2%	>2%	≤2%	>2%	Maximum Slope = 6%
Filter strip Minimum length	10'	15'	20'	25'	10'	12'	15'	18'	

Example: To pretreat runoff that flows 75 feet across a parking lot before reaching the bioretention device, the filter strip should be 20 feet long if the filter strip slope is <2% and 25 feet long if the filter strip slope is over 2%.

- K. Regulatory Sizing “Caps” – If a bioretention device designed in accordance with this standard exceeds the maximum required effective infiltration area established in s. NR 151.12(5)(c), the designer may reduce the effective infiltration area in the final design. Such a reduction is not required, however, and sizing based on an approved model will achieve optimal infiltration and device longevity. If the size of the device is reduced as provided for in NR

151.12(5)(c), then the design should consider maximizing the pond depth and gravel storage thickness to compensate for the decrease in the effective infiltration area.

- L. The DNR has created a technical note that may be used to size bioretention devices. The “Technical Note for Sizing Infiltration Basins and Bioretention Devices To Meet State Of Wisconsin Stormwater

Infiltration Performance Standards” contains an approved method to determine the target stay-on depth and presents an approved infiltration model (RECARGA) that can be used to determine the effective infiltration area requirements. Other models may be used if approved. The Technical Note can be accessed at:  
<http://dnr.wi.gov/org/water/wm/nps/stormwater/techstds.htm#Post>

- M. If possible, settling of the planting bed should be accomplished naturally by allowing the filled bed to sit for several months. This will require over-filling the planting area so that after settling the proper ponding depth is achieved. Watering each lift of the planting bed to induce settling is not recommended unless water can be gently applied and the watered lift is allowed sufficient time (at least 24 hours) to thoroughly drain prior to adding the subsequent lift and at least 48 hours prior to adding mulch.
- N. The sidewalls of the planting bed and sand/gravel storage area may be sloped as needed to assure a stable configuration.
- O. To reduce lateral flow of water from the bioretention device towards pavement foundations, a geotextile fabric may be placed along the side-walls of the device.
- P. The optimal design pond depth for overall system function is 6-9 inches.
- Q. Plants can be selected to simulate a variety of plant communities. Forest and forest fringe communities should contain a mix of trees and shrubs. Trees should be planted 11-19 feet apart, shrubs 4-7 feet apart and shrub-tree mixes about 7 feet apart. Ornamental communities should contain a mix of shrubs and perennial herbaceous plants. The foliage canopy of ornamental communities should completely cover the soil planting bed at the end of two growing seasons. Meadows and meadow gardens that employ a mixture of grasses and wildflowers may also be planted.
- R. Use plant materials from a certified nursery that offers a plant warranty. Select plants that can thrive with minimum maintenance in the environment of the bioretention device and that have added wildlife value as food or cover. Section IX includes two references for plant selection (Shaw and Schmidt, 2003; Bannerman and Considine, 2003). It is recommended

that experienced individuals be consulted to assist with vegetation selection and establishment.

- S. The rooting depth of plants and the depth of the soil planting bed should be matched to prevent plant roots from clogging holes in the underdrain.
- T. A reasonable underdrain perforation safety factor is 2 to 4. The underdrain outlet may be fitted with an end wall and rodent shield if allowed by the local jurisdiction.
- U. A 72-hour time limit is established in this standard for draining water from a fully saturated bioretention device. This limit is established to reduce the risk of declining infiltration caused by persistent saturation at the native soil interface.

The maximum allowable thickness of the storage layer will depend on how much time is available to drain water from that layer after time is taken to drain water from the ponding area and engineered soil. The water in the ponding area and the engineered soil exits the bioretention device via the underdrain and the native soil. The water in the storage layer exits only via the native soil. The following equations may be used to determine the allowable storage layer thickness:

$$H_p = D_p / (K_u + K_n)$$

$$H_{ES} = (D_{ES} * P_{ES}) / (K_u + K_n)$$

$$D = (72 \text{ hours} - (H_p + H_{ES})) * K_n$$

$$T_{SL} = D / P_{SL}$$

Where:

- $H_p$  = Time to drain the ponding area (hours)
- $D_p$  = Depth of ponding area (inches)
- $K_u$  = Underdrain flow rate (inches/hour)
- $K_n$  = Native soil infiltration rate (inches/hour)
- $H_{ES}$  = Time to drain the engineered soil (hours)
- $D_{ES}$  = Depth of the engineered soil (inches)
- $P_{ES}$  = Porosity of engineered soil
- $D$  = Maximum depth of water in storage layer (inches)
- $T_{SL}$  = Thickness of storage layer (inches)
- $P_{SL}$  = Porosity of gravel storage layer

Using these equations, Table 5 shows sample storage layer thicknesses for a variety of conditions. Variables include pond depth, drawdown rate (underdrain flow rate ( $K_u$ ) + design infiltration rate ( $K_n$ )) and design infiltration rate ( $K_n$ ).

Table 5. Sample storage layer thicknesses (inches) that meet the 72-hour total device drain time								
Pond Depth (in)	Ku+Kn (in/hr)	Kn (in/hr)						
		0.07	0.11	0.13	0.24	0.5	1.63	3.6
Storage Layer Thickness (inches)								
6	0.24	1	2	3	6			
6	0.5	9	14	16	29	48		
6	1.63	13	21	25	45	48	48	
6	3.6	14	23	27	48	48	48	48
9	0.5	7	12	14	25	48		
9	1.63	13	20	24	44	48	48	
9	3.6	14	22	26	48	48	48	48
12	1.63	12	20	23	43	48	48	
12	3.6	14	22	26	48	48	48	48

The following assumptions are incorporated into Table 5:

- Maximum pond depth will drain in 24 hours or less,
- The maximum allowable storage layer thickness is 48 inches,
- The engineered soil depth is 36 inches,
- Engineered soil porosity is assumed to be 27%,
- Storage layer porosity is assumed to be 33%.

V. A municipal easement may be acquired to facilitate maintenance.

W. Once the design depth of the storage layer is determined, it can be reduced as long as the total storage volume is maintained. This will require making a corresponding increase in the surface area of the storage layer. This may be necessary at some sites to meet the required groundwater separation.

## VII. Plans and Specifications

A. Plans and specifications shall be prepared for each specific field site in accordance with the criteria of this standard and shall describe the requirements for applying the infiltration device to achieve its intended use. Plans shall specify the materials, construction processes and sequence, location, size, and elevations of all components of the infiltration device to allow for certification of construction upon completion.

B. The plans shall include:

1. A vicinity map showing the drainage area, device location and flow paths to and from the device.
2. A plan view of the device showing the shape, dimensions, flow paths to and from the device, vegetation plan (including plant names and planting locations) and pretreatment components.

3. Longitudinal and cross-section views of the device

C. Specifications shall include the following:

1. A description of the contractor's responsibilities.
2. A requirement for the contractor to submit certifications prior to use for all materials that are to be incorporated into the project stating compliance with the standards.
3. Initial maintenance requirements.
4. Additional specifications relating to vegetation, including:
  - a. Site preparation sufficient to establish and grow selected species.
  - b. Planting dates, care, and handling of the plants to ensure that planted materials have an acceptable rate of survival, including weeding and watering responsibilities.
  - c. Vegetation warranty period

## VIII. Operation and Maintenance

A. An operation and maintenance plan shall be developed that is consistent with the purposes of this infiltration device, its intended life, safety requirements and the criteria for its design. The plan shall be developed for inspection, operation and maintenance of the device. The plan shall assign responsibility for activities and the qualifications of the personnel performing the work.



- B. At a minimum, the plan shall address operation and maintenance of all vegetative and non-vegetative components identified in this standard.
- C. At a minimum, the plan shall also include details on the following: frequency of inspections; inspecting for sediment buildup and clogging, erosion, trash and debris build-up and plant health; frequency of sediment removal; disposal locations for sediment; pH testing of the soil; frequency of soil, mulch, and plant replacement; inlet and outlet maintenance, and providing access to perform the operation and maintenance activities. The maintenance activities in the plan shall be consistent with Table 6.

<b>Table 6. Typical Maintenance Activities for Bioretention Areas</b>	
<b>ACTIVITY</b>	<b>FREQUENCY</b>
Water Plants	As necessary during first growing season
Water as necessary during dry periods	As needed after first growing season
Re-mulch void areas	As needed
Treat diseased trees and shrubs	As needed
Inspect soil and repair eroded areas	Monthly
Remove liter and debris	Monthly
Add additional mulch	Once per year

- D. Snow shall not be dumped directly onto the conditioned planting bed.

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## X. Definitions

*Approved Model* (V.B.): A computer model with an infiltration component that has been approved by the applicable regulatory authorities.

*Curtain Drain* (V.B.3.b.(3)): An overflow system structures consisting of vertical columns of gravel or sand, called curtain drains, that allow the water quality volume to bypass the soil planting bed and discharge untreated to ground water.

*Design Drawdown Rate* (V.B.4.b.). The rate (inches/hour) at which water drains from the ponding area through a combination of infiltration into the native soil and loss through the underdrain.

*Design Infiltration Rate* (V.B.8.c.): The infiltration rate of the native soil selected as a basis to size an infiltration device.

*Design Ponding Depth* (V.B.4.a.) The distance (inches) between the top of the mulch layer and the invert of the overflow structure.

*Effective Infiltration Area* (V.B.11) The area of the infiltration system that is used to infiltrate runoff, not to include the area used for site access, berms or pretreatment. For bioretention, the effective infiltration area is considered to be the surface area of the bottom of the excavated hole, at the native soil interface.

*Final Stabilization* (V.C.1) A condition achieved on pervious areas when uniform perennial vegetative cover has been established with a density of at least 70%.

*Fully Saturated*(V.B.7.b) A bioretention device that has a saturated storage layer, a saturated engineered soil layer and water ponded to the invert of the overflow pipe in the ponding area.

*Heavy Equipment* (V.C.3): Equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires.

*Hydraulically connected* (V.A.2.a): Two entities are said to be hydraulically connected if a surface or subsurface conduit exists between the two such that water is transmitted from one entity to the other.

*Infiltration* (II): Entry and movement of precipitation or runoff into or through the soil. It includes water that may be subsequently evapotranspired. It does not include water discharged through underdrains or overflow devices.

*Infiltration Device* (I): A structure or mechanism engineered to facilitate the entry and movement of precipitation or runoff into or through the soil.

*Native Soil* (I): The undisturbed soil, situated below the bioretention device.

*NR 151* (V.B.6.d.(1)): Chapter NR 151, Wisconsin Administrative Code (Runoff Management) that includes State of Wisconsin performance standards for infiltration.

*Pretreatment* (V.B.1): Preliminary reduction of pollutants from storm water prior to discharge of the storm water to the bioretention device.

*Source Area* (III): A component of urban land use including rooftops, sidewalks, driveways, parking lots, storage areas, streets and lawns from which urban runoff pollutants and volumes are generated during periods of snow melt and rainfall runoff.

*Target Stay-on Depth* (V.B.2): The amount of infiltration required on an average annual basis. It is the portion of the annual rainfall (inches) on the development site that must be infiltrated on an annual basis to meet the infiltration goal.

*Total Device Drain Time* (V.B.7.b): The time it takes water to drain from a fully saturated bioretention device. This includes the time it takes to drain water from the ponding area, the engineered soil and the storage layer. Water from the ponding area and engineered soil exit via a combination of the underdrain and native soil. Water from the storage layer exits only via the native soil.

*Underdrain* (V.B.1.): A perforated drain pipe situated below the engineered soil bed and above the gravel storage layer.

*Underdrain Flow Rate* (V.B.8.c.): The rate at which water is discharged from the underdrain, as determined by the orifice flow equation.

Figure 1. Example of **Bioretention Device** – plan view

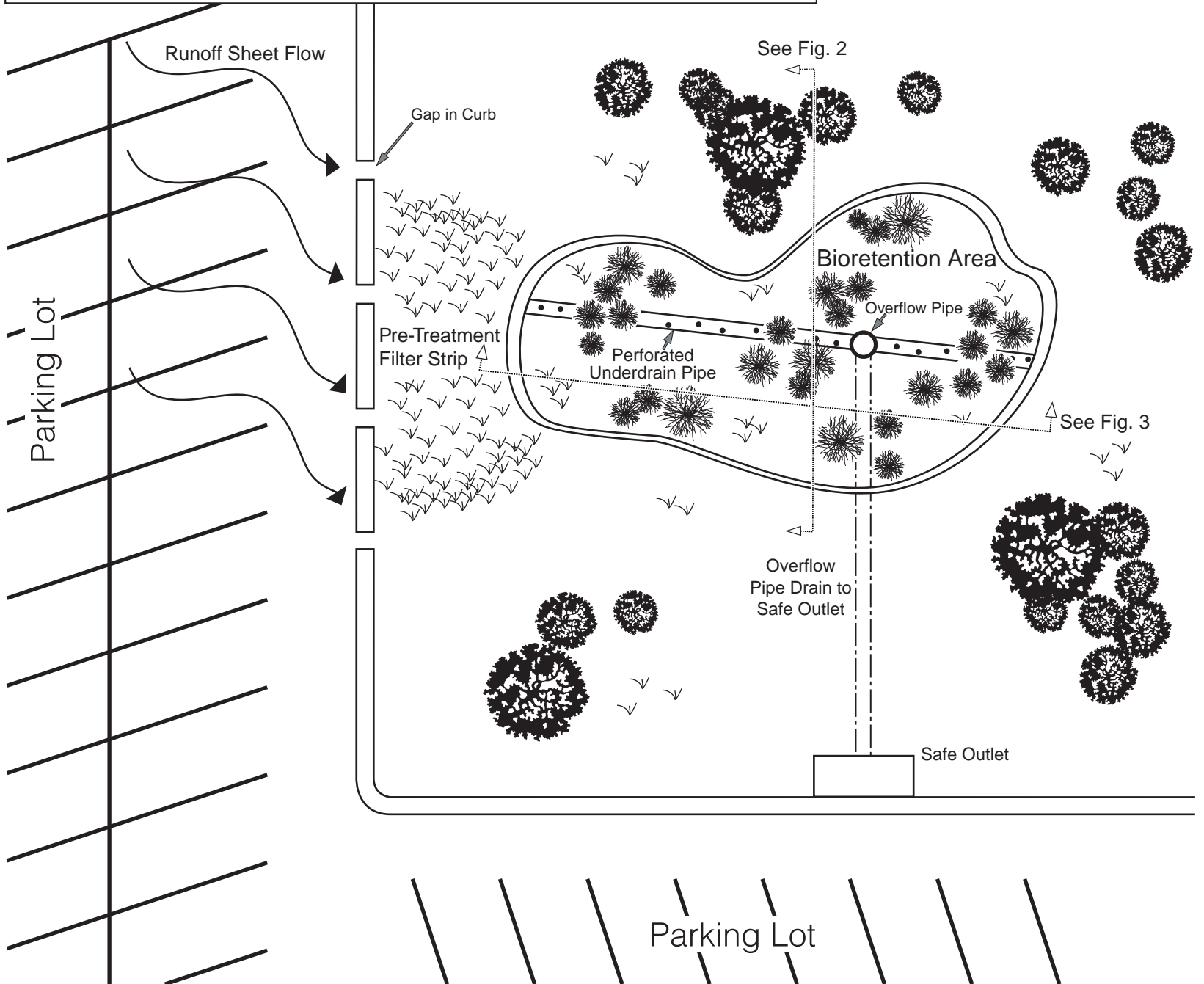


Figure 2. Example of **Bioretention Device** – cross-section across width of device

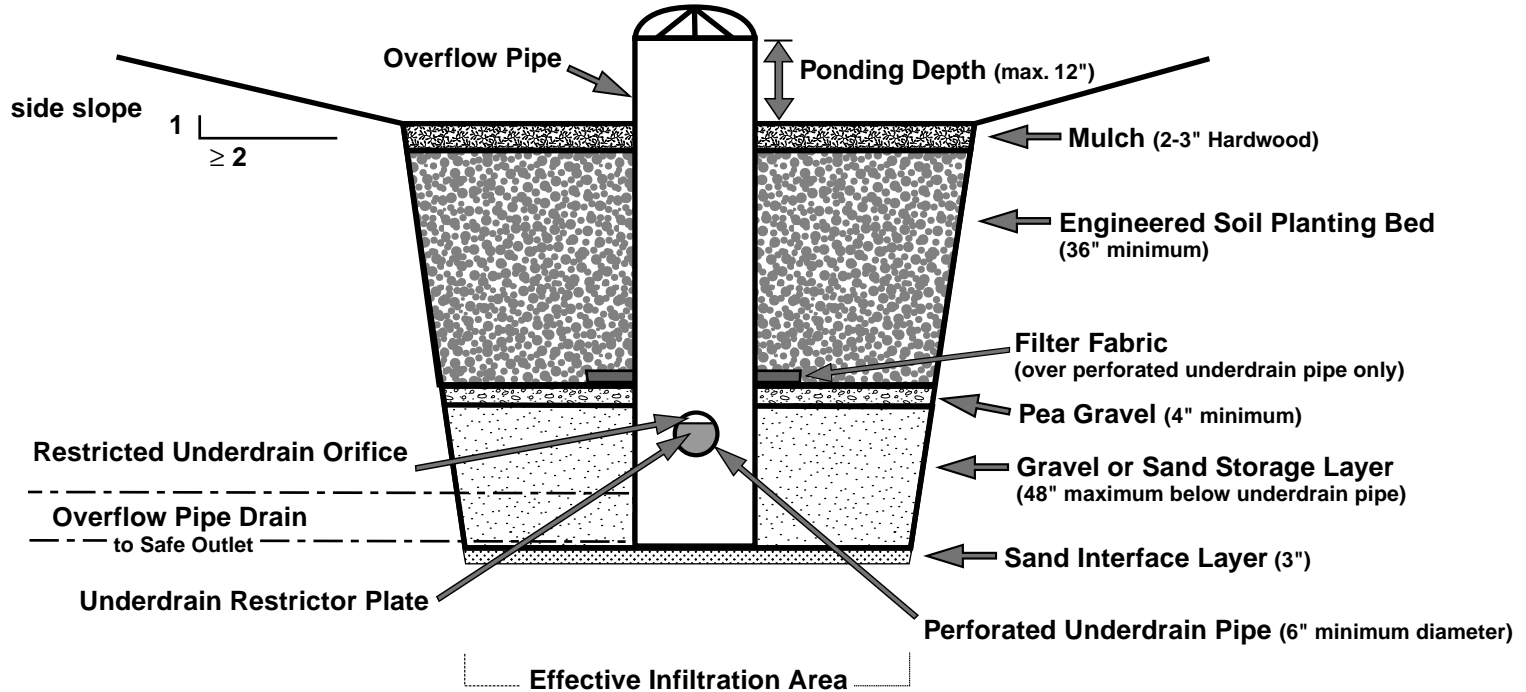
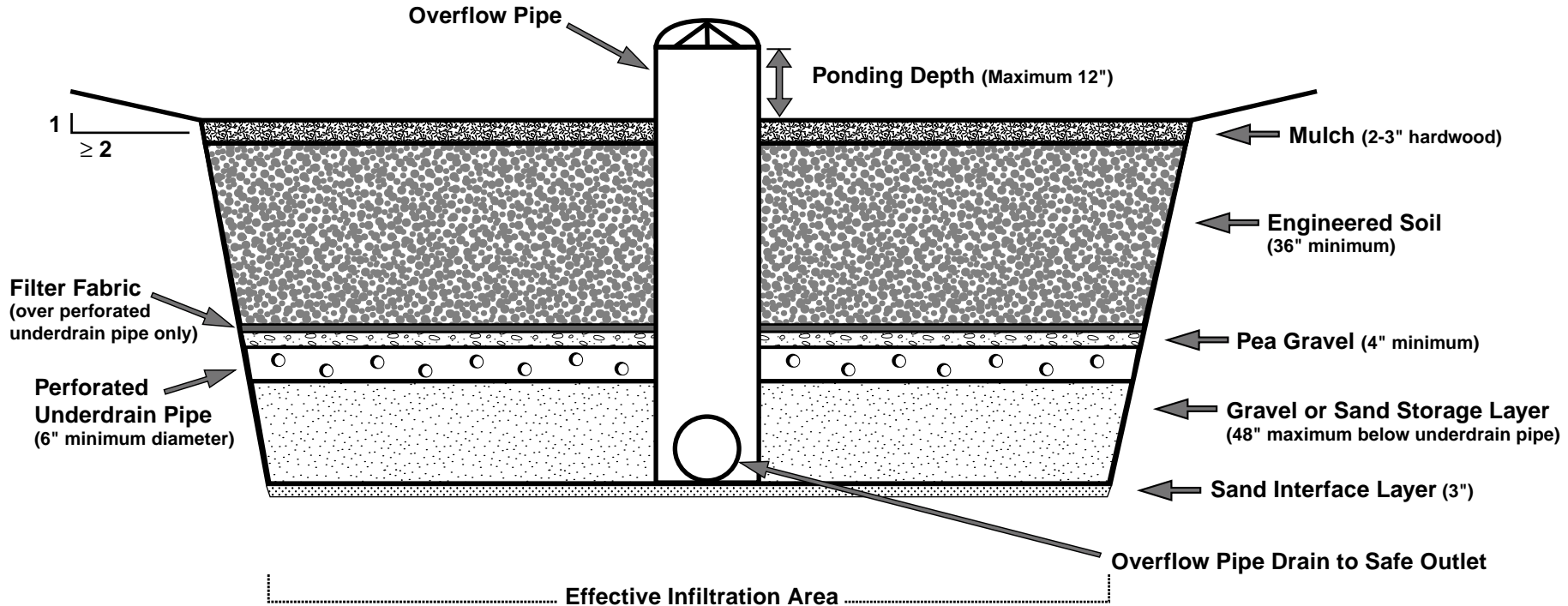
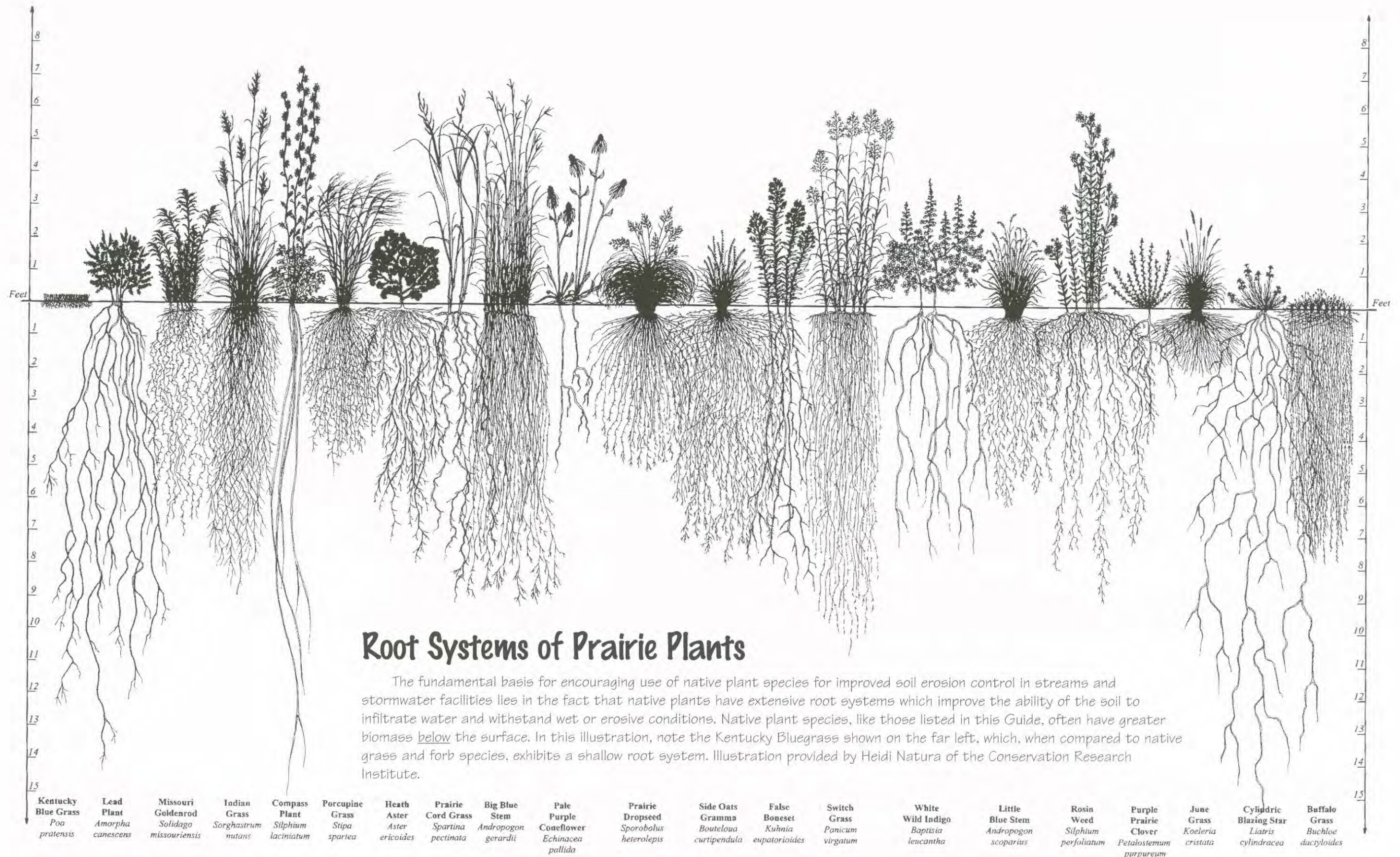


Figure 3. Example of **Bioretention Device** – cross-section across length of device





## Root Systems of Prairie Plants

The fundamental basis for encouraging use of native plant species for improved soil erosion control in streams and stormwater facilities lies in the fact that native plants have extensive root systems which improve the ability of the soil to infiltrate water and withstand wet or erosive conditions. Native plant species, like those listed in this Guide, often have greater biomass below the surface. In this illustration, note the Kentucky Bluegrass shown on the far left, which, when compared to native grass and forb species, exhibits a shallow root system. Illustration provided by Heidi Natura of the Conservation Research Institute.

## UWSP

### Spill Prevention, Control, & Countermeasures' Plan Training

#### SPCC Training Objectives:

- To provide oil-handling personnel information necessary for safe and proper management of oil (diesel fuel oil, used oil, transformer oil, and used vegetable oils);
- To contain and prevent the loss of oil; and
- To respond to spills or releases of oil.

To prevent discharges, procedures must be in place to operate equipment according to manufacturer's recommendations. Proper maintenance of equipment must be scheduled and completed. All personnel operating such equipment must be properly trained to operate that equipment.

If there is a spill or release of oil, clean-up is necessary. All spills, regardless of size, must be cleaned up. Spill kits, including absorbent booms, socks, &/or pads may be used to clean up oil. Efforts must be made to stop the leak and report it as soon as possible (if it goes "to the environment") to supervision and the EHS Officer (2320) or Protective Services (3456). A release to the environment may require reporting to the WI Dep't of Natural Resources, the National Response Center, and the Portage County Local Emergency Planning Committee (see the UW-SP Emergency Management Plan; Contact List; Environmental Compliance). WRR Environmental Services has been contracted by the State of Wisconsin to help with spill clean-up.

A release to the environment is defined as: Any amount of oil that produces a sheen on water and/or threatens navigable waters, including drainage ditches or enters a storm sewer; One gallon or more of a flammable liquid (such as gasoline) onto unpaved ground; Five gallons or more of a combustible liquid (such as diesel fuel, used oil, or mineral oil) onto unpaved ground; or the discharge of a federally listed substance in excess of its reportable quantity.

Applicable pollution control laws, rules, and regulations include; 40 CFR 112 (Oil Pollution Prevention), 29 CFR 1910.38 (Emergency Action Plan), and Wisconsin Spill Law, Chapter 292.11.

General facility operations as they relate to our SPCC Plan include hazardous waste generation (drums are stored in the hazardous waste storage area); aboveground storage tanks of diesel fuel (two, outdoors and the others are indoors), used lubricating oil (one, indoors), transformer oil (one, outdoors), and used vegetable oil (two, outdoors). The university includes many buildings requiring maintenance, several have elevators (21 using hydraulic oil). The boilerhouse has four boilers; coal, natural gas, and #2 diesel oil are fuels for the boilers.

The contents of the Spill Prevention, Control, and Countermeasures' Plan comply with 40 CFR 112.7 and 112.8, and include a summary of the university, a description of the types of oil in use, an inventory of all storage sites covered by 40 CFR 112.7 and 112.8, and requirements for spill responses, security, training, inspections and records.

Inspections of the oil storage sites are required monthly; these inspections must be documented and kept at least 3 years. Inspection documents are to be sent to the Environmental Health & Safety Officer monthly for retention. Integrity testing is not required for ASTs 1-4 as indicated in section 12 of the SPCC Plan because the tanks are double-hulled and we are able to inspect beneath them.

The EHS Officer is responsible for discharge prevention. Training is required annually for those persons responsible for handling oil. Training includes discussions related to discharges, responses, malfunctioning components, clean-up, and recently developed precautionary measures.

**UNIVERSITY OF WISCONSIN – STEVENS POINT**  
**STORMWATER MANAGEMENT SYSTEMS**  
**"BIOFILTRATION/ BIORETENTION DEVICE AND GRASS SWALES"**  
**CITY OF STEVENS POINT**  
**APRIL 2006**

**Maintenance Inspection Form**  
**Storm Water Management Systems**  
**Biofiltration/Bioretention Devices**  
**Grass Swales**

Inspection Date: \_\_\_\_\_

Inspector Name: \_\_\_\_\_ Subdivision: \_\_\_\_\_  
 Company Name: \_\_\_\_\_  
 Company Address: \_\_\_\_\_  
 Company Phone Number: \_\_\_\_\_  
 Company Fax Number: \_\_\_\_\_

Storm Water:  
 Biofiltration Device   
 Detention Pond   
 Grass Swale

Items Inspected	Checked		Maintenance Needed		Remarks
	Yes	No	Yes	No	
<b>I. Bioretention components</b>					
<b>A. Embankment and Emergency Spillway</b>					
1. Vegetation and ground cover adequate					
2. Embankment erosion					
3. Animal burrows					
4. Unauthorized plantings					
5. Cracking, bulging, or sliding of berm					
a. Upstream face					
b. Downstream face					
<b>B. Riser and Principal Spillway</b>					
Type: Reinforced concrete ___					
Corrugated pipe ___					
Masonry ___					
1. Low flow orifice obstructed					



2. Low flow trash rack					
a. Debris removal necessary					
b. Corrosion control					
3. Weir trash rack maintenance					
a. Debris removal necessary					
b. Corrosion control					
4. Excessive sediment accumulation inside riser					
5. Concrete/Masonry condition riser and barrels					
a. Cracks or displacement					
b. Minor spalling (<1")					
c. Major spalling (rebars exposed)					
d. Joint failures					
e. Water tightness					

6. PVC pipe condition					
7. Outfall channels functioning					
8. Other (specify)					
D. Sediment Forebays					
1. Sedimentation noted					
2. Sediment cleanout					

<b>Bioretention components</b>					
E. Condition of Outfalls Into Bioretention Device					
1. Riprap failures					
2. Slope erosion					
3. Storm drain pipes					
4. Endwalls/headwalls					
5. Other (specify)					
F. Other					
1. Encroachments on biofilter or easement area					
2. Complaints from residents (describe on back)					
3. Aesthetics					

a. Grass mowing required					
b. ____ removal needed					
c. Other (specify)					
4. Any public hazards (specify)					
5. Maintenance access					

II. Summary

1. Inspectors Remarks:

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2. Overall Condition of Facility (Check One)

- Acceptable
- Unacceptable

3. Dates any maintenance must be completed by:

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## General Stormwater Resources

Minnesota Stormwater Manual: This manual provides information about a variety of stormwater BMPs and topics in the State of Minnesota. Many of the topics are applicable to stormwater in Wisconsin.

<http://www.pca.state.mn.us/water/stormwater/stormwater-manual.html>

EPA – Post-Construction Stormwater Management: This website provides a variety of fact sheets regarding various structural and non-structural BMPs from the EPA.

<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/post.cfm>

Storm Water Center: This provides a link to a manual titled *Stormwater Practices for Cold Climates* that was published by the Center for Watershed Protection. The manual is free for download.

<http://www.stormwatercenter.net/Cold%20Climates/cold-climates.htm>

Urban Small Sites BMP Manual: This information was put together by an organization involving various municipalities around the Twin Cities, in Minnesota. It includes information structural and non-structural BMPs that are practical for urban areas.

<http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm>

The WDNR website has general information available about stormwater runoff. It contains information specific to Wisconsin and also up to date technical standards.

<http://www.dnr.state.wi.us/org/water/wm/nps/index.htm>