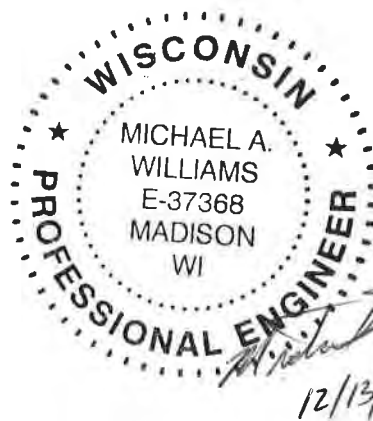


Report for City of Portage, Wisconsin

Stormwater Quality Management Plan Update



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**SECTION 1
INTRODUCTION**

1.01 BACKGROUND

This report has been prompted by the need for the City of Portage, Wisconsin (City) to update previous stormwater planning efforts (January 2008 Stormwater Management Plan) for the City for purposes of Wisconsin River Basin and Upper Fox and Wolf River Total Maximum Daily Load (TMDL) compliance purposes. In addition, the City is a United States Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) and Wisconsin Pollutant Discharge Elimination System (WPDES)-permitted area. The City is considered a significant contributor under Wisconsin Administrative Code (WAC), Department of Natural Resources, Chapter NR 216 (NR 216). A significant contributor is an entity that discharges pollutants to waters of the state that contribute to or have the reasonable potential to contribute to an exceedance of a water quality standard. This permit program is aimed at reduction of pollutants associated with nonpoint source stormwater runoff. The effective date of the current permit is May 1, 2019, and it is subject to renewal April 30, 2024. The permit is titled *General Permit to Discharge under the Wisconsin Pollutant Discharge Elimination System WPDES Permit No. WI-S050075-3*. A copy of the permit is provided in Appendix A.

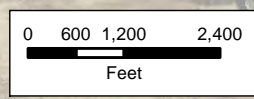
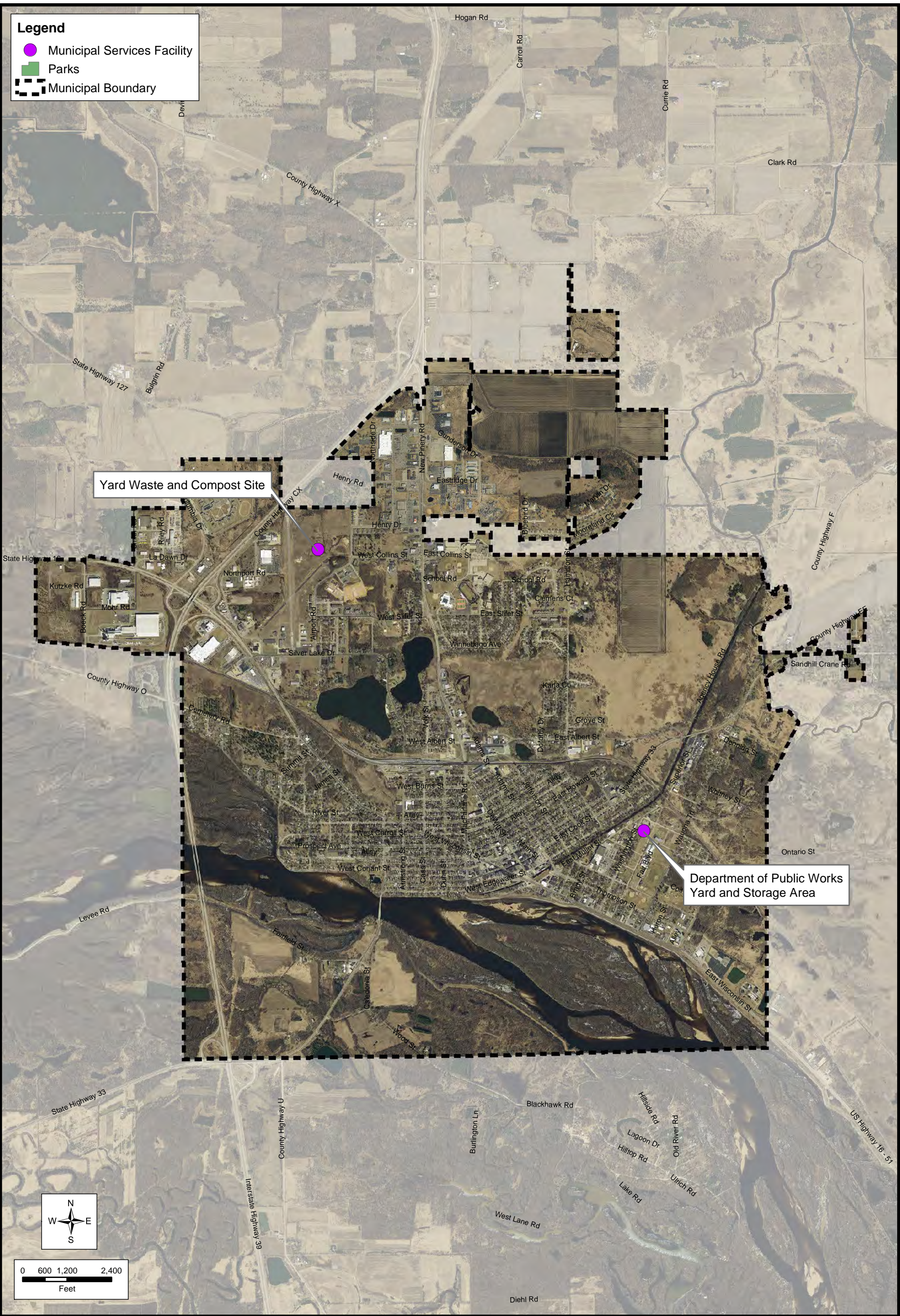
This plan updates and improves upon identified measures to improve the quality of nonpoint source (NPS) stormwater runoff discharging to the Wisconsin River, Upper Fox River, and other City natural resources, while being consistent with the requirements of the permit. An overview of current stormwater management infrastructure, policies, and programs in the City is included within this report, as well as a plan for future improvements. Figure 1.01-1 shows the City boundary, City parks, and public works buildings.

This report is comprised of seven sections:

1. Section 1 provides introductory and general information regarding stormwater management practices (SMPs) and methodologies used in the study.
2. Section 2 provides information about the contributing watershed.
3. Section 3 provides an overview of current policies, practices, and issues in the City, and recommends possible modifications for consideration to improve NPS runoff quality.
4. Section 4 summarizes water quality modeling for baseline and current conditions in the City and summarizes the pollutant reductions each achieves in their Wisconsin River Basin and Upper Fox and Wolf River TMDL reaches.
5. Section 5 discusses stormwater management alternatives investigated, potential level of buy-in to watershed adaptive management (WAM), and the potential for water quality trading (WQT).
6. Section 6 provides a review of the City's current stormwater utility.
7. Section 7 provides a possible funding and implementation plan.

Legend

- Municipal Services Facility
- Parks
- Municipal Boundary



This project is funded by a Wisconsin Department of Natural Resources (WDNR) Urban Nonpoint Source and Stormwater (UNPS&SW) Grant (No. USP-11271-Y18) and the City.

1.02 PLAN OBJECTIVES AND CRITERIA

A. Regulatory Issues

A primary concern in land development has historically been quickly draining stormwater runoff. Typically, curbs, gutters, and storm sewer systems have been constructed to provide for efficient stormwater drainage. However, along with efficiently transporting stormwater runoff, storm sewers are also efficient at conveying accumulated pollutants from parking lots, streets, rooftops, lawns, and other areas to adjacent waterways. Sediment, heavy metals, pesticides, nutrients, bacteria, and oxygen-demanding organic waste from pollutant “source areas” have been recognized as a cause of water quality degradation in streams, lakes, ponds, and other water resources. While not common within the City limits, drainage of developed lands employing a “rural” road cross section with grassed swales somewhat mitigates the effect of development but itself is not able to meet WDNR stormwater quality goals.

In recognition of the potential harmful impacts of stormwater runoff, regulations have been implemented at the federal and state levels. In response to the 1987 Amendments to the Clean Water Act (CWA), USEPA developed Phase 1 of the NPDES Stormwater Program in 1990. The Phase 1 program addressed sources of stormwater runoff that had the greatest potential to negatively impact water quality. Under Phase 1, USEPA required NPDES permit coverage for stormwater discharges from medium and large municipal separate storm sewer systems (MS4s) located in incorporated places or counties with populations of 100,000 or more.

Subsequent to the Phase 1 program, in October 1999, the USEPA adopted Phase 2 NPDES stormwater runoff requirements, applicable to municipalities located in urbanized areas (UAs), as defined by the United States Census Bureau. A UA is a land area comprising one or more places and the adjacent densely settled surrounding area that together have a residential population of at least 50,000 and an overall population density of at least 500 people per square mile. The City is considered a Phase 2 municipality.

The City’s stormwater permit requires implementation of the following measures and tracking of these measures through identification of measurable goals.

1. Public Education and Outreach: Implementation of a public education and outreach program to increase community awareness of stormwater pollution impacts on waters of the state, thereby encouraging changes in public behavior to reduce such impacts.
2. Public Involvement and Participation: Public involvement and participation in efforts to reduce NPS pollutant discharges and inform the public of permit-required activities.
3. Illicit Discharge Detection and Elimination (IDDE): Development of an illicit discharge detection and elimination program with the primary goal of eliminating nonstormwater discharges to the storm sewer system. A primary component of this program is

development of mapping to identify storm sewer outfalls to adjacent water bodies. In addition, the illicit discharge ordinance should be updated, if necessary.

4. Construction Site Pollution Control: Development of a program to reduce pollutants in stormwater runoff from construction activities that result in a land disturbance of greater than or equal to one acre. This includes requesting authority to regulate erosion control at public buildings from the Wisconsin Department of Commerce pursuant to Section 101.1206(4), Wisconsin Statutes. It should be noted that the City is required to administer a program as restrictive as the requirements in WAC, Department of Natural Resources, Chapter NR 151 (NR 151), (see Appendix B).
5. Postconstruction Stormwater Management: Development of a program to control the quality of stormwater runoff from new development and redevelopment projects after construction is completed that disturb an area greater than or equal to one acre. It should be noted that the City is required to administer a program as restrictive as the requirements in NR 151 (see Appendix B).
6. Pollution Prevention: Development and implementation of an operation and maintenance program to prevent pollution and facilitate good housekeeping practices for municipal operations.
7. Stormwater Quality Management: Development and implementation of a municipal stormwater management program that, to the “maximum extent practicable” as documented by stormwater quality modeling, achieves a reduction in total suspended solids (TSS) in the WPDES-designated area of at least 20 percent. The City is also subject to the TSS and total phosphorus (TP) wasteload allocations (in the form of a percent reduction) included in the Wisconsin River Basin and Upper Fox and Wolf River TMDLs.
8. Storm Sewer System Map: Development of a storm sewer system map of the MS4.
9. Annual Report: Submittal of an annual report to WDNR documenting permit-related activities.
10. Cooperation: By written agreement, implement the City’s permit with another municipality or contract with another entity to perform one or more of the conditions of the permit.

In the State of Wisconsin, WDNR is responsible for administering the USEPA Stormwater Permit Program. The WDNR administers this program through NR 216, which requires affected municipalities to implement the minimum control measures previously listed to the maximum extent practicable. To better define maximum extent practicable, WDNR has adopted specific stormwater management performance standards as defined in the NR 151 administrative rules.

As part of the permit, the City must also comply with Impaired Waterbodies and TMDL Requirements. The impaired waterbody requirements require the City to include a written section in the stormwater

management program that discusses the control measures and practices that will be implemented to collectively eliminate the pollutant of concern from discharging into the impaired waterbody. The City is within the Wisconsin River Basin TMDL, which was approved in April 2019, and the Upper Fox and Wolf River TMDL, which is currently in development. To comply with the TMDL requirements, the City must adhere to the following compliance schedule.

Submitted with the annual report due on March 31, 2022, must be an updated storm sewer system map of the MS4 including the following:

1. The current municipal boundary.
2. The TMDL researched boundaries within the municipal boundary, and the area in acres of each TMDL researched within the municipal boundary.
3. The MS4 drainage boundary associated with each TMDL researched, and the area in acres of the MS4 drainage boundary associated with each TMDL researched.
4. Areas within the municipal boundary that should be excluded from the TMDL analysis and reasoning for the exclusion(s).

Included with the annual report due March 31, 2022, the City must submit a tabular summary that contains the following for each MS4 drainage boundary associated with each TMDL researched and for each pollutant of concern:

1. The City's percent reduction needed to comply with its TMDL wasteload allocation from the no-controls modeling condition. The no-controls modeling condition means taking zero credit for stormwater control measures that reduce the discharge of pollutants.
2. The modeled MS4 annual average pollutant load without stormwater control measures (Baseline Conditions).
3. The modeled MS4 annual average pollutant load with existing stormwater control measures (Existing Conditions).
4. The percent reduction in pollutant load achieved calculated from the baseline condition and the existing controls condition.
5. The existing stormwater control measures including the type, area treated in acres, the pollutant load reduction efficiency, and confirmation of the permittee's authority for long-term maintenance of each practice.

If the City is not achieving the applicable percent reductions needed to comply with its TMDL wasteload allocation for each TMDL researched, a written plan must be submitted to WDNR that describes how the City will make progress toward achieving compliance and must include the following by March 31, 2023:

1. Recommendations and options for stormwater control measures that will be considered to reduce the discharge of each pollutant of concern.
2. A proposed schedule for implementation of the recommendations and options identified.
3. A cost-effectiveness analysis for implementation of the recommendations and options identified.

B. Plan Objectives

The objectives of this plan are consistent with goals of USEPA and WDNR in addressing nonpoint source runoff sources. These objectives include the following:

1. Improve the quality of water in receiving waterways, which include the Wisconsin River and the Upper Fox River, and groundwater recharged by infiltrated stormwater.
2. Increase citizen awareness of issues associated with stormwater runoff.
3. Implement best management practices (BMPs) to comply with USEPA and WDNR requirements.

C. BMPs

WDNR defines BMPs as structural or nonstructural measures, practices, techniques, or devices employed to avoid or minimize soil, sediment, or pollutants carried in runoff to waters of the state. A BMP may include any program, technology, process, siting criteria, operational method, measure, or device that controls, prevents, removes, or reduces pollution. Nonstructural measures may include public information and education of homeowners to reduce their impacts on NPS pollution and “source controls,” such as street sweeping and leaf collection. Structural BMPs may include construction of wet detention basins, infiltration basins, vegetated swales, and similar measures.

An effective stormwater management program will include a mixture of structural and nonstructural BMPs and effective source controls to reduce NPS runoff to receiving waterways. This plan will discuss or recommend a series of City-wide and basin-specific BMPs to reduce NPS runoff to the Wisconsin River and Upper Fox River and other waters of the state.

1.03 SCOPE OF STUDY

This study was undertaken to meet requirements of the NPDES and WPDES stormwater permitting program. Primary tasks included development of an updated SMP for the City, which are summarized as follows.

A. Administration and Meetings

1. Assist in submittal of up to two grant progress reports and reimbursement requests. Prepare and submit the WDNR Final Report (Form 3400-189).
2. Participate in up to four meetings as follows:
 - a. Meeting No. 1–Kickoff Meeting
 - b. Meeting No. 2–Progress Meeting
 - c. Meeting No. 3–Progress Meeting to discuss draft plan
 - d. Meeting No. 4–Presentation of final plan

B. Stormwater Quality Modeling, Alternatives Analysis, and Implementation Plan

1. Provide up to two days of field survey and inventory of existing stormwater BMPs in the City. Provide a geographic information system (GIS) shapefile showing the location of the surveyed BMPs.
2. Provide an updated stormwater system map for the City consistent with the proposed WPDES Permit No. WI-S050181-1 based on information provided by the City.
3. Provide a tabular summary for the City consistent with the proposed WPDES Permit No. WI-S050181-1.
4. Provide updated City-wide stormwater quality modeling to be consistent with the WDNR's MS4-TMDL guidance. Modeling will be performed in the Source Loading and Management Model (WinSLAMM v10.4.1), herein referred to as WinSLAMM for TSS and TP.
5. Identify and analyze up to three alternatives for TMDL compliance within the City's limits consisting of a combination of the following various implementation methods being considered. Provide a figure, analysis, and opinion of probable cost (OPC) for each alternative.
 - a. Ordinance review and updates.
 - b. Structural management practices.
 - c. Operational management practices.
 - d. Streambank stabilization.

6. Provide a written section in the plan discussing the mechanism for achieving TMDL compliance through WQT. A concept level cost to achieve TMDL compliance through WQT will be developed for comparison with TMDL compliance within the City's limits.
7. Develop a stormwater quality implementation plan considering engineering requirements, water quality benefit, available funding sources, land availability, and proximity to wetlands. The implementation plan will include prioritization of improvements, potential schedule of improvements, and a budgeting plan including identification of potential funding sources.

C. Stormwater Program Updates

1. Review and discuss revisions to the City's Public Education and Outreach and Public Involvement and Participation programs.
2. Review and discuss revisions to the City's construction site erosion control ordinance to be consistent with the most recent NR 151 revisions.
3. Review and discuss revisions to the City's stormwater management ordinance to be consistent with the most recent NR 151 revisions.
4. Review and discuss revisions to the City's IDDE programs and ordinances to be consistent with the WDNR's March 2012 guidance document. Provide illicit discharge field screening in 2019.
5. Review and discuss revisions to the existing City's Stormwater Pollution Prevention Plan (SWPPP) programs.
6. Provide information on the City's deicing activities based on information provided by the City.

D. Stormwater Utility Rate Review and Update

Provide a review of the City's existing stormwater utility budget and prepare a proposed stormwater utility budget. Prepare a rate base estimate of potential annual revenues for a range of stormwater utility rates. Prepare an estimate of potential impacts to various land use classes at up to ten parcels by comparing costs under a tax-based and a fee-based funding mechanism. Submit a narrative documenting concept level stormwater utility feasibility study efforts.

E. TMDL Stormwater Plan

Prepare a TMDL Stormwater Plan and submit it to the City in draft and final formats. Submit two copies of the draft and final plan to the City in a hard-copy format. Provide a portable document format (PDF) file copy of the draft and final plan to the City.

1.04 DEFINITIONS AND ABBREVIATIONS

The following definitions and abbreviations are presented as an aid to the reader.

- Average sediment depth–The average depth of deposited sediment measured over the entire pond area.
- Average current normal pool depth–The average depth of water measured over the entire pond area. This is the difference between the water surface and the top of sediment.
- Average current total pond depth–The average depth of the pond if all deposited sediment were removed. This is the difference between the water surface and the existing bottom of the pond.
- BMPs–Structural or nonstructural measures, practices, techniques, or devices that are employed to avoid or minimize soil, sediment, or pollutants carried in runoff to waters of the state.
- Catch basins–An inlet to a storm sewer equipped with a sediment sump and sometimes a hood on its outlet pipe to the downstream storm sewer.
- Control structure–The manmade structure that controls the water released from a stormwater facility to the outfall.
- Curve number–The Soil Conservation Service (SCS) has devised a method of computing the runoff from an area based on a system of curve numbers. The curve number for an area of land is obtained by examining the land use and soil type of the land area.
- Design storm–A hypothetical discrete rainstorm characterized by a specific duration, temporal distribution, rainfall intensity, return frequency, and total depth of rainfall.
- Detention basin–A stormwater management structure that temporarily detains runoff and discharges it through a hydraulic structure to a stream or receiving waterway.
- Drainage basin–A geographical area that contributes surface water runoff to a particular point.
- Erosion–The process by which soil, rocks, and other landforms are worn away by repetitive wind, water, or ice activity.
- Final stabilization–When all land disturbing construction activities at the construction site have been completed and a uniform perennial vegetative cover has been established with a density of at least 70 percent of the cover for the unpaved areas and areas not covered by permanent structures or that employ equivalent permanent stabilization measures.
- Flume–The structure or channel upstream of the stormwater facility used to convey stormwater to the facility.

- Forebay–The area of the pond near the inlet where heavy sediments are encouraged to settle out of the stormwater that enters the pond.
- Illicit discharge–Any discharge to a municipal separate storm sewer system 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, firefighting, and similar discharges.
- Impervious surface–A ground cover such as concrete, rooftops, asphalt, gravel, or other surface that inhibits precipitation or runoff from infiltrating or penetrating the surface. A surface that releases as runoff all or most of the precipitation that falls on it.
- In-fill development–Development that occurs in an undeveloped area that is located within or is surrounded by a developed area.
- Infiltration–The entry of precipitation or runoff into or through the soil.
- Inlet–An entryway to the storm sewer system usually located at street corners and low points.
- Karst feature–An area or surficial geological 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.
- Maximum extent practicable (MEP)–A level of implementing BMPs to achieve a performance standard that 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.
- New development–Development resulting from the conversion of previously undeveloped land or agricultural land uses.
- Outfall–The piping, channel, or other equipment downstream of the control structure used to transfer water out of the control structure to the surrounding environment.
- Performance standard–A narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.
- Recurrence interval–The probability that a given rainfall event will occur in a given year. For example, a 100-year rainfall event has a 1 percent chance of occurring in a given year ($1/100 = 0.01 = 1$ percent), a 5-year rainfall event has a 20 percent chance of occurring in a given year ($1/5 = 0.20 = 20$ percent).
- Redevelopment–Areas where development is replacing older development.
- Retention basin–A stormwater management structure that captures stormwater runoff and does not discharge to a surface water body. The water is discharged by infiltration or evaporation.

- Separate storm sewer–A conveyance or system of conveyances including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all 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 stormwater treatment device or system.
 - Discharges directly or indirectly to waters of the state.
- Sheet flow runoff–Water, usually storm runoff, flowing in a thin layer over the ground; also called overland flow.
- Subbasin–The parts of a drainage basin that, when combined, create the entire drainage basin for a facility.
- Time of concentration (Tc)–“... the time for runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed,” SCS, 1986.
- Time distribution of rainfall–The amount of rainfall that has fallen during a storm event versus the amount of time that has elapsed during a storm event.
- TMDL–The amount of a pollutant a stream, river, or lake can receive before exceeding water quality standards.
- Weir–A wall spanning the control structure. When the water level of the pond reaches the top of the weir, water flows over the weir and out of the pond.

A/I	Active/Interactive
AGR	agriculture
AMSL	above mean sea level
APWA	American Public Works Association
BMP	Best Management Practices
CEM	cemetery
cfu	colony forming unit
City	City of Portage
CTH	County Highway
CWA	Clean Water Act
CWF	Clean Water Fund
CWP	Center for Watershed Protection
CWP Guide	<i>Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments (October 2004)</i>
EIF	Environmental Improvement Fund
ERU	equivalent runoff unit
ERW	Exceptional Resource Water
ES	Enforcement Standard
ft/ft	foot per feet

FAL	Fish and Aquatic Life
GIS	geographic information system
HDRNA	high density residential no alleys
HDRWA	high density residential, with alleys
HOSP	hospital
HRR	high rise residential
HSG	Hydrologic Soils Group
HUC	Hydrologic Unit Code
IDDE	Illicit Discharge Detection and Elimination
in/hr	inches per hour
INST	miscellaneous institutional
ITA	Intent to Apply
KnB	Kewaunee Silt Loam
lb	pound(s)
lb/acre	pound(s) per acre
lb/sf	pound(s) per square foot
LDR	low density residential
LI	light industrial
MDRNA	medium density residential no alleys
MDRWA	medium density residential with alleys
MEP	maximum extent practicable
MFR	multifamily residential
mL	milliliter
mg/L	milligrams per liter
MI	Medium industrial
MOBH	mobile home park
MPN	most probable number
MS4	Municipal Separate Storm Sewer System
NA	not applicable
NCSWS	North Central Stormwater Coalition
NEWSC	Northeast Wisconsin Stormwater Consortium
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	nonpoint source
NPW	net present worth
NR 151	WAC, Department of Natural Resources, Chapter NR 151
NR 216	WAC, Department of Natural Resources, Chapter NR 216
NRCS	National Resource Conservation Service
OFFPARK	office parks
OPC	opinion of probable cost
OPCC	opinion of probable construction cost
ORW	Outstanding Resource Water
P	Passive

PAL	Preventative Action Limit
PCB	polychlorinated biphenyls
PDF	portable document format
PDS	partial duration series
PERF	Priority Evaluation Review Form
PF	precipitation frequency
RAIL	railroad
ROW	right-of-way
RR	Remediation and Redevelopment
SCH	education
SCS	Soil Conservation Services
sf	square feet
SHOPCENT	shopping center
SMP	stormwater management practices
Strand	Strand Associates, Inc.®
STRIPCOM	strip commercial
SWPPP	Stormwater Pollution Prevention Plan
Tc	time of concentration
TMDL	total maximum daily load
TP	total phosphorus
TSS	total suspended solids
UA	urbanized areas
UNPS	urban nonpoint source
UNPS&SW	Urban Nonpoint Source and Stormwater
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WAC	Wisconsin Administrative Code
WAM	watershed adaptive management
WDNR	Wisconsin Department of Natural Resources
WinSLAMM	Source Loading and Management Modeling
WISDOT	Wisconsin Department of Transportation
WPDES	Wisconsin Pollutant Discharge Elimination System
WTR	water
WQBEL	water quality-based effluent limitations
WQT	water quality trading
WWTP	wastewater treatment plant

SECTION 2
CONTRIBUTING WATERSHED CHARACTERISTICS

2.01 WATERSHED DESCRIPTION

This section describes land characteristics in the City that impact stormwater runoff. Stormwater runoff and nonpoint pollutant loading from a watershed depend on physical characteristics such as watershed size and topography, land use, soil types, degree of saturation, and type of drainage system (storm sewers, open channels). Figure 2.01-1 shows the drainage system and drainage basin boundaries in the City, including storm sewer/culverts, detention ponds, floodplains, wetlands, and outfalls.

A. Population and Land Use

The City is located in Columbia County, Wisconsin. According to the Year 2010 Census, the population of the City is 10,662. The total municipal area of the City is approximately 9.71 square miles.

Existing land use in the City is shown in Figure 2.01-2 and graphically summarized in Figure 2.01-3. It should be noted this figure is not a zoning map; rather it identifies WinSLAMM land use designations. Detailed land use for each watershed is included in Table 2.01-1.

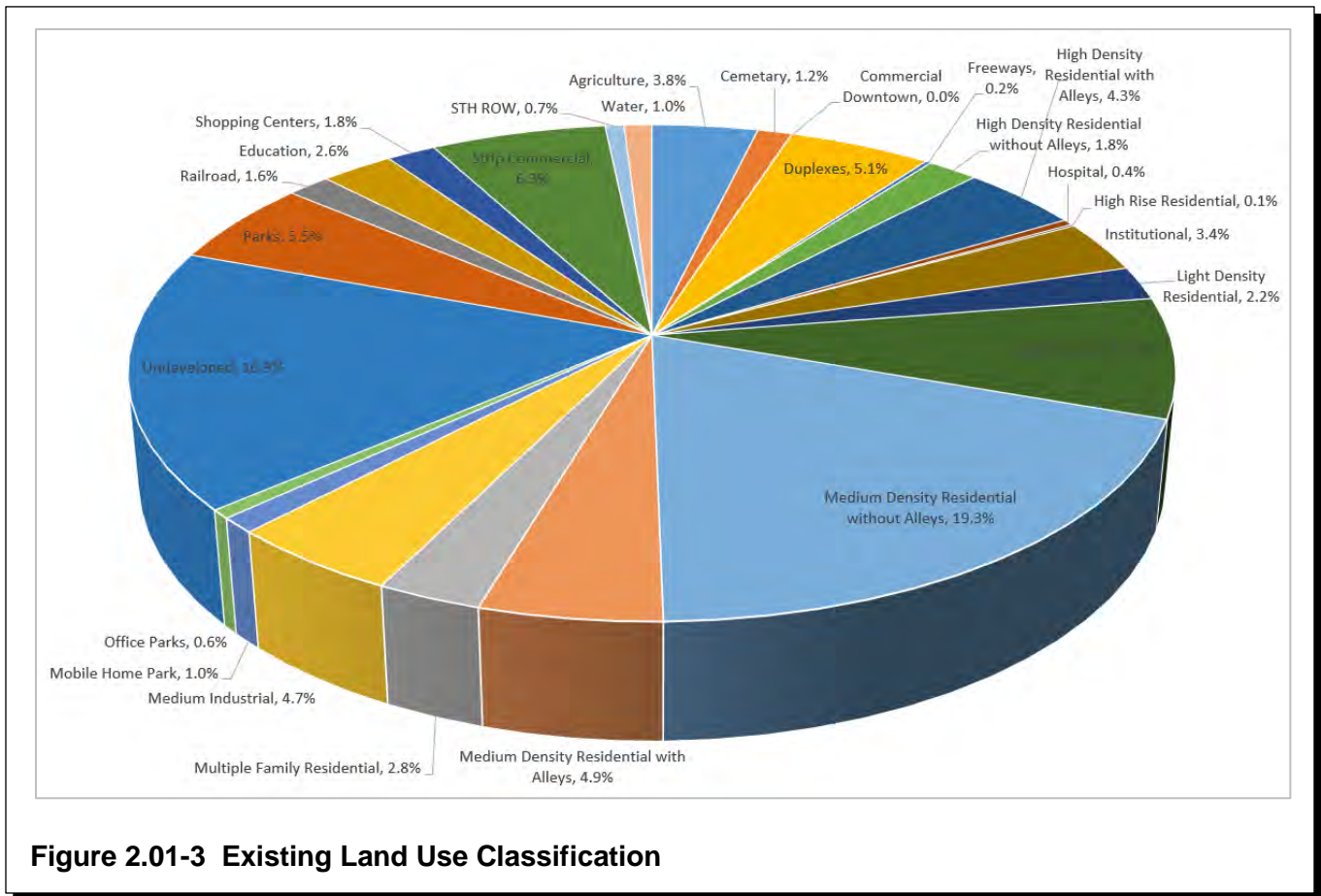


Figure 2.01-3 Existing Land Use Classification

Legend

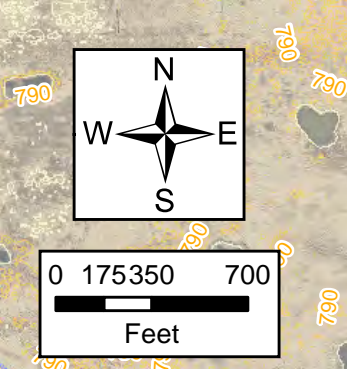
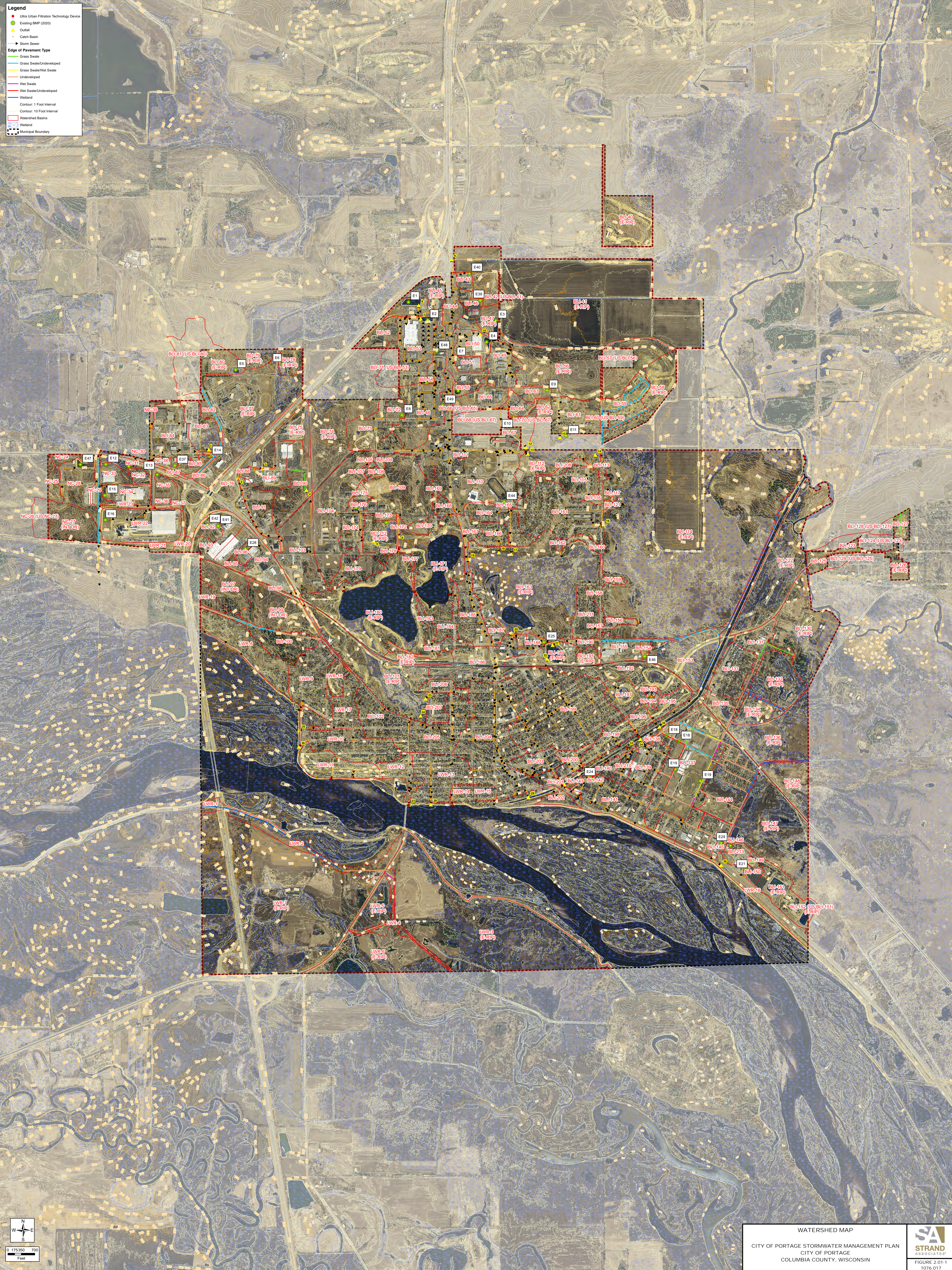
- Ultra Urban Filtration Technology Device
- Existing BMP (2020)
- Outfall
- Catch Basin
- Storm Sewer

Edge of Pavement Type

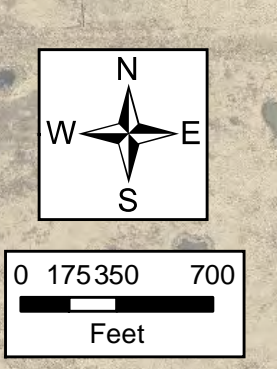
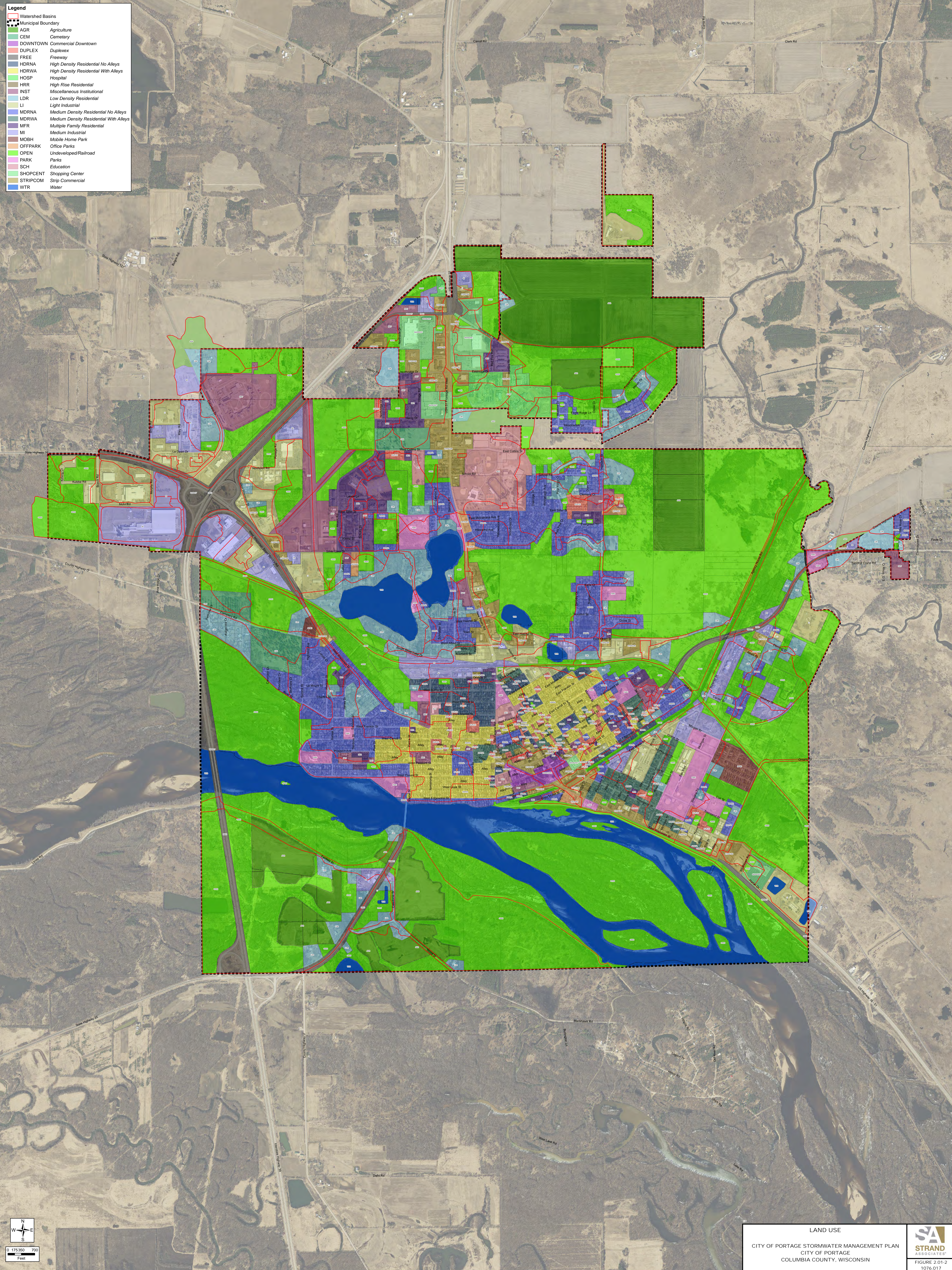
- Grass Swale
- Grass Swale/Undeveloped
- Grass Swale/Wet Swale
- Undeveloped
- Wet Swale
- Wet Swale/Undeveloped
- Wetland

Contour: 1 Foot Interval
Contour: 10 Foot Interval

- Watershed Basins
- Wetland
- Municipal Boundary



- Legend**
- Watershed Basins
 - Municipal Boundary
 - AGR Agriculture
 - CEM Cemetery
 - DOWNTOWN Commercial Downtown
 - DUPLEX Duplex
 - FREE Freeway
 - HDRNA High Density Residential No Alleys
 - HDRWA High Density Residential With Alleys
 - HOSP Hospital
 - HRR High Rise Residential
 - INST Miscellaneous Institutional
 - LDR Low Density Residential
 - LI Light Industrial
 - MDRNA Medium Density Residential No Alleys
 - MDRWA Medium Density Residential With Alleys
 - MFR Multiple Family Residential
 - MI Medium Industrial
 - MCBH Mobile Home Park
 - OFFPARK Office Parks
 - OPEN Undeveloped/Railroad
 - PARK Parks
 - SCH Education
 - SHOPCENT Shopping Center
 - STRIPCOM Strip Commercial
 - WTR Water



B. Watershed Description

A majority of the City is located within the Lower Wisconsin River and Upper Fox River watersheds. Areas on the northwest side of the City also drain to the Neenah Creek watershed. The Lower Wisconsin River watershed includes a 4,940-square-mile area that drains portions of Adams, Columbia, Crawford, Dane, Grant, Iowa, Jackson, Juneau, Monroe, Richland, Sauk, and Vernon Counties. The Upper Fox River watershed includes a 2,090-square-mile area that drains portions of Adams, Calumet, Columbia, Fond du Lac, Green Lake, Winnebago, and Waushara Counties. The manmade Portage Canal connects the Wisconsin River to the Upper Fox River in the eastern portion of the City. The City also includes Silver Lake and Mud Lake, as well as large areas of wetlands.

The Wisconsin River, Upper Fox River, Black River, and Portage Canal are included on the state’s 303(d) list of impaired waters as shown in Table 2.01-2. The list is derived from data available on the WDNR Surface Water Data Viewer. A waterbody is considered impaired if: (1) the current water quality does not meet the numeric or narrative criteria in a water quality standard, or (2) the designated use that is described in WAC is not being achieved. WDNR addresses impaired waters by analyzing the waterbody to create a TMDL as described in the following.

A TMDL is defined as the amount of a pollutant a stream, river, or lake can receive before exceeding water quality standards. The pollutants researched as part of this report include TSS and TP. WDNR has released a Wisconsin River Basin TMDL and a draft Upper Fox and Wolf River TMDL that are available on the WDNR Web site. TMDL basins are broken up into separate reachsheds that are delineated based on the stream segment, lake, or reservoir the area drains to. The City is located in one reachshed in the Wisconsin River Basin TMDL, Reach 190, and two reachsheds in the Upper Fox and Wolf River TMDL, Reach 4 and Reach 7. Reach 190 represents the Lower Wisconsin River, Reach 4 represents Neenah Creek, and Reach 7 represents the Buffalo Lake Inflow. Basin used in this analysis have designations that define the reach it is in with the following nomenclature Reach #-xx (e.g. 190-01). The Wisconsin River Basin and Upper Fox and Wolf River TMDL wasteload allocations for each reach in the form of a percent reduction are included in Table 2.01-3.

Reach	Wisconsin River Basin TMDL TSS	Wisconsin River Basin TMDL TP
(190) Lower Wisconsin River	NA	68.6%
Reach	Upper Fox and Wolf River TMDL TSS	Upper Fox and Wolf River TMDL TP
(4) Neenah Creek	57.6%	89.8%
(7) Buffalo Lake Inflow	57.6%	89.8%

NA—not applicable

Table 2.01-3 Wisconsin River Basin and Upper Fox and Wolf River TMDL Wasteload Allocations per Reach (From No-Controls)

A TMDL is also a plan to reduce the amount of specific pollutants reaching an impaired lake or stream to the extent that water quality standards will be met. As part of the TMDL, the amount of a pollutant that the water can tolerate and still meet water quality standards must be identified. That identified amount is allocated between point sources (wasteload allocation) and NPS (load allocation). As part of the TMDL, WDNR identifies how the TMDL wasteload allocations will be implemented through the WPDES permit program. Load allocations will be implemented through Wisconsin's NPS program. USEPA provides final approval of all TMDLs.

Table 2.01-1 WinSLAMM Land Use by Subbasin (Acres) to City Boundary (Including Exempt and Upstream Areas)

Subbasin	Exempt or Upstream (Off-Site) Status	AGR	CEM	Downtown	Duplex	Freeway	HDRNA	HDRWA	Hospital	HRR	INST	LDR	LI	MDRNA	MDRWA	MFR	MI	MOBH	OFFPARK	OPEN	PARK	RAIL	SCH	SHOPCENT	STRIPCOM	WISDOT	WTR	Total	
LWR-1						1.05														2.88						1.05		4.97	
LWR-2		9.97				2.34						2.95					2.77			9.68							2.34	30.06	
LWR-3	(E-RIP)	53.97				1.98						3.53					0.01			148.55							1.98	210.02	
LWR-4		3.30				0.66						6.18					0.88			2.12							0.66	13.80	
LWR-5	(E-RIP)					3.56						4.18	0.00				0.21			9.69							3.56	1.32	22.52
LWR-6	(E-RIP)	27.03				3.27						2.52								21.69							3.27	4.52	62.30
LWR-7	(E-RIP)	81.99				33.20						18.75					3.78			163.10							33.21	334.03	
LWR-8			11.77									20.59		7.01						0.62								39.99	
LWR-9			3.05									0.01		33.36						0.17					0.45			37.03	
LWR-10								7.77			2.46	0.04		27.20		1.93				4.12	1.95							45.47	
LWR-11											1.34			15.83		1.51				0.96	6.22							25.85	
LWR-12								6.64			0.14			6.28						0.25	0.78							14.08	
LWR-13					0.26			25.43			3.16			6.94														35.78	
LWR-14								4.90						0.97														5.88	
LWR-15								4.64						0.63	0.15								0.01					5.42	
LWR-16						7.61							2.02		0.13					9.92					0.80	2.83	7.61	30.92	
LWR-17												6.74		12.69		0.77				0.04	0.02					0.30		20.55	
LWR-18												1.38		2.06		2.07				3.16								8.67	
LWR-19			5.25																	1.45								6.69	
LWR-20						1.96											0.84					0.17					1.96	4.93	
LWR-21						0.01											7.83			0.06		1.17					0.01	9.08	
LWR-22																	41.11											41.11	
LWR-23													2.84															3.82	
NC-24						1.30							1.12							2.70							1.30	6.41	
NC-25						0.05														7.32							0.05	7.43	
NC-26	US (NC-27)																			9.25								9.25	
NC-27	(INT DR)																			25.77								25.77	
NC-28													6.33							18.62								24.94	
NC-29						0.07							5.72				0.77			0.84							0.07	7.47	
NC-30						4.36							0.01														4.37	8.74	
NC-31						6.32							4.28				0.08			1.10							6.32	18.10	
NC-32													4.26															4.26	
NC-33													8.91															8.91	
NC-34													13.76															13.76	
NC-35						0.01														6.99								7.00	
LWR-36																	1.08			1.49								2.57	

Subbasin	Exempt or Upstream (Off-Site) Status	AGR	CEM	Downtown	Duplex	Freeway	HDRNA	HDRWA	Hospital	HRR	INST	LDR	LI	MDRNA	MDRWA	MFR	MI	MOBH	OFFPARK	OPEN	PARK	RAIL	SCH	SHOPCENT	STRIPCOM	WISDOT	WTR	Total
LWR-37																0.85				0.55								1.40
NC-38						0.41							2.16													0.41		2.99
NC-39													2.31				0.11											2.42
BLI-40	(E-RIP)												17.90							23.83								41.73
BLI-41	(E-RIP)	253.03				0.25						2.19				0.06				12.36				0.05	0.18	0.00		268.12
BLI-42	US (BLI-41)											1.69								0.00								1.70
BLI-43						0.01							0.52			3.31				0.22					0.18	0.01		4.25
BLI-44						6.04			2.47				0.46			0.24	0.09			1.06				3.87	10.77	6.04		31.04
BLI-45	(E-RIP)					0.38			2.93								2.53			4.81					2.00	0.31		12.95
BLI-46																				0.12				3.24				3.36
BLI-47	(E-RIP)															0.00				6.97				1.71				8.69
BLI-48			8.59			2.91					4.79					11.92	2.69			3.54				10.30	14.81	2.91	1.81	64.25
BLI-49						0.01			6.47							9.29				2.81				4.56	2.26	0.01		25.39
BLI-50																0.97								12.97	0.29			14.23
BLI-51																								5.48	0.63			6.11
BLI-52						3.10					4.41									1.52					4.69	3.10		16.82
BLI-53						0.00					2.10					2.44				5.83				19.44	6.03			35.85
BLI-54																0.00				0.04					1.07			1.10
BLI-55									1.71											2.27					0.48			4.46
BLI-56	(E-RIP)	24.07							3.30			1.28		0.83		0.00				61.37					1.11			91.95
BLI-57	US (BLI-56)	0.00																		9.85								9.86
BLI-58	(E-RIP)											9.86		0.91						17.95								28.72
BLI-59												9.65		6.44						7.39	0.19							23.67
BLI-60	US (BLI-60)											1.54																1.54
BLI-61									0.04					13.39						12.21	0.70							26.35
BLI-62	(E-RIP)								4.49											0.00								4.49
BLI-63									7.02											0.00								7.02
BLI-64		0.00							7.78																			7.78
BLI-65									12.83											3.02								15.84
BLI-66	US (BLI-65)	1.63																										1.63
BLI-67		0.00																					5.75					5.75
BLI-68	US (BLI-67)	22.95							0.00											3.59				0.00				26.55
BLI-69									0.61																			0.61
BLI-70		0.00							1.91																			1.91
BLI-71	US (BLI-53)											11.25								0.00					0.00			11.25
BLI-72																2.50				4.50								7.00
BLI-73			2.61		1.29											3.46				13.69								21.06

Subbasin	Exempt or Upstream (Off-Site) Status	AGR	CEM	Downtown	Duplex	Freeway	HDRNA	HDRWA	Hospital	HRR	INST	LDR	LI	MDRNA	MDRWA	MFR	MI	MOBH	OFFPARK	OPEN	PARK	RAIL	SCH	SHOPCENT	STRIPCOM	WISDOT	WTR	Total	
BLI-74	(E-RIP)				0.90	0.02					9.05									43.02						0.02		53.01	
BLI-75	(E-RIP)					1.11					5.39		0.34				8.17			0.24						1.11		16.36	
BLI-76						51.67							6.09				0.88			5.59					2.76	51.67		118.65	
BLI-77	(E-RIP)					7.52					50.99	0.39	9.33				0.00			32.56						7.52		108.31	
BLI-78	(E-RIP)																			8.92								8.92	
BLI-79	(E-RIP)										0.48									9.40								9.87	
BLI-80	(E-RIP)										0.96	6.05								7.84								14.85	
BLI-81	US (BLI-80)	18.77										4.58				9.04												32.38	
BLI-82											0.23	4.29	0.75				0.14			0.00								5.41	
BLI-83												6.57	0.17				10.30			2.44								19.49	
BLI-84						0.11							23.55				13.84			0.00						0.11		37.62	
BLI-85													2.01															2.01	
BLI-86						0.50							1.49													0.50		2.48	
BLI-87						0.13							1.22													0.13		1.47	
BLI-88						0.49							1.18													0.49		2.17	
BLI-89													15.12							2.44								17.56	
BLI-90	(INT-DR)										8.59		8.61							13.59								30.79	
BLI-91						0.34					0.56	3.20	12.42							1.70					2.33	0.34		20.88	
BLI-92						1.33											6.41									1.33		9.07	
BLI-93						3.93											13.84					0.41				3.93		22.10	
BLI-94						6.84							3.85				18.20					2.52				6.84		38.24	
BLI-95													2.72				0.01					0.40						3.13	
BLI-96						0.00							4.15				0.00									0.00		4.16	
BLI-97	(INT-DR)		8.44																	12.87		4.29						25.61	
BLI-98						0.11														0.15		2.45				0.11		2.81	
BLI-99	(INT-DR)		2.34			0.39						4.84						2.70		25.86		0.94			0.38	0.39		37.85	
BLI-100			19.04									2.53		2.84				0.71		0.84					0.20			26.15	
BLI-101	(E-RIP)					0.10	1.51				2.79	4.87		7.56		6.28				36.94	3.12	7.06			1.92	0.10		72.25	
BLI-102						0.01		4.42			0.00	8.20		19.35		0.04		0.52		0.02					0.63	0.01		33.20	
BLI-103						2.80					21.27		15.40				2.22			0.52					1.75	2.80		46.75	
BLI-104			0.01								19.06	0.68	2.14			18.24			0.73	19.99								60.84	
BLI-105																1.11													1.11
BLI-106																0.56													0.56
BLI-107																0.86													0.86
BLI-108																1.96													1.96
BLI-109					2.07							7.07		2.95		12.21				20.30	3.06		4.38					52.04	
BLI-110		0.01	7.70		0.75				0.01			1.09		4.56		0.89			0.35	5.18	0.03		60.74	3.50	28.74			113.55	
BLI-111																							0.00		0.53				0.53

Subbasin	Exempt or Upstream (Off-Site) Status	AGR	CEM	Downtown	Duplex	Freeway	HDRNA	HDRWA	Hospital	HRR	INST	LDR	LI	MDRNA	MDRWA	MFR	MI	MOBH	OFFPARK	OPEN	PARK	RAIL	SCH	SHOPCENT	STRIPCOM	WISDOT	WTR	Total
BLI-112	(E-RIP)											5.85		3.55						12.78			7.06				29.24	
BLI-113												0.41		0.92						0.01								1.34
BLI-114	(E-RIP)	80.16									1.08	20.81	0.18	8.18		0.35			3.37	336.56	5.32		0.46				456.47	
BLI-115					0.90						0.11	4.67		10.39						2.49								18.56
BLI-116					0.07						1.83	0.33		1.63														3.85
BLI-117											0.47																	0.47
BLI-118											0.32								0.00									0.32
BLI-119											0.21																	0.21
BLI-120											0.58																	0.58
BLI-121											0.40								0.85				0.04					1.29
BLI-122	(E-RIP)					3.88						4.60				2.04				64.87	0.06					3.81	79.28	
BLI-123		0.00				2.19					0.02	0.75		0.02		1.59				0.84	2.48				0.56	2.19	10.64	
BLI-124	US (BLI-123)	3.49				0.00						10.64				0.00					0.00					0.00	14.13	
BLI-125						1.38															2.97					1.38	5.73	
BLI-126	(E-RIP)					0.00					6.96															0.00	6.96	
BLI-127												0.00		6.33						0.25							6.59	
BLI-128	US (BLI-127)										4.10																4.10	
BLI-129	US (BLI-125)					0.00					4.33										0.00					0.00	4.33	
BLI-130	(E-RIP)					1.89					7.00	15.01	0.39							35.20						1.88	61.36	
BLI-131						1.58					3.59	0.37	4.23			5.69				5.88		0.02			2.59	1.58	25.52	
BLI-132	(E-RIP)										3.63			1.65		3.99				24.49							33.75	
BLI-133											3.72			0.84		13.02				7.08					0.75		25.41	
BLI-134	(E-RIP)													1.86		5.63				4.55		1.23					13.27	
BLI-135											1.39			1.09		1.48				3.30		3.62					10.88	
BLI-136	(E-RIP)															0.71				46.68		2.62					50.01	
BLI-137					0.85						3.80	8.70	0.72	10.10		16.17	2.17			6.84	37.54	1.79			0.67		89.34	
BLI-138											0.07	1.96		0.10													2.12	
BLI-139					0.82						0.16	10.40	0.14	10.70	0.48					0.37							23.07	
BLI-140														1.23	1.16	1.96				0.26					0.17		4.78	
BLI-141					1.53								0.59	0.83	14.29	0.51			0.25	3.78	1.87				13.43		37.09	
BLI-142																									0.23		0.23	
BLI-143																									1.28		1.28	
BLI-144					3.51						3.18	8.75	5.92	4.67			19.65			19.38	6.68	1.76			8.61		82.11	
BLI-145																									1.58		1.58	
BLI-146																									0.76		0.76	
BLI-147	(E-RIP)												3.68					0.00		70.34		4.80			0.02		78.84	
BLI-148	(E-RIP)																			22.16		2.00					24.17	
BLI-149																				0.76					0.95	0.15		1.87

Subbasin	Exempt or Upstream (Off-Site) Status	AGR	CEM	Downtown	Duplex	Freeway	HDRNA	HDRWA	Hospital	HRR	INST	LDR	LI	MDRNA	MDRWA	MFR	MI	MOBH	OFFPARK	OPEN	PARK	RAIL	SCH	SHOPCENT	STRIPCOM	WISDOT	WTR	Total
BLI-150																				0.44				3.37	0.14			3.95
BLI-151	(E-RIP)					0.00							16.30							1.69				4.12	0.05		4.88	27.04
BLI-152	US (BLI-151)																										2.09	2.09
BLI-153						4.61						5.65	1.74							29.19		2.99				4.61		48.78
BLI-154													2.40									0.01						2.41
BLI-155													10.00	0.44		0.36				0.68		1.20			5.09			17.76
BLI-156														4.75											0.00			4.75
BLI-157												0.09		1.61											0.00			1.69
BLI-158												0.02		3.48							0.35							3.85
BLI-159												0.26		2.01														2.27
BLI-160												3.71		2.11						0.70								6.52
BLI-161					4.75						2.07	4.34		35.99		4.45			0.09	3.55			1.75					56.99
BLI-162														1.09														1.09
BLI-163	(E-RIP)											3.81	2.81	13.85			0.50		1.13	114.26					8.74		7.50	152.60
BLI-164														15.32					0.12	0.03			5.14					20.60
BLI-165																							0.59					0.59
BLI-166														10.15														10.15
BLI-167														4.26					2.82	0.00	0.76				1.09			8.93
BLI-168														4.17							0.12							4.29
BLI-169												0.18		2.29						0.92					0.03			3.42
BLI-170												0.37		2.02							3.93							6.33
BLI-171	(E-RIP)										0.22	18.72		3.36						3.49	10.12				0.09		31.33	67.33
BLI-172														0.19						0.71	1.14							2.04
BLI-173														1.07						1.05								2.12
BLI-174											0.29	1.75		0.45		16.07				0.67								19.23
BLI-175															3.17													3.17
BLI-176															1.97													1.97
BLI-177												2.46									0.15						0.04	2.64
BLI-178												0.61		0.28														0.89
BLI-179											1.26	6.00		1.70					2.13	4.80								15.89
BLI-180	(E-RIP)					0.24						39.83	2.04	0.03						8.97	1.55	4.34				0.24	47.40	104.63
BLI-181												6.95		2.31	0.96		0.55											10.77
BLI-182	(E-RIP)											2.94				5.60						1.27						9.81
BLI-183												2.86		1.71							0.70							5.27
BLI-184											0.50	1.94		7.83						0.00								10.27
BLI-185											4.47	2.36	1.22	6.70	0.10		0.68			0.01					9.18			24.72
BLI-186					0.26		3.55					0.27	11.97		3.23	2.04	15.16			1.05	0.08				2.25			39.85
BLI-187													0.90							1.80					4.56			7.26

Subbasin	Exempt or Upstream (Off-Site) Status	AGR	CEM	Downtown	Duplex	Freeway	HDRNA	HDRWA	Hospital	HRR	INST	LDR	LI	MDRNA	MDRWA	MFR	MI	MOBH	OFFPARK	OPEN	PARK	RAIL	SCH	SHOPCENT	STRIPCOM	WISDOT	WTR	Total	
BLI-188													4.52	0.77			0.14			0.26					1.48			7.16	
BLI-189	(E-RIP)											0.23	4.55	0.31			4.32			1.27		3.94					4.45	19.07	
BLI-190												0.10	0.33	3.90			0.50								0.30			5.12	
BLI-191	(E-RIP)											2.78	0.06	0.81								2.03						5.68	
BLI-192					0.90	1.15	2.48	1.48			2.45	1.98	0.99	5.27		2.92				11.30		5.02				1.15		37.07	
BLI-193											1.90																	1.90	
BLI-194											1.19																	1.19	
BLI-195					0.75		0.15	0.06			0.48	2.05		7.00						0.16		0.04						10.69	
BLI-196					0.96		0.40	1.61			0.31	0.74			2.61	0.08				0.01								6.71	
BLI-197					1.51		0.28	0.84			2.23	0.18		2.91	2.96	0.23					5.40							16.53	
BLI-198					1.83		2.03	6.70					0.98	2.86		1.79				0.00					0.15			16.34	
BLI-199					12.20		10.80	58.02			1.28		6.46	8.39	4.55	1.57	0.07			0.46	1.54	0.06	0.13		2.44			107.96	
BLI-200				1.58	0.85			1.20			0.24					0.68								2.07	3.35			9.97	
BLI-201				3.62															1.65	0.02	0.00				1.99			7.28	
BLI-202														1.86		0.04			2.01	1.56					0.53			6.01	
BLI-203				5.40	1.35			0.30			0.62				0.15	0.61									7.19			15.61	
BLI-204				5.29	7.02		19.64	22.29		0.27	4.43			6.02	7.60	0.58					3.67		8.54		5.68			91.04	
BLI-205					4.18		7.16	21.32			0.81	0.37		0.00		0.49												34.33	
BLI-206							7.35					0.02					0.02			1.07	0.08							8.54	
BLI-207					0.18		3.75	2.03			1.15										0.15		1.77					9.03	
BLI-208												1.97		0.96						0.61								3.55	
BLI-209																0.94													0.94
BLI-210													2.54	0.17	2.05		2.35											7.11	
BLI-211														17.01						0.16								17.17	
BLI-212	(E-RIP)										0.24			2.61		5.31				8.99								17.15	
BLI-213																				0.27					7.25			7.53	
Total MS4 Area		580.37	68.80	15.89	49.69	175.13	59.09	169.63	51.55	0.27	175.87	357.20	302.57	411.74	65.50	117.61	241.47	25.75	15.48	1,771.52	102.73	58.14	96.35	76.45	179.70	174.74	105.34	5,448.57	
Total Upstream (Off-site) Area		46.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.13	0.00	0.00	0.00	0.00	9.04	0.00	0.00	22.70	0.00	0.00	0.00	0.00	0.00	0.00	2.09	118.80	
Total Exempt MS4 Area		520.25	10.78	0.00	0.90	57.77	1.51	0.00	10.71	0.00	86.74	168.65	80.81	45.91	0.00	5.66	43.82	2.70	4.50	1443.67	20.17	34.52	7.52	5.88	14.49	57.38	101.41	2725.74	
Total Regulatory MS4 Area		13.28	58.02	15.89	48.78	117.36	57.58	169.63	40.84	0.27	89.13	150.43	221.76	365.84	65.50	111.94	188.61	23.05	10.98	305.15	82.56	23.63	88.83	70.56	165.21	117.35	1.84	2,604.02	

Notes:
 AGR—agriculture
 CEM—cemetery
 Downtown—commercial downtown
 HDRNA—high density residential no alleys
 HDRWA—high density residential with alleys
 HRR—high rise residential
 INST—miscellaneous institutional
 LDR—low density residential
 LI—light industrial
 MDRNA—medium density residential no alleys
 MDRWA—medium density residential with alleys
 MER—multifamily residential
 MI—medium industrial
 MOBH—mobile home park
 OFFPARK—office parks
 OPEN—undeveloped
 PARK—parks
 RAIL—railroad
 SCH—education
 SHOPCENT—shopping center
 STRIPCOM—strip commercial
 WISDOT—Wisconsin Department of Transportation, State Right-of-Way
 WTR—water

Table 2.01-2 Impaired Waters

Water Body	Major Watershed	Attainable Use	Supporting Attainable Use	Nonpoint Source Rank	303d Listed/Category/Impairment/Pollutant/Sources	TMDL Priority	ORW or ERW
Wisconsin River	Wisconsin River	FAL	Not Assessed	Not Ranked	<ul style="list-style-type: none"> ▪ Yes ▪ Contaminated Sediment ▪ Mercury Contaminated Fish Tissue, PCB-Contaminated Fish Tissue ▪ PCBs, Mercury ▪ Contaminated Sediments, Atmospheric Deposition–Toxics 	Low	No
Portage Canal	Wisconsin River and Upper Fox River	FAL	Not Supporting	Not Ranked	<ul style="list-style-type: none"> ▪ Yes ▪ Contaminated Sediment ▪ Lead Contaminated Sediments, Mercury Contaminated Sediments, PCB-Contaminated Sediments, PCBs ▪ Contaminated Fish Tissue ▪ PCBs, Lead, Mercury ▪ Contaminated Sediments, Legacy/Historical Pollutants 	Low	No
Upper Fox River	Upper Fox River	FAL	Not Assessed	Not Ranked	<ul style="list-style-type: none"> ▪ Yes ▪ Contaminated Sediment ▪ PCB-Contaminated Fish Tissue ▪ PCBs ▪ Contaminated Sediments 	Low	No

Notes:

- ORW Outstanding Resource Water
- ERW Exceptional Resource Water
- FAL Fish and Aquatic Life
- PCB polychlorinated Biphenyls

2.02 LOCAL SOURCE AREAS AND OUTFALLS

A. Pollutant Source Areas

In addition to land use, pollutant loading from urban areas is dependent on the characterization of “source areas.” Various urban source areas will contribute different quantities of runoff and associated pollutants depending on their characteristics. For instance, impervious areas such as roadways and parking lots will generally generate more runoff and pollutants than pervious areas such as lawns and gardens, especially for smaller, more frequent storms. However, pervious areas will contribute a larger portion of the runoff and pollutants as storm events get larger. For the smallest of rainfall events, almost all runoff and pollutants will be generated by impervious area. Rooftops contribute to increased runoff volumes but tend to contribute fewer pollutants than parking lots or streets.

Impervious cover in a watershed can be organized into two main categories:

1. Rooftops—Created by buildings, homes, garages, stores, warehouses, and other buildings.
2. Transport systems—Impervious cover created by roads, sidewalks, driveways, and parking lots.

For modeling purposes, all impervious surface area is described in two basic ways: total impervious area or effective impervious area. The total impervious area in a watershed includes all impervious cover, both rooftops and transport systems. The effective impervious area is the portion of total impervious cover that is directly connected to the storm drain network. Often, roof drains are directed to lawns or other pervious surface, allowing some stormwater runoff to infiltrate, which removes these rooftops from effective impervious area.

B. Stormwater Drainage System

1. Description of Drainage System

The main drainage systems in the City consist of a storm sewer system and grass-lined ditch system that discharge to the Wisconsin River and Upper Fox River.

Historically, stormwater management in the City has focused on draining stormwater from developed areas as quickly as possible. BMPs are primarily focused on construction of engineered drainage systems consisting of graded ditches, curb and gutter, and storm sewer. More recently, the City has required construction of stormwater BMPs as required by ordinance if applicable to a development. Stormwater BMPs are a mix of privately maintained BMPs and City-owned BMPs. The City currently requires Stormwater Maintenance Agreements with owners of the privately maintained BMPs through its ordinance.

2. Outfall Locations

According to the City’s GIS data, it was determined there are 36 storm sewer outfalls (ditches, storm sewers, or culverts) in the City’s MS4 area, which are listed in Table 3.02-3. Outfalls are defined as ditches or culverts that discharge either to a water of the state or to an adjacent MS4. Of the 36 identified, there are 15 major outfalls and 21 minor outfalls. Major outfalls are defined as outfalls that are 36-inch-diameter (or equivalent cross sectional area) or larger or are associated with a drainage area of 50 acres or larger. Outfalls with an inside diameter of 12 inches or more are also classified as major outfalls if they receive stormwater runoff from land zoned for industrial activity with 2 or more acres of industrial activity.

Outfall and major outfall locations are identified in Figures 2.01-1 (in pocket folder at back of Section 2).

3. Existing Stormwater Management Issues

- a. Streambank Erosion and Dredging Issues–There are no known streambank erosion concerns within the City.
- b. Stormwater Quantity Issues–There are no known flooding areas of concern within the City.
- c. Other Issues–Outfall 5 and the upstream structure have failed. The area within an approximate 20-foot radius of the upstream structure has eroded.

2.03 TOPOGRAPHY, SOILS, AND PRECIPITATION

A. Topography

Topographic features, particularly slope steepness, have a direct bearing on the potential for soil erosion and the sedimentation of surface waters. Slope steepness affects the velocity and, accordingly, the erosive potential of runoff. As a result, steep slopes may place limitations on urban development and contribute to high levels of NPS pollution associated with construction sites.

The primary drainage features in the City’s MS4 area are the Wisconsin River, Portage Canal, and Upper Fox River. For the most part, land within the MS4 area drains toward these waterways. Elevations range from 790 feet above mean sea level (AMSL) at the Wisconsin River to a range of 850 to 870 feet AMSL on the western side of the City. There appears to be three internally drained areas within the City (i.e., subbasins NC-27, BLI-97, and BLI-99).

B. Soils

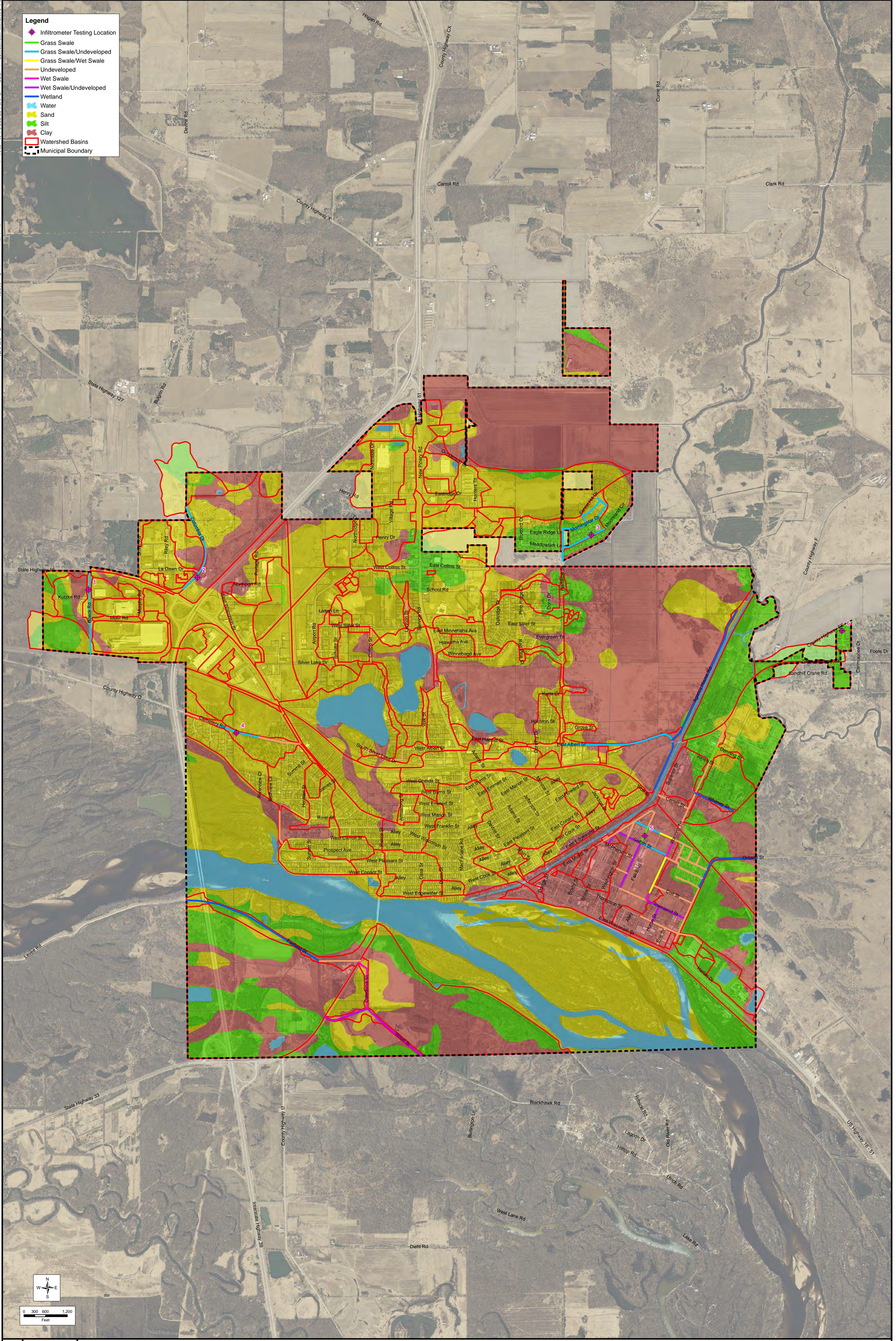
The amount of stormwater runoff produced by a storm event is impacted by the types of soil underlying the watershed. Soils having a high percentage of sand and gravel will absorb and infiltrate a higher percentage of stormwater runoff than will soils having high clay content. This means that sandy soil generally produces less runoff than clayey soil.

The Natural Resource Conservation Service (NRCS) classifies soil types in categories known as Hydrologic Soil Groups (HSG). Group A soils consist of sandy soils having high infiltration rates and low runoff potential. Group B soils have moderately fine to moderately coarse textures and moderate runoff potential. Group C soils are typically sandy clay loam soils having moderately fine to fine textures and a low infiltration capacity. Group D soils have a very low infiltration capacity and have high runoff potential. Examples of Group D soils are clays, soils with a permanent high water table, and shallow soils over nearly impervious material.

Soil types in the City were determined by NRCS soils maps based on their respective amount of silt, sand, and clay. Soils used for the purposes of this plan are identified in Table 2.03-1 and illustrated in Figure 2.03-1. Within the City’s MS4 area, there are 62 different soil types with the dominant soil being Kewaunee Silt Loam (KnB). Most of the soils are silty soils and classified as HSG C.

In October 2019, double-ring infiltrometer testing was completed at various locations within the City, as shown on Figure 2.03-1, with a testing approach approved by Dan Bekta of WDNR in a June 28, 2019 e-mail. The results of the field infiltration testing calculated an average dynamic infiltration rate of 0.50 inches per hour (in/hr). This infiltration rate was approved by Dan Bekta of WDNR in a July 20, 2020 e-mail and is used in the WinSLAMM modeling. The double-ring infiltrometer testing is discussed in more detail in Section 4 and the results are included in Appendix L.

- Legend**
-  Infiltrometer Testing Location
 -  Grass Swale
 -  Grass Swale/Undeveloped
 -  Grass Swale/Wet Swale
 -  Undeveloped
 -  Wet Swale
 -  Wet Swale/Undeveloped
 -  Wetland
 -  Water
 -  Sand
 -  Silt
 -  Clay
 -  Watershed Basins
 -  Municipal Boundary



SSURGO SOILS MAP

CITY OF PORTAGE STORMWATER MANAGEMENT PLAN
 CITY OF PORTAGE
 COLUMBIA COUNTY



STRAND ASSOCIATES
 FIGURE 2.03-1
 10/76/017

Table 2.03-1 Soil Types

Symbol	Soil Name and Description	HSG	Area (acres)	Percent of Total Area
Ad	Adrian Muck	B/D	397.17	6.41
Ae	Alluvial Land	A	82.05	1.32
Af	Alluvial Land	A	525.62	8.49
Ag	Alluvial Land	B	98.99	1.60
Ah	Alluvial Land	B	587.34	9.48
BpB	Boyer Loamy Sand	A	100.8	1.63
BpC2	Boyer Loamy Sand	A	100.7	1.63
BpD2	Boyer Loamy Sand	A	15.99	0.26
BtB2	Briggsville Silt Loam	C	38.79	0.63
CoA	Colwood Fine Sandy Loam	C/D	28.89	0.47
DrB	Dresden Loam	B	59.13	0.95
DrC2	Dresden Loam	B	33.95	0.55
GaA	Gilford Fine Sandy Loam	B/D	10.24	0.17
Gb	Granby Loamy	A/D	341.38	5.51
GP	Gravel Pit	A	12.63	0.20
Ho	Houghton Muck	D	386.74	6.24
KbA	Kibbie Fine Sandy Loam	C	21.08	0.34
LaB	Lapeer Fine Sandy Loam	B	5.78	0.09
LaC2	Lapeer Fine Sandy Loam	B	4.28	0.07
LaD2	Lapeer Fine Sandy Loam	B	0.87	0.01
LDF	Landfill	D	25.3	0.41
MaB	Marcellon Loam	C	16	0.26
Mc	Marshan Loam	B/D	254.21	4.10
MoA	Morocco Loamy Sand	A/D	166.64	2.69
OkB	Okee Loamy Fine Sand	A	3.49	0.06
OmA	Oshtemo Loamy Sand	A	47.79	0.77
OmB	Oshtemo Loamy Sand	A	191.37	3.09
OmC2	Oshtemo Loamy Sand	A	79.83	1.29
Pa	Palms Muck	B/D	19.81	0.32
PfA	Plainfield Loamy Fine Sand	A	1.79	0.03
PfB	Plainfield Loamy Fine Sand	A	1129.28	18.23
PfC	Plainfield Loamy Fine Sand	A	296.12	4.78
PfD	Plainfield Loamy Fine Sand	A	54.85	0.89

Symbol	Soil Name and Description	HSG	Area (acres)	Percent of Total Area
PkB	Plainfield Loamy Fine Sand, Loamy Substratum	A	108.18	1.75
PkC	Plainfield Loamy Fine Sand, Loamy Substratum	A	35.67	0.58
PkD	Plainfield Loamy Fine Sand, Loamy Substratum	A	7.57	0.12
SbA	Salter Fine Sandy Loam	B	6.05	0.10
Sd	Sandy Land	A	106.22	1.71
SnB	Sisson Fine Sandy Loam	B	74.34	1.20
SnC2	Sisson Fine Sandy Loam	B	12.8	0.21
TuB	Tustin Loamy Fine Sand	C	23.41	0.38
W	Water	NA	428.53	6.92
Wa	Wacousta Mucky Silt Loam	B/D	6.02	0.10
WcA	Wasepi Fine Sandy Loam	B	8.04	0.13
WoB	Wyocena Loamy Sand	A	32.91	0.53
WoC2	Wyocena Loamy Sand	A	78.83	1.27
WoD2	Wyocena Loamy Sand	A	58.51	0.94
WxB	Wyocena Sandy Loam	A	3.2	0.05
WxC2	Wyocena Sandy Loam	A	7.84	0.13
YaA	Yahara Fine Sandy Loam	B/D	57.17	0.92
	Total		6194.2	100%

C. Precipitation

The depth and duration of rainfall in a watershed for a given storm event has a major impact on the amount of stormwater runoff produced.

Expected rainfall depths for the City from National Oceanic and Atmospheric Administration (NOAA) Atlas 14, Volume 8, Version 2 for storm events of various frequencies are summarized in Table 2.03-2.

Recurrence Interval and Precipitation Frequency Estimates ¹ (inches)						
Storm Duration	2 Years	5 Years	10 Years	25 Years	50 Years	100 Years
5 Minutes	0.42	0.51	0.58	0.70	0.80	0.90
10 Minutes	0.61	0.74	0.85	1.02	1.17	1.32
15 Minutes	0.74	0.90	1.04	1.25	1.42	1.60
30 Minutes	1.02	1.24	1.44	1.73	1.97	2.23
60 Minutes	1.31	1.62	1.91	2.33	2.69	3.07
2 Hours	1.60	2.00	2.37	2.93	3.40	3.91
3 Hours	1.78	2.25	2.68	3.34	3.91	4.53
6 Hours	2.09	2.63	3.14	3.94	4.64	5.40
12 Hours	2.42	2.97	3.50	4.36	5.12	5.96
24 Hours	2.76	3.38	3.97	4.90	5.71	6.61
48 Hours	3.16	3.94	4.65	5.72	6.62	7.59
72 Hours	3.46	4.29	5.04	6.16	7.09	8.09
7 Days	4.40	5.33	6.15	7.37	8.37	9.43
10 Days	5.02	6.01	6.89	8.17	9.22	10.30

¹Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).
 Source: NOAA Atlas 14

Table 2.03-2 Expected Rainfall Depths from NOAA Atlas 14

For stormwater quality modeling purposes, the 5-year average annual rainfall for the City of Madison area (WisReg–Madison Five Year Rainfall.ran) is used with run dates for our modeling of March 12 to December 2 (nonwinter season) as required by WDNR.

SECTION 3
EVALUATION OF CURRENT CITY PRACTICES

3.01 CURRENT STORMWATER POLICIES AND PRACTICES

This section summarizes existing plans and programs in the City. Information included in this section is intended to document baseline conditions as required by the City’s WPDES Stormwater Discharge Permit. Section 3.02 recommends program modifications for compliance with Stormwater Permit requirements and reduction of annual pollutant loading to City water resources.

A. Public Education and Outreach

The City aims to educate members of the public through informational brochures, an annual water quality report, the City’s stormwater Web site, and informational meetings. Additionally, the City promotes low-impact developments and City staff training. The existing City public education and outreach program is documented within the City’s annual report.

B. Public Involvement and Participation

The Common Council meets the second and fourth Thursday of every month, during which residents may voice concerns or complaints regarding stormwater issues. The City then proactively deals with these concerns or complaints. In addition, the City provides public notice of all public meetings.

C. IDDE

1. Continued Enforcement of the IDDE Program

- a. The current City program prohibits illicit discharges and/or connections to the MS4 and waters of the state through an ordinance (Section 78-130–Sewer Construction and Connections). The program follows the required activities outlined in Part II. C. of the City’s stormwater permit. City Public Works and Inspection staff are in charge of detection and follow-up on complaints, and provide appropriate enforcement. City employees are instructed to report any type of illicit discharge into the City’s stormwater system. The City also receives input from concerned City residents.
- b. The City Fire Department is the first responder for all nonhazardous material spills and has a policy in place to contain and clean up most spills. At the present time, the City is following the procedures included in the City’s Hazardous Materials Emergency Response Plan included in Appendix C. Table 3.01-1 lists the City Fire Department Spill Responses from 2017 to 2020.

Spill Type	2017	2018	2019	2020
Hazardous	3	0	3	4
Chemical	0	1	0	0
Other Hazards	0	0	0	0

Table 3.01-1 City Fire Department Spill Responses

2. Dry Weather Field Screening

The City storm sewer system and outfalls are mapped. Currently, the City does not perform dry weather field screening.

3. Procedures for Responding to Known or Suspected Illicit Discharges

At the present time, the City is following the procedures included in the City’s Hazardous Materials Emergency Response Plan included in Appendix C.

D. Construction Site Erosion Pollutant Control

1. Erosion Control Ordinance

The City has an existing Construction Site Erosion Control ordinance (Chapter 10, Article VII of the City’s Code of Ordinances) included as Appendix D in this report. As part of this report, improvements to this ordinance will be recommended to bring the City’s ordinance into conformance with current NR 151 standards. See comments in Section 3.02 D.

2. Erosion Control Ordinance Site Review Procedures and Enforcement

The City’s Departments of Public Works and Engineering currently administers and enforces the provisions of this ordinance. The Building Inspector and/or City Engineer inspects construction sites at least once a month during the period starting March 1 and ending October 31 and at least two times during the period starting November 1 and ending February 28 to ensure compliance with the control plan. A final inspection is conducted after the site is stabilized. During site inspections, the Departments of Public Works and Engineering recommend proactive steps and corrective actions as necessary. If violations are noted, they are required to be fixed before the continuation of construction activities. The City’s erosion control ordinance includes enforcement provisions.

3. Permits Issued

Table 3.01-2 documents the commercial erosion control permitting and enforcement activity from 2017 to 2020.

Activity	2017	2018	2019	2020
Permits Issued	16	14	16	20
Inspections	20	30	32	40
Violation Letters Sent	0	0	1	0
Verbal Warnings	2	6	6	3

Table 3.01-2 Commercial Erosion Control Permits

E. Postconstruction Stormwater Management

1. Postconstruction Stormwater Management Ordinance

The City currently has a Stormwater Management Ordinance (Chapter 10 , Article VIII of the City’s Code of Ordinances) included as Appendix E in this report. As part of this report, improvements to this ordinance will be recommended to bring the City’s ordinance into conformance with current NR 151 standards. See comments in Section 3.02 E.

2. Postconstruction Stormwater Management Ordinance Site Review Procedures and Enforcement

The City’s Departments of Public Works and Engineering currently administer and enforce the provisions of this ordinance. Completed stormwater management practices must pass a final inspection by the Departments of Public Works and Engineering or their designee to determine if they are in accordance with the approved stormwater management plan and ordinance. The Departments of Public Works and Engineering or their designee shall notify the responsible party in writing of any changes required in such practices to bring them into compliance with the conditions of this permit. The City’s stormwater management ordinance includes enforcement provisions.

3. Permits Issued

The City generally tracks this information through commercial erosion control permits as shown in Table 3.01-2.

F. Pollution Prevention–Municipal Operations

1. Maintenance of Existing Municipally Owned and Operated Stormwater BMPs

The City’s Departments of Public Works and Engineering staff have been assigned as the departments to handle inspections and maintenance of public stormwater facilities. Specifically, the City Engineer is directly responsible for inspection and maintenance activities. The Public Works Department performs the following inspection and maintenance activities shown in Table 3.01-3.

Activity	Frequency	Responsible Party	Comments
Catch Basin Cleaning	Annually	City Engineer	Approximately 100 catch basins within the City.
Storm Sewer Maintenance	As needed	City Engineer	
Road Crossing Culverts	As needed	City Engineer	
Grass-Lined Swales/Ditches	As needed	City Engineer	
Dry Detention Basins	Annually	City Engineer	
Wet Detention Basins	Annually	City Engineer	
Hydrodynamic Separators	Semi-Annually	City Engineer	Installed in 2020.

Table 3.01-3 Department of Public Works Inspection and Maintenance Activities

Private stormwater BMPs are maintained by the property owner in accordance with the City’s Stormwater Management Ordinance.

2. Street Sweeping

Street sweeping, while historically conducted primarily for aesthetic and maintenance purposes, is an effective stormwater management practice. On average, the entire City is swept on a bi-monthly basis. Table 3.01-4 lists the City’s current street sweeping schedule. Materials collected through street sweeping are disposed of at the City’s compost site.

Location	Street Sweeping Frequency	Approximate Start Date	Approximate End Date
Entire City	Bi-monthly	March 1	December 1

Table 3.01-4 Approximate Street Sweeping Schedule

Table 3.01-5 summarizes the street sweeping materials collected from 2016 to 2020.

	Year				
	2016	2017	2018	2019	2020
Solids Captured (tons)		105	2,800	3,000	2,900
Miles Swept			1,400	1,400	1,400

Table 3.01-5 Street Sweeping Quantity Summary

3. Catch Basin Cleaning

Table 3.01-6 provides information on the City’s catch basin cleaning program. Catch basin cleaning is performed with a Vac-All truck. Sump depths in the City range from 12 to 18 inches. It should be noted WDNR only allows water quality credit in WinSLAMM for sumps that are greater than 1 foot in depth. As such, WinSLAMM modeling will incorporate catch basin cleaning as an existing stormwater quality control. Modeling will show that sumps are most effective in areas where streets are not or are minimally swept (the City sweeps all streets twice a month) and where there are not downstream BMPs (for example, portions of older parts of the City).

	Year				
	2016	2017	2018	2019	2020
Number of Catch Basins Cleaned		45	1,002	100	100
Solids Captured (tons)		5	25	25	25

Table 3.01-6 Catch Basin Cleaning Quantity Summary

4. Deicing and Snow Removal

Table 3.01-7 provides a summary of the City’s winter roadway maintenance program. Table 3.01-8 shows the City’s deicer usage in the period from 2018 to 2020. Table 3.01-9 shows the rainfall and snowfall amounts in the City as obtained from the NOAA Web site. The average rainfall amount is 46.65 inches a year and the average snowfall each winter season is 32.57 inches. Higher than average seasonal snowfall is an indicator of the potential for a higher level of deicer usage and is, therefore, requested to be tracked by WDNR.



Figure 3.01-1 Snow Disposal at Yard Waste Site–Airport Road

Item	Description
Winter Roadway Maintenance Contact	Kim Standke, Street Superintendent 608-742-8486
Enclosed Salt Storage Building	Department of Public Works Yard and Storage Area 606 Washington Street, Portage, WI 53901 Capacity: 200 tons of salt
Lane-miles of roadway managed	55
Truck Route Map Showing Waterway Crossings and Streets Within 100 feet of waterbody	See map in Appendix F
Snow Disposal Location and Spring Cleanup	Location: See Figure 3.01-1, additional storage located at County Fairgrounds between Wauona Trail and Superior Street Spring Cleanup: Vacuum Street Sweeper
Deicing Products Used and Amount	Road salt and brine (See Table 3.01-8)
Deicing Products Used Per Lane Mile	Salt: 300 pounds per lane mile (pre-wetted) Pre-wetting agent: 210 pounds per lane mile (25 gallons per ton of brine)
Type of Deicing Equipment Used	Three single-axle plow trucks, all outfitted with a Monroe Electric Pre-Wet Systems. Two plows are fitted with a single auger Monroe VBox Spreader and the other is fitted with a dual auger Monroe VBox spreader.
Anti-icing, Equipment Calibration, and Salt Reduction Strategies Considered	Fleet manager works with equipment vendor to calibrate equipment, and anti-icing is done on arterial streets, hills, and streets with hospitals and schools.
Most recent staff training	American Public Works Association (APWA) Winter Maintenance Training, 2018 and 2019

Table 3.01-7 Winter Roadway Maintenance Details

Month	Salt (Tons) Per Year		Brine (Gallons) Per Year	
	2018 to 2019	2019 to 2020	2018 to 2019	2019 to 2020
October	0	25	0	0
November	60	20	0	0
December	180	25	0	50
January	280	300	0	350
February	320	425	0	550
March	45	65	0	50
April	0	0	0	0
Total	885	860	0	1,000

Table 3.01-8 Deicer Usage by City per Winter Season

	2016 Rainfall (inches)	2016 Snowfall (inches)	2017 Rainfall (inches)	2017 Snowfall (inches)	2018 Rainfall (inches)	2018 Snowfall (inches)
January	1.19	5.90	2.66	9.60	0.95	7.50
February	0.83	5.50	1.63	2.50	1.75	7.40
March	5.45	7.50	2.86	5.60	0.71	4.50
April	1.17	2.00	5.87	0	3.45	15.00
May	5.40	0	4.56	0	9.40	0
June	4.77	0	6.90	0	7.61	0
July	5.42	0	4.13	0	2.16	0
August	6.37	0	4.13	0	11.41	0
September	10.51	0	0.68	0	7.31	0
October	3.28	0	2.83	0	5.42	0
November	1.54	0	0.75	0	2.06	1.70
December	2.28	18.0	0.71	2.50	1.80	2.50
Totals	48.21	38.90	37.71	20.2	54.03	38.6

Table 3.01-9 Rainfall and Snowfall in the City

5. Leaf and Grass Clipping Management

City staff collects brush, bagged leaves, and grass clippings curbside the first full week of the month, April through November. During the fall, the City schedules leaf collections on a weekly basis. Currently, the City requires that leaves are bagged in paper or plastic and placed at the curb for collection. Leaves are collected and transported to the City’s compost site on Airport Road. In addition to curbside collection, the City’s Department of Public Works maintains a Yard Waste Site (northwest corner of Airport Road) where residents can discard leaves, grass clippings, branches, brush, and garden waste. More information on the City’s Leaf and Grass Clipping Management program can be found at:

<https://www.portagewi.gov/brush-and-grass-collection/>.

Year	Curbside Leaf Pickup (Tons)
2016	55
2017	55
2018	55
2019	55
2020	55

Table 3.01-10 Leaf Collection

6. Municipal Garage and Storage Area Management

The City’s Department of Public Works Yard and Storage Area facility is located at 606 Washington Street. The City’s vehicle maintenance and storage is provided on this site. It is also the primary storage facility for materials used in the repair and maintenance of City streets and infrastructure. Figure 3.01-2 shows typical storage areas at the facility. A copy of the SWPPP for the facility is included in Appendix G.



Figure 3.01-2 Department of Public Works Yard and Storage Area at 606 Washington Street

7. Turf Maintenance Policies

Table 3.01-11 summarizes the amount of fertilizer used in the City.

Year	Property Type	Acres	Amount of Fertilizer (pounds)	Amount of Fertilizer (lb/acre)
2016	Park Lands	12	528	44
	City-Owned Properties	17	748	44
2017	Park Lands	12	528	44
	City-Owned Properties	17	748	44
2018	Park Lands	18	792	44
	City-Owned Properties	17	748	44
2019	Park Lands	18	792	44
	City-Owned Properties	17	748	44
2020	Park Lands	18	792	44
	City-Owned Properties	17	748	44

lb/acre–pound(s) per acre

Table 3.01-11 Amount of Fertilizer Used in the City

8. Inform Department Staff of Permit Requirements

The City internally coordinates implementation of the requirements of the NR 216 permit through weekly staff meetings with the Department of Public Works.

9. Measures to Reduce Municipal Sources of Stormwater within Source Water Protection Areas

The City is served by a municipal sanitary sewer system and municipal water system that draws primarily from groundwater. The municipal sanitary sewer system discharges to the Portage Wastewater Treatment Plant (WWTP), which outfalls to the Wisconsin River.

G. Stormwater Quality Management

The City completed a Stormwater Management Plan in January 2008. The report, herein, provides a stormwater management plan update.

H. Storm Sewer System Map

The City has an existing storm sewer system map. Maps included in this document augment the existing map to meet the requirements of the stormwater permit. The maps and figures are listed in the Table of Contents. The locations and listing of WPDES permit holders have been added to Figure 2.01-1.

I. Annual Report

The City submits annual reports to the WDNR meeting the March 31 annual deadline.

J. Cooperation

The City is not currently cooperating with any organizations in permit compliance efforts.

3.02 RECOMMENDED STORMWATER MANAGEMENT PROGRAM

To comply with the terms of the WPDES permit, Strand Associates, Inc.® (Strand) recommends the following program.

An outside consultant may need to be retained to address the recommended activities outlined in this section. Costs for the recommended activities are outlined in Table 6.04-2. that will be included in forthcoming Section 6.

A. Public Education and Outreach

Strand recommends continuation of the City's program to educate City employees and residents of measures they can take to reduce nonpoint source discharges to surrounding water resources. The information and education program is intended to raise awareness among individuals and organizations concerning stormwater runoff and the measures that can be taken to minimize its harmful effects. The

program would include the activities of measurable goals, anticipated completion dates, and responsible parties as shown in Table 3.02-1. In addition, Strand recommends the City join the North Central Stormwater Coalition (NCSWC) and the Northeast Wisconsin Stormwater Consortium (NEWSC). According to correspondence with Fred Heider of NCSWC, the membership fee for joining NCSWC would be approximately \$1,250. The City would need to sign a five-year Cooperative Agreement to demonstrate commitment to maintaining the group. According to correspondence with Jessica Shultz of the Fox-Wolf Watershed Alliance, the membership fee for joining NEWSC would be approximately \$1,145. Both group memberships would include access to training, workshops, model ordinances, public education materials, and assistance with public participation needs. Following is the Web site for each group, which contain additional information.

- NCSWC: www.ncwrpc.org/NCWSC/
- NEWSC: <https://fwwa.org/newsc3/>

B. Public Involvement and Participation

Strand recommends the implementation of the following public involvement and participation activities with their associated measurable goals, responsible party, and anticipated completion date as described in Table 3.02-2.

Table 3.02-1 Public Education and Outreach Plan and Measurable Goals

	Activity	Measurable Goal	Delivery Mechanism	Target Audience	Responsible Party	Anticipated Completion Date
1	Complete one presentation to the City Council and interested citizens discussing the plan contents upon completion of this plan.	One meeting.	A/I	Residents and Public Employees	City Staff and Strand	July 2021
2	Biennially, dedicate a portion of one City Council meeting to the discussion of the annual report submitted for the previous year's permit compliance activities.	One meeting every other year, starting in 2022.	A/I	Residents and Public Employees	City Staff and Strand	Biennially
3	The City will have available stormwater management-related materials at City Hall prepared by organizations such as WDNR, NCSWC, NEWSC, and Columbia County. Materials will promote detection of illicit discharges and will promote proper management of lawn and garden waste, waste oil, pet waste, and household waste. It will also include promotion of good streambank and shoreline management, infiltration of stormwater runoff where feasible, and general stormwater pollution prevention techniques.	Have the following available starting in 2022: 1. Lawn, pet, and household waste. 2. Fertilizer/pesticide management. 3. Hazardous waste and oil management and illicit discharges. 4. Streambank and shoreline management. 5. Infiltration. Note: Brochures will be numbered to track usage.	P and A/I	Residents	Director of Public Works or City Engineer	Ongoing
4	Continue the City's current program of providing information on recycling, leaf collection, and garbage collection on the City Web site. Evaluate expanding the Department of Public Works page to include a link that accesses the City Stormwater Quality Management Plan and Biennial Report.	Evaluate updating the City Web site to include additional links.	P and A/I	Residents	City staff	Ongoing
5	The City will have periodic articles in a City newsletter or publication to promote detection of illicit discharges and proper management of lawn and garden waste, waste oil, pet waste, and household waste. It will also include promotion of good streambank and shoreline management, infiltration of stormwater runoff where feasible, and general stormwater pollution prevention techniques.	Newsletter is distributed quarterly.	P	Residents	Director of Public Works or City Engineer	Quarterly each year.
6	During concept plan review, the City will continue to promote environmentally-sensitive land development designs by developers and designers.	On an as-needed basis as development occurs.	A/I	Developers	City Staff	On an as-needed basis as development occurs.
7	Joint education programs for NCSWC and NEWSC.	Participate in joint activities.	A/I	Residents	City Staff	As required by joint agreement when processed.
8	Track public education and outreach activities for biennial reporting to WDNR. Tracking should include amount of materials distributed and related information regarding the items above.	Once each year.	P	Public Employees	Director of Public Works or City Engineer	Once each year.

Note: A/I=Active/Interactive; P=Passive

Table 3.02-2 Public Involvement and Participation Plan and Measurable Goals

	Activity	Measurable Goal	Delivery Mechanism	Target Audience	Responsible Party	Anticipated Completion Date
1	Continue to public notice all public meetings.	Ongoing	A/I	Residents	City staff	Ongoing
2	Work with NCSWC and NEWSC for planning and participating in public involvement events.	Ongoing	A/I	Residents	Director of Public Works or City Engineer	Complete by August 30, annually
3	Hold an annual meeting to update City officials, residents, regulatory agencies, local contractors, and interested stakeholders on the progress of the City's stormwater program.	One meeting each year starting in 2022. Hold in conjunction with annual meeting described in Public Education and Outreach above.	A/I	Residents	Director of Public Works or City Engineer	First meeting in April or May 2022
4	Track public involvement and participation activities for biennial reporting to WDNR.	Once each year.	A/I	Public Employees	Director of Public Works or City Engineer	Once each year.

Note: A/I–Active/Interactive
P–Passive

C. IDDE Plan

1. Introduction

a. Background and Definitions

As discussed in Section 2, the City’s storm drainage system discharges to a number of waterbodies at approximately 36 outfall locations throughout the City as shown on Figure 2.01-1 and in Table 3.02-3. In addition to stormwater runoff, the storm drainage system connected to each of these outfalls has the potential to carry other discharges introduced to the storm drainage system such as sanitary sewage, waste oil, industrial waste, and other substances that may harm downstream water quality. The term “illicit discharge” is generally used to refer to any discharge to a storm drainage system that is not composed entirely of stormwater, except those discharges allowed by an ordinance or permit. Such allowable discharges may include those from firefighting activities, air-conditioning condensate, and related “clean water” flows.

The Center for Watershed Protection (CWP) has published a manual titled *Illicit Discharge Detection and Elimination, A Guidance Manual for Program Development and Technical Assessments* (October 2004). This document (referred to as the “CWP Guide” in this report) uses a four-part definition for illicit discharges, including the following:

- (1) Illicit discharges have a measurable flow during dry weather containing pollutants and/or pathogens. Storm drains having measurable flow, but no pollutants are simply considered a discharge.
- (2) Illicit discharges have a unique frequency, composition, and mode of entry in the storm drainage system.
- (3) Illicit discharges may be caused when the sewage disposal system interacts with the storm drainage system through illegal cross connections or other sources.
- (4) Illicit discharges may be produced from specific source areas and operations known as “generating sites.” An understanding of the interaction between these potential generating sites and the storm drainage system can be helpful in locating and preventing illicit discharges.

b. Modes of Entry

The CWP Guide describes potential direct and indirect modes of entry for illicit discharges to the storm drainage system. Direct entry means the discharge is directly connected to the storm drain through a sewage pipe, shop drain, or other kind of pipe. Indirect entry means that flows generated outside the storm drainage system enter through storm drain inlets or by infiltrating through the joints of the pipe.

Primary sources of direct entry include the following:

- (1) Sewage cross connections.
- (2) Straight pipe connections—Straight pipe connections refer to small diameter (typically) pipes that intentionally bypass the sanitary connection or septic drain fields, producing direct discharge to open channels, streams, lakes, or other water resources.
- (3) Industrial and commercial cross connections—These occur when industrial or commercial wash water, process water, or other illicit flows enter the storm drainage system, typically through floor drains connected to systems improperly connected to the storm drainage system. These are most prevalent in older industrial areas.

Primary sources of indirect entry to the storm drainage system include the following:

- (1) Groundwater seepage—Groundwater seepage usually consists of relatively clean water but can mask other illicit discharges. For example, groundwater seepage may include diluted sewage if the storm and sanitary sewer systems are close together.
- (2) Spills—These may occur when a spill travels across an impervious surface and enters a storm drain inlet.
- (3) Dumping liquid into a storm drain inlet—This occurs when liquid wastes such as oil, grease, paint, solvents, and various automotive fluids are dumped into the storm drain. One example of an intermittent discharge of this type is cleaning deep fryers in the parking lot of fast food operations.
- (4) Outdoor washing activities—This may or may not produce illicit discharges, depending on the nature of the activity. Routine washing of fueling or outdoor storage areas, power washing of parking lots, and cleaning construction equipment outdoors are examples of activities that may produce illicit discharges.

c. Land Use and Generating Sites

Experience in other communities indicates that land use can be a good predictor of the likelihood of illicit discharges. For example, residential areas may be sources of indirect discharges from activities such as failing septic systems (unlikely in the City), waste oil dumping, or car washing. Commercial areas are the most prominent sources of discharges from outdoor washing, disposal of food wastes, car fueling, repair, and washing, and other activities.

Figure 3.02-1, an excerpt from the CWP Guide, provides an overview of common discharges from various land use types. It should be noted that WDNR regulations exempt some of the activities listed in Figure 3.02-1, such as individual residential car washing.

Figure 3.02-1 Typical Land Uses and Activities that Produce Illicit Discharges (Excerpt)*

Table 2: Land Uses, Generating Sites and Activities That Produce Indirect Discharges		
Land Use	Generating Site	Activity that Produces Discharge
Residential	<ul style="list-style-type: none"> • Apartments • Multi-family • Single Family Detached 	<ul style="list-style-type: none"> • Car Washing • Driveway Cleaning • Dumping/Spills (e.g., leaf litter and RV/boat holding tank effluent) • Equipment Washdowns • Lawn/Landscape Watering • Septic System Maintenance • Swimming Pool Discharges
Commercial	<ul style="list-style-type: none"> • Campgrounds/RV parks • Car Dealers/Rental Car Companies • Car Washes • Commercial Laundry/Dry Cleaning • Gas Stations/Auto Repair Shops • Marinas • Nurseries and Garden Centers • Oil Change Shops • Restaurants • Swimming Pools 	<ul style="list-style-type: none"> • Building Maintenance (power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing • Washdown of greasy equipment and grease traps
Industrial	<ul style="list-style-type: none"> • Auto recyclers • Beverages and brewing • Construction vehicle washouts • Distribution centers • Food processing • Garbage truck washouts • Marinas, boat building and repair • Metal plating operations • Paper and wood products • Petroleum storage and refining • Printing 	<ul style="list-style-type: none"> • All commercial activities • Industrial process water or rinse water • Loading and un-loading area washdowns • Outdoor material storage (fluids)
Institutional	<ul style="list-style-type: none"> • Cemeteries • Churches • Corporate Campuses • Hospitals • Schools and Universities 	<ul style="list-style-type: none"> • Building Maintenance (e.g., power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Parking Lot Maintenance (power washing) • Vehicle Washing
Municipal	<ul style="list-style-type: none"> • Airports • Landfills • Maintenance Depots • Municipal Fleet Storage Areas • Ports • Public Works Yards • Streets and Highways 	<ul style="list-style-type: none"> • Building Maintenance (power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Road Maintenance • Spill Prevention/Response • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing

*Excerpted from Table 2 of *Illicit Discharge Detection and Elimination, A Guidance Manual*, Center for Watershed Protection, October 2004.

d. Regulatory Requirements

In recognition of the potentially harmful impacts of illicit discharges, WDNR has identified development of an IDDE program as a condition of the City’s Stormwater Discharge Permit. Specific program requirements are included in Part II, Section C of the WPDES Municipal Separate Storm Sewer System Permit No. WI-S049867-03 (included in Appendix A). This permit references WDNR’s MS4 IDDE Guidance Document that includes several recommendations and criteria regarding selection of outfalls for field screening, screening frequency, indicator parameter selection, indicator parameter action levels, and documentation. In general, the program must include the following:

- (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 must prohibit the discharge, spilling, or dumping of nonstormwater substances or materials into waters of the state or the MS4, identify nonstormwater discharges or flows that are not considered illicit discharges, and establish inspection and enforcement authority.
- (2) Ongoing field screening at outfalls during dry weather periods during the term of the permit. At a minimum, field screening shall be documented and shall include visual observation and field analysis if flow is observed.
- (3) Field screening shall be conducted at selected outfalls. The MS4 Permit and WDNR Guidance Document screening frequencies are shown in Table 3.02-3.

Outfall Type	MS4 Permit Screening Frequency	WDNR Guidance Document Screening Frequency	Number of Outfalls
Major	Once every five years	See below	0
Major (With Previous Illicit Discharge History)	Annual	See below	0
Priority Major or Minor	Annual	See below	0
Priority Major	NA	Annual	14
Nonpriority Major	NA	Once every five years	1
Priority Minor	NA	Annual	12
Nonpriority Minor	NA	NA	9
		Total	36

Table 3.02-3 MS4 Permit and WDNR Guidance Document Screening Frequencies

- (4) Procedures for responding to known or suspected illicit discharges.
- (5) Procedures to remove illicit discharges from its MS4 system as soon as possible (according to the permit, within three working days to the MEP).
- (6) Immediately notify WDNR in accordance with WAC Chapter NR 706. Contact shall be made with the WDNR via the WDNR 24-hour toll-free spill hotline at 1-800-943-0003.
- (7) Notice to the affected municipality within one working day in the case of an illicit discharge that originates from the permittee’s permitted area and that discharges directly to a MS4 or property under the jurisdiction of another municipality.
- (8) 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 of Public Works.

2. IDDE Ordinance

The City currently regulates illicit discharge through Article III, Section 78-130–Sewer Construction and Connections of the City of Portage Ordinances included as Appendix H in this report. It is recommended the City adopt a new IDDE ordinance. A draft IDDE ordinance is included in Appendix N.

3. Initial Field Screening Procedures and Screening Requirements

Initial field screening shall be conducted at all major outfalls during dry weather periods. In the event that now or in the future a major outfall is a ditch rather than a pipe, the nearest upstream pipe discharge point should be used as a field screening point. Table 3.02-3 identifies recommended field screening points. Field screening shall be documented on the form included in Appendix I and will include the following:

- a. 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 nonstormwater illicit discharges.
- b. Field Analysis–If flow is observed, a field analysis shall be conducted to determine the presence of nonstormwater illicit discharges. The field analysis shall include sampling for pH, total chlorine, total copper, total phenol, detergents, and ammonia as illicit discharge indicator parameters. Alternative indicator parameters may be considered including potassium, fluoride, *E. coli*, or bacteriodes based on specific MS4 outfall conditions.

- (1) Field screening points shall, where possible, be located downstream of any source of suspected illicit activity.
 - (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.
 - (3) If field analysis indicates higher than expected range for pH, total chlorine, total copper, total phenol, and/or detergents, the discharge will need to be tracked upstream and eliminated. Table 3.02-4 provides expected ranges for the analytes.
- c. Database–The City will maintain a file or database of all field screening forms. Field screening results will be reported to WDNR annually in the annual report.

Parameter	Indicator Parameters Action Levels ¹	City Expected Ranges ²	Enforcement Standard (ES) ³	Preventative Action Limit (PAL) ³
Ammonia	0.1 mg/L	--	--	--
Detergents	0.5 mg/L	<0.25 mg/L	--	--
pH	<6 or >9	<6 or >9	--	--
Total Chlorine	Detection or positive test unless associated with a WPDES permitted discharge at background water supply levels	<0.2 mg/L	--	--
Total Copper	0.1 mg/L	<0.1 mg/L	1.3	0.13
Phenol	Detection or positive test	<0.5 mg/L	2	0.4
Fluoride	Detection above background or water supply levels ⁴	--	4	0.8
Potassium	10 mg/l	--	--	--
<i>E. coli</i>	10,000 MPN/100 mL	200 cfu/100 mL ⁵	--	--
Human Bacteriodes	Detection or positive test	--	--	--

Notes:
 mg/L–milligrams per liter; MPN–most probable number; cfu–colony forming units; mL–milliliter
¹WNDR Program Guidance Document 3800-2012-01, March 15, 2012
²Illicit Storm Water Discharge Inspection and Sampling Report for 2018, Cardinal Environmental, December 5, 2008 (expected ranges reference values used by City of Milwaukee)
³Public Health Groundwater Quality Standards (NR 140, Table 1)
⁴Detection above background groundwater or drinking water. In southeast Wisconsin, fluoride concentrations in groundwater from glacial sediments typically range from 0.7 to 2.0 mg/L. Source: Groundwater Quantity and Quality Issues in a Water-Rich Region: Examples from Wisconsin, USA, John Luczaj and Kevin Masarik, June 2015
⁵Expected range from NR 102.04 (5a) Standards for Recreational Use

Table 3.02-4 IDDE Expected Ranges

4. Ongoing Dry Weather Screening Program

Outfall Screening Priorities: Beginning in 2022, it is proposed to screen all priority outfalls (major and minor) once per year, and all nonpriority major outfalls once per five-year permit term as required by the City's MS4 permit following the WDNR's Guidance Document screening frequencies (see Table 3.02-5). In identifying field screening locations, consideration has been 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.

Table 3.02-5 City Outfalls

Outfall ID	Location	Contributing Subbasin	Drainage Area	Predominant Land Use	Priority ²	Reason for Priority	Watershed	Major or Minor ¹	Size (inches)	Recommended Screening Frequency	Last Year Screened	Comments from Last Screening	2016: <i>E. Coli</i> >200 cfu/100ml	2016: Chlorine >0.2 mg/L	2016: Surfactants >0.25 mg/L	Future Screening Schedule					
																2021	2022	2023	2024	2025	2026
1	Northwest of La Dawn Drive and Columbia Drive intersection	BLI-84	<50	Industrial	Y	Industrial	Buffalo Lake Inflow	Major	30	Every Year	2020	No flow				x	x	x	x	x	x
2	Southwest of West Wisconsin Street and Northport Road intersection	BLI-91	<50	Industrial	Y	Industrial	Buffalo Lake Inflow	Major	42x24	Every Year	2020	Stagnant, some debris				x	x	x	x	x	x
3	Near southeast lot corner of 2957 County Road CX	BLI-89	<50	Industrial	Y	Industrial	Buffalo Lake Inflow	Major	48x30	Every Year	2020	Stagnant				x	x	x	x	x	x
4	West of runway intersection at the Portage Municipal Airport	BLI-103	<50	Institutional	Y	Institutional	Buffalo Lake Inflow	Minor	30	Every Year	2020	Stagnant, some debris				x	x	x	x	x	x
5	Near southeast lot corner of 2345 Schultz Street	BLI-174	<50	Residential	N		Buffalo Lake Inflow	Minor	21	Screening Not Necessary	2020	Structural failure									
6	East of Collip Street between West Slifer Street and Silver Lake Drive	BLI-109	<50	Other	N		Buffalo Lake Inflow	Minor	15	Screening Not Necessary	2020	Fully submerged									
7	West side of pond to the west of Kwik Trip at 2970 New Pinery Road	BLI-53	<50	Commercial	Y	Commercial	Buffalo Lake Inflow	Minor	30	Every Year						x	x	x	x	x	x
8	Near southeast corner of pond to the north of 2939 County Road CX	BLI-48	>50	Commercial	Y	Commercial	Buffalo Lake Inflow	Major	36	Every Year	2020	No flow				x	x	x	x	x	x
9	East of US Highway 51 and Interstate Highway 39 merger	BLI-44	<50	Commercial	Y	Commercial	Buffalo Lake Inflow	Minor	24	Every Year	2020	Low flow				x	x	x	x	x	x
10	Northwest corner of pond west of 2935 New Pinery Road	BLI-50	<50	Commercial	Y	Commercial	Buffalo Lake Inflow	Minor	30	Every Year	2020	Partially submerged				x	x	x	x	x	x
11	North of Guderson Drive and Red Fox Run intersection	BLI-49	<50	Commercial, Institutional	Y	Commercial, Institutional	Buffalo Lake Inflow	Major	54x30	Every Year	2020	Partially submerged				x	x	x	x	x	x
12	Northeast of East Collins Street cul-de-sac	BLI-65, BLI-67	<50	Institutional	Y	Institutional	Buffalo Lake Inflow	Major	42	Every Year	2020	No flow				x	x	x	x	x	x
13	East of East Collins Street cul-de-sac	BLI-110	>50	Commercial, Institutional	Y	Commercial, Institutional	Buffalo Lake Inflow	Major	42	Every Year	2020	No flow, algal scum on bottom of endwall				x	x	x	x	x	x
14	North of 2642 Hamilton Street	BLI-115	<50	Residential	N		Buffalo Lake Inflow	Minor	18	Screening Not Necessary	2020	No flow									
15	South of 508 Meadowlark Lane on south side of gravel path	BLI-61	<50	Residential	N		Buffalo Lake Inflow	Minor	21	Screening Not Necessary	2020	No flow									
16	East of Evergreen Trail and Hamilton Street intersection	BLI-161	>50	Residential	N		Buffalo Lake Inflow	Major	24	Every Five Years	2020	Stagnant, some debris				x					x
17	South of 402 Winnebago Avenue in line with west lot line	BLI-164	<50	Residential, Institutional	Y	Institutional	Buffalo Lake Inflow	Minor	18, 18	Every Year	2020	No flow				x	x	x	x	x	x
18	South of 302 Winnebago Avenue in line with west lot line	BLI-166	<50	Residential	N		Buffalo Lake Inflow	Minor	18, 15	Screening Not Necessary	2020	No flow									

Outfall ID	Location	Contributing Subbasin	Drainage Area	Predominant Land Use	Priority ²	Reason for Priority	Watershed	Major or Minor ¹	Size (inches)	Recommended Screening Frequency	Last Year Screened	Comments from Last Screening	2016: <i>E. Coli</i> >200 cfu/100ml	2016: Chlorine >0.2 mg/L	2016: Surfactants >0.25 mg/L	Future Screening Schedule					
																2021	2022	2023	2024	2025	2026
19	North of Kwik Trip at 1921 New Pinery Road on east side of street	BLI-167	<50	Residential, Commercial	Y	Commercial	Buffalo Lake Inflow	Minor	24	Every Year	2020	Partially submerged				x	x	x	x	x	x
20	West of storage yard between East Haetel Street and Mud Lake	BLI-187	<50	Commercial	Y	Commercial	Buffalo Lake Inflow	Minor	18	Every Year	2020	No flow				x	x	x	x	x	x
21	West of 428 East Albert Street	BLI-190	<50	Residential, Industrial	Y	Industrial	Buffalo Lake Inflow	Minor	12	Every Year	2020	No flow				x	x	x	x	x	x
22	Southeast of 1325 Adams Street adjacent to pond	BLI-199	>50	Residential, Industrial	Y	Industrial	Buffalo Lake Inflow	Major	36	Every Year	2020	Partially submerged				x	x	x	x	x	x
23	Cattail Park	BLI-206	<50	Residential	N		Buffalo Lake Inflow	Minor		Screening Not Necessary	2020	Could not locate									
24	Northwest of Saint John's Lutheran Church (850 Armstrong Street)	BLI-205	<50	Residential	N		Buffalo Lake Inflow	Minor	30	Screening Not Necessary	2020	Fully submerged									
25	West side of Summit Street between River Street and West Carroll Street	LWR-17	<50	Residential	N		Lower Wisconsin River	Minor	24	Screening Not Necessary	2020	No flow									
26	North of Sunset Park Boat Ramp adjacent to the Summit Street and West Carroll Street intersection	LWR-10	<50	Residential, Institutional	Y	Institutional	Lower Wisconsin River	Minor	21	Every Year	2020	No flow				x	x	x	x	x	x
27	Southwest of 730 East Edgewater Street	LWR-12	<50	Residential	N		Lower Wisconsin River	Minor	18	Screening Not Necessary	2020	Low flow									
28	South of 630 West Edgewater Street in line with west lot line	LWR-13	<50	Residential, Institutional	Y	Institutional	Lower Wisconsin River	Major	36	Every Year	2020	Partially submerged				x	x	x	x	x	x
29	South of 242 West Edgewater Street	BLI-204	>50	Residential, Institutional, Commercial	Y	Institutional, Commercial	Buffalo Lake Inflow	Major	48	Every Year	2020	Partially submerged				x	x	x	x	x	x
30	East side of culvert beneath West Wisconsin Street and De Witt Street	BLI-201, BLI-203	<50	Commercial	Y	Commercial	Buffalo Lake Inflow	Minor	30, 30	Every Year	2020	Partially submerged				x	x	x	x	x	x
31	East side Adams Street on south side of culvert	BLI-141	<50	Commercial, Residential	Y	Commercial	Buffalo Lake Inflow	Minor	18	Every Year	2020	Heavy flow, dewatering trench into upstream structure observed				x	x	x	x	x	x
32	East side Adams Street on north side of culvert	BLI-200	<50	Commercial	Y	Commercial	Buffalo Lake Inflow	Major	42x24	Every Year	2020	Stagnant, some debris				x	x	x	x	x	x
33	Northwest of 403 East Mullett Street	BLI-210	<50	Industrial, Residential	Y	Industrial	Buffalo Lake Inflow	Major	12	Every Year	2020	No flow				x	x	x	x	x	x
34	North of 429 East Mullett Street in line with northeast lot line	BLI-139	<50	Industrial, Residential	Y	Industrial	Buffalo Lake Inflow	Major	24	Every Year	2020	Low flow, structural failure, brown scum in waterway adjacent to structure, sewage odor				x	x	x	x	x	x
35	North of 531 East Mullett Street in line with northeast lot line	BLI-137	>50	Industrial, Residential, Other	Y	Industrial	Buffalo Lake Inflow	Major	36	Every Year	2020	Low flow, faint odor				x	x	x	x	x	x

Outfall ID	Location	Contributing Subbasin	Drainage Area	Predominant Land Use	Priority ²	Reason for Priority	Watershed	Major or Minor ¹	Size (inches)	Recommended Screening Frequency	Last Year Screened	Comments from Last Screening	2016: <i>E. Coli</i> >200 cfu/100ml	2016: Chlorine >0.2 mg/L	2016: Surfactants >0.25 mg/L	Future Screening Schedule					
																2021	2022	2023	2024	2025	2026
36	Southeast of East Wisconsin Street and Ontario Street intersection	LWR-16	<50	Other, Commercial	Y	Commercial	Lower Wisconsin River	Minor	12	Every Year	2020	Stagnant				x	x	x	x	x	x

Notes:

¹Major outfalls are defined as outfalls that are 36 inches in diameter (or equivalent cross-sectional area) or larger and are associated with a drainage area of 50 acres or larger. Outfalls with an inside diameter of 12 inches or more are also classified as major outfalls if they receive stormwater runoff from land zoned for industrial activity with 2 or more acres of industrial activity.

²Priority outfalls can be major or minor outfalls that have a higher potential for illicit discharge. Contributing drainage area characteristics or land uses that should be considered when selecting priority outfalls include:

- History of known or suspected illicit discharges reported within the last five years.
- Sections of storm sewer and/or sanitary sewer infrastructure that have exceeded or are approaching their design/useful life.
- Contributing drainage areas with 80 or more percent impervious.
- Business or industrial parks with frequent changes in property ownership or operations.
- Schools or other institutional facilities.
- Commercial or industrial operations that generate wastewater or wash water including food processing, metal plating or machining shops, auto and scrap recyclers, commercial car washes and chemical manufacturers or users, or wash water including food processing, metal plating or machining shops, auto and scrap recyclers, commercial car washes and chemical manufacturers or users.

5. Response Procedures

a. Identification of Suspected Spill or Illicit Discharge

Where field screening indicates the possible presence of an illicit discharge or other nonstormwater discharge, the following procedure shall be implemented as soon as possible:

- (1) The field analysis described in Section 3.02 C. 3. A. (2) shall be conducted.
- (2) The suspected illicit discharge shall be tracked by screening manholes and other screening points upstream until the source of the spill or discharge is identified.
- (3) Measures shall be taken to prevent or contain spills that have discharged or may discharge into the drainage system.
- (4) WDNR shall be notified immediately in accordance with NR 706, Wisconsin Administrative Code, in the event that a spill or release of a hazardous substance is identified that has resulted or may result in the discharge of pollutants into waters of the state. WDNR shall be notified via the 24-hour toll free spill hotline at 1-800-943-0003. The City will cooperate with WDNR staff in efforts to investigate and prevent such discharges from polluting waters of the state.
- (5) The City shall take appropriate action to remove illicit discharges from its MS4 system as soon as possible. If it will take more than three days to remove an illicit connection, the City will contact WDNR to discuss an appropriate action and/or time frame for removal.
- (6) If a suspected illicit discharge that originates from the City's permitted area is found to discharge directly to a storm sewer or property under the jurisdiction of another municipality, the City shall notify the affected municipality within one working day.

b. Leakage from Sanitary Conveyance System

Leakages from sanitary conveyance system into the MS4 shall be eliminated to the MEP. Any actions taken to eliminate sanitary conveyance leakage will be recorded and reported to WDNR in the annual report.

c. Dye Testing Notification

The City will provide WDNR with advance notice of the time and location of dye testing within an MS4.

6. Responsible Parties

Aaron Jahncke, P.E.
 City of Portage
 115 West Pleasant Street
 Portage, WI 53901
 608-742-2176 ext. 325

7. Measurable Goals

Strand recommends implementation of the following activities with their associated measurable goal, responsible party, and anticipated completion date as described in Table 3.02-6.

	Activity	Measurable Goal	Responsible Party	Anticipated Completion Date
1	Implement the IDDE program described in Section 3.02.C.	See above	City Engineer	Ongoing
2	Conduct field screening for illicit discharges as described in Section 3.02.C. using the blank field screening form in Appendix H.	See above	City Engineer	By November 15, annually
3	Track the IDDE program activities for annual reporting to WDNR.	Once each year	City Engineer	Once each year

Table 3.02-6 IDDE Plan and Measurable Goals

D. Construction Site Pollution Control

A review of the City’s ordinance in comparison to the current version of NR 151 reveals the following necessary revisions in Table 3.02-7. It is recommended that the City repeal the existing construction site erosion control ordinance and replace it with a new construction site erosion control ordinance based on the WDNR’s most recent model ordinance. NR 151 is included in Appendix B.

Proposed Revision Location	Proposed Revision
Existing Construction Site Erosion Control Ordinance	Repeal entire existing ordinance after consultation with the City Attorney.
Adopt the Erosion Control and Stormwater Requirements Document that includes a new Construction Site Erosion and Sediment Control Ordinance in Appendix A	Review and adopt the new document and ordinance.

Table 3.02-7 Construction Site Pollution Control Ordinance Revisions

Section 3.01 documents existing City activities. It is recommended that the City continue those activities and supplement them with the recommendations included in Table 3.02-8.

	Activity	Measurable Goal	Responsible Party	Anticipated Completion Date
1	Continue administration and enforcement of the Construction Site Erosion Control Ordinance.	Ongoing	City Engineer	Ongoing
2	Adopt the Erosion Control and Stormwater Requirements Document that includes a new Construction Site Erosion and Sediment Control Ordinance in Appendix A.	See Table 3.02-8	City Engineer	December 2021
3	Document the number of erosion control permits issued each year.	Ongoing	City Engineer	Ongoing
4	Document the number and nature of inspections and enforcement actions conducted to ensure compliance with the erosion control ordinance. Develop a standard inspection form to document inspections.	Ongoing. Develop form in 2021 and begin use of form in 2022.	City Engineer	Ongoing. Develop form in 2021 and begin use of form in 2022.

Table 3.02-8 Construction Site Pollution Control Plan and Measurable Goals

E. Postconstruction Stormwater Management

A review of the City’s ordinance in comparison to the current version of NR 151 reveals the following necessary revisions in Table 3.02-9. It is recommended the City repeal the existing Postconstruction Stormwater Management Zoning Ordinance and replace it with a new Postconstruction Stormwater Management Ordinance based on WDNR’s most recent model ordinance. NR 151 is included in Appendix B. It is also recommended the City adopt a new BMP Maintenance Ordinance that requires all privately owned BMPs have inspection and maintenance completed once every five years. A draft BMP Maintenance Ordinance is included in Appendix M.

Ordinance Section	Recommended Revision
Existing Post-Construction Stormwater Management Zoning ordinance	Repeal entire existing ordinance after consultation with the City Attorney.
Adopt the Erosion Control and Stormwater Requirements Document that includes a new Post-Construction Stormwater Management Ordinance	Review and adopt the new document and ordinance.
Adopt a BMP Maintenance Ordinance	Review and adopt the new ordinance.

Table 3.02-9 Postconstruction Stormwater Management Ordinance Revisions

Section 3.01 documents existing City activities. It is recommended that the City continue those activities and supplement them with the recommendations included in Table 3.02-10.

	Activity	Measurable Goal	Responsible Party	Anticipated Completion Date
1	Continue administration and enforcement of the Postconstruction Stormwater Management Ordinance.	Ongoing	City Engineer	Ongoing
2	Adopt the Erosion Control and Stormwater Requirements Document that includes a new Construction Site Erosion and Sediment Control Ordinance.	See Table 3.02-10	City Engineer	December 2021
3	Adopt a BMP Maintenance Ordinance	See Table 3.02-10	City Engineer	December 2021
4	Document the number of stormwater management permits issued each year.	Ongoing	City Engineer	Ongoing
5	Document the number and nature of inspections and enforcement actions conducted to ensure compliance with the Postconstruction Stormwater Management Ordinance. Develop a standard inspection form to document inspections.	Ongoing. Develop form in 2021 and begin use of form in 2022.	City Engineer	Ongoing. Develop form in 2021 and begin use of form in 2022.
6	Initiate a program to gather all existing maintenance agreements for privately owned stormwater BMPs. Obtain maintenance agreements retroactively if it is found that any are missing.	Gather all existing agreements	City Engineer	Report progress on gathering of agreements in annual reports.
7	Initiate a program to require yearly reporting from owners of private BMPs showing that BMPs are being properly maintained.	Develop program in 2021 and initiate program in 2022.	City Engineer	Develop program in 2021 and initiate program in 2022.

Table 3.02-10 Postconstruction Stormwater Management Plan and Measurable Goals

F. Pollution Prevention for Municipal Operations

In Section 3.01, existing City activities are documented. It is recommended that the City continue those activities and supplement them with the recommendations included in Table 3.02-11.

Table 3.02-11 Pollution Prevention for Municipal Operations Plan and Measurable Goals

	Activity	Measurable Goal	Responsible Party	Anticipated Completion Date
1	Maintenance of Existing Municipally Owned/Operated Stormwater BMPs–Continue to maintain stormwater facilities. Maintenance of stormwater facilities should be in accordance with the Stormwater Facility Maintenance program document provided in Appendix J. Track these maintenance operations.	Ongoing	City Engineer	Ongoing
2	Inspection of Privately Owned Stormwater Management Facilities with Long-Term Maintenance Agreements–Initiate inspection program using Stormwater Facility Maintenance Program document provided in Appendix J.	Inspect once every five years	City Engineer	Ongoing
2	Street Sweeping–Continue existing program.	Ongoing and report annually	City Engineer	Ongoing
3	Catch Basin Cleaning–Continue existing program. Consider project to map location and depth of catch basins with sumps.	Ongoing and report annually	City Engineer	Ongoing
4	Deicing and Snow Removal–Continue current operations and look for possible ways to decrease deicer use while still maintaining public safety. References regarding deicers include: WisDOT Highway Maintenance Manual, Chapter 35 http://www.dot.wisconsin.gov/business/extranet Also, track monthly precipitation amounts.	Ongoing and report annually	City Engineer	Ongoing
5	Leaf and Grass Management–Continue current program. Consider potential changes necessary to qualify for WDNR’s Interim Municipal Phosphorus Reduction Credit for Leaf Management Programs.	Ongoing and report annually.	City Engineer	Ongoing
6	Municipal Garage and Storage Area Management–Implement the recommended activities listed in the SWPPP provided in Appendix G. Track quantity of used oil recycled each year.	Ongoing and report annually	City Engineer	Ongoing
7	Turf Maintenance Policies–Continue existing program. In 2021, begin tracking the type, quantity, and location of fertilizer usage each year.	Ongoing and report annually	City Engineer	Ongoing
8	Measures to Reduce Municipal Sources of Stormwater Within Source Water Protection Areas–The City should continue existing practices.	Ongoing	City Engineer	Ongoing
9	Track Pollution Prevention for Municipal Operations for annual report to WDNR.	Once each year	City Engineer	Once each year

G. Stormwater Quality Management

The City currently meets the 20 percent reduction in the annual average mass of TSS discharging from the City’s MS4 to surface waters of the state as described in Section 4. Section 5 provides an alternatives analysis to look at cost-effective ways to attain TMDL compliance for the Wisconsin River Basin and Upper Fox and Wolf River TMDL TP and TSS reduction requirements.

Strand recommends the implementation of the following activities with their associated measurable goal, responsible party, and anticipated completion date as described in Table 3.02-12.

	Activity	Measurable Goal	Responsible Party	Anticipated Completion Date
1	Implement recommended activities to bring the City into compliance with the Wisconsin River Basin and Upper Fox and Wolf River TMDL TP and TSS reduction requirements in Section 5 of this plan.	Achieve Wisconsin River Basin and Upper Fox and Wolf River TMDL TP and TSS reduction requirements.	City Engineer	To be determined, ongoing.

Table 3.02-12 Stormwater Quality Management Plan and Measurable Goal

H. Storm Sewer System Map

The storm sewer system maps submitted in this plan meet the WPDES permit requirements. It is recommended the storm sewer system map be updated on an annual basis as needed to be submitted with the annual report. Strand recommends implementation of the following activities with their associated measurable goal, responsible party, and anticipated completion date as described in Table 3.02-13.

	Activity	Measurable Goal	Responsible Party	Anticipated Completion Date
1	Annual update of storm sewer system map.	Once each year, if needed because of development in the City.	City Engineer	Annually by March 1, if needed.

Table 3.02-13 Storm Sewer System Map Plan and Measurable Goal

I. Annual Report

The WPDES stormwater permit requires the City to submit an online annual report for each calendar year by March 31 of the following year.

According to the State of Wisconsin Department of Administration Web site, the population of the City is 10,324 (Year 2010 Census), which determines the annual permit fee.

Strand recommends implementation of the following activities with their associated measurable goal, responsible party, and anticipated completion date as described in Table 3.02-14.

	Activity	Measurable Goal	Responsible Party	Anticipated Completion Date
1	Compilation of tracked permit activities.	Once each year	City Engineer	Once each year, by March 1.
2	Preparation and submittal of annual report.	Once each year	City Engineer	Annually by March 31.
3	Phase I Permit Fee (\$1,500) under NR 216.08 for population of between 10,000 to 12,499 in the City.	Once each year	City Engineer	Payable by June 30 each year.

Table 3.02-14 Biennial Report and Permit Fee Plan and Measurable Goals

J. Cooperation

It is recommended that the City yearly contributes monetarily to NCSWC and NEWSW for Public Education and Outreach and Public Involvement and Participation activities.

SECTION 4
STORMWATER QUALITY MODELING

4.01 INTRODUCTION

A. General

Water quality analysis for the City was completed using WinSLAMM. WinSLAMM is a computer model approved by WDNR to address the requirements of NR 151 that analyzes NPS pollution abatement. WinSLAMM has been calibrated using extensive water quality data throughout the United States. As this model is used for regulatory purposes, the results can be compared to other past and ongoing studies. WinSLAMM is regularly updated to include additional water quality monitoring data to further refine its predictive capabilities.

WinSLAMM is a planning-level tool that enables municipalities to make decisions regarding BMPs necessary to achieve NPS runoff standards described in NR 151. WinSLAMM specifically analyzes control practices including street sweeping, wet detention ponds, catch basin and inlet sumps, infiltration devices, porous pavements, and grass swales. WinSLAMM also predicts relative pollutant contributions from “source areas” including rooftops, parking lots, driveways, streets, sidewalks, and pervious space.

B. Regulatory Requirements

The City’s Stormwater Permit requires assessment of compliance with NR 151 pollutant reduction goals through completion of a pollutant loading analysis using the WinSLAMM or other equivalent pollutant loading model. At a minimum, the City must estimate average annual TSS and TP loads for the cumulative discharge from all outfalls for the “no controls/baseline” and “controls/existing” conditions. For the no controls condition, the modeling must estimate the theoretical annual average mass of TSS and TP generated for the entire area served by the City’s stormwater management system with no controls or BMPs applied. The controls condition must estimate the City’s current level of pollutant reductions based on current City practices including wet detention basins and swale drainage. The controls condition must be judged against the no controls condition to determine the percent of TSS and TP reduction.

In the City’s case, its January 2008 Stormwater Management Plan documented the achievement of the WDNR-mandated 20 percent TSS reduction requirement by submittal of MS4 existing conditions modeling in WinSLAMM 9.2 showing a 30 percent TSS reduction. As such, the City does not need to maintain the MS4 model as confirmed with Eric Rortvedt of WDNR. Rather, the scope of services for this project includes performing MS4/TMDL modeling using WDNR’s current guidance to meet requirements of the approved Wisconsin River Basin and Upper Fox and Wolf River TMDL.

C. Analysis Methodology

City land use was divided for WinSLAMM modeling purposes into the categories of residential, commercial, institutional, industrial, exempt, and open space. The standard land use files were used for these categories. Table 4.01-1 lists the percentage of source area for each land use category, excluding transportation right-of-way (ROW), from the WDNR Standard Land Use. Table 4.01-2 lists the distribution of impervious source areas by land use class from the WDNR Standard Land Use. Table 4.01-3 lists the distribution of pervious source areas by land use class from the WDNR Standard Land Use. Refer to Figure 2.01-2, which shows the Modeled WinSLAMM Land Use.

Basins were delineated through a desktop analysis. Key features used to delineate basins included, but were not limited to, the existing storm sewer conveyance system, drainage patterns, topography, and aerial photography. Several basins were identified as potential internally drained basins. Each of these flagged basins were modeled in HydroCAD. If the 10-year, 24-hour storm event did not leave the basin, it was determined that the basin was internally drained. Basins that were determined to be internally drained were deemed exempt and were not included in MS4 TMDL analysis, in accordance with WDNR guidance. Three basins (NC-27, BLI-97, and BLI-99) located on the west side of the City were determined to be internally drained.

Table 4.01-1 Source Area by Land Use

Class	Land Use	Roof (percent)	Driveway (percent)	Sidewalk (percent)	Paved Parking/Storage (percent)	Unpaved Parking/Storage (percent)	Playground (percent)	Large Landscaped (percent)	Undeveloped (percent)	Small Landscaped (percent)	Other Pervious (percent)	Isolated Water Body (percent)	Directly Connected Impervious (percent)	Partially Connected Impervious (percent)	Street Area (percent)	Total (percent)
Residential	High Density Residential with Alleys (<1/4-acre lots)	24.20	0.70	6.40	0.40	0.00	0.00	0.00	0.30	41.50	6.30	0.00	0.00	0.00	20.20	100.00
	High Density Residential Without Alleys (<1/4-acre lots)	21.40	14.10	4.0	0.00	0.00	0.00	0.00	0.00	41.00	5.90	0.10	0.00	0.00	13.50	100.00
	Medium Density Residential (1/4- to 1/2-acre lots)	15.00	7.50	2.20	0.20	0.00	0.00	0.20	0.40	57.50	4.00	0.20	0.00	0.00	12.80	100.00
	Low Density Residential (>1/2-acre lots)	8.00	4.50	0.70	0.10	0.00	0.00	0.00	4.40	74.80	0.20	0.20	0.10	0.00	7.00	100.00
	Duplex	16.54	5.31	3.96	0.00	0.00	0.00	0.00	0.00	60.88	0.00	0.00	0.00	0.00	13.31	100.00
	Multifamily	20.70	2.80	4.20	10.80	0.50	0.10	1.40	3.00	38.00	3.80	0.10	0.00	0.00	14.60	100.00
	Mobile Home	16.90	12.30	1.00	13.40	0.60	0.00	0.00	4.50	44.70	0.00	1.00	2.00	0.00	3.60	100.00
Commercial	Commercial	9.44	0.00	2.28	26.31	0.00	0.00	58.66	0.00	0.00	0.00	0.00	0.00	0.00	3.31	100.00
	Commercial Downtown	40.73	1.48	8.35	22.61	0.00	0.00	0.00	0.00	3.56	0.62	0.00	0.00	0.08	22.17	99.60
	Shopping Center	21.61	1.81	0.54	60.68	0.34	0.00	0.00	2.93	4.53	0.82	0.00	0.35	0.00	6.39	100.00
	Strip Commercial	23.40	2.00	4.30	40.90	1.40	0.00	0.00	0.20	5.80	1.90	0.00	0.00	0.00	20.10	100.00
Institutional	Institutional	14.41	3.00	2.20	27.21	0.00	3.40	5.34	1.83	26.55	2.65	0.00	0.00	1.33	12.08	100.00
	School	15.00	1.98	2.91	10.65	0.00	17.33	22.09	0.42	17.43	2.19	0.00	0.00	1.35	8.65	100.00
Industrial	Light Industrial	25.35	2.56	1.28	32.94	6.34	0.00	3.51	4.34	9.86	2.77	0.00	0.00	0.21	10.84	100.00
	Medium Industrial	23.11	2.80	0.90	34.09	14.61	0.00	2.81	5.37	4.00	4.53	0.00	0.00	0.23	7.55	100.00
Other Urban	Cemetery	1.10	7.67	0.06	2.24	0.07	0.00	86.40	0.48	0.23	0.00	0.28	0.00	0.03	1.44	100.00
	Open Space	0.55	0.00	0.58	0.00	0.00	0.00	0.59	94.54	0.00	0.00	0.00	0.00	0.00	3.74	100.00
	Park	0.46	1.21	0.49	4.19	0.22	1.80	77.95	0.00	0.85	0.00	7.08	0.00	2.48	3.27	100.00

Source: WDNR Standard Land Use Files

Table 4.01-2 Distribution of Impervious Source Areas by Land Use Class

Class	Land Use	Pitched Roofs		Flat Roofs		Driveways		Sidewalks		Parking/Storage		Unpaved Parking/Storage		Total (percent)
		Connected (percent)	Unconnected (percent)	Connected (percent)	Unconnected (percent)	Connected (percent)	Unconnected (percent)	Connected (percent)	Unconnected (percent)	Connected (percent)	Unconnected (percent)	Connected (percent)	Unconnected (percent)	
Residential	High Density Residential with Alleys (<1/4-acre lots)	42.9	33.4	0.0	0.0	2.2	0.0	10.1	10.1	1.3	0.0	0.0	0.0	100.0
	High Density Residential Without Alleys (<1/4-acre lots)	26.0	28.1	0.0	0.0	35.7	0.0	5.1	5.1	0.0	0.0	0.0	0.0	100.0
	Medium Density Residential (1/4- to 1/2-acre lots)	18.1	42.2	0.0	0.0	22.5	7.6	4.4	4.4	0.8	0.0	0.0	0.0	100.0
	Low Density Residential (>1/2-acre lots)	14.3	45.9	0.0	0.0	24.1	9.8	2.6	2.6	0.8	0.0	0.0	0.0	100.0
	Duplex	17.4	46.7	0.0	0.0	20.6	0.0	15.3	0.0	0.0	0.0	0.0	0.0	100.0
	Multifamily	36.2	8.2	8.7	0.0	4.9	2.3	5.4	5.4	27.7	0.0	1.3	0.0	100.0
	Mobile Home	0.0	0.0	38.2	0.0	27.8	0.0	1.1	1.1	30.3	0.0	0.0	1.4	100.0
Commercial	Commercial	2.0	0.0	12.4	10.5	0.0	0.0	6.0	0.0	69.2	0.0	0.0	0.0	100.0
	Commercial Downtown	0.0	0.0	55.7	0.0	2.0	0.0	11.4	0.0	30.9	0.0	0.0	0.0	100.0
	Shopping Center	0.0	0.0	25.4	0.0	2.1	0.0	0.6	0.0	71.4	0.0	0.4	0.0	100.0
	Strip Commercial	5.1	0.0	27.4	0.0	2.8	0.0	6.0	0.0	56.8	0.0	0.0	1.9	100.0
Institutional	Institutional	18.0	1.2	11.5	0.0	6.4	0.0	4.7	0.0	58.1	0.0	0.0	0.0	100.0
	School	0.0	0.0	49.1	0.0	6.5	0.0	9.5	0.0	34.9	0.0	0.0	0.0	100.0
Industrial	Light Industrial	3.8	0.0	30.0	3.3	3.7	0.0	1.9	0.0	48.1	0.0	0.0	9.3	100.0
	Medium Industrial	2.5	0.0	22.3	5.9	2.4	1.3	0.6	0.6	45.2	0.0	0.0	19.4	100.0
Other Urban	Cemetery	0.0	4.9	4.9	0.0	68.9	0.0	0.5	0.0	20.1	0.6	0.0	0.0	100.0
	Open Space	0.0	0.0	48.7	0.0	0.0	0.0	51.3	0.0	0.0	0.0	0.0	0.0	100.0
	Park	1.7	3.8	1.5	0.0	18.4	0.0	7.5	0.0	63.8	0.0	0.0	3.4	100.0

Source: WDNR Standard Land Use Files

Table 4.01-3 Distribution of Pervious Source Areas by Land Use Class

Class	Land Use	Playground		Pervious Areas							Total (percent)
		Connected (percent)	Unconnected (percent)	Large Landscaped Area (percent)	Undeveloped (percent)	Small Landscaped Area (percent)	Other Pervious (percent)	Isolated Water Body (percent)	Other Partially Connected (percent)	Other Directly Connected (percent)	
Residential	High Density Residential with Alleys (<1/4-acre lots)	0.0	0.0	0.0	0.6	86.3	13.1	0.0	0.0	0.0	100.0
	High Density Residential Without Alleys (<1/4-acre lots)	0.0	0.0	0.0	0.0	87.2	12.6	0.2	0.0	0.0	100.0
	Medium Density Residential (1/4- to 1/2-acre lots)	0.0	0.0	0.3	0.6	92.3	6.4	0.3	0.0	0.0	100.0
	Low Density Residential (>1/2-acre lots)	0.0	0.0	0.0	5.5	93.9	0.3	0.3	0.1	0.0	100.0
	Duplex	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0
	Multifamily	0.0	0.2	3.0	6.5	81.9	8.2	0.2	0.0	0.0	100.0
	Mobile Home	0.0	0.0	0.0	8.6	85.6	0.0	1.9	0.0	3.8	100.0
Commercial	Commercial	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
	Commercial Downtown	0.0	0.0	0.0	0.0	83.6	14.6	0.0	1.9	0.0	100.0
	Shopping Center	0.0	0.0	0.0	34.0	52.5	9.5	0.0	0.0	4.1	100.0
	Strip Commercial	0.0	0.0	0.0	2.5	73.4	24.1	0.0	0.0	0.0	100.0
Institutional	Institutional	4.1	4.1	13.0	4.5	64.6	6.5	0.0	3.2	0.0	100.0
	School	28.5	0.0	36.3	0.7	28.7	3.6	0.0	2.2	0.0	100.0
Industrial	Light Industrial	0.0	0.0	17.0	21.0	47.7	13.4	0.0	1.0	0.0	100.0
	Medium Industrial	0.0	0.0	16.6	31.7	23.6	26.7	0.0	1.4	0.0	100.0
Other Urban	Cemetery	0.0	0.0	98.8	0.6	0.3	0.0	0.3	0.0	0.0	100.0
	Open Space	0.0	0.0	0.6	99.4	0.0	0.0	0.0	0.0	0.0	100.0
	Park	1.0	1.0	86.5	0.0	0.9	0.0	7.9	2.8	0.0	100.0

Source: WDNR Standard Land Use Files

4.02 WDNR WINSLAMM GUIDANCE

The following WDNR guidance was referred to for the City's MS4 modeling. These guidance documents are available at the following WDNR Web site:

https://dnr.wi.gov/topic/stormwater/standards/ms4_modeling.html

1. *TMDL Guidance for MS4 Permits: Planning, Implementation, and Modeling Guidance, Addendum B (Internally Drained Areas)*, May 2016.
2. *TMDL Guidance for MS4 Permits: Planning, Implementation, and Modeling Guidance, Addendum A (Percent Reduction)*, February 2016.
3. *TMDL Guidance for MS4 Permits: Planning, Implementation, and Modeling Guidance*, October 20, 2014.
4. *Developed Urban Areas and the 20% and 40% TSS Reductions Sections NR 151.13(2) and NR 216.07(6)*, Wis. Adm. Code, November 24, 2010.
5. *Process to Assess and Model Grass Swales for ss. NR 151.13(2) and NR216.07(6)*, Wis. Adm. Code—Total Suspended Solids Reduction, November 24, 2010.
6. Modeling of dry detention basins for TSS removal, April 1, 2010.
7. *Errata to Guidance on Process to Assess and Model Grass Swales for ss. NR 151.13(2) and NR 216.07*6)*, Wis. Adm. Code—Total Suspended Solids Reduction, January 8, 2010.
8. *Developed Urban Areas and the 20% and 40% TSS Reductions Internally Drained Areas*, April 6, 2009.
9. *Errata for Process to Assess and Model Existing Grass Swales (TSS Reduction): Modifications to Double-Ring Infiltrometer Test Procedures in Technical Standard 1002*, August 2008.

Pursuant to the guidelines provided in the memorandums, a portion of the City lands can be exempted from inclusion in the lands required to be modeled in WinSLAMM. Figures 2.01-1 and 2.01-2 show the watersheds modeled in WinSLAMM.

Table 4.02-1 lists the parameter files used for the WinSLAMM modeling.

Land Use	Parking Density	Start and End Dates	Winter Season Range
Rain File	WisReg-Madison Five Year Rainfall.ran	January 2, 1980 to January 1, 1985	December 2 to March 12
Pollutant Probability Distribution File	WI_GEOO3.ppd	--	--
Runoff Coefficient File	WI_SL06 Dec 06.rsvx	--	--
Particulate Solids Concentration File	V10.1 WI_AVGO1.pscx	--	--
Street Delivery Files	WI_Res and Other Urban Dec 06.std WI_Com Inst Indust Dec 06.std WI_Freeway Dec06.std	--	--
Source Area PSD and Peak to Average Flow Ratio File	NURP Source Areas PSD Files.csv	--	--
Pollutants Modeled	Particulate Solids (TSS), Particulate Phosphorus, Dissolved Phosphorus, TP	--	--

Note: PSD–Prevention of Significant Deterioration

Table 4.02-1 WinSLAMM Parameter Files

4.03 SWALE MODELING AND DOUBLE-RING INFILTRMETER TESTING

In October 2019, double-ring infiltrometer testing was completed at various locations within the City shown on Figure 2.03-1 with a testing approach approved by Dan Bekta of the WDNR in a June 28, 2019, e-mail. The results of the field infiltration testing calculated an average dynamic infiltration rate of 0.50 in/hr. This infiltration rate was approved by Dan Bekta of the WDNR in a July 20, 2020, e-mail and is used in the WinSLAMM modeling. The double-ring infiltrometer results are included in Appendix K.

4.04 BASELINE CONDITIONS ANALYSIS

To evaluate the effectiveness of the City’s existing stormwater management practices and proposed management practices, baseline conditions were modeled using WinSLAMM. Models were run to estimate the TSS and TP loadings for each watershed. Baseline conditions are considered to have no BMPs employed, in accordance with guidelines specified by the WDNR. For example, the City is assumed to be drained completely by a curb and gutter system. Also, no wet detention basins or infiltration practices were modeled for the baseline conditions.

Results of the baseline condition model are discussed in Section 4.06.

4.05 EXISTING CONDITIONS ANALYSIS

Water quality modeling was completed for existing conditions to assess the effectiveness of current stormwater management practices in removing TSS from stormwater. BMPs evaluated typically include street sweeping, grassed swales, wet detention basins, inlet and catch basin sumps, and infiltration areas. Descriptions of current practices and modeling results are summarized in this section. Figure 2.01-1 shows the locations of the publicly-owned and privately-owned BMPs within the City. As part of this plan update, the City intends to adopt a BMP Maintenance Ordinance which will require all privately owned BMPs have inspection and maintenance completed once every five years. This ordinance allows all private BMPs within the City to be incorporated in the modeling. Appendix L includes photographs of the various BMPs in the City.

A. Street Sweeping

The City currently performs street sweeping using its two vacuum sweepers (i.e., one 2004 Freightliner and one 2014 Elgin Whirlwind). The sweeping schedule is once per month during April through September, which takes one sweeper approximately 40 hours per month. During spring clean-up and fall leaf clean-up, the sweeping schedule increases to six times per month, which takes two sweepers each approximately 120 hours per month. In total, the City performs street sweeping 24 times per year. The street sweeping date range in WinSLAMM was limited to March 12 through December 2 because of the input winter season date range as recommended by the United States Geological Survey (USGS). In WinSLAMM, a sweeping frequency of once every two weeks produced an average annual sweeping frequency of 17.6 sweeping days per year over the five-year modeled period. The WinSLAMM sweeping frequency once every two weeks produced the nearest annual sweeping frequency to the actual estimated frequency and was therefore selected for modeling the existing conditions. Table 4.05-1 provides the street sweeping parameters used in the modeling.

Land Use	Parking Density	Parking Controls
All WinSLAMM landuses	Medium	None

Table 4.05-1 Street Sweeping Parameters

B. Wet Detention Basins

There is one publicly owned and 15 privately owned wet detention basins with maintenance agreements in the City as shown on Figure 2.01-1, and they are listed in Table 4.05-2.

C. Inlet and Catch Basin Sumps

The City began using storm structures with sumps approximately three years ago. In total, the locations of 97 storm structures with sumps were documented across 30 watersheds. Out of the 97 documented sump locations, 67 of those included sump depths below the outgoing pipe invert elevation; the average documented sump depth from the surface is 3.9 feet. Sump depths from the outlet invert were not individually documented, but generally range from 12 to 18 inches; therefore,

it was assumed the average sump depth from the outlet invert was 15 inches (1.25 feet). The cross-sectional area of sumps was not comprehensively documented; the minimum sump cross-sectional area documented was 2 by 3 feet. Therefore, in an effort to be conservative, the modeled sump cross-sectional area was input as 6 square feet for each set of sumps. The City cleans sumps twice per year. Table 4.05-3 summarizes the assumed catch basin model inputs.

Table 4.05-2 City Detention Basin Properties

BMP Name	BMP ID	Basin	Approximate Year Constructed	Owner	BMP Modeled As	Modeled in Existing Conditions?	Comments (Long-term Maintenance Agreement?)	Potential Retrofit?
Publicly Owned BMPs:								
Industrial Park Wet Pond	E47	NC-28	No Record	City	Wet Pond	Yes	NA	Yes
Privately Owned BMPs:								
Grace Bible Church Wet Pond	E1	BLI-48	2003	Private	Wet Pond	Yes	Yes	No
Walmart Wet Pond	E2	BLI-53	2002	Private	Wet Pond	Yes	Yes	No
Gunderson Drive Wet Pond	E3	BLI-47	2002	Private	NA–No As-Built Plans	No	NA	Yes
Kmart Wet Pond	E4	BLI-50	2016	Private	Wet Pond	Yes	Yes	No
Behnke Property Wet Pond	E5	BLI-80	NA	Private	NA–No As-Built Plans	No	NA	Yes
Columbia Correctional Institution Wet Pond	E6	BLI-78	NA	Private	NA–No As-Built Plans	No	NA	Yes
Festival Foods Wet Pond	E7	BLI-51	No Record	Private	Wet Pond	Yes	Yes	No
Braund Development Dry Pond	E8	BLI-72	2005	Private	Dry Pond (Swale)	Yes	Yes	Yes
Divine Savior Nursing Home North Dry Pond	E9	BLI-63	2009	Private	Dry Pond (Bioretention Basin)	Yes	Yes	Yes
Divine Savior Nursing Home South Dry Pond	E10	BLI-64	2009	Private	Dry Pond (Bioretention Basin)	Yes	Yes	Yes
Meadowlark Lane Pond	E11	BLI-61	NA	Private	NA–No As-Built Plans	No	NA	Yes
Portage Plastics Dry Pond	E12	NC-33	2002	Private	Dry Pond (Bioretention Basin)	Yes	Yes	Yes
La Dawn Drive Dry Pond (Baraboo News Republic)	E13	NC-38	2002	Private	Dry Pond (Swale)	Yes	Yes	Yes
Dawn's Foods Biofiltration Basin	E14	BLI-85	2018	Private	Bioretention Basin	Yes	Yes	No
Flexible Foam Dry Pond	E15	NC-34	No Record	Private	Dry Pond (Swale)	Yes	Yes	Yes
Cardinal FG BMPs	E16	LWR-22, LWR-37	2017	Private	Wet Ponds	Yes	Yes	No
Cardinal FG BMPs	E16	LWR-36	2017	Private	Bioretention Basin	Yes	Yes	Yes
Manchester Place Wet Pond	E17	BLI-176	2006	Private	Wet Pond	Yes	Yes	No
Southtown North Dry Pond	E20	BLI-149	No Record	Private	Dry Pond (Swale)	Yes	Yes	Yes
Southtown South Dry Pond	E21	BLI-150	No Record	Private	Dry Pond (Swale)	Yes	Yes	Yes
Hamilton Park Place BMPs	E22	BLI-117	2013	Private	Dry Pond (Swale)	Yes	Yes	Yes
Hamilton Park Place BMPs	E22	BLI-118	2013	Private	Bioretention Basin	Yes	Yes	No
Hamilton Park Place BMPs	E22	BLI-119	2013	Private	Bioretention Basin	Yes	Yes	No
Hamilton Park Place BMPs	E22	BLI-120	2013	Private	Dry Pond (Swale)	Yes	Yes	Yes
Rolling Woods Estates BMPs	E23	BLI-109	NA	Private	NA–No As-Built Plans	No	NA	Yes
Thompson_Mullett Parking Lot Bio Basin	E24	BLI-142	No Record	Private	Bioretention Basin	Yes	Yes	No
Albert_Haertel Wet Pond	E25	BLI-188	No Record	Private	Wet Pond	Yes	Yes	No
Cardinal FG Wet Pond	E26	NC-35	2017	Private	Wet Pond	Yes	Yes	No
Heritage House BMPs	E27	BLI-105, BLI-106, BLI-107, BLI-209	2005	Private	Dry Ponds (Grass Swales)	Yes	Yes	No
Heritage House BMPs	E27	BLI-108	2005	Private	Dry Pond (Bioretention Basin)	Yes	Yes	No
Saint-Gobain Wet Pond	E28	BLI-96	2014	Private	Wet Pond	Yes	Yes	No
Saint-Gobain Dry Pond	E28	BLI-95	2014	Private	Dry Pond (Bioretention Basin)	Yes	Yes	Yes
Kwik Trip Wet Pond	E29	BLI-145	2010	Private	Wet Pond	Yes	Yes	No
FM Solutions Dry Pond	E30	NC-32	2000	Private	Dry Pond (Swale)	Yes	Yes	Yes
Parkside Subdivision Dry Pond	E31	BLI-173	2005	Private	Dry Pond (Swale)	Yes	Yes	No
Portage Commons Ponds	E32	BLI-212	NA	Private	NA–No As-Built Plans	No	NA	Yes
Divine Savior Wet Ponds	E33	BLI-55, BLI-65	2002	Private	Wet Ponds	Yes	Yes	No
Hilife Investments Underground Pond	E34	BLI-54	2002	Private	Underground Pond	Yes	Yes	No
Hamilton Grove Subdivision Infiltration Basin	E35	BLI-156	NA	Private	NA–No As-Built Plans	No	NA	Yes
Erath Office Building Dry Pond	E36	BLI-111	2003	Private	Dry Pond (Swale)	Yes	Yes	Yes
Labbeemint Dry Pond	E37	BLI-87	2003	Private	Dry Pond (Swale)	Yes	Yes	Yes
Columbia County Jail Sediment Chambers	E38	BLI-193, BLI-194	2003	Private	Hydrodynamic Devices	Yes	Yes	No
Hill Ford Body Shop Dry Pond	E39	BLI-46	2004	Private	Dry Pond (Swale)	Yes	Yes	Yes
Tractor Supply Dry Pond	E40	BLI-43	2004	Private	Dry Pond (Swale)	Yes	Yes	Yes
Appleton Papers Tank Farm	E41	BLI-93	2006	Private	Exempt	No	Yes	No
Encapsys Wet Pond	E42	BLI-92	2018	Private	Wet Pond	Yes	Yes	No
Columbia County Administration Building Bioretention Basin	E43	BLI-143	2015	Private	Bioretention Basin	Yes	Yes	No
Portage Community School Infiltration Basin	E44	BLI-165	2011	Private	Filter Strip	Yes	Yes	Yes
Kwik Trip Car Wash Wet Pond	E45	BLI-146	2010	Private	Wet Pond	Yes	Yes	No
Dan Roeker Site Wet Pond	E46	BLI-154	2014	Private	Wet Pond	Yes	Yes	No
Portage Plaza Wet Ponds	E48	BLI-48	NA	Private	NA–No As-Built Plans	No	NA	Yes
Advantage Credit Union Infiltration Pond	E49	BLI-48	NA	Private	NA–No As-Built Plans	No	NA	Yes
Ultra Urban Filtration Technology Devices (UUFT)	U1-U11	NA	NA	Private	NA–No As-Built Plans	No	NA	Yes

Table 4.05-3 City Catch Basin Properties

Basin	Number of Catch Basins	Fraction of Basin Served by Catch Basins (0 to 1)	Average Sump Depth from Invert (feet)	Depth of Sediment in Sump at Start (feet)	Typical Outlet Pipe Diameter (feet)	Typical Outlet Pipe Manning's n	Typical Outlet Pipe Slope (ft/ft)	Sump Area (sf)	Sump Depth from Surface (feet)	Annual Cleaning Frequency
LWR-10	12	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
LWR-23	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
NC-31	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
NC-39	6	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-44	4	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-48	16	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-53	11	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-61	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-84	8	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-110	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-115	2	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-137	1	0.05	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-139	2	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-140	2	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-141	3	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-144	5	0.20	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-174	2	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-178	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-186	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-188	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-195	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-197	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-199	3	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-201	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-202	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-203	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-204	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-205	5	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-206	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2
BLI-210	1	1.00	1.25	0.0	1.0	0.013	0.020	6.0	3.9	2

sf—square feet; ft/ft—foot per foot

D. Infiltration Basins

There is one privately owned infiltration basin (Portage Community School Infiltration Basin) with maintenance agreements in the City as shown on Figure 2.01-1. As identified in Table 4.05-2, this infiltration basin was modeled as a filter strip using the input parameters as shown in Table 4.05-4.

Basin	Total Length (feet)	Typical Filter Strip Width (feet)	Fraction of Drainage Area	Typical Slope (ft/ft)	Swale Retardance Factor	Typical Grass Height (feet)	Surface Clogging Load (lb/sf)	Dynamic Infiltration Rate (in/hr)
BLI-165	70	6	1.00	0.01	C	3	3.50	3.60

Note: lb/sf=pounds per square foot

Table 4.05-4 Infiltration Basins Modeled as Filter Strip Parameters

E. Dry Detention Basins

There are 22 existing privately owned dry detention basins in the City as identified in Table 4.05-2. WDNR previously did not give stormwater quality credit to dry detention basins because of their propensity to resuspend sediment during storm events; however, recent guidance now allows credit to be taken for dry basins (not modeled if they have a concrete-lined invert, modeled as a swale if outlet structure invert is level with the bottom of the basin, and modeled as a bioretention basin if the outlet structure invert is elevated above the bottom of the basin). Table 4.05-5 identifies the dry detention basins that were modeled as grass swales and the corresponding input parameters used to model each dry pond.

Basin	Total Length (feet)	Average Swale Length (feet)	Fraction of Drainage Area	Typical Bottom Width (feet)	Typical Swale Side Slope	Typical Slope (ft/ft)	Swale Retardance Factor	Typical Grass Height (feet)	Dynamic Infiltration Rate (in/hr)
					(_ ft H: 1 ft V)				
NC-32	125	63	1.0	40.0	4.0	0.01	C	3	3.60
NC-34	230	115	1.0	60.0	4.0	0.01	C	3	3.60
NC-38	90	45	1.0	50.0	4.0	0.01	C	3	3.60
BLI-43	210	105	1.0	20.0	4.0	0.01	C	3	0.07
BLI-46	245	123	1.0	20.0	4.0	0.01	C	3	3.60
BLI-72	100	50	1.0	20.0	4.0	0.01	C	3	3.60
BLI-87	110	55	1.0	50.0	4.0	0.01	C	3	3.60
BLI-105	80	40	1.0	20.0	4.0	0.01	C	3	3.60
BLI-106	100	50	1.0	20.0	4.0	0.01	C	3	3.60
BLI-107	80	40	1.0	20.0	4.0	0.01	C	3	3.60
BLI-111	130	65	1.0	5.0	4.0	0.01	C	3	0.13
BLI-117	64	32	1.0	20.0	4.0	0.01	C	3	0.13
BLI-120	75	38	1.0	20.0	4.0	0.01	C	3	0.13
BLI-149	150	75	1.0	70.0	4.0	0.01	C	3	0.13
BLI-150	175	88	1.0	100.0	4.0	0.01	C	3	0.13
BLI-173	75	38	1.0	20.0	4.0	0.01	C	3	3.60
BLI-209	120	60	1.0	20.0	4.0	0.01	C	3	3.60

Table 4.05-5 Dry Detention Basins Modeled as Swales Parameters

F. Grass-Lined Ditches and Swales

Areas drained by grass-lined ditches and swales were modeled as such in WinSLAMM. Ditch properties used in the modeling were conservatively assumed and supplemented with GIS topographic data for cross-section geometry and horizontal slope. Swale cross-sections were sampled for each swale modeled in the City’s MS4 area. Table 4.05-6 shows the swale parameters used in the modeling.

It should be noted that WDNR does not allow infiltration credit for grass-lined ditches or swales that have less than a 1 percent longitudinal slope where visual evidence indicates the infiltration rate has been reduced (i.e., significant duration of ponded water or evidence of wetland vegetation). If there is evidence of reduced infiltration rate, an appropriate infiltration rate for clay soils should be used. Based on the review of the City’s swales, several sections appear to have less than a 1 percent longitudinal slope. Strand performed an investigation (combination of field and desktop analysis) of all the ditches in the watersheds that had a weighted average of less than a 1 percent longitudinal slope. This investigation revealed that several of the ditches in watersheds with a weighted average of less than 1 percent longitudinal slope had evidence of ponded water or wetland vegetation. These were all classified with a wet swale or wetland designation, as shown on Figure 2.01-1, and a clay infiltration rate was assigned to this ditch section.

WDNR provided approval to use the geometric mean of four of six infiltration test results (i.e., omitting the highest and lowest infiltration test results) to represent the average infiltration conditions for areas served by grass-lined swales in the City. Therefore, it was assumed that all ditches with a wet swales or wetland designation had a dynamic infiltration rate of 0.035 in/hr and all other ditches had a dynamic infiltration rate of 0.500 in/hr. A geometric mean value, calculated using the ditch lengths within a watershed, was determined for each swale model parameter input. Table 4.05-6 identifies the swale model input parameters used for to model the ditches and swales in each watershed.

G. Rain Gardens and Bioretention Basins

There are no designed rain gardens. There are six privately owned bioretention basins in the City as identified in Table 4.05-2.

H. Hydrodynamic Separators

There are two privately owned hydrodynamic separators (Columbia County Jail Sediment Chambers Nos. 1 and 2) within the City as identified in Table 4.05-2.

The above practices were evaluated in the WinSLAMM model based on contour mapping, field review, and information supplied by the City

Results of the existing condition model are discussed in Section 4.06.

Table 4.05-6 Swale Modeling Parameters

Basin	Length (feet)	Average Swale Length (feet)	Typical Bottom Width (feet)	Typical Swale Side Slope (_ft H: 1 ft V)	Typical Slope (ft/ft)	Swale Retardance Factor	Typical Grass Height (inches)	Dynamic Infiltration Rate (in/hr)	Evidence of Ponding?	Undeveloped Roadside?
LWR-1	1,200	313	7.0	4.8	0.013	C	3	0.035	Yes	No
LWR-2	9,284	313	8.5	4.8	0.011	C	3	0.148	Yes	Yes
LWR-4	9,192	313	9.7	3.9	0.009	C	3	0.035	Yes	Yes
LWR-10	1,799	313	10.0	2.3	0.010	C	3	0.500	NA	Yes
LWR-21	296	296	8.8	5.0	0.013	C	3	0.500	NA	Yes
NC-28	438	313	7.5	6.5	0.043	C	3	0.500	NA	Yes
NC-29	3,315	313	8.8	9.0	0.024	C	3	0.500	NA	Yes
BLI-58	262	262	10.0	7.5	0.032	C	3	0.500	NA	Yes
BLI-59	8,101	313	8.4	5.5	0.030	C	3	0.318	Yes	Yes
BLI-82	1,969	313	7.8	6.0	0.024	C	3	0.500	NA	Yes
BLI-86	625	313	8.0	5.0	0.040	C	3	0.500	NA	Yes
BLI-90	764	313	5.0	10.0	0.005	C	3	0.500	No	No
BLI-100	6,543	313	9.3	4.0	0.021	C	3	0.500	NA	Yes
BLI-123	192	192	3.5	4.5	0.013	C	3	0.500	NA	No
BLI-127	1,453	313	2.5	7.0	0.050	C	3	0.500	NA	No
BLI-131	9,682	313	9.2	9.5	0.001	C	3	0.390	Yes	Yes
BLI-135	2,272	313	10.0	8.5	0.001	C	3	0.500	No	Yes
BLI-137	21,391	313	9.2	18.6	0.003	C	3	0.303	Yes	Yes
BLI-138	1,121	313	9.0	31.6	0.006	C	3	0.305	Yes	Yes
BLI-144	24,673	313	12.8	11.9	0.002	C	3	0.367	Yes	Yes
BLI-153	13,331	313	11.3	15.9	0.002	C	3	0.122	Yes	Yes
BLI-155	3,978	313	10.0	9.5	0.007	C	3	0.500	No	Yes
BLI-169	1,386	313	10.0	17.0	0.013	C	3	0.500	NA	Yes
BLI-172	1,757	313	10.0	8.0	0.013	C	3	0.500	NA	Yes
BLI-181	2,941	313	10.0	5.0	0.031	C	3	0.500	NA	Yes

4.06 WATER QUALITY MODELING CONCLUSIONS

Tables 4.06-1 and 4.06-2 list the baseline/no controls and existing conditions annual TSS and TP loads by subbasin, respectively. The baseline and existing annual TSS loads are shown graphically in Figures 4.06-1 and 4.06-2.

A. Baseline Conditions

Table 4.06-3 summarizes the annual baseline/no controls water quality modeling results per watershed and for the entire City.

Watershed	Regulatory MS4 Area (acres)	TSS Baseline Load (lb)	TSS Baseline Load Concentration (lb/ac)	TP Baseline Load (lb)	TP Baseline Load Concentration (lb/ac)
Lower Wisconsin River (LWR)	347.6	90,851.4	261.4	237.7	0.68
Neenah Creek (NC)	87.4	36,520.1	417.9	67.7	0.78
Buffalo Lake Inflow (BLI)	1,947.0	630,260.4	323.7	1,522.1	0.82
Entire City	2,381.9	757,631.9	318.1	1,884.4	0.80

lb/ac=pound(s) per acre

Table 4.06-3 Baseline Conditions Modeling Results Summary per Watershed

Of the 162 subbasins modeled, the TSS unit loads ranged from approximately 47 lb/ac in open land south of the Wisconsin River to 640 lb/ac in the industrial lands near the interchange between Interstate Highway 39 and State Highway 16. As shown in Figure 4.06-1, higher unit loads of TSS are found in the areas of commercial and industrial land use. Baseline and existing conditions modeling output is provided on a CD in Appendix M.

B. Existing Conditions

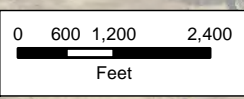
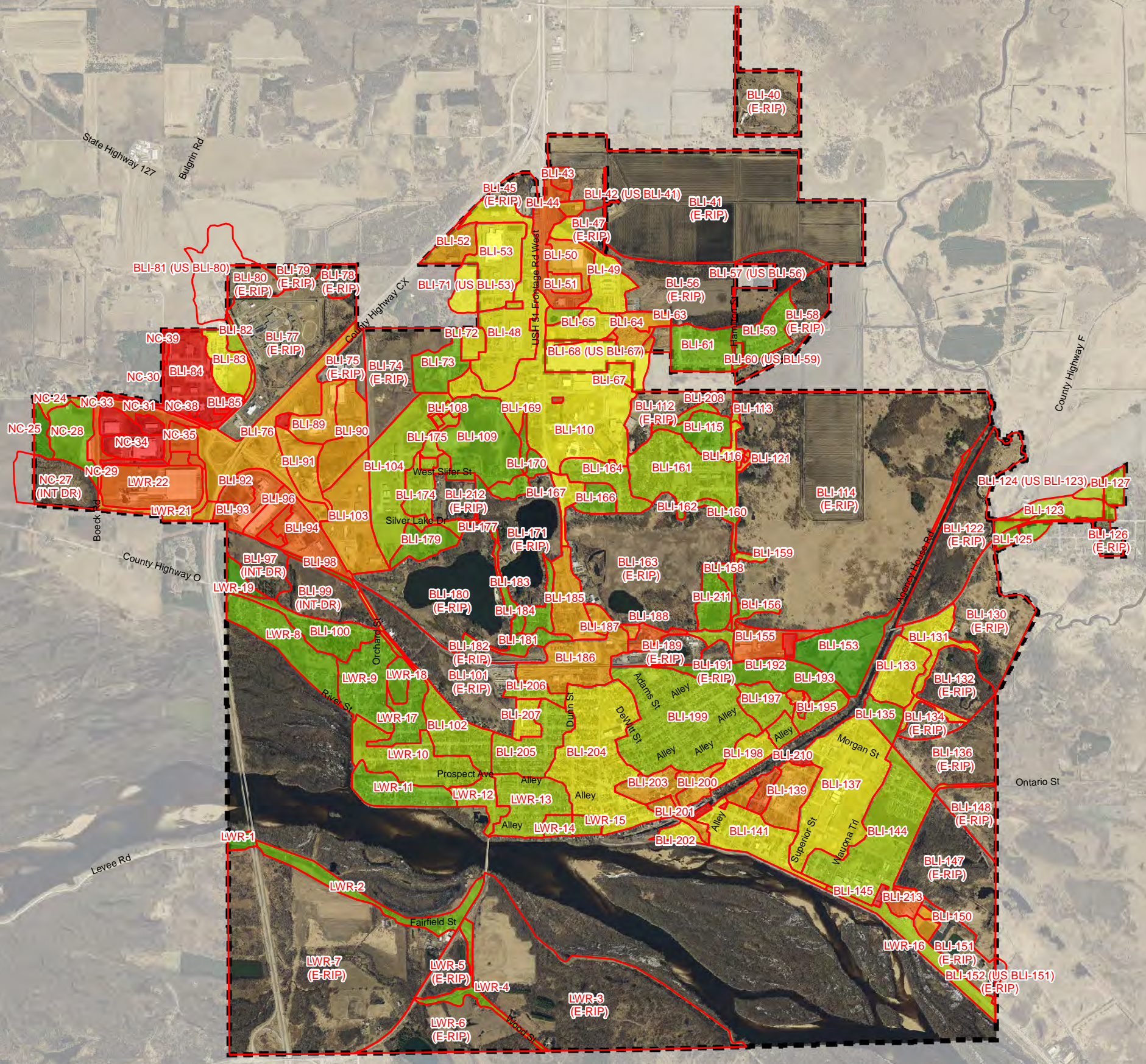
Table 4.06-4 summarizes the existing conditions water quality modeling results per watershed and for the entire City in terms of total TSS and TP load (pounds) and TSS and TP Load Concentration (lb/ac). Water quality modeling of current conditions shows that the City’s current BMPs have been effective in controlling nonpoint source pollution in stormwater runoff. Table 4.06-5 summarizes the existing conditions modeling results per watershed and for the entire City in terms of percent reduction and pollutant reduction gap in meeting the Wisconsin River and Upper Fox and Wolf River TMDL requirements. Individual watershed results vary from 0 percent to 100 percent TSS reduction and 0 percent to 100 percent TP reduction while the City-wide results show a 29.1 percent TSS reduction and a 26.27 percent TP reduction.

Legend

- Watershed Basins
- Municipal Boundary

Baseline Annual Loading TSS (lbs/ac)

- 0 - 100
- 101 - 200
- 201 - 300
- 301 - 400
- 401 - 500
- 501 - 600
- 601 - 700



BASELINE ANNUAL LOADING CONDITIONS - TOTAL SUSPENDED SOLIDS

CITY OF PORTAGE STORMWATER MANAGEMENT PLAN
 CITY OF PORTAGE
 COLUMBIA COUNTY, WISCONSIN

STRAND ASSOCIATES

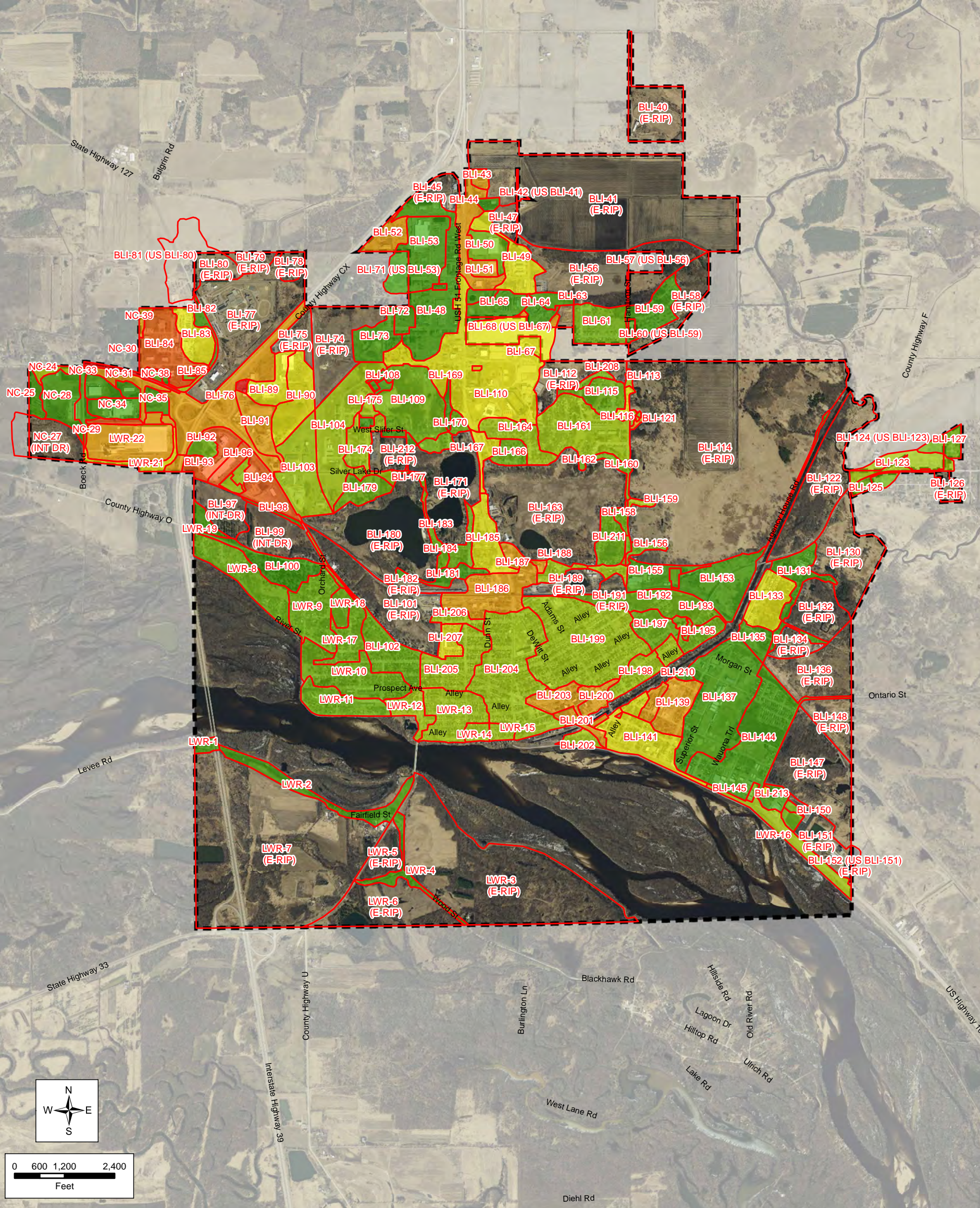
FIGURE 4.06-1
1076.017

Legend

- Watershed Basins
- Municipal Boundary

Existing Annual Loading TSS (lbs/ac)

- 0 - 100
- 101 - 200
- 201 - 300
- 301 - 400
- 401 - 500
- 501 - 600
- 601 - 700



EXISTING ANNUAL LOADING CONDITIONS - TOTAL SUSPENDED SOLIDS

CITY OF PORTAGE STORMWATER MANAGEMENT PLAN
CITY OF PORTAGE
COLUMBIA COUNTY, WISCONSIN

STRAND ASSOCIATES

FIGURE 4.06-2
1076.017

Table 4.06-1 Pollutant Loading Calculation Results Baseline and Existing Controls Conditions

Basin	Total MS4 Area (acres)	Off-Site Drainage Area (acres)	Exempt MS4 Area (acres)	Regulatory MS4 Area (acres)	Baseline Conditions	2018 Baseline Conditions		Existing Conditions	2018 Existing Conditions		Percent Reduction	Major Soil Type	Current Practices	Swale Dynamic Infiltration Rate (in/hr)
					Five-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)	Five-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)				
LWR-1	2.88	1.05	0.00	2.88	683	137	47	383	77	27	44.0%	Sandy	GS	0.04
LWR-2	25.37	2.34	9.97	15.40	1,3459	2,692	175	2,579	516	33	80.8%	Clayey	GS	0.15
LWR-3	206.06	1.98	206.06	NA								Clayey	(E-RIP)	
LWR-4	12.49	0.66	3.30	9.18	7,688	1,538	167	2,163	433	47	71.9%	Sandy	GS	0.0
LWR-5	15.40	3.56	15.40	NA								Sandy	(E-RIP)	
LWR-6	55.77	3.27	55.77	NA								Silty	(E-RIP)	
LWR-7	275.82	33.21	275.82	NA								Clayey	(E-RIP)	
LWR-8	39.99	0.00	0.00	39.99	25,628	5,126	128	24,706	4,941	124	3.6%	Sandy	SS	
LWR-9	37.03	0.00	0.00	37.03	35,660	7,132	193	34,234	6,847	185	4.0%	Sandy	SS	
LWR-10	45.47	0.00	0.00	45.47	51,649	10,330	227	37,950	7,590	167	26.5%	Sandy	GS, CB, SS	0.5
LWR-11	25.85	0.00	0.00	25.85	23,615	4,723	183	22,702	4,540	176	3.9%	Sandy	SS	
LWR-12	14.08	0.00	0.00	14.08	16,557	3,311	235	15,772	3,154	224	4.7%	Sandy	SS	
LWR-13	35.78	0.00	0.00	35.78	51,192	10,238	286	48,743	9,749	272	4.8%	Sandy	SS	
LWR-14	5.88	0.00	0.00	5.88	8,131	1,626	277	7,718	1,544	263	5.1%	Sandy	SS	
LWR-15	5.42	0.00	0.00	5.42	7,586	1,517	280	7,199	1,440	266	5.1%	Sandy	SS	
LWR-16	15.70	7.61	0.00	15.70	19,684	3,937	251	19,094	3,819	243	3.0%	Silty	SS	
LWR-17	20.55	0.00	0.00	20.55	19,398	3,880	189	18,622	3,724	181	4.0%	Sandy	SS	
LWR-18	8.67	0.00	0.00	8.67	6,563	1,313	151	6,288	1,258	145	4.2%	Sandy	SS	
LWR-19	6.69	0.00	0.00	6.69	2,856	571	85	2,856	571	85	0.0%	Sandy	NA	
LWR-20	1.02	1.96	0.00	1.02	2,417	483	475	2,417	483	475	0.0%	Sandy	NA	
LWR-21	9.06	0.01	0.00	9.06	22,402	4,480	495	14,088	2,818	311	37.1%	Sandy	GS	0.50
LWR-22, LWR-36, LWR-37	45.08	0.00	0.00	45.08	127,492	25,498	566	90,958	18,192	404	28.7%	Sandy	DP, IB	
LWR-23	3.82	0.00	0.00	3.82	11,596	2,319	607	10,531	2,106	551	9.2%	Sandy	CB, SS	
LWR SUBTOTAL	914	56	566	348	454,257	90851	261	369003	73801	212	18.8%			
NC-24	3.82	1.30	0.00	3.82	4,196	839	220	4,196	839	220	0.0%	Sandy	NA	
NC-25	7.32	0.05	0.00	7.32	1,798	360	49	1,798	360	49	0.0%	Sandy	NA	
NC-27, NC-26 (US)	25.77	9.25	25.77	NA								Silty	(INT-DR)	
NC-28	24.94	0.00	0.00	24.94	24,780	4,956	199	436	87	3	98.2%	Clayey	WP, GS, SS	0.50
NC-29	7.33	0.07	0.00	7.33	20,182	4,036	551	3,581	716	98	82.3%	Sandy	GS	0.50
NC-30	0.01	4.37	0.00	0.01	37	7	619	37	7	606	2.1%	Sandy	SS	
NC-31	5.46	6.32	0.00	5.46	13,904	2,781	509	13,004	2,601	476	6.5%	Sandy	CB, SS	
NC-32	4.26	0.00	0.00	4.26	13,233	2,647	622	1,070	214	50	91.9%	Sandy	DP	
NC-33	8.91	0.00	0.00	8.91	27,748	5,550	623	1,352	270	30	95.1%	Sandy	WP	
NC-34	13.76	0.00	0.00	13.76	42,788	8,558	622	4,380	876	64	89.8%	Sandy	DP	
NC-35	6.99	0.00	0.00	6.99	19,714	3,943	564	2,913	583	83	85.2%	Sandy	WP	
NC-38	2.16	0.41	0.00	2.16	6,717	1,343	622	280	56	26	95.8%	Sandy	DP	
NC-39	2.42	0.00	0.00	2.42	7,502	1,500	619	6,002	1,200	495	20.0%	Sandy	CB, SS	
NC SUBTOTAL	113	22	26	87	182,600	36520	418	39049	7810	89	78.6%			
BLI-40	41.73	0.00	41.73	NA								Clayey	(E-RIP)	

Basin	Total MS4 Area (acres)	Off-Site Drainage Area (acres)	Exempt MS4 Area (acres)	Regulatory MS4 Area (acres)	Baseline Conditions	2018 Baseline Conditions		Existing Conditions	2018 Existing Conditions		Percent Reduction	Major Soil Type	Current Practices	Swale Dynamic Infiltration Rate (in/hr)
					Five-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)	Five-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)				
BLI-41, BLI-42 (US)	268.12	1.70	268.12	NA								Sandy	(E-RIP)	
BLI-43	4.24	0.01	0.00	4.24	11,832	2,366	559	8,724	1,745	412	26.3%	Clayey	DP	
BLI-44	18.96	6.04	0.00	18.96	48,691	9,738	514	44,318	8,864	467	9.0%	Sandy	CB, SS	
BLI-45	12.33	0.31	12.33	NA								Sandy	(E-RIP)	
BLI-46	3.36	0.00	0.00	3.36	7,844	1,569	467	539	108	32	93.1%	Sandy	DP	
BLI-47	9.55	0.00	9.55	NA								Clayey	(E-RIP)	
BLI-48, BLI-53, BLI-54, BLI-72	103.01	14.16	2.44	100.57	192,004	38,401	382	47,720	9,544	95	75.1%	Sandy	UP, WP, DP, CB, SS	
BLI-49	25.38	0.01	0.00	25.38	45,388	9,078	358	43,888	8,778	346	3.3%	Sandy	SS	
BLI-50	14.89	0.00	0.66	14.23	33,527	6,705	471	8,710	1,742	122	74.0%	Sandy	WP	
BLI-51	6.11	0.00	0.00	6.11	15,070	3,014	493	13,123	2,625	430	12.9%	Sandy	WP	
BLI-52	10.62	3.10	0.00	10.62	24,197	4,839	456	23,390	4,678	441	3.3%	Sandy	SS	
BLI-55	4.46	0.00	0.00	4.46	5,617	1,123	252	674	135	30	88.0%	Sandy	WP	
BLI-56, BLI-57 (US)	92.05	9.85	92.05	NA								Sandy	(E-RIP)	
BLI-58	28.72	0.00	28.72	NA								Sandy	(E-RIP)	0.50
BLI-59, BLI-60 (US)	23.67	1.54	0.00	23.67	17,009	3,402	144	1,631	326	14	90.4%	Silty	GS	0.50
BLI-61	26.35	0.00	0.00	26.35	19,190	3,838	146	17,766	3,553	135	7.4%	Silty	CB, SS	
BLI-62	4.49	0.00	4.49	NA								Sandy	(E-RIP)	
BLI-63	7.02	0.00	0.00	7.02	14,962	2,992	426	3,217	643	92	78.5%	Sandy	WP	
BLI-64	7.78	0.00	0.00	7.78	16,581	3,316	426	683	137	18	95.9%	Sandy	WP	
BLI-65, BLI-66 (US)	15.84	1.63	0.00	15.84	28,070	5,614	354	6,165	1,233	78	78.0%	Sandy	WP	
BLI-67, BLI-68 (US)	5.75	5.89	0.00	5.75	11,046	2,209	384	11,046	2,209	384	0.0%	Sandy	NA	
BLI-69	0.61	0.00	0.00	0.61	1,301	260	426	1,301	260	426	0.0%	Sandy	NA	
BLI-70	1.91	0.00	0.00	1.91	4067	813	426	4,067	813	426	0.0%	Sandy	NA	
BLI-73	21.06	0.00	0.00	21.06	10739	2,148	102	10,288	2,058	98	4.2%	Sandy	SS	
BLI-74	52.98	0.02	52.98	NA								Sandy	(E-RIP)	
BLI-75	14.14	1.11	14.14	NA								Sandy	(E-RIP)	
BLI-76	15.32	51.67	0.00	15.32	31181	6,236	407	31,181	6,236	407	0.0%	Sandy	NA	
BLI-77	93.30	7.52	93.30	NA								Clayey	(E-RIP)	
BLI-78	8.92	0.00	8.92	NA								Sandy	(E-RIP)	
BLI-79	9.87	0.00	9.87	NA								Clayey	(E-RIP)	
BLI-80, BLI-81 (US)	15.28	32.38	15.28	NA								Clayey	(E-RIP)	
BLI-82	5.41	0.00	0.00	5.41	6174	1,235	228	746	149	28	87.9%	Sandy	GS	0.50
BLI-83	19.49	0.00	0.00	19.49	36001	7,200	369	36,001	7,200	369	0.0%	Sandy	NA	
BLI-84	37.39	0.11	0.00	37.39	112288	22,458	601	103,363	20,673	553	7.9%	Sandy	CB, SS	
BLI-85	2.01	0.00	0.00	2.01	6268	1,254	624	1,332	266	133	78.7%	Sandy	BB	
BLI-86	1.49	0.50	0.00	1.49	4651	930	625	1,504	301	202	67.7%	Sandy	GS	0.50
BLI-87	1.22	0.13	0.00	1.22	3795	759	622	28	6	5	99.3%	Sandy	DP	
BLI-88	1.18	0.49	0.00	1.18	3790	758	640	3,713	743	627	2.0%	Clayey	SS	
BLI-89, BLI-90, BLI-103	86.44	2.80	0.00	86.44	192926	38,585	446	159,159	31,832	368	17.5%	Sandy	SS, GS	0.50
BLI-91	20.20	0.34	0.00	20.20	49159	9,832	487	47,960	9,592	475	2.4%	Sandy	SS	

Basin	Total MS4 Area (acres)	Off-Site Drainage Area (acres)	Exempt MS4 Area (acres)	Regulatory MS4 Area (acres)	Baseline Conditions	2018 Baseline Conditions		Existing Conditions	2018 Existing Conditions		Percent Reduction	Major Soil Type	Current Practices	Swale Dynamic Infiltration Rate (in/hr)
					Five-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)	Five-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)				
BLI-92	6.41	1.33	0.00	6.41	18088	3,618	564	3,603	721	112	80.1%	Sandy	WP	
BLI-93	14.25	3.93	0.00	14.25	39128	7,826	549	39,128	7,826	549	0.0%	Sandy	NA	
BLI-94	24.57	6.84	0.00	24.57	63875	12,775	520	63,875	12,775	520	0.0%	Sandy	NA	
BLI-95, BLI-96	7.29	0.00	0.00	7.29	21493	4,299	590	43	9	1	99.8%	Sandy	WP, BB	
BLI-97	25.61	0.00	25.61	NA								Sandy	(INT-DR)	
BLI-98	2.59	0.11	0.00	2.59	616	123	47	616	123	47	0.0%	Sandy	NA	
BLI-99	37.06	0.39	37.06	NA								Sandy	(INT-DR)	
BLI-100	26.15	0.00	0.00	26.15	15091	3,018	115	1,443	289	11	90.4%	Sandy	GS	0.50
BLI-101	72.06	0.10	72.06	NA								Sandy	(E-RIP)	
BLI-102	33.18	0.01	0.00	33.18	33300	6,660	201	31,878	6,376	192	4.3%	Sandy	SS	
BLI-104	60.84	0.00	0.00	60.84	81085	16,217	267	78,337	15,667	258	3.4%	Sandy	SS	
BLI-105, BLI-106, BLI-107, BLI-108, BLI-209	5.42	0.00	0.00	5.42	7688	1,538	284	0	0	0	100.0%	Sandy	BF, DP	
BLI-109	52.04	0.00	0.00	52.04	41774	8,355	161	40,199	8,040	155	3.8%	Sandy	SS	
BLI-110	113.55	0.00	0.00	113.55	225943	45,189	398	218,432	43,686	385	3.3%	Sandy	CB, SS	
BLI-111	0.53	0.00	0.00	0.53	1587	317	597	1,022	204	384	35.6%	Silty	SS, DP	
BLI-112	29.24	0.00	29.24	NA								Sandy	(E-RIP)	
BLI-113	1.34	0.00	0.00	1.34	1485	297	221	1,435	287	214	3.3%	Silty	SS	
BLI-114	456.51	0.00	456.51	NA								Clayey	(E-RIP)	
BLI-115	18.56	0.00	0.00	18.56	16878	3,376	182	15,233	3,047	164	9.7%	Sandy	CB, SS	
BLI-116	3.85	0.00	0.00	3.85	6611	1,322	343	6,405	1,281	332	3.1%	Silty	SS	
BLI-117	0.47	0.00	0.00	0.47	1083	217	464	503	101	216	53.6%	Silty	DP	
BLI-118	0.32	0.00	0.00	0.32	751	150	464	245	49	151	67.4%	Silty	BB	
BLI-119	0.21	0.00	0.00	0.21	496	99	464	219	44	205	55.9%	Silty	BB	
BLI-120	0.58	0.00	0.00	0.58	1346	269	464	535	107	184	60.2%	Silty	DP	
BLI-121	1.29	0.00	0.00	1.29	2975	595	462	2,906	581	451	2.3%	Silty	SS	
BLI-122	73.54	3.81	73.54	NA								Silty	(E-RIP)	
BLI-123, BLI-124 (US)	6.26	12.83	0.00	6.26	9341	1,868	298	7,292	1,458	233	21.9%	Silty	GS	0.50
BLI-125, BLI-129 (US)	2.97	5.71	0.00	2.97	2219	444	149	2,164	433	146	2.5%	Silty	SS	
BLI-126	6.98	0.00	6.98	NA								Silty	(E-RIP)	
BLI-127, BLI-128 (US)	6.59	4.10	0.00	6.59	7677	1,535	233	3,490	698	106	54.5%	Silty	GS	0.50
BLI-130	57.75	1.88	57.75	NA								Silty	(E-RIP)	
BLI-131	22.37	1.58	0.00	22.37	34604	6,921	309	745	149	7	97.8%	Silty	GS	0.50
BLI-132	33.75	0.00	33.75	NA								Silty	(E-RIP)	
BLI-133	25.41	0.00	0.00	25.41	46720	9,344	368	45,819	9,164	361	1.9%	Clayey	SS	
BLI-134	13.27	0.00	13.27	NA								Clayey	(E-RIP)	
BLI-135	10.88	0.00	0.00	10.88	8958	1,792	165	305	61	6	96.6%	Clayey	GS	0.50
BLI-136	50.01	0.00	50.01									Silty	(E-RIP)	
BLI-137	89.34	0.00	0.00	89.34	134869	26,974	302	4,509	902	10	96.7%	Clayey	GS, CB	0.50
BLI-138	2.12	0.00	0.00	2.12	6484	1,297	611	303	61	29	95.3%	Clayey	GS	0.50

Basin	Total MS4 Area (acres)	Off-Site Drainage Area (acres)	Exempt MS4 Area (acres)	Regulatory MS4 Area (acres)	Baseline Conditions	2018 Baseline Conditions		Existing Conditions	2018 Existing Conditions		Percent Reduction	Major Soil Type	Current Practices	Swale Dynamic Infiltration Rate (in/hr)
					Five-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)	Five-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)				
BLI-139	23.07	0.00	0.00	23.07	52366	10,473	454	48,860	9,772	424	6.7%	Clayey	CB, SS	
BLI-140	4.78	0.00	0.00	4.78	9731	1,946	407	8,580	1,716	359	11.8%	Clayey	CB, SS	
BLI-141	37.09	0.00	0.00	37.09	71992	14,398	388	66,920	13,384	361	7.0%	Clayey	CB, SS	
BLI-142	0.23	0.00	0.00	0.23	704	141	605	219	44	188	68.9%	Clayey	BB, SS	
BLI-143	1.28	0.00	0.00	1.28	3869	774	605	2,917	583	456	24.6%	Clayey	BB	
BLI-144	82.11	0.00	0.00	82.11	113677	22,735	277	2,896	579	7	97.5%	Clayey	GS, CB	0.50
BLI-145	1.58	0.00	0.00	1.58	4777	955	605	1,314	263	167	72.5%	Clayey	WP	
BLI-146	0.76	0.00	0.00	0.76	2271	454	597	1,218	244	320	46.4%	Silty	WP	
BLI-147	81.74	0.00	81.74	NA								Silty	(E-RIP)	
BLI-148	24.17	0.00	24.17	NA								Clayey	(E-RIP)	
BLI-149, BLI-150	5.82	0.00	0.00	5.82	11693	2,339	402	4,962	992	171	57.6%	Silty	DP	
BLI-151, BLI-152 (US)	27.50	2.09	27.50	NA								Silty	(E-RIP)	
BLI-153	39.56	4.61	0.00	39.56	18383	3,677	93	1,405	281	7	92.4%	Clayey	GS	0.50
BLI-154	2.41	0.00	0.00	2.41	7555	1,511	627	1,124	225	93	85.1%	Sandy	WP	
BLI-155	17.76	0.00	0.00	17.76	47680	9,536	537	7,123	1,425	80	85.1%	Sandy	GS	0.50
BLI-156	4.75	0.00	0.00	4.75	4719	944	199	4,524	905	190	4.1%	Sandy	SS	
BLI-157	1.69	0.00	0.00	1.69	1622	324	192	1,554	311	184	4.2%	Sandy	SS	
BLI-158	3.85	0.00	0.00	3.85	3567	713	185	3,420	684	178	4.1%	Sandy	SS	
BLI-159	2.27	0.00	0.00	2.27	2604	521	229	2,515	503	221	3.4%	Clayey	SS	
BLI-160	6.52	0.00	0.00	6.52	5169	1,034	158	4,970	994	152	3.9%	Sandy	SS	
BLI-161	56.99	0.00	0.00	56.99	60290	12,058	212	57,972	11,594	203	3.8%	Sandy	SS	
BLI-162	1.09	0.00	0.00	1.09	1061	212	195	1,016	203	187	4.2%	Sandy	SS	
BLI-163	153.81	0.00	153.81	NA								Clayey	(E-RIP)	
BLI-164	20.60	0.00	0.00	20.60	25046	5,009	243	24,180	4,836	235	3.5%	Sandy	SS	
BLI-165	0.59	0.00	0.00	0.59	1123	225	383	0	0	0	100.0%	Sandy	IB	
BLI-166	10.15	0.00	0.00	10.15	9896	1,979	195	9,481	1,896	187	4.2%	Sandy	SS	
BLI-167	8.93	0.00	0.00	8.93	14172	2,834	318	13,748	2,750	308	3.0%	Sandy	SS	
BLI-168	4.29	0.00	0.00	4.29	4121	824	192	3,949	790	184	4.2%	Sandy	SS	
BLI-169	3.42	0.00	0.00	3.42	2651	530	155	46	9	3	98.3%	Sandy	GS	0.50
BLI-170	6.33	0.00	0.00	6.33	4023	805	127	3,878	776	123	3.6%	Sandy	SS	
BLI-171	67.34	0.00	67.34	NA								Sandy	(E-RIP)	
BLI-172	2.04	0.00	0.00	2.04	882	176	87	1	0	0	99.9%	Sandy	GS	0.50
BLI-173	2.12	0.00	0.00	2.12	1294	259	122	22	4	2	98.3%	Sandy	DP	
BLI-174	19.23	0.00	0.00	19.23	25134	5,027	261	23,141	4,628	241	7.9%	Sandy	CB, SS	
BLI-175	3.17	0.00	0.00	3.17	4491	898	284	4,329	866	273	3.6%	Sandy	SS	
BLI-176	1.97	0.00	0.00	1.97	2793	559	284	340	68	35	87.8%	Sandy	WP	
BLI-177	2.61	0.00	0.00	2.61	1622	324	124	1,552	310	119	4.3%	Sandy	SS	
BLI-178	0.89	0.00	0.00	0.89	660	132	148	504	101	113	23.6%	Sandy	CB, SS	
BLI-179	15.89	0.00	0.00	15.89	14092	2,818	177	13,600	2,720	171	3.5%	Sandy	SS	
BLI-180	104.69	0.24	104.69	NA								Sandy	(E-RIP)	
BLI-181	10.77	0.00	0.00	10.77	9390	1,878	174	1,000	200	19	89.4%	Sandy	GS	0.50

Basin	Total MS4 Area (acres)	Off-Site Drainage Area (acres)	Exempt MS4 Area (acres)	Regulatory MS4 Area (acres)	Baseline Conditions	2018 Baseline Conditions		Existing Conditions	2018 Existing Conditions		Percent Reduction	Major Soil Type	Current Practices	Swale Dynamic Infiltration Rate (in/hr)
					Five-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)	Five-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)				
BLI-182	9.81	0.00	9.81	NA								Sandy	(E-RIP)	
BLI-183	5.27	0.00	0.00	5.27	3796	759	144	3,638	728	138	4.2%	Sandy	SS	
BLI-184	10.27	0.00	0.00	10.27	9949	1,990	194	9,541	1,908	186	4.1%	Sandy	SS	
BLI-185	24.72	0.00	0.00	24.72	50816	10,163	411	49,115	9,823	397	3.3%	Sandy	SS	
BLI-186	39.85	0.00	0.00	39.85	98916	19,783	496	95,396	19,079	479	3.6%	Sandy	CB, SS	
BLI-187	7.26	0.00	0.00	7.26	16777	3,355	462	16,228	3,246	447	3.3%	Sandy	SS	
BLI-188	7.16	0.00	0.00	7.16	19628	3,926	548	9,589	1,918	268	51.1%	Sandy	WP, CB	
BLI-189	19.09	0.00	19.09	NA								Sandy	(E-RIP)	
BLI-190	5.12	0.00	0.00	5.12	7175	1,435	280	6,939	1,388	271	3.3%	Sandy	SS	
BLI-191	5.68	0.00	5.68	NA								Sandy	(E-RIP)	
BLI-192	34.78	1.15	0.00	34.78	29509	5,902	170	28,341	5,668	163	4.0%	Sandy	SS	
BLI-193	1.90	0.00	0.00	1.90	4172	834	438	1,506	301	158	63.9%	Sandy	HD	
BLI-194	1.19	0.00	0.00	1.19	2598	520	438	1,024	205	173	60.6%	Sandy	HD	
BLI-195	10.69	0.00	0.00	10.69	10792	2,158	202	9,802	1,960	183	9.2%	Sandy	CB, SS	
BLI-196	6.71	0.00	0.00	6.71	8347	1,669	249	7,965	1,593	237	4.6%	Sandy	SS	
BLI-197	16.53	0.00	0.00	16.53	17951	3,590	217	16,523	3,305	200	8.0%	Sandy	CB, SS	
BLI-198	16.34	0.00	0.00	16.34	24746	4,949	303	23,767	4,753	291	4.0%	Sandy	SS	
BLI-199	107.96	0.00	0.00	107.96	153535	30,707	284	148,267	29,653	275	3.4%	Sandy	CB, SS	
BLI-200	9.97	0.00	0.00	9.97	22658	4,532	455	21,965	4,393	441	3.1%	Sandy	SS	
BLI-201	7.28	0.00	0.00	7.28	18172	3,634	499	16,839	3,368	462	7.3%	Sandy	CB, SS	
BLI-202	6.01	0.00	0.00	6.01	9227	1,845	307	8,398	1,680	280	9.0%	Clayey	CB, SS	
BLI-203	15.61	0.00	0.00	15.61	37821	7,564	485	35,477	7,095	454	6.2%	Sandy	CB, SS	
BLI-204	91.03	0.00	0.00	91.03	140602	28,120	309	134,007	26,801	294	4.7%	Sandy	CB, SS	
BLI-205	34.33	0.00	0.00	34.33	48882	9,776	285	43,863	8,773	256	10.3%	Sandy	CB, SS	
BLI-206	8.54	0.00	0.00	8.54	10597	2,119	248	9,682	1,936	227	8.6%	Sandy	CB, SS	
BLI-207	9.03	0.00	0.00	9.03	14364	2,873	318	13,858	2,772	307	3.5%	Sandy	SS	
BLI-208	3.55	0.00	0.00	3.55	2550	510	144	2,447	489	138	4.0%	Sandy	SS	
BLI-210	7.11	0.00	0.00	7.11	18459	3,692	519	17,065	3,413	480	7.5%	Clayey	CB, SS	
BLI-211	17.17	0.00	0.00	17.17	16892	3,378	197	16,194	3,239	189	4.1%	Sandy	SS	
BLI-212	17.15	0.00	17.15	NA								Sandy	(E-RIP)	
BLI-213	7.53	0.00	0.00	7.53	21720	4,344	577	3,185	637	85	85.3%	Silty	GS	
BLI SUBTOTAL	3968	192	2021	1947	3151302	630260	324	2276821	455364	234	27.7%			
TOTAL	4995	269	2613	2382	3788160	757632	318	2684872	536974	225	29.1%			

Note: lb–pound(s)

Footnotes:

- ¹ "Total MS4 Area" is all the area within the municipality.
- "Off-site Drainage Area" is the area outside the municipal jurisdiction.
- "Exempt MS4 Area" is the area draining to the MS4 but the municipality is not responsible for the loading (e.g. Agricultural, WisDOT ROW, and County ROW land use).
- "Regulatory MS4 Area" is the area which loading is assessed for the municipality.

Abbreviation	Name	Abbreviation	Name
SS	Street Sweeping	CG	Curb and Gutter
SW	Swale	IB	Infiltration Basin
DP	Dry Pond	HD	Hydrodynamic Device
WP	Wet Pond	CB	Catch Basin Cleaning
UR	Undeveloped Roadside	BB	Bioretention Basin
ID	Internally Drained	GS	Grass Swale/Ditch

Table 4.06-2 Phosphorus Loading Results Baseline and Existing Controls Conditions

Basin ID	Total MS4 Area (acres)	Off-site Drainage Area (acres)	Exempt MS4 Area (acres)	Regulatory MS4 Area (acres)	Annual Dissolved Phosphorus			Annual Particulate Phosphorus			Total Annual Phosphorus			Major Soil Type	Current Practices	Swale Dynamic Infiltration Rate (in/hr)
					Baseline Dissolved Phosphorus (lb)	Existing Dissolved Phosphorus (lb)	Reduction in Dissolved Phosphorus (%)	Baseline Particulate Phosphorus (lb)	Existing Particulate Phosphorus (lb)	Reduction in Particulate Phosphorus (%)	Baseline TP (lb)	Existing TP (lb)	Reduction in TP (%)			
LWR-1	2.88	1.05	0.00	2.88	0.31	0.18	44.1%	0.18	0.14	23.8%	0.50	0.32	36.6%	SANDY	GS	0.04
LWR-2	25.37	2.34	9.97	15.40	4.86	0.99	79.6%	3.99	1.20	69.8%	8.85	2.20	75.2%	CLAYEY	GS	0.15
LWR-3	206.06	1.98	206.06	NA										CLAYEY	(E-RIP)	
LWR-4	12.49	0.66	3.30	9.18	3.47	1.03	70.3%	1.59	0.64	59.4%	5.06	1.67	66.9%	SANDY	GS	0.04
LWR-5	15.40	3.56	15.40	NA										SANDY	(E-RIP)	
LWR-6	55.77	3.27	55.77	NA										SILTY	(E-RIP)	
LWR-7	275.82	33.21	275.82	NA										CLAYEY	(E-RIP)	
LWR-8	39.99	0.00	0.00	39.99	12.93	12.50	3.3%	4.18	4.18	0.0%	17.11	16.68	2.5%	SANDY	SS	
LWR-9	37.03	0.00	0.00	37.03	17.62	16.97	3.7%	5.61	5.61	0.0%	23.23	22.58	2.8%	SANDY	SS	
LWR-10	45.47	0.00	0.00	45.47	26.00	19.23	26.0%	9.54	8.05	15.7%	35.54	27.28	23.2%	SANDY	GS, CB, SS	0.50
LWR-11	25.85	0.00	0.00	25.85	11.17	10.77	3.6%	3.38	3.38	0.0%	14.56	14.15	2.8%	SANDY	SS	
LWR-12	14.08	0.00	0.00	14.08	8.11	7.75	4.4%	2.38	2.38	0.0%	10.49	10.13	3.4%	SANDY	SS	
LWR-13	35.78	0.00	0.00	35.78	24.34	23.25	4.5%	6.63	6.63	0.0%	30.97	29.87	3.5%	SANDY	SS	
LWR-14	5.88	0.00	0.00	5.88	4.00	3.81	4.8%	1.13	1.13	0.0%	5.13	4.94	3.7%	SANDY	SS	
LWR-15	5.42	0.00	0.00	5.42	3.73	3.55	4.8%	1.05	1.05	0.0%	4.78	4.60	3.7%	SANDY	SS	
LWR-16	15.70	7.61	0.00	15.70	6.70	6.50	2.9%	3.86	3.86	0.0%	10.56	10.37	1.9%	SILTY	SS	
LWR-17	20.55	0.00	0.00	20.55	9.79	9.43	3.6%	3.18	3.18	0.0%	12.97	12.62	2.7%	SANDY	SS	
LWR-18	8.67	0.00	0.00	8.67	3.13	3.00	4.1%	1.05	1.05	0.0%	4.17	4.05	3.0%	SANDY	SS	
LWR-19	6.69	0.00	0.00	6.69	1.43	1.43	0.0%	0.56	0.56	0.0%	1.99	1.99	0.0%	SANDY	NA	
LWR-20	1.02	1.96	0.00	1.02	0.57	0.57	0.0%	0.20	0.20	0.0%	0.77	0.77	0.0%	SANDY	NA	
LWR-21	9.06	0.01	0.00	9.06	5.27	3.32	37.0%	1.87	1.44	23.0%	7.14	4.76	33.3%	SANDY	GS	0.50
LWR-22, LWR-36, LWR-37	45.08	0.00	0.00	45.08	29.66	21.14	28.7%	10.40	9.45	9.1%	40.06	30.59	23.6%	SANDY	DP, IB	
LWR-23	3.82	0.00	0.00	3.82	2.74	2.49	9.1%	1.08	1.08	0.0%	3.82	3.57	6.5%	SANDY	CB, SS	
LWR SUBTOTAL	914	56	566	348	176	148	15.9%	62	55	10.7%	238	203	14.5%			
NC-24	3.82	1.30	0.00	3.82	1.15	1.15	0.0%	0.98	0.98	0.0%	2.13	2.13	0.0%	SANDY	NA	
NC-25	7.32	0.05	0.00	7.32	0.81	0.81	0.0%	0.89	0.89	0.0%	1.70	1.70	0.0%	SANDY	NA	
NC-27, NC-26 (US)	25.77	9.25	25.77	NA										SILTY	(INT-DR)	
NC-28	24.94	0.00	0.00	24.94	6.99	0.12	98.2%	6.20	5.25	15.4%	13.19	5.37	59.3%	CLAYEY	WP, GS, SS	0.50
NC-29	7.33	0.07	0.00	7.33	4.85	0.87	82.1%	2.01	0.47	76.6%	6.86	1.34	80.5%	SANDY	GS	0.50
NC-30	0.01	4.37	0.00	0.01	0.01	0.01	2.1%	0.00	0.00	-0.1%	0.01	0.01	1.5%	SANDY	SS	
NC-31	5.46	6.32	0.00	5.46	3.42	3.20	6.4%	1.43	1.43	0.0%	4.86	4.64	4.5%	SANDY	CB, SS	
NC-32	4.26	0.00	0.00	4.26	3.15	0.26	91.9%	1.28	0.12	90.9%	4.43	0.37	91.6%	SANDY	DP	

Basin ID	Total MS4 Area (acres)	Off-site Drainage Area (acres)	Exempt MS4 Area (acres)	Regulatory MS4 Area (acres)	Annual Dissolved Phosphorus			Annual Particulate Phosphorus			Total Annual Phosphorus			Major Soil Type	Current Practices	Swale Dynamic Infiltration Rate (in/hr)
					Baseline Dissolved Phosphorus (lb)	Existing Dissolved Phosphorus (lb)	Reduction in Dissolved Phosphorus (%)	Baseline Particulate Phosphorus (lb)	Existing Particulate Phosphorus (lb)	Reduction in Particulate Phosphorus (%)	Baseline TP (lb)	Existing TP (lb)	Reduction in TP (%)			
NC-33	8.91	0.00	0.00	8.91	6.63	0.33	95.0%	2.70	0.16	94.1%	9.33	0.49	94.8%	SANDY	WP	
NC-34	13.76	0.00	0.00	13.76	10.18	1.05	89.7%	4.14	0.48	88.4%	14.33	1.53	89.3%	SANDY	DP	
NC-35	6.99	0.00	0.00	6.99	4.56	0.68	85.2%	1.59	1.58	0.6%	6.15	2.25	63.3%	SANDY	WP	
NC-38	2.16	0.41	0.00	2.16	1.60	0.07	95.8%	0.65	0.03	95.1%	2.25	0.10	95.6%	SANDY	DP	
NC-39	2.42	0.00	0.00	2.42	1.78	1.43	19.9%	0.72	0.72	0.0%	2.50	2.15	14.2%	SANDY	CB, SS	
NC SUBTOTAL	113	22	26	87	45	10	77.9%	23	12	46.4%	68	22	67.4%			
BLI-40	41.73	0.00	41.73	NA										CLAYEY	(E-RIP)	
BLI-41, BLI-42 (US)	268.12	1.70	268.12	NA										SANDY	(E-RIP)	
BLI-43	4.24	0.01	0.00	4.24	2.96	2.19	25.9%	1.10	0.99	10.5%	4.06	3.18	21.7%	CLAYEY	DP	
BLI-44	18.96	6.04	0.00	18.96	17.91	16.42	8.4%	2.99	2.99	0.0%	20.91	19.41	7.2%	SANDY	CB, SS	
BLI-45	12.33	0.31	12.33	NA										SANDY	(E-RIP)	
BLI-46	3.36	0.00	0.00	3.36	2.81	0.19	93.1%	0.48	0.04	91.7%	3.29	0.23	92.9%	SANDY	DP	
BLI-47	9.55	0.00	9.55	NA										CLAYEY	(E-RIP)	
BLI-48, BLI-53, BLI-54, BLI-72	103.01	14.16	2.44	100.57	72.51	18.43	74.6%	15.19	14.51	4.5%	87.70	32.94	62.4%	SANDY	UP, WP, DP, CB, SS	
BLI-49	25.38	0.01	0.00	25.38	18.86	18.32	2.9%	4.24	4.24	0.0%	23.10	22.56	2.4%	SANDY	SS	
BLI-50	14.89	0.00	0.66	14.23	12.15	3.18	73.9%	2.15	2.16	-0.2%	14.31	5.33	62.7%	SANDY	WP	
BLI-51	6.11	0.00	0.00	6.11	5.40	4.71	12.9%	0.90	0.91	-0.2%	6.31	5.61	11.0%	SANDY	WP	
BLI-52	10.62	3.10	0.00	10.62	9.06	8.81	2.8%	1.63	1.63	0.0%	10.70	10.44	2.4%	SANDY	SS	
BLI-55	4.46	0.00	0.00	4.46	2.38	0.30	87.6%	0.49	0.50	-0.2%	2.88	0.79	72.5%	SANDY	WP	
BLI-56, BLI-57 (US)	92.05	9.85	92.05	NA										SANDY	(E-RIP)	
BLI-58	28.72	0.00	28.72	NA										SANDY	(E-RIP)	0.50
BLI-59, BLI-60 (US)	23.67	1.54	0.00	23.67	9.48	0.98	89.7%	4.38	0.62	85.9%	13.86	1.60	88.5%	SILTY	GS	0.50
BLI-61	26.35	0.00	0.00	26.35	10.31	9.61	6.8%	5.93	5.93	0.0%	16.24	15.54	4.3%	SILTY	CB, SS	
BLI-62	4.49	0.00	4.49	NA										SANDY	(E-RIP)	
BLI-63	7.02	0.00	0.00	7.02	6.62	1.56	76.4%	1.11	0.32	71.1%	7.73	1.88	75.6%	SANDY	WP	
BLI-64	7.78	0.00	0.00	7.78	7.33	0.34	95.4%	1.23	0.07	94.1%	8.56	0.41	95.2%	SANDY	WP	
BLI-65, BLI-66 (US)	15.84	1.63	0.00	15.84	12.42	2.81	77.4%	2.23	2.23	-0.2%	14.65	5.04	65.6%	SANDY	WP	
BLI-67, BLI-68 (US)	5.75	5.89	0.00	5.75	4.82	4.82	0.0%	1.10	1.10	0.0%	5.92	5.92	0.0%	SANDY	NA	
BLI-69	0.61	0.00	0.00	0.61	0.58	0.58	0.0%	0.10	0.10	0.0%	0.67	0.67	0.0%	SANDY	NA	
BLI-70	1.91	0.00	0.00	1.91	1.80	1.80	0.0%	0.30	0.30	0.0%	2.10	2.10	0.0%	SANDY	NA	
BLI-73	21.06	0.00	0.00	21.06	5.04	4.83	4.1%	1.99	1.99	0.0%	7.02	6.82	3.0%	SANDY	SS	
BLI-74	52.98	0.02	52.98	NA										SANDY	(E-RIP)	

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					Baseline Dissolved Phosphorus (lb)	Existing Dissolved Phosphorus (lb)	Reduction in Dissolved Phosphorus (%)	Baseline Particulate Phosphorus (lb)	Existing Particulate Phosphorus (lb)	Reduction in Particulate Phosphorus (%)	Baseline TP (lb)	Existing TP (lb)	Reduction in TP (%)			
BLI-75	14.14	1.11	14.14	NA										SANDY	(E-RIP)	
BLI-76	15.32	51.67	0.00	15.32	8.87	8.87	0.0%	3.16	3.16	0.0%	12.03	12.03	0.0%	SANDY	NA	
BLI-77	93.30	7.52	93.30	NA										CLAYEY	(E-RIP)	
BLI-78	8.92	0.00	8.92	NA										SANDY	(E-RIP)	
BLI-79	9.87	0.00	9.87	NA										CLAYEY	(E-RIP)	
BLI-80, BLI-81 (US)	15.28	32.38	15.28	NA										CLAYEY	(E-RIP)	
BLI-82	5.41	0.00	0.00	5.41	2.42	0.31	87.3%	0.85	0.15	82.9%	3.27	0.45	86.1%	SANDY	GS	0.50
BLI-83	19.49	0.00	0.00	19.49	10.63	10.63	0.0%	4.45	4.45	0.0%	15.08	15.08	0.0%	SANDY	NA	
BLI-84	37.39	0.11	0.00	37.39	26.50	24.40	7.9%	10.26	10.26	0.0%	36.75	34.66	5.7%	SANDY	CB, SS	
BLI-85	2.01	0.00	0.00	2.01	1.50	0.33	78.3%	0.62	0.16	74.0%	2.12	0.49	77.1%	SANDY	BB	
BLI-86	1.49	0.50	0.00	1.49	1.12	0.37	67.3%	0.46	0.20	57.2%	1.58	0.56	64.4%	SANDY	GS	0.50
BLI-87	1.22	0.13	0.00	1.22	0.90	0.01	99.3%	0.37	0.00	99.1%	1.27	0.01	99.2%	SANDY	DP	
BLI-88	1.18	0.49	0.00	1.18	0.96	0.94	1.8%	0.42	0.42	0.0%	1.38	1.36	1.3%	CLAYEY	SS	
BLI-89, BLI-90, BLI-103	86.44	2.80	0.00	86.44	56.10	46.13	17.8%	16.64	14.63	12.1%	72.75	60.77	16.5%	SANDY	SS, GS	0.50
BLI-91	20.20	0.34	0.00	20.20	13.37	13.05	2.4%	4.63	4.63	0.0%	18.00	17.68	1.8%	SANDY	SS	
BLI-92	6.41	1.33	0.00	6.41	4.19	0.84	80.0%	1.46	1.45	0.2%	5.64	2.29	59.4%	SANDY	WP	
BLI-93	14.25	3.93	0.00	14.25	9.08	9.08	0.0%	3.17	3.17	0.0%	12.25	12.25	0.0%	SANDY	NA	
BLI-94	24.57	6.84	0.00	24.57	15.00	15.00	0.0%	5.45	5.45	0.0%	20.45	20.45	0.0%	SANDY	NA	
BLI-95, BLI-96	7.29	0.00	0.00	7.29	5.14	0.01	99.8%	2.10	0.01	99.7%	7.23	0.02	99.8%	SANDY	WP, BB	
BLI-97	25.61	0.00	25.61	NA										SANDY	(INT-DR)	
BLI-98	2.59	0.11	0.00	2.59	0.28	0.28	0.0%	0.17	0.17	0.0%	0.45	0.45	0.0%	SANDY	NA	
BLI-99	37.06	0.39	37.06	NA										SANDY	(INT-DR)	
BLI-100	26.15	0.00	0.00	26.15	7.49	0.73	90.2%	2.58	0.31	88.0%	10.07	1.04	89.6%	SANDY	GS	0.50
BLI-101	72.06	0.10	72.06	NA										SANDY	(E-RIP)	
BLI-102	33.18	0.01	0.00	33.18	16.35	15.71	3.9%	4.98	4.98	0.0%	21.33	20.68	3.0%	SANDY	SS	
BLI-104	60.84	0.00	0.00	60.84	31.90	30.87	3.2%	8.09	8.09	0.0%	39.99	38.96	2.6%	SANDY	SS	
BLI-105, BLI-106, BLI-107, BLI-108, BLI-209	5.42	0.00	0.00	5.42	3.52	0.00	100.0%	1.04	0.00	100.0%	4.56	0.00	100.0%	SANDY	BF, DP	
BLI-109	52.04	0.00	0.00	52.04	19.48	18.78	3.6%	6.81	6.81	0.0%	26.29	25.59	2.6%	SANDY	SS	
BLI-110	113.55	0.00	0.00	113.55	93.64	91.12	2.7%	20.91	20.91	0.0%	114.55	112.04	2.2%	SANDY	CB, SS	
BLI-111	0.53	0.00	0.00	0.53	0.59	0.38	34.7%	0.10	0.08	17.6%	0.68	0.46	32.3%	SILTY	SS, DP	
BLI-112	29.24	0.00	29.24	NA										SANDY	(E-RIP)	
BLI-113	1.34	0.00	0.00	1.34	0.86	0.84	2.6%	0.35	0.35	0.0%	1.22	1.20	1.9%	SILTY	SS	

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					Baseline Dissolved Phosphorus (lb)	Existing Dissolved Phosphorus (lb)	Reduction in Dissolved Phosphorus (%)	Baseline Particulate Phosphorus (lb)	Existing Particulate Phosphorus (lb)	Reduction in Particulate Phosphorus (%)	Baseline TP (lb)	Existing TP (lb)	Reduction in TP (%)			
BLI-114	456.51	0.00	456.51	NA										CLAYEY	(E-RIP)	
BLI-115	18.56	0.00	0.00	18.56	9.10	8.26	9.2%	3.68	3.68	0.0%	12.78	11.94	6.5%	SANDY	CB, SS	
BLI-116	3.85	0.00	0.00	3.85	3.06	2.99	2.5%	0.92	0.92	0.0%	3.99	3.91	1.9%	SILTY	SS	
BLI-117	0.47	0.00	0.00	0.47	0.43	0.21	51.4%	0.09	0.06	33.2%	0.53	0.27	48.2%	SILTY	DP	
BLI-118	0.32	0.00	0.00	0.32	0.30	0.11	63.4%	0.07	0.03	48.8%	0.36	0.14	60.8%	SILTY	BB	
BLI-119	0.21	0.00	0.00	0.21	0.20	0.10	51.9%	0.04	0.03	37.3%	0.24	0.12	49.3%	SILTY	BB	
BLI-120	0.58	0.00	0.00	0.58	0.54	0.22	58.2%	0.12	0.07	41.2%	0.65	0.29	55.1%	SILTY	DP	
BLI-121	1.29	0.00	0.00	1.29	1.15	1.13	1.9%	0.25	0.25	0.0%	1.40	1.38	1.5%	SILTY	SS	
BLI-122	73.54	3.81	73.54	NA										SILTY	(E-RIP)	
BLI-123, BLI-124 (US)	6.26	12.83	0.00	6.26	3.55	2.82	20.6%	1.60	1.48	7.5%	5.15	4.30	16.5%	SILTY	GS	0.50
BLI-125, BLI-129 (US)	2.97	5.71	0.00	2.97	1.40	1.37	1.8%	0.66	0.66	0.0%	2.06	2.03	1.2%	SILTY	SS	
BLI-126	6.98	0.00	6.98	NA										SILTY	(E-RIP)	
BLI-127, BLI-128 (US)	6.59	4.10	0.00	6.59	4.36	2.07	52.4%	1.78	1.09	38.8%	6.14	3.16	48.5%	SILTY	GS	0.50
BLI-130	57.75	1.88	57.75	NA										SILTY	(E-RIP)	
BLI-131	22.37	1.58	0.00	22.37	12.14	0.28	97.7%	4.98	0.13	97.4%	17.12	0.40	97.6%	SILTY	GS	0.50
BLI-132	33.75	0.00	33.75	NA										SILTY	(E-RIP)	
BLI-133	25.41	0.00	0.00	25.41	13.80	13.53	2.0%	6.91	6.91	0.0%	20.71	20.44	1.3%	CLAYEY	SS	
BLI-134	13.27	0.00	13.27	NA										CLAYEY	(E-RIP)	
BLI-135	10.88	0.00	0.00	10.88	3.55	0.13	96.3%	3.14	0.16	94.9%	6.69	0.29	95.7%	CLAYEY	GS	0.50
BLI-136	50.01	0.00	50.01	NA										SILTY	(E-RIP)	
BLI-137	89.34	0.00	0.00	89.34	54.66	2.01	96.3%	25.45	1.02	96.0%	80.11	3.03	96.2%	CLAYEY	GS, CB	0.50
BLI-138	2.12	0.00	0.00	2.12	1.72	0.08	95.1%	0.74	0.05	93.7%	2.46	0.13	94.7%	CLAYEY	GS	0.50
BLI-139	23.07	0.00	0.00	23.07	19.20	17.97	6.4%	7.81	7.81	0.0%	27.01	25.78	4.6%	CLAYEY	CB, SS	
BLI-140	4.78	0.00	0.00	4.78	3.59	3.18	11.5%	1.41	1.41	0.0%	5.00	4.59	8.2%	CLAYEY	CB, SS	
BLI-141	37.09	0.00	0.00	37.09	32.08	30.01	6.4%	9.96	9.96	0.0%	42.03	39.97	4.9%	CLAYEY	CB, SS	
BLI-142	0.23	0.00	0.00	0.23	0.26	0.09	66.7%	0.04	0.02	55.0%	0.31	0.11	65.0%	CLAYEY	BB, SS	
BLI-143	1.28	0.00	0.00	1.28	1.44	1.11	23.1%	0.24	0.20	16.0%	1.68	1.31	22.1%	CLAYEY	BB	
BLI-144	82.11	0.00	0.00	82.11	48.98	1.33	97.3%	22.94	0.71	96.9%	71.92	2.04	97.2%	CLAYEY	GS, CB	0.50
BLI-145	1.58	0.00	0.00	1.58	1.77	0.50	71.9%	0.30	0.30	-0.2%	2.07	0.80	61.6%	CLAYEY	WP	
BLI-146	0.76	0.00	0.00	0.76	0.84	0.45	46.0%	0.14	0.14	-0.2%	0.97	0.59	39.6%	SILTY	WP	
BLI-147	81.74	0.00	81.74	NA										SILTY	(E-RIP)	
BLI-148	24.17	0.00	24.17	NA										CLAYEY	(E-RIP)	

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					Baseline Dissolved Phosphorus (lb)	Existing Dissolved Phosphorus (lb)	Reduction in Dissolved Phosphorus (%)	Baseline Particulate Phosphorus (lb)	Existing Particulate Phosphorus (lb)	Reduction in Particulate Phosphorus (%)	Baseline TP (lb)	Existing TP (lb)	Reduction in TP (%)			
BLI-149, BLI-150	5.82	0.00	0.00	5.82	4.26	1.83	57.0%	1.04	0.58	44.3%	5.30	2.41	54.5%	SILTY	DP	
BLI-151, BLI-152 (US)	27.50	2.09	27.50	NA										SILTY	(E-RIP)	
BLI-153	39.56	4.61	0.00	39.56	7.51	0.59	92.1%	9.97	1.26	87.4%	17.48	1.85	89.4%	CLAYEY	GS	0.50
BLI-154	2.41	0.00	0.00	2.41	1.85	0.28	84.9%	0.77	0.77	0.1%	2.62	1.05	59.9%	SANDY	WP	
BLI-155	17.76	0.00	0.00	17.76	13.64	2.07	84.9%	4.21	0.80	81.0%	17.86	2.87	83.9%	SANDY	GS	0.50
BLI-156	4.75	0.00	0.00	4.75	2.37	2.28	3.8%	0.76	0.76	0.0%	3.13	3.04	2.9%	SANDY	SS	
BLI-157	1.69	0.00	0.00	1.69	0.80	0.77	3.9%	0.25	0.25	0.0%	1.06	1.03	3.0%	SANDY	SS	
BLI-158	3.85	0.00	0.00	3.85	1.76	1.69	3.9%	0.56	0.56	0.0%	2.32	2.25	2.9%	SANDY	SS	
BLI-159	2.27	0.00	0.00	2.27	1.47	1.43	2.8%	0.58	0.58	0.0%	2.05	2.00	2.0%	CLAYEY	SS	
BLI-160	6.52	0.00	0.00	6.52	2.81	2.71	3.3%	1.18	1.18	0.0%	3.99	3.90	2.3%	SANDY	SS	
BLI-161	56.99	0.00	0.00	56.99	29.68	28.65	3.5%	9.81	9.81	0.0%	39.49	38.46	2.6%	SANDY	SS	
BLI-162	1.09	0.00	0.00	1.09	0.53	0.50	3.9%	0.17	0.17	0.0%	0.69	0.67	3.0%	SANDY	SS	
BLI-163	153.81	0.00	153.81	NA										CLAYEY	(E-RIP)	
BLI-164	20.60	0.00	0.00	20.60	11.77	11.41	3.1%	3.33	3.33	0.0%	15.10	14.74	2.4%	SANDY	SS	
BLI-165	0.59	0.00	0.00	0.59	0.49	0.00	100.0%	0.11	0.00	100.0%	0.60	0.00	100.0%	SANDY	IB	
BLI-166	10.15	0.00	0.00	10.15	4.90	4.71	3.9%	1.55	1.55	0.0%	6.45	6.26	3.0%	SANDY	SS	
BLI-167	8.93	0.00	0.00	8.93	5.76	5.60	2.8%	1.36	1.36	0.0%	7.12	6.96	2.2%	SANDY	SS	
BLI-168	4.29	0.00	0.00	4.29	2.04	1.96	3.9%	0.64	0.64	0.0%	2.68	2.60	3.0%	SANDY	SS	
BLI-169	3.42	0.00	0.00	3.42	1.29	0.02	98.3%	0.45	0.01	98.0%	1.74	0.03	98.2%	SANDY	GS	0.50
BLI-170	6.33	0.00	0.00	6.33	1.95	1.88	3.4%	0.62	0.62	0.0%	2.58	2.51	2.6%	SANDY	SS	
BLI-171	67.34	0.00	67.34	NA										SANDY	(E-RIP)	
BLI-172	2.04	0.00	0.00	2.04	0.42	0.00	99.9%	0.19	0.00	99.9%	0.61	0.00	99.9%	SANDY	GS	0.50
BLI-173	2.12	0.00	0.00	2.12	0.63	0.01	98.3%	0.24	0.00	98.1%	0.88	0.02	98.2%	SANDY	DP	
BLI-174	19.23	0.00	0.00	19.23	11.53	10.61	7.9%	3.40	3.40	0.0%	14.92	14.01	6.1%	SANDY	CB, SS	
BLI-175	3.17	0.00	0.00	3.17	2.06	1.98	3.6%	0.61	0.61	0.0%	2.66	2.59	2.8%	SANDY	SS	
BLI-176	1.97	0.00	0.00	1.97	1.28	0.16	87.8%	0.38	0.38	-0.2%	1.66	0.53	67.8%	SANDY	WP	
BLI-177	2.61	0.00	0.00	2.61	0.82	0.79	3.9%	0.25	0.25	0.0%	1.07	1.04	3.0%	SANDY	SS	
BLI-178	0.89	0.00	0.00	0.89	0.33	0.25	23.2%	0.10	0.10	0.0%	0.43	0.36	17.7%	SANDY	CB, SS	
BLI-179	15.89	0.00	0.00	15.89	5.98	5.78	3.3%	1.62	1.62	0.0%	7.60	7.40	2.6%	SANDY	SS	
BLI-180	104.69	0.24	104.69	NA										SANDY	(E-RIP)	
BLI-181	10.77	0.00	0.00	10.77	4.31	0.47	89.1%	1.36	0.19	85.8%	5.67	0.66	88.3%	SANDY	GS	0.50
BLI-182	9.81	0.00	9.81	NA										SANDY	(E-RIP)	
BLI-183	5.27	0.00	0.00	5.27	1.90	1.82	3.8%	0.59	0.59	0.0%	2.49	2.41	2.9%	SANDY	SS	
BLI-184	10.27	0.00	0.00	10.27	4.81	4.62	3.8%	1.45	1.45	0.0%	6.26	6.07	2.9%	SANDY	SS	

Basin ID	Total MS4 Area (acres)	Off-site Drainage Area (acres)	Exempt MS4 Area (acres)	Regulatory MS4 Area (acres)	Annual Dissolved Phosphorus			Annual Particulate Phosphorus			Total Annual Phosphorus			Major Soil Type	Current Practices	Swale Dynamic Infiltration Rate (in/hr)
					Baseline Dissolved Phosphorus (lb)	Existing Dissolved Phosphorus (lb)	Reduction in Dissolved Phosphorus (%)	Baseline Particulate Phosphorus (lb)	Existing Particulate Phosphorus (lb)	Reduction in Particulate Phosphorus (%)	Baseline TP (lb)	Existing TP (lb)	Reduction in TP (%)			
BLI-185	24.72	0.00	0.00	24.72	18.92	18.35	3.0%	3.89	3.89	0.0%	22.82	22.24	2.5%	SANDY	SS	
BLI-186	39.85	0.00	0.00	39.85	27.10	26.11	3.7%	9.34	9.34	0.0%	36.44	35.45	2.7%	SANDY	CB, SS	
BLI-187	7.26	0.00	0.00	7.26	5.81	5.64	2.9%	1.21	1.21	0.0%	7.03	6.86	2.4%	SANDY	SS	
BLI-188	7.16	0.00	0.00	7.16	5.43	2.66	51.0%	1.77	1.77	-0.2%	7.19	4.43	38.4%	SANDY	WP, CB	
BLI-189	19.09	0.00	19.09	NA										SANDY	(E-RIP)	
BLI-190	5.12	0.00	0.00	5.12	2.81	2.71	3.4%	0.86	0.86	0.0%	3.67	3.58	2.6%	SANDY	SS	
BLI-191	5.68	0.00	5.68	NA										SANDY	(E-RIP)	
BLI-192	34.78	1.15	0.00	34.78	12.86	12.36	3.9%	4.81	4.81	0.0%	17.67	17.17	2.8%	SANDY	SS	
BLI-193	1.90	0.00	0.00	1.90	1.55	0.57	63.3%	0.25	0.25	0.0%	1.80	0.82	54.5%	SANDY	HD	
BLI-194	1.19	0.00	0.00	1.19	0.96	0.39	60.0%	0.16	0.16	0.0%	1.12	0.54	51.6%	SANDY	HD	
BLI-195	10.69	0.00	0.00	10.69	5.42	4.94	8.8%	1.79	1.79	0.0%	7.20	6.73	6.6%	SANDY	CB, SS	
BLI-196	6.71	0.00	0.00	6.71	4.07	3.90	4.2%	1.20	1.20	0.0%	5.27	5.10	3.3%	SANDY	SS	
BLI-197	16.53	0.00	0.00	16.53	8.45	7.81	7.6%	2.51	2.51	0.0%	10.96	10.32	5.8%	SANDY	CB, SS	
BLI-198	16.34	0.00	0.00	16.34	11.77	11.34	3.7%	3.88	3.88	0.0%	15.65	15.22	2.8%	SANDY	SS	
BLI-199	107.96	0.00	0.00	107.96	69.24	66.99	3.2%	21.08	21.08	0.0%	90.32	88.07	2.5%	SANDY	CB, SS	
BLI-200	9.97	0.00	0.00	9.97	8.92	8.68	2.7%	1.70	1.70	0.0%	10.62	10.38	2.3%	SANDY	SS	
BLI-201	7.28	0.00	0.00	7.28	7.32	6.83	6.7%	1.38	1.38	0.0%	8.69	8.21	5.6%	SANDY	CB, SS	
BLI-202	6.01	0.00	0.00	6.01	4.02	3.68	8.5%	1.54	1.54	0.0%	5.56	5.22	6.1%	CLAYEY	CB, SS	
BLI-203	15.61	0.00	0.00	15.61	15.00	14.16	5.6%	2.68	2.68	0.0%	17.68	16.85	4.7%	SANDY	CB, SS	
BLI-204	91.03	0.00	0.00	91.03	64.47	61.69	4.3%	16.95	16.95	0.0%	81.42	78.64	3.4%	SANDY	CB, SS	
BLI-205	34.33	0.00	0.00	34.33	24.09	21.70	9.9%	7.13	7.13	0.0%	31.21	28.83	7.6%	SANDY	CB, SS	
BLI-206	8.54	0.00	0.00	8.54	5.25	4.80	8.4%	1.69	1.69	0.0%	6.93	6.49	6.4%	SANDY	CB, SS	
BLI-207	9.03	0.00	0.00	9.03	6.59	6.38	3.2%	1.76	1.76	0.0%	8.35	8.14	2.5%	SANDY	SS	
BLI-208	3.55	0.00	0.00	3.55	1.36	1.31	3.5%	0.49	0.49	0.0%	1.85	1.80	2.6%	SANDY	SS	
BLI-210	7.11	0.00	0.00	7.11	5.72	5.30	7.3%	2.28	2.28	0.0%	7.99	7.57	5.3%	CLAYEY	CB, SS	
BLI-211	17.17	0.00	0.00	17.17	8.47	8.15	3.8%	2.74	2.74	0.0%	11.21	10.88	2.9%	SANDY	SS	
BLI-212	17.15	0.00	17.15	NA										SANDY	(E-RIP)	
BLI-213	7.53	0.00	0.00	7.53	8.01	1.22	84.7%	1.36	0.29	78.7%	9.38	1.51	83.9%	SILTY	GS	
BLI SUBTOTAL	3968	192	2021	1947	1213	881	27.4%	382	294	23.1%	1595	1175	26.3%			
TOTAL	4,995.4	269.4	2,613.4	2,381.9	1,433.9	1,038.9	27.5%	466.4	361.1	22.6%	1,900.3	1,400.0	26.3%			

Footnotes:

- ¹ "Total MS4 Area" is all the area within the municipality.
- "Off-site Drainage Area" is the area outside the municipal jurisdiction.
- "Exempt MS4 Area" is the area draining to the MS4 but the municipality is not responsible for the loading (e.g. Agricultural, WisDOT ROW, and County ROW land use).
- "Regulatory MS4 Area" is the area which loading is assessed for the municipality.

Watershed	Regulatory MS4 Area (acres)	TSS Load (lb)	TSS Load Concentration (lb/ac)	TP Load (lb)	TP Load Concentration (lb/ac)
Lower Wisconsin River (LWR)	347.6	73,800.5	212.3	203.1	0.58
Neenah Creek (NC)	87.4	7,809.8	89.4	22.1	0.25
Buffalo Lake Inflow (BLI)	1,947.0	45,5584.8	234.0	1,175.9	0.60
Entire City	2,381.9	537,195.1	225.5	1,401.1	0.59

Table 4.06-4 Existing Conditions Modeling Results Summary per Watershed

The current City-wide level of TSS reduction meets the 20 percent TSS reduction requirement in the City’s stormwater permit. However, the current City-wide TSS and TP reductions do not meet the Wisconsin River and Upper Fox and Wolf River TMDL requirements. Baseline and existing conditions modeling output is provided on a CD in Appendix M.

Pollutant	MS4 Permit Required Reductions	TMDL Required Reductions (Assumed)	MS4 Modeled Conditions Community-Wide (% Reduction)	TMDL Pollutant Reduction Gap (%)
TSS	20%	Wisconsin River (Reach 190): NA Upper Fox and Wolf River (Reaches 4 and 7): 47.0%	LWR: 18.8% NC: 78.6% BLI: 27.7% Entire City: 29.1%	LWR: NA NC: -31.6% BLI: 19.3% Entire City: NA
TP	NA	Wisconsin River (Reach 190): 68.6% Upper Fox and Wolf River (Reaches 4 and 7): 88.0%	LWR: 14.5% NC: 67.4% BLI: 26.3% Entire City: 26.3%	LWR: 54.1% NC: 20.6% BLI: 61.7% Entire City: NA

Table 4.06-5 MS4 Permit and Wisconsin River and Upper Fox and Wolf River TMDLs Average Annual Percent Pollutant Reductions and Pollutant Reduction Gap per Watershed

The current levels of pollutant reduction are the result of existing BMPs within the City. To meet the TMDL pollutant reduction requirements, the City needs to implement additional BMPs to meet the reduction targets. Section 5 outlines different alternatives the City may investigate to further reduce pollutant loads.

C. Impaired Waterbodies and TMDL Requirements

Part II, Section J of the City’s permit requires that the permittee “shall include a written section in its stormwater 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.”

As described in Table 2.01-2, the City discharges to multiple waterbodies that are impaired for TP (Wisconsin River, Neenah Creek, and Buffalo Lake Inflow). To further reduce pollutant loads that enter the impaired waters, Strand recommends the City investigate ways, if possible, to reduce discharge of phosphorus from City lands that come from farmland, lawn fertilizers, yard waste, and leaves. One way to do this could be to encourage residents to keep leaves and yard waste out of the curb and gutter line and ditches. TSS can be reduced by minimizing erosion, directing downspouts onto lawns rather than hard surfaces, and reducing impervious surfaces on property. The stormwater plan, herein, provides the framework for addressing the City’s TSS and phosphorus loads. Section 5 of this report includes an alternative analysis for the City to meet wasteload allocations of the Wisconsin River and Upper Wolf and Fox River TMDLs.

**SECTION 5
ALTERNATIVES ANALYSIS**

5.01 INTRODUCTION

The City is required to meet the Wisconsin River Basin and Upper Fox and Wolf River TMDL requirements and must meet the WPDES MS4 Stormwater Permit requirements as stated previously in Section 1. Table 5.01-1 shows that the City is in compliance with the MS4 Stormwater Permit’s required 20 percent TSS reduction requirement, but not in compliance with the TMDL required TSS and TP reductions. There are generally three ways to meet the TMDL requirements, including stormwater BMPs within the municipality, WAM, and WQT, or a combination of these options.

To achieve the required TSS and TP reductions, the City may need to implement WQT and a number of new BMPs that might include conversion of dry detention basins to wet detention basins, construction of new wet detention basins, bioretention basins, porous pavement, hydrodynamic stormwater treatment devices, chemical treatment of wet ponds, modified street sweeping, and modified ordinance requirements for redevelopment as further described in this section.

Pollutant	MS4 Permit Required Reductions (%)	TMDL Required Reductions (%)	MS4 Existing Conditions Reductions (%)	TMDL Pollutant Reduction Gap (%)	Annual TMDL Pollutant Reduction Gap (pounds)
TSS	20%	Wisconsin River: NA Upper Fox and Wolf River: 47.0%	29.1%	LWR: NA NC: -31.6% BLI: 19.3% Entire City: NA	LWR: NA NC: NA BLI: 121,640 Entire City: NA
TP	NA	Wisconsin River: 68.6% Upper Fox and Wolf River: 88.0%	26.3%	LWR: 54.1% NC: 20.6% BLI: 61.7% Entire City: NA	LWR: 129 NC: 14 BLI: 984 Entire City: NA

Table 5.01-1 Required and Existing Conditions Pollutant Reductions per Wisconsin River Basin and Upper Fox and Wolf River TMDL

The remainder of this section is devoted to alternatives analysis to determine the most cost-effective way for the City to achieve TMDL compliance.

Section 5.02 discusses alternatives considered for the City. Section 5.03 discusses components that make up the alternatives for the City. Section 5.04 provides an evaluation of alternatives for the City. Section 5.05 provides an evaluation of WQT and WAM. Section 5.06 includes a discussion of potential trading partners. Section 5.07 discusses the potential for WQT with the Portage WWTP. Section 5.08 discusses the potential for WQT with agricultural lands. Section 5.09 discusses the potential for WAM. Section 5.10 includes recommendations.

Each alternative includes a description, the effects on stormwater quality, and the planning-level OPC. Costs presented were estimated using historical bid costs, where available, and supplemented by other reference sources. All referenced project costs include allowances for engineering, contingencies, and

soils investigations, where necessary. The purpose of this report is to provide the City with the information required to initiate the budgeting and planning phase for facilities improvements. All costs are presented in 4th quarter 2021 dollars and include estimated property acquisition costs. All costs presented in this section include a 35 percent contingency and technical services allowance. Costs do not include utility conflict resolution, if any, unless noted. Maintenance costs are included in the 20-year net present worth (NPW) in Table 5.04-1. Appendix O includes figures (Figures 5.01-1 to 5.01-6) showing the layout of each alternative component. Appendix P includes detailed opinion of probable construction cost (OPCC) breakouts for each alternative. Future construction costs should be adjusted for inflation when final project schedules are determined. OPCs should be updated during the design phase.

5.02 ALTERNATIVES CONSIDERED

Table 5.02-1 shows three alternatives seeking to close the TSS and TP pollutant reduction gaps identified in Table 5.01-1. Alternative components considered (though in some cases not analyzed) include WQT, increased frequency of street sweeping, wet detention basins, underground wet detention basins, dry to wet detention basin conversion, vegetated swales, permeable pavement retrofits, hydrodynamic separators, traffic-calming bioretention basin bumpouts, improved leaf collection, and 40 percent TSS reduction for redevelopment. Table 5.04-1 provides a listing of these alternative components including their individual cost, performance, cost effectiveness, soil contamination on-site (according to WDNR Remediation and Redevelopment (RR) Sites Map), property acquisition need, and wetland delineation need. Table 5.04-1 also packages the BMPs into Alternatives 1, 2, and 3 to achieve closing the TP reduction gaps to achieve TMDL compliance.

Alternative	Structural BMPs	Nonstructural BMP: 40% TSS Requirement for Redevelopment	Nonstructural BMP: 80% TSS Requirement for Redevelopment	Nonstructural BMP: Increased Street Sweeping Frequency (1 Pass Every 2 Weeks)	Nonstructural BMP: Increased Street Sweeping Frequency (1 Pass Every Week)	WQT with Agricultural Lands
1	6	Yes	No	Yes	No	Yes
2	6	Yes	No	No	No	Yes
3	6	Yes	No	No	No	Yes

Note: See Table 5.04-1 for detailed alternatives analysis information.

Table 5.02-1 Alternatives Analysis Summary of Components

5.03 ALTERNATIVE COMPONENTS

Alternatives considered for the City involve many different components. Assumptions for these components are described in this section.

A. Increased Frequency of Regenerative Air Street Sweeping

As described in Section 4.05, the City currently performs street sweeping with two vacuum sweepers at least once per month along curb and gutter streets in the City. Sweeping generally starts in early April and continues until November each year. The City can realize an increase in pollutant reduction by switching to a weekly or biweekly sweeping frequency, as shown in Table 5.04-1. This component is used in Alternatives 1 and 2 of the alternatives analysis.

B. Catch Basins with Sumps

At this time, it appears that the City could upgrade inlets to catch basins with sumps along with annual street reconstruction projects and update WinSLAMM modeling from time to time to account for the pollutant reduction. At a 20-year NPW cost of more than \$5,000 pounds per TP, catch basins are generally less cost effective than other structural BMPs. Therefore, they were considered but not analyzed as a part of this alternatives analysis.

C. Redevelopment

WDNR allows TMDL pollutant reduction credit to be taken for redevelopment. The City's proposed postconstruction stormwater ordinance requires redevelopments to meet a 40 percent TSS reduction, which matches that required by WAC NR 151. Assuming that 1 acre of commercial redevelopment occurs yearly within the City, the City can realize a reduction of 0.5 pounds per year TP (lb/year) and 136.4 lb/year TSS due to redevelopment meeting 40 percent TSS reduction over a 20-year planning period. It is anticipated that private development will use an array of stormwater BMPs for compliance, including green infrastructure such as wet detention ponds, underground wet detention basins, bioretention basins, infiltration basins, permeable pavement, and green roofs. Table 5.04-1 includes the effect of 20 years of redevelopment at a 40 percent TSS requirement. The City could decide to change the ordinance to 80 percent TSS reduction for redevelopment, potentially doubling the TP reduction, but it would have to weigh the pros and cons of this change to the development community and the City. This component is used in all three alternatives listed in Table 5.04-1.

D. Construction of Stormwater BMPs

Appendix O includes figures for each of the proposed structural stormwater BMPs. These figures show existing wetlands, floodplains, and storm sewer. Inclusion of this information allows preliminary siting of proposed stormwater BMPs outside of wetlands and floodplains and to avoid or reroute existing public utilities. The proposed stormwater BMPs are included in all three alternatives listed in Table 5.04-1.

1. Dry Detention Basin to Wet Detention Basin Conversion

One dry basin analyzed was the Cardinal FG Dry Pond. This pond was chosen based on its upstream pollutant loadings and ease of conversion from a dry to a partially wet basin. Figure 5.01-1 in Appendix O shows the location of the proposed Cardinal FG Wet Pond. The Cardinal FG Dry Pond is privately owned so land would need to be purchased.

The Cardinal FG Wet Pond would provide additional treatment to basins LWR-22, LWR-36, and LWR-37 (16,661 lb TSS/year and 19 lb TP/year). The pond is modeled to achieve 94 percent TSS and 72.29 percent TP reduction for area draining to it.

2. Wet Detention Basin at Portage High School

The construction of a new wet detention basin on land located to the east of Portage High School is proposed as shown on Figure 5.01-2 in Appendix O. The proposed pond is located on land (6.34-acre parcel) currently owned by the Portage Community School District; therefore, the land would either need to be purchased or the City would need to obtain a permanent easement in order to construct this pond. The cost for a clay liner is included in this alternative. It is recommended that geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner.

The Portage High School Wet Pond would provide additional treatment to Basins BLI-110, BLI-67, and BLI-68 (US) (37,652 lb TSS/year and 83 lb TP/year). The pond is modeled to achieve 87.27 percent TSS and 70.97 percent TP reduction for the area draining to it.

3. Wet Detention Basin at East Haertel Street

The construction of a new wet detention basin on vacant land located between East Haertel Street and East Albert Street is proposed as shown on Figure 5.01-3 in Appendix O. The proposed pond is located on land (0.40-acre parcel) not currently owned by the City; therefore, the land would need to be purchased in order to construct this pond. The cost for a clay liner is included in this alternative. It is recommended that geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner.

The East Haertel Street Wet Pond would provide additional treatment to Basins BLI-186 and BLI-187 (9,337 lb TSS/year and 18 lb TP/year). The pond is modeled to achieve 57.9 percent TSS and 43.74 percent TP reduction for the area draining to it.

4. Wet Detention Basin at East Mullet Street

The construction of a new wet detention basin on partially vacant land located east of the East Mullet Street and McPherson Street intersection is proposed as shown on Figure 5.01-4 in Appendix O. The proposed pond is located on land (0.29-acre parcel) not currently owned by the City; therefore, the land would need to be purchased in order to construct this pond. The cost for a clay liner is included in this alternative. It is recommended that geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner.

The East Mullet Street Wet Pond provides additional treatment to Basin BLI-139 (5,112 lb TSS/year and 9 lb TP/year). The pond is modeled to achieve 53.6 percent TSS and 37.07 percent TP reduction for the area draining to it.

5. Wet Detention Basin at County Highway (CTH) CX

The construction of a new wet detention basin on agricultural land located east of CTH CX is proposed as shown on Figure 5.01-6 in Appendix O. The proposed pond is located on land (17.88-acre parcel) that is currently owned by the City; therefore, no land would need to be purchased in order to construct this pond. The cost for a clay liner is included in this alternative. It is recommended that geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner.

The CTH CX Wet Detention Basin provides additional treatment to Basin BLI-44 (7,195 lb TSS/year and 13 lb TP/year). The pond is modeled to achieve 84.7 percent TSS and 72.38 percent TP reduction for the area draining to it.

6. Underground Wet Detention Basin at Portage Public Library

The construction of a new underground wet detention basin located at Portage Public Library is proposed as shown on Figure 5.01-5 in Appendix O. This underground basin is proposed to be located beneath the library's current parking lot; therefore, the parking lot would need to be reconstructed. Underground wet detention basins are generally more expensive than traditional wet ponds but are considered when there is little open land available. Several photographs showing the construction of an underground detention basin are shown in Figure 5.03-1.

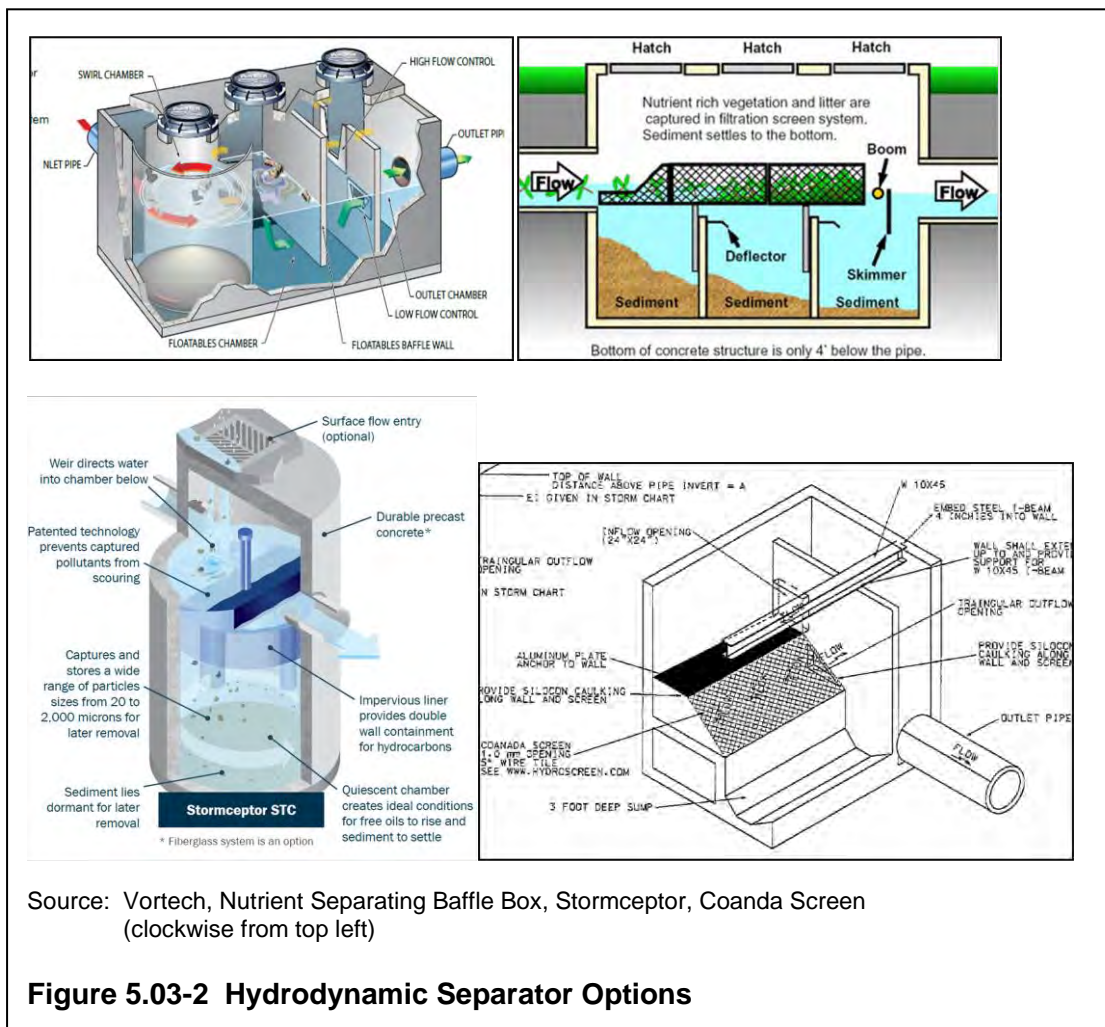
The Portage Public Library Wet Pond provides additional treatment to Basin BLI-204 (13,694 lb TSS/year and 31 lb TP/year). The pond is modeled to achieve 53.4 percent TSS and 41.5 percent TP reduction for the area draining to it.



7. Hydrodynamic Separators

Hydrodynamic separators were considered but not analyzed as part of this report. Hydrodynamic separators are generally less effective than wet detention and bioretention basins but are considered when there is little open land available to site a more traditional stormwater BMP such as a wet detention or bioretention basin. Hydrodynamic separators typically will treat only low flows (1- to 2-year storm events) while bypassing high flows around or through the unit. Appropriately sized hydrodynamic separators generally can expect to achieve a 15 percent TSS reduction and a 12 percent TP reduction, though this performance decreases in areas already treated by street sweeping and catch basins with sumps. Hydrodynamic separators are proven to be effective in reducing urban stormwater pollutants (nutrients, TSS, TP, oil/grease, trash, and other debris) when adequately maintained. Typical maintenance would be provided via a vacuum truck two to three times per year. Hydrodynamic separators are typically less effective in TSS and TP control where there is a high density of catch basins with sumps in a watershed because the catch basins with sumps have a similar treatment mechanism as hydrodynamic separators. Catch basins, however, do little to capture oil/grease, trash, and floatables. Hydrodynamic separators should be considered during street reconstruction projects at locations with no treatment at existing outfalls.

Typical options for hydrodynamic separators as shown in Figure 5.03-2 include Vortechs (Contech) units, Nutrient Separating Baffle Box (Oldcastle Infrastructure), Stormceptor (Contech), and nonproprietary Coanda screen pretreatment units. Strand recommends an alternatives analysis be completed during design to determine the most cost-effective hydrodynamic separator at a given location while considering performance, need for bypass, ease of maintenance, and cost.



8. Permeable Pavement

Permeable pavement was considered, but not analyzed, as part of this report. Permeable pavement would likely be best implemented through City projects during redevelopment. Permeable pavement (ranging from \$11,000 to \$25,000/lb TP on a 20-year present worth basis) is generally less cost effective than other traditional stormwater BMPs.

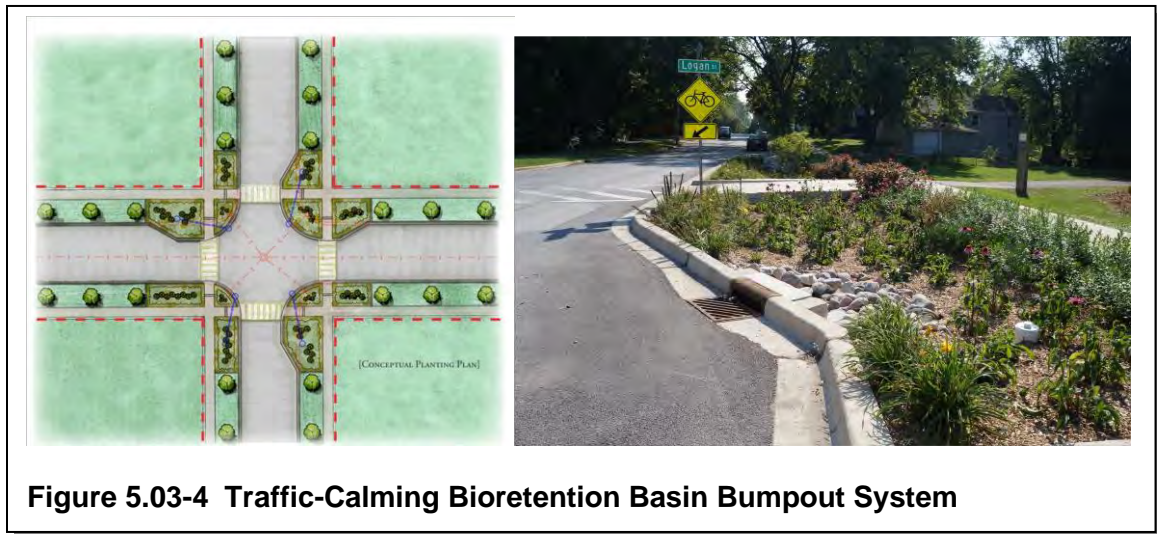
When analyzing permeable pavement, a 5:1 traditional pavement to permeable pavement run-on ratio is allowed by WDNR Permeable Pavement Technical Standard 1008. Technical Standard 1008 allows for 100 percent TSS and TP reduction for the portion of incoming flows

infiltrating into the ground beneath the pavement and 65 percent TSS and 35 percent TP removal for incoming flows flowing out of an underdrain in a permeable pavement system. Typical options for permeable pavement as shown in Figure 5.03-3 include permeable asphalt, permeable concrete, and paver blocks.



9. Traffic Calming Bioretention Basin Bumpout System

Where there is a need to provide traffic-calming and pedestrian refuge at certain intersections, a traffic-calming bioretention basin bumpout system could be considered. This system would look much like Figure 5.03-4. Traffic Calming Bioretention Basin Bumpout Systems (ranging from \$7,000 to \$13,000/lb TP on a 20-year present worth basis) are generally less cost-effective than other traditional stormwater BMPs but their value increases due to the dual purpose traffic calming function.



On a recent Strand project in Aurora, Illinois, 17 intersections were provided with this system. Watersheds draining to each intersection ranged from 0.3 acres to 5.4 acres with an average of 3.2 acres per intersection. Underdrains would be connected to existing storm sewer infrastructure in or nearby the intersection.

Bioretention basins would be designed using the WDNR *Technical Standard 1004: Bioretention for Infiltration*. Bioretention basins would typically be analyzed to have 1.25 feet of aboveground storage, a 2-foot engineered soil layer, and a 15-inch aggregate storage layer with a 6-inch underdrain pipe.

An engineered soil mix that minimizes leaching of phosphorus would be considered. As stated in the WDNR guidance document *Modeling Post-Construction Storm Water Management Treatment, May 2015*, the “DNR allows [...] 80% TSS and 0% TP removal credit for the volume of runoff that is filtered through an engineered soil filtering layer that meets the requirements of Technical Standard 1004 (Bioretention for Infiltration), and that is discharged via an underdrain.”

Due the higher unit costs of the bioretention basin bumpout systems in comparison to other structural BMPs, they were not analyzed as a part of this report.

10. Chemical Treatment of Existing Wet Detention Basins

Chemical treatment at existing wet detention basins was considered but not analyzed in the City. Typical candidates for chemical treatment would be regional wet detention basins with large drainage areas and underperforming wet detention basins (that get considerably less than 80 percent TSS reduction). The premise behind a chemical treatment system is that wet detention basins will settle out particulate phosphorus, but without chemical treatment, and will allow dissolved phosphorus to pass through. With the additional of a chemical feed system, an 80 percent TSS and 80 percent TP reduction may be considered feasible. Chemical treatment of existing wet detention basins (ranging from \$600 to \$1,000/lb TP on a 20-year present worth basis) can be relatively cost effective in the proper application.

11. Streambank Restoration

According to the WDNR's *TMDL Guidance for MS4 Permits: Planning, Implementation, and Modeling Guidance No. 3800-2014-04*, October 20, 2014, streambank or shoreline restoration is not given credit toward TMDL compliance because the TMDL baseline modeling already assumes that drainage systems are stable. However, recognizing the benefit that streambank or shoreline restoration provides, the WDNR allows and encourages streambank or shoreline restoration as a compliance benchmark toward meeting TMDL goals. It is recommended that the City discretionarily pursue design and construction of streambank restoration projects if they arise. There are currently no streambank erosion issues identified in the City.

12. Pollutant Reduction Credit for Improved Leaf Collection

On March 8, 2018, the WDNR released the Interim Municipal Phosphorus Reduction Credit for Leaf Management Programs guidance. The guidance states that a 17 percent TP reduction credit would be given for leaf collection in medium density residential areas without alleys (unless alleys receive the same leaf pickup and alley cleaning as streets) under the following conditions.

(a) Areas Eligible for TP Credit

- (1) Basins must have less than a 17 percent TP reduction due to existing BMPs.
- (2) Land use must be medium density residential (two to six units per acre) without alleys.
- (3) The leaf collection must be in a curb and gutter drainage system and light parking densities during street cleaning activities.
- (4) The tree cover must include one or more mature trees between the sidewalk and curb for every 80 feet of curb. Where sidewalk is not present, trees within 15 feet of the curb may be counted toward tree cover. Generally, this equates to a 17 percent or greater tree canopy over the street (pavement only).

(b) Leaf Collection Programs Conditions for Eligibility

- (1) Municipality must have an ordinance prohibiting placement of leaves in the street.
- (2) Policy stating leaves shall be placed on the terrace in bags or piles.
- (3) Municipal leaf collection must occur at least four times in the months of October and November by pushing, vacuuming, or manually loading the leaves into a garbage vehicle.

- (4) Municipality must clean the street of remaining leaf litter within 24 hours of each leaf collection occurrence by mechanical broom or vacuum-assisted street cleaner.
- (5) No leaf piles shall be left in the street overnight.
- (6) The credit is currently not available for any areas other than medium-density residential land use areas.
- (7) The credit may not be taken in addition to phosphorus reductions from other BMPs in a given drainage area at this time.

It should be noted that on July 22, 2020, the WDNR released an updated draft Interim Municipal Phosphorus Reduction Credit for Leaf Management Programs guidance that would offer credit to additional residential land uses and up to a 25 percent TP credit if coupled with weekly high-efficiency street sweeping. Likewise, it is likely that the guidance will include a start by date for leaf collection of October 1 for the City of Portage area. A TP credit analysis was considered, but not analyzed as a part of this update. Strand recommends that the City provide financial support for research efforts that will capitalize on this credit as the opportunity arises.

5.04 EVALUATION OF ALTERNATIVES

Table 5.04-1 summarizes the alternatives, the incremental TP reduction, and the OPCCs.

Alternative 1 relies on 20 years of redevelopment (with a 40 percent TSS reduction requirement), enhanced street sweeping (once every two weeks), constructed structural BMPs, and agricultural WQT to achieve the TMDL TSS and TP requirements.

Alternative 2 is similar to Alternative 1 but includes street sweeping every week instead of every two weeks.

Alternative 3 is similar to Alternatives 1 and 2 but does not include enhanced street sweeping. The City would continue its existing street sweeping schedule of once per month.

It appears the most cost-effective alternative to meet the Wisconsin River Basin and Upper Fox and Wolf River TMDLs is Alternative 3. Although Alternative 3 includes the most reliance on agricultural WQT, it is not much higher than the WQT that would be required for Alternatives 2 and 3. For purposes of developing a TMDL Implementation Plan required by the City's MS4 Permit, it is recommended that the City pursue Alternative 3 because it maximizes BMPs within the City and does not require an increase to the City's street sweeping operations. It is expected that as technologies further develop over the years and other WQT opportunities present themselves, the City will revisit the TMDL Implementation Plan from time to time seeking the most cost-effective route to TMDL compliance.

Table 5.04-1 Summary of Alternatives

Alternative 1

Condition or BMP	Proposed BMP Type	Figure Number	Basin Treated	Treated Area (acres)	Property Acquisition or Easement Needed?	Wetland Delineation Needed?	Soil Contamination On-Site Per WDNR RR Sites Map?	Additional TSS Removed (lb)	Additional TP Removed (lb)	2021 BMP Cost (Including Property Acquisition)	BMP Cost (20-Yr NPW)	20-Year NPW Cost Effectiveness (\$/lb TSS Removed)	20-Year NPW Cost Effectiveness (\$/lb TP Removed)	Alternative 1			
														TSS lb/yr	TP (lb/yr)		
Reach 190 (Lower Wisconsin River)														TMDL Reduction Gap:		NA	129.0
Redevelopment Areas-40%. Assume 20 years of redevelopment. Distributed 18% to Reach 190, 2% to Reach 4, and 80% to Reach 7	Account for 1 acre of commercial redevelopment achieving 40% TSS reduction	NA	NA	1	NA	NA	NA	491	1.8	\$0	\$0	\$0	\$0			491	1.8
Cardinal FG Dry to Wet Pond Conversion	Wet Detention Basin	5.01.1	LWR-22 36 & 37	45.083	Yes	No	No	15,353	18.0	\$1,374,019	\$1,713,159	\$5.14	\$4,508			15,353	18.0
Street Sweeping Once Every 2 Weeks in Entire City	Street Sweeping	NA	Varies	258	NA	NA	NA	667	1.5	\$140,113	\$2,686,285	\$29.81	\$14,924			667	1.5
Street Sweeping Once Every Week in Entire City	Street Sweeping	NA	Varies	258	NA	NA	NA	1,992	4.4	\$280,227	\$5,372,570	\$19.75	\$9,912				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$269,345		\$125			0	108
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$261,995		\$125				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$273,045		\$125				
														Reduction Subtotal (Reach 190):		16,511	129
Reach 4 (Neenah Creek)														TMDL Reduction Gap:		NA	14.0
Redevelopment Areas-40%. Assume 20 years of redevelopment. Distributed 18% to Reach 190, 2% to Reach 4, and 80% to Reach 7	Account for 1 acre of commercial redevelopment achieving 40% TSS reduction	NA	NA	1	NA	NA	NA	55	0.2	\$0	\$0	\$0	\$0			55	0.2
Street Sweeping Once Every 2 Weeks in Entire City	Street Sweeping	NA	Varies	33	NA	NA	NA	15	0.0	\$140,113	\$2,686,285	\$29.81	\$14,924			15	0.0
Street Sweeping Once Every Week in Entire City	Street Sweeping	NA	Varies	33	NA	NA	NA	54	0.1	\$280,227	\$5,372,570	\$19.75	\$9,912				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$34,455		\$125			0	13.8
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$34,330		\$125				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$34,505		\$125				
														Reduction Subtotal (Reach 4):		70	14.0
Reach 7 (Buffalo Lake Inflow)														TMDL Reduction Gap:		121,640	984.0
Redevelopment Areas-40%. Assume 20 years of redevelopment. Distributed 18% to Reach 190, 2% to Reach 4, and 80% to Reach 7	Account for 1 acre of commercial redevelopment achieving 40% TSS reduction	NA	NA	1	NA	NA	NA	2,182	7.9	\$0	\$0	\$0	\$0			2,182	7.9
Street Sweeping Once Every 2 Weeks in Entire City	Street Sweeping	NA	Varies	1,432	NA	NA	NA	3,823	7.6	\$140,113	\$2,686,285	\$29.81	\$14,924			3,823	7.6
Street Sweeping Once Every Week in Entire City	Street Sweeping	NA	Varies	1,432	NA	NA	NA	11,551	22.6	\$280,227	\$5,372,570	\$19.75	\$9,912				
Portage High School Wet Detention Basin	Wet Detention Basin	5.01-2	BLI-110 67 & 68	122.885	Yes	No	No	37,652	83.0	\$2,952,625	\$3,746,460	\$4.98	\$4,508			37,652	83.0

Condition or BMP	Proposed BMP Type	Figure Number	Basin Treated	Treated Area (acres)	Property Acquisition or Easement Needed?	Wetland Delineation Needed?	Soil Contamination On-Site Per WDNR RR Sites Map?	Additional TSS Removed (lb)	Additional TP Removed (lb)	2021 BMP Cost (Including Property Acquisition)	BMP Cost (20-Yr NPW)	20-Year NPW Cost Effectiveness (\$/lb TSS Removed)	20-Year NPW Cost Effectiveness (\$/lb TP Removed)	Alternative 1		
														TSS lb/yr	TP (lb/yr)	
East Haertel Street Wet Detention Basin	Wet Detention Basin	5.01-3	BLI-186 & 187	47.119	Yes	No	No	9,337	18.0	\$472,695	\$546,794	\$2.93	\$5,352	9,337	18.0	
East Mullet Street Wet Detention Basin	Wet Detention Basin	5.01-4	BLI-139	23.065	Yes	No	No	5,112	31.0	\$304,095	\$337,158	\$3.30	\$1,519	5,112	31.0	
Portage Public Library Underground Detention Basin	Underground Detention Basin	5.01-5	BLI-204	91.038	No	No	No	13,694	9.0	\$1,812,300	\$2,061,564	\$6.63	\$10,266	13,694	9.0	
CTH CX Wet Detention Basin	Wet Detention Basin	5.01-6	BLI-44	25.001	No	No	No	7,195	13.0	\$621,425	\$829,774	\$5.77	\$3,191	7,195	13.0	
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$2,036,325	NA	\$125	39,612	815	
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$1,984,495	NA	\$125			
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$2,041,095	NA	\$125			
														Reduction Subtotal (Reach 7):	121,640	984.0
														Reduction Subtotal (Reaches 190, 4, & 7):	138,221	1,127
														Total 2021 Cost	\$7,677,272	\$7,677,272
														Total 20-Year NPW Cost	\$14,261,319	\$14,261,319
														20-Year NPW Cost Per Pound Captured	\$5.16	\$632.71

Alternative 2

Condition or BMP	Proposed BMP Type	Figure Number	Basin Treated	Treated Area (acres)	Property Acquisition or Easement Needed?	Wetland Delineation Needed?	Soil Contamination On-Site Per WDNR RR Sites Map?	Additional TSS Removed (lb)	Additional TP Removed (lb)	2021 BMP Cost (Including Property Acquisition)	BMP Cost (20-Yr NPW)	20-Year NPW Cost Effectiveness (\$/lb TSS Removed)	20-Year NPW Cost Effectiveness (\$/lb TP Removed)	Alternative 2			
														TSS (lb/yr)	TP (lb/yr)		
Reach 190 (Lower Wisconsin River)														TMDL Reduction Gap:		NA	129.0
Redevelopment Areas-40%. Assume 20 years of redevelopment. Distributed 18% to Reach 190, 2% to Reach 4, and 80% to Reach 7	Account for 1 acre of commercial redevelopment achieving 40% TSS reduction	NA	NA	1	NA	NA	NA	491	1.8	\$0	\$0	\$0	\$0	491	1.8		
Cardinal FG Dry to Wet Pond Conversion	Wet Detention Basin	5.01.1	LWR-22 36 & 37	45.083	Yes	No	No	15,353	18.0	\$1,374,019	\$1,713,159	\$5.14	\$4,508	15,353	18.0		
Street Sweeping Once Every 2 Weeks in Entire City	Street Sweeping	NA	Varies	258	NA	NA	NA	667	1.5	\$140,113	\$2,686,285	\$29.81	\$14,924				
Street Sweeping Once Every Week in Entire City	Street Sweeping	NA	Varies	258	NA	NA	NA	1,992	4.4	\$280,227	\$5,372,570	\$19.75	\$9,912	1,992	4.4		
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$269,345		\$125				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$261,995		\$125	0	105		
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$273,045		\$125				
														Reduction Subtotal (Reach 190):		17,836	129
Reach 4 (Neenah Creek)														TMDL Reduction Gap:		NA	14.0
Redevelopment Areas-40%. Assume 20 years of redevelopment. Distributed 18% to Reach 190, 2% to Reach 4, and 80% to Reach 7	Account for 1 acre of commercial redevelopment achieving 40% TSS reduction	NA	NA	1	NA	NA	NA	55	0.2	\$0	\$0	\$0	\$0	55	0.2		
Street Sweeping Once Every 2 Weeks in Entire City	Street Sweeping	NA	Varies	33	NA	NA	NA	15	0.0	\$140,113	\$2,686,285	\$29.81	\$14,924				
Street Sweeping Once Every Week in Entire City	Street Sweeping	NA	Varies	33	NA	NA	NA	54	0.1	\$280,227	\$5,372,570	\$19.75	\$9,912	54	0.1		
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$34,455		\$125				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$34,330		\$125	0	13.7		
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$34,505		\$125				
														Reduction Subtotal (Reach 4):		109	14.0
Reach 7 (Buffalo Lake Inflow)														TMDL Reduction Gap:		121,640	984.0
Redevelopment Areas-40%. Assume 20 years of redevelopment. Distributed 18% to Reach 190, 2% to Reach 4, and 80% to Reach 7	Account for 1 acre of commercial redevelopment achieving 40% TSS reduction	NA	NA	1	NA	NA	NA	2,182	7.9	\$0	\$0	\$0	\$0	2,182	7.9		
Street Sweeping Once Every 2 Weeks in Entire City	Street Sweeping	NA	Varies	1,432	NA	NA	NA	3,823	7.6	\$140,113	\$2,686,285	\$29.81	\$14,924				
Street Sweeping Once Every Week in Entire City	Street Sweeping	NA	Varies	1,432	NA	NA	NA	11,551	22.6	\$280,227	\$5,372,570	\$19.75	\$9,912	11,551	22.6		
Portage High School Wet Detention Basin	Wet Detention Basin	5.01-2	BLI-110 67 & 68	122.885	Yes	No	No	37,652	83.0	\$2,952,625	\$3,746,460	\$4.98	\$4,508	37,652	83.0		
East Haertel Street Wet Detention Basin	Wet Detention Basin	5.01-3	BLI-186 & 187	47.119	Yes	No	No	9,337	18.0	\$472,695	\$546,794	\$2.93	\$5,352	9,337	18.0		
East Mullet Street Wet Detention Basin	Wet Detention Basin	5.01-4	BLI-139	23.065	Yes	No	No	5,112	31.0	\$304,095	\$337,158	\$3.30	\$1,519	5,112	31.0		

Condition or BMP	Proposed BMP Type	Figure Number	Basin Treated	Treated Area (acres)	Property Acquisition or Easement Needed?	Wetland Delineation Needed?	Soil Contamination On-Site Per WDNR RR Sites Map?	Additional TSS Removed (lb)	Additional TP Removed (lb)	2021 BMP Cost (Including Property Acquisition)	BMP Cost (20-Yr NPW)	20-Year NPW Cost Effectiveness (\$/lb TSS Removed)	20-Year NPW Cost Effectiveness (\$/lb TP Removed)	Alternative 2		
														TSS (lb/yr)	TP (lb/yr)	
Portage Public Library Underground Detention Basin	Underground Detention Basin	5.01-5	BLI-204	91.038	No	No	No	13,694	9.0	\$1,812,300	\$2,061,564	\$6.63	\$10,266	13,694	9.0	
CTH CX Wet Detention Basin	Wet Detention Basin	5.01-6	BLI-44	25.001	No	No	No	7,195	13.0	\$621,425	\$829,774	\$5.77	\$3,191	7,195	13.0	
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$2,036,325	NA	\$125			
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$1,984,495	NA	\$125	31,884	794	
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$2,041,095	NA	\$125			
														Reduction Subtotal (Reach 7):	121,640	984.0
														Reduction Subtotal (Reaches 190, 4, & 7):	139,585	1,127
														Total 2021 Cost	\$7,817,385	\$7,817,385
														Total 20-Year NPW Cost	\$16,888,299	\$16,888,299
														20-Year NPW Cost Per Pound Captured	\$6.05	\$749.26

Alternative 3

Condition or BMP	Proposed BMP Type	Figure Number	Basin Treated	Treated Area (acres)	Property Acquisition or Easement Needed?	Wetland Delineation Needed?	Soil Contamination On-Site Per WDNR RR Sites Map?	Additional TSS Removed (lb)	Additional TP Removed (lb)	2021 BMP Cost (Including Property Acquisition)	BMP Cost (20-Yr NPW)	20-Year NPW Cost Effectiveness (\$/lb TSS Removed)	20-Year NPW Cost Effectiveness (\$/lb TP Removed)	Alternative 3			
														TSS (lb/yr)	TP (lb/yr)		
Reach 190 (Lower Wisconsin River)														TMDL Reduction Gap:		NA	129.0
Redevelopment Areas-40%. Assume 20 years of redevelopment. Distributed 18% to Reach 190, 2% to Reach 4, and 80% to Reach 7	Account for 1 acre of commercial redevelopment achieving 40% TSS reduction	NA	NA	1	NA	NA	NA	491	1.8	\$0	\$0	\$0	\$0	491	1.8		
Cardinal FG Dry to Wet Pond Conversion	Wet Detention Basin	5.01.1	LWR-22 36 & 37	45.083	Yes	No	No	15,353	18.0	\$1,374,019	\$1,713,159	\$5.14	\$4,508	15,353	18.0		
Street Sweeping Once Every 2 Weeks in Entire City	Street Sweeping	NA	Varies	258	NA	NA	NA	667	1.5	\$140,113	\$2,686,285	\$29.81	\$14,924				
Street Sweeping Once Every Week in Entire City	Street Sweeping	NA	Varies	258	NA	NA	NA	1,992	4.4	\$280,227	\$5,372,570	\$19.75	\$9,912				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$269,345		\$125				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$261,995		\$125				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$273,045		\$125	0	109.2		
														Reduction Subtotal (Reach 190):		15,844	129
Reach 4 (Neenah Creek)														TMDL Reduction Gap:		NA	14.0
Redevelopment Areas-40%. Assume 20 years of redevelopment. Distributed 18% to Reach 190, 2% to Reach 4, and 80% to Reach 7	Account for 1 acre of commercial redevelopment achieving 40% TSS reduction	NA	NA	1	NA	NA	NA	55	0.2	\$0	\$0	\$0	\$0	55	0.2		
Street Sweeping Once Every 2 Weeks in Entire City	Street Sweeping	NA	Varies	33	NA	NA	NA	15	0.0	\$140,113	\$2,686,285	\$29.81	\$14,924				
Street Sweeping Once Every Week in Entire City	Street Sweeping	NA	Varies	33	NA	NA	NA	54	0.1	\$280,227	\$5,372,570	\$19.75	\$9,912				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$34,455		\$125				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$34,330		\$125				
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$34,505		\$125	0	14		
														Reduction Subtotal (Reach 4):		55	14.0
Reach 7 (Buffalo Lake Inflow)														TMDL Reduction Gap:		121,640	984.0
Redevelopment Areas-40%. Assume 20 years of redevelopment. Distributed 18% to Reach 190, 2% to Reach 4, and 80% to Reach 7	Account for 1 acre of commercial redevelopment achieving 40% TSS reduction	NA	NA	1	NA	NA	NA	2,182	7.9	\$0	\$0	\$0	\$0	2,182	7.9		
Street Sweeping Once Every 2 Weeks in Entire City	Street Sweeping	NA	Varies	1,432	NA	NA	NA	3,823	7.6	\$140,113	\$2,686,285	\$29.81	\$14,924				
Street Sweeping Once Every Week in Entire City	Street Sweeping	NA	Varies	1,432	NA	NA	NA	11,551	22.6	\$280,227	\$5,372,570	\$19.75	\$9,912				
Portage High School Wet Detention Basin	Wet Detention Basin	5.01-2	BLI-110 67 & 68	122.885	Yes	No	No	37,652	83.0	\$2,952,625	\$3,746,460	\$4.98	\$4,508	37,652	83.0		
East Haertel Street Wet Detention Basin	Wet Detention Basin	5.01-3	BLI-186 & 187	47.119	Yes	No	No	9,337	18.0	\$472,695	\$546,794	\$2.93	\$5,352	9,337	18.0		
East Mullet Street Wet Detention Basin	Wet Detention Basin	5.01-4	BLI-139	23.065	Yes	No	No	5,112	31.0	\$304,095	\$337,158	\$3.30	\$1,519	5,112	31.0		
Portage Public Library Underground Detention Basin	Underground Detention Basin	5.01-5	BLI-204	91.038	No	No	No	13,694	9.0	\$1,812,300	\$2,061,564	\$6.63	\$10,266	13,694	9.0		
CTH CX Wet Detention Basin	Wet Detention Basin	5.01-6	BLI-44	25.001	No	No	No	7,195	13.0	\$621,425	\$829,774	\$5.77	\$3,191	7,195	13.0		

Condition or BMP	Proposed BMP Type	Figure Number	Basin Treated	Treated Area (acres)	Property Acquisition or Easement Needed?	Wetland Delineation Needed?	Soil Contamination On-Site Per WDNR RR Sites Map?	Additional TSS Removed (lb)	Additional TP Removed (lb)	2021 BMP Cost (Including Property Acquisition)	BMP Cost (20-Yr NPW)	20-Year NPW Cost Effectiveness (\$/lb TSS Removed)	20-Year NPW Cost Effectiveness (\$/lb TP Removed)	Alternative 3		
														TSS (lb/yr)	TP (lb/yr)	
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$2,036,325	NA	\$125			
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$1,984,495	NA	\$125			
Agricultural Water Quality Trading (Lbs of Interim Credits)											\$2,041,095	NA	\$125	43,435	816.4	
														Reduction Subtotal (Reach 7):	121,640	984.0
														Reduction Subtotal (Reaches 190, 4, & 7):	137,539	1,127
														Total 2021 Cost	\$7,537,159	\$ 7,537,159
														Total 20-Year NPW Cost	\$11,583,554	\$ 11,583,554
														20-Year NPW Cost Per Pound Captured	\$4.21	\$513.91

5.05 EVALUATION OF WQT AND WAM

A. WQT

WQT or pollutant trading is a method for municipalities and industrial WPDES permit holders (point sources) to establish compliance with water quality-based effluent limitations (WQBELs) and TMDLs. WQT generally involves a point source facing relatively high pollutant reduction costs compensating another party to achieve less costly pollutant reduction with the same or greater water quality benefit. WQT thresholds also apply. For example, in a TMDL watershed, credit generators need to meet their own load (nonpoint) or wasteload (point) allocation before generating long-term credits. However, interim credits may be generated if the credit threshold is not yet met. The duration of interim credits equals the lifespan of the management practice employed to reduce pollutant loads, or five years, whichever is less. Once interim credits have expired, new interim credits or long-term credits need to be used. Overall, WQT provides point sources with the flexibility to acquire pollutant reductions from other sources in the watershed to offset their point source load so that they will comply with their own permit requirements. WQT is not a mandatory program or a regulatory requirement, but instead is a market-based option that may enable some industrial and municipal facilities to meet regulatory requirements more cost effectively. A WPDES permit holder can be a WQT credit generator or user.

As stated in the WDNR's *A Water Quality Trading How To Manual*, a few benefits to WQT include:

1. Permit compliance through WQT may be economically preferable to other compliance options.
2. New and expanding point source discharges can use WQT to develop new economic opportunities in a region while still meeting water quality goals.
3. Permittees, and the point sources and NPSs that work cooperatively with them, can demonstrate their commitment to the community and to the environment by working together to protect and restore local water resources.

In the City's case, trading with upstream partners could have multiple benefits such as improving the Lower Wisconsin River, Neenah Creek, and Buffalo Lake inflow quality adjacent to the City while meeting WPDES permit requirements at a lower overall cost.

It should also be noted that Wisconsin Act 151 (passed in 2020) created the framework for a third-party WQT clearinghouse. The clearinghouse is touted as removing some of the impediments to WQT under the current framework.

B. WAM

WAM is a phosphorus and TSS compliance option available to WWTPs and their partners. It may be used to meet a WQBEL developed in accordance with WAC NR 217.13 or a WQBEL resulting from an approved TMDL in accordance with Section 283.13(7), Wisconsin Statutes. Overall, WAM focuses on compliance with phosphorus criteria (meeting an acceptable in-stream phosphorus concentration) as determined by in-stream monitoring, modeling, or other appropriate information. WAM initiatives must be led by a WWTP, in accordance with WAC NR 217.18, otherwise it is not a compliance option for MS4s.

As stated in the WDNR's *Adaptive Management Technical Handbook*, benefits to WAM include:

1. Permit compliance through WAM may be economically preferable to other compliance options.
2. Point sources, and the NPSs that work cooperatively with them, can demonstrate their commitment to the community and to the environment by protecting and restoring local water resources.
3. Dischargers are given less restrictive interim phosphorus limits while they work to improve water quality under WAM; these less restrictive phosphorus limits can be permanent, if WAM is successful (water quality criteria is met).
4. WAM provides flexibility for permittees and their partners to learn from each other and adapt as experience is gained. The WAM option can extend over a 15-year time frame (up to three 5-year permit terms). This time is given so the permittee can install phosphorus reduction practices, create new partnerships, and measure success.

In the City's case, WAM could have multiple benefits such as improving the Lower Wisconsin River, Neenah Creek, and Buffalo Lake inflow water quality while meeting WPDES permit requirements at a lower overall cost.

C. WQT versus WAM

WQT and WAM are similar but are not the same. WQT is used to comply with WQBELs and TMDLs for a range of pollutants and focuses on offsetting phosphorus and TSS (in this case) from a discharge to comply with a permit limit. WAM focuses on achieving a water quality criterion for phosphorus and TSS in the surface water. In-stream monitoring and annual reports are usually required with WAM, although modeling can be used in lieu of monitoring in some cases. WQT requires the practices used to generate reductions to be established before the phosphorus limit takes effect and a relatively short (three to four years) compliance schedule is typically granted for this. WAM allows permittees to reduce phosphorus and TSS over three terms (15 years) of the permit. WQT and WAM both take credit for phosphorus and TSS reductions within the watershed. Both also allow point source dischargers (including WWTPs and MS4s) to work with NPS dischargers (i.e., the agricultural community). WQT can be difficult in TMDL watersheds because

the credit threshold for point sources and NPSs (agricultural) can be low, making it difficult to find long-term credits.

D. WPDES Permit Requirements and General Conditions for WQT

Before WQT can occur, the trade must be formalized through a written agreement (trade agreement) between trading partners in accordance with Section 283.84(1), Wisconsin Statutes. As stated in Sections 283.84 (3r) and (4), Wisconsin Statutes, the credit user's WPDES discharge permit and, if one is required, the credit generator's WPDES discharge permit, must be issued, reissued, or modified to incorporate appropriate language and enable trading to be implemented (see Figure 5.05-1). The permit must include terms and conditions related to the trade agreement before trading of credits may occur. Every trade will have a trade ratio, which is based on the uncertainties associated with WQT due to several factors relating to site-specific conditions of the trade and the trade location. It is ideal for trade ratios to be as small as possible to make WQT economically efficient. The approach on how to calculate and reduce trade ratios is provided in the WDNR guidance documents and appears to be continually evolving as trades are developed and reviewed by WDNR.

- *Guidance for Implementing Water Quality Trading in WPDES Permits, WDNR, June 1, 2020*

Guidance documents also require submittal of a WQT Notice of Intent (NOI) and management practice registration. There may be a possibility to trade at a trade ratio as low as 1.1:1 if within the same TMDL reach and trading occurs between point sources.

Figure 5.05-1 Timeline and Process to Begin Using WQT to Demonstrate Compliances with WQBELS

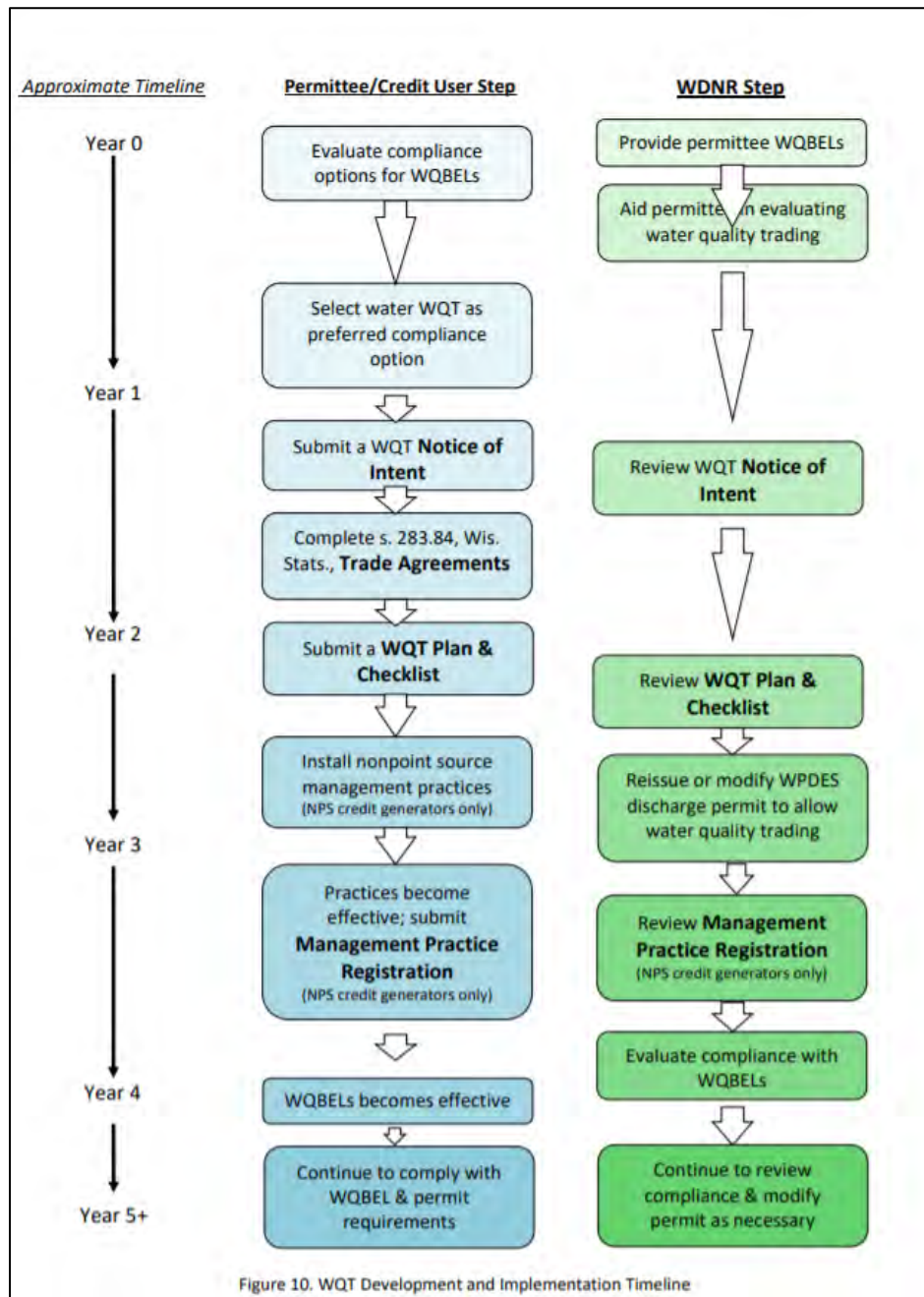
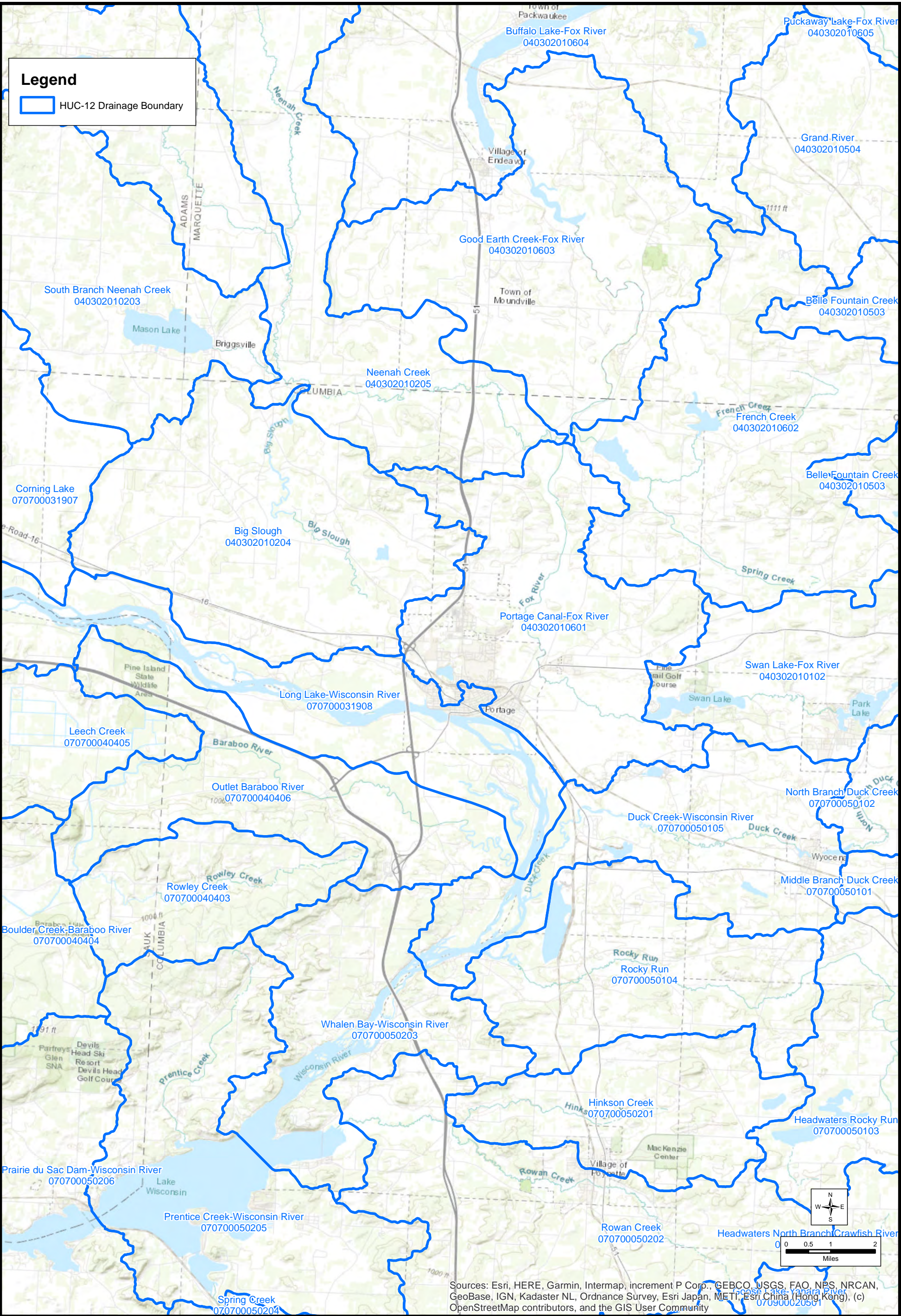


Figure 10. WQT Development and Implementation Timeline

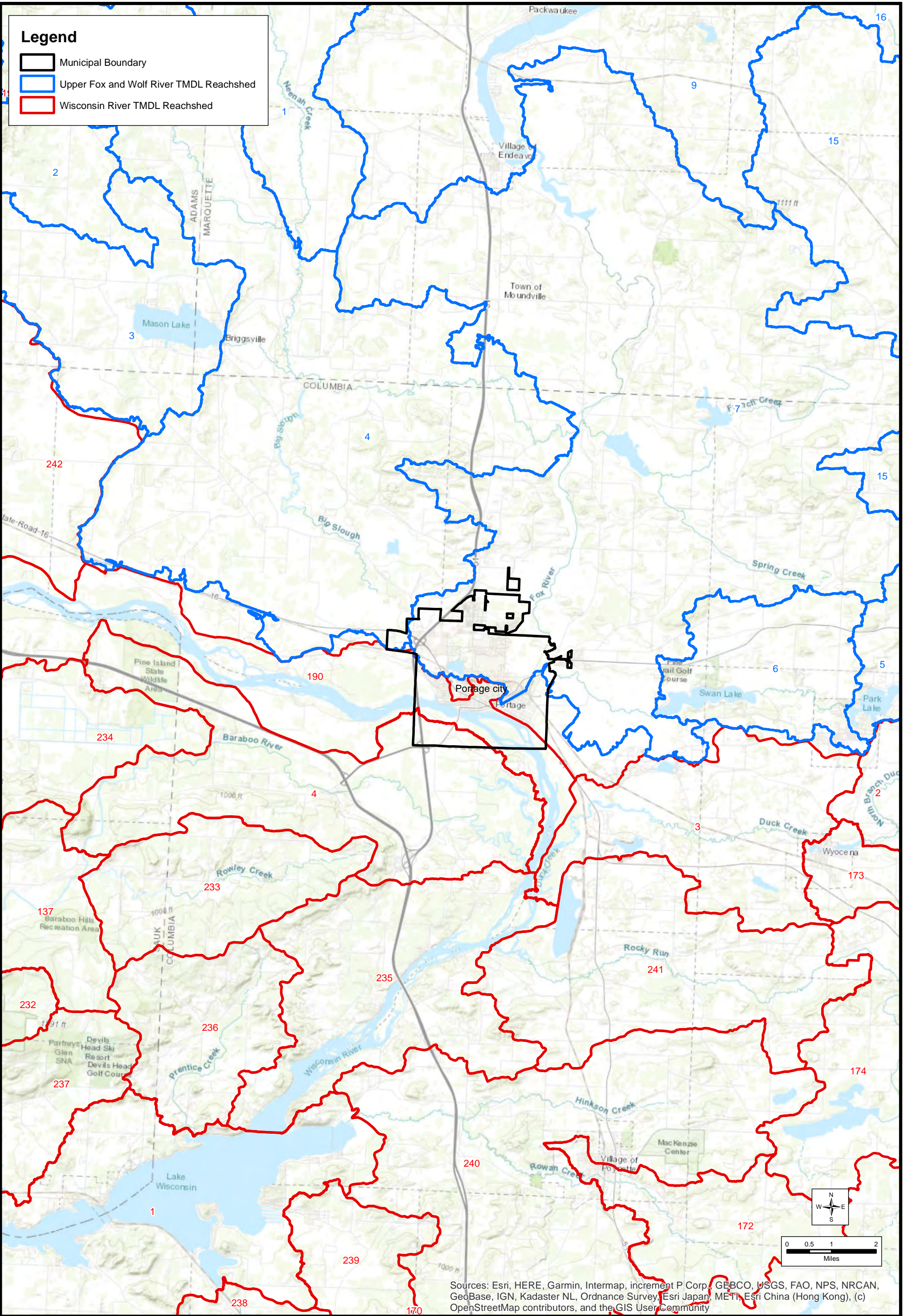
Source: Figure 10, *Guidance for Implementing Water Quality Trading in WPDES Permits*, WDNR, 2020



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

UPSTREAM WATERSHEDS FOR WATER QUALITY TRADING
 CITY OF PORTAGE STORMWATER MANAGEMENT PLAN UPDATE
 CITY OF PORTAGE
 COLUMBIA COUNTY, WISCONSIN





Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

WATER QUALITY TRADING OPPORTUNITIES (TMDL REACHES)

CITY OF PORTAGE STORMWATER MANAGEMENT PLAN UPDATE
 CITY OF PORTAGE
 COLUMBIA COUNTY, WISCONSIN

STRAND ASSOCIATES
 FIGURE 5.06-2
 1076.017

5.06 IDENTIFICATION OF POTENTIAL WQT PARTNERS

WQT may occur with MS4s or point dischargers downstream or upstream if they are in the City’s Hydrologic Unit Code (HUC)-12 (040302010601, 040302010204, and 070700031908) area or the same TMDL Reachshed (4, 7, and 190) as shown in Figures 5.06-1 and 5.06-2. Potential nearby trading partners that may be able to generate credits are listed in Table 5.06-1.

Facility	HUC-12	Available TSS or TP for WQT (lb)	Reachshed
MS4s			
No other MS4s located in Reach 4, 7, or 190			
WWTPs			
Portage WWTP	040302010601	To Be Determined	Reach 7
Wisconsin Dells/Lake Delton Wastewater Treatment Facility	070700031908	To Be Determined	Reach 190
Private Point Dischargers			
See Table 4 in Appendix C of the Upper Fox and Wolf TMDL Report published February 2020 for a listing of potential permitted point source discharger trading partners.	Varies	To Be Determined	Varies

Table 5.06-1 Potential Trading Partners

5.07 PORTAGE WWTP WQT POTENTIAL

The Portage WWTP represents a potential WQT partner. Currently, the WWTP employs a chemical phosphorus removal treatment system, and the current discharge limit of 1 mg/L is readily achievable. However, the WWTP’s WPDES permit recently expired. With its new permit, it is anticipated the WWTP will receive an interim limit of 1 mg/L with requirements to plan for a future, more stringent mass limit based on the Wisconsin River TMDL waste load allocations. If the WWTP implements additional tertiary treatment measures to comply with the future limit and generates excess pollutant reductions, the excess could potentially be traded to the City MS4. If the cost for the WWTP to generate these credits is less than the cost to achieve TMDL compliance with stormwater BMPs in the City, then this should be considered, though a study would likely be needed to better understand potential synergies.

5.08 AGRICULTURAL LANDS WQT POTENTIAL

WQT may also occur with agricultural producers upstream of the City and downstream shown in Figures 5.06-1 and 5.06-2. There appear to be significant opportunities for agricultural WQT using buffer strips, cover crops, and cropping, tillage, and in-field practices. The cost for agricultural WQT is generally in the \$124/lb TP on a 20-year present worth basis.

5.09 WAM POTENTIAL

WAM does not require a trade ratio, and TMDL credit thresholds do not apply. The goal is to meet water quality standards at the outlet of the HUC 12 or TMDL reach, so surface water monitoring for TP would be required on the Wisconsin River. The cost of WAM can be budgeted at approximately \$62 to \$124 per pound TP reduced on a 20-year present worth basis. This assumes some cost-share (grant) dollars would be available from the United States Department of Agriculture (USDA), NRCS, and other programs and that Columbia County will provide some technical and outreach assistance. Again, a WAM program would need to be led by one or more local WWTPs. At this time, Strand is not aware of WAM being pursued by Portage WWTP.

5.10 RECOMMENDATIONS

As seen in Section 5.04 and Table 5.04-1, the 20-year NPW cost to implement stormwater BMPs in combination with varying levels of agricultural WQT to achieve TMDL compliance ranges from \$11.6 million (\$513.76/lb TP and \$4.21/lb TSS) to \$16.9 million (\$749.11/lb TP and \$6.05/lb TSS). Strand has the following recommendations.

1. Choose an alternative from Table 5.04-1 to implement over a 20-year period while pursuing grants to partially fund design and construction of stormwater BMPs. From a TMDL compliance standpoint, any of the three alternatives would constitute a TMDL Compliance Plan required by and described in Appendix C in the City's MS4 Permit. Appendix C requires, at a minimum, that 20 percent of the remaining TSS reduction be achieved over the next permit term (May 1, 2025 to April 30, 2030). With UNPS&SW grant funding up to \$150,000 for each constructed stormwater BMP, the City would see an increase in the cost-effectiveness of the three alternatives.
2. Update the City's TP Reduction Credit for Leaf Collection program analysis to account for potential future WDNR guidance that would allow this credit to be greater in value. As described previously, WDNR is considering expanding land uses eligible for the credit as well as increasing the percent reduction when weekly high-efficiency street sweeping is employed.
3. For purposes of agricultural WQT, further investigate Wisconsin Act 151 (passed in 2020) that created the framework for a third-party WQT clearinghouse. The clearinghouse is touted as removing many of the impediments to WQT under WDNR's current framework.
4. Further investigate potential WQT opportunities with nearby WWTPs and point dischargers.

6.01 INTRODUCTION

Included in this report is a concept-level stormwater utility feasibility study for the City. The study provides the City with a general overview of current stormwater management practices and funding in the City, background information on stormwater utilities and other funding alternatives, estimates of impervious areas by land class in the City, and an evaluation of potential impacts of stormwater utility formation on select properties.

6.02 BACKGROUND INFORMATION

Currently, the costs of expansion, operation, and maintenance of the City’s stormwater management system are paid for by property taxes through the General Fund. Increasing pressures on the General Fund caused by rising municipal costs and reduced revenues from the State of Wisconsin may make the General Fund a less reliable source for stormwater management funding. One possible means of addressing stormwater management funding needs without placing an additional burden on property taxes is the formation of a stormwater utility. A stormwater utility is a utility formed for the purpose of managing stormwater and imposing user charges for cost recovery. Unlike property tax funding, user charges under a stormwater utility are established in proportion to the relative amount of stormwater runoff “generated” by an individual property. A common method of estimating the relative amount of stormwater runoff from a property is by the amount of “impervious area.” Impervious area includes surfaces such as rooftops, parking lots, driveways, and sidewalks that generally resist infiltration of stormwater. Typically, there is a greater amount of stormwater runoff from impervious areas than vegetated areas.

Stormwater utilities continue to be a popular means of funding stormwater management improvements throughout Wisconsin and the United States. A stormwater utility could provide a means of funding implementation measures to protect and improve nearby water resources and comply with State requirements. Appendix Q provides an updated summary of information from some stormwater utilities in Wisconsin. Section 6 provides information on the feasibility of a stormwater utility in the City.

It should be noted that as a result of recently passed state legislation (2013 Wisconsin Act 20, Section 66.0602 (2m)(b), Wisconsin Statutes), if a municipality adopts a new fee for covered services which had previously been partly or wholly funded by property tax revenue, the municipality must commensurately reduce its levy limit by the amount of the new fee. This requires all revenue acquired from the stormwater utility to only be used for activities included in the stormwater management implementation plan. Communities, such as the City of Middleton, have approved increases in levy limits alongside a stormwater utility through referendum. It is recommended that the City consult the City Attorney on whether 2013 Wisconsin Act 20 impacts the City’s ability to adopt a stormwater utility.

Anticipated responsibilities of a stormwater utility typically include the following activities:

1. Develop and administer programs and practices to reduce sediment, heavy metals, pesticides, nutrients, bacteria, and oxygen-demanding organic waste from pollutant “source areas” that have been recognized as a cause of water quality degradation in the City’s streams, lakes, ponds, and other water resources. These programs and practices are necessary for compliance with USEPA and WDNR nonpoint source pollution control rules and local stormwater management and erosion control ordinances.

2. Fund and administer stormwater management operation and maintenance activities. Activities include cleaning and routine repair of ditches, detention basins, retention basins, storm sewers, catch basins, manholes, streambanks and associated facilities, street sweeping, leaf collection, and construction of stormwater treatment, detention, and conveyance facilities serving a public purpose.
3. Fund stormwater capital improvement projects related to stormwater quantity and quality management.
4. Respond to customer billing and service inquiries.

6.03 STORMWATER UTILITY RATE STRUCTURE

The proposed stormwater utility rate structure is based on a parameter known as an equivalent runoff unit (ERU). One ERU is defined as the average square footage of impervious area for a typical residential parcel. An impervious area analysis study completed in 2014 estimated that in the City, one ERU is equivalent to approximately 3,274 square feet (rounded) of impervious area, which is the basis for the stormwater utility rate structure. The average impervious area on a typical single-family residential property was determined by averaging the amount of impervious areas of the five different parcel size categories. The estimated percent impervious area for each parcel size was based off of the WDNR’s WinSLAMM standard land use files after subtracting out street source areas. The number of parcels in each category can be seen in Figure 6.03-1.

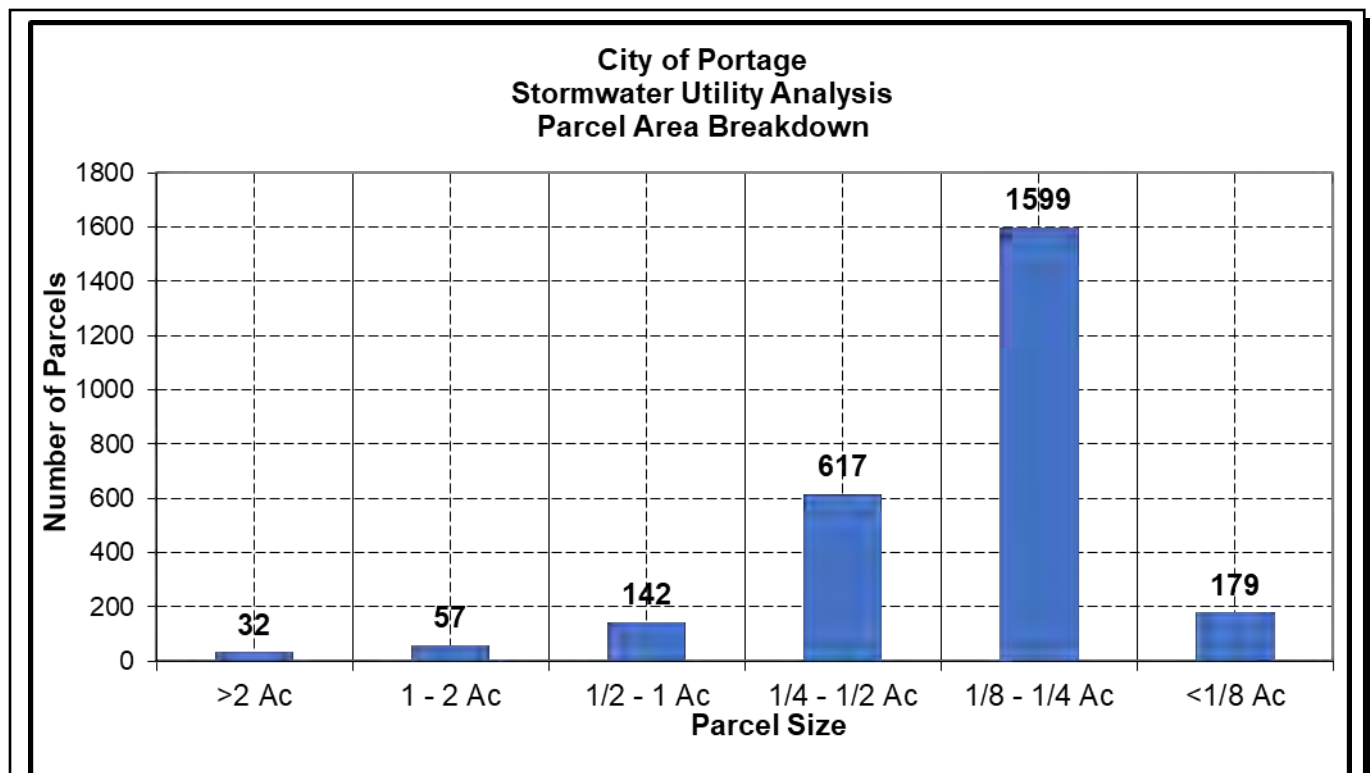


Figure 6.03-1 Single-Family Residential Parcel Size Distribution

For the purposes of this study, a flat residential rate was analyzed. Under a flat rate structure, all single-family residential users are charged the same fee, typically one ERU. The number of ERUs assigned to a nonresidential parcel is estimated by dividing the total estimated impervious area on that parcel by the typical single-family residential impervious area.

Table 6.03-1 is a breakdown of the impervious area per real estate class in the City, and the overall results are summarized in Figure 6.03-2. As the data shows, tax exempt dominates the land classes within the City limits as a percent of total land while nonresidential (commercial, industrial, and manufacturing) dominate the land classes within the City limits as a percent of total impervious area.

	Total Area		Impervious Area	
Real Estate Class	Acres	% of Total	Acres	% of Total
Single Family Residential	859.2	17.77%	196.8	28.15%
Multifamily Residential	46.2	0.96%	19.9	2.84%
Vacant Residential	607.1	12.55%	0.0	0.00%
Commercial	588.7	12.17%	234.4	33.52%
Industrial	64.7	1.34%	0.0	0.00%
Manufacturing	228.7	4.73%	106.6	15.25%
Tax Exempt	1,836.5	37.98%	141.5	20.23%
Agricultural	604.5	12.50%	0.0	0.00%
Total	4,836	100%	699	100%

Table 6.03-1 Nonresidential and Residential Area Breakdown

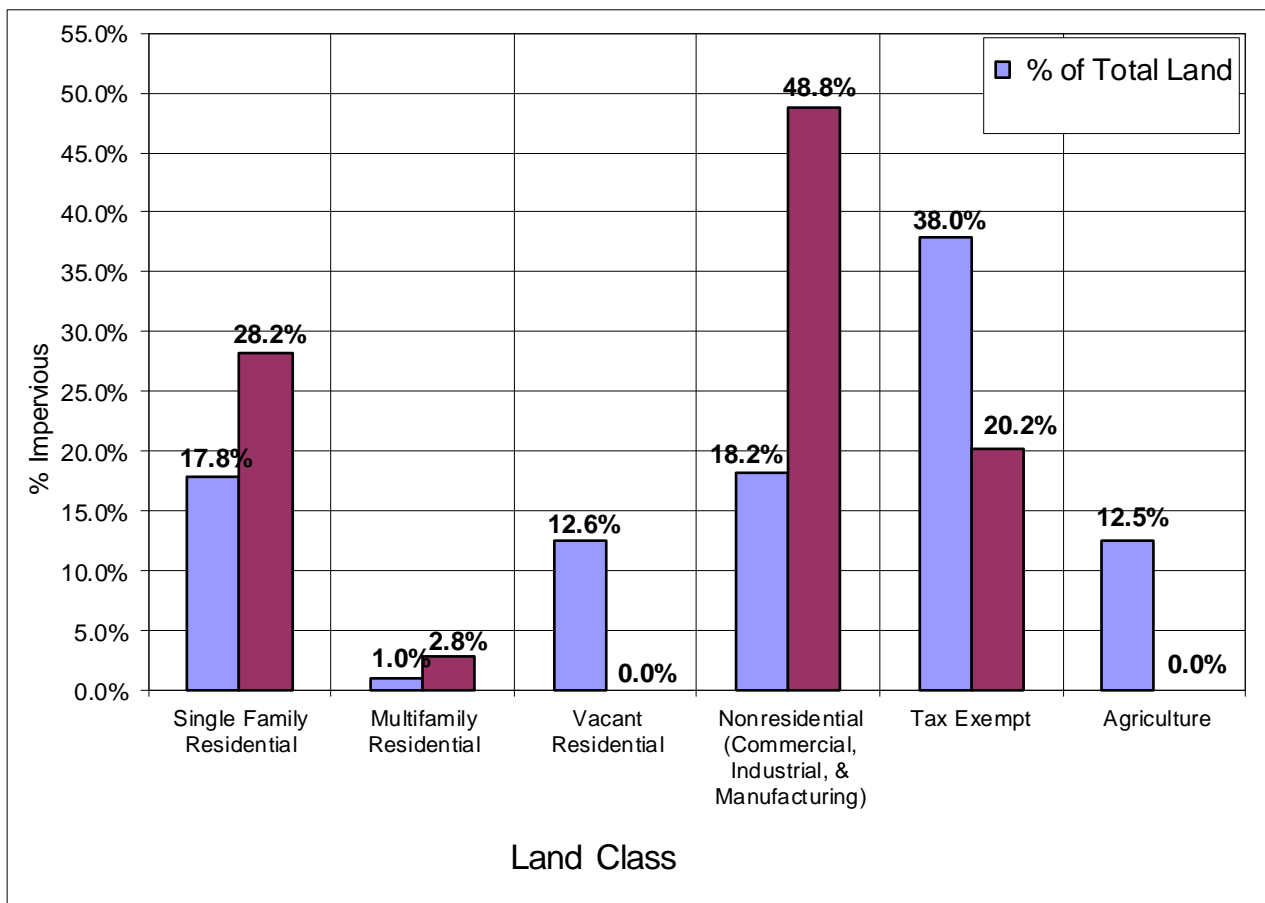


Figure 6.03-2 Percent Land and Impervious Area by Land Class

6.04 STORMWATER UTILITY BUDGET SUMMARY

The estimated stormwater user fee was calculated based on the flat user fee approach as described above. User fees have been estimated based on a one-, two- and five-year average annual stormwater management budgets beginning in 2020. This allows for comparison of user fees to current property tax rates as well as for future estimated stormwater management costs.

Note that the City’s intent is to fund all expenditures related to its stormwater management program, including operation and maintenance costs and capital improvement projects using a stormwater utility if implementation of a stormwater utility makes sense for the City. However, based on state legislation that was passed within the 2013 to 2015 budget (2013 Wisconsin Act 20), if a municipality adopts a new fee for covered services which had previously been partly or wholly funded by property tax revenue, the municipality must commensurately reduce its levy limit by the amount of the new fee. Based on discussions with Wisconsin Department of Revenue staff, 2013 Wisconsin Act 20 would also apply to fees that are covering expenditures that were not previously funded with property tax revenue, including new debt service payments for capital improvement projects and stormwater utility administration expenditures. If expenditures for operation and maintenance activities, including street

sweeping, leaf collection, and storm sewer repairs, were to be funded with stormwater utility revenue, tax levy reductions would need to apply. It is recommended the City consult its attorney on whether 2013 Wisconsin Act 20 impacts the City’s ability to adopt a stormwater utility.

Table 6.04-1 summarizes the estimated potential revenue that could be generated based on a range of ERU costs from \$1 to \$13 per month (\$12 to \$156 annually).

Annual ERU Charge	Monthly ERU Charge	ERUs	Annual Potential Revenue Generated
\$12.00	\$1.00	8,683	\$104,196
\$24.00	\$2.00	8,683	\$208,392
\$36.00	\$3.00	8,683	\$312,588
\$48.00	\$4.00	8,683	\$416,784
\$60.00	\$5.00	8,683	\$520,980
\$72.00	\$6.00	8,683	\$625,176
\$84.00	\$7.00	8,683	\$729,372
\$96.00	\$8.00	8,683	\$833,568
\$108.00	\$9.00	8,683	\$937,764
\$120.00	\$10.00	8,683	\$1,041,960
\$132.00	\$11.00	8,683	\$1,146,156
\$144.00	\$12.00	8,683	\$1,250,352
\$156.00	\$13.00	8,683	\$1,354,548

Table 6.04-1 Potential Revenue per ERU Charge

Following is a description of the proposed stormwater utility budget for the 25-year planning period between 2021 and 2046. The rate for each ERU is determined for each year, and for two- and five-year planning periods by dividing the revenue that must be generated for the stormwater program in the planning periods by the total number of ERUs within the stormwater utility district at the beginning of the planning periods. The total number of ERUs is estimated to increase by 1 percent during each planning period. Based on 8,683 ERUs, the annual user fee necessary to support the annual stormwater management budget of \$346,715 for the 2020 planning period would be approximately \$39.93. This means the annual stormwater management fee for a typical residential user (one ERU) would be \$39.93 per year or \$3.33 per month. A property assigned 10 ERUs (24,700 square feet of impervious area) would pay \$399.30 per year or \$33.28 per month. Table 6.04-2 shows the estimated 25-year planning period annual budgets and ERUs costs.

Table 6.04-2 Existing and Future Stormwater Management Costs

Years 2020 to 2025

Activity	Permit Deadlines		Current Status		Year						Potential Funding Source
	Planning	Implementation	Planning	Implementation	2020	2021	2022	2023	2024	2025	
Public Education/Outreach	31-Mar-21										
Overall Public Involvement and Participation Program Costs			In Report	2021	\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,093	\$ 1,126	\$ 1,159	General Fund
NCSWC and NEWSOC Buy-In			In Report	2021	\$ 2,395	\$ 2,467	\$ 2,541	\$ 2,617	\$ 2,696	\$ 2,776	General Fund
					\$ 3,395	\$ 3,497	\$ 3,602	\$ 3,710	\$ 3,821	\$ 3,936	
Public Involvement/Participation	31-Mar-21										
Overall Public Involvement and Participation Program Costs			In Report	On-going	\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,093	\$ 1,126	\$ 1,159	General Fund
					\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,093	\$ 1,126	\$ 1,159	
Illicit Discharge Detection Program	31-Mar-21										
Administration of IDDE Program			In Report	2021	\$ 200	\$ 206	\$ 212	\$ 219	\$ 225	\$ 232	General Fund
Perform IDDE Inspections (36 Outfalls Per Year)			In Report	On-going	\$ 600	\$ 618	\$ 637	\$ 656	\$ 675	\$ 696	General Fund
Track IDDE Activities for Annual Report			In Report	On-going	\$ 200	\$ 206	\$ 212	\$ 500	\$ 515	\$ 530	General Fund
					\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,374	\$ 1,415	\$ 1,458	
Construction Site Erosion Control	31-Mar-21										
Overall Construction Site Erosion Control Program Costs			In Report	2021	\$ 500	\$ 515	\$ 530	\$ 546	\$ 563	\$ 580	General Fund
Work with City Attorney to Adopt Updated Construction Site Erosion and Sediment Control Ordinance			In Report	2021	\$ -	\$ -	\$ 1,000	\$ -	\$ -	\$ -	General Fund
Continue Administration of Ordinance			In Report	On-going	\$ 250	\$ 258	\$ 265	\$ 273	\$ 281	\$ 290	General Fund
Track Ordinance-Related Activities (Permits Issued, Enforcement Actions) for Annual Report			In Report	On-going	\$ 250	\$ 258	\$ 265	\$ 273	\$ 281	\$ 290	General Fund
					\$ 1,000	\$ 1,030	\$ 2,061	\$ 1,093	\$ 1,126	\$ 1,159	
Postconstruction Stormwater Management	31-Mar-21										
Overall Post Construction Program Costs			In Report	2021	\$ 500	\$ 515	\$ 530	\$ 546	\$ 563	\$ 580	General Fund
Work with City Attorney to Adopt Updated Postconstruction Stormwater Management Ordinance			In Report	2021	\$ -	\$ -	\$ 1,000	\$ -	\$ -	\$ -	General Fund
Continue Administration of Ordinance			In Report	On-going	\$ 250	\$ 258	\$ 265	\$ 273	\$ 281	\$ 290	General Fund
Initiate Private BMP Maintenance Program per Appendix D and E of the City's Erosion Control and Stormwater Management Reference Document			In Report	2021	\$ -	\$ -	\$ 500	\$ 515	\$ 530	\$ 546	General Fund
Initiate Program to Gather or Obtain Retroactively Maintenance Agreements for Private BMPs			In Report	2021			\$ 500	\$ 515	\$ 530	\$ 546	General Fund
Track Ordinance-Related Activities (Permits Issued, Enforcement Actions) for Annual Report			In Report	On-going	\$ 250	\$ 258	\$ 265	\$ 273	\$ 281	\$ 290	General Fund
					\$ 1,000	\$ 1,030	\$ 3,061	\$ 2,123	\$ 2,186	\$ 2,252	
Pollution Prevention Program and Operation and Maintenance	31-Mar-21										
Overall Pollution Prevention Program Costs			In Report	On-going	\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,093	\$ 1,126	\$ 1,159	General Fund
Initiate Public BMP Maintenance Program per Appendix E of the City Erosion Control and Stormwater Management Reference Guide			In Report	2021	\$ -	\$ -	\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,093	General Fund
Assessment of City's stormwater BMPs for Necessary Routine Maintenance per Appendix E of the City Erosion Control and Stormwater Management Reference Guide: Once per Year			In Report	2021	\$ -	\$ -	\$ 1,500	\$ 1,545	\$ 1,591	\$ 1,639	General Fund

Activity	Permit Deadlines		Current Status		Year						Potential Funding Source
	Planning	Implementation	Planning	Implementation	2020	2021	2022	2023	2024	2025	
Assessment of City's stormwater BMPs for Necessary Non-Routine Maintenance per Appendix E of the City Erosion Control and Stormwater Management Reference Guide: Once every 5 years			In Report	2021	\$ -	\$ -	\$ -	\$ -	\$ 2,000	\$ -	General Fund
Design of City-Owned Stormwater BMP Non-Routine Maintenance	2021 Cost:	\$ 210,000			\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,000	General Fund
City-Owned Stormwater BMP Non-Routine Maintenance (Project#1-2026)	\$ 243,448				\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
SWPPP-Install Perimeter Sediment Control Devices and catch basin filters at Municipal Services Building			In Report	2022	\$ -	\$ -	\$ 3,000	\$ -	\$ -	\$ -	General Fund
Deicing and Snow Removal Operations Admin/Tracking			In Report	On-going	\$ 250	\$ 258	\$ 265	\$ 273	\$ 281	\$ 290	General Fund
Leaf and Grass Clipping Management			In Report	On-going	\$ 21,034	\$ 21,665	\$ 22,315	\$ 22,984	\$ 23,674	\$ 24,384	General Fund
Stormwater Pollution Prevention Training for City staff			In Report	On-going	\$ 250	\$ 258	\$ 265	\$ 273	\$ 281	\$ 290	General Fund
Street Sweeping			In Report	On-going	\$ 68,683	\$ 70,743	\$ 72,866	\$ 75,052	\$ 77,303	\$ 79,622	General Fund
Track Pollution Prevention Activities for Annual Report			In Report	On-going	\$ 250	\$ 258	\$ 265	\$ 273	\$ 281	\$ 290	General Fund
					\$ 91,467	\$ 94,211	\$ 102,537	\$ 102,523	\$ 107,599	\$ 123,767	
Stormwater Quality Management	31-Mar-21										
Overall Stormwater Quality Management Program Costs			In Report	In-Compliance	\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,093	\$ 1,126	\$ 1,159	General Fund
Stormwater Quality Management Plan Update			In Report	In-Compliance	\$ 62,500	\$ 62,500	\$ -	\$ -	\$ -	\$ -	General Fund
UNPS Planning Grant Funding Stormwater Quality Management Plan Update					\$ (31,250)	\$ (31,250)					UNPS Grant
TP Credit for Leaf Management Program Analysis								\$ 35,000			
WDNR UNPS Grant Application for WinSLAMM Modeling Update					\$ -	\$ -	\$ -	\$ -	\$ -	\$ 8,296	General Fund
WDNR UNPS Grant for WinSLAMM Modeling Update					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	UNPS Grant
WinSLAMM Modeling Update					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Modeling of Private BMPs for Inclusion in Existing Conditions Pollutant Reduction			In Report	On-going	\$ -	\$ -	\$ 2,000	\$ 2,060	\$ 2,122	\$ 2,185	General Fund
Enhanced Leaf Collection Program to Meet TP Credit Criteria			In Report	2022	\$ -	\$ -	\$ -	\$ -	\$ 40,000	\$ 41,200	General Fund
WDNR UNPS Grant Application for Design/Construction of Stormwater BMPs				On-going	\$ 6,000	\$ -	\$ -	\$ -	\$ 7,293	\$ -	General Fund
WDNR UNPS Grant for Stormwater BMP	2021 Cost	TMDL Reach			\$ -	\$ -	\$ (150,000)	\$ -	\$ -	\$ -	UNPS Grant
Implementation of BMPs Identified in Alternative 3:			In Report								
Design/Construct East Haertel Street Wet Detention Basin	\$ 472,695	7 (Buffalo Lake Inflow)	In Report	2022	\$ -	\$ -	\$ 37,429	\$ 37,429	\$ 37,429	\$ 37,429	General Fund
Design/Construct East Mullet Street Wet Detention Basin	\$ 304,095	7 (Buffalo Lake Inflow)	In Report	2026	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Design/Construct Portage High School Wet Detention Basin	\$ 2,952,625	7 (Buffalo Lake Inflow)	In Report	2030	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Design/Construct Cardinal FG Dry to Wet Pond Conversion	\$ 1,374,019	190 (Lower Wisconsin River)	In Report	2034	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Design/Construct CTH CX Wet Detention Basin	\$ 621,425	7 (Buffalo Lake Inflow)	In Report	2038	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Design/Construct Portage Public Library Underground Detention Basin	\$ 1,812,300	7 (Buffalo Lake Inflow)	In Report	2042	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Agricultural Water Quality Trading for TP (816.4 lb at \$125/lb TP; 1/20 per year starting in 2026 with full implementation in 2046)	\$ 125.00		In Report		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
					\$ 38,250	\$ 32,280	\$ (109,510)	\$ 75,582	\$ 87,969	\$ 90,270	

Activity	Permit Deadlines		Current Status		Year						Potential Funding Source
	Planning	Implementation	Planning	Implementation	2020	2021	2022	2023	2024	2025	
Storm Sewer Map	31-Mar-21										
Submit/Maintain Updated Storm Sewer System Map			In Report	On-going	\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,093	\$ 1,126	\$ 1,159	General Fund
Annual Report	31-Mar-21										
Compilation of Tracked Permit Activities			In Report	On-going	\$ 500	\$ 515	\$ 530	\$ 546	\$ 563	\$ 580	General Fund
Prepare Annual Report			In Report	On-going	\$ 1,000	\$ 1,030	\$ 1,061	\$ 1,093	\$ 1,126	\$ 1,159	General Fund
Permit Fee			In Report	On-going	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	General Fund
					\$ 3,000	\$ 3,045	\$ 3,091	\$ 3,139	\$ 3,188	\$ 3,239	
Capital Improvement	31-Mar-21										
Storm Sewer Maintenance				On-going	\$ 22,850	\$ 23,536	\$ 24,242	\$ 24,969	\$ 25,718	\$ 26,489	General Fund
Miscellaneous Capital Improvements and Projects				On-going	\$ 162,600	\$ 167,478	\$ 172,502	\$ 177,677	\$ 183,008	\$ 188,498	General Fund
Administrative				On-going	\$ 20,153	\$ 20,758	\$ 21,380	\$ 22,022	\$ 22,682	\$ 23,363	General Fund
					\$ 205,603	\$ 211,771	\$ 218,124	\$ 224,668	\$ 231,408	\$ 238,350	
TOTAL					\$ 346,715	\$ 349,954	\$ 226,149	\$ 416,397	\$ 440,964	\$ 466,749	
					2020	2021	2022	2023	2024	2025	
				Total No. of ERUs	8,683	8,683	8,770	8,858	8,947	9,036	
				Annual Cost per ERU	\$39.93	\$40.30	\$25.79	\$47.01	\$49.29	\$51.65	
				Monthly Cost per ERU	\$3.33	\$3.36	\$2.15	\$3.92	\$4.11	\$4.30	
				2 Year ERU Average	\$3.34		\$3.03		\$4.21		
				5 Year ERU Average	\$3.53						

Years 2026 to 2031

Activity	Permit Deadlines		Current Status		Year						Potential Funding Source
	Planning	Implementation	Planning	Implementation	2026	2027	2028	2029	2030	2031	
Public Education/Outreach	31-Mar-21										
Overall Public Involvement and Participation Program Costs			In Report	2021	\$ 1,194	\$ 1,230	\$ 1,267	\$ 1,305	\$ 1,344	\$ 1,384	General Fund
NCSWC and NEWSW Buy-In			In Report	2021	\$ 2,860	\$ 2,946	\$ 3,034	\$ 3,125	\$ 3,219	\$ 3,315	General Fund
					\$ 4,054	\$ 4,175	\$ 4,301	\$ 4,430	\$ 4,563	\$ 4,699	
Public Involvement/Participation	31-Mar-21										
Overall Public Involvement and Participation Program Costs			In Report	On-going	\$ 1,194	\$ 1,230	\$ 1,267	\$ 1,305	\$ 1,344	\$ 1,384	General Fund
					\$ 1,194	\$ 1,230	\$ 1,267	\$ 1,305	\$ 1,344	\$ 1,384	
Illicit Discharge Detection Program	31-Mar-21										
Administration of IDDE Program			In Report	2021	\$ 239	\$ 246	\$ 253	\$ 261	\$ 269	\$ 277	General Fund
Perform IDDE Inspections (36 Outfalls Per Year)			In Report	On-going	\$ 716	\$ 738	\$ 760	\$ 783	\$ 806	\$ 831	General Fund
Track IDDE Activities for Annual Report			In Report	On-going	\$ 546	\$ 563	\$ 580	\$ 597	\$ 615	\$ 633	General Fund
					\$ 1,502	\$ 1,547	\$ 1,593	\$ 1,641	\$ 1,690	\$ 1,741	
Construction Site Erosion Control	31-Mar-21										
Overall Construction Site Erosion Control Program Costs			In Report	2021	\$ 597	\$ 615	\$ 633	\$ 652	\$ 672	\$ 692	General Fund
Work with City Attorney to Adopt Updated Construction Site Erosion and Sediment Control Ordinance			In Report	2021	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Continue Administration of Ordinance			In Report	On-going	\$ 299	\$ 307	\$ 317	\$ 326	\$ 336	\$ 346	General Fund
Track Ordinance-Related Activities (Permits Issued, Enforcement Actions) for Annual Report			In Report	On-going	\$ 299	\$ 307	\$ 317	\$ 326	\$ 336	\$ 346	General Fund
					\$ 1,194	\$ 1,230	\$ 1,267	\$ 1,305	\$ 1,344	\$ 1,384	
Postconstruction Stormwater Management	31-Mar-21										
Overall Post Construction Program Costs			In Report	2021	\$ 597	\$ 615	\$ 633	\$ 652	\$ 672	\$ 692	General Fund
Work with City Attorney to Adopt Updated Postconstruction Stormwater Management Ordinance			In Report	2021	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Continue Administration of Ordinance			In Report	On-going	\$ 299	\$ 307	\$ 317	\$ 326	\$ 336	\$ 346	General Fund
Initiate Private BMP Maintenance Program per Appendix D and E of the City's Erosion Control and Stormwater Management Reference Document			In Report	2021	\$ 563	\$ 580	\$ 597	\$ 615	\$ 633	\$ 652	General Fund
Initiate Program to Gather or Obtain Retroactively Maintenance Agreements for Private BMPs			In Report	2021	\$ 563	\$ 580	\$ 597	\$ 615	\$ 633	\$ 652	General Fund
Track Ordinance-Related Activities (Permits Issued, Enforcement Actions) for Annual Report			In Report	On-going	\$ 299	\$ 307	\$ 317	\$ 326	\$ 336	\$ 346	General Fund
					\$ 2,320	\$ 2,389	\$ 2,461	\$ 2,535	\$ 2,611	\$ 2,689	
Pollution Prevention Program and Operation and Maintenance	31-Mar-21										
Overall Pollution Prevention Program Costs			In Report	On-going	\$ 1,194	\$ 1,230	\$ 1,267	\$ 1,305	\$ 1,344	\$ 1,384	General Fund
Initiate Public BMP Maintenance Program per Appendix E of the City Erosion Control and Stormwater Management Reference Guide			In Report	2021	\$ 1,126	\$ 1,159	\$ 1,194	\$ 1,230	\$ 1,267	\$ 1,305	General Fund
Assessment of City's stormwater BMPs for Necessary Routine Maintenance per Appendix E of the City Erosion Control and Stormwater Management Reference Guide: Once per Year			In Report	2021	\$ 1,688	\$ 1,739	\$ 1,791	\$ 1,845	\$ 1,900	\$ 1,957	General Fund

Activity	Permit Deadlines		Current Status		Year						Potential Funding Source
	Planning	Implementation	Planning	Implementation	2026	2027	2028	2029	2030	2031	
Assessment of City's stormwater BMPs for Necessary Non-Routine Maintenance per Appendix E of the City Erosion Control and Stormwater Management Reference Guide: Once every 5 years			In Report	2021	\$ -		\$ -	\$ 2,319	\$ -	\$ -	General Fund
Design of City-Owned Stormwater BMP Non-Routine Maintenance	2021 Cost:	\$ 210,000			\$ -	\$ -	\$ -	\$ -	\$ 19,144	\$ -	General Fund
City-Owned Stormwater BMP Non-Routine Maintenance (Project#1-2026)	\$ 243,448				\$ 18,715	\$ 18,715	\$ 18,715	\$ 18,715	\$ 18,715	\$ 18,715	General Fund
SWPPP-Install Perimeter Sediment Control Devices and catch basin filters at Municipal Services Building			In Report	2022	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Deicing and Snow Removal Operations Admin/Tracking			In Report	On-going	\$ 299	\$ 307	\$ 317	\$ 326	\$ 336	\$ 346	General Fund
Leaf and Grass Clipping Management			In Report	On-going	\$ 25,116	\$ 25,869	\$ 26,645	\$ 27,445	\$ 28,268	\$ 29,116	General Fund
Stormwater Pollution Prevention Training for City staff			In Report	On-going	\$ 299	\$ 307	\$ 317	\$ 326	\$ 336	\$ 346	General Fund
Street Sweeping			In Report	On-going	\$ 82,011	\$ 84,471	\$ 87,006	\$ 89,616	\$ 92,304	\$ 95,073	General Fund
Track Pollution Prevention Activities for Annual Report			In Report	On-going	\$ 299	\$ 307	\$ 317	\$ 326	\$ 336	\$ 346	General Fund
					\$ 130,745	\$ 134,106	\$ 137,568	\$ 143,452	\$ 163,950	\$ 148,589	
Stormwater Quality Management	31-Mar-21										
Overall Stormwater Quality Management Program Costs			In Report	In-Compliance	\$ 1,194	\$ 1,230	\$ 1,267	\$ 1,305	\$ 1,344	\$ 1,384	General Fund
Stormwater Quality Management Plan Update			In Report	In-Compliance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
UNPS Planning Grant Funding Stormwater Quality Management Plan Update											UNPS Grant
TP Credit for Leaf Management Program Analysis											
WDNR UNPS Grant Application for WinSLAMM Modeling Update					\$ -	\$ -	\$ -	\$ -	\$ -	\$ 11,117	General Fund
WDNR UNPS Grant for WinSLAMM Modeling Update					\$ (30,000)	\$ -	\$ -	\$ -	\$ -	\$ -	UNPS Grant
WinSLAMM Modeling Update					\$ 60,000	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Modeling of Private BMPs for Inclusion in Existing Conditions Pollutant Reduction			In Report	On-going	\$ 2,251	\$ 2,319	\$ 2,388	\$ 2,460	\$ 2,534	\$ 2,610	General Fund
Enhanced Leaf Collection Program to Meet TP Credit Criteria			In Report	2022	\$ 42,436	\$ 43,709	\$ 45,020	\$ 46,371	\$ 47,762	\$ 49,195	General Fund
WDNR UNPS Grant Application for Design/Construction of Stormwater BMPs				On-going	\$ -	\$ -	\$ 8,865	\$ -	\$ -	\$ -	General Fund
WDNR UNPS Grant for Stormwater BMP	2021 Cost	TMDL Reach			\$(200,000)	\$ -	\$ -	\$ -	\$(200,000)	\$ -	UNPS Grant
Implementation of BMPs Identified in Alternative 3:			In Report								
Design/Construct East Haertel Street Wet Detention Basin	\$ 472,695	7 (Buffalo Lake Inflow)	In Report	2022	\$ 37,429	\$ 37,429	\$ 37,429	\$ 37,429	\$ 37,429	\$ 37,429	General Fund
Design/Construct East Mullet Street Wet Detention Basin	\$ 304,095	7 (Buffalo Lake Inflow)	In Report	2026	\$ 27,101	\$ 27,101	\$ 27,101	\$ 27,101	\$ 27,101	\$ 27,101	General Fund
Design/Construct Portage High School Wet Detention Basin	\$ 2,952,625	7 (Buffalo Lake Inflow)	In Report	2030	\$ -	\$ -	\$ -	\$ -	\$ 296,166	\$ 296,166	General Fund
Design/Construct Cardinal FG Dry to Wet Pond Conversion	\$ 1,374,019	190 (Lower Wisconsin River)	In Report	2034	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Design/Construct CTH CX Wet Detention Basin	\$ 621,425	7 (Buffalo Lake Inflow)	In Report	2038	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Design/Construct Portage Public Library Underground Detention Basin	\$ 1,812,300	7 (Buffalo Lake Inflow)	In Report	2042	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Agricultural Water Quality Trading for TP (816.4 lb at \$125/lb TP; 1/20 per year starting in 2026 with full implementation in 2046)	\$ 125.00		In Report		\$ 5,915	\$ 12,185	\$ 18,826	\$ 25,855	\$ 33,288	\$ 41,144	General Fund
					\$ (53,673)	\$ 123,973	\$ 140,896	\$ 140,521	\$ 245,624	\$ 466,146	

Activity	Permit Deadlines		Current Status		Year						Potential Funding Source
	Planning	Implementation	Planning	Implementation	2026	2027	2028	2029	2030	2031	
Storm Sewer Map	31-Mar-21										
Submit/Maintain Updated Storm Sewer System Map			In Report	On-going	\$ 1,194	\$ 1,230	\$ 1,267	\$ 1,305	\$ 1,344	\$ 1,384	General Fund
Annual Report	31-Mar-21										
Compilation of Tracked Permit Activities			In Report	On-going	\$ 597	\$ 615	\$ 633	\$ 652	\$ 672	\$ 692	General Fund
Prepare Annual Report			In Report	On-going	\$ 1,194	\$ 1,230	\$ 1,267	\$ 1,305	\$ 1,344	\$ 1,384	General Fund
Permit Fee			In Report	On-going	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	General Fund
					\$ 3,291	\$ 3,345	\$ 3,400	\$ 3,457	\$ 3,516	\$ 3,576	
Capital Improvement	31-Mar-21										
Storm Sewer Maintenance				On-going	\$ 27,284	\$ 28,103	\$ 28,946	\$ 29,814	\$ 30,708	\$ 31,630	General Fund
Miscellaneous Capital Improvements and Projects				On-going	\$ 194,153	\$ 199,977	\$ 205,977	\$ 212,156	\$ 218,521	\$ 225,076	General Fund
Administrative				On-going	\$ 24,064	\$ 24,786	\$ 25,529	\$ 26,295	\$ 27,084	\$ 27,896	General Fund
					\$ 245,501	\$ 252,866	\$ 260,452	\$ 268,265	\$ 276,313	\$ 284,603	
TOTAL					\$ 337,321	\$ 526,091	\$ 554,471	\$ 568,215	\$ 702,298	\$ 916,196	
					2026	2027	2028	2029	2030	2031	
				Total No. of ERUs	9,126	9,217	9,309	9,402	9,496	9,591	
				Annual Cost per ERU	\$36.96	\$57.08	\$59.56	\$60.44	\$73.96	\$95.53	
				Monthly Cost per ERU	\$3.08	\$4.76	\$4.96	\$5.04	\$6.16	\$7.96	
				2 Year ERU Average	\$3.92		\$5.00		\$7.06		
				5 Year ERU Average	\$4.80					\$8.44	

Years 2032 to 2037

Activity	Permit Deadlines		Current Status		Year						Potential Funding Source
	Planning	Implementation	Planning	Implementation	2032	2033	2034	2035	2036	2037	
Public Education/Outreach	31-Mar-21										
Overall Public Involvement and Participation Program Costs			In Report	2021	\$ 1,426	\$ 1,469	\$ 1,513	\$ 1,558	\$ 1,605	\$ 1,653	General Fund
NCSWC and NEWSWC Buy-In			In Report	2021	\$ 3,415	\$ 3,517	\$ 3,623	\$ 3,731	\$ 3,843	\$ 3,959	General Fund
					\$ 4,840	\$ 4,986	\$ 5,135	\$ 5,289	\$ 5,448	\$ 5,611	
Public Involvement/Participation	31-Mar-21										
Overall Public Involvement and Participation Program Costs			In Report	On-going	\$ 1,426	\$ 1,469	\$ 1,513	\$ 1,558	\$ 1,605	\$ 1,653	General Fund
					\$ 1,426	\$ 1,469	\$ 1,513	\$ 1,558	\$ 1,605	\$ 1,653	
Illicit Discharge Detection Program	31-Mar-21										
Administration of IDDE Program			In Report	2021	\$ 285	\$ 294	\$ 303	\$ 312	\$ 321	\$ 331	General Fund
Perform IDDE Inspections (36 Outfalls Per Year)			In Report	On-going	\$ 855	\$ 881	\$ 908	\$ 935	\$ 963	\$ 992	General Fund
Track IDDE Activities for Annual Report			In Report	On-going	\$ 652	\$ 672	\$ 692	\$ 713	\$ 734	\$ 756	General Fund
					\$ 1,793	\$ 1,847	\$ 1,902	\$ 1,959	\$ 2,018	\$ 2,079	
Construction Site Erosion Control	31-Mar-21										
Overall Construction Site Erosion Control Program Costs			In Report	2021	\$ 713	\$ 734	\$ 756	\$ 779	\$ 802	\$ 826	General Fund
Work with City Attorney to Adopt Updated Construction Site Erosion and Sediment Control Ordinance			In Report	2021	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Continue Administration of Ordinance			In Report	On-going	\$ 356	\$ 367	\$ 378	\$ 389	\$ 401	\$ 413	General Fund
Track Ordinance-Related Activities (Permits Issued, Enforcement Actions) for Annual Report			In Report	On-going	\$ 356	\$ 367	\$ 378	\$ 389	\$ 401	\$ 413	General Fund
					\$ 1,426	\$ 1,469	\$ 1,513	\$ 1,558	\$ 1,605	\$ 1,653	
Postconstruction Stormwater Management	31-Mar-21										
Overall Post Construction Program Costs			In Report	2021	\$ 713	\$ 734	\$ 756	\$ 779	\$ 802	\$ 826	General Fund
Work with City Attorney to Adopt Updated Postconstruction Stormwater Management Ordinance			In Report	2021	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Continue Administration of Ordinance			In Report	On-going	\$ 356	\$ 367	\$ 378	\$ 389	\$ 401	\$ 413	General Fund
Initiate Private BMP Maintenance Program per Appendix D and E of the City's Erosion Control and Stormwater Management Reference Document			In Report	2021	\$ 672	\$ 692	\$ 713	\$ 734	\$ 756	\$ 779	General Fund
Initiate Program to Gather or Obtain Retroactively Maintenance Agreements for Private BMPs			In Report	2021	\$ 672	\$ 692	\$ 713	\$ 734	\$ 756	\$ 779	General Fund
Track Ordinance-Related Activities (Permits Issued, Enforcement Actions) for Annual Report			In Report	On-going	\$ 356	\$ 367	\$ 378	\$ 389	\$ 401	\$ 413	General Fund
					\$ 2,770	\$ 2,853	\$ 2,938	\$ 3,027	\$ 3,117	\$ 3,211	
Pollution Prevention Program and Operation and Maintenance	31-Mar-21										
Overall Pollution Prevention Program Costs			In Report	On-going	\$ 1,426	\$ 1,469	\$ 1,513	\$ 1,558	\$ 1,605	\$ 1,653	General Fund
Initiate Public BMP Maintenance Program per Appendix E of the City Erosion Control and Stormwater Management Reference Guide			In Report	2021	\$ 1,344	\$ 1,384	\$ 1,426	\$ 1,469	\$ 1,513	\$ 1,558	General Fund
Assessment of City's stormwater BMPs for Necessary Routine Maintenance per Appendix E of the City Erosion Control and Stormwater Management Reference Guide: Once per Year			In Report	2021	\$ 2,016	\$ 2,076	\$ 2,139	\$ 2,203	\$ 2,269	\$ 2,337	General Fund

Activity	Permit Deadlines		Current Status		Year						Potential Funding Source
	Planning	Implementation	Planning	Implementation	2032	2033	2034	2035	2036	2037	
Assessment of City's stormwater BMPs for Necessary Non-Routine Maintenance per Appendix E of the City Erosion Control and Stormwater Management Reference Guide: Once every 5 years			In Report	2021	\$ -	\$ -	\$ 2,688	\$ -	\$ -	\$ -	General Fund
Design of City-Owned Stormwater BMP Non-Routine Maintenance	2021 Cost:	\$ 210,000			\$ -	\$ -	\$ -	\$ 24,433	\$ -	\$ -	General Fund
City-Owned Stormwater BMP Non-Routine Maintenance (Project#1-2026)	\$ 243,448				\$ 18,715	\$ 18,715	\$ 18,715	\$ 18,715	\$ 18,715	\$ 18,715	General Fund
SWPPP-Install Perimeter Sediment Control Devices and catch basin filters at Municipal Services Building			In Report	2022	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Deicing and Snow Removal Operations Admin/Tracking			In Report	On-going	\$ 356	\$ 367	\$ 378	\$ 389	\$ 401	\$ 413	General Fund
Leaf and Grass Clipping Management			In Report	On-going	\$ 29,989	\$ 30,889	\$ 31,816	\$ 32,770	\$ 33,753	\$ 34,766	General Fund
Stormwater Pollution Prevention Training for City staff			In Report	On-going	\$ 356	\$ 367	\$ 378	\$ 389	\$ 401	\$ 413	General Fund
Street Sweeping			In Report	On-going	\$ 97,926	\$ 100,863	\$ 103,889	\$ 107,006	\$ 110,216	\$ 113,523	General Fund
Track Pollution Prevention Activities for Annual Report			In Report	On-going	\$ 356	\$ 367	\$ 378	\$ 389	\$ 401	\$ 413	General Fund
					\$ 152,485	\$ 156,498	\$ 163,320	\$ 189,323	\$ 169,274	\$ 173,791	
Stormwater Quality Management	31-Mar-21										
Overall Stormwater Quality Management Program Costs			In Report	In-Compliance	\$ 1,426	\$ 1,469	\$ 1,513	\$ 1,558	\$ 1,605	\$ 1,653	General Fund
Stormwater Quality Management Plan Update			In Report	In-Compliance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
UNPS Planning Grant Funding Stormwater Quality Management Plan Update											UNPS Grant
TP Credit for Leaf Management Program Analysis											
WDNR UNPS Grant Application for WinSLAMM Modeling Update					\$ -	\$ -	\$ -	\$ -	\$ -	\$ 14,898	General Fund
WDNR UNPS Grant for WinSLAMM Modeling Update					\$ (40,203)	\$ -	\$ -	\$ -	\$ -	\$ -	UNPS Grant
WinSLAMM Modeling Update					\$ 80,406	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Modeling of Private BMPs for Inclusion in Existing Conditions Pollutant Reduction			In Report	On-going	\$ 2,688	\$ 2,768	\$ 2,852	\$ 2,937	\$ 3,025	\$ 3,116	General Fund
Enhanced Leaf Collection Program to Meet TP Credit Criteria			In Report	2022	\$ 50,671	\$ 52,191	\$ 53,757	\$ 55,369	\$ 57,030	\$ 58,741	General Fund
WDNR UNPS Grant Application for Design/Construction of Stormwater BMPs				On-going	\$ 10,775		\$ -	\$ -	\$ 13,097	\$ -	General Fund
WDNR UNPS Grant for Stormwater BMP	2021 Cost	TMDL Reach			\$ -	\$ -	\$(200,000)	\$ -	\$ -	\$ -	UNPS Grant
Implementation of BMPs Identified in Alternative 3:			In Report								
Design/Construct East Haertel Street Wet Detention Basin	\$ 472,695	7 (Buffalo Lake Inflow)	In Report	2022	\$ 37,429	\$ 37,429	\$ 37,429	\$ 37,429	\$ 37,429	\$ 37,429	General Fund
Design/Construct East Mullet Street Wet Detention Basin	\$ 304,095	7 (Buffalo Lake Inflow)	In Report	2026	\$ 27,101	\$ 27,101	\$ 27,101	\$ 27,101	\$ 27,101	\$ 27,101	General Fund
Design/Construct Portage High School Wet Detention Basin	\$ 2,952,625	7 (Buffalo Lake Inflow)	In Report	2030	\$ 296,166	\$ 296,166	\$ 296,166	\$ 296,166	\$ 296,166	\$ 296,166	General Fund
Design/Construct Cardinal FG Dry to Wet Pond Conversion	\$ 1,374,019	190 (Lower Wisconsin River)	In Report	2034	\$ -	\$ -	\$ 155,120	\$ 155,120	\$ 155,120	\$ 155,120	General Fund
Design/Construct CTH CX Wet Detention Basin	\$ 621,425	7 (Buffalo Lake Inflow)	In Report	2038	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Design/Construct Portage Public Library Underground Detention Basin	\$ 1,812,300	7 (Buffalo Lake Inflow)	In Report	2042	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Agricultural Water Quality Trading for TP (816.4 lb at \$125/lb TP; 1/20 per year starting in 2026 with full implementation in 2046)	\$ 125.00		In Report		\$ 49,441	\$ 58,200	\$ 67,439	\$ 77,180	\$ 87,445	\$ 98,256	General Fund
					\$ 515,900	\$ 475,324	\$ 441,376	\$ 652,860	\$ 678,019	\$ 692,481	

Activity	Permit Deadlines		Current Status		Year						Potential Funding Source
	Planning	Implementation	Planning	Implementation	2032	2033	2034	2035	2036	2037	
Storm Sewer Map	31-Mar-21										
Submit/Maintain Updated Storm Sewer System Map			In Report	On-going	\$ 1,426	\$ 1,469	\$ 1,513	\$ 1,558	\$ 1,605	\$ 1,653	General Fund
Annual Report	31-Mar-21										
Compilation of Tracked Permit Activities			In Report	On-going	\$ 713	\$ 734	\$ 756	\$ 779	\$ 802	\$ 826	General Fund
Prepare Annual Report			In Report	On-going	\$ 1,426	\$ 1,469	\$ 1,513	\$ 1,558	\$ 1,605	\$ 1,653	General Fund
Permit Fee			In Report	On-going	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	General Fund
					\$ 3,639	\$ 3,703	\$ 3,769	\$ 3,837	\$ 3,907	\$ 3,979	
Capital Improvement	31-Mar-21										
Storm Sewer Maintenance				On-going	\$ 32,579	\$ 33,556	\$ 34,563	\$ 35,600	\$ 36,668	\$ 37,768	General Fund
Miscellaneous Capital Improvements and Projects				On-going	\$ 231,829	\$ 238,784	\$ 245,947	\$ 253,326	\$ 260,925	\$ 268,753	General Fund
Administrative				On-going	\$ 28,733	\$ 29,595	\$ 30,483	\$ 31,398	\$ 32,340	\$ 33,310	General Fund
					\$ 293,141	\$ 301,935	\$ 310,993	\$ 320,323	\$ 329,932	\$ 339,830	
TOTAL					\$ 978,845	\$ 951,550	\$ 933,971	\$1,181,292	\$1,196,530	\$1,225,941	
					2032	2033	2034	2035	2036	2037	
				Total No. of ERUs	9,687	9,784	9,882	9,981	10,081	10,182	
				Annual Cost per ERU	\$101.05	\$97.26	\$94.51	\$118.35	\$118.69	\$120.40	
				Monthly Cost per ERU	\$8.42	\$8.10	\$7.88	\$9.86	\$9.89	\$10.03	
				2 Year ERU Average	\$8.26		\$8.87		\$9.96		
				5 Year ERU Average	\$8.44				\$10.37		

Years 2038 to 2041

Activity	Permit Deadlines		Current Status		Year				Potential Funding Source
	Planning	Implementation	Planning	Implementation	2038	2039	2040	2041	
Public Education/Outreach	31-Mar-21								
Overall Public Involvement and Participation Program Costs			In Report	2021	\$ 1,702	\$ 1,754	\$ 1,806	\$ 1,860	General Fund
NCSWC and NEWSC Buy-In			In Report	2021	\$ 4,077	\$ 4,200	\$ 4,326	\$ 4,455	General Fund
					\$ 5,780	\$ 5,953	\$ 6,132	\$ 6,316	
Public Involvement/Participation	31-Mar-21								
Overall Public Involvement and Participation Program Costs			In Report	On-going	\$ 1,702	\$ 1,754	\$ 1,806	\$ 1,860	General Fund
					\$ 1,702	\$ 1,754	\$ 1,806	\$ 1,860	
Illicit Discharge Detection Program	31-Mar-21								
Administration of IDDE Program			In Report	2021	\$ 340	\$ 351	\$ 361	\$ 372	General Fund
Perform IDDE Inspections (36 Outfalls Per Year)			In Report	On-going	\$ 1,021	\$ 1,052	\$ 1,084	\$ 1,116	General Fund
Track IDDE Activities for Annual Report			In Report	On-going	\$ 779	\$ 802	\$ 826	\$ 851	General Fund
					\$ 2,141	\$ 2,205	\$ 2,271	\$ 2,339	
Construction Site Erosion Control	31-Mar-21								
Overall Construction Site Erosion Control Program Costs			In Report	2021	\$ 851	\$ 877	\$ 903	\$ 930	General Fund
Work with City Attorney to Adopt Updated Construction Site Erosion and Sediment Control Ordinance			In Report	2021	\$ -	\$ -	\$ -	\$ -	General Fund
Continue Administration of Ordinance			In Report	On-going	\$ 426	\$ 438	\$ 452	\$ 465	General Fund
Track Ordinance-Related Activities (Permits Issued, Enforcement Actions) for Annual Report			In Report	On-going	\$ 426	\$ 438	\$ 452	\$ 465	General Fund
					\$ 1,702	\$ 1,754	\$ 1,806	\$ 1,860	
Postconstruction Stormwater Management	31-Mar-21								
Overall Post Construction Program Costs			In Report	2021	\$ 851	\$ 877	\$ 903	\$ 930	General Fund
Work with City Attorney to Adopt Updated Postconstruction Stormwater Management Ordinance			In Report	2021	\$ -	\$ -	\$ -	\$ -	General Fund
Continue Administration of Ordinance			In Report	On-going	\$ 426	\$ 438	\$ 452	\$ 465	General Fund
Initiate Private BMP Maintenance Program per Appendix D and E of the City's Erosion Control and Stormwater Management Reference Document			In Report	2021	\$ 802	\$ 826	\$ 851	\$ 877	General Fund
Initiate Program to Gather or Obtain Retroactively Maintenance Agreements for Private BMPs			In Report	2021	\$ 802	\$ 826	\$ 851	\$ 877	General Fund
Track Ordinance-Related Activities (Permits Issued, Enforcement Actions) for Annual Report			In Report	On-going	\$ 426	\$ 438	\$ 452	\$ 465	General Fund
					\$ 3,307	\$ 3,406	\$ 3,509	\$ 3,614	
Pollution Prevention Program and Operation and Maintenance	31-Mar-21								
Overall Pollution Prevention Program Costs			In Report	On-going	\$ 1,702	\$ 1,754	\$ 1,806	\$ 1,860	General Fund
Initiate Public BMP Maintenance Program per Appendix E of the City Erosion Control and Stormwater Management Reference Guide			In Report	2021	\$ 1,605	\$ 1,653	\$ 1,702	\$ 1,754	General Fund
Assessment of City's stormwater BMPs for Necessary Routine Maintenance per Appendix E of the City Erosion Control and Stormwater Management Reference Guide: Once per Year			In Report	2021	\$ 2,407	\$ 2,479	\$ 2,554	\$ 2,630	General Fund

Activity	Permit Deadlines		Current Status		Year				Potential Funding Source
	Planning	Implementation	Planning	Implementation	2038	2039	2040	2041	
Assessment of City's stormwater BMPs for Necessary Non-Routine Maintenance per Appendix E of the City Erosion Control and Stormwater Management Reference Guide: Once every 5 years			In Report	2021	\$ -	\$ 3,116	\$ -	\$ -	General Fund
Design of City-Owned Stormwater BMP Non-Routine Maintenance	2021 Cost:	\$ 210,000			\$ -	\$ -	\$ 31,184	\$ -	General Fund
City-Owned Stormwater BMP Non-Routine Maintenance (Project#1-2026)	\$ 243,448				\$ 18,715	\$ 18,715	\$ 18,715	\$ 18,715	General Fund
SWPPP-Install Perimeter Sediment Control Devices and catch basin filters at Municipal Services Building			In Report	2022	\$ -	\$ -	\$ -	\$ -	General Fund
Deicing and Snow Removal Operations Admin/Tracking			In Report	On-going	\$ 426	\$ 438	\$ 452	\$ 465	General Fund
Leaf and Grass Clipping Management			In Report	On-going	\$ 35,809	\$ 36,883	\$ 37,990	\$ 39,129	General Fund
Stormwater Pollution Prevention Training for City staff			In Report	On-going	\$ 426	\$ 438	\$ 452	\$ 465	General Fund
Street Sweeping			In Report	On-going	\$ 116,928	\$ 120,436	\$ 124,049	\$ 127,771	General Fund
Track Pollution Prevention Activities for Annual Report			In Report	On-going	\$ 426	\$ 438	\$ 452	\$ 465	General Fund
					\$ 178,444	\$ 186,351	\$ 219,355	\$ 193,255	
Stormwater Quality Management	31-Mar-21								
Overall Stormwater Quality Management Program Costs			In Report	In-Compliance	\$ 1,702	\$ 1,754	\$ 1,806	\$ 1,860	General Fund
Stormwater Quality Management Plan Update			In Report	In-Compliance	\$ -	\$ -	\$ -	\$ -	General Fund
UNPS Planning Grant Funding Stormwater Quality Management Plan Update									UNPS Grant
TP Credit for Leaf Management Program Analysis									
WDNR UNPS Grant Application for WinSLAMM Modeling Update						\$ -	\$ -	\$ -	General Fund
WDNR UNPS Grant for WinSLAMM Modeling Update					\$ (53,876)	\$ -	\$ -	\$ -	UNPS Grant
WinSLAMM Modeling Update					\$ 107,751	\$ -	\$ -	\$ -	General Fund
Modeling of Private BMPs for Inclusion in Existing Conditions Pollutant Reduction			In Report	On-going	\$ 3,209	\$ 3,306	\$ 3,405	\$ 3,507	General Fund
Enhanced Leaf Collection Program to Meet TP Credit Criteria			In Report	2022	\$ 60,504	\$ 62,319	\$ 64,188	\$ 66,114	General Fund
WDNR UNPS Grant Application for Design/Construction of Stormwater BMPs				On-going	\$ -	\$ -	\$ 15,920	\$ -	General Fund
WDNR UNPS Grant for Stormwater BMP	2021 Cost	TMDL Reach			\$(200,000)	\$ -	\$ -	\$ -	UNPS Grant
Implementation of BMPs Identified in Alternative 3:			In Report						
Design/Construct East Haertel Street Wet Detention Basin	\$ 472,695	7 (Buffalo Lake Inflow)	In Report	2022	\$ 37,429	\$ 37,429	\$ 37,429	\$ 37,429	General Fund
Design/Construct East Mullet Street Wet Detention Basin	\$ 304,095	7 (Buffalo Lake Inflow)	In Report	2026	\$ 27,101	\$ 27,101	\$ 27,101	\$ 27,101	General Fund
Design/Construct Portage High School Wet Detention Basin	\$ 2,952,625	7 (Buffalo Lake Inflow)	In Report	2030	\$ 296,166	\$ 296,166	\$ 296,166	\$ 296,166	General Fund
Design/Construct Cardinal FG Dry to Wet Pond Conversion	\$ 1,374,019	190 (Lower Wisconsin River)	In Report	2034	\$ 155,120	\$ 155,120	\$ 155,120	\$ 155,120	General Fund
Design/Construct CTH CX Wet Detention Basin	\$ 621,425	7 (Buffalo Lake Inflow)	In Report	2038	\$ 88,871	\$ 88,871	\$ 88,871	\$ 88,871	General Fund
Design/Construct Portage Public Library Underground Detention Basin	\$ 1,812,300	7 (Buffalo Lake Inflow)	In Report	2042	\$ -	\$ -	\$ -	\$ -	General Fund
Agricultural Water Quality Trading for TP (816.4 lb at \$125/lb TP; 1/20 per year starting in 2026 with full implementation in 2046)	\$ 125.00		In Report		\$ 109,638	\$ 121,613	\$ 134,209	\$ 147,451	General Fund
					\$ 633,616	\$ 793,679	\$ 824,216	\$ 823,620	

Activity	Permit Deadlines		Current Status		Year				Potential Funding Source
	Planning	Implementation	Planning	Implementation	2038	2039	2040	2041	
Storm Sewer Map	31-Mar-21								
Submit/Maintain Updated Storm Sewer System Map			In Report	On-going	\$ 1,702	\$ 1,754	\$ 1,806	\$ 1,860	General Fund
Annual Report	31-Mar-21								
Compilation of Tracked Permit Activities			In Report	On-going	\$ 851	\$ 877	\$ 903	\$ 930	General Fund
Prepare Annual Report			In Report	On-going	\$ 1,702	\$ 1,754	\$ 1,806	\$ 1,860	General Fund
Permit Fee			In Report	On-going	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	General Fund
					\$ 4,054	\$ 4,130	\$ 4,209	\$ 4,290	
Capital Improvement	31-Mar-21								
Storm Sewer Maintenance				On-going	\$ 38,901	\$ 40,068	\$ 41,270	\$ 42,508	General Fund
Miscellaneous Capital Improvements and Projects				On-going	\$ 276,816	\$ 285,120	\$ 293,674	\$ 302,484	General Fund
Administrative				On-going	\$ 34,309	\$ 35,338	\$ 36,399	\$ 37,491	General Fund
					\$ 350,025	\$ 360,526	\$ 371,342	\$ 382,482	
TOTAL					\$1,182,474	\$1,361,512	\$1,436,451	\$1,421,497	
					2038	2039	2040	2041	
				Total No. of ERUs	10,284	10,387	10,491	10,596	
				Annual Cost per ERU	\$114.98	\$131.08	\$136.92	\$134.15	
				Monthly Cost per ERU	\$9.58	\$10.92	\$11.41	\$11.18	
				2 Year ERU Average	\$10.25		\$11.29		
				5 Year ERU Average	\$10.37			\$12.64	

Years 2042 to 2046

Activity	Permit Deadlines		Current Status		Year					Potential Funding Source
	Planning	Implementation	Planning	Implementation	2042	2043	2044	2045	2046	
Public Education/Outreach	31-Mar-21									
Overall Public Involvement and Participation Program Costs			In Report	2021	\$ 1,916	\$ 1,974	\$ 2,033	\$ 2,094	\$ 2,157	General Fund
NCSWC and NEWSC Buy-In			In Report	2021	\$ 4,589	\$ 4,727	\$ 4,869	\$ 5,015	\$ 5,165	General Fund
					\$ 6,505	\$ 6,700	\$ 6,901	\$ 7,108	\$ 7,322	
Public Involvement/Participation	31-Mar-21									
Overall Public Involvement and Participation Program Costs			In Report	On-going	\$ 1,916	\$ 1,974	\$ 2,033	\$ 2,094	\$ 2,157	General Fund
					\$ 1,916	\$ 1,974	\$ 2,033	\$ 2,094	\$ 2,157	
Illicit Discharge Detection Program	31-Mar-21									
Administration of IDDE Program			In Report	2021	\$ 383	\$ 395	\$ 407	\$ 419	\$ 431	General Fund
Perform IDDE Inspections (36 Outfalls Per Year)			In Report	On-going	\$ 1,150	\$ 1,184	\$ 1,220	\$ 1,256	\$ 1,294	General Fund
Track IDDE Activities for Annual Report			In Report	On-going	\$ 877	\$ 903	\$ 930	\$ 958	\$ 987	General Fund
					\$ 2,410	\$ 2,482	\$ 2,556	\$ 2,633	\$ 2,712	
Construction Site Erosion Control	31-Mar-21									
Overall Construction Site Erosion Control Program Costs			In Report	2021	\$ 958	\$ 987	\$ 1,016	\$ 1,047	\$ 1,078	General Fund
Work with City Attorney to Adopt Updated Construction Site Erosion and Sediment Control Ordinance			In Report	2021	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Continue Administration of Ordinance			In Report	On-going	\$ 479	\$ 493	\$ 508	\$ 523	\$ 539	General Fund
Track Ordinance-Related Activities (Permits Issued, Enforcement Actions) for Annual Report			In Report	On-going	\$ 479	\$ 493	\$ 508	\$ 523	\$ 539	General Fund
					\$ 1,916	\$ 1,974	\$ 2,033	\$ 2,094	\$ 2,157	
Postconstruction Stormwater Management	31-Mar-21									
Overall Post Construction Program Costs			In Report	2021	\$ 958	\$ 987	\$ 1,016	\$ 1,047	\$ 1,078	General Fund
Work with City Attorney to Adopt Updated Postconstruction Stormwater Management Ordinance			In Report	2021	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Continue Administration of Ordinance			In Report	On-going	\$ 479	\$ 493	\$ 508	\$ 523	\$ 539	General Fund
Initiate Private BMP Maintenance Program per Appendix D and E of the City's Erosion Control and Stormwater Management Reference Document			In Report	2021	\$ 903	\$ 930	\$ 958	\$ 987	\$ 1,016	General Fund
Initiate Program to Gather or Obtain Retroactively Maintenance Agreements for Private BMPs			In Report	2021	\$ 903	\$ 930	\$ 958	\$ 987	\$ 1,016	General Fund
Track Ordinance-Related Activities (Permits Issued, Enforcement Actions) for Annual Report			In Report	On-going	\$ 479	\$ 493	\$ 508	\$ 523	\$ 539	General Fund
					\$ 3,722	\$ 3,834	\$ 3,949	\$ 4,067	\$ 4,189	
Pollution Prevention Program and Operation and Maintenance	31-Mar-21									
Overall Pollution Prevention Program Costs			In Report	On-going	\$ 1,916	\$ 1,974	\$ 2,033	\$ 2,094	\$ 2,157	General Fund
Initiate Public BMP Maintenance Program per Appendix E of the City Erosion Control and Stormwater Management Reference Guide			In Report	2021	\$ 1,806	\$ 1,860	\$ 1,916	\$ 1,974	\$ 2,033	General Fund
Assessment of City's stormwater BMPs for Necessary Routine Maintenance per Appendix E of the City Erosion Control and Stormwater Management Reference Guide: Once per Year			In Report	2021	\$ 2,709	\$ 2,790	\$ 2,874	\$ 2,960	\$ 3,049	General Fund

Activity	Permit Deadlines		Current Status		Year					Potential Funding Source
	Planning	Implementation	Planning	Implementation	2042	2043	2044	2045	2046	
Assessment of City's stormwater BMPs for Necessary Non-Routine Maintenance per Appendix E of the City Erosion Control and Stormwater Management Reference Guide: Once every 5 years			In Report	2021	\$ -	\$ -	\$ 3,612	\$ -	\$ -	General Fund
Design of City-Owned Stormwater BMP Non-Routine Maintenance	2021 Cost:	\$ 210,000			\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
City-Owned Stormwater BMP Non-Routine Maintenance (Project#1-2026)	\$ 243,448				\$ 18,715	\$ 18,715	\$ 18,715	\$ 18,715	\$ -	General Fund
SWPPP-Install Perimeter Sediment Control Devices and catch basin filters at Municipal Services Building			In Report	2022	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
Deicing and Snow Removal Operations Admin/Tracking			In Report	On-going	\$ 479	\$ 493	\$ 508	\$ 523	\$ 539	General Fund
Leaf and Grass Clipping Management			In Report	On-going	\$ 40,303	\$ 41,512	\$ 42,758	\$ 44,041	\$ 45,362	General Fund
Stormwater Pollution Prevention Training for City staff			In Report	On-going	\$ 479	\$ 493	\$ 508	\$ 523	\$ 539	General Fund
Street Sweeping			In Report	On-going	\$ 131,604	\$ 135,552	\$ 139,618	\$ 143,807	\$ 148,121	General Fund
Track Pollution Prevention Activities for Annual Report			In Report	On-going	\$ 479	\$ 493	\$ 508	\$ 523	\$ 539	General Fund
					\$ 198,491	\$ 203,884	\$ 213,051	\$ 215,161	\$ 202,339	
Stormwater Quality Management	31-Mar-21									
Overall Stormwater Quality Management Program Costs			In Report	In-Compliance	\$ 1,916	\$ 1,974	\$ 2,033	\$ 2,094	\$ 2,157	General Fund
Stormwater Quality Management Plan Update			In Report	In-Compliance	\$ -	\$ -	\$ -	\$ -	\$ -	General Fund
UNPS Planning Grant Funding Stormwater Quality Management Plan Update										UNPS Grant
TP Credit for Leaf Management Program Analysis										
WDNR UNPS Grant Application for WinSLAMM Modeling Update					\$ -	\$ 19,965	\$ -	\$ -	\$ -	General Fund
WDNR UNPS Grant for WinSLAMM Modeling Update					\$ -	\$ -	\$ (72,199)	\$ -	\$ -	UNPS Grant
WinSLAMM Modeling Update					\$ -	\$ -	\$ 144,397	\$ -	\$ -	General Fund
Modeling of Private BMPs for Inclusion in Existing Conditions Pollutant Reduction			In Report	On-going	\$ 3,612	\$ 3,721	\$ 3,832	\$ 3,947	\$ 4,066	General Fund
Enhanced Leaf Collection Program to Meet TP Credit Criteria			In Report	2022	\$ 68,097	\$ 70,140	\$ 72,244	\$ 74,412	\$ 76,644	General Fund
WDNR UNPS Grant Application for Design/Construction of Stormwater BMPs				On-going	\$ 17,635	\$ -	\$ 19,351	\$ -	\$ -	General Fund
WDNR UNPS Grant for Stormwater BMP	2021 Cost	TMDL Reach			\$(200,000)	\$ -	\$(200,000)	\$ -	\$(200,000)	UNPS Grant
Implementation of BMPs Identified in Alternative 3:			In Report							
Design/Construct East Haertel Street Wet Detention Basin	\$ 472,695	7 (Buffalo Lake Inflow)	In Report	2022						General Fund
Design/Construct East Mullet Street Wet Detention Basin	\$ 304,095	7 (Buffalo Lake Inflow)	In Report	2026	\$ 27,101	\$ 27,101	\$ 27,101	\$ 27,101		General Fund
Design/Construct Portage High School Wet Detention Basin	\$ 2,952,625	7 (Buffalo Lake Inflow)	In Report	2030	\$ 296,166	\$ 296,166	\$ 296,166	\$ 296,166	\$ 296,166	General Fund
Design/Construct Cardinal FG Dry to Wet Pond Conversion	\$ 1,374,019	190 (Lower Wisconsin River)	In Report	2034	\$ 155,120	\$ 155,120	\$ 155,120	\$ 155,120	\$ 155,120	General Fund
Design/Construct CTH CX Wet Detention Basin	\$ 621,425	7 (Buffalo Lake Inflow)	In Report	2038	\$ 88,871	\$ 88,871	\$ 88,871	\$ 88,871	\$ 88,871	General Fund
Design/Construct Portage Public Library Underground Detention Basin	\$ 1,812,300	7 (Buffalo Lake Inflow)	In Report	2042	\$ 291,711	\$ 291,711	\$ 291,711	\$ 291,711	\$ 291,711	General Fund
Agricultural Water Quality Trading for TP (816.4 lb at \$125/lb TP; 1/20 per year starting in 2026 with full implementation in 2046)	\$ 125.00		In Report		\$ 161,367	\$ 175,985	\$ 191,334	\$ 207,447	\$ 224,354	General Fund
					\$ 911,597	\$1,130,753	\$1,019,962	\$1,146,868	\$ 939,088	

Activity	Permit Deadlines		Current Status		Year					Potential Funding Source
	Planning	Implementation	Planning	Implementation	2042	2043	2044	2045	2046	
Storm Sewer Map	31-Mar-21									
Submit/Maintain Updated Storm Sewer System Map			In Report	On-going	\$ 1,916	\$ 1,974	\$ 2,033	\$ 2,094	\$ 2,157	General Fund
Annual Report	31-Mar-21									
Compilation of Tracked Permit Activities			In Report	On-going	\$ 958	\$ 987	\$ 1,016	\$ 1,047	\$ 1,078	General Fund
Prepare Annual Report			In Report	On-going	\$ 1,916	\$ 1,974	\$ 2,033	\$ 2,094	\$ 2,157	General Fund
Permit Fee			In Report	On-going	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	\$ 1,500	General Fund
					\$ 4,374	\$ 4,460	\$ 4,549	\$ 4,641	\$ 4,735	
Capital Improvement	31-Mar-21									
Storm Sewer Maintenance				On-going	\$ 43,783	\$ 45,096	\$ 46,449	\$ 47,843	\$ 49,278	General Fund
Miscellaneous Capital Improvements and Projects				On-going	\$ 311,558	\$ 320,905	\$ 330,532	\$ 340,448	\$ 350,662	General Fund
Administrative				On-going	\$ 38,615	\$ 39,774	\$ 40,967	\$ 42,196	\$ 43,462	General Fund
					\$ 393,957	\$ 405,775	\$ 417,949	\$ 430,487	\$ 443,402	
TOTAL					\$1,526,803	\$1,763,810	\$1,675,016	\$1,817,247	\$1,610,256	
					2042	2043	2044	2045	2046	
				Total No. of ERUs	10,702	10,809	10,917	11,026	11,136	
				Annual Cost per ERU	\$142.67	\$163.18	\$153.43	\$164.81	\$144.60	
				Monthly Cost per ERU	\$11.89	\$13.60	\$12.79	\$13.73	\$12.05	
				2 Year ERU Average	\$12.74		\$13.26			
				5 Year ERU Average	\$12.64					

6.05 POSSIBLE COST REALLOCATION UNDER A STORMWATER UTILITY

Figure 6.05-1 and Table 6.05-1 compare the relative contribution of each land use sector to stormwater system funding under a property tax-based system versus a user fee-based system. This comparison is based on the 2020 stormwater budget in Table 6.04-2. Figure 6.05-1 and Table 6.05-1 indicate that conversion from a tax-based to a user fee-based system would shift the primary burden for funding the stormwater management system from the residential to the nonresidential sector. Greatest impacts would be felt by tax-exempt properties, which do not currently contribute to stormwater management funding through property taxes. Residential properties would generally contribute proportionately less to stormwater funding than currently based on the lower relative impervious area present on typical residential properties.

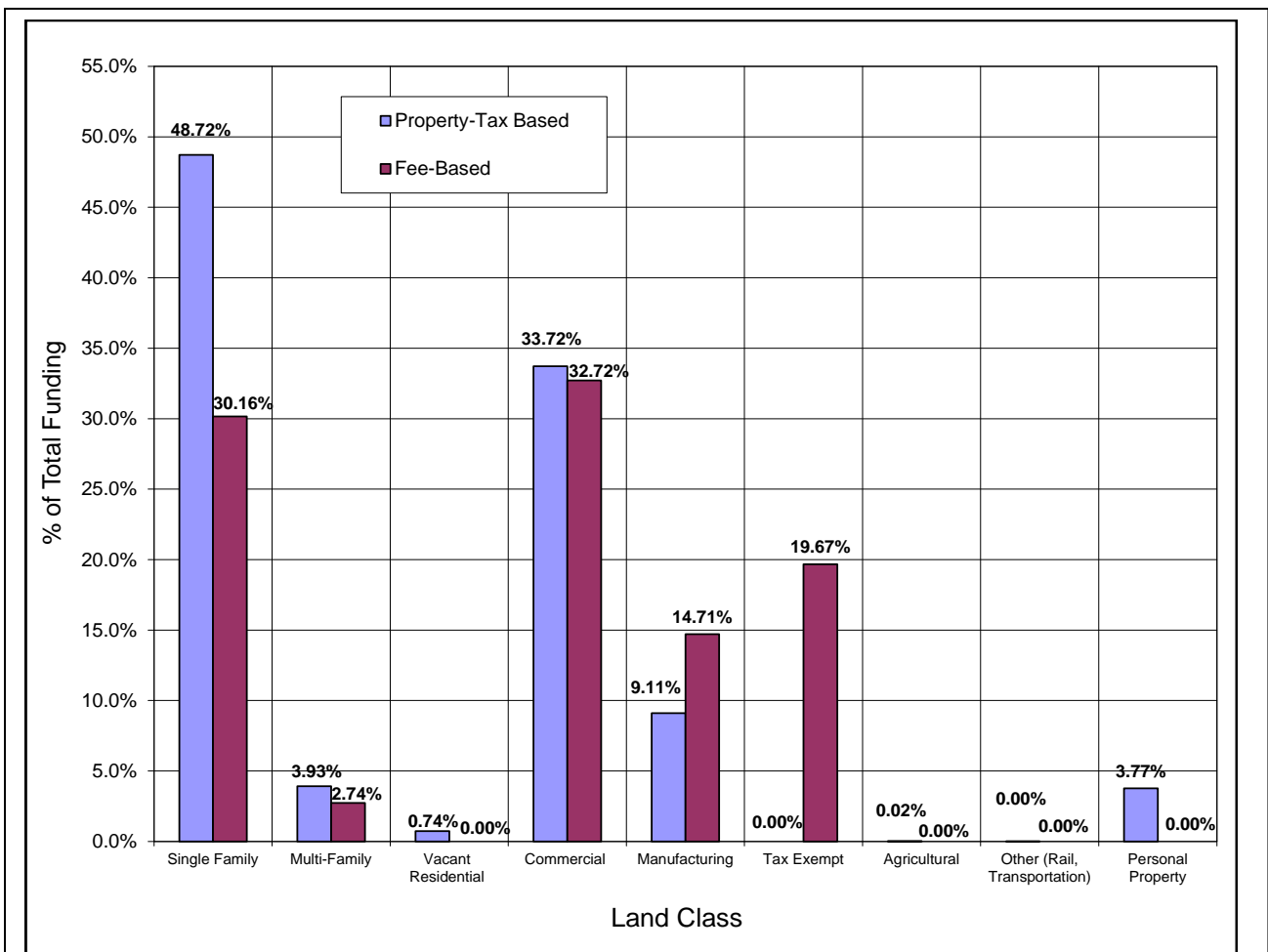


Figure 6.05-1 Reallocation of Funding Contribution by Land Class Under a Stormwater Utility

Real Estate Class	Dollars			Percentage		
	Tax Based	Fee Based	Reallocation	Tax Based	Fee Based	Reallocation
Residential						
Single Family	\$ 168,905	\$ 104,578	\$ (64,327)	48.72%	30.16%	-18.55%
Multifamily	\$ 13,620	\$ 9,491	\$ (4,129)	3.93%	2.74%	-1.19%
Vacant Residential	\$ 2,559	\$ -	\$ (2,559)	0.74%	0.00%	-0.74%
Residential Subtotal	\$ 185,084	\$ 114,069		53.38%	32.90%	-20.48%
Nonresidential						
Commercial	\$ 116,907	\$ 113,430	\$ (3,477)	33.72%	32.72%	-1.00%
Manufacturing	\$ 31,580	\$ 51,003	\$ 19,422	9.11%	14.71%	5.60%
Non Residential Subtotal	\$ 148,487	\$ 164,432		42.83%	47.43%	4.60%
Tax Exempt						
Church Owned	\$ -	\$ 5,912	\$ 5,912	0.00%	1.71%	1.71%
City Owned	\$ -	\$ 19,033	\$ 19,033	0.00%	5.49%	5.49%
County Owned	\$ -	\$ 5,423	\$ 5,423	0.00%	1.56%	1.56%
Federal Owned	\$ -	\$ 575	\$ 575	0.00%	0.17%	0.17%
Other	\$ -	\$ 14,343	\$ 14,343	0.00%	4.14%	4.14%
School Owned	\$ -	\$ 13,387	\$ 13,387	0.00%	3.86%	3.86%
State Owned	\$ -	\$ 9,541	\$ 9,541	0.00%	2.75%	2.75%
Tax Exempt Subtotal	\$ -	\$ 68,213		0.00%	19.67%	19.67%
Other						
Agricultural	\$ 78	\$ -	\$ (78)	0.02%	0.00%	-0.02%
Other	\$ 7	\$ -	\$ (7)	0.00%	0.00%	0.00%
Other Subtotal	\$ 85	\$ -		0.02%	0.00%	-0.02%
Personal Property	\$ 13,058	\$ -	\$ (13,058)	3.77%	0.00%	-3.77%
Total	\$ 346,715	\$ 346,715		100.00%	100.00%	

Table 6.05-1 Reallocation of Funding Contribution by Real Estate Class Under a Stormwater Utility

6.06 COMPARISON OF STORMWATER UTILITY IMPACTS ON INDIVIDUAL PROPERTIES

Impacts of conversion to a user fee-based method of stormwater system funding were evaluated for various residential, commercial, industrial, and tax-exempt properties. To provide a comparison, the following analysis is based on the stormwater budget for 2020 of \$346,715, the 2020 mill rate of \$8.87 per \$1,000 of assessed value, and an estimated 8,683 ERUs. Results of this evaluation are summarized in Table 6.06-1 and a graphical representation is provided in Figure 6.06-1.

Table 6.06-1 Possible Stormwater Utility Impacts on Selected Properties

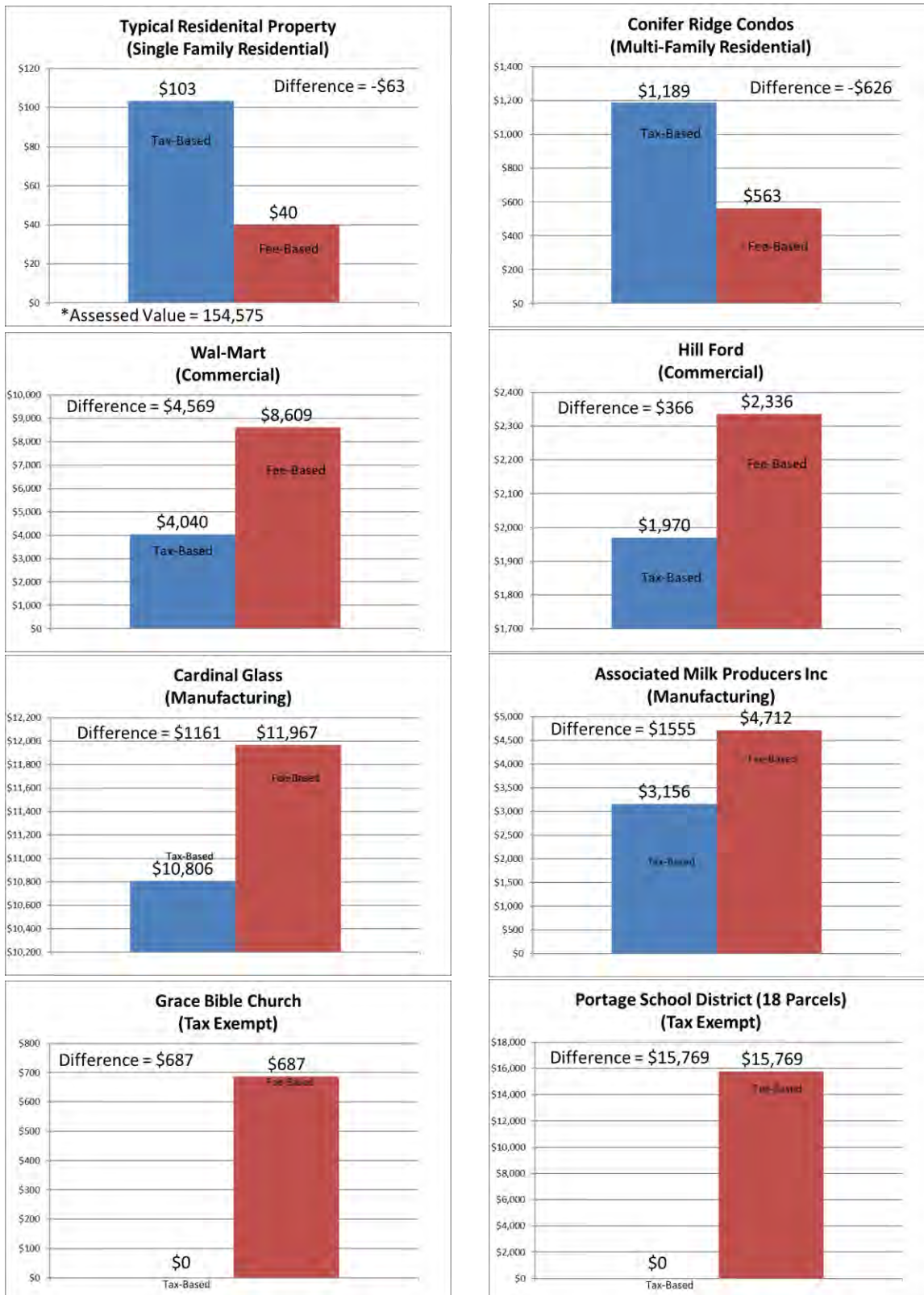
Owner	Class	Tax-Based (2020) ¹			Fee-Based ² (2020 Stormwater Budget)			Change ³
		Assessed Value	Stormwater Contribution Rate	Annual Contribution	ERU's	Rate/ERU	Annual Contribution	
Typical Residential Property	Single Family Residential	\$207,145	\$0.000499	\$103	1	\$39.93	\$40	-\$63
Silver Lake Apartments	Multifamily Residential	\$8,629,800	\$0.000499	\$4,304	24.8	\$39.93	\$990	-\$3,314
Conifer Ridge Condos	Multifamily Residential	\$2,384,000	\$0.000499	\$1,189	14.1	\$39.93	\$563	-\$626
Walmart	Commercial	\$8,100,000	\$0.000499	\$4,040	215.6	\$39.93	\$8,609	\$4,569
Hill Ford	Commercial	\$3,950,000	\$0.000499	\$1,970	58.5	\$39.93	\$2,336	\$366
Cardinal Glass*	Manufacturing	\$21,668,100	\$0.000499	\$10,806	299.7	\$39.93	\$11,967	\$1,161
Associated Milk Producers Inc (AMPI)	Manufacturing	\$6,329,100	\$0.000499	\$3,156	118	\$39.93	\$4,712	\$1,555
Grace Bible Church	Tax Exempt	\$0	\$0.000499	\$0	17.2	\$39.93	\$687	\$687
Portage School District (18 Parcels)	Tax Exempt	\$0	\$0.000499	\$0	394.9	\$39.93	\$15,769	\$15,769
City of Portage (169 Parcels)	Tax Exempt	\$0	\$0.000499	\$0	538.3	\$39.93	\$21,495	\$21,495

¹ Based on a 2020 Stormwater Management budget of \$346,715 (Mill Rate = \$8.87/\$1,000 Value).

² Based on a 2020 Stormwater Management budget of \$346,715 and 1 ERU = 8,683 SF.

³ Does not consider possible reductions from credits or other adjustments

Figure 6.06-1 Possible Stormwater Utility Impacts on Selected Properties



Individual properties analyzed included small, average, and large single-family residential parcels. For each single-family residential category, the approximate average assessed value is based on the Columbia County’s GIS parcel data. Results indicate the stormwater contribution from each typical residential parcel would be lower under a stormwater utility than under the present property-tax based system. The annual reduction would be approximately \$63 per parcel.

Relative impacts of tax-funding versus stormwater utility funding were compared at the Silver Lake Apartments complex and Conifer Ridge Condominiums (multifamily residential) at 917 Silver Lake Drive and 526 Clemens Court, respectively. Results indicate a reduction of approximately \$3,314 and \$626, respectively, under a stormwater utility in comparison with the current property tax-based system at this property.

A variety of commercial and industrial properties were also evaluated including Walmart, Hill Ford, Cardinal Glass, and Associated Milk Producers, Inc. The comparative analysis indicates that the stormwater contribution would increase for each of the nonresidential properties analyzed.

The most significant impacts of conversion to a stormwater fee-based system will be tax-exempt parcels such as the City of Portage, Portage School District, and area churches. Analysis of some of these parcels indicates potential increases ranging from approximately \$687 for the Grace Bible Church to \$21,495 for the City.

It should be noted this analysis does not consider potential reductions in fees from credits for measures such as detention basins, rain gardens, rain barrel, and similar improvements designed to accommodate some or all the stormwater discharge from the property. Also, some consideration may be given to reducing stormwater fees to customers whose surface waters do not discharge into a lake, a river, or creek. The criteria for eligibility and size of these credits would need to be developed and implemented into a fee structure.

6.07 STORMWATER UTILITY IMPLEMENTATION

Should the City be interested in pursuing revival of the stormwater utility, the next step in doing so would include proceeding into stormwater utility implementation. Components of stormwater utility implementation typically include the following components.

1. Stormwater Utility Task Force–To keep the stormwater utility implementation process transparent, it is typically advisable to convene a Stormwater Utility Task Force to help guide the Stormwater Utility Rate Study and the Stormwater Utility Credit Policy and help to gain buy-in from affected rate payers.
2. Stormwater Utility Rate Study–Completion of a comprehensive impervious area analysis, final stormwater utility budget, and establishment of stormwater utility rates to meet anticipated revenue needs. The impervious area analysis would include sampling of residential parcels to refine the equivalent runoff unit and measurement of each nonresidential parcel in the City.

3. Billing System Review–Review of the City’s existing billing system capacity to accommodate a new line item for a stormwater utility charge.
4. Stormwater Utility Master Account File–Preparation of a Stormwater Utility Master Account File consisting of a database of stormwater utility customers.
5. Stormwater Utility Ordinance and Credit Policy–A Stormwater Utility Ordinance would be adopted, and a stormwater utility credit policy would be developed to specify guidelines and procedures for receiving credits.
6. Billing System Testing–Testing would be performed of the billing system prior to sending out utility bills including on-site staff training.
7. Impervious Area Map Book–To assist in answering billing questions from customers, a GIS mapbook would be created that illustrates the delineated impervious areas for each nonresidential property and the residential parcels that were sampled.
8. Public Information and Education–This includes preparation of a stormwater utility narrative, public informational meeting with top rate payers, and general assistance with resolution of technical questions during first billing cycle and preparation of specific protocol for answering billing questions.
9. Meetings.

SECTION 7
CONCLUSIONS AND RECOMMENDATIONS

7.01 GENERAL

This section presents specific recommendations for achieving the goals of the Stormwater Management Plan Update. These recommendations are based on the evaluations and information presented in Sections 3, 4, 5, and 6 and on analyses performed as part of this plan.

7.02 RECOMMENDATIONS FOR ACHIEVING STORMWATER MANAGEMENT GOALS

Implementation of the following recommendations will aid the City in achieving the plan goals and objectives contained in this plan.

1. Implement the recommended Public Education/Outreach and Involvement/Participation Programs identified in Section 3. Meet the measurable goals for the programs.
2. Perform illicit discharge inspections at major outfalls at the frequency identified in Table 3.02-5. Locate and eliminate any illicit discharges discovered according to the procedure described in Section 3.02.C.4 and 3.02.C.5 and on the form provided in Appendix I. Meet the measurable goals for the program.
3. Adopt the Erosion Control and Stormwater Management ordinance identified in Table 3.02-7. Meet the measurable goals for the program.
4. Adopt the Post-Construction Stormwater Management Ordinance identified in Table 3.02-9. Meet the measurable goals for the program.
5. Implement the recommended improvements to the construction site erosion control and postconstruction stormwater management programs related to tracking of inspections identified in Tables 3.02-8 and 3.02-10.
6. Implement the recommended pollution prevention for municipal operations program identified in Table 3.02-11.
7. Proceed with recommendations in Section 5.10 to achieve TMDL compliance related to TSS and TP reduction.
8. Update the City's storm sewer system map on an annual basis.
9. Submit a report to WDNR documenting and tracking permit-related activities at the frequency required by the City's stormwater permit.
10. Maintain stormwater BMPs according to the Maintenance and Inspection of Stormwater Management Facilities document provided in Appendix J.
11. Leverage funds from grants for design and construction of the improvements necessary.

7.03 IMPLEMENTATION PLAN

Tables 6.04-2 and 7.03-1 include a breakdown of implementation of Alternative 3 for TMDL compliance (and is further described in Sections 5.04 and 5.10 and Table 5.04-1) including the cost of each component, the implementation schedule, and applicable funding source, if applicable. This includes continuing to administer the existing stormwater program while incorporating recommendations, herein. Over time, the City should consider other opportunities for TP reductions as they arise, including consideration of components of Alternatives 1, 2, or 3 if they make sense for the City. If the City needs to consider additional measures to achieve TMDL compliance in the future, requiring 80 percent TSS reduction for redevelopment could be considered.

Table 7.03-1 TMDL Implementation Plan (lb TP)

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Water Quality Trading					40.8	81.6	122.5	163.3	204.1	244.9	285.7	326.6	367.4	408.2	449.0	489.8	530.7	571.5	612.3	653.1	693.9	734.8	775.6	816.4	816.4
East Haertel Street Wet Detention Basin		18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
East Mullet Street Wet Detention Basin					31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Portage High School Wet Detention Basin									83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0	83.0
Cardinal FG Dry to Wet Pond Conversion													18	18	18	18	18	18	18	18	18	18	18	18	18
CTH CX Wet Detention Basin																	13	13	13	13	13	13	13	13	13
Portage Public Library Underground Detention Basin																					9	9	9	9	9
TP Leaf Credit (To Be Determined)																									
Redevelopment at 40 percent TSS Reduction	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.4	5.9	6.4	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4	10.9	11.4	11.9	12.4
Private BMPs (To Be Determined)																									
Total	0.5	19.0	19.5	20.0	92.3	133.6	174.9	216.2	340.6	381.9	423.2	464.5	523.8	565.1	606.4	647.8	702.1	743.4	784.7	826.0	876.3	917.7	959.0	1000.3	1000.8
Permit Required (10% of TP Reduction Gap by 2030)										112.7															

7.04 PROGRAM FUNDING OPTIONS

Possible funding sources for implementation of activities required for compliance with the stormwater permit are described herein.

A. Grants

Some of the more popular WDNR grant programs include the UNPS&SW Grant, Local Water Quality Management Planning Aids, Lake Planning Grant, Lake Protection and Classification Grant, River Protection Grant, and Municipal Flood Control Grant. The WDNR UNPS&SW Grant is the most appropriate for implementing stormwater quality BMPs recommended in this plan. Up to 50 percent of the design and construction of a stormwater quality BMP could be covered by the grant program should the City be successful in obtaining a grant. Land acquisition is also funded through this grant program. The remaining percentage would be covered by City funds. Scoring criteria dictates that if the City were to pay a higher percentage, then the score of the grant application would increase, potentially increasing the odds of grant award.

The Clean Water Fund (CWF) administered through the WDNR is also a funding option with current funding providing a 30 percent principal forgiveness loan and a 70 percent low interest loan. The principal forgiveness loan is received through a competitive process. An Intent to Apply (ITA) and Priority Evaluation Review Form (PERF) form would need to be submitted to the WDNR.

B. Fees

Fees are another common means of funding stormwater management improvements. Fees are charges for services rendered. Many municipalities, including the City, recover costs of constructing, designing, reviewing, and/or inspecting new developments through fees assessed to developers. Impact fees and special assessments transfer the cost of infrastructure improvements needed for private development directly to developers or property owners. User fees recover costs over the life of a project. An increasingly common type of user fee related to stormwater management is a stormwater utility. Formation of stormwater utilities enables municipalities to recover costs of stormwater management improvements based on the amount of stormwater “generated” by a land use. The City may want to consider implementing stormwater utility rates to assist in funding the implementation of this plan.

C. Bonds

Large capital improvement projects such as major storm sewers or detention facilities may be funded through bonds or grants. Bonds are a mechanism to borrow capital for a project and distribute repayment over the life span of the project. A popular local bonding program is the CWF Program. This is one of the subsidized loan programs included in the WDNR’s Environmental Improvement Fund (EIF). The CWF provides loans to municipalities for wastewater treatment and urban stormwater projects. This program has historically been used extensively for WWTP construction. Recent program modifications allow funds to be used for stormwater management improvements.

Most CWF projects receive a subsidized interest rate of 55 percent, 65 percent, or 70 percent of the EIF market interest rate. CWF wastewater projects that meet certain criteria may be eligible to receive Hardship Financial Assistance, which may be in the form of a lower interest rate loan or include a grant.

7.05 POLICIES AND PRACTICES

A. General

As in any typical community, localized drainage issues commonly arise that may affect a limited number of areas. These issues may be caused by a deficiency in a drainage facility, a maintenance issue, or alterations of property during maintenance or construction projects.

It is recommended the City develop a uniform policy for addressing localized drainage issues and maintain a record of where these issues have occurred. This policy should establish the procedure to be followed in resolving future drainage issues in the City. This will ensure that future issues are addressed in an equitable and timely manner, and locations of recurring problem areas can be identified for future planning purposes.

B. Recommended Policy

This section includes a recommended policy for addressing drainage issues which should be reviewed by the City and, if appropriate, adopted as a formal policy.

1. Problem Identification and Drainage Evaluation

- a. After receiving a verbal or written complaint from a resident, the resident should be provided a Drainage Evaluation Form (Appendix R). The resident should complete Parts A, B, and C of the form and return it to the City.
- b. Within 30 calendar days of receiving the form, with completed Parts A, B, and C, a City representative will inspect the location and review the information submitted by the resident. The City representative will complete Part D of the form based upon this review.
- c. The City representative will make a recommendation in Part E of the form regarding action to be taken (if any) to alleviate or mitigate the problem. Decision-making criteria will be clearly stated.
- d. A copy of the completed Drainage Evaluation Form will be returned to the resident. Additional copies will be maintained in the City's files and the form and complaint location will be incorporated into the City's GIS database for future analysis of drainage problem area trends.

2. City Authority

The City authority in addressing individual drainage issues should be determined on a case-by-case basis. Before the City takes corrective action, the ownership of the properties

causing the problem and being damaged should be verified. Where the City has easement rights and the issue involves the obstruction of a natural watercourse (under Section 88.90 of the WAC), the City can move to correct the problem. If the drainage issue results from an activity that is not located on City property or ROW, does not violate a City ordinance, or does not involve obstruction of a natural watercourse, the City may be without jurisdiction to act.

3. Determination of City Responsibility

In cases where it is determined the City can take corrective action to address the drainage deficiency, the following steps should be taken:

- a. Alternative solutions to the identified problem should be developed and incorporated into the City stormwater management plan(s).
- b. Opinions of probable engineering and construction costs of individual projects should be prepared.
- c. As part of the annual budget process, projects to be constructed each year should be selected based upon priority ranking and funding availability.

7.06 CONCLUSION

The purpose of this report has been to provide the City with a WPDES Permit-compliant stormwater quality management program. The City should use this report to guide its stormwater permit compliance efforts.

Funding of the stormwater program is at the discretion of the City. At this time, it appears that the most economical way to implement a stormwater program is to leverage general funds in addition to applying for WDNR UNPS&SW grants and other applicable grants for the recommended alternative stormwater BMP components required to close the TSS and TP reduction gaps and maintain permit compliance. WQT also appears to be a feasible method of compliance.

**APPENDIX A
PORTAGE MS4 PERMIT**



**STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES**

**GENERAL PERMIT TO DISCHARGE UNDER THE WISCONSIN
POLLUTANT DISCHARGE ELIMINATION SYSTEM
WPDES PERMIT NO. WI-S050075-3**

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.

With written authorization by the Department, this permit will be used to cover a municipal separate storm sewer system initially covered under a previous version of a municipal separate storm sewer system general permit. The **Start Date** of coverage under this permit is the date of the Department letter sent to the municipality authorizing coverage under this 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. 283.33(9), Wis. Stats., and s. NR 216.08, Wis. Adm. Code.

State of Wisconsin Department of Natural Resources
For the Secretary

By Michael C. Thompson

Michael C. Thompson, Director
Bureau of Watershed Management
External Services Division

5/1/19

Date Permit Signed

PERMIT EFFECTIVE DATE: May 1, 2019

EXPIRATION DATE: April 30, 2024

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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 (MS4) that receives runoff from any of the following:

1.1.1 An urbanized area, adjacent developing areas and areas whose runoff is connected or will connect to a municipal separate storm sewer regulated under subch. I of NR 216, Wis. Adm. Code; 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 is connected or will connect to an MS4 regulated under subch. I of NR 216, Wis. Adm. Code; or

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

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 pursuant to section 2.3.1 of this permit.

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, NR 140, and NR 207, Wis. Adm. Code. For the term of this permit, compliance with water quality standards will be addressed by adherence to the requirements in this permit.

1.3.2 This permit does not authorize discharges that the Department 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, the Department may notify the municipality that an individual permit 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.

Note: An unofficial list of ORWs and ERWs may be found on the Department's Internet site at: <https://dnr.wi.gov/topic/SurfaceWater/orwerw.html>

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

1.4.3 If the permittee has an existing MS4 discharge to an ORW, it may increase the discharge of pollutants, either at the existing point of discharge or a new location, provided all of the following are met:

- a. 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.
- b. 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 ERW, it may increase the discharge of pollutants if the increased discharge would not result in a violation of water quality standards.

1.5 Impaired Waterbodies and Total Maximum Daily Load Requirements

1.5.1 By March 31 of each odd-numbered year, the permittee shall determine whether any part of its MS4 discharges to an impaired waterbody 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). For a permittee that determines that any part of its MS4 does discharge to a listed impaired waterbody but for which there is no United States Environmental Protection Agency (USEPA) approved Total Maximum Daily Load (TMDL) for the pollutant of concern, 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 pollutants of concern that contribute to the impairment of the waterbody. 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 pollutants of concern that contribute to the impairment of the waterbody and explain why these control measures and practices were chosen as opposed to other alternatives.

Note: Every two years, the Department updates and publishes a list of waters considered impaired under the Clean Water Act. The list is updated in even-numbered years. A list of Wisconsin impaired waterbodies may be found on the Department's Internet site at:

<http://dnr.wi.gov/topic/impairedwaters/>

1.5.2 For a permittee with an MS4 discharge of a pollutant of concern to a waterbody subject to an USEPA approved TMDL under which the permittee is assigned a Wasteload Allocation (WLA), the permittee shall meet the following requirements, in addition to the minimum control measures described within Section 2 of the permit:

- a. Appendix A provides the permit conditions for permittees subject to the Rock River Basin TMDL, Lower Fox River Basin and Lower Green Bay TMDL, Lake St. Croix Nutrient

TMDL, Red Cedar River (Tainter Lake, Menomin Lake) TMDL, or Beaver Dam Lake TMDL. For a permittee subject to any of these TMDLs, the permittee shall comply with the provisions in Appendix A: MS4 Permittees Subject to a TMDL Approved Prior to May 1, 2014 including Applicable Updates.

b. Appendix B provides the permit conditions for permittees subject to the Milwaukee River Basin TMDL. For a permittee subject to this TMDL, the permittee shall comply with the provisions in Appendix B: MS4 Permittees Subject to Milwaukee River Basin TMDL.

c. Appendix C provides the permit conditions for permittees subject to the Wisconsin River Basin TMDL or any other TMDL approved on or after May 1, 2019. For a permittee subject to any of these TMDLs, the permittee shall comply with the provisions in Appendix C: MS4 Permittees Subject to the Wisconsin River Basin TMDL or a TMDL Approved After May 1, 2019.

Note: The reports for Department and USEPA approved TMDLs are available from the Department's Internet site at: <https://dnr.wi.gov/topic/TMDLs/tmdlreports.html>

1.5.3 After the effective date of this permit, the permittee may not establish a new MS4 discharge of a pollutant of concern to an impaired waterbody or increase the discharge of a pollutant of concern to an impaired waterbody unless the new or increased discharge causes the receiving water to meet applicable water quality standards, or the USEPA has approved a TMDL for the impaired waterbody.

1.6 Wetlands

The permittee's MS4 discharge shall comply with the applicable 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

In accordance with s. NR 102.04, Wis. Adm. Code, practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

1.9.1 Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.

1.9.2 Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.

1.9.3 Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.

1.9.4 Substances in concentrations or combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.

1.10 Obtaining Permit Coverage

1.10.1 The owner or operator of an MS4 covered under a previous version of an MS4 permit before the effective date of this permit shall be covered by this permit pursuant to written authorization by the Department.

Note: The Department will notify in writing the owner or operator of an MS4 covered under a previous version of an MS4 permit that this permit has been reissued and that the MS4 is covered under it. However, the City of Madison and the City of Milwaukee are not eligible for coverage under this permit.

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 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 the change. If the permittee ceases to own or operate any MS4 regulated under this permit, the Department may terminate its coverage under this permit.

1.12 Exclusions

The following are excluded from coverage and are not authorized under this permit:

1.12.1 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.

1.12.2 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.

1.12.3 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 to 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.

1.12.4 Indian Country

Storm water discharges within Indian Country. The federal Clean Water Act requires owners and operators of storm water discharges within Indian Country in Wisconsin to obtain permit coverage directly from the USEPA.

1.12.5 Non-MS4 Discharge

Storm water discharges that do not enter an MS4.

1.13 Compliance with Permit Requirements

Compliance with the requirements contained in this permit including the applicable appendices shall not be contingent upon receiving financial assistance from the Department or any other public or private grant or loan program.

2. PERMIT CONDITIONS

This permit establishes the following measurable goals, with a compliance schedule in section 3, for the permittee to maintain compliance with the minimum control measures for their storm water management program described under sections 2.1 through 2.6. The following permit conditions apply to the permittee, unless the Department issues a written determination that a condition is not appropriate under the circumstances. The permittee shall have a written storm water management program that describes in detail how the permittee intends to comply with the permit requirements for each minimum control measure. The permittee shall begin implementing any updates to its storm water management programs no later than March 31, 2021.

2.1 Public Education and Outreach

The permittee shall maintain its public education and outreach program to increase the awareness of storm water pollution impacts on waters of the state and to encourage changes in public behavior to reduce such impacts. The permittee shall implement the following measurable goals:

2.1.1 Topics. The permittee shall address all eight topics in Table 1 at least once during the permit term. Permittees that are a County shall address a minimum of six topics each year. Permittees that are a City, Village, Town, or University with a population of 5,000 or more based on the latest U.S. Census shall address a minimum of six topics each year. Permittees that are a City, Village, Town, or University with a population less than 5,000 based on the latest U.S. Census shall address a minimum of four topics each year. Topics may be repeated as necessary. Permittees shall select from the topic areas in Table 1.

Note: Universities should average its enrolled student population plus employee population over a recent ten-year period to determine which requirement it should follow for permit compliance. Universities are also expected to undertake public education efforts that reach the entire student body and staff.

Table 1: Public Education and Outreach Topic Areas and Descriptions

#	Topic Area	Description
1	Illicit Discharge Detection and Elimination	Promote detection and elimination of illicit discharges and water quality impacts associated with such discharges from municipal separate storm sewer systems.
2	Household Hazardous Waste Disposal/Pet Waste Management/Vehicle Washing	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.
3	Yard Waste Management/Pesticide and Fertilizer Application	Promote beneficial onsite reuse of leaves and grass clippings and proper use of lawn and garden fertilizers and pesticides.
4	Stream and Shoreline Management	Promote the management of streambanks and shorelines by riparian landowners to minimize erosion and restore and enhance the ecological value of waterways.

5	Residential Infiltration	Promote infiltration of residential storm water runoff from rooftop downspouts, driveways and sidewalks.
6	Construction Sites and Post-Construction Storm Water Management	Inform and 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.
7	Pollution Prevention	Identify businesses and activities that may pose a storm water contamination concern, and educate those specific audiences on methods of storm water pollution prevention.
8	Green Infrastructure/Low Impact Development	Promote environmentally sensitive land development designs by developers and designers, including green infrastructure and low impact development.

Note: Additional information on green infrastructure and low impact development may be found on the USEPA’s Internet site at: <https://www.epa.gov/green-infrastructure>

2.1.2 Delivery mechanism. The permittee shall use at least four public education delivery mechanisms each year. Permittees that are a City, Village, Town, or University with a population of 5,000 or more based on the latest U.S. census shall use at least two from the Active/Interactive Mechanisms column in Table 2 each year. Permittees that are a City, Village, Town, or University with a population less than 5,000 based on the latest U.S. census shall use at least one from the Active/Interactive Mechanisms column in Table 2 each year. Permittees that are a County shall use at least one from the Active/Interactive Mechanisms column in Table 2 each year.”

Note: Universities should average its enrolled student population plus employee population over a recent ten-year period to determine which requirement it should follow for permit compliance. Universities are also expected to undertake public education efforts that reach the entire student body and staff.

Table 2: Public Education and Outreach Delivery Mechanisms (Active and Passive)

Active/Interactive Mechanisms	Passive Mechanisms
<ul style="list-style-type: none"> • Educational activities (school presentations, summer camps) • Informational booth at event • Targeted group training (contractors, consultants, etc.) • Government event (public hearing, council meeting) • Workshops • Tours • Other 	<ul style="list-style-type: none"> • Passive print media (brochures at front desk, posters, etc.) • Distribution of print media (mailings, newsletters, etc.) via mail or email • Media offerings (radio and TV ads, press release, etc.) • Social media posts • Signage • Website • Other

2.1.3 Target audience. The permittee shall identify the target audience for each public education and outreach topic. Target audiences may include the general public, public employees, residents, businesses, contractors, developers, industries, and/or other appropriate audiences.

2.2 Public Involvement and Participation

The permittee shall maintain its public involvement and participation program, in compliance with applicable state and local public notice requirements, to notify the public of activities required by this permit and to encourage input and participation from the public regarding these activities. The permittee shall implement the following measurable goals:

2.2.1 Permit activities. The permittee shall provide a minimum of one opportunity annually for the public to provide input on each of the following permit activities: annual report, storm water management program, and if applicable, the adoption or amendment of storm water related ordinances.

2.2.2 Delivery mechanism. The permittee shall identify the public involvement and participation delivery mechanism for each permit activity in section 2.2.1. Delivery mechanisms may include public workshop, presentation of storm water information, government event (public hearing, council meeting, etc.), citizen committee meeting, or website.

2.2.3 Volunteer activities. The permittee shall implement at a minimum one of the following volunteer activities per year: group best management practice (BMP) installation or maintenance, storm drain stenciling, planting community rain garden, clean up event, stream monitoring, citizen committee meeting, public workshop, presentation of storm water information, or other hands-on event.

2.2.4 Target participants. The permittee shall identify the targeted participants for each permit activity and volunteer activity. Participants may include general public, public employees, residents, businesses, contractors, developers, industries, and/or other appropriate audience.

2.3 Illicit Discharge Detection and Elimination (IDDE)

The permittee shall continue to implement and enforce its program to detect and remove illicit connections and discharges to the MS4. The permittee shall implement the following measurable goals:

2.3.1 IDDE ordinance. 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:

- a. Prohibit illicit discharges and the discharge, spilling or dumping of non-storm water substances or materials into waters of the state or the MS4.
- b. Identify non-storm water discharges or flows that are not considered illicit discharges. Categories of 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. However, the occurrence of a discharge listed above may be considered an illicit discharge on a case-by-case basis if the permittee or the Department identifies it as a significant source of a pollutant to waters of the state.

c. 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 IDDE field screening. On-going dry weather field screening shall be conducted at 100% of the total major outfalls at least once during the term of the permit. Additionally, the permittee shall select minor outfalls for annual on-going dry weather field screening during the term of the permit. The permittee shall develop a prioritization procedure to assist with selecting minor outfalls and 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 when selecting outfalls for annual field screening. At a minimum, field screening shall be documented and include:

a. 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.

b. 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.

(1) Field screening points shall, where possible, be located downstream of any source of suspected illicit activity.

(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.

Note: The Department's MS4 Illicit Discharge Detection and Elimination guidance document includes several recommendations regarding selection of outfalls for field screening, screening frequency, indicator parameter selection, indicator parameter action levels and documentation. The Illicit Discharge Detection and Elimination guidance is available on the Department's Internet site at: <https://dnr.wi.gov/topic/stormwater/municipal/overview.html>

2.3.3 IDDE source investigation and elimination. Written procedures for responding to known or suspected illicit discharges, including an assessment of risks and the establishment to response times. At a minimum, procedures shall be established for:

a. 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.

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

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

d. Promoting, publicizing, and facilitating public reporting of illicit discharges or water quality impacts associated with discharges into or from MS4s through a central contact point, including a form, website, email address, and/or telephone number for complaints and spill reporting, and publicize to both internal permittee staff and the public.

e. 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.

f. Detecting and eliminating cross-connections and leakage from sanitary conveyance systems into the MS4.

g. Providing the Department with advanced notice of the time and location of dye testing within an MS4. Department notification prior to dye testing is required due to the likelihood that dye observed in waterways will be reported to the Department as an illicit discharge or spill.

h. Documentation of the following information:

(1) Dates and locations of IDDE screenings conducted in accordance with section 2.3.2.

(2) Reports of alleged illicit discharges received, including dates of the reports, and any follow-up actions taken by the permittee.

(3) Dates of discovery of all illicit discharges.

(4) Identification of outfalls, or other areas, where illicit discharge have been discovered.

(5) Sources (including a description and the responsible party) of illicit discharges (if known).

(6) Actions taken by the permittee, including dates, to address discovered illicit discharges.

2.3.4 The permittee shall take appropriate action to remove known illicit discharges from its MS4 system discovered under section 2.3 as soon as possible. If it will take more than 30 days to remove an illicit connection or if the potential illicit discharge is from a facility with WPDES permit coverage, the Department shall be contacted to discuss an appropriate action and/or timeframe for removal. Notwithstanding this 30-day timeframe and notification of the Department, the permittee shall be responsible for any known illicit connections to its MS4 system that are a significant risk to human health and the environment.

2.3.5 In the case of interconnected MS4s, the permittee shall notify the appropriate municipality within one working day of either of the following:

- a.** An illicit discharge that originates from the permittee's permitted area that discharges directly to a municipal separate storm sewer or property under the jurisdiction of another municipality.
- b.** An illicit discharge that has been tracked upstream to the interconnection point with or outfall from another municipality.

2.3.6 The name, title and phone number of the individuals responsible for responding to reports of illicit discharges and spills shall be included in the illicit discharge response procedure.

2.4 Construction Site Pollutant Control

The permittee shall continue to implement and enforce its program to reduce the discharge of sediment and construction materials from construction sites. The permittee shall implement the following measurable goals:

2.4.1 Construction site ordinance. An ordinance or other regulatory mechanism to require erosion and sediment control at construction sites and establish sanctions to ensure compliance. At a minimum, the ordinance or other regulatory mechanism shall establish or include:

- a.** Applicability and jurisdiction, pursuant to the authority provided to the permittee under Wisconsin statutes, the ordinance 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.
- b.** Requirements for design and implementation of erosion and sediment control practices consistent with the criteria of those approved by the Department.

Note: Department approved erosion and sediment control technical standards may be found on the Department's Internet site at:

https://dnr.wi.gov/topic/stormwater/standards/const_standards.html

c. Construction site performance standards equivalent to those in ss. NR 151.11(6m), (7), and (8), and 151.23(4m), (5), and (6), Wis. Adm. Code, to achieve the following measurable goals:

(1) BMPs for construction sites that, by design, discharge no more than 5 tons per acre per year, or to the maximum extent practicable, of the sediment load carried in runoff from initial grading to final stabilization.

(2) BMPs for transportation facilities that, by design, discharge no more than 5 tons per acre per year, or to the maximum extent practicable, of the sediment load carried in runoff from initial grading to final stabilization.

Note: The requirements for erosion and sediment control practices, sediment performance standards, and preventive measures for non-transportation facilities can be found in s. NR 151.11(6m), Wis. Adm. Code, and for transportation facilities can be found in NR. 151.23(4m), Wis. Adm. Code.

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

e. Inspection and enforcement authority.

f. 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 to reduce adverse impacts to waters of the state.

Note: In accordance with section 2.10, when a town demonstrates to the Department that an adequate county ordinance that meets the requirements of this permit is administered and enforced within its town, then the town may be excused from having to adopt its own ordinance. Model ordinances for construction site erosion and sediment control can be found in ch. NR 152, Wis. Adm. Code: https://docs.legis.wisconsin.gov/code/admin_code/nr/100/152

2.4.2 Erosion and sediment control plan review. Written procedures for construction site plan review which incorporate consideration of potential water quality impacts. Preconstruction erosion control plan reviews shall be conducted for all construction sites with greater than one acre of land disturbance.

2.4.3 Administrative procedures. Written procedures for the administration of the construction site pollutant control program including the process for obtaining local approval, managing and responding to complaints, tracking regulated construction sites, and construction site plan receipt and consideration of information submitted by the public.

2.4.4 Construction site inspections and enforcement. Written procedures for construction site inspection and enforcement of erosion and sediment control measures. By April 1, 2020, at a minimum, the procedures shall establish:

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

Note: The Department recommends that municipal construction site inspectors obtain certification as a Soil Erosion Inspector pursuant to s. SPS 305.63, Wis. Adm. Code, for more information:

<https://dsps.wi.gov/Pages/Professions/SoilErosionInspector/Default.aspx>

b. Construction site inspection frequency. The permittee shall inspect all construction sites, at a minimum, in accordance with the frequency specified in Table 3 below.

Table 3: Construction Site Inspection Frequency

Site	Inspection Frequency
(1) All sites one acre or more in size	<ul style="list-style-type: none"> • New projects shall be inspected within the first two weeks of commencement of land disturbing activity • All active sites shall be inspected at least once every 45 days • All inactive sites shall be inspected at least once every 60 days
(2) Follow up inspection	<ul style="list-style-type: none"> • Follow up inspections are required within 7 days of any sediment discharge or inadequate control measure, unless corrections were made and observed by the inspector during initial inspection or corrections were verified via photographs submitted to the inspector
(3) Final inspection	<ul style="list-style-type: none"> • Confirm that all graded areas have reached final stabilization and that all temporary control measures are removed, and permanent storm water management BMPs are installed as designed

c. Construction site inspection documentation. Compliance with the inspection requirements in 2.4.4.a. and b. above, shall be determined by proper documentation and maintenance of records of an established inspection program designed to inspect all sites.

Note: The Department’s Construction Site Inspection Report (Form 3400-187) may be used to document inspections. The form can be found on the Department’s Internet site at: <https://dnr.wi.gov/topic/Stormwater/construction/forms.html>

d. Enforcement mechanisms that will be used to obtain compliance.

2.5 Post-Construction Storm Water Management

The permittee shall continue to implement and enforce its program to require control of the quality of discharges from areas of new development, infill, and redevelopment, after construction is completed. The permittee shall implement the following measurable goals:

2.5.1 Post-construction storm water ordinance. An ordinance or other regulatory mechanism to regulate post-construction storm water discharges from new development and redevelopment. At a minimum, the ordinance or other regulatory mechanism shall establish or include:

a. Applicability and jurisdiction, pursuant to the authority provided to the permittee under Wisconsin statutes, the ordinance 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.

b. Requirements for design and implementation of post-construction storm water management control practices consistent with the criteria of those approved by the Department.

Note: Department approved post-construction storm water management control technical standards may be found on the Department's Internet site at:

https://dnr.wi.gov/topic/stormwater/standards/postconst_standards.html

c. For new development and infill, post-construction performance standards equivalent to those in ss. NR 151.122 through 151.126 and 151.242 through 151.246, Wis. Adm. Code, that meet the measurable goals for pollutant removal and post-construction storm water treatment. Post-construction performance standards for new development and infill may be more restrictive than those required in this section 2.5.1.c. if necessary to comply with federally approved TMDL requirements.

d. For redevelopment, post-construction performance standards equivalent to or more restrictive than those in ss. NR 151.122 through 151.126 and 151.242 through 151.246, Wis. Adm. Code, that meet the measurable goals for pollutant removal and post-construction storm water treatment.

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

f. Long-term maintenance requirements for landowners and other persons responsible for long-term maintenance of post-construction storm water control measures, including requirements for routine inspection and maintenance of privately owned post-construction storm water control measures that discharge to the MS4 to maintain their pollutant removal operating efficiency.

g. Inspection and enforcement authority.

Note: In accordance with section 2.10, when a town demonstrates to the Department that an adequate county ordinance that meets the requirements of this permit is administered and enforced within its town, then the town may be excused from having to adopt its own ordinance. Model ordinances for post-construction storm water management can be found in ch. NR 152, Wis. Adm. Code: https://docs.legis.wisconsin.gov/code/admin_code/nr/100/152

2.5.2 Administrative procedures. Written procedures for the administration of the post-construction storm water management program including the process for obtaining local approval and responding to complaints.

2.5.3 Storm water management plan review. Written procedures for post-construction site plan review which incorporate consideration of potential water quality impacts. Post-construction site plan reviews shall be conducted for all construction sites with greater than one acre of land disturbance.

Note: The Department recommends that municipal staff reviewing plans obtain training on post-construction plan review.

2.5.4 Long-term maintenance, inspections and enforcement. Written procedures that will be used by the permittee through its ordinance jurisdiction, approval process, and authority to, at a minimum, track and enforce the long-term maintenance of storm water management facilities implemented to meet the applicable post-construction performance standards in section 2.5.1.c and d of this permit. The procedures shall include:

- a. A mechanism for tracking regulated sites.
- b. At a minimum, long-term maintenance inspections shall occur once per permit term.
- c. Inspection documentation.
- d. Follow up enforcement with timeframes for corrective maintenance.

2.6 Pollution Prevention

The permittee shall continue to implement its pollution prevention program to prevent or reduce pollutant runoff from the MS4 to waters of the state. The permittee shall implement the following measurable goals:

2.6.1 Storm water management facilities. Update and maintain an inventory of municipally owned or operated storm water BMPs such as wet detention ponds, bioretention devices, infiltration basins and trenches, permeable pavement, proprietary sedimentation devices, vegetated swales, or any similar practices or devices used to meet a water quality requirement under this permit. At a minimum, the inventory shall be maintained in a tabular format and contain the following information for each structural storm water facility:

- a. A key corresponding to the location of the BMP on the storm sewer system map required under section 2.8.
- b. The name and a description of the BMP, including the type and year constructed.
- c. A confirmation of whether each of the following elements exist or are not available:
 - (1) An operation and maintenance plan with inspection procedures and schedule.
 - (2) A record drawing.

Note: A record drawing is a complete clean set of drawings that accurately reflect how the final practice was built.

(3) If using a BMP to meet a water quality requirement in this permit and the BMP is owned by another entity, written documentation exists that the permittee has permission from the owner to use the BMP for this purpose.

2.6.2 For each BMP inventoried under section 2.6.1, the permittee shall develop and implement a maintenance plan with inspection procedures and schedule to maintain the pollutant removal operating efficiency of the practice in compliance with any water quality requirement under this permit. Documentation of inspections and maintenance activities shall be maintained.

Note: Chapter NR 528, Wis. Adm. Code, *Management of Accumulated Sediment from Storm Water Management Structures*, establishes a process to regulate sediment removal and use to help storm water pond owners manage storm water pond sediment. Information on NR 528 and managing accumulated sediment from storm water ponds is available through the Department's Internet site at: <https://dnr.wi.gov/topic/waste/nr528.html>

2.6.3 Municipally owned public works facilities. The storm water pollution prevention plans (SWPPPs) for municipal garages, municipal storage areas, and other public works related municipal facilities located within the permitted area shall be maintained and updated annually as needed and shall include the information in sections 2.6.3.a. When a SWPPP is updated, it shall be submitted to the Department with the annual report.

a. SWPPPs shall include the following information:

(1) The physical locations of each facility with a key corresponding to the locations on the storm sewer system map required under section 2.8.

(2) The contact information for the individuals with overall responsibility for each facility.

(3) A map of each facility, drawn to scale, and including the following features:

i. The locations and descriptions of major activities and storage areas.

ii. Identification of drainage patterns, potential sources of storm water contamination, and discharge points.

iii. Identification of nearby receiving waters or wetlands.

iv. Identification of connections to the permittees MS4.

(4) A description of procedures, good housekeeping activities, and any BMPs installed to reduce or eliminate storm water contamination.

(5) A maintenance plan with inspection procedures and schedule for each facility to identify deficiencies, necessary improvements and/or repairs, assess effectiveness, and address new or unaddressed potential sources of storm water contamination.

(6) Spills prevention and response standard operating procedures.

b. The permittee is not required to comply with section 2.6.3 if the permittee certifies that the municipal facility qualifies for no exposure with the Department's concurrence.

(1) No exposure means that the facility shall have all materials and activities protected by a storm-resistant shelter to prevent exposure to storm water. Materials or activities include material handling equipment or activities, industrial machinery, raw materials, intermediate products, by-products, final products or waste products. Material handling activities include the storage, loading and unloading, transportation or conveyance of any raw material, intermediate product, final product or waste product.

(2) The permittee shall certify for no exposure for each facility at least once each permit term. The permittee shall submit a letter requesting no exposure, an inspection report of the site, and photos of all materials or activities at the site. The photo locations shall be labeled on an aerial photo diagram.

2.6.4 Measures to reduce municipal sources of storm water contamination within source water protection areas.

Note: Wisconsin's source water assessment program information may be found on the Department's Internet site at:
<https://dnr.wi.gov/topic/drinkingwater/sourcewaterprotection.html>

2.6.5 Collection services/Storm sewer system maintenance activities.

a. Street sweeping. If routine street sweeping is utilized to meet a water quality requirement under this permit, the permittee shall maintain documentation of the number and type of equipment used, standard operating procedures, an estimate of the number of lane-miles swept annually, and an estimate of the weight in tons of material collected annually.

b. Catch basins. If routine cleaning of catch basins with sumps is utilized to meet a water quality requirement under this permit, the permittee shall maintain documentation of the number of catch basins inspected, the number of catch basins cleaned, standard operating procedures, and an estimate of the weight in tons of material collected annually.

c. Material handling and disposal. Material collected under a. and b. of this section shall be handled and stored in a manner that prevents contamination of storm water runoff and shall be disposed of or beneficially reused in accordance with applicable solid and hazardous waste statutes and administrative codes. Non-storm water discharges to waters of the state associated with dewatering and drying material collected under sections a. and b. of this section are not authorized by this permit.

Note: Information on managing waste and materials is available on the Department's Internet site at: <https://dnr.wi.gov/topic/Waste/>. Information on WPDES permits for non-storm water discharges is available on the Department's Internet site at: <https://dnr.wi.gov/topic/wastewater/>

d. Leaf management. Proper management of leaves and grass clippings from municipally-owned properties and private property. The program may include instructions to private property owners for on-site composting, on-site beneficial reuse, or yard waste drop-off as opposed to a municipal collection program. On-site management and/or drop-off shall be communicated to private property owners in accordance with the public education and outreach program implemented under section 2.1 of this permit. If the permittee has a municipal collection program, collected material shall be handled and stored in a manner that prevents contamination of storm water runoff. For a municipal leaf collection program, the permittee shall maintain the following documentation:

(1) A description of the leaf collection program, including the type of pick-up methodology and equipment used, timing of associated street cleaning, standard operating procedures, schedule and frequency, and instructions for private property owners.

(2) An estimate of the weight in tons of material collected annually.

(3) Municipally operated leaf disposal locations with a key corresponding to the locations on the storm sewer system map required under section 2.8. If the disposal location is outside of the MS4 boundary, then the permittee can provide documentation if the disposal is taken elsewhere.

Note: The Department has developed "Interim Municipal Phosphorus Reduction Credit for Leaf Management Programs" guidance to assist permitted MS4s on creditable phosphorus reduction through leaf collection and management. The guidance document may be found on the Department's Internet site at: https://dnr.wi.gov/topic/stormwater/standards/ms4_modeling.html

2.6.6 Winter Road Management. If road salt or other deicers are applied by the permittee or a contractor on behalf of the permittee, no more shall be applied than necessary to maintain public safety. Documentation on deicing activities shall be performed by the permittee or a contractor on behalf of the permittee and include the following:

a. Contact information for the individuals with overall responsibility for winter roadway maintenance.

b. A description of the types of deicing products used.

c. The amount of deicing product used per month.

d. A description of the type of equipment used.

e. An estimate of the number of lane-miles treated with deicing products for the roadways that the permittee is responsible for, and an estimate in acres of the total area of municipally-owned parking lots treated with deicing products by the permittee or contractor.

f. If applicable, snow disposal locations with a key corresponding to the locations on the storm sewer system map required under section 2.8.

Note: Snow treatment and disposal guidance for municipalities is available through the Department's Internet site at: <https://dnr.wi.gov/topic/stormwater/publications.html>

g. A description of anti-icing, pre-wetting and brining, equipment calibration, pavement temperature monitoring, and/or salt reduction strategies implemented or being considered, and/or alternative products.

h. Other measurable data or information that the permittee uses to evaluate or modify its deicing activities.

Note: The Wisconsin Department of Transportation (WisDOT) Highway maintenance manual - Chapter 6, contains guidelines on winter maintenance including application of road salt and other deicers. Chapter 6 is available on the WisDOT's Internet site at: <https://wisconsindot.gov/Pages/doing-bus/local-gov/hwy-mnt/mntc-manual/chapter06.aspx>. The WisDOT highway salt storage requirements are contained in ch. Trans 277, Wis. Adm. Code.

2.6.7 Nutrient management. Application of turf and garden fertilizers on municipally controlled properties (such as parks, athletic fields, golf courses), with pervious surfaces over 5 acres each, in accordance with a site-specific nutrient application schedule based on appropriate soil tests.

Note: To assist permittees with this requirement, the Department has developed a technical standard for turf nutrient management. These documents may be found on the Department's Internet site at: https://dnr.wi.gov/topic/stormwater/standards/turf_nutrient.html

2.6.8 Environmentally sensitive development. Consideration of environmentally sensitive land development designs for municipal projects, including green infrastructure and low impact development, which shall be designed, installed, and maintained to comply with a water quality requirement under this permit.

Note: Additional information on green infrastructure and low impact development may be found on the following USEPA Internet sites:

<https://www.epa.gov/green-infrastructure>
<https://www.epa.gov/nps/urban-runoff-low-impact-development>

2.6.9 Internal training and education. At a minimum, the permittee shall hold one annual training event for appropriate municipal staff and other personnel involved in implementing each of the elements of the pollution prevention program under this section 2.6. Documentation shall be maintained of the date, the number of people attending the training, the names of each person attending and a summary of their responsibilities, and the content of the training. The permittee shall inform contractors performing any services to implement

section 2.6 of the permit requirements and expectations. The permittee shall also inform their elected officials of the permit requirements and expectations.

2.7 Storm Water Quality Management

The permittee shall implement its municipal storm water quality management program. This program shall maintain compliance with the developed urban area performance standards of s. NR 151.13(2)(b)1., Wis. Adm. Code, for those areas of the municipality that were not subject to the post-construction performance standards of ss. NR 151.12 or 151.24, or ss. NR 151.122 through 151.126, or ss. 151.242 through 151.246, Wis. Adm. Code. The permittee shall implement the following measurable goals:

2.7.1 To the maximum extent practicable, implementation and maintenance of all storm water management practices necessary to meet the more restrictive total suspended solids reduction of either of the following:

a. The permittee shall maintain all source area controls, structural storm water management facilities, and non-structural storm water BMPs that the permittee implemented on or before July 1, 2011, to achieve a reduction of 20% or more of total suspended solids carried by storm water runoff from existing development to waters of the state. If the permittee removes or modifies a storm water BMP, the permittee shall continue to achieve the reduction by installing, implementing, and maintaining the necessary storm water BMPs to, at a minimum, equal the same level of treatment. All structural storm water management facilities utilized to meet the requirements in section 2.7.1.a shall be inventoried and maintained in accordance with sections 2.6.1 and 2.6.2.

b. 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. All source area controls, structural storm water management facilities, and non-structural storm water BMPs implemented to achieve the 20% reduction in total suspended solids shall be maintained. If the permittee removes or modifies a storm water BMP, the permittee shall continue to achieve the 20% reduction by installing, implementing, and maintaining the necessary storm water BMPs to equal, at a minimum, the same level of treatment. All structural storm water management facilities utilized to meet the requirements in section 2.7.1.b shall be inventoried and maintained in accordance with sections 2.6.1 and 2.6.2.

Note: The total suspended solids reduction requirement applies to storm water runoff from areas of urban land use and is not applicable to agricultural or rural land uses and associated roads. Additional MS4 modeling guidance for modeling the total suspended solids control is available on the Department's Internet site at: https://dnr.wi.gov/topic/stormwater/standards/ms4_modeling.html. The permittee may elect to meet the applicable total suspended solids standard above on a watershed or regional basis by working with other permittees to provide regional treatment that collectively meets the standard.

2.8 Storm Sewer System Map

The permittee shall maintain its MS4 map. The storm sewer system map shall be updated annually as needed for changes occurring in the permitted area boundaries. The municipal storm sewer system map shall include:

2.8.1 Identification of waters of the state, name and classification of receiving waters, 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 the municipal separate storm sewer conveyance systems including direction of flow.

2.8.2 Identification of any known wetlands, endangered or threatened resources, and historical property, 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 total suspended solids credit for pollutant removal from privately-owned facilities, they shall 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 for each calendar year to the Department by **March 31 of the following year**. 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 An evaluation of program compliance, the appropriateness of identified BMPs, and progress towards achieving identified measurable goals. Any program changes made as a result of this evaluation shall be identified and described in the annual report. For any identified deficiencies towards achieving the requirements under section 2 of this permit or lack of progress towards meeting a measurable goal, the permittee shall initiate program changes to improve their effectiveness.

2.9.6 If applicable, notice that the permittee is relying on another municipality or entity to satisfy any of the permit requirements and a description of the arrangement where a permit requirement is being met in this manner.

2.9.7 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.

2.9.8. The annual report and other required reports, and permit compliance documents shall be submitted electronically through the Department's electronic reporting system.

Note: The Department's electronic reporting system is Internet-based and available at: <https://dnr.wi.gov/permits/water/>. Municipal storm water permit eReporting information and user support tools can be found at: <https://dnr.wi.gov/topic/stormwater/municipal/eReporting.html>

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. The permittee is ultimately responsible for compliance with the conditions of this permit. The permittee may rely on another municipality or contract with another entity to satisfy a condition of this permit if all of the following are met:

2.10.1 The other municipality or entity implements the required control measure or permit requirement.

2.10.2 A particular control measure, or component thereof, is at least as stringent as the corresponding permit requirement.

2.10.3 The other municipality or entity agrees to implement a control measure or permit requirement on the permittee's behalf. This shall be shown by formal written agreement, signed by both parties' authorized representatives. The agreement shall be explicit as to which specific permit conditions are being covered by which municipality or other entity. Copies of current agreements shall be submitted with the annual report or to the Department upon request.

Note: If a county is implementing and enforcing adequate storm water ordinances within a town, the town would then not have to adopt its own ordinance. However, the town, as the permittee, is still expected to evaluate how the county is implementing and enforcing the ordinance in the town's permitted area, to verify the county is meeting the permit condition. Another example, if another entity agrees to implement the permit condition of long-term maintenance inspections, the permittee must

evaluate that the entity is completing inspections as agree upon. The permittee should not assume that another entity is implementing a permit condition as required because the permittee remains responsible for compliance with the conditions of this permit.

2.11 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.

2.12 Reapplication for Permit Coverage

To remain covered after the expiration date of this permit, pursuant to s. NR 216.09, Wis. Adm. Code, the permittee shall reapply to the Department at least 180 days prior to the expiration date of this permit for continued coverage under a reissued version of this permit.

3. COMPLIANCE SCHEDULE

The permittee shall comply with the specific permit conditions contained in sections 1 and 2 according to the schedule in this section 3 and Table 4. The permittee shall begin implementing any updates to its storm water management programs no later than March 31, 2021. Required reports and permit compliance documents shall be submitted electronically through the Department's electronic reporting system.

Note: The Department's electronic reporting system is Internet-based and available at: <https://dnr.wi.gov/permits/water/>. Municipal storm water permit eReporting information and user support tools can be found at: <https://dnr.wi.gov/topic/stormwater/municipal/eReporting.html>

3.1 Impaired Waterbodies and Total Maximum Daily Loads

3.1.1 The permittee shall determine whether any part of its MS4 discharges to an impaired waterbody as required under section 1.5.1 of this permit **by March 31 of each odd-numbered year.**

3.1.2 If the permittee is subject to TMDL requirements under section 1.5 of this permit, the permittee shall submit information to the Department in accordance with the schedule as required in the applicable appendix of this permit.

3.2 Public Outreach and Education

The permittee shall submit to the Department the public education and outreach program developed for the term of this permit as required under section 2.1 of this permit **by March 31, 2021.**

3.3 Public Involvement and Participation

The permittee shall submit to the Department the public involvement and participation program developed for the term of this permit as required under section 2.2 of this permit **by March 31, 2021.**

3.4 Illicit Discharge Detection and Elimination

The permittee shall submit to the Department the illicit discharge detection and elimination program developed for the term of this permit as required under section 2.3.2 to 2.3.6 of this permit **by March 31, 2021.**

3.5 Construction Site Pollutant Control

The permittee shall submit to the Department the construction site pollutant control program developed for the term of this permit as required under sections 2.4.2 to 2.4.4 of this permit **by March 31, 2021.**

3.6 Post-Construction Storm Water Management

The permittee shall submit to the Department the post-construction storm water management program developed for the term of this permit as required under sections 2.5.2 to 2.5.4 of this permit **by March 31, 2021.**

3.7 Pollution Prevention

3.7.1 The permittee shall submit to the Department the municipal storm water management facility inventory as required under section 2.6.1 of this permit by **March 31, 2021**. Include with the annual report submittal via the Department's electronic reporting system. When the inventory is updated, it shall be submitted by **March 31 of each year** to the Department.

3.7.2 The permittee shall submit to the Department the maintenance plan for municipal storm water management facilities as required under section 2.6.2 of this permit by **March 31, 2021**.

3.7.3 The permittee shall update SWPPPs for municipally owned properties as needed as required under section 2.6.3 of this permit. When a SWPPP is updated, it shall be submitted by **March 31 of each year** to the Department.

3.8 Storm Water Quality Management

The permittee shall report compliance with the developed urban area performance standards as required under section 2.7 of this permit by **March 31 of each year**.

3.9 Storm Sewer System Map

The permittee shall update the storm sewer system map as needed as required under section 2.8 of this permit. When the MS4 map is updated, it shall be submitted by **March 31 of each year** to the Department.

3.10 Annual Report

The permittee shall submit to the Department an annual report as required under section 2.9 of this permit for each calendar year by **March 31 of the following year**. The annual report and other required reports, and permit compliance documents shall be submitted electronically through the Department's electronic reporting system.

Table 4: Compliance Schedule for Permit Requirements

PERMIT SECTION	ACTIVITY	COMPLIANCE DATE	COMMENTS
Section 1.5.1	Identify discharges to an impaired waterbody	By March 31 of each odd-numbered year thereafter	All permittees
Section 1.5.2	Total maximum daily load implementation	See applicable Appendix.	Applies to a permittee with an MS4 discharge of a pollutant of concern to a waterbody subject to an USEPA approved TMDL that assigns the permittee a wasteload allocation.
Section 2.1	Public Education and Outreach – Submit public education and outreach program for the permit term with annual report	March 31, 2021	All permittees
Section 2.2	Public Involvement and Participation – Submit public involvement and participation program for the permit term with annual report	March 31, 2021	All permittees
Section 2.3.2 to 2.3.6	Illicit Discharge Detection and Elimination – Submit illicit discharge detection and elimination program for the permit term with annual report	March 31, 2021	All permittees
Section 2.4.2 to 2.4.4	Construction Site Pollutant Control – Submit construction site pollutant control program for the permit term with annual report	March 31, 2021	All permittees
Section 2.5.2 to 2.5.4	Post-Construction Storm Water Management – Submit post-construction storm water management program for the permit term with annual report	March 31, 2021	All permittees
Section 2.6	Pollution Prevention – Section 2.6.1, submit the municipal storm water management facility inventory with annual report	March 31, 2021, and annually thereafter (if updates)	All permittees
	Pollution Prevention – Section 2.6.2, submit the maintenance plan for municipal storm water management facilities with annual report	March 31, 2021	All permittees
	Pollution Prevention – Section 2.6.3, submit SWPPPs for municipally owned properties with annual report	March 31 of each year reporting on previous calendar year (if updates)	All permittees

Section 2.7	Storm Water Quality Management – Report TSS percent reduction	March 31 of each year reporting on previous calendar year	All permittees
Section 2.8	Storm sewer system map - Submit map with annual report	March 31 of each year reporting on previous calendar year (if updates)	All permittees
Section 2.9	Submit Annual Report	March 31 of each year reporting on previous calendar year	All permittees

4. GENERAL 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), Wis. Adm. Code, which does not apply to facilities covered under general permits. Some of these requirements are outlined below. 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 Wisconsin 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 General Conditions sections 3.3, 3.4.1, or 3.6. shall be submitted with the annual report. The reports shall contain all the information listed in General Conditions section 3.4.1.

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 s. 292.11(2)(a), Wis. Stats., which requires any person who possesses or controls a hazardous substance or who causes the discharge of a hazardous substance to notify the DNR immediately of any discharge not

authorized by the permit. The discharge of a hazardous substance that is not authorized by this permit or that violates this permit may be a hazardous substance spill. To report a hazardous substance spill, call the DNR's 24-hour HOTLINE at 1-800-943-0003.

Note: For details on state and federal reportable quantities, visit:

<https://dnr.wi.gov/topic/Spills/define.html>

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 a storm water treatment facility if necessary for human safety or maintenance to assure efficient operation. A bypass shall comply with the general storm water discharge limitations in Section 1.9 of this permit. Notification of the Department is not required for these types of bypasses. Any other bypass is prohibited.

Note: A discharge from a storm water treatment facility that exceeds the operational design capacity of the facility is not considered a bypass.

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, terminating, suspending revoking or reissuing the permit or to determine compliance with the permit. The permittee shall give advance notice to the Department of any planned changes to the storm water management program which may result in noncompliance with permit requirements. 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. The permittee shall retain records documenting implementation of the minimum control measures in sections 2.1 through 2.6 of this permit for a period of at least 5 years from the date the record was generated.

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. If the permittee files a request for a permit modification, termination, suspension, revocation and reissuance, or submits a notification of planned changes or anticipated noncompliance, this action by itself does not relieve the permittee of any permit condition.

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.

4.20 Continuation of the Expired General Permit: The Department's goal is to reissue this general permit prior to its expiration date. However, in accordance with s. NR 216.09, Wis. Adm. Code, a permittee shall reapply to the Department at least 180 days prior to the expiration date for continued coverage under this permit after its expiration. If the permit is not reissued by the time the existing permit expires, the existing permit remains in effect.

4.21 Need to Halt or Reduce Activity not a Defense: It is not a defense for a permittee in an enforcement action to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

5. DEFINITIONS USED IN THIS PERMIT

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

5.1 Department means the Wisconsin Department of Natural Resources.

5.2 Development means residential, commercial, industrial and institutional land uses and associated roads.

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 or combination of substances including any waste of a solid, semisolid, liquid or gaseous form which may cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or 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. This term includes, but is not limited to, substances which are toxic, corrosive, flammable, irritants, strong sensitizers or explosives as determined by the Department.

5.5 Illicit connection means any man-made conveyance connecting an illicit discharge to a municipal separate storm sewer system.

5.6 Illicit discharge means any discharge to a municipal separate storm sewer system 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, diverted stream flows, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, lawn watering, flows from riparian habitats and wetlands, and similar discharges. However, the occurrence of a discharge listed above may be considered an illicit discharge on a case-by-case basis if the permittee or the Department identifies it as a significant source of a pollutant to waters of the state.

5.7 Impaired water means a waterbody impaired in whole or in part and listed by the Department pursuant to 33 USC § 1313(d)(1)(A) and 40 CFR 130.7, for not meeting a water quality standard, including a water quality standard for a specific substance or the waterbody's designated use.

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

5.9 Jurisdiction means the area where the permittee has authority to enforce its ordinances 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 clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.

5.11 Maximum Extent Practicable has the meaning given it in s. NR 151.002(25), Wis. Adm. Code.

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 from an 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 municipal separate storm sewer system that receives storm water runoff from lands zoned for 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.

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.

5.14.4 Which is not part of a publicly owned wastewater treatment works that provides secondary or more stringent treatment.

5.15 New MS4 discharge of a pollutant means an MS4 discharge that would first occur after the permittee's original date of initial coverage under an MS4 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.

5.16 Outfall means the point at which storm water is discharged to waters of the state or to a storm sewer (e.g., leaves one municipality and enters another).

5.17 Permittee means a person who has applied for and received WPDES permit coverage for storm water discharge. For the purposes of this permit, permittee is the owner or operator of a municipal separate storm sewer system authorized to discharge storm water into waters of the state.

5.18 Permitted area means the areas of land under the jurisdiction of the permittee that drains into a municipal separate storm sewer system, which is regulated under a permit issued pursuant to subch. I of NR 216, Wis. Adm. Code.

5.19 Pollutants of concern means a pollutant that is causing impairment of a waterbody.

5.20 Reach means a specific stream segment, lake or reservoir as identified in a TMDL.

5.21 Reachshed means the drainage area contributing runoff to a given reach.

5.22 Redevelopment means areas where development is replacing older development.

5.23 Riparian landowners are the owners of lands bordering lakes and rivers.

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

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

5.26 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.

5.27 Storm Water Pollution Prevention Plan or SWPPP 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.

5.28 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.

5.29 Total maximum daily load or TMDL means the amount of pollutants specified as a function of one or more water quality parameters, that can be discharged per day into a water quality limited segment and still ensure attainment of the applicable water quality standard.

5.30 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.

5.31 Wasteload Allocation or WLA means the allocation resulting from the process of distributing or apportioning the total maximum load to each individual point source discharge.

5.32 Waters of the State has the meaning given it in s. 283.01(20), Wis. Stats.

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

Appendix A: MS4 Permittees Subject to a TMDL Approved Prior to May 1, 2014 including Applicable Updates

A.1 Applicability and Structure of Appendix.

A.1.1 Applicability. In accordance with section 1.5.2.a, this Appendix A applies to permittees subject to a total maximum daily load (TMDL) approved by the United States Environmental Protection Agency (USEPA) prior to May 1, 2014, that includes the following:

- “Total Maximum Daily Loads for Total Phosphorus and Total Suspended Solids in the Rock River Basin,” approved by USEPA September 2011
- “Total Maximum Daily Load and Watershed Management Plan for Total Phosphorus and Total Suspended Solids in the Lower Fox River Basin and Lower Green Bay,” approved by USEPA May 2012
- “Lake St. Croix Nutrient Total Maximum Daily Load,” approved by USEPA August 2012
- “Phosphorus Total Maximum Daily Loads (TMDLs) Tainter Lake and Lake Menomin, Dunn County Wisconsin,” approved by USEPA September 2012

In addition to the TMDLs listed above, Appendix A also applies to the following:

- “Beaver Dam Lake Total Maximum Daily Load for Total Phosphorus,” approved by USEPA August 2018

Note: The Beaver Dam Lake TMDL updates allocations from the Rock River Basin TMDL for the City of Beaver Dam and provides higher allocations, lower percent reductions, than those contained in the Rock River Basin TMDL approved in September 2011.

Note: If the MS4 area extends into or discharges to other basins with a USEPA approved TMDL, a permittee could be subject to more than one TMDL and thus the requirements under Appendices B and/or C.

A.1.2 Structure of Appendix. This appendix is structured to provide permittees with several compliance options. Section A.2 defines full TMDL compliance while sections A.3, A.4, and A.5 provide different compliance options. Section A.3 applies to permittees that submitted a plan meeting the requirements contained in sections 1.5.4.4 and 1.5.4.5 of WPDES Permit No. WI-S050075-2 or WI-S050181-1 and received Department concurrence regarding the plan. Section A.3 also applies to permittees that are participating in an approved adaptive management plan. Section A.4 details requirements for permittees that can comply with the TMDL during this permit term. Section A.5 applies to permittees who have not been able to utilize sections A.3 or A.4. Section A.5 contains two compliance tracks; permittees may choose between the requirements stipulated under section A.5.2 or meet the requirements under section A.5.3. Section A.6 outlines reporting requirements.

A.2 Full TMDL Compliance.

A.2.1 USEPA is allowing the Department to evaluate MS4 compliance with TMDL Wasteload Allocations (WLAs) using a percent reduction framework consistent with Wisconsin’s storm

water program. For consistency with existing storm water program requirements, demonstration of TMDL compliance will use the percent reduction measured from the no runoff management controls (no-controls) condition. The percent reduction from no-controls, for each pollutant of concern and reachshed, necessary to meet the TMDL WLAs for the USEPA approved TMDLs are listed in Tables A1-A4. The no-controls modeling condition means taking no (zero) credit for existing storm water control measures that reduce the discharge of pollutants. Existing practices can then be applied and counted toward meeting the TMDL reductions.

A.2.2 TMDLs may assign a percent reduction for one or more reachsheds for each pollutant of concern (i.e., total suspended solids (TSS) and total phosphorus (TP)). Full TMDL compliance is achieved by the permittee provided all of the following conditions are met:

- a. By October 31, 2023, the permittee submits the necessary data and documentation to the Department that demonstrates that the permittee meets the percent reductions stipulated in Tables A1-A4 for each reachshed that the MS4 discharges to and for each pollutant of concern.
- b. The documentation submitted by the permittee includes the policies, procedures, and regulatory mechanisms that the permittee will employ to ensure that storm water controls and management measures will continue to be operated and maintained so that their pollutant removal efficiency continues to be met.
- c. Based upon the data and documentation and any necessary subsequent information requested by the Department, the permittee receives written concurrence from the Department by April 30, 2024, that the permittee has achieved full TMDL compliance.

A.3 Implementation of TMDL Compliance Plan or Participation in an Approved Adaptive Management Plan.

A.3.1 If the permittee submitted a TMDL Implementation Plan meeting the requirements contained in sections 1.5.4.4 and 1.5.4.5 of WPDES Permit No. WI-S050075-2 or WI-S050181-1 and has received Department concurrence regarding the plan, the permittee shall implement the plan as its TMDL Compliance Plan.

A.3.2 In accordance with s. 283.13(7), Wis. Stats., and s. NR 217.18, Wis. Adm. Code, if by the effective date of this permit the permittee has chosen to participate in an Adaptive Management project that has been approved by the Department the permittee shall continue to participate in the implementation of the Adaptive Management project.

A.4 Compliance During the Term of This Permit. If the permittee determines that it can meet the requirements stipulated in section A.2.2 by October 31, 2023, the permittee shall meet all the following:

A.4.1 By March 31, 2020, the permittee shall notify the Department if compliance will be achieved by October 31, 2023.

A.4.2 Consistent with the reporting requirements contained in section A.6, the permittee shall submit written verification that it has met the applicable requirements contained in section A.2.2.

A.5 Compliance Over Multiple Permit Terms. If the permittee cannot meet the requirements stipulated under sections A.3 or A.4, the permittee shall demonstrate continued progress towards compliance with the requirements contained in section A.2.2. During the term of this permit, the following are required:

A.5.1 By March 31, 2020, if the permittee determines that the applicable requirements contained in section A.2.2 will not be achieved by October 31, 2023, then the permittee shall notify the Department in writing which reachsheds and pollutants of concern are not in compliance with the requirements contained in section A.2.2.

A.5.2 By October 31, 2021, the permittee shall submit a TMDL Implementation Plan to the Department identifying and describing the actions that the permittee shall undertake, including a proposed schedule and milestones, to achieve the following by the end of the term of this permit:

a. A level of reduction that achieves at least 20% of the remaining reduction needed beyond the current 20% TSS reduction required under s. NR 151.13 (2)(b)1.b., Wis. Adm. Code, to achieve full compliance in sediment or TSS.

b. A level of reduction that achieves at least 10% of the remaining reduction needed beyond 15% TP reduction to achieve full compliance in TP.

Note: The reductions stipulated under section A.5.2 are interim compliance targets set for this permit term. Future permit reduction targets may taper off or vary between municipalities based on individual plans as it is expected that municipalities will rely more on reductions obtained through redevelopment.

Note: Unlike full compliance as outlined in section A.2.2, compliance with the reductions stipulated under sections A.5.2.a and A.5.2.b can be achieved utilizing an averaged reduction calculated from individual reductions achieved in one or multiple reachsheds and spanning the entire MS4 area that is impacted by the TMDL.

Note: Reductions obtained through a permittee's participation in a water quality trading project, in accordance with s. 283.84, Wis. Stats., and that has been reviewed and approved by the Department, may be counted toward credit in meeting the requirements stipulated under sections A.5.2.a and A.5.2.b. Additional information on water quality trading is available from the Department's Internet site at:

<https://dnr.wi.gov/topic/surfacewater/waterqualitytrading.html>

Note: Example calculation to meet section A.5.2.a for total suspended solids (TSS)

“Municipality A” has modeled a no-controls TSS load of 50 tons/year for Reachshed 2 and 100 tons/year for Reachshed 3.

Determine Calculated Wasteload Allocation

“Municipality A” has area in Rock River TMDL Reachsheds 2 and 3. From Table A.1, the TMDL requires the following reductions from no controls which under section A.2 must ultimately achieve a mass reduction as follows:

TMDL Reachshed	Modeled TSS from No-Controls (tons/yr)	TMDL TSS Reduction from No-Controls	Ultimate Mass Reduction Required for Full TMDL Compliance (tons/yr)	Calculated Wasteload Allocation (tons/yr)
2	50	40.6%	$50 * 0.406 = 20.3$	$50 - 20.3 = 29.7$
3	100	55.6%	$100 * 0.556 = 55.6$	$100 - 55.6 = 44.4$

Determine Minimum Control Required under Section NR 151.13(2)(b)1.b., Wis. Adm. Code

TMDL Reachshed	No Controls TSS (tons/yr)	NR 151 Required Reduction (tons/yr)	NR 151 Allowable Load (tons/yr)
2	50	$50 * 0.20 = 10$	$50 - 10 = 40$
3	100	$100 * 0.20 = 20$	$100 - 20 = 80$
Total		30.0	

Calculate 20% Additional Reduction from Section NR 151.13(2)(b)1.b., Wis. Adm. Code

Under section A.5.2.a, “Municipality A” must achieve an additional 20% reduction from the current 20% TSS reduction required under s. 151.13 (2)(b)1.b., Wis. Adm. Code. As shown below, “Municipality A” needs to achieve a 20% reduction of the remaining 45.9 tons results in “Municipality A” needing to achieve an additional 9.18 tons/year in reduction.

Reachshed	NR 151 Allowable Load (tons/yr)	Calculated Wasteload Allocation (tons/yr)	Additional Reduction from NR 151 (tons/yr)	20% Additional Reduction from NR 151 (tons/yr)
2	40	29.7	$40 - 29.7 = 10.3$	$10.3 * 0.2 = 2.06$
3	80	44.4	$80 - 44.4 = 35.6$	$35.6 * 0.2 = 7.12$
Total			45.9	9.18

Load reduction at the end of permit term

At the end of the permit term, “Municipality A” should demonstrate a minimum reduction from no controls of 39.18 (30 tons plus 9.18 tons). “Municipality A” has the flexibility to decide how much of that reduction is provided in TMDL Reachshed 2 and/or 3 over the next permit term. “Municipality A” will still require additional reductions in each reachshed over subsequent permit terms to reach the calculated wasteload allocation of 29.7 tons in TMDL Reachshed 2 and 44.4 tons in TMDL Reachshed 3.

The calculation process is similar for total phosphorus (TP).

A.5.3 If the permittee determines by October 31, 2021, that it is unable to achieve the reductions stipulated under sections A.5.2.a and A.5.2.b, the permittee shall meet the following requirements by October 31, 2023:

Note: The permittee may optimize deployment of resources between the requirements listed below to maximize reductions for the least cost. In some cases, permittees may already be meeting these requirements.

a. Pursuant to the permittee's authority under s. 281.33(6)(a)2., Wis. Stats., the permittee shall create or revise and promulgate a municipal storm water management ordinance applicable to redevelopment that requires compliance with post-construction storm water management performance standards that are stricter than the uniform statewide standards established by the Department. When reporting to the Department under section A.6.3, the permittee shall include a justification for the level of pollutant reduction in the ordinance with an assessment of the progress it achieves towards full compliance with the TMDL. The redevelopment reductions may be adjusted to account for other storm water control measures that may exist. The permittee may also establish TP reduction levels for redevelopment projects.

Note: The permittee may enact an ordinance that is municipal-wide, targets individual TMDL reachsheds, or designated areas within the permitted MS4, balancing required TMDL reductions, parcel size, and the impact of other treatment options. Increasing redevelopment reductions is one tool in moving toward TMDL compliance.

b. The permittee shall create or revise a municipal ordinance that requires the development and implementation of a maintenance plan for all privately-owned storm water treatment facilities for which the permittee takes a TSS and/or TP reduction credit. The permittee shall develop and implement procedures and measures to verify and track that the storm water treatment facilities are inspected on a regular schedule and maintained in the intended working condition in accordance with the plans. The permittee shall require that maintenance agreements be recorded with the appropriate property records that obligates the current and future owners to implement the maintenance plans.

c. The permittee shall revise or promulgate a municipal ordinance that requires the submittal of record drawings for storm water management facility that the permittee takes a TSS and/or TP reduction credit. The permittee shall require submittal of the record drawing prior to close-out of the local permit or upon final approval and shall maintain appropriate records and tracking of the plans.

d. If the pollutant of concern is TP, the permittee shall implement, expand, or optimize a municipal leaf collection program coupled with street cleaning to serve areas where municipal leaf collection is not currently provided within the MS4 but for which a phosphorus reduction has been assigned and additional reductions could be achieved.

Note: The Department's "Interim Municipal Phosphorus Reduction Credit for Leaf Management Programs" guidance document includes recommendations on how the permittee's municipal leaf collection program should be designed and implemented.

The guidance is available from the Department's Internet site at:
https://dnr.wi.gov/topic/stormwater/standards/ms4_modeling.html

- e. Within the MS4 permitted area, the permittee shall inventory the condition of the conveyance systems and outfalls. Where erosion or scour is occurring, the permittee shall develop a schedule to stabilize the identified areas over a 5-year period.
- f. The permittee shall install at least one new structural BMP or enhance one or more existing structural BMPs to reduce a pollutant of concern discharged via storm water runoff to an impaired waterbody for which a WLA has been assigned to the permittee. The permittee shall develop and implement a maintenance plan for each new structural BMP.
- g. The permittee shall conduct an analysis of the current municipal street cleaning program, to determine if additional pollutant loading reductions can be achieved. The permittee shall evaluate optimizing sweeping frequency, targeting of critical areas and time periods, and instituting parking restrictions. If a pollutant reduction can be achieved through optimizing the existing street cleaning program, the permittee shall adopt the optimized program the next calendar year or provide a written explanation to the Department explaining why the optimize street cleaning program is not feasible and provide alternative options to achieve similar pollutant reductions.

A.6 Reporting Requirements. For the term of this permit, the permittee shall meet the following reporting requirements:

A.6.1 Compliance Determination Reporting. The permittee shall submit the information requested in this appendix in accordance with the following schedule:

- a. By March 31, 2020, for sections A.4.1 and A.5.1.
- b. By October 31, 2021, for section A.5.2.
- c. By October 31, 2023, for sections A.2.2.a and A.5.3.

A.6.2 Annual Reporting. For compliance options outlined under sections A.3, A.4, and A.5, the permittee shall include a description and the status of progress toward implementing the identified actions and activities in their MS4 annual reports due by March 31 of each year.

A.6.3 Final Documentation. Except for permittees complying with a Department approved adaptive management plan under section A.3.2, by October 31, 2023, the permittee shall submit documentation to the Department to verify that the permittee has completed all actions required under this appendix including the following:

- a. An updated storm sewer system map that identifies:
 - (1) The current municipal boundary. For a permittee that is not a city or village, identify the permitted area.

Note: The permitted area for towns, counties and non-traditional MS4s pertains to the area within an urbanized area or the area served by its storm sewer system, such as a university campus.

(2) The TMDL reachshed boundaries within the municipal boundary, and the area of each TMDL reachshed in acres within the municipal boundary.

(3) The MS4 drainage boundary associated with each TMDL reachshed, and the area in acres of the MS4 drainage boundary associated with each TMDL reachshed.

b. The permittee shall submit an updated tabular summary that includes the following for each MS4 drainage boundary associated with each TMDL reachshed as identified under section A.6.3.a and for each pollutant of concern:

(1) The permittee's percent reduction needed to comply with its TMDL WLA from the no-controls modeling condition.

(2) The modeled MS4 annual average pollutant load without any storm water control measures.

(3) The modeled MS4 annual average pollutant load with existing storm water control measures.

(4) The percent reduction in pollutant load achieved calculated from the no-controls condition determined under section A.6.3.a(2) and the existing controls condition determined under section A.6.3.a(3).

(5) The existing storm water control measures, including the type of measure, area treated in acres, the pollutant load reduction efficiency, and confirmation of the permittee's authority for long-term maintenance of each practice.

c. If the updated tabular summary required under section A.6.3.b shows that the permittee is not achieving the requirements stipulated in section A.2, the permittee shall submit an updated written TMDL Implementation Plan to the Department that describes how the permittee will make progress toward achieving compliance. The TMDL Implementation Plan shall include the following information:

(1) A list of management options and an implementation schedule that over the next permit term achieves, to the maximum extent practicable, an additional 20% reduction in sediment or TSS and an additional 10% reduction in TP. The percent reductions shall be applied to the difference measured from loading conditions at the end of this permit to the total reductions listed in Tables A1-A4. The reductions can be achieved utilizing an averaged reduction calculated from individual reductions achieved in one or multiple reachsheds and spanning the entire MS4 area impacted by a TMDL.

Note: Reductions that occur through stricter redevelopment standards or through water quality trading can be counted toward meeting the reduction requirements under this section.

Note: Unlike full compliance as outlined in section A.2.2, interim compliance under this section can be based on an average reduction measured across the MS4 area impacted by a TMDL.

(2) Recommendations and options with supporting analysis for storm water control measures that will be installed or implemented in future permit terms to achieve the requirements, to the maximum extent possible, stipulated in section A.2.

(3) A proposed schedule for implementation of the recommendations and options identified under section A.6.3.c(1). The proposed schedule may extend into future permit terms.

(4) A cost effectiveness analysis for implementation of the recommendations and options identified under section A.6.3.c(1).

Table A1: Rock River Basin TMDL Load Reductions Necessary to Meet TMDL Wasteload Allocations by TMDL Reachshed

Reachshed Number (TMDL Subbasin)	Waterbody Name	County	TSS % Reduction from No-controls	TP % Reduction from No-controls
2	South Branch Rock River	Dodge, Fond du Lac, Green Lake	40.6	48.2
3	South Branch Rock River	Dodge, Fond du Lac	55.6	86.9
20	Rock River	Dodge, Jefferson, Washington, Waukesha	40.0	37.2
21	Rock River	Dodge, Jefferson, Washington, Waukesha	40.0	34.3
23	Oconomowoc River	Washington, Waukesha	46.6	35.8
24	Mason Creek	Dodge, Washington, Waukesha	47.2	35.0
25	Oconomowoc River	Jefferson, Waukesha	59.2	73.7
26	Battle Creek	Waukesha	57.4	52.6
27	Oconomowoc River	Jefferson, Waukesha	40.0	27.0
28	Rock River	Dodge, Jefferson	40.0	27.7
29	Rock River	Dodge, Jefferson	44.2	64.2
30	Johnson Creek	Jefferson	40.0	27.0
33	Mill Creek, Beaver Dam Lake	Columbia, Dodge	45.4	48.2
34	Beaver Dam River	Columbia	58.6	86.1
37	Park Creek	Columbia	72.4	75.2
39	Shaw Brook	Columbia	40.0	27.0
45	Mauneshia River	Columbia	44.8	36.5
51	Crawfish River	Columbia	40.0	37.2
54	Rock River	Columbia, Dodge, Jefferson	43.6	71.5
55	Bark River	Waukesha	65.8	76.6
56	Bark River	Jefferson, Waukesha	40.0	40.9

Reachshed Number (TMDL Subbasin)	Waterbody Name	County	TSS % Reduction from No-controls	TP % Reduction from No-controls
59	Steel Brook, Scuppernong River, Bark River	Jefferson, Walworth, Rock	49.0	66.4
60	Rock River	Jefferson, Rock	40.6	48.2
61	Rock River	Dane, Rock	41.2	31.4
62	Pheasant Branch Creek	Dane	82.0	78.1
63	Spring (Dorn) Creek	Dane	46.6	37.2
64	Yahara River, Lake Mendota, Lake Monona	Dane, Columbia	73.0	61.3
65	Nine Springs Creek	Dane	67.6	62.8
66	Yahara River, Lake Waubesa, Lake Kegonsa	Dane	62.2	54.0
67	Yahara River	Dane	40.0	27.0
68	Yahara River	Dane, Rock	50.8	65.0
69	Yahara River	Dane, Rock	52.6	79.6
70	Rock River	Rock	40.6	27.7
71	Rock River	Rock	58.6	48.2
72	Blackhawk Creek	Rock, Walworth	40.0	27.0
73	Blackhawk Creek	Rock	69.4	64.2
74	Rock River	Rock	52.0	39.4
75	Markham Creek	Rock	51.4	38.0
76	Rock River	Rock	57.4	81.8
78	Bass Creek	Rock	40.0	29.9
79	Rock River	Rock	62.2	66.4
80*	Turtle Creek	Rock, Walworth	55.0	62.8
81	Turtle Creek	Rock, Walworth	44.2	41.6
83	Lake Koshkonong	Dane, Jefferson, Rock	55.0	54.0

Note: *MS4 Reachshed 80 reductions are based on Non-Point Source annual average reductions as TMDL had not assigned a separate MS4 reduction for MS4s in this reach.

Table A2: Lower Fox River Basin and Lower Green Bay TMDL Load Reductions Necessary to Meet TMDL Wasteload Allocations by TMDL Reachshed

Reachshed Name (Subbasin)	County	Subbasin ID	TSS % Reduction from No-controls	TP % Reduction from No-controls
Lower Green Bay	Brown	LFS7 & LFS8	52%	41%
Lower Fox River Main Stem	Brown, Outagamie, Winnebago	LFM	72%	41%
East River	Brown, Calumet	LF01	52%	41%
Baird Creek	Brown	LF01	52%	41%
Bower Creek	Brown	LF01	52%	41%
Dutchman Creek	Brown	LF02	52%	41%
Ashwaubenon Creek	Brown	LF02	52%	41%
Apple Creek	Brown, Outagamie	LF02	52%	41%
Plum Creek	Brown, Calumet	LF03	52%	41%
Kankapot Creek	Calumet, Outagamie	LF03	52%	41%
Garners Creek	Outagamie	LF03	60%	69%
Mud Creek	Outagamie, Winnebago	LF04	43%	48%
Neenah Slough	Winnebago	LF06	52%	41%
Duck Creek	Brown, Outagamie	LF05	52%	41%
Trout Creek	Brown	LF05	52%	41%

Note: % TSS reduction from No Controls = 20 + [0.80 x (% TSS Control Lower Fox TMDL Report)]
 % TP reduction from No Controls = 15 + [0.85 x (% TP Control Lower Fox TMDL Report)]

Table A3: Lake St. Croix Nutrient TMDL Load Reductions Necessary to Meet TMDL Wasteload Allocations by TMDL Reachshed

Waterbody Name	County	WBIC	MS4 TP % Reduction from No Controls
Lake St. Croix	St. Croix, Pierce	2601500	46.0

Table A4: Red Cedar River (Tainter Lake, Menomin Lake) TMDL Load Reductions Necessary to Meet TMDL Wasteload Allocations by TMDL Reachshed

Waterbody Name	County	WBIC	MS4 TP % Reduction from No Controls*
Tainter Lake	Dunn	2068000	$\frac{Load_{2025\ No\ Controls} - 1700 \frac{lbs}{yr}}{Load_{2025\ No\ Controls}}$
Lake Menomin	Dunn	2065900	39.2

Note: *The TMDL allocations and necessary reduction are calculated using the 2025 projected MS4 build out area. The 2025 area modeled in a No Controls condition compared against the WLA written in the TMDL yields the percent reduction.

Appendix B: MS4 Permittees Subject to Milwaukee River Basin TMDL

B.1 Applicability. In accordance with section 1.5.2.b, this Appendix B applies to permittees subject to a total maximum daily load (TMDL) approved by the United States Environmental Protection Agency (USEPA) that includes the following:

- “Total Maximum Daily Loads for Total Phosphorus, Total Suspended Solids, and Fecal Coliform Milwaukee River Basin, Wisconsin,” approved by USEPA March 2018

Note: If the MS4 area extends into or discharges to other basins with a USEPA approved TMDL, a permittee could be subject to more than one TMDL and thus the requirements under Appendices A and/or C.

B.2 Full TMDL Compliance for Total Suspended Solids (TSS) and Total Phosphorus (TP) WLAs.

B.2.1 USEPA is allowing the Department to evaluate MS4 compliance with TMDL Wasteload Allocations (WLAs) using a percent reduction framework consistent with Wisconsin’s storm water program. For consistency with existing storm water program requirements, TMDL compliance will use the percent reduction basis from the no runoff management controls (no-controls) condition. The percent reduction from no-controls, for TSS and TP for each reachshed, necessary to meet the TMDL WLAs for the USEPA approved TMDLs are listed on Table B1. The no-controls modeling condition means taking no (zero) credit for existing storm water control measures that reduce the discharge of pollutants. Existing practices can then be applied and counted toward meeting the TMDL reductions.

B.2.2 TMDLs may assign a percent reduction for one or more reachsheds for each pollutant of concern (i.e., total suspended solids (TSS) and total phosphorus (TP)). Full TMDL compliance is achieved by the permittee provided all of the following conditions are met:

- a. By October 31, 2023, the permittee submits the necessary data and documentation to the Department that demonstrates that the permittee meets the percent reductions stipulated in Table B1 for each reachshed that the MS4 discharges to and for each pollutant of concern.
- b. The documentation submitted by the permittee includes the policies, procedures, and regulatory mechanisms that the permittee will employ to ensure that storm water controls and management measures will continue to be operated and maintained so that their pollutant removal efficiency continues to be met.
- c. Based upon the data and documentation and any necessary subsequent information requested by the Department, the permittee receives written concurrence from the Department by April 30, 2024, that the permittee has achieved full TMDL compliance.

B.3 Participation in an Approved Adaptive Management Plan for Total Suspended Solids (TSS) and Total Phosphorus (TP) WLAs. In accordance with s. 283.13(7), Wis. Stats., and s. NR 217.18, Wis. Adm. Code, if the permittee chooses to participate in an Adaptive Management project, the permittee shall submit the plan to the Department by March 31, 2022 for approval.

Note: Information on adaptive management is available from the Department's Internet site at: <https://dnr.wi.gov/topic/SurfaceWater/AdaptiveManagement.html>

B.4 TMDL Implementation Plan for Total Suspended Solids (TSS) and Total Phosphorus (TP) WLAs. If the permittee has chosen not to participate in an adaptive management plan as stipulated in section B.3, the permittee shall perform the following activities:

B.4.1 By March 31, 2022, the permittee shall determine if the applicable requirements contained in section B.2.2 will be achieved during the term of this permit. The permittee shall notify the Department which reachsheds and pollutants of concern are not in compliance with the requirements contained in section B.2.2 with the tabular summary created under section B.4.2(b) and develop a TMDL Implementation Plan per section B.4.2(c).

B.4.2 The permittee shall develop and submit the following documentation to meet the requirements stipulated in section B.2.2:

a. By March 31, 2020, an updated storm sewer system map that identifies:

(1) The current municipal boundary. For a permittee that is not a city or village, identify the permitted area.

Note: The permitted area for towns, counties and non-traditional MS4s pertains to the area within an urbanized area or the area served by its storm sewer system, such as a university campus.

(2) The TMDL reachshed boundaries within the municipal boundary, and the area of each TMDL reachshed in acres within the municipal boundary.

(3) The MS4 drainage boundary associated with each TMDL reachshed, and the area in acres of the MS4 drainage boundary associated with each TMDL reachshed.

(4) Identification of areas on a map and the acreage of those areas within the municipal boundary that the permittee believes should be excluded from its analysis to show compliance with the TMDL WLA. In addition, the permittee shall provide an explanation of why these areas should not be its responsibility.

Note: An example of an area within a municipal boundary that may not be subject to a TMDL WLA for the permittee is an area that does not drain through the permittee's MS4.

(5) Flow paths of storm water through the storm sewer system.

(6) The location and associated drainage basin of structural BMPs the MS4 uses for TSS and TP treatment.

b. By March 31, 2022, the permittee shall submit a tabular summary that includes the following for each MS4 drainage boundary associated with each TMDL reachshed as identified under section B.4.2.a(2) and for each pollutant of concern listed in Table B1:

(1) The permittee's percent reduction needed to comply with its TSS and TP WLA from the no-controls modeling condition. The no-controls modeling condition means taking no (zero) credit for storm water control measures that reduce the discharge of pollutants.

Note: This model run is comparable to the no-controls condition modeled for the developed urban area performance standard of s. NR 151.13, Wis. Adm. Code.

(2) The modeled annual average pollutant load without any storm water control measures for each reachshed which the MS4 discharge to.

(3) The modeled MS4 annual average pollutant load with existing and current storm water control measures for each reachshed which the MS4 discharges to.

(4) The percent reduction in pollutant load achieved calculated from the no-controls condition determined under section B.4.2.b(2) and the existing controls condition determined under section B.4.2.b(3).

(5) The existing storm water control measures including the type of measure, area treated in acres, the pollutant load reduction efficiency, and confirmation of the permittee's authority for long-term maintenance of each practice.

c. By March 31, 2022, if the tabular summary required under section B.4.2.b shows that the permittee is not achieving the applicable percent reductions needed to comply with section B.2.2, then the permittee shall submit a written TMDL Implementation Plan to the Department that describes how the permittee will make progress toward achieving compliance. The plan shall include the following information:

(1) Recommendations and options for storm water control measures that will be considered to reduce the discharge of each pollutant of concern. At a minimum, the following shall be evaluated: all post-construction BMPs for which the Department has a technical standard, optimizing or retrofitting all existing public and private storm water control practices, regional practices, optimization or improvements to existing BMPs, incorporation of storm water control for all road reconstruction projects, more restrictive post-construction ordinances, updated development and redevelopment standards.

(2) A proposed schedule for implementation of the alternatives identified under section B.4.2.c(1). The proposed schedule may extend beyond the expiration date of this permit. The schedule should aim to achieve, to the maximum extent practicable, a level of reduction that achieves at least 20% of the remaining reduction needed beyond baseline to achieve full compliance in TSS and a level of reduction that achieves at least 10% of the remaining reduction needed

beyond baseline to achieve full compliance in TP over the next permit term. The reductions can be achieved utilizing an averaged reduction calculated from individual reductions achieved in one or multiple reachsheds and spanning the entire MS4 area impacted by a TMDL.

Note: The reductions stipulated under B.4.2.c(2) are interim compliance targets set as a planning target for the next permit term. Future permit reduction targets may taper off or vary between municipalities based on individual plans as it is expected that municipalities will rely more on reductions obtained through redevelopment.

(3) A cost effectiveness analysis for implementation of the recommendations and options identified under section B.4.2.c(1).

Note: The Department has developed the guidance document “TMDL Guidance for MS4 Permits: Planning, Implementation, and Modeling Guidance.” The guidance is available on the Department’s Internet site:

https://dnr.wi.gov/topic/stormwater/standards/ms4_modeling.html, and is available to assist a permittee with complying with the requirements of section B.4.

Note: Reductions obtained through a permittee’s participation in a water quality trading project, in accordance with s. 283.84, Wis. Stats., and that has been reviewed and approved by the Department, can be counted toward credit in meeting the requirements stipulated under section B.4.2.c(2). Additional information on water quality trading is available from the Department’s Internet site at:

<https://dnr.wi.gov/topic/surfacewater/waterqualitytrading.html>

B.4.3 TMDL Compliance During the Term of This Permit for Total Suspended Solids (TSS) and Total Phosphorus (TP) WLAs. If the permittee has chosen not to participate in an adaptive management plan as stipulated in section B.3, the permittee shall select and implement a minimum of three of the activities listed below, in addition to the planning requirements contained in section B.4.2, by October 31, 2023:

Note: The permittee may optimize deployment of resources between the requirements listed below to maximize reductions for the least cost. In some cases, permittees may already be meeting these requirements.

a. Pursuant to the permittee’s authority under s. 281.33(6)(a)2., Wis. Stats., the permittee shall create or revise and promulgate a municipal storm water management ordinance applicable to redevelopment that requires compliance with post-construction storm water management performance standards that are stricter than the uniform statewide standards established by the Department. When reporting to the Department under section B.6.3, the permittee shall include a justification for the level of pollutant reduction in the ordinance with an assessment of the progress it achieves towards full compliance with the TMDL. The redevelopment TSS reduction may be adjusted to account for other storm water controls measures that may exist. The permittee may also establish TP reduction levels for redevelopment projects.

Note: The permittee may enact an ordinance that is municipal wide, targets individual TMDL reachsheds, or designated areas within the permitted MS4 balancing required TMDL reductions, parcel size, and the impact of other treatment options. Increasing redevelopment reductions is one tool in moving toward TMDL compliance.

b. The permittee shall create or revise a municipal ordinance that requires the development and implementation of a maintenance plan for all privately-owned storm water treatment facilities for which the permittee takes a TSS and/or TP reduction credit. The permittee shall develop and implement procedures and measures to verify and track that the storm water treatment facilities are inspected on a regular schedule and maintained in the intended working condition in accordance with the plans. The permittee shall require that maintenance agreements be recorded with the appropriate property records that obligates the current and future owners to implement the maintenance plans.

c. The permittee shall revise or promulgate a municipal ordinance that requires the submittal of record drawings for which the permittee takes a TSS and/or TP reduction credit. The permittee shall require submittal of the record drawing prior to close-out of the local permit or upon final approval and shall maintain appropriate records and tracking of the plans.

d. If the pollutant of concern is TP, implement, expand, or optimize a municipal leaf collection program coupled with street cleaning to serve areas where municipal leaf collection is not currently provided within the MS4 but for which a phosphorus WLA has been assigned and additional reductions could be achieved.

Note: The Department's "Interim Municipal Phosphorus Reduction Credit for Leaf Management Programs" guidance document includes recommendations on how the permittee's municipal leaf collection program should be designed and implemented. The guidance is available from the Department's Internet site at:
https://dnr.wi.gov/topic/stormwater/standards/ms4_modeling.html

e. Within the MS4 permitted area, the permittee shall inventory the condition of the conveyance systems and outfalls. Where erosion or scour is occurring, the permittee shall develop a schedule to stabilize the identified areas.

f. Install one new structural BMP or enhance one existing structural BMPs to reduce a pollutant of concern discharged via storm water runoff to an impaired waterbody for which a WLA has been assigned to the permittee. The permittee shall develop and implement a maintenance plan for each new structural BMP.

Note: This option can be counted each time the permittee installs or enhances a structural BMP to satisfy the required activities. A permittee could meet the requirement if they solely chose this option and installed or enhanced three BMPs.

g. Permittee shall conduct an analysis of the current municipal street cleaning program, to determine if additional pollutant loading reductions can be achieved. The permittee shall evaluate optimizing sweeping frequency, targeting of critical areas and time

periods, and instituting parking restrictions. If a pollutant reduction can be achieved through optimizing the existing street cleaning program, the permittee shall adopt the optimized program the next calendar year or provide a written explanation to the Department explaining why the optimize street cleaning program is not feasible and provide alternative options to achieve similar pollutant reductions.

Note: The permittee may optimize deployment of resources between the requirements listed above to maximize reductions for the least cost; for example, only increase street sweeping where structural practices do not already exist to treat the runoff for the area.

B.5 TMDL Compliance and Implementation for Bacteria WLAs. This section applies to all permittees with a bacteria WLA specified in the Milwaukee River Basin TMDL Final Report dated March 19, 2018. The permittee shall do all of the following:

B.5.1 As part of its program to address illicit discharges under section 2.3 of this permit, by March 31, 2021, the permittee shall begin to conduct ongoing public education and outreach activities specifically to increase awareness of bacterial pollution problems, potential sources, proper pet waste management, and the impacts of urban wildlife and pests.

B.5.2 In addition to complying with the requirements in section 2.3 of this permit, the permittee shall comply with the following:

a. By March 31, 2022, the permittee shall develop and submit to the Department an inventory of bacteria sources and a map indicating the locations of the potential sources of fecal coliform and *E. coli* entering its MS4. The inventory shall be in a tabular format and include a label code, the name of the source, the physical address or location description of the source, and the ownership of the source (i.e., public or private). The map shall be to scale, identify all municipal streets, and indicate the locations of the sources using the label codes. The permittee shall consider the variation in flow conditions in its identification of potential sources. The inventory and map shall include the following potential sources of bacteria:

- Known or suspected leaking or failing septic systems.
- Sanitary sewer overflow locations.
- Livestock and domesticated animals housed or raised within the MS4 permitted area and discharging to the MS4, but not including household pets.
- Zoos, kennels, animal breeders, pet stores, and dog training facilities.
- Waste hauling, storage, and transfer facilities.
- Areas that attract congregations of nuisance urban birds and wildlife.
- Known or suspected properties with inadequate food or organic waste handling or storage.
- Composting sites or facilities.
- Known or suspected areas with improper human sanitation use.
- Any other source that the permittee or the Department has a reason to believe is discharging bacteria to the MS4.

b. By October 31, 2023, the permittee shall develop and submit to the Department a bacteria source elimination plan. The plan shall consist of a strategy and prioritization

scheme to eliminate each source of bacteria identified under section B.5.2.2. The plan shall include the BMPs to be used, cost estimates, sources of funding, and a schedule to eliminate the sources. BMPs identified in the plan may be structural, non-structural, targeted outreach, and/or additional ordinances, but the plan shall include the rationale for using each BMP, the reason for selected a BMP over another, and the expected outcome from implementing each BMP.

Note: While the TMDL allocations in the Milwaukee River Basin TMDL are expressed only in terms of fecal coliform, both fecal coliform and *E. coli* have been listed as sources of recreational use impairments that the TMDL was completed to address.

B.5.3 By March 31, 2023, the permittee shall adopt local ordinances to address the requirements for proper pet waste management, the restrictions on feeding of urban wildlife that are potential sources of bacteria entering the MS4, the requirements for property owners to cooperate with identifying and eliminating illicit sanitary sewerage cross-connections with the MS4, and the requirements for property owners to address other potential sources of bacteria that may enter the MS4 (e.g., refuse management, pest control).

B.6 Reporting Requirements. For the term of this permit, the permittee shall meet the following reporting requirements:

B.6.1 Compliance Determination Reporting. The permittee shall submit the information requested in this appendix in accordance with the following schedule:

- a. By March 31, 2020, for section B.4.2.a.
- b. By March 31, 2021, for sections B.5.1.
- c. By March 31, 2022, for sections B.4.1, B.4.2.b, and B.5.2.a.
- d. By March 31, 2023, for section B.5.3.
- e. By October 31, 2023, for section B.2.2.a, B.4.3, and B.5.2.b.

B.6.2 Annual Reporting. For requirements outlined under sections B.3, B.4, and B.5 the permittee shall include a description and the status of progress toward implementing the identified actions and activities in their MS4 annual reports due by March 31 of each year.

B.6.3 Final Documentation. By October 31, 2023, the permittee shall submit documentation to the Department to verify that the permittee has completed all actions required under this appendix including submittal of the TMDL Implementation Plan required under section B.4 and documentation that the three activities selected under section B.4.3 have been completed.

Table B1: Milwaukee River Basin TMDL Load Reductions Necessary to Meet TMDL Wasteload Allocations by TMDL Reachshed

Kinnickinnic River Basin:

Reachshed (TMDL Subbasin)	Waterbody Name	Waterbody Extents	TSS % Reduction from No-controls	TP % Reduction from No-controls
KK-1	Lyons Park Creek	Entire Length	78.4%	68.1%
KK-2	Kinnickinnic River	From Wilson Park Creek to Lyons Park Creek	77.6%	68.1%
KK-3	South 43rd St. Ditch	Entire Length	76.8%	78.7%
KK-4	Edgerton Channel, Wilson Park Creek, Villa Mann Creek	Entire Length	84.0%	89.4%
KK-5	Holmes Avenue Creek	Entire Length	80.0%	78.7%
KK-6	Cherokee Park Creek	Entire Length	77.6%	69.0%
KK-7	Kinnickinnic River	Estuary to Wilson Park Creek	75.2%	45.0%

Menomonee River Basin:

Reachshed (TMDL Subbasin)	Waterbody Name	Waterbody Extents	TSS % Reduction from No-controls	TP % Reduction from No-controls
MN-1	Menomonee River	From Nor-X-Way Channel to Headwaters	66.4%	63.6%
MN-2	Goldendale Creek	Entire Length	63.2%	47.7%
MN-3	West Branch Menomonee River	Entire Length	65.6%	60.1%
MN-4	Willow Creek	Entire Length	64.0%	51.2%
MN-5	Nor-X-Way Channel	Entire Length	70.4%	72.5%
MN-6	Menomonee River and Dretzka Park Creek	From Little Menomonee River to Nor-X-Way Channel	73.6%	69.0%
MN-7	Lilly Creek	Entire Length	70.4%	64.5%
MN-8	Butler Ditch	Entire Length	69.6%	58.3%
MN-9	Little Menomonee River	Entire Length	70.4%	64.5%
MN-10	Menomonee River	From Underwood Creek to Little Menomonee River	67.2%	31.7%
MN-11	Underwood Creek and Dousman Ditch	From South Branch Underwood Creek to Headwaters	72.0%	62.7%

Reachshed (TMDL Subbasin)	Waterbody Name	Waterbody Extents	TSS % Reduction from No-controls	TP % Reduction from No-controls
MN-12	Underwood Creek	From Menomonee River to South Branch Underwood Creek	80.0%	76.1%
MN-13	South Branch Underwood Creek	Entire Length	76.8%	69.8%
MN-14	Menomonee River	From Honey Creek to Underwood Creek	64.8%	49.4%
MN-15	Honey Creek	Entire Length	73.6%	67.2%
MN-16	Menomonee River	From Estuary to Honey Creek	72.0%	49.4%

Milwaukee River Basin:

Reachshed (TMDL Subbasin)	Waterbody Name	Waterbody Extents	TSS % Reduction from No-controls	TP % Reduction from No-controls
MI-1	Upper Milwaukee River	From Campbellsport to Headwaters	**	**
MI-2	Upper Milwaukee River	From Kewaskum To Campbellsport and Auburn	73.6%	71.6%
MI-3	West Branch Milwaukee River	Entire Length	77.6%	48.6%
MI-4	Kewaskum Creek	Entire Length	76.8%	55.7%
MI-5	Watercress Creek and East Branch Milwaukee River	Entire Length	73.6%	51.2%
MI-6	Quass Creek and Milwaukee River	Near West Bend	73.6%	86.7%
MI-7	Myra Creek and Milwaukee River	From North Branch Milwaukee River to West Bend	79.2%	67.2%
MI-8	North Branch Milwaukee River	from Adell Tributary to Headwaters	**	**
MI-9	Adell Tributary	Entire Length	**	**
MI-10	Chambers Creek, Batabia Creek, and North Branch Milwaukee River	Near Sherman	**	**
MI-11	Melius Creek	Entire Length	**	**
MI-12	Mink Creek	Entire Length	**	**

Reachshed (TMDL Subbasin)	Waterbody Name	Waterbody Extents	TSS % Reduction from No-controls	TP % Reduction from No-controls
MI-13	Stony Creek, Wallace Creek, and North Branch Milwaukee River	Near Farmington	74.4%	46.8%
MI-14	Silver Creek	Entire Length	**	**
MI-15	Milwaukee River	Near Fredonia	**	**
MI-16	Milwaukee River	Near Saukville	75.2%	77.8%
MI-17	Milwaukee River	From Cedar Creek to Saukville	76.0%	83.1%
MI-18	Cedar Creek	From Jackson Creek to Headwaters	76.8%	71.6%
MI-19	Lehner Creek	Entire Length	77.6%	61.0%
MI-20	Jackson Creek	Entire Length	80.8%	77.8%
MI-21	Little Cedar Creek	Entire Length	80.8%	77.8%
MI-22	Cedar Creek	Near Jackson	76.8%	54.8%
MI-23	Evergreen Creek	Near Jackson	79.2%	53.0%
MI-24	North Branch Cedar Creek and Cedar Creek	From Milwaukee River to Myra Creek	73.6%	79.6%
MI-25	Milwaukee River	From Pigeon Creek to Cedar Creek	81.6%	43.2%
MI-26	Pigeon Creek	Entire Length	90.4%	88.5%
MI-27	Milwaukee River	From Lincoln Creek to Pigeon Creek	72.8%	53.9%
MI-28	Beaver Creek	Entire Length	72.8%	88.5%
MI-29	South Branch Creek	Entire Length	71.2%	87.6%
MI-30	Indian Creek	Entire Length	65.6%	76.1%
MI-31	Lincoln Creek	Entire Length	71.2%	85.8%
MI-32	Milwaukee River	From Estuary to Lincoln Creek	58.4%	23.7%

Note: **The TMDL did not assign a percent reduction for these reachsheds because modeling indicated that there is no direct MS4 discharge to this subbasin. If more detailed analysis conducted by the permittee indicates the presence of an MS4 discharge, contact your DNR storm water engineer or specialist for more information on how best to proceed.

Appendix C: MS4 Permittees Subject to the Wisconsin River Basin TMDL or a TMDL Approved After May 1, 2019

C.1 Applicability. In accordance with section 1.5.2.c, this Appendix C applies to permittees subject to a total maximum daily load (TMDL) approved by the United States Environmental Protection Agency (USEPA) that includes the following:

- “Total Maximum Daily Loads for Total Phosphorus in the Wisconsin River Basin,” approved by USEPA April 2019

Note: The Wisconsin River Basin TMDL has two sets of allocations. Table J-4 of Appendix J of the TMDL report lists the allocations and corresponding percent reductions based on current water quality criteria and Table K-4 of Appendix K of the TMDL report lists the allocations and corresponding percent reductions based on recommended site-specific criteria. Both tables provide the percent reductions measured from no-controls and the TMDL baseline. Under this permit term, the allocations listed in Appendix J of the TMDL report apply. If the recommended site-specific criteria are approved by USEPA, the allocations and percent reductions listed in Appendix K of the TMDL report will become applicable. However, permittees may use the allocations from either Appendix J or Appendix K of the TMDL report for planning purposes under sections C.3 and C.4 below.

- A TMDL approved by the USEPA on or after May 1, 2019

Note: If the MS4 area extends into or discharges to other basins with a USEPA approved TMDL, a permittee could be subject to more than one TMDL and thus the requirements under Appendices A and/or B.

C.2 Full TMDL Compliance.

C.2.1 USEPA is allowing the Department to evaluate MS4 compliance with TMDL Wasteload Allocations (WLA) using a percent reduction framework consistent with Wisconsin’s storm water program. For consistency with existing storm water program requirements, TMDL compliance will use the percent reduction measured from the no runoff management controls (no-controls) condition. The percent reduction from no-controls, for each pollutant of concern and reachshed, necessary to meet the TMDL WLAs for the USEPA approved TMDLs are listed in the approved TMDLs. The no-controls modeling condition means taking no (zero) credit for existing storm water control measures that reduce the discharge of pollutants. Existing practices can then be applied and counted toward meeting the TMDL reduction reductions.

C.2.2 TMDLs may assign a percent reduction for one or more reachsheds for each pollutant of concern (i.e., total suspended solids (TSS) and total phosphorus (TP)). Full TMDL compliance is achieved by the permittee provided all of the following conditions are met:

- a. The permittee submits the necessary data and documentation to the Department that demonstrates that the permittee meets the percent reductions stipulated in the USEPA approved TMDL for each reachshed that the MS4 discharges to and for each pollutant of concern.

b. The documentation submitted by the permittee includes the policies, procedures, and regulatory mechanisms that the permittee will employ to ensure that storm water controls and management measures will continue to be operated and maintained so that their pollutant removal efficiency continues to be met.

c. Based upon the data and documentation and any necessary subsequent information requested by the Department, the permittee receives written concurrence from the Department that the permittee has achieved full TMDL compliance.

C.3 Participation in an approved Adaptive Management Plan. In accordance with s. 283.13(7), Wis. Stats., and s. NR 217.18, Wis. Adm. Code, if the permittee has chosen to participate in an Adaptive Management project that has been approved by the Department the permittee shall continue to participate in the implementation of the Adaptive Management project.

Note: Information on adaptive management is available from the Department's Internet site at: <https://dnr.wi.gov/topic/SurfaceWater/AdaptiveManagement.html>

C.4 TMDL Implementation Plan. If the permittee is not participating in a Department approved adaptive management plan as stipulated in section C.3, a permittee with MS4s discharging to TMDL reachsheds shall do all the following to demonstrate progress towards achieving the TMDL reductions stipulated in section C.2.2 and shall submit the following documentation:

C.4.1 Within 36 months of the approval date of the TMDL, an updated storm sewer system map that identifies:

a. The current municipal boundary. For a permittee that is not a city or village, identify the permitted area.

Note: The permitted area for towns, counties and non-traditional MS4s pertains to the area within an urbanized area or the area served by its storm sewer system, such as a university campus.

b. The TMDL reachshed boundaries within the municipal boundary, and the area of each TMDL reachshed in acres within the municipal boundary.

c. The MS4 drainage boundary associated with each TMDL reachshed, and the area in acres of the MS4 drainage boundary associated with each TMDL reachshed.

d. Identification of areas on a map and the acreage of those areas within the municipal boundary that the permittee believes should be excluded from its analysis to show compliance with the TMDL WLA. In addition, the permittee shall provide an explanation of why these areas should not be its responsibility.

Note: An example of an area within a municipal boundary that may not be subject to a TMDL WLA for the permittee is an area that does not drain through the permittee's MS4.

- e. Flow paths of storm water through the storm sewer system.
- f. The location and associated drainage basin of structural BMPs the MS4 uses for TSS and TP treatment.

C.4.2 Within 36 months of the approval date of the TMDL, the permittee shall submit a tabular summary that includes the following for each MS4 drainage boundary associated with each TMDL reachshed as identified under section C.4.1 and for each TMDL WLA:

- a. The permittee's percent reduction needed to comply with its TMDL WLA from the no-controls modeling condition. The no-controls modeling condition means taking no (zero) credit for storm water control measures that reduce the discharge of pollutants.
- b. The modeled annual average pollutant load without any storm water control measures for each subbasin which the MS4 discharges to as previously identified in section C.4.1.
- c. The modeled annual average pollutant load with existing storm water control measures for each subbasin with the MS4 discharges to as previously identified in section C.4.1.
- d. The percent reduction in pollutant load achieved from the no-controls condition and the existing controls condition.
- e. The existing storm water control measures including the type of measure, area treated in acres, the pollutant load reduction efficiency, and documentation of the permittee's authority for long-term maintenance of each practice.
- f. If applicable, the remaining pollutant load reduction for each pollutant of concern and reachshed to meet the TMDL reduction goals.

C.4.3 Within 48 months of the approval date of the TMDL, if the tabular summary required under section C.4.2 shows that the permittee is not achieving the applicable percent reductions needed to comply with its TMDL WLA for each TMDL reachshed, then the permittee shall submit a written TMDL Implementation Plan to the Department that describes how the permittee will make progress toward achieving compliance with the TMDL WLA. The plan shall include the following information:

- a. Recommendations and options for storm water control measures that will be considered to reduce the discharge of each pollutant of concern. At a minimum, the following shall be evaluated: all post-construction BMPs for which the Department has a technical standard, optimizing or retrofitting all existing public and private storm water control practices, regional practices, optimization or improvements to existing BMPs, incorporation of storm water control for all road reconstruction projects, more restrictive post-construction ordinances, updated development and redevelopment standards. Focus should be placed on those areas identified in section C.4.2 without any controls.

b. A proposed schedule for implementation of the alternatives identified under section C.4.3.a. The proposed schedule may extend beyond the expiration date of this permit. The schedule should aim to achieve, to the maximum extent practicable, a level of reduction that achieves at least 20% of the remaining reduction needed beyond baseline to achieve full compliance in TSS and a level of reduction that achieves at least 10% of the remaining reduction needed beyond baseline to achieve full compliance in TP over the next permit term. The reductions can be achieved utilizing an averaged reduction calculated from individual reductions achieved in one or multiple reachsheds and spanning the entire MS4 area impacted by a TMDL.

Note: The reductions stipulated under C.4.3.b are interim compliance targets set as a planning target for the next permit term. Future permit reduction targets may taper off or vary between municipalities based on individual plans as it is expected that municipalities will rely more on reductions obtained through redevelopment. In many some cases, reductions that occur through redevelopment activities as outlined in section C.4.3.d may provide the most economical and practical method toward eventually achieving the reduction goals.

c. A cost effectiveness analysis for implementation of the recommendations and options identified under section C.4.3.a.

Note: The Department has developed the guidance document “TMDL Guidance for MS4 Permits: Planning, Implementation, and Modeling Guidance.” The guidance is available on the Department’s Internet site: https://dnr.wi.gov/topic/stormwater/standards/ms4_modeling.html, and is available to assist a permittee with complying with the requirements of section C.4.

Note: Reductions obtained through a permittee’s participation in a water quality trading project, in accordance with s. 283.84, Wis. Stats., and that has been reviewed and approved by the Department, can be counted toward credit in meeting the requirements stipulated under section C.2.2. Additional information on water quality trading is available from the Department’s Internet site at: <https://dnr.wi.gov/topic/surfacewater/waterqualitytrading.html>

C.5 Annual Reporting. For requirements outlined under sections C.3 and C.4 the permittee shall include a description and the status of progress toward implementing the identified actions and activities in their MS4 annual reports due by March 31 of each year.

Chapter NR 151

RUNOFF MANAGEMENT

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Subchapter V — Technical Standards Development Process for Non-Agricultural Performance Standards

NR 151.30	Purpose.
NR 151.31	Technical standards development process.
NR 151.32	Dissemination of technical standards.

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 typical calendar year of precipitation as determined by the department for users of models such as SLAMM, P8, or equivalent methodology. The average annual rainfall is chosen from a department publication for the location closest to the municipality.

Note: Information on how to access SLAMM and P8 and the average annual rainfall files for five locations in the state, as published periodically by the department, is available at dnr.wi.gov.

(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 connected to the waters of the state via a separate storm sewer, an impervious flow path, or a minimally pervious flow path.

Note: An example of minimally pervious flow path would be roof runoff flowing across a lawn of less than 20 feet, to the driveway, to the street, and finally to the storm sewer. The department has a guidance document to aid in the application of this term that is available from the department at dnr.wi.gov.

(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.

(11m) “Direct conduits to groundwater” means wells, sinkholes, swallets, fractured bedrock at the surface, mine shafts, non-metallic mines, tile inlets discharging to groundwater, quarries, or depressional groundwater recharge areas over shallow fractured bedrock.

(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.

(14g) “Existing development” means development in existence on October 1, 2004, or development for which a notice of intent to apply for a storm water permit in accordance with subch. III of ch. NR 216 was received by the department or the department of commerce on or before October 1, 2004.

(14r) “Filtering layer” means soil that has at least a 3-foot deep layer with at least 20 percent fines; or at least a 5-foot deep layer with at least 10 percent fines; or an engineered soil with an equivalent level of protection as determined by the regulatory authority for the site.

(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.

(16m) “Impaired water” means a waterbody impaired in whole or in part and listed by the department pursuant to 33 USC 1313 (d) (1) (A) and 40 CFR 130.7, for not meeting a water quality standard, including a water quality standard for a specific substance or the waterbody’s designated use.

Note: The impaired waters list is available from the department at dnr.wi.gov.

(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, gravel or paved parking lots, and streets are examples of surfaces that typically are impervious.

(18) “In-fill” means an undeveloped area of land located within an existing urban sewer service area, surrounded by development or development and natural or man-made features where development cannot occur. “In-fill” does not include any undeveloped area that was part of a larger new development for which a notice of intent to apply for a storm water permit in accordance with subch. III of ch. NR 216 was required to be submitted after October 1, 2004, to the department or the department of commerce.

(19) “Infiltration” means the entry and movement of precipitation or runoff into or through soil.

(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.

(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 the highest level of performance that is achievable but is not equivalent to a performance standard identified in subch. III or IV, as determined in accordance with s. NR 151.006.

(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- μ m (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 part of a publicly owned wastewater treatment works that provides secondary or more stringent treatment.
- (d) Discharges directly or indirectly to waters of the state.

(42m) “Silviculture activity” means activities including tree nursery operations, tree harvesting operations, reforestation, tree thinning, prescribed burning, and pest and fire control. Clearing and grubbing of an area of a construction site is not a silviculture activity.

(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.

(46m) “Total maximum daily load” or “TMDL” means the amount of pollutants specified as a function of one or more water quality parameters, that can be discharged per day into a water quality limited segment and still ensure attainment of the applicable water quality standard.

(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, the natural resources conservation service, the secretary of state, and the legislative reference bureau, all in Madison, WI.

(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 pursuant to s. 281.33, 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, the natural resources conservation service, the secretary of state, and the legislative reference bureau, all in Madison, WI.

(49m) “US EPA” means the United States environmental protection agency.

(50) “Waters of the state” has the meaning given in s. 283.01 (20), Stats.

(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; CR 09-112: am. (3), (6), (17), (18), (25), (42) (c), cr. (11m), (14g), (14r), (16m), (42m),

(46m), (49m), r. (21) Register December 2010 No. 660, eff. 1-1-11; corrections in (48) made under s. 13.92 (4) (b) 6. and 7., Stats., Register December 2010 No. 660.

NR 151.003 BMP Location. (1) **NON-NAVIGABLE WATERS.** For purposes of determining compliance with the performance standards of subchs. III and IV, the department may give credit for BMPs that function to provide treatment for runoff from existing development and post-construction runoff from new development, redevelopment, and in-fill development and that are located within non-navigable waters.

(2) **NAVIGABLE WATERS.** (a) *New development runoff.* Except as allowed under par. (b), BMPs designed to treat post-construction runoff from new development may not be located in navigable waters and, for purposes of determining compliance with the performance standards of subchs. III and IV, the department may not give credit for such BMPs.

(b) *New development runoff exemption.* BMPs to treat post-construction runoff from new development may be located within navigable waters and may be creditable by the department under subchs. III and IV, if all the following are met:

1. The BMP was constructed prior to October 1, 2002, and received all applicable permits.
2. The BMP functions or will function to provide runoff treatment for the new development.

(c) *Existing development and post-construction runoff from redevelopment and in-fill development.* Except as provided in par. (d), BMPs that function to provide runoff treatment for existing development and post-construction runoff from redevelopment and in-fill development may not be located in navigable waters and, for purposes of determining compliance with the performance standards of subchs. III and IV, the department may not give credit for such BMPs.

(d) *Existing development and post-construction runoff from redevelopment and in-fill development exemption.* BMPs that function to provide treatment of runoff from existing development and post-construction runoff from redevelopment and in-fill development may be located within navigable waters and may be creditable by the department under subchs. III and IV, if any of the following are met:

1. The BMP was constructed, contracts were signed or bids advertised and all applicable permits were received prior to January 1, 2011.
2. The BMP is on an intermittent waterway and all applicable permits are received.

Note: An intermittent waterway may be identified on a United States geological survey 7.5-minute series topographic map, a county soil survey map, the Surface Water Data Viewer Map, 24K hydro layer on the department’s website, or determined by the department through a site evaluation, whichever is more current. The Surface Water Data Viewer Map, 24K hydro layer is available at <http://dnr.wi.gov/topic/surfacewater/swdv/>.

(3) **CREDIT.** The amount of credit that the department may give a BMP for purposes of determining compliance with the performance standards of subchs. III and IV is limited to the treatment capability of the BMP.

Note: This section does not supersede any other applicable federal, state, or local regulation such as ch. NR 103 or ch. 30, Stats. Federal, state, and local permits or approvals may be required to excavate, dredge, fill, or construct BMPs in or near wetlands, non-navigable or navigable waters. Other permits and approvals may not be authorized where the BMP construction will result in adverse environmental impacts to the waterway or wetland.

History: CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02; CR 09-112: r. and recr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.004 State targeted performance standards. Implementation of the statewide performance standards and prohibitions in this chapter may not be sufficient to achieve water quality standards under chs. NR 102 to 105 or groundwater standards under ch. NR 140. In those cases, using modeling or monitoring, the department shall determine if a specific waterbody or area will not attain water quality standards or groundwater standards after substantial implementation of the performance standards and prohibitions in this chapter. If the department finds that

water quality standards or groundwater standards will not be attained using statewide performance standards and prohibitions but the implementation of targeted performance standards would attain water quality standards or groundwater 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.

Note: Pursuant to s. 281.16 (3), Stats., the department of agriculture, trade and consumer protection shall develop or specify the best management practices, conservation practices or technical standards used to demonstrate compliance with a performance standard developed under s. NR 151.004.

History: CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02; CR 09-112: am. Register December 2010 No. 660, eff. 1-1-11.

NR 151.005 Performance standard for total maximum daily loads. A crop producer or livestock producer subject to this chapter shall reduce discharges of pollutants from a livestock facility or cropland to surface waters if necessary to meet a load allocation in a US EPA and state approved TMDL.

(1) A crop producer or livestock producer subject to this chapter shall use the best management practices, conservation practices, or technical standards established under ch. ATCP 50 to meet a load allocation in a US EPA and state approved TMDL.

(2) If compliance with a more stringent or additional performance standard, other than the performance standards contained in this chapter, is required for crop producers or livestock producers to meet a load allocation in a US EPA and state approved TMDL, the department shall use the procedure in s. NR 151.004 to promulgate the more stringent or additional performance standard before compliance is required.

History: CR 09-112: cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.006 Applicability of maximum extent practicable. Maximum extent practicable applies when a person who is subject to a performance standard of subchs. III and IV demonstrates to the department's satisfaction that a performance standard is not achievable and that a lower level of performance is appropriate. In making the assertion that a performance standard is not achievable and that a level of performance different from the performance standard is the maximum extent practicable, an applicant shall take into account the best available technology, cost effectiveness, geographic features, and other competing interests such as protection of public safety and welfare, protection of endangered and threatened resources, and preservation of historic properties.

History: CR 09-112: cr. Register December 2010 No. 660, eff. 1-1-11.

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) "Accounting period" means the crop rotation period over which compliance is measured and consists of the current year and extends back the previous 7 years moving forward each consecutive year creating a rolling time period not to exceed 8 years.

(2) "Closed depression" means a topographical basin where water ponds to a seasonal high water mark, has no external drainage, and drainage may occur either through direct conduits to groundwater or low areas where water ponds and infiltrates into the groundwater. Closed depressions may be identified using topographic maps and visual interpretation, ArcGIS tools, or other methods. A seasonal high water mark may include, but is not limited to, areas that collect and retain water for extended time

periods (days or weeks) that result in areas of reduced or no crop growth.

(2m) "Concentrated flow channel" means a natural channel or constructed channel that has been shaped or graded to required dimensions and established in perennial vegetation for the stable conveyance of runoff. Concentrated flow channel may also include non-vegetated channels caused by ephemeral erosion, intermittent streams, drainage ditches, and drainage ends identified on the NRCS soil survey and may be identified as contiguous up-gradient deflections of contour lines on the USGS 1:24,000 scale topographic map.

(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" includes any of the following:

(a) Runoff from a feedlot that can be predicted to discharge a significant amount of pollutants to surface waters of the state or to a direct conduit to ground water.

(b) Runoff of stored manure, including manure leachate, that discharges a significant amount of pollutants to surface waters of the state or to a direct conduit to ground water.

(c) 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).

(d) Discharge of a significant amount of leachate from stored manure to waters of the state.

(7m) "Established crop" means a growing annual crop, perennial crop, or cover crop that provides vegetative cover of the soil.

(8) "Feedlot" means a barnyard, exercise area, or other outdoor area where livestock are concentrated for feeding or other purposes and self-sustaining vegetative cover is not maintained. "Feedlot" does not include a winter grazing area or a bare soil area such as a cattle lane or a supplemental feeding area located within a pasture, provided that the bare soil area is not a significant source of pollution to waters of the state.

(8d) "Incorporation" has the meaning given in s. NR 243.03 (28).

(8h) "Infield bedrock verification" means determining bedrock depth using available data which may include well construction reports, location of drill cores or other subsurface investigations, location of quarries and natural bedrock outcrops, geophysical investigations, and uneven crop growth patterns that are linked to fracture traces in the field.

(8p) "Injection" has the meaning given in s. NR 243.03 (29).

(8t) "Liquid manure" has the meaning given in s. NR 243.03 (32) when applied to facilities subject to ch. NR 243, and the meaning given in UW A2809 for all other agricultural facilities where manure is generated.

Note: Copies of Wisconsin — Extension publication A2809 Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin, dated 2012 (A2809) may be inspected at the office of the department, the Wisconsin Department of Agriculture, Trade and Consumer Protection and the legislative reference bureau, Madison, Wisconsin. A2809 is also available electronically at: <http://learningstore.uwex.edu/assets/pdfs/A2809.pdf>.

(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.

(11m) “Long term no-till” means no-till farming that has been implemented a minimum of 3 consecutive years.

(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.

(13g) “Margin of safety level” has the meaning given in it in s. NR 243.03 (37).

(13j) “Mechanical application” means surface application, injection, or incorporation of manure on cropland or pastures using manure hauling vehicles or equipment.

(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.

(15e) “Overflow” means discharge of manure to the environment resulting from flow over the brim of a facility or from flow directed onto the ground through a man-made device including a pump or pipe.

(15m) “Pasture” means land on which livestock graze or otherwise seek feed in a manner that maintains the vegetative cover over the grazing area. Pasture may include limited areas of bare soil such as cattle lanes and supplemental feeding areas provided the bare soil areas are not significant sources of pollution to waters of the state.

(15n) “Pathogens” has the meaning given in s. NR 204.03 (38).

(15s) “Phosphorus index” or “P-index” means Wisconsin’s agricultural land management planning tool for assessing the potential of a cropped or grazed field to contribute phosphorus to the surface water.

(15w) “Pre-tillage” means using mechanical equipment to reduce soil preferential flow paths, worm holes, root holes, and cracks by turning and mixing the soil prior to and at least 2 inches below the depth of manure application.

(16) “Process wastewater” has the meaning given in s. NR 243.03 (53).

(17) “Silurian bedrock” means the area in Wisconsin where the bedrock consists of Silurian dolomite with a depth to bedrock of 20 feet or less. This area comprises portions of the following counties: Brown, Calumet, Dodge, Door, Fond du Lac, Kenosha, Kewaunee, Manitowoc, Milwaukee, Outagamie, Ozaukee, Racine, Sheboygan, Walworth, Washington, and Waukesha. Areas where Silurian bedrock occurs in Wisconsin can be identified by the most current NRCS, Wisconsin Geological Natural History Survey, department of agriculture, trade and consumer protection, department of natural resources, county maps, or infield bedrock verification methods.

(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 a direct conduit to groundwater.
- (d) A channel that flows to a direct conduit to groundwater.
- (e) An area where the soil depth to groundwater or bedrock is less than 2 feet.

(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.

(18g) “Soil texture” means the surface texture of the Silurian bedrock soil map unit.

(18r) “Solid manure” has the meaning given in s. NR 243.03 (58) when applied to facilities subject to ch. NR 243, Wis. Adm. Code and the meaning given in UW A2809 for all other agricultural facilities where manure is generated.

Note: Copies of the University of Wisconsin — Extension publication A2809 Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin, dated 2012 (A2809) may be inspected at the office of the department, the Wisconsin Department of Agriculture, Trade and Consumer Protection and the legislative reference bureau, Madison, Wisconsin. A2809 is also available electronically at: <http://learningstore.uwex.edu/assets/pdfs/A2809.pdf>.

(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 ft³ 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.

(22m) “UW A2809” means the 2012 version of the University of Wisconsin – Extension Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin (A2809).

Note: Copies of the University of Wisconsin — Extension publication A2809 Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin, dated 2012 (A2809) may be inspected at the office of the department, the Wisconsin Department of Agriculture, Trade and Consumer Protection and the legislative reference bureau, Madison, Wisconsin. A2809 is also available electronically at: <http://learningstore.uwex.edu/assets/pdfs/A2809.pdf>.

(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.

(25) “Winter grazing area” means a cropland or pasture where livestock feed on dormant vegetation or crop residue, with or without supplementary feed, during the period of October 1 to April 30.

History: CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02; CR 09-112: r. and recr. (1), (8), (16), am. (7), (18) (c), (d), cr. (13g), (15e), (15m), (15s), (25), r. (17) Register December 2010 No. 660, eff. 1-1-11; CR 17-062: cr. (2), (2m), (7m), (8d), (8h), (8p), (8t), (11m), (13j), (15n), (15w), (17), (18g), (18r), (22m), Register June 2018 No. 750 eff. 7-1-18; corrections in (8t) and (17) made under s. 35.17, Stats., Register June 2018 No. 750.

NR 151.02 Sheet, rill and wind erosion performance standard. (1) All land where crops or feed are grown, including pastures, shall be managed to achieve a soil erosion rate equal to, or less than, the “tolerable” (T) rate established for that soil.

(2) This standard first applies to pastures beginning July 1, 2012.

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; CR 09–112: am. Register December 2010 No. 660, eff. 1–1–11.

NR 151.03 Tillage setback performance standard. The purpose of this standard is to prevent tillage operations from destroying stream banks and depositing soil directly in surface waters. In this section, “surface water” has the meaning given in s. NR 102.03 (7).

(1) No crop producer may conduct a tillage operation that negatively impacts stream bank integrity or deposits soil directly in surface waters.

(2) No tillage operations may be conducted within 5 feet of the top of the channel of surface waters. Tillage setbacks greater than 5 feet but no more than 20 feet may be required to meet this standard.

(3) Crop producers shall maintain the area within the tillage setback required under sub. (2) in adequate sod or self–sustaining vegetative cover that provides a minimum of 70% coverage.

(4) This section does not apply to grassed waterways installed as conservation practices.

History: CR 09–112: cr. Register December 2010 No. 660, eff. 1–1–11; correction to (intro.) made under s. 13.92 (4) (b) 7., Stats., Register December 2010 No. 660.

NR 151.04 Phosphorus index performance standard. (1) All crop and livestock producers shall comply with this section.

(2) (a) Croplands, pastures, and winter grazing areas shall average a phosphorus index of 6 or less over the accounting period and may not exceed a phosphorus index of 12 in any individual year within the accounting period.

(b) Except as provided under sub. (3), for purposes of compliance with this section the phosphorus index shall be calculated using the version of the Wisconsin Phosphorus Index available as of January 1, 2011.

Note: The Wisconsin Phosphorus Index is maintained by the University of Wisconsin department of soil science and can be found at <http://wpindex.soils.wisc.edu/>.

Note: Soil test phosphorus concentration may be used to help identify fields that are high priority for evaluation with the Wisconsin Phosphorus Index. For example, croplands with soil test phosphorus concentrations of 35 parts per million or greater should be given higher priority for evaluation.

Note: Best management practices developed by the department of agriculture, trade and consumer protection may be used alone or in combination to meet the requirements of this section.

(c) The accounting period required under par. (a) shall meet the following conditions:

1. The accounting period shall begin once a nutrient management plan meeting the requirements of s. NR 151.07 and s. ATCP 50.04 (3) is completed.

2. During the first 8 years of implementation of this standard by a producer, computation of the phosphorus index may be based on a combination of planned crop management and historic data. Planned crop management data is based on projected management and crop rotations. Historic data is based on management and crop rotations that have actually occurred.

3. Once the nutrient management plan under s. NR 151.07 and s. ATCP 50.04 (3) is developed, historic data shall be used for each year as it becomes available.

(3) If the phosphorus index is not applicable to a particular crop or situation, an equivalent calculation approved by the department shall be used to meet the requirements of this section.

Note: The requirement provides for alternative methods to calculate a phosphorus index. Some strategies for assessing and reducing phosphorus index values, algorithms, and software can be found at <http://wpindex.soils.wisc.edu/>.

(4) Producers may not apply nutrients or manure directly, through mechanical means, to surface waters as defined in s. NR 102.03 (7).

(5) The phosphorus index requirement under sub. (2) (a) first takes effect for pastures beginning July 1, 2012.

History: CR 09–112: cr. Register December 2010 No. 660, eff. 1–1–11; correction to (4) made under s. 13.92 (4) (b) 7., Stats., Register December 2010 No. 660.

NR 151.05 Manure storage facilities performance standards. (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 and minimize leakage of the facility in order to comply with groundwater standards. The levels of materials in the storage facility may not exceed the margin of safety level.

(am) Storage facilities that are constructed or significantly altered on or after January 1, 2011, shall be designed and operated to contain the additional volume of runoff and direct precipitation entering the facility as a result of a 25–year, 24–hour storm.

(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) **EXISTING FACILITIES.** (a) Manure storage facilities in existence as of October 1, 2002, that pose an imminent threat to public health, fish and aquatic life, or groundwater shall be upgraded, replaced, or abandoned in accordance with this section.

(b) Levels of materials in storage facilities may not exceed the margin of safety level.

Note: Manure storage facilities are sometimes used to store non–agricultural wastes, such as septage or organic food wastes. These facilities may be subject to additional regulatory and cost–sharing requirements.

History: CR 00–027: cr. Register September 2002 No. 561, eff. 10–1–02; CR 09–112: am. (title), (2) (a), (4), cr. (2) (am) Register December 2010 No. 660, eff. 1–1–11.

NR 151.055 Process wastewater handling performance standard. (1) All livestock producers shall comply with this section.

(2) There may be no significant discharge of process wastewater to waters of the state.

(3) The department shall consider all of the following factors when determining whether a discharge of process wastewater is a significant discharge to waters of the state:

(a) Volume and frequency of the discharge.

(b) Location of the source relative to receiving waters.

(c) Means of process wastewater conveyance to waters of the state.

(d) Slope, vegetation, rainfall, and other factors affecting the likelihood or frequency of process wastewater discharge to waters of the state.

(e) Available evidence of discharge to a surface water of the state or to a direct conduit to groundwater as defined under s. NR 151.002 (11m).

(f) Whether the process wastewater discharge is to a site that is defined as a site susceptible to groundwater contamination under s. NR 151.015 (18).

(g) Other factors relevant to the impact of the discharge on water quality standards of the receiving water or to groundwater standards.

Note: Existing technical standards contained in the U.S. department of agriculture natural resources conservation service field office technical guide may be used for managing process wastewater. When such standards are not applicable, the landowner or operator is expected to take reasonable steps to reduce the significance of the discharge in accordance with the agricultural performance standard and prohibition compliance requirements of this chapter. The Wisconsin department of agriculture, trade and consumer protection is responsible under s. 281.16 (3) (c), Stats., for developing additional management practices if needed.

History: CR 09-112: cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.06 Clean water diversion performance standard. (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; CR 09-112: am. (title) Register December 2010 No. 660, eff. 1-1-11.

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 the application of industrial waste and byproducts regulated under ch. NR 214, municipal sludge regulated under ch. NR 204, and septage regulated under ch. NR 113, provided the material is not commingled with manure prior to application.

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.

Note: If an application of material to cropland is regulated under ch. NR 113, 204, or 214, the management practices, loading limitations, and other restrictions specified in the applicable regulation apply to that application. However, nutrient management plans developed in accordance with this performance standard must account for all nutrient sources, including industrial waste and byproducts, municipal sludge, and septage. This means that the future application of manure and commercial fertilizer may be restricted by this performance standard due to other applications of industrial waste and byproducts, municipal sludge, and septage. In addition, it means that if industrial waste and byproducts, municipal sludge, or septage are placed in a manure storage structure and mixed with manure, the commingled material is also covered by this standard and must be accounted for by the producer when preparing and implementing a nutrient management plan.

(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 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 (61).

(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; CR 09-112: am. (2) Register December 2010 No. 660, eff. 1-1-11; correction to (4) (c) made under s. 13.92 (4) (b) 7., Stats., Register December 2010 No. 660.

NR 151.075 Silurian bedrock performance standards. (1) All crop producers and livestock producers that mechanically apply manure directly or through contract or other agreement to cropland or pasture areas that meet the definition of Silurian bedrock under s. NR 151.015 (17) must comply with this section.

(2) Mechanical manure application may not cause the fecal contamination of water in a well.

(3) Manure may not be mechanically applied on areas of cropland or pastures that have 24 inches or less of separation between the ground surface and apparent water table.

(4) Manure must be applied in conformance with a nutrient management plan that meets the requirements under all the following:

(a) The plan must be consistent with s. NR 151.07.

(b) The plan must be consistent with NRCS Technical Standard 590, dated December 2015.

Note: Copies of the Wisconsin Natural Resources Conservation Service ("NRCS") Nutrient Management Standard 590, dated December 2015, including the Technical Note (TN-1) referenced in the standard, may be inspected at the offices of the department, the Wisconsin Department of Agriculture, Trade and Consumer Protection, county land conservation departments and the legislative reference bureau, Madison Wisconsin. NRCS 590 (and TN-1) is also available electronically at: [https://efotg.sc.egov.usda.gov/references/public/WI/590_Standard-\(2015-12\).pdf](https://efotg.sc.egov.usda.gov/references/public/WI/590_Standard-(2015-12).pdf) and https://efotg.sc.egov.usda.gov/references/public/WI/Conservation_Planning-TN-1.pdf.

(c) The plan must be designed and implemented consistent with this section to manage manure so as to reduce the risk of pathogen delivery to groundwater and prevent exceedances of groundwater water quality standards.

(d) The plan must use NRCS soil survey maps/information or other methods as a planning tool to identify Silurian bedrock within or adjacent to cropland and pastures.

(5) Manure may not be mechanically applied on croplands or pastures until infield bedrock verification or Silurian bedrock map information is used to identify areas where the Silurian bedrock soil depth is less than 5 feet. If infield bedrock verification uses drill cores or other subsurface investigations, they must be back-filled with soil within 72 hours of being created.

Note: Silurian bedrock map information developed by the department of agriculture, trade and consumer protection and/or department of natural resources, may be used alone or in combination to meet the requirements of this section.

Note: Silurian bedrock map information, available from the University of Wisconsin department of soil science, can be found at <https://snapplus.wisc.edu/maps/>.

(6) Manure may not be mechanically applied on croplands or pastures where the Silurian bedrock soil depth is less than 5 feet until such fields are evaluated and ranked for risk of pathogen delivery to groundwater. Areas determined to have a high risk for pathogen delivery to groundwater must be avoided or must be lowest priority for manure application.

(7) Mechanical application of manure and headland stacking of manure is prohibited on soils with 5 feet or less to Silurian bedrock when soils are frozen or snow covered.

(8) Mechanical application of manure is prohibited within Silurian bedrock having soil depths less than 5 feet when rainfall greater than one inch is forecast within 24 hours of planned application.

(9) Mechanical application of manure is prohibited for soils with less than 2 feet to Silurian bedrock.

(10) For soils with 2 to 3 feet to Silurian bedrock, all the following apply:

(a) No mechanical application of solid manure unless all the following are met:

1. Solid manure is incorporated within 72 hours to no more than 4 inches below ground.

2. At least one of the following is implemented:

a. Solid manure is applied at a rate no greater than 15 tons/acre/year, or the rate that supplies the crop nitrogen recommendation from UW A2809, whichever is less.

b. Solid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Solid manure is composted or treated to reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 colony-forming units or most probable number per gram total solids on a dry weight basis.

Note: Copies of the University of Wisconsin — Extension publication A2809 Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin, dated 2012 (A2809) may be inspected at the office of the department, the Wisconsin Department of Agriculture, Trade and Consumer Protection and the legislative reference bureau, Madison, Wisconsin. A2809 is also available electronically at: <http://learningstore.uwex.edu/assets/pdfs/A2809.pdf>.

(b) No mechanical application of liquid manure unless all the following are met:

1. Pre-tillage is completed, unless exempt under par. (c) or (d).

2. Liquid manure is injected or incorporated within 24 hours to no more than 4 inches below ground, unless exempt under par. (c).

3. At least one of the following is implemented:

a. Total liquid manure application is applied in compliance with UW A2809, or limited to Table 1, whichever is less, to prevent hydraulic overloading of the soil.

Soil Texture	2 to 3 Feet Depth (gal/ac/yr)	3 to 5 Feet Depth (gal/ac/wk)	5 to 20 Feet Depth (gal/ac/wk)
Sand	6,750	6,750	13,500
Sandy Loam	13,500	13,500	27,000*
Loam	13,500	13,500	27,000*
Silt Loam	13,500	13,500	27,000*
Clay Loam	13,500	13,500	20,000*
Clay	6,750	6,750	13,500

*It is anticipated that this rate would exceed the UW A2809 annual (crop year) application rate.

b. Liquid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.

c. Liquid manure is treated to substantially reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 most probable number or colony-forming units per 100 milliliter sample.

Note: Copies of the University of Wisconsin — Extension publication A2809 Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin, dated 2012 (A2809) may be inspected at the office of the department, the Wisconsin Department of Agriculture, Trade and Consumer Protection and the legislative reference bureau, Madison, Wisconsin. A2809 is also available electronically at: <http://learningstore.uwex.edu/assets/pdfs/A2809.pdf>.

(c) Pre-tillage, incorporation or injection is not required if cropland or pastures meet long term no-till or have a perennial or established crop. Each surface application of liquid manure must not exceed 6,750 gallons per acre.

(d) Pre-tillage is not required if demonstrated to the department that a field cannot meet s. NR 151.02 over an eight-year crop rotation using a combination of the following practices: tillage, crops, contouring, filter strips, or cover crops.

(11) For soils with 3 to 5 feet to Silurian bedrock, all the following apply:

(a) No mechanical application of solid manure unless all the following are met:

1. Incorporated within 72 hours to no more than 6 inches below ground.
2. At least one of the following is implemented:
 - a. Manure is applied in accordance with UW A2809 annual application rate, or at a rate of 15 tons/acre/year, whichever is less.
 - b. Manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.
 - c. Manure is composted or treated to reduce pathogen levels via practices to a fecal coliform bacteria density of 500,000 colony-forming units, or most probable number per gram total solids on a dry weight basis.

Note: Copies of the University of Wisconsin — Extension publication A2809 Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin, dated 2012 (A2809) may be inspected at the office of the department, the Wisconsin Department of Agriculture, Trade and Consumer Protection and the legislative reference bureau, Madison, Wisconsin. A2809 is also available electronically at: <http://learningstore.uwex.edu/assets/pdfs/A2809.pdf>

(b) No mechanical application of liquid manure unless all the following are met:

1. Pre-tillage is completed unless exempt under par. (c) or (d).
2. Liquid manure is injected or incorporated within 24 hours to no more than 6 inches below ground, unless exempt under par. (c).
3. At least one of the following is implemented:
 - a. Total liquid manure application is applied in compliance with UW A2809, or limited to sub. (10) (b) 3. Table 1 rates, whichever is less, to prevent hydraulic overloading of the soil.
 - b. Liquid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.
 - c. Liquid manure is treated to substantially reduce pathogen levels via practices to a fecal coliform bacteria density of less than 500,000 most probable number or colony-forming units per 100 milliliter sample.

Note: Copies of the University of Wisconsin — Extension publication A2809 Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin, dated 2012 (A2809) may be inspected at the office of the department, the Wisconsin Department of Agriculture, Trade and Consumer Protection and the legislative reference bureau, Madison, Wisconsin. A2809 is also available electronically at: <http://learningstore.uwex.edu/assets/pdfs/A2809.pdf>

(c) Pre-tillage, incorporation or injection is not required if cropland or pastures meet long term no-till or have a perennial or established crop. Each surface application of liquid manure must not exceed 6,750 gallons per acre.

(d) Pre-tillage is not required if demonstrated to the department that a field cannot meet s. NR 151.02 over an eight-year crop rotation using a combination of the following practices: tillage, crops, contouring, filter strips, or cover crops.

(12) For soils with 5 to 20 feet to Silurian bedrock, all the following apply:

- (a) No mechanical application of liquid manure unless all the following are met:
 1. Pre-tillage is completed unless exempt under par. (b) or (c).
 2. Liquid manure is injected or incorporated within 24 hours to no more than 6 inches below ground, unless exempt under par. (b).
 3. At least one of the following is implemented:
 - a. Total liquid manure application is applied in compliance with UW A2809, or limited to sub. (10) (b) 3. Table 1 rates, whichever is less, to prevent hydraulic overloading of the soil.
 - b. Liquid manure is applied in compliance with UW A2809 and within 10 days of the planting date or applied on a perennial or established crop.
 - c. Liquid manure is treated to substantially reduce pathogen levels via practices to a fecal coliform bacteria density of less than

500,000 most probable number or colony-forming units per 100 milliliter sample.

Note: Copies of the University of Wisconsin — Extension publication A2809 Nutrient Application Guidelines for Field, Vegetable, and Fruit Crops in Wisconsin, dated 2012 (A2809) may be inspected at the office of the department, the Wisconsin Department of Agriculture, Trade and Consumer Protection and the legislative reference bureau, Madison, Wisconsin. A2809 is also available electronically at: <http://learningstore.uwex.edu/assets/pdfs/A2809.pdf>.

(b) Pre-tillage, incorporation or injection is not required if cropland or pastures meet long term no-till or have a perennial or established crop. Each surface application of liquid manure must not exceed 10,000 gallons per acre.

(c) Pre-tillage is not required if demonstrated to the department that a field cannot meet s. NR 151.02 over an eight-year crop rotation using a combination of the following practices: tillage, crops, contouring, filter strips, or cover crops.

Note: Silurian bedrock map information for soils with 5 to 20 feet to Silurian bedrock, developed by the department of agriculture, trade and consumer protection and/or department of natural resources, may be used alone or in combination to meet the requirements of this section.

(13) Mechanical manure applications are prohibited within any of the following:

- (a) 1000 feet of a community water system as defined in s. NR 811.02.
- (b) 250 feet of a private water system or a non-community water system as defined in s. NR 812.07.
- (c) An area within 300 feet upslope or 100 feet downslope of a direct conduit to groundwater as defined in s. NR 151.002 (11m).
- (d) 100 feet of a concentrated flow channel that leads to a water system included in par. (a) or (b) or direct conduit to groundwater in par. (c).

(14) Mechanical manure applications are prohibited on or within 100 feet of Silurian bedrock in a closed depression unless the manure is injected or incorporated within 24 hours or prior to precipitation capable of producing runoff, whichever comes first. The prohibition of mechanical application of manure does not apply to areas following long term no-till practices or with a perennial or established crop.

(15) No surface application of manure on slopes of 6 percent or greater in cropland and pasture areas that have concentrated flow channels that drain to a closed depression in Silurian bedrock, unless the material is incorporated within 24 hours or prior to precipitation capable of producing runoff, whichever comes first. The prohibition of surface application of manure does not apply to areas following long term no-till practices or with a perennial or established crop.

(16) Practices must retain land applied manure on the soil where they are applied with minimal movement to maintain setback distances specified in subs. (13) and (14).

History: CR 17-062: cr. Register June 2018 No. 750 eff. 7-1-18; corrections in (10) (b) 1., 2., (11) (b) 1., 2., (12) (a) 1., 2., (13) (intro.), (d), made under s. 35.17, Stats., Register June 2018 No. 750.

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 151.005, 151.02, 151.03, 151.04, 151.07, and 151.075.

(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 landowners 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, landowner records, 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 subds. 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.

2. An existing cropland also includes land enrolled on October 1, 2002, in the conservation reserve or conservation reserve enhancement program administered by the U.S. department of agriculture. This subdivision does not apply to croplands re-enrolled after October 1, 2002.

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, landowner records, 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. Eligible technical assistance costs include best management practice planning, design, installation supervision, and installation certification.

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), including any required offer of cost sharing, 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., provide cost sharing consistent with the hardship determination.

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.

(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 not less than 60 days nor more than 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 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.

(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 not less than 60 days nor more than 3 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., except in cases of repeated mismanagement. In such cases, the department may pursue direct enforcement under s. 281.98, Stats., for the second and any subsequent offenses.

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; CR 09-112: am. (1), (4) (b) 2., (c) 3., (d) 2. a., c., (5) (b) 2. b., (6) (b) 1. b., (7) (b), r. (5) (a) 3. h., (6) (a) 3. e. Register December 2010 No. 660, eff. 1-1-11; CR 17-062: am. (1), Register June 2018 No. 750 eff. 7-1-18.

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 151.005, 151.05, 151.055, 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 prohibition, the owner or operator shall bring the livestock facility back into compliance regardless of cost-share availability.

Note: The department or a municipality may use conservation plans, cost share agreements, deed restrictions, personal observations, landowner records, or other information to determine whether a change has occurred.

(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 prohibition and that undergoes a change in the livestock facility that results in noncompliance with the livestock performance standard or prohibition. This includes manure storage facilities that fail to meet the requirements of s. NR 151.05 (3) and were either: constructed on or after October 1, 2002; or were constructed prior to October 1, 2002, and subject through October 1, 2002, to the operation and maintenance provisions of a cost share agreement.

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 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. Eligible technical assistance costs include best management practice planning, design, installation supervision, and installation certification.

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), including any required offer of cost sharing, 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., provide cost sharing consistent with the hardship determination.

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.

(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 not less than 60 days nor more than 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.

(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 not less than 60 days nor more than 3 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, 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.

(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., except in cases of repeated mismanagement, such as allowing repeated manure storage overflows, where the department may pursue direct enforcement under s. 281.98, Stats., for the second and subsequent offenses.

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; CR 09-112: am. (1) (intro.), (5) (b) 2. c., 5., (c) 3., (d) 2. a., c., (6) (b) 2. b., (7) (b) 1. b., (8) (b), r. (6) (a) 3. h., (7) (a) 3. e. Register December 2010 No. 660, eff. 1-1-11.

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 uncodified water quality protection standards that exceed state standards, those uncodified 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 uncodified 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 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 151.105 Construction site performance standard for non-permitted sites. (1) **APPLICABILITY.** Except as provided under sub. (2), this section applies to all of the following:

(a) A construction site that consists of land disturbing construction activity of less than one acre.

Note: Land disturbing construction sites of less than one acre are not regulated under subch. III of ch. NR 216 unless designated by the department under s. NR 216.51 (3).

(b) 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.

(2) **EXEMPTIONS.** This section does not apply to the following:

(a) One- and two- family dwellings regulated by the department of commerce pursuant to s. 101.653, Stats.

(b) Agricultural facilities and practices.

(c) Silviculture activities.

(3) **RESPONSIBLE PARTY.** The landowner of the construction site or other person contracted or obligated by other agreement with the landowner to implement and maintain construction site BMPs is the responsible party and shall comply with this section.

(4) REQUIREMENTS. Erosion and sediment control practices at each site where land disturbing construction activity is to occur shall be used to prevent or reduce all of the following:

- (a) The deposition of soil from being tracked onto streets by vehicles.
- (b) The discharge of sediment from disturbed areas into on-site storm water inlets.
- (c) The discharge of sediment from disturbed areas into adjacent waters of the state.
- (d) The discharge of sediment from drainage ways that flow off the site.
- (e) The discharge of sediment by dewatering activities.
- (f) The discharge of sediment eroding from soil stockpiles existing for more than 7 days.
- (g) The transport by runoff into waters of the state of chemicals, cement and other building compounds and materials on the construction site during the construction period. 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.

Note: In accordance with subch. V, the department has developed technical standards to help meet the construction site performance standards. These technical standards are available from the department at dnr.wi.gov.

(5) LOCATION. BMPs shall be located so that treatment occurs before runoff enters waters of the state.

(6) IMPLEMENTATION. The BMPs used to comply with this section shall be implemented as follows:

- (a) Erosion and sediment control practices shall be constructed or installed before land disturbing construction activities begin.
- (b) Erosion and sediment control practices shall be maintained until final stabilization.
- (c) Final stabilization activity shall commence when land disturbing activities cease and final grade has been reached on any portion of the site.
- (d) Temporary stabilization activity shall commence when land disturbing construction activities have temporarily ceased and will not resume for a period exceeding 14 calendar days.
- (e) BMPs that are no longer necessary for erosion and sediment control shall be removed by the responsible party.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.11 Construction site performance standard for sites of one acre or more. (1) DETERMINATION OF SOIL LOSS.

In this section, soil loss is calculated using the appropriate 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 universal soil loss equation and its successors, revised universal soil loss equation and revised universal soil loss equation 2, utilize an R factor which has been developed to estimate soil erosion, averaged over extended time periods. The R factor can be modified to estimate monthly and single-storm erosion.

(2) APPLICABILITY. This section applies to any construction site that consists of one acre or more of land disturbing construction activity.

(a) Subsections (3), (4), (5), (6), and (7) apply to all of the following:

- 1. Construction sites for which the department received a notice of intent in accordance with subch. III of ch. NR 216 before January 1, 2011.
- 2. Construction sites for which the department of commerce received a notice of intent in accordance with ch. SPS 360 before January 1, 2011.
- 3. Construction sites for which a bid has been advertised or construction contract signed for which no bid was advertised, before January 1, 2011.

(b) Subsections (3) (a) to (d), (4), (5), (6m), (7), and (8) apply to all of the following:

1. Construction sites for which the department received a notice of intent in accordance with subch. III of ch. NR 216 on or after January 1, 2011.

2. Construction sites for which a bid has been advertised or construction contract signed for which no bid was advertised, on or after January 1, 2011.

(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.

Note: This exemption is for nonpoint discharges from agricultural facilities and practices, such as cropping and pasturing. Subchapter III of ch. NR 216 also exempts nonpoint discharges, but regulates point source discharges of storm water, such as the construction of barns, manure storage facilities, sand settling lanes, and barnyard runoff control systems. Under s. NR 216.42 (2), such construction sites are subject to the construction performance standards of this section.

(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 with the landowner, is the responsible party and shall comply with this section.

(5) PLAN. The responsible party under sub. (4) shall develop and implement a written plan for each construction site. The plan shall incorporate the applicable 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) PRE-JANUARY 1, 2011 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.

(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.

(6m) POST-JANUARY 1, 2011 REQUIREMENTS. The plan required under sub. (5) shall meet all of the following:

(a) *Erosion and sediment control practices.* Erosion and sediment control practices at each site where land disturbing construction activity is to occur shall be used to prevent or reduce all of the following:

1. The deposition of soil from being tracked onto streets by vehicles.
2. The discharge of sediment from disturbed areas into on-site storm water inlets.
3. The discharge of sediment from disturbed areas into adjacent waters of the state.
4. The discharge of sediment from drainage ways that flow off the site.
5. The discharge of sediment by dewatering activities.
6. The discharge of sediment eroding from soil stockpiles existing for more than 7 days.
7. The discharge of sediment from erosive flows at outlets and in downstream channels.
8. The transport by runoff into waters of the state of chemicals, cement, and other building compounds and materials on the construction site during the construction period. 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 subdivision.

9. The transport by runoff into waters of the state of untreated wash water from vehicle and wheel washing.

Note: Wastewaters, such as from concrete truck washout, needs to be properly managed to limit the discharge of pollutants to waters of the state. A separate permit may be needed from the department where a wastewater discharge has the potential to adversely impact waters of the state. The appropriate department wastewater specialist should be contacted to determine if wastewater permit coverage is needed where wastewater will be discharged to waters of the state.

(b) *Sediment performance standards.* In addition to the erosion and sediment control practices under par. (a), the following erosion and sediment control practices shall be employed:

1. For construction sites for which the department received a notice of intent for the construction project in accordance with subch. III of ch. NR 216, within 2 years after January 1, 2011, BMPs that, by design, achieve a reduction of 80 percent, or to the maximum extent practicable, 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.

2. For construction sites for which the department received a notice of intent for the construction project in accordance with subch. III of ch. NR 216, 2 years or more after January 1, 2011, BMPs that, by design, discharge no more than 5 tons per acre per year, or to the maximum extent practicable, of the sediment load carried in runoff from initial grading to final stabilization.

3. The department may not require any person to employ more BMPs than are needed to meet a performance standard in order to comply with maximum extent practicable. Erosion and sediment control BMPs may be combined to meet the requirements of this paragraph. The department may give credit toward meeting the sediment performance standard of this paragraph for limiting the duration or area, or both, of land disturbing construction activity, or for other appropriate mechanisms.

4. Notwithstanding subd. 1. or 2., if BMPs cannot be designed and implemented to meet the sediment performance standard, the plan shall include a written, site-specific explanation of why the sediment performance standard cannot be met and how the sediment load will be reduced to the maximum extent practicable.

Note: The department of natural resources has developed guidance document no. 3800-2017-03 to assist with compliance with the 5 tons per acre sediment performance standard.

Note: In accordance with subch. V, the department has developed technical standards to help meet the construction site performance standards. These technical standards are available from the department at dnr.wi.gov.

(c) *Preventive measures.* The plan shall incorporate all of the following:

1. Maintenance of existing vegetation, especially adjacent to surface waters whenever possible.
2. Minimization of soil compaction and preservation of topsoil.
3. Minimization of land disturbing construction activity on slopes of 20% or more.
4. Development of spill prevention and response procedures.

(7) LOCATION. BMPs shall be located so that treatment occurs before runoff enters 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.

(8) IMPLEMENTATION. The BMPs used to comply with this section shall be implemented as follows:

(a) Erosion and sediment control practices shall be constructed or installed before land disturbing construction activities begin in accordance with the plan developed under sub. (5).

(b) Erosion and sediment control practices shall be maintained until final stabilization.

(c) Final stabilization activity shall commence when land disturbing activities cease and final grade has been reached on any portion of the site.

(d) Temporary stabilization activity shall commence when land disturbing construction activities have temporarily ceased and will not resume for a period exceeding 14 calendar days.

(e) BMPs that are no longer necessary for erosion and sediment control shall be removed by the responsible party.

History: CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02; CR 09-112: am. (title), (1), (2), (4), (5), (6) (title), (7), cr. (6m), (8) Register December 2010 No. 660, eff. 1-1-11; correction in (2) (a) 2. made under s. 13.93 (4) (b) 7., Stats., Register February 2012 No. 674.

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.

Note: Section Comm 61.115 was repealed effective 4-1-07.

(bm) A post-construction site for which the department received a notice of intent for the construction project, in accordance with subch. III of ch. NR 216, on or after January 1, 2011. Post-construction sites for which the department received a notice of intent for the construction project, in accordance with subch. III of ch. NR 216, on or after January 1, 2011, shall meet the performance standards of ss. NR 151.122 to 151.128.

(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-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 (1) to (6).

(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 from the storm water coordinator in the runoff management section of the bureau of watershed management at dnr.wi.gov.

(b) *Peak discharge.* 1. By design, BMPs shall be employed to maintain or reduce the peak runoff discharge rates, to the maxi-

imum 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

available from the storm water coordinator in the runoff management section of the bureau of watershed management at dnr.wi.gov.

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

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; CR 09-112: cr. (2) (bm) Register December 2010 No. 660, eff. 1-1-11.

NR 151.121 Post-construction performance standards. (1) **GENERAL.** In ss. NR 151.121 to 151.128, "post-construction site" means a construction site subject to regulation under this subchapter, after construction is completed and final stabilization has occurred.

(2) **APPLICABILITY.** Sections NR 151.121 to 151.128 apply 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 with less than 10 percent connected imperviousness, based on the area of land disturbance, provided the cumulative area of all impervious surfaces is less than one acre. However, the exemption of this paragraph does not include exemption from the protective area standard of s. NR 151.125.

(b) Agricultural facilities and practices.

Note: This exemption includes both point and nonpoint discharges from agricultural facilities and practices. Therefore, post-construction structures such as barns, manure storage facilities, sand settling lanes, and barnyard runoff control systems are subject to subch. II and are not subject, under s. NR 216.47 (1), to the post-construction performance standards of this subchapter.

(c) Underground utility construction, 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 with the landowner to implement and maintain post-construction storm water BMPs is the responsible party and shall comply with ss. NR 151.121 to 151.128.

(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 ss. NR 151.122 to 151.128.

Note: Examples of storm water management plans that may be used to comply with ss. NR 151.122 to 151.128 may include those specified in s. NR 216.47 or the municipal storm water management program specified in s. NR 216.07 (5).

(5) **MAINTENANCE OF EFFORT.** For redevelopment sites where the redevelopment will be replacing older development that was subject to post-construction performance standards of this chapter in effect on or after October 1, 2004, the responsible party shall meet the total suspended solids reduction, peak flow control, infiltration, and protective areas standards applicable to the older development or meet the redevelopment standards of ss. NR 151.122 to 151.125, whichever are more stringent.

History: CR 09-112: cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.122 Total suspended solids performance standard. (1) **REQUIREMENT.** BMPs shall be designed, installed and maintained to control total suspended solids carried in runoff from the post-construction site. BMPs shall be designed in accordance with Table 1., or to the maximum extent practicable as provided in sub. (3). The design shall be based on an average annual rainfall, as compared to no runoff management controls.

Development Type	TSS Reduction
New Development	80 percent
In-fill \geq 5 acres	80 percent
In-fill < 5 acres on or after October 1, 2012	80 percent
Redevelopment	40 percent of load from parking areas and roads
In-fill < 5 acres and before October 1, 2012	40 percent

(2) **REDEVELOPMENT.** Except as provided in s. NR 151.121 (5), the redevelopment total suspended solids reduction standard of Table 1., applies to redevelopment.

(3) **MAXIMUM EXTENT PRACTICABLE.** If the design cannot meet a total suspended solids reduction performance standard of sub. (1), Table 1., the storm water management plan shall include a written, site-specific explanation of why the total suspended solids reduction performance standard cannot be met and why the total suspended solids load will be reduced only to the maximum extent practicable. The department may not require any person to exceed the applicable total suspended solids reduction performance standard to meet the requirements of maximum extent practicable.

Note: Pollutant loading models such as DETPOND, 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 these models is available from the department's storm water management program at dnr.wi.gov. Use the most recent version of the model and the rainfall files and other parameter files identified for Wisconsin users unless directed otherwise by the regulatory authority.

(4) **OFF-SITE DRAINAGE.** When designing BMPs, runoff draining to the BMP from off-site shall be taken into account in determining the treatment efficiency of the practice. Any impact on the

efficiency shall be compensated for by increasing the size of the BMP accordingly.

History: CR 09-112: cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.123 Peak discharge performance standard.

(1) **REQUIREMENT.** By design, BMPs shall be employed to maintain or reduce the 1-year, 24-hour and the 2-year, 24-hour post-construction peak runoff discharge rates to the 1-year, 24-hour and the 2-year, 24-hour pre-development peak runoff discharge rates respectively, or to the maximum extent practicable. The runoff curve numbers in Table 2. shall be used to represent the actual pre-development condition.

Runoff Curve Number	Hydrologic Soil Group			
	A	B	C	D
Woodland	30	55	70	77
Grassland	39	61	71	78
Cropland	55	69	78	83

Note: Where the pre-development condition is a combination of woodland, grassland, or cropland, the runoff curve number should be pro-rated by area.

(2) **EXEMPTIONS.** This section does not apply to the following:

(a) A post-construction site where the discharge is directly into a lake over 5,000 acres or a stream or river segment draining more than 500 square miles.

(b) Except as provided under s. NR 151.121 (5), a redevelopment post-construction site.

(c) An in-fill development area of less than 5 acres.

Note: The intent of s. NR 151.123 is to minimize streambank and shoreline erosion under bank-full conditions.

History: CR 09-112: cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.124 Infiltration performance standard.

(1) **REQUIREMENT.** BMPs shall be designed, installed, and maintained to infiltrate runoff in accordance with the following or to the maximum extent practicable:

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

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

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

Note: A histogram showing the relationship between connected imperviousness and land use is available from the department at dnr.wi.gov.

(2) **PRE-DEVELOPMENT.** Pre-development condition shall be the same as specified in s. NR 151.123 (1), Table 2.

Note: A model that calculates runoff volume, such as SLAMM, P8, or an equivalent methodology may be used. For performance standards based on an average annual rainfall, specific rainfall files for five geographic locations around the state may be used. Information on how to access SLAMM and P8 and the rainfall files is available from the department's storm water management program at dnr.wi.gov. Use the most recent version of the model and the parameter files for Wisconsin users unless directed otherwise by the regulatory authority.

(3) **SOURCE AREAS.** (a) *Prohibitions.* Runoff from the following areas may not be infiltrated and may not qualify as contributing to meeting the requirements of this section unless demonstrated to meet the conditions of sub. (6):

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

2. Storage and loading areas of a tier 2 industrial facility identified in s. NR 216.21 (2) (b).

Note: Runoff from the employee and guest parking and rooftop areas of a tier 2 facility may be infiltrated but runoff from the parking area may require pretreatment.

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

(b) *Exemptions.* Runoff from the following areas may be credited toward meeting the requirement when infiltrated, but the decision to infiltrate runoff from these source areas is optional:

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

2. Parking areas and access roads less than 5,000 square feet for industrial development not subject to the prohibitions under par. (a).

3. Except as provided under s. NR 151.121 (5), redevelopment post-construction sites.

4. In-fill development areas less than 5 acres.

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

(4) **LOCATION OF PRACTICES.** (a) *Prohibitions.* Infiltration practices may not be located in the following areas:

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

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

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

(b) *Separation distances.* 1. Infiltration practices shall be located so that the characteristics of the soil and the separation distance between the bottom of the infiltration system and the elevation of seasonal high groundwater or the top of bedrock are in accordance with Table 3:

Source Area	Separation Distance	Soil Characteristics
Industrial, Commercial, Institutional Parking Lots and Roads	5 feet or more	Filtering Layer
Residential Arterial Roads	5 feet or more	Filtering Layer

Roofs Draining to Subsurface Infiltration Practices	1 foot or more	Native or Engineered Soil with Particles Finer than Coarse Sand
Roofs Draining to Surface Infiltration Practices	Not Applicable	
All Other Impervious Source Areas	3 feet or more	Filtering Layer

2. Notwithstanding par. (b), applicable requirements for injection wells classified under ch. NR 815 shall be followed.

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

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

2. Where the least permeable soil horizon to 5 feet below the proposed bottom of the infiltration system using the U.S. department of agriculture method of soils analysis is one of the following: sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, or clay.

(5) *ALTERNATE USE.* Where alternate uses of runoff are employed, such as for toilet flushing, laundry or irrigation or storage on green roofs where an equivalent portion of the runoff is captured permanently by rooftop vegetation, such alternate use shall be given equal credit toward the infiltration volume required by this section.

(6) *GROUNDWATER STANDARDS.* (a) Infiltration systems designed in accordance with this section 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 par. (a), the discharge from BMPs shall remain below the enforcement standard at the point of standards application.

(7) *PRETREATMENT.* 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 sub. (6). Pretreatment options may include, but are not limited to, oil and grease separation, sedimentation, biofiltration, filtration, swales, or filter strips.

(8) *MAXIMUM EXTENT PRACTICABLE.* Where the conditions of subs. (3) and (4) limit or restrict the use of infiltration practices, the performance standard of s. NR 151.124 shall be met to the maximum extent practicable.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.125 Protective areas performance standard. (1) *DEFINITION.* In this section, “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 section, “protective area” does not include any area of land adjacent to any stream enclosed within a pipe or culvert, so that runoff cannot enter the enclosure at this location.

(a) For outstanding resource waters and exceptional resource waters, 75 feet.

(b) For perennial and intermittent streams identified on a U.S. 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 wetlands not subject to par. (e) or (f), 50 feet.

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

Note: Information on wetland types, including ephemeral ponds, is available at (608) 266-7012.

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

(g) In pars. (d) to (f), 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.

(h) 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 compliance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in compliance with all applicable state and federal regulations shall be measured from the wetland boundary delineation after fill has been placed. Where there is a legally authorized wetland fill, the protective area standard need not be met in that location.

(i) For concentrated flow channels with drainage areas greater than 130 acres, 10 feet.

(j) Notwithstanding pars. (a) to (i), the greatest protective area width shall apply where rivers, streams, lakes, and wetlands are contiguous.

Note: A stream or lake is not eligible for a lower protective area width even if contiguous to a less susceptible wetland.

(2) *APPLICABILITY.* This section applies to post-construction sites located within a protective area, except those areas exempted pursuant to sub. (4).

(3) *REQUIREMENTS.* The following requirements shall be met:

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

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

Note: It is recommended that seeding of non-invasive vegetative cover be used in the protective areas. Some invasive plants are listed in ch. NR 40. 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 ponds, that are designed to control pollutants from non-point sources, may be located in the protective area.

Note: Other laws, such as ch. 30, Stats., and chs. NR 103, 115, 116, and 117 and their associated review and approval processes may apply in the protective area.

(4) EXEMPTIONS. This section does not apply to any of the following:

- (a) Except as provided under s. NR 151.121 (5), 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) Areas of post-construction sites from which the runoff does not enter the surface water, including wetlands, without first being treated by a BMP to meet the requirements of ss. NR 151.122 to 151.123, 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 par. (e) is not necessary since the runoff at that location is treated prior to entering the surface water. Other practices necessary to meet the requirements of this section, such as a swale or pond, will need to be designed and implemented to reduce runoff pollutants prior to runoff entering a surface water of the state. The requirements of ch. NR 103 still apply and should be considered before runoff is diverted to or from a wetland.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.126 Fueling and vehicle maintenance areas performance standard. Fueling and vehicle maintenance areas shall have BMPs designed, installed, and maintained to reduce petroleum within runoff, so that the runoff that enters waters of the state contains no visible petroleum sheen, or to the maximum extent practicable.

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.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.127 Location. To comply with the standards required under ss. NR 151.122 to 151.124, 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.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.128 Timing. The BMPs that are required under ss. NR 151.122 to 151.126 shall be installed before the construction site has undergone final stabilization.

Note: In accordance with subch. V, the department has developed technical standards to help meet the post-construction performance standards. These technical standards are available from the department at dnr.wi.gov.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.13 Developed urban area performance standard for municipalities. (1) INCORPORATED MUNICIPALITIES. (a) *Applicability.* This subsection 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 U.S. census, as well as any commercial and industrial areas contiguous to these areas.

Note: The municipality has primary responsibility for complying with this subsection. However, the public 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:

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 turf and garden fertilizers and pesticides, proper management of pet wastes, and prevention of dumping oil and other chemicals in storm sewers.

2. A municipal program, as appropriate, for the management of leaf and grass clippings, including public education about this program.

3. The application of turf and garden fertilizers on five acres or more of municipally controlled properties 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 turf or garden vegetation.

Note: In accordance with subch. V, the department has developed a technical standard to help meet the nutrient management performance standard. The technical standard is available from the department at dnr.wi.gov.

4. Detection and elimination of illicit discharges to storm sewers.

(2) PERMITTED MUNICIPALITIES. (a) *Applicability.* This subsection applies to municipalities that are subject to the municipal storm water permit requirements of subch. I of ch. NR 216.

(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:

1. 'Stage 1 requirements.' The municipalities identified under par. (a) shall implement all of the following within 2 years of receiving permit coverage under subch. I of ch. NR 216:

- a. All of the requirements contained in sub. (1) (b).
- b. A 20 percent reduction in total suspended solids, or to the maximum extent practicable, as compared to no controls, for runoff from existing development that enters waters of the state.

5. 'Model requirements.' Evidence of meeting the performance standard of subd. 2. shall be based on the use of a model or an equivalent methodology approved by the department. Acceptable models and model versions include SLAMM version 9.2 and P8 version 3.4 or subsequent versions of those models. Earlier versions of SLAMM are acceptable when the municipality is not taking any credit for street cleaning.

Note: Section NR 151.13 (2) (b) 2. was repealed by CR 19-050 Register January 2020 No 769, eff. 2-1-20.

Note: Information on how to access SLAMM and P8 and the relevant parameter files are available by contacting the department's storm water management program at dnr.wi.gov.

(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) *Exemption.* The requirements of par. (b) 1. and 2. do not apply to areas subject to a permit issued under subch. II of ch. NR 216.

Note: Section NR 151.13 (2) (b) 2. was repealed by CR 19-050 Register January 2020 No 769, eff. 2-1-20.

(e) *Calculation of reduction.* The department shall recognize total suspended solids reduction not otherwise accounted for in computer models for the implementation of programs, ordinances and other institutional controls that result in scientifically supported reductions of total suspended solids and are developed as a technical standard under s. NR 151.31.

History: CR 00-027; cr. Register September 2002 No. 561, eff. 10-1-02; CR 09-112; r. and recr. Register December 2010 No. 660, eff. 1-1-11; CR 19-050; r. (2) (b) 2. to 4. Register January 2020 No. 769, eff. 2-1-20.

NR 151.14 Turf and garden nutrient management performance standard. (1) APPLICABILITY. This section applies when all of the following conditions are met:

- (a) The property is not subject to s. NR 151.13 (1) (b) 3.
- (b) Nutrients are applied to over 5 acres of turf or garden.
- (c) The property discharges runoff to waters of the state.
- (d) The property is not an agricultural facility or practice.
- (e) The property does not conduct silviculture activity.

(2) RESPONSIBLE PARTY. The landowner is the responsible party and shall comply with this section.

(3) REQUIREMENTS. The application of turf 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 turf or garden vegetation.

Note: In accordance with subch. V, the department has developed a technical standard to help meet the nutrient management performance standard. The technical standard is available from the department at dnr.wi.gov.

History: CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02; CR 09-112: r. and recr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.15 Implementation and enforcement.

(1) IMPLEMENTATION. This subchapter shall be implemented as follows:

(a) *Construction sites and post-construction sites.* The provisions of ss. NR 151.11, 151.12, and 151.121 to 151.128 shall be implemented through subch. III of ch. NR 216.

Note: The department may develop and revise available model ordinances to reflect the applicability and performance standards in ss. NR 151.11, 151.12, and 151.121 to 151.128. These model ordinances are in ch. NR 152. Municipalities are encouraged to adopt the requirements of ss. NR 151.11, 151.12, and 151.121 to 151.128, into local ordinances. 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.* 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., except for those requirements that are implemented through ch. NR 216, which shall be enforced under ss. 283.89 and 283.91, Stats.

History: CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02; CR 09-112; am. (1), (2) Register December 2010 No. 660, eff. 1-1-11; correction to numbering of (2) made under s. 13.92 (4) (b) 1., Stats., Register December 2010 No. 660.

Subchapter IV — Transportation Facility Performance Standards

NR 151.20 Purpose and applicability. (1) This subchapter establishes performance standards, as authorized by s. 281.16 (2) (a), Stats., for transportation facilities that cause or may cause runoff pollution. 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.

(2) 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.

(3) In s. NR 151.23, soil loss is calculated using the appropriate 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 universal soil loss equation and its successors, revised universal soil loss equation and revised universal soil loss equation 2, utilize an R factor which has been developed to estimate soil erosion, averaged over extended time periods. The R factor can be modified to estimate monthly and single-storm erosion.

History: CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02; CR 09-112; am. Register December 2010 No. 660, eff. 1-1-11.

NR 151.21 Definitions.

In this subchapter:

(1m) "Average annual rainfall" means a typical calendar year of precipitation as determined by the department for users of models such as SLAMM, P8, or equivalent methodology. The average annual rainfall is chosen from a department publication for the location closest to the municipality.

Note: Information on how to access SLAMM and P8 and the average annual rainfall files for five locations in the state, as published periodically by the department, is available by contacting the storm water management program at dnr.wi.gov.

(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 either of the following:

(a) For transportation facility construction sites where, before January 1, 2011, a bid was advertised, a construction contract was signed and no bid was advertised, or a notice of intent was received by the department in accordance with subch. III of ch. NR 216, 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.

(b) For transportation facility construction sites where, on or after January 1, 2011, a bid is advertised, a construction contract signed where no bid is advertised or a notice of intent was received by the department in accordance with subch. III of ch. NR 216, 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, and that does not include replacement of a vegetated drainage system with a non-vegetated drainage system except where necessary to convey runoff under a highway or private road or driveway.

(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" has the meaning given it in 49 USC 47102(21).

(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-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.

ity 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; CR 09-112: r. (1), cr. (1m), am. (5), (8) Register December 2010 No. 660, eff. 1-1-11.

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 this subchapter for land disturbing construction activity at the transportation facility construction site.

(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.

(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 perfor-

mance 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; CR 09-112: am. (1) (a) Register December 2010 No. 660, eff. 1-1-11.

NR 151.225 Construction site performance standard for non-permitted sites and routine maintenance.

(1) APPLICABILITY. This section applies to any transportation facility construction site that consists of land disturbing construction activity for any of the following:

(a) Transportation facility construction sites of less than one acre.

(b) Routine maintenance if performed for storm water conveyance system cleaning for sites that consist of less than 5 acres.

Note: Land disturbing construction sites of less than one acre and routine maintenance if performed for storm water conveyance system cleaning for sites that consist of less than 5 acres of land disturbance are not regulated under subch. III of ch. NR 216 unless designated by the department under s. NR 216.51 (3).

(c) 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.

(2) RESPONSIBLE PARTY. The transportation facility authority or other person contracted or obligated by other agreement with the transportation facility authority to implement and maintain construction site BMPs is the responsible party and shall comply with this section.

(3) REQUIREMENTS. Erosion and sediment control practices at each site where land disturbing construction activity is to occur shall be used to prevent or reduce all of the following:

(a) The deposition of soil from being tracked onto streets by vehicles.

(b) The discharge of sediment from disturbed areas into on-site storm water inlets.

(c) The discharge of sediment from disturbed areas into adjacent waters of the state.

(d) The discharge of sediment from drainage ways that flow off the site.

(e) The discharge of sediment by dewatering activities.

(f) The discharge of sediment eroding from soil stockpiles existing for more than 7 days.

(g) The transport by runoff into waters of the state of chemicals, cement and other building compounds and materials on the construction site during the construction period. 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.

Note: In accordance with subch. V, the department has developed technical standards to help meet the construction site performance standards. These technical standards are available from the department at dnr.wi.gov.

(4) LOCATION. BMPs shall be located so that treatment occurs before runoff enters waters of the state.

(5) IMPLEMENTATION. The BMPs used to comply with this section shall be implemented as follows:

(a) Erosion and sediment control practices shall be constructed or installed before land disturbing construction activities begin.

(b) Erosion and sediment control practices shall be maintained until final stabilization.

(c) Final stabilization activity shall commence when land disturbing activities cease and final grade has been reached on any portion of the site.

(d) Temporary stabilization activity shall commence when land disturbing construction activities have temporarily ceased and will not resume for a period exceeding 14 calendar days.

(e) BMPs that are no longer necessary for erosion and sediment control shall be removed by the responsible party.

History: CR 09-112: cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.23 Construction site performance standard for sites of one acre or more. (1) **APPLICABILITY.** This section applies to any transportation facility construction site that consists of one acre or more of land disturbing construction activity.

(a) Subsections (2), (3), (4), and (5) apply to all of the following:

1. Transportation facility construction sites for which the department received a notice of intent in accordance with subch. III of ch. NR 216 before January 1, 2011.

2. Transportation facility construction sites for which a bid has been advertised or construction contract signed for which no bid was advertised, before January 1, 2011.

(b) Subsections (2) (a), (b), and (cm), (3), (4m), (5), and (6) apply to all of the following:

1. Transportation facility construction sites for which the department received a notice of intent in accordance with subch. III of ch. NR 216 on or after January 1, 2011.

2. Transportation facility construction sites for which a bid has been advertised or construction contract signed for which no bid was advertised, on or after January 1, 2011.

(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.

(cm) Routine maintenance if performed for storm water conveyance system cleaning for sites that consist of less than 5 acres of land disturbance.

(3) **PLAN.** (a) The responsible party under s. NR 151.22 shall develop and implement a written design plan for each construction site. The plan shall incorporate the applicable 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) **PRE-JANUARY 1, 2011 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 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.

(4m) **POST-JANUARY 1, 2011 REQUIREMENTS.** The design plan required under sub. (3) shall meet all of the following:

(a) *Erosion and sediment control practices.* Erosion and sediment control practices at each site where land disturbing construction activity is to occur shall be used to prevent or reduce all of the following:

1. The deposition of soil from being tracked onto streets by vehicles.

2. The discharge of sediment from disturbed areas into on-site storm water inlets.

3. The discharge of sediment from disturbed areas into adjacent waters of the state.

4. The discharge of sediment from drainage ways that flow off the site.

5. The discharge of sediment by dewatering activities.

6. The discharge of sediment eroding from soil stockpiles existing for more than 7 days.

7. The discharge of sediment from erosive flows at outlets and in downstream channels.

8. The transport by runoff into waters of the state of chemicals, cement and other building compounds and materials on the construction site during the construction period. 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 subdivision.

9. The transport by runoff into waters of the state of untreated wash water from vehicle and wheel washing.

Note: Wastewaters, such as from concrete truck washout, need to be properly managed to limit the discharge of pollutants to waters of the state. A separate permit may be needed from the department where a wastewater discharge has the potential to adversely impact waters of the state. The appropriate department regional wastewater specialist should be contacted to determine if wastewater permit coverage is needed where wastewater will be discharged to waters of the state.

(b) *Sediment performance standards.* In addition to the erosion and sediment control practices under par. (a), the following erosion and sediment control practices shall be employed:

1. For transportation facility construction sites for which the department received a notice of intent for the construction project in accordance with subch. III of ch. NR 216 within 2 years after January 1, 2011, BMPs that, by design, achieve a reduction of 80 percent, or to the maximum extent practicable, 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.

2. For transportation facility construction sites for which the department received a notice of intent for the construction project

in accordance with subch. III of ch. NR 216, 2 years or more after January 1, 2011, BMPs that, by design, discharge no more than 5 tons per acre per year, or to the maximum extent practicable, of the sediment load carried in runoff from initial grading to final stabilization.

3. The department may not require any person to employ more BMPs than are needed to meet a performance standard in order to comply with maximum extent practicable. Erosion and sediment control BMPs may be combined to meet the requirements of this paragraph. The department shall give credit toward meeting the sediment performance standard of this paragraph for limiting the duration or area, or both, of land disturbing construction activity, or for other appropriate mechanisms.

4. Notwithstanding subd. 1. or 2., if BMPs cannot be designed and implemented to meet the sediment performance standard, the plan shall include a written, site-specific explanation of why the sediment performance standard cannot be met and how the sediment load will be reduced to the maximum extent practicable.

Note: The department of natural resources has developed guidance document no. 3800-2017-03 to assist with compliance with the 5 tons per acre sediment performance standard.

Note: In accordance with subch. V, the department has developed technical standards to help meet the construction site performance standards. These technical standards are available from the department at dnr.wi.gov.

(c) *Preventive measures.* The plan shall incorporate all of the following:

1. Maintenance of existing vegetation, especially adjacent to surface waters, whenever possible.

2. Minimization of soil compaction and preservation of topsoil.

3. Minimization of land disturbing construction activity on slopes of 20% or more.

4. Development of spill prevention and response procedures.

(5) **LOCATION.** BMPs shall be located so that treatment occurs before runoff enters 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.

(6) **IMPLEMENTATION.** The BMPs used to comply with this section shall be implemented as follows:

(a) Erosion and sediment control practices shall be constructed or installed before land disturbing construction activities begin and in accordance with the plan developed under sub. (3).

(b) Erosion and sediment control practices shall be maintained until final stabilization.

(c) Final stabilization activity shall commence when land disturbing activities cease and final grade has been reached on any portion of the site.

(d) Temporary stabilization activity shall commence when land disturbing construction activities have temporarily ceased and will not resume for a period exceeding 14 calendar days.

(e) BMPs that are no longer necessary for erosion and sediment control shall be removed by the responsible party.

History: CR 00-027: cr. Register September 2002 No. 561, eff. 10-1-02; CR 09-112: am. (title), (1), (3) (a), (4) (title), (5), cr. (2) (cm), (4m), (6) Register December 2010 No. 660, eff. 1-1-11.

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.

(bm) A transportation post-construction site for which the department received a notice of intent for the construction project in accordance with subch. III of ch. NR 216 on or after January 1,

2011. Transportation post-construction sites for which the department received a notice of intent for the construction project, in accordance with subch. III of ch. NR 216, on or after January 1, 2011, shall meet the performance standards of ss. NR 151.242 to 151.249.

(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).

(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 from the storm water coordinator in the runoff management section of the bureau of watershed management at dnr.wi.gov.

(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 runoff 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 from the storm water coordinator in the runoff management section of the bureau of watershed management at dnr.wi.gov.

(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 down-gradient 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.

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:

- Non-highway transportation redevelopment sites.
- Transportation facilities that cross or access surface waters, such as boat landings, bridges and culverts.
- Structures constructed in accordance with s. 59.692 (1v), Stats.
- 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 sec-

tion, 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:

- An outstanding resource water.
- An exceptional resource water.
- Waters listed in section 303 (d) of the federal clean water act that are identified as impaired in whole or in part, due to non-point source impacts.
- 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; CR 09-112: cr. (1) (bm) Register December 2010 No. 660, eff. 1-1-11.

NR 151.241 Post-construction performance standards. (1) **GENERAL.** In ss. NR 151.241 to 151.249, "post-construction site" means a construction site subject to regulation under this subchapter, after construction is completed and final stabilization has occurred.

(2) **APPLICABILITY.** Sections NR 151.241 to 151.249 apply to a transportation facility post-construction site that is or was sub-

ject to the construction performance standards of s. NR 151.23, except any of the following:

(a) A transportation facility post-construction site with less than 10 percent connected imperviousness, based on the area of land disturbance, provided the cumulative area of all impervious surfaces is less than one acre. However, the exemption of this paragraph does not include exemption from the protective area standard of s. NR 151.245.

(b) Reconditioning or resurfacing of a highway.

(c) Minor reconstruction of a highway. Notwithstanding the exemption under this paragraph, the protective area performance standard in s. NR 151.245 applies to minor reconstruction of a highway.

(d) 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.

(e) Routine maintenance if performed for storm water conveyance system cleaning.

(3) STORM WATER MANAGEMENT PLAN. The responsible party under s. NR 151.22 shall develop and implement a written storm water management plan for each transportation facility post-construction site and shall incorporate the requirements of ss. NR 151.242 to 151.249.

(4) MAINTENANCE OF EFFORT. For non-highway transportation facility redevelopment sites and highway reconstruction where the redevelopment or reconstruction will be replacing older development or highway that was subject to post-construction performance standards of this chapter in effect on or after October 1, 2004, the responsible party shall meet the total suspended solids reduction, peak flow control, infiltration, and protective areas standards applicable to the older development or highway, or meet the redevelopment or highway reconstruction standards of ss. NR 151.242 to 151.249, whichever are more stringent.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.242 Total suspended solids performance standard. **(1) REQUIREMENT.** Except as provided in sub. (3), BMPs shall be designed, installed, and maintained to control total suspended solids carried in runoff from the transportation facility post-construction site. BMPs shall be designed in accordance with Table 1., or to the maximum extent practicable as provided in sub. (4). The design shall be based on an average annual rainfall, as compared to no runoff management controls.

Table 1. TSS Reduction Standards	
Development Type	TSS Reduction

New Transportation Facilities	80 percent
Highway Reconstruction	40 percent
Non-highway transportation facility redevelopment	40 percent of load from parking areas and roads

(2) NON-HIGHWAY TRANSPORTATION REDEVELOPMENT AND HIGHWAY RECONSTRUCTION. Except as provided in s. NR 151.241 (4), the non-highway transportation facility redevelopment and highway reconstruction total suspended solids reduction standard of Table 1. applies to non-highway transportation facility redevelopment and highway reconstruction.

(3) DELAYED IMPLEMENTATION. For municipalities that are regulated under subch. I of ch. NR 216 and for transportation facilities under the jurisdiction of the department of transportation for maintenance purposes that are located within municipalities regulated under subch. I of ch. NR 216, the highway reconstruction total suspended solids performance standard first applies January 1, 2017.

(4) MAXIMUM EXTENT PRACTICABLE. If the design cannot meet a total suspended solids reduction performance standard of sub. (1), Table 1., the storm water management plan shall include a written, site-specific explanation of why the total suspended solids reduction performance standard cannot be met and why the total suspended solids load will be reduced only to the maximum extent practicable. The department may not require any person to exceed the applicable total suspended solids reduction performance standard to meet the requirements of maximum extent practicable.

Note: Pollutant loading models such as DETPOND, 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 these models is available from the department's storm water management program at dnr.wi.gov. Use the most recent version of the model and the rainfall files and other parameter files identified for Wisconsin users unless directed otherwise by the regulatory authority.

(5) OFF-SITE DRAINAGE. When designing BMPs, runoff draining to the BMP from off-site shall be taken into account in determining the treatment efficiency of the practice. Any impact on the efficiency shall be compensated for by increasing the size of the BMP accordingly.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.243 Peak discharge performance standard. **(1) REQUIREMENT.** By design, BMPs shall be employed to maintain or reduce the 1-year, 24-hour and the 2-year, 24-hour post-construction peak runoff discharge rates to the 1-year, 24-hour and the 2-year, 24-hour pre-development peak runoff discharge rates respectively, or to the maximum extent practicable. The runoff curve numbers in Table 2. shall be used to represent the actual pre-development condition.

Runoff Curve Number	Hydrologic Soil Group			
	A	B	C	D
Woodland	30	55	70	77
Grassland	39	61	71	78
Cropland	55	69	78	83

Note: Where the pre-development condition is a combination of woodland, grassland, or cropland, the runoff curve number should be pro-rated by area.

(2) EXEMPTIONS. This section does not apply to the following:

(a) A transportation facility post-construction site where the discharge is directly into a lake over 5,000 acres or a stream or river segment draining more than 500 square miles.

(b) Except as provided under s. NR 151.241 (4), a transportation facility that is part of a redevelopment project.

(c) Except as provided under s. NR 151.241 (4), a highway reconstruction site.

Note: The intent of s. NR 151.243 is to minimize streambank and shoreline erosion under bank-full conditions.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.244 Infiltration performance standard.

(1) REQUIREMENT. Except as provided in sub. (2), the requirements are the same as those given in s. NR 151.124.

(2) EXEMPTIONS. Except as provided under s. NR 151.241 (4), transportation facility highway reconstruction and new highways are not required to meet the performance standards of this section.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11; renumbering of (1), (2) made under s. 13.92 (4) (b) 1., Stats., Register December 2010 No. 660.

NR 151.245 Protective areas performance standard.

(1) DEFINITION. In this section, “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 section, “protective area” does not include any area of land adjacent to any stream enclosed within a pipe or culvert, so that runoff cannot enter the enclosure at this location.

(a) For outstanding resource waters and exceptional resource waters, 75 feet.

(b) For perennial and intermittent streams identified on a U.S. 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 wetlands not subject to par. (e) or (f), 50 feet.

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

Note: Information on wetland types, including ephemeral ponds, is available from the department at (608) 266-7012.

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

(g) In pars. (d) to (f), 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.

(h) 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 compliance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in compliance with all

applicable state and federal regulations shall be measured from the wetland boundary delineation after fill has been placed. Where there is a legally authorized wetland fill, the protective area standard need not be met in that location.

(i) For concentrated flow channels with drainage areas greater than 130 acres, 10 feet.

(j) Notwithstanding pars. (a) to (i), the greatest protective area width shall apply where rivers, streams, lakes, and wetlands are contiguous.

Note: A stream or lake is not eligible for a lower protective area width even if contiguous to a less susceptible wetland.

(2) APPLICABILITY. This section applies to transportation facility post-construction sites located within a protective area, except those areas exempted pursuant to sub. (4).

(3) REQUIREMENTS. The following requirements shall be met:

(a) 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. The transportation facility authority shall state in the design plan prepared pursuant to s. NR 151.241 (3), why it is necessary to construct the transportation facility within a protective area.

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

Note: It is recommended that seeding of non-invasive vegetative cover be used in the protective areas. Some invasive plants are listed in ch. NR 40. 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 ponds, that are designed to control pollutants from non-point sources, may be located in the protective area.

Note: Other laws, such as ch. 30, Stats., and chs. NR 103, 115, 116, and 117 and their associated review and approval processes may apply in the protective area.

(4) EXEMPTIONS. This section does not apply to any of the following:

(a) Except as provided under s. NR 151.241 (4), non-highway transportation redevelopment post-construction sites.

(b) Structures 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 the runoff does not enter the surface water, including wetlands, without first being treated by a BMP to meet the requirements of ss. NR 151.242 to 151.243, 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 par. (d) is not necessary since the runoff at that location is treated prior to entering the surface water. Other practices necessary to meet the requirements of this section, such as a swale or pond, will need to be designed and implemented to reduce runoff pollutants prior to runoff entering a surface water of the state. The requirements of ch. NR 103 still apply and should be considered before runoff is diverted to or from a wetland.

History: CR 09-112; cr. Register December 2010 No. 660, eff. 1-1-11.

NR 151.246 Fueling and vehicle maintenance areas performance standard. Fueling and vehicle maintenance areas shall have BMPs designed, installed, and maintained to

reduce petroleum within runoff, so that the runoff that enters waters of the state contains no visible petroleum sheen, or to the maximum extent practicable.

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.

History: CR 09–112: cr. Register December 2010 No. 660, eff. 1–1–11.

NR 151.247 Location. To comply with the standards required under ss. NR 151.242 to 151.244, 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.

History: CR 09–112: cr. Register December 2010 No. 660, eff. 1–1–11.

NR 151.248 Timing. The BMPs that are required under ss. NR 151.242 to 151.246 and 151.249 shall be installed before the construction site has undergone final stabilization.

Note: In accordance with subch. V, the department has developed technical standards to help meet the post-construction performance standards. These technical standards are available from the department at dnr.wi.gov.

History: CR 09–112: cr. Register December 2010 No. 660, eff. 1–1–11.

NR 151.249 Swale treatment performance standard. (1) **REQUIREMENT.** Except as provided in sub. (2), transportation facilities that use swales for runoff conveyance and pollutant removal are exempt from the requirements of ss. NR 151.242 to 151.244, if the swales are designed to do all of the following or to the maximum extent practicable:

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

Note: It is preferred that tall and dense vegetation be maintained within the swale due to its greater effectiveness at enhancing runoff pollutant removal.

(b) Swales shall comply with the department technical standard 1005, “Vegetated Infiltration Swale”, dated May, 2007, except as otherwise authorized in writing by the department.

Note: In accordance with subch. V, the Department of Natural Resources has updated technical standard 1005, “Vegetated Swale,” dated December 2017, which is the current authorized technical standard. The technical standard is available from the department at dnr.wi.gov.

(2) **OTHER REQUIREMENTS.** (a) Notwithstanding sub. (1), the department may, consistent with water quality standards, require that other requirements, in addition to swale treatment, be met on a transportation facility with an average daily traffic rate greater than 2,500 and where the initial surface water of the state that the runoff directly enters is any of the following:

1. An outstanding resource water.
2. An exceptional resource water.
3. Waters listed in section 303 (d) of the federal clean water act that are identified as impaired in whole or in part, due to non-point source impacts.
4. Waters where targeted performance standards are developed pursuant to s. NR 151.004.

(b) 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 subsection.

History: CR 09–112: cr. Register December 2010 No. 660, eff. 1–1–11.

NR 151.25 Developed urban area performance standard for transportation facilities. (1) **APPLICABILITY.** This section applies to transportation facilities under the jurisdiction of the department of transportation for maintenance purposes that are located within a municipality regulated under subch. I of ch. NR 216.

Note: Transportation facilities that are not under the jurisdiction of the department of transportation for maintenance purposes are subject to the performance standards in s. NR 151.13.

(2) **REQUIREMENTS.** (a) Except as provided in par. (c), the department of transportation shall develop and implement a storm

water management plan in consultation with the department to control pollutants from transportation facilities described in sub. (1), for runoff from existing transportation facilities that enters waters of the state as compared to no storm water management controls. By design, the plan shall do the following:

Note: Section NR 151.25 (2) (c) was repealed by CR 19–050 Register January 2020 No 769, eff. 2–1–20.

1. A 20 percent reduction in total suspended solids or to the maximum extent practicable, beginning not later than a date consistent with the municipality regulated under subch. I of ch. NR 216.

4. Evidence of meeting the performance standard of this paragraph shall require the use of a model or an equivalent methodology approved by the department. Acceptable models and model versions include SLAMM version 9.2 and P8 version 3.4 or subsequent versions of those models. An earlier version of SLAMM is acceptable if no credit is being taken for street cleaning.

Note: Information on how to access SLAMM and P8 and the relevant parameter files is available from the department’s storm water management program at dnr.wi.gov.

(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.

(d) 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.

History: CR 00–027: cr. Register September 2002 No. 561, eff. 10–1–02; CR 09–112: r. and recr. Register December 2010 No. 660, eff. 1–1–11; CR 19–050 r. (2) (a) 2., 3., (c) Register January 2020 No. 769, eff. 2–1–20.

NR 151.26 Enforcement. This subchapter shall be enforced as follows:

(1) If a transportation facility that is exempt from prohibitions, permit or approval requirements by s. 30.2022 (1m), 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., Register July 2004 No. 583; CR 09–112: am. (1) Register December 2010 No. 660, eff. 1–1–11; correction in (1) made under s. 13.92 (4) (b) 7., Stats., Register January 2017 No. 733.

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 subchs. III and IV 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 (4) and (4m). 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.
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 (4) and (4m).
 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 safety and professional services, 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 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; CR 09-112: am. (1) (intro.), 1. a., 2. Register December 2010 No. 660, eff. 1-1-11; correction in (3) made under s. 13.93 (4) (b) 6., Stats., Register February 2012 No. 674.

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.

PORTAGE FIRE DEPARTMENT
STANDARD OPERATIONAL GUIDELINES

CHAPTER #3 SECTION #8

HAZARDOUS MATERIALS EMERGENCY RESPONSE PLAN

May 1, 2017 (revised)

I. PLANNING BASIS

A. Purpose

The purpose of this Hazardous Materials Emergency Response Plan is to establish policies and standard operating guidelines for the Portage Fire Department to use during a hazardous materials incident.

B. Objectives

1. To describe operational concepts, policies, and standard operating guidelines within the plan.
2. To establish an operational structure that has the ability to function within the Portage Fire Department Incident Command System.
3. To maintain a Level "A" Hazardous Materials Response Team.
4. To mitigate a hazardous materials incident as **SAFELY** as possible.
5. To review and update the HAZARDOUS MATERIALS RESPONSE PLAN as necessary, but in any event at least annually.

II. SCOPE

A. Geographical Factors

This plan is concerned with hazardous materials incidents that occur within the response jurisdiction, and on any mutual aid response outside the response jurisdiction of the Portage Fire Department.

B. Hazardous Materials Incident

Any incident in which any substance has escaped its container and presents the potential for harm to life, property, and/or the environment.

III. HAZARDOUS MATERIALS INCIDENT RESPONSE LEVELS

There are three (3) levels of hazardous materials incidents.

A. Level I Incident

Hazardous materials incidents which can be controlled with the immediate resources available to the Portage Fire Department.

- B. Level II Incident
1. Hazardous materials incidents which require the evacuation of civilians, including those who are outside the HOT ZONE and WARM ZONE.
 2. Hazardous materials incidents which require 2 or more outside resources available within the Fire Department's jurisdiction. (e.g., city utilities, county highway department, DNR, etc.).
- C. Level III Incident
1. Hazardous materials incidents that require Level "A" response equipment.
 2. Hazardous materials incidents that require highly specialized equipment and supplies available to industrial or environmental response personnel.
 3. Fire involving hazardous materials that are allowed to burn due to ineffectiveness or dangers of the use of extinguishing agents, or the unavailability of water; and/or there is a real threat of large container failure; and/or an explosion, detonation, BLEVE, or container failure has occurred.
 4. Hazardous materials incidents that require evacuation of civilians extending across jurisdiction boundaries and/or there are serious civilian injuries and/or deaths as a result of the incident.
 5. Hazardous materials incident that has become one of multi-agency involvement of large proportions.
 6. Hazardous materials incident that requires specialized chemical protective clothing.

IV. TRAINING

1. The Portage Fire Department will develop a training program to provide a Level "A" Hazardous Materials Response Team; (HAZMAT TEAM).
2. The training program will be developed using the guidelines provided by NFPA 472, Standard for Professional Competence of Responders to Hazardous Materials Incidents and OSHA Standard 1910.120.
3. The training program will allow the HAZMAT TEAM personnel to obtain training for the following levels of 'responders' within the restrictions of the equipment available to the Portage Fire Department HAZMAT TEAM personnel.

First Responder Awareness

4. Records of all personnel hazardous materials training will be developed and maintained.
5. All personnel on the Portage Fire Department will be responsible for understanding the Hazardous Materials Response Plan Policies and Standard Operating Guidelines.

V. MEDICAL SURVEILLANCE PROGRAM

1. The Portage Fire Department will develop a Medical Surveillance Program using the guidelines provided by OSHA Standard 1910.120
2. Hazardous Materials Response Team members who are trained to, and above, the "Technician" level shall be required to be in the Medical Surveillance Program.

VI. SITE SAFETY

A. Incident Command System

1. The Portage Fire Department Incident Command System will be implemented at all hazardous materials incidents. This will include the policies and standard operating guidelines of the HAZMAT TEAM.
2. The Incident Commander/Hazmat Team Leader (COMMAND) may designate the following positions as necessary to mitigate the incident;

Safety Officer (SAFETY)

Operations Officer (OPERATIONS)

Decontamination Officer (DECON)

Hit Team Leader (HIT TEAM)

Staging Officer (STAGING)

Rehab Officer (REHAB)

Hazmat Medical Officer (HAZMAT MEDICAL)

or any other position he deems necessary.

(In the event that the Hazmat Team responds to a mutual aid incident, the Hazmat Team Leader will command the Hazmat Team.)

3. The Incident Commander shall upgrade the Response Level from Level I to Level II, or Level III as needed.
4. The Incident Commander shall determine what local, county, state, and federal agencies need to be notified of the incident, and if representatives of those agencies need to respond to the scene.

5. The Incident Commander shall determine if any local, county, state, or federal Emergency Response Plan needs to be initiated and make the necessary communications.

6. The Incident Commander shall maintain, or assign someone to maintain an incident log that should, as a minimum, contain the following:
 - a. Date
 - b. Chronological recording of events
 - c. Name of Incident Log recorder
7. The Incident Commander shall be responsible for completing an Incident Report following the termination of the incident.
8. The Hazardous Materials Response Team Policies and Standard Operating Guidelines and the Incident Command Checklist will be at the Incident Command Post.

B. Safety Officer

1. A SAFETY OFFICER (SAFETY) will be appointed by and report to the Incident Commander. The SAFETY OFFICER will be trained to the Technician Level as a minimum.
2. The SAFETY OFFICER will assist in identifying and evaluating the hazards present at the incident.
3. The SAFETY OFFICER will assure that SAFE practices are carried out and observed by emergency personnel during the incident.
4. The SAFETY OFFICER is responsible for implementing the Hazardous Materials Response Team Safety Plan which will include, but is not limited to, the following:
 - a. Establish control zones
 - b. Establish control and security of entry and exit of personnel between zones
 - c. Determine proper level of protective clothing
 - d. Use of SCBA and/or other respiratory protective equipment
 - e. Entry/No Entry guidelines
 - f. Determine monitoring and sampling methods
 - g. Withdrawal or evacuation of personnel guidelines
 - h. Decontamination procedures and DECON AREA set-up prior to entry
 - i. Communications
 - j. Back-up teams (buddy system)
 - k. EMS availability

- l. Hazardous identification reference sources

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- m. Operational briefings for personnel
 - n. Equipment and personnel staging area
 - o. REHAB AREA
5. The above Safety Plan and the SAFETY OFFICER CHECKLIST will be found in the Hazardous Materials Response Team Standard Operating Guidelines.
 6. The SAFETY OFFICER will ensure that a record is kept of all personnel entering the HOT ZONE that includes, but is not limited to, the following information:
 - a. Firefighter's name
 - b. Material involved
 - c. Length of exposure
 - d. Time into protective clothing
 - e. ID numbers of protective clothing
 - f. Time of entry into and exit from HOT ZONE
 - g. Time of entry into and exit from DECON AREA
 - h. Level of decontamination
 - i. EMS information
 - j. Where firefighter went after EMS
 7. If the SAFETY OFFICER at any time deems the actions or situation at the incident to be immediately dangerous to the life and health, or to involve an imminent danger to personnel, he shall have the authority to alter, suspend, or terminate those actions in progress to control the incident. The SAFETY OFFICER shall immediately notify the Incident Commander of any actions, which need to be taken to correct these hazards.

C. Decontamination

1. A decontamination program will be developed to ensure the proper decontamination of personnel and equipment at a hazardous materials incident.
2. A DECON OFFICER (DECON) will be appointed by the Incident Commander or Safety Officer.
3. The DECON OFFICER will be responsible for determining the level of decontamination, Decon site set-up and Decon site security.
4. The DECON standard operating guidelines, site set-up maps, and checklists will be found in the Hazardous Materials Response Team Standard Operating Guidelines.

D. Emergency Medical Services

The Incident Commander and Safety Officer will ensure that emergency medical services are on site and available at hazardous materials incidents using, but not limited to, the following guidelines;

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1. Hazardous materials incidents which require the use of chemical-protective gear.
2. Hazardous materials incidents which require the evacuation of civilians.
3. Fires involving hazardous materials that are permitted to burn for a controlled period of time, or are allowed to consume themselves.
4. Any time the Incident Commander or Safety Officer deems it necessary.

The emergency medical personnel shall be briefed and kept up to date on pertinent information as necessary during the incident.

E. Hazardous Materials Disposal

1. The Portage Fire Department will not be responsible for the disposal or removal of any hazardous material from the scene of a hazardous materials incident.
2. The Portage Fire Department will determine what department equipment can be decontaminated and reused. Any equipment that cannot be decontaminated will be left at the scene. Any contaminated equipment left at the scene will be sealed in an appropriate container, properly labeled, and isolated from the public. It will be disposed of with the hazardous materials.
3. If the Portage Fire Department returns contaminated equipment to the station for later decontamination, it will be responsible for disposal, if the equipment cannot be decontaminated.

VII. INCIDENT MITIGATION

A. Operations Officer

1. The Incident Commander shall appoint an OPERATIONS OFFICER (OPERATIONS) to direct operations directly dealing with the actual mitigation of the incident.
2. The OPERATIONS OFFICER shall operate within the Portage Fire Department Incident Command System and the Hazardous Materials Response Plans Policies and Standard Operating Guidelines to mitigate the incident.
3. The OPERATIONS OFFICER shall assist, as necessary, to identify the hazardous materials with the other appointed sector officers.

B. Hit Team

1. The Hazardous Materials Team personnel who enter the HOT ZONE to mitigate the incident shall be identified as the HIT TEAM. The HIT TEAM will be backed-up by personnel designated as the BACK-UP TEAM.

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2. The HIT TEAM and BACK-UP TEAM will be under the immediate command of the HIT TEAM LEADER.

VIII. INCIDENT TERMINATION

The termination of a Level III hazardous materials incident shall include, but is not limited to the following items:

1. Documentation of the following**;
 - Safety Procedures
 - Site Operations
 - Hazards faced
 - Exposure of personnel
 - Decontamination Procedures
 - Incident Log
 - Incident Report
 - Hazmat Incident Report
 - EMS Reports
 - Critiques
 - Lessons learned

**Level I and Level II incidents may not require all of the above documentation
2. Debriefing the incident. This involves the collection of all pertinent information relating to the incident and providing any additional information to, or by personnel, as needed.
3. Post-incident analysis. This involves evaluating the collected information.
4. Post-incident critique

IX. PERSONAL PROTECTIVE EQUIPMENT

1. The Portage Fire Department will develop and establish a Personal Protective Equipment Program (PPEP) to provide guidelines that will protect the wearer from safety and health hazards and prevent injury to the wearer from incorrect use and/or failure of the protective equipment.

2. The (PPEP) will be developed using the following as guidelines: NFPA 1500 (ch. 5), Standard on Fire Department Occupational Safety and Health Program, NFPA 1981, Standard on Open-Circuit Self-Contained Breathing Apparatus for Firefighters, NFPA 1982, Standard on Personal Alert Safety Systems (PASS) for Firefighters; NFPA 471, Recommended Practice for Responding to Hazardous Materials Incidents; and OSHA 1910.120, Hazardous Waste Operations and Emergency Response.

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3. The (PPEP) will be developed for a LEVEL "A" response team.

NOTE: Refer to Portage Fire Department SOG Chapter #2 Section #2 "Hazardous Materials Personal Protective Equipment Program".

X. EQUIPMENT MAINTENANCE

1. All equipment used will be maintained in good working condition at all times. Routine maintenance programs will be developed per manufacturers instructions where required by the manufacture. A master maintenance program will be maintained to assure the equipment checks are kept up to date.
2. Any equipment that becomes unusable will be replaced as soon as possible.

PORTAGE FIRE DEPARTMENT

HAZARDOUS MATERIALS TEAM

STANDARD OPERATING GUIDELINES

**"IF WE CANNOT DO IT SAFELY, THEN
WE WILL NOT DO IT AT ALL"**

**Portage Fire Department
Hazardous Materials Response Team**

The nature of hazardous materials incidents makes it virtually impossible for the Portage Fire Department's Hazardous Materials Response Team Standard Operating Guidelines to anticipate all contingencies that may arise at an incident. Therefore, the INCIDENT COMMANDER and his OFFICERS have the authority to alter the Standard Operating Guidelines as they deem necessary to mitigate the incident and maintain the safety of their personnel.

I. INCIDENT COMMAND OPERATIONS

1. The Portage Fire Department Incident Command System will be implemented as soon as the first due unit arrives on the scene of the hazardous materials incident.
2. An initial Command Post will be established by the first due unit.
3. When the permanent INCIDENT COMMANDER (COMMAND) is established through the ICS, a primary Command Post will be established and identified.
4. COMMAND will designate the following sector commands, as necessary, to mitigate the incident:

Safety Officer (SAFETY)
Operations Officer (OPERATIONS)
Decontamination Officer (DECON)
Hazmat Medical Officer (HAZMAT MEDICAL)
Hit Team Leader (HIT TEAM)
Staging Officer (STAGING)
Rehab Officer (REHAB)
or any other position he deems necessary.

(In the event that the Hazmat Team responds to a mutual aid incident, the Hazmat Team Leader will command the Hazmat Team.)

5. All emergency responders and their communications shall be coordinated and controlled through COMMAND.
6. COMMAND shall identify the hazardous material to the fullest extent as possible.
7. Based on the identification of the hazardous material and the conditions present, COMMAND shall determine the Incident Level (I, II, or III) and implement the appropriate emergency actions. COMMAND shall obtain all necessary resources needed through mutual aid response and/or emergency plan(s) activation to control and mitigate the incident.

At least 3 different reference sources should be used before any action is taken. Always use the most conservative recommendations.

8. COMMAND will determine if the Hazardous Materials Response Safety Plan should be formally implemented.

LEVEL I incidents may not require the full Safety Plan being implemented.

LEVEL II incidents may not require the full Safety Plan being implemented.

LEVEL III incidents will normally require that the Safety Plan be implemented.

9. COMMAND will confirm that ALL necessary personnel are briefed on the product identification, product hazards, health symptoms and effects, and plan of action BEFORE any emergency personnel are sent into the HOT ZONE.
10. The INCIDENT COMMANDER will be responsible for the completion of the termination procedures when they are implemented.

EMERGENCY RESCUE GUIDELINES

In order to facilitate a quick emergency rescue of victims in a Hot Zone, the following guidelines may be used by the Incident Commander and/or Hazmat Team leader:

A size up, plan, and go/no go decision may be made by using the following criteria:

1. **Hazmat IQ** and/or the Hazmat Rescue Matrix.
2. The chemical(s) should be positively identified is possible – see Product Checklist
3. PPE compatibility should be confirmed if possible – see Product Checklist
4. EMS checks prior to entry are not mandatory, but all personnel who suit up will go into the EMS system after work is complete.
5. Firefighters suiting up will do so independently of each other with the assistance of another firefighter. Remember:
 - Communication equipment
 - Taping not necessary
 - Suit up to the point of going on air

GO ON AIR SIMULTANEOUSLY

6. Rescue equipment needed.
7. Use emergency decon procedures. If Decon Area can be set, proceed in the following order:
 - Decon Tent
 - Remainder of Decon area

II. SAFETY

1. A SAFETY OFFICER (SAFETY) will be appointed by and report to the INCIDENT COMMANDER.
2. The SAFETY OFFICER will assist in identifying and evaluating the hazards present at the incident.
3. The SAFETY OFFICER will assure that SAFE practices are carried out and observed by emergency personnel during the incident.
4. The SAFETY OFFICER will confirm that ALL necessary personnel are briefed on the product identification, product hazards, health symptoms and affects, and plan of action BEFORE any emergency personnel are sent into the HOT ZONE.
5. The SAFETY OFFICER will implement the Hazardous Materials Response Team Safety Plan when necessary. The SAFETY OFFICER will maintain and monitor the Safety Plan throughout the incident, until the incident is terminated.

HAZARDOUS MATERIAL RESPONSE TEAM SAFETY PLAN

The Hazardous Materials Response Team Safety Plan is an integral part of the Hazardous Materials Team Standard Operating Guidelines. Both the Safety Plan and the Standard Operating Guidelines must be used in conjunction with one another to provide emergency personnel with the SAFEST working conditions.

1. Establish control ZONES.

HOT ZONE

This is the contaminated area surrounding the chemical emergency.

NO personnel except those in the proper level of protective clothing shall enter this area and then only upon the authority of COMMAND and using the entry control points.

All personnel and equipment entering this area must be decontaminated immediately after their exit from the HOT ZONE.

WARM ZONE

The WARM ZONE is the transition zone between the contaminated area (HOT ZONE) and the clean, non-contaminated area (COLD ZONE).

NO personnel except those in the proper level of protective clothing shall enter this area and then only upon the authority of COMMAND and using the entry control points.

The decontamination area required by the incident will be in the WARM ZONE.

COLD ZONE

The COLD ZONE is an area free from any level of contamination and personnel can freely move about this area without the need for chemical protective clothing or breathing apparatus.

The COLD ZONE will contain the primary Command Post, the Staging Area, the REHAB area, EMS, and all other support activities.

AS MUCH AS POSSIBLE, ALL PERSONNEL, EQUIPMENT, AND SUPPORT ACTIVITIES WILL BE UPWIND AND UPHILL FROM THE HAZARDOUS MATERIAL INVOLVED.

The 3 control zones will be identified and marked as clearly, as possible, as conditions will allow.

Entry and exit control points for each zone will be established and maintained in order to keep the number of personnel entering the WARM ZONE and HOT ZONE to the minimum needed to

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successfully and SAFELY handle the incident. If necessary, SAFETY will appoint personnel to monitor these control points.

2. **HAZARDOUS MATERIAL IDENTIFICATION**

The hazardous material(s) will be positively identified BEFORE any emergency personnel are allowed into the WARM ZONE or HOT ZONE.

SLOW DOWN, ASSESS THE SITUATION, I.D. THE PRODUCT, PLAN, AND THINK SAFETY!

DO NOT ENTER THE HOT ZONE IF THE HAZARDOUS MATERIAL HAS NOT BEEN IDENTIFIED! SEE EMERGENCY RESCUE GUIDELINES! (pg. 16)

If possible, at least 3 different reference sources will be used to identify the product and its hazards. If the hazardous material is positively identified, the reference material will be evaluated by COMMAND, SAFETY, OPERATIONS, and other necessary personnel as determined by COMMAND, to determine if the proper level of personal protective clothing and equipment is available for the HIT TEAM to enter the HOT ZONE.

DO NOT ENTER THE HOT ZONE IF THERE IS ANY DOUBT THAT THE EQUIPMENT YOU HAVE CAN PROTECT YOU FROM THE HAZARDOUS MATERIAL! SEE EMERGENCY RESCUE GUIDELINES! (pg. 16)

IF ANY COMMAND OR SECTOR OFFICER EVALUATING THE INFORMATION CONCERNING THE HAZARDOUS MATERIAL INVOLVED HAS ANY DOUBT ABOUT SENDING PERSONNEL INTO THE HOT ZONE, A NO-GO DECISION WILL BE MADE AND PERSONNEL WILL NOT ENTER THE HOT ZONE! SEE EMERGENCY RESCUE GUIDELINES! (pg. 16)

REMEMBER! A DECISION NOT TO ENTER THE HOT ZONE AT THIS POINT MAY BE THE ONLY THING THAT SAVES THE LIVES OF YOUR PERSONNEL!

3. **PROTECTIVE CLOTHING**

IF the hazardous material is positively identified and protective clothing chosen, the protective clothing will be checked against the chemical compatibility chart supplied by the manufacturer.

ALL personnel entering the HOT ZONE will wear positive-pressure self-contained breathing apparatus until the SAFETY OFFICER has determined that the hazard no longer exists.

All chemical protective clothing will be inspected prior to entry into the HOT ZONE. It will be monitored during the incident and properly disposed of after the incident. **SEE EMERGENCY RESCUE GUIDELINES! (pg. 16)**

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The HIT TEAM PRE-ENTRY CHECKLIST will be completed before the HIT TEAM enters the HOT ZONE. This is to ensure that the protective clothing has been inspected for abrasions, tears, or other deformities that would prevent its use.

All personnel working in the WARM ZONE and on the DECON CREW will wear the proper protective clothing as determined by the COMMAND and SECTOR OFFICERS evaluating the hazardous materials.

4. DECONTAMINATION

A DECONTAMINATION OFFICER (DECON) will be appointed by COMMAND. A DECON AREA will be established and be operational BEFORE any emergency personnel enter the HOT ZONE.

All HIT TEAM, BACK-UP TEAM, and DECON CREW personnel will be familiar with decontamination procedures.

5. EMERGENCY MEDICAL SERVICES

Emergency Medical Services will respond and be staged in the COLD ZONE as soon as possible, and BEFORE any emergency personnel enter the HOT ZONE.

EMS units on location, and if necessary medical facilities off-site, will be given information about possible health effects of the hazardous material involved in the incident.

ALL emergency personnel who enter the HOT ZONE or WARM ZONE in protective clothing will have vital signs taken by EMS prior to their entry into the HOT ZONE or WARM ZONE and upon their exit from the HOT ZONE, DECON, or WARM ZONE. **SEE EMERGENCY RESCUE GUIDELINES! (pg. 16)**

All personnel entering the HOT ZONE will continually be monitored for any physical symptoms that would indicate chemical contamination, illness, exhaustion, or heat stress (Reference: Heat Stress Monitoring SOG Chapter #6 Section #2). Upon any of these symptoms being diagnosed, the affected personnel will be removed from the work area and will enter the EMS system.

6. REHABILITATION AREA (REHAB)

If necessary, a REHAB AREA will be established in the COLD ZONE for emergency personnel.

7. OPERATIONAL BRIEFINGS

Operational briefings will be held as often as necessary for all emergency personnel during an incident. The briefing will include, but is not limited to, information on the following:

hazardous material identification
health symptoms caused by the product
health effects on contaminated personnel
operational procedures to be used
escape routes
weather conditions

At least 1 briefing will be conducted BEFORE any emergency personnel enter the HOT ZONE.

8. HIT TEAM AND BACK-UP TEAM

The buddy-system will be used at all times by the HIT TEAM and BACK-UP TEAM when entering the HOT ZONE.

Each TEAM will consist of either 2 or 3 personnel.

The HIT TEAM WILL NOT enter the HOT ZONE without the BACK-UP TEAM in position.

The HIT TEAM PRE-ENTRY CHECKLIST will be completed BEFORE any personnel enter the HOT ZONE.

HIT TEAM and BACK-UP TEAM members will not make more than two entries into the HOT ZONE without being evaluated by EMS personnel. (This will involve decontamination prior to EMS evaluation).

9. COMMUNICATIONS

All radio communications will be held to a minimum during an incident.

Emergency personnel entering the HOT ZONE will be provided with the best communications available based on safety and given the highest priority. If the HIT TEAM and BACK-UP TEAM cannot use radios, hand communications and/or safety ropes will be used and visual contact with them will be maintained as much as possible.

If at any time, emergency personnel in the HOT ZONE declare an emergency, all other unnecessary communications will cease until the situation can be brought under control.

If it is determined that the HIT TEAM and BACK-UP TEAM must evacuate the HOT ZONE immediately and other communications fail or are deemed not fast enough, an air horn will be sounded. The emergency signal will be 1 long blast (at least 10 seconds) on the air horn.

Communications will be tested BEFORE any emergency personnel enter the HOT ZONE.

10. MONITORING INSTRUMENTS, TOOLS, AND EQUIPMENT

It will be determined by COMMAND and SECTOR OFFICERS evaluating the hazardous material if the equipment is available to mitigate the incident.

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If the incident cannot be handled by the Portage Fire Department, no personnel will enter the HOT ZONE. Outside resources will be called in. The Portage Fire Department will secure, monitor, and control the incident as well as possible, until the outside resources can arrive.

Air monitoring equipment WILL BE USED in all HOT ZONE entries. When entering the HOT ZONE with monitoring instruments, manufacturers instructions will be followed in using the instruments and personnel will try to avoid damage to them.

If entering the HOT ZONE with tools and/or equipment, all precautions will be taken to prevent sparks from being produced.

11. EVACUATION OR WITHDRAWAL OF EMERGENCY PERSONNEL

If the SAFETY OFFICER at any time deems the actions or situation at the incident to be immediately dangerous to the life and health, or to involve an imminent danger to personnel, he shall have the authority to alter, suspend or terminate those actions in progress to control the incident. This includes withdrawal or evacuation of all personnel from the WARM or HOT ZONES. The SAFETY OFFICER shall immediately notify the INCIDENT COMMANDER of any actions which need to be taken to correct these hazards.

III. OPERATIONS

1. An OPERATIONS OFFICER (OPERATIONS) will be appointed by the INCIDENT COMMANDER to direct operations specifically dealing with the mitigation of the incident.
2. OPERATIONS will assist in identifying the hazardous materials.
3. OPERATIONS will assist in evaluating the incident and determine what actions will or will not be taken to mitigate the incident.
4. OPERATIONS will be in immediate command of the WARM ZONE and HOT ZONE.
5. OPERATIONS will ensure that no mitigation efforts take place until the Hazardous Materials Response Team Safety Plan is in place and operational when Level A or B protective clothing is required.
6. If the OPERATIONS OFFICER at any time deems the actions or situation in the HOT ZONE to be immediately dangerous to the life and health, or to involve an imminent danger to personnel, he shall have the authority to alter, suspend, or terminate those actions in progress to control the incident. This includes withdrawal or evacuation of all personnel from the WARM and HOT ZONES. The OPERATIONS OFFICER shall immediately notify the SAFETY

OFFICER and INCIDENT COMMANDER of any actions, which need to be taken to correct these hazards.

IV. HIT TEAM OPERATIONS

1. A HAZMAT MEDICAL OFFICER (HAZMAT MEDICAL) and HIT TEAM LEADER (HIT TEAM) shall be appointed by the INCIDENT COMMANDER.
2. The HAZMAT MEDICAL OFFICER will be the liaison between the HIT TEAM, BACK-UP TEAM, DECON TEAM and the EMS.
3. The HAZMAT MEDICAL OFFICER will ensure that the HIT TEAM PRE-ENTRY CHECKLIST has been updated prior to TEAM entry into the HOT ZONE.
4. The HAZMAT MEDICAL OFFICER will ensure that all TEAM members have had vital signs taken by EMS before entering the HOT ZONE. **SEE EMERGENCY RESCUE GUIDELINES! (pg. 16)**
5. The HAZMAT MEDICAL OFFICER will ensure that all HIT TEAM, BACK-UP TEAM, AND DECON TEAM members receive any medical attention required or needed.

UPON LEAVING THE DECON AREA, MEMBERS OF THE HIT TEAM, BACK-UP TEAM, AND DECON TEAM WILL ENTER THE EMS SYSTEM FOR THE REQUIRED MEDICAL SURVEILLANCE. UPON ENTERING THE EMS SYSTEM, NO MEMBER OF THESE TEAMS WILL BE ALLOWED TO WORK AT THE SCENE UNTIL CLEARED BY EMS OR MEDICAL PERSONNEL, WHO WILL REPORT TO THE HAZMAT MEDICAL OFFICER.

The HAZMAT MEDICAL OFFICER will ensure that the HOT ZONE air TIME SHEET is used and adhered to during HOT ZONE entry.

6. The HIT TEAM and BACK-UP TEAM will be the personnel who enter the HOT ZONE for reconnaissance, monitoring, and performing mitigation operations.
7. The HIT TEAM LEADER will assist in evaluating the incident and developing mitigation operations, if necessary.
8. The HIT TEAM LEADER will ensure that both TEAMS have received an operational briefing and are aware of the following:
 - a. Hazardous material identification
 - b. Health symptoms to watch for
 - c. DECON AREA location and procedures
 - d. Escape routes out of the HOT ZONE
 - e. Communications
 - f. Operations to be conducted within the HOT ZONE

9. If the HIT TEAM LEADER at any time deems the actions or situation in the HOT ZONE to be immediately dangerous to the life and health, or to involve imminent danger to personnel, or the mitigation methods needed to complete the operation are beyond the capabilities of his personnel, he shall have the authority to alter, suspend, or terminate those actions in progress to control the incident. This includes withdrawal or evacuation of all personnel from the HOT ZONE. The HIT TEAM LEADER shall immediately notify OPERATIONS of any actions that need to be taken to correct these hazards.

V. DECON OPERATIONS

The DECONTAMINATION SECTOR (DECON) shall be designated as necessary to establish a procedure to decontaminate emergency personnel, civilians, and equipment in an effort to reduce or stop the spread of contaminants.

DECON PHILOSOPHY, "THE HUMAN BEING COMES BEFORE THE ENVIRONMENT."

The INCIDENT COMMANDER will appoint a DECON OFFICER to be in command of the DECON SECTOR.

The DECON OFFICER will be responsible for the following:

- A. Site selection and identification
- B. Site set-up and security
- C. DECON CREW
- D. Record of decontaminated personnel and equipment
- E. Complete checklist

A. SITE SELECTION AND IDENTIFICATION

The DECON OFFICER will ensure that the DECON SECTOR is set up and identified BEFORE the HIT TEAM enters the HOT ZONE.

The DECON OFFICER will set up the DECON SECTOR based on, and following the criteria below as closely as possible:

1. Weather conditions (temperature, precip., etc.)
*DECON SECTOR may be off-site if weather is cold or inclement
2. Wind direction
*DECON SECTOR must be upwind of the HOT ZONE
3. Slope of ground
*DECON SECTOR must be uphill of the HOT ZONE
4. Surface material and porosity

5. Availability of water
6. Availability of power and lighting

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7. Proximity of incident
*DECON SECTOR will be located in the WARM ZONE with the exit leading to the COLD ZONE.
8. Location of drains, sewers, and watercourses

B. SITE SELECTION AND ENVIRONMENTAL CONSIDERATIONS

All attempts should be made to contain any run-off from the DECON SECTOR.

1. Containment basins (wading pools, folding tanks, etc) should be able to be emptied into a holding container for later disposal.
2. Any run-off not contained will eventually enter the sewers, watercourses, or ground water.
3. Any substance that enters the sewers and watercourses should be reported to environmental authorities (DNR, etc.) and to the sewage treatment plant.
4. If DECON SECTOR is indoors because of bad weather, ensure that the drains go into a holding tank and not directly into the sewers.

The DECON SECTOR will have clearly marked boundaries using whatever means are available.

C. SITE SET-UP AND SECURITY

The DECON SECTOR will be set up using the DECON SECTOR MAP and the DECON SET-UP CHECKLIST and will provide the following:

1. Spare supply of breathing air (extra SCBA, extra cylinders, or workline units).
2. A supply of heavy-duty plastic bags for disposal of contaminated materials.
3. Clearly marked entry and exit points with the exit upwind and away from the HOT ZONE.
4. Access to the EMS area and other medical aid.
5. Protection of personnel from inclement weather.
6. Security and control from the setting-up of the area to final clean-up of the site.

The SAFETY OFFICER and DECON OFFICER will ensure that only trained and authorized personnel are allowed in the DECON SECTOR.

D. DECON CREW

1. All personnel on the HIT TEAM, BACK-UP TEAM and DECON CREW will be familiar with decontamination site set-up and procedures

2. The DECON OFFICER will determine the level of protective clothing used by the DECON CREW.
3. The DECON CREW will be kept to a minimum number of personnel, but will have a minimum of 2 trained personnel.

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4. The DECON CREW must also be decontaminated.
5. The last DECON crew member to decontaminate will do so alone and ensure that as much of the equipment and bags are secured as possible.

E. RECORD OF EQUIPMENT

A record will be kept of all equipment that is contaminated and enters the DECON SECTOR.

F. CLEAN-UP OF DECON SECTOR

The INCIDENT COMMANDER, OPERATIONS OFFICER, and SAFETY OFFICER will determine when and how the DECON SECTOR clean-up will take place.

1. Fire Department clean-up
2. Authorized contractor
3. Outside agency assistance
 - a. Water/sewage treatment facilities
 - b. Pollution control agencies (EPA, DNR, etc.)
 - c. Product specialists

If necessary, DECON SECTOR and HIT TEAM equipment will be disposed of or destroyed by proper methods if decontamination cannot be accomplished.

If contaminated equipment will remain on site for any length of time, it will be properly identified.

TOWER 1 MASS DECON

- A. When having patients enter the tunnel, have either all of the female patients or all of the male patients go through before the other sex goes through.
- B. Have patients go through the tunnel individually. As one patient enters the shower, the next one can enter the Undressing Area. At any given time, there should only be one person in the shower and Undressing Area.
- C. If possible, a Decon Team member should be in the Undressing Area to direct the patients. **THE DECON TEAM MEMBER IN UNDRESSING AREA MUST BE OF THE SAME SEX AS THE PATIENTS GOING THROUGH THE TUNNEL. IF THIS IS NOT POSSIBLE, THEN THE DECON MEMBER WILL STAY ON THE OUTSIDE OF THE TUNNEL.**

Have the patient enter the tunnel from the end nearest the cab. Give them the following instructions:

1. Disrobe in the first enclosed area.
2. Put clothing and valuables in a plastic bag and label the bag with a magic marker.
3. Upon direction of the Decon Team member inside the Undressing Area, (or the Decon Team member outside the tunnel) enter the shower area.
4. In the shower use the available soap and pull-handle shower to get decontaminated.
5. When finished showering, advise the Decon Team member located between the shower and the Decon Tent.
6. Upon direction of the Decon Team member, enter the side of the Decon Tent as directed, dry off and put on a disposable suit.
7. Exit the Decon Tent and enter the EMS system.

WET DECON PROCEDURE

NO TENT OR VICTIMS

1. Deposit tools and equipment into plastic bag in bucket.
2. Stand in GROSS DECON POOL and receive gross decon.
3. Deposit first pair of outer gloves and boots into plastic bags in buckets.
4. Stand in RINSE POOL and receive rinse.
5. Go to SUIT REMOVAL AREA.
6. Remove boots and second pair of gloves and deposit into plastic bags in barrels.
7. Remove suit and deposit into plastic bags in barrels.

**** NON-ENCAPSULATED SUIT REMOVAL MUST BE DONE
WITH SCBA FACEPIECE IN PLACE WHILE ON AIR!!**

8. Go to SCBA REMOVAL AREA.

****IF NON-ENCAPSULATED SUITS WERE USED, PLACE THESE
SCBA'S INTO PLASTIC BAGS IN BLACK CONTAINERS
SEPARATE FROM THE OTHER SCBA'S.**

9. Remove radio and deposit into buckets.
10. Remove SCBA and facepiece and place in black container.
11. Remove inner gloves and deposit into plastic bag in bucket.
12. Clean and/or shower, if needed.
13. Enter EMS system.

**WET DECON PROCEDURE
WITH TENT (NO VICTIMS)**

1. Deposit tools and equipment into plastic bag in bucket.
2. Deposit outer first pair of boots and gloves into plastic bag in bucket.
3. Stand in pool inside tent and receive gross decon and rinse.
4. Go to SUIT REMOVAL AREA.
5. Remove boots and second pair of gloves and deposit into plastic bags in barrels.
6. Remove suit and deposit into plastic bags in barrels.

****NON-ENCAPSULATED SUIT REMOVAL MUST BE DONE
WITH SCBA FACEPIECE IN PLACE WHILE ON AIR.**

7. Go to SCBA REMOVAL AREA.

****IN NON-ENCAPSULATED SUITS WERE USED, PLACE
THESE SCBA'S INTO PLASTIC BAGS IN BLACK
CONTAINERS SEPARATE FROM THE OTHER SCBA'S.**

8. Remove radio and deposit into bucket.
9. Remove SCBA and facepiece and place into in black container.
10. Remove inner gloves and deposit into plastic bag in bucket.
11. Clean and/or shower, if needed.
12. Enter EMS system.

WET DECON PROCEDURE
FOR NON-AMBULATORY VICTIMS
THROUGH TENT

1. Place backboard on sawhorses in pool.
2. Put victim on oxygen.
3. Cut away clothing and place into plastic bag in barrel.

****IF MULTIPLE VICTIMS, TRY TO KEEP CLOTHING AND
VALUBLES OF EACH VICTIM SEPARATE.**

4. Do gross decon and rinse.
5. Dry victim with disposable towels and cover with disposable blankets. (Place used towels into plastic bag in barrel.
6. Turn victim over to EMS.

****DISCONNECT OXYGEN LINE FROM BOTTLE.
LEAVE OXYGEN MASK ON VICTIM.**

ADDENDUM A

RETURNING CONTAMINATED ABSORBENTS TO THE STATION

It is the policy of the Portage Fire Department that NO contaminated absorbents be returned to the fire station after a hazardous materials spill. It is the responsibility of the spiller to remove these materials.

However, there are incidents where a small amount of contaminated absorbents may have to be removed by our department in the interest of expediency, safety and public interest. When this occurs, the following guidelines shall be followed:

1. Sphag-sorb, spill-dri, etc:
 - A. If the spill is large enough to use these materials as the primary absorbent, then it should be put in drums and left on site.
 - B. These materials shall not be returned to the station. These materials may be spread over the spill residue after the liquid is absorbed by pads, pillows, if oil dry is not available.

2. Oil Dry:

Oil dry should only be used to spread over the spill residue after the liquid is absorbed by pads, pillows, etc. It should only be used as a primary absorbent as a last resort. It shall not be returned to the station.

3. When pads, pillows, snakes, etc. are utilized as the primary absorbents, the following numbers should be used as guidelines for returning them to the station:

5-7	pads
3	pillows
3	snakes
2-3	pans

If the amount of absorbents used fills or exceeds a small barrel, the absorbents will be left in a barrel on site.

4. If contaminated absorbents are returned to the station in a hazardous materials bag, that bag shall immediately be placed in a regular brown garbage bag, sealed, and set aside to be placed out with the regular garbage.

ADDENDUM B

PETROLEUM PRODUCTS - NON-EXTREMELY HAZARDOUS SUBSTANCES

In the event of a hazardous substance spill/release, when does the local DNR warden and Officer Emergency Government want to be notified? That question has been asked recently by several persons from different agencies and hopefully the following will answer it.

The county's game Wardens and Emergency Government request that they be contacted when:

1. A spill exceeds 25 gallons or pounds.
2. A spill threatens ground or surface water.
3. A spill threatens the human population.
4. A spill threatens livestock.
5. Emergency response (fire dept., etc.) is dispatched for the spill only, not the incident/accident that caused it.

The above is not all inclusive, but is meant as a common sense guide for the releases of common petroleum products and non-extremely hazardous substances. This guide does not apply to the releases of extremely hazardous substances.

ADDENDUM C

FUEL SPILL GUIDELINES

The following guidelines will be followed at fuel spills. These will hopefully provide greater protection for the Fire Department personnel and provide time to assess the situation and mitigate the incident.

1. A hoseline will be pulled at all fuel spills. The Incident Commander will determine what size line.
2. Fire Department personnel will remain in full turnout gear. Personnel involved directly in stopping a leak shall use protective equipment found in the fuel spill kits, as is necessary.
3. Drip pans, pillows, and other department material will be used as much as possible to initially contain the spilled fuel. It is hoped that by doing this, a more organized and less hazardous approach will be made by personnel in stopping the leak with Plug N Dike, Pig Putty, and/or plugs.
4. Some situations may indicate the need to do air monitoring. Air monitoring should be considered at fuel spills.

**APPENDIX D–PORTAGE
EXISTING CONSTRUCTION SITE EROSION CONTROL ORDINANCE**

ARTICLE VII. - CONSTRUCTION SITE EROSION CONTROL

Sec. 10-221. - Authority.

This article is adopted pursuant to the guidelines in Wis. Stats. § 62.234.

(Code 1990, § 15-2-1)

Sec. 10-222. - Findings and purpose.

- (a) *Findings.* The common council finds runoff from construction sites carries a significant amount of sediment and other pollutants to the waters of the state and the city.
- (b) *Purpose.* It is the purpose of this article to preserve the natural resources; to protect the quality of the waters of the state and city; and to protect and promote the health, safety and welfare of the people, to the extent practicable by minimizing the amount of sediment and other pollutants carried by runoff or discharge from construction sites and other land developing and disturbing sites to lakes, streams and wetlands.

(Code 1990, § 15-2-2)

Sec. 10-223. - Applicability of regulations.

- (a) This article applies to land disturbing and land developing activities on land within the boundaries and jurisdiction of the city. This article is applicable to all lands located within the extraterritorial plat approval jurisdiction of the city, even if plat approval is not involved. All state funded or conducted construction is exempt from this article. Construction by the city is not exempt.
- (b) State funded or conducted construction activities must meet the requirements contained in the "State Plan for the Control of Construction Erosion and Stormwater Runoff," which contains similar requirements as contained in this article, as a minimum.

(Code 1990, § 15-2-3)

Sec. 10-224. - Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Agricultural land use means use of land for planting, growing, cultivating and harvesting of crops for human or livestock consumption and pasturing or yarding of livestock.

Commercial land use means use of land for the retail or wholesale sale of goods or services.

Construction site control measure means a control measure used to meet the requirements of section 10-227(b).

Control measure means a practice or combination of practices to control erosion and attendant pollution.

Control plan means a written description of the number, locations, sizes and other pertinent information of control measures designed to meet the requirements of this article submitted by the applicant for review and approval by the director of public works.

Erosion means the detachment and movement of soil, sediment or rock fragments by water, wind, ice or gravity.

Land developing activity or *land development activity* means the construction of buildings, roads, parking lots, paved storage areas and similar facilities.

Land disturbing construction activity or *land disturbing activity* means any manmade change of the land surface including removing vegetation cover, excavating, filling and grading but not including agricultural land uses such as planting, growing, cultivating and harvesting of crops; growing and tending of gardens; harvesting of trees; and landscaping modifications.

Landowner means any person holding title to or having any interest in land.

Land user means any person operating, leasing, renting, or having made other arrangements with the landowner by which the landowner authorizes uses of his land.

Runoff means the rainfall, snowmelt, or irrigation water flowing over the ground surface.

Set of one-year design storms means the rain intensities and rain volumes or corresponding values specific to the community for the storm durations of 0.5, 1, 2, 3, 6, 12 and 24 hours that occur approximately one per year. The following are typical characteristics of these one-year storms for most of the state:

Storm Duration (Hours)	Rain Intensity (Inches/Hour)	Average Total Rain (Inches)
0	1.8	0.9
1	1.1	1.1
2	0.7	1.3
3	0.5	1.5
6	0.3	1.7
12	0.2	2.0
24	0.1	2.3

Site means the entire area included in the legal description of the land on which the land disturbing or land development activity is proposed in the permit application.

(Code 1990, § 15-2-4)

Cross reference— Definitions generally, § 1-2.

Sec. 10-225. - Design criteria, standards and specifications for control measures.

All control measures required to comply with this article shall meet the design criteria, standards and specifications for the control measures based on accepted design criteria, standards and specifications identified by the department of public works, including the state department of natural resources's "Wisconsin Construction Site Best Management Practice Handbook."

(Code 1990, § 15-2-5)

Sec. 10-226. - Maintenance of control measures.

All sedimentation basins and other control measures necessary to meet the requirements of this article shall be maintained by the applicant or subsequent landowner during the period of land disturbance and land development of the site in a satisfactory manner to ensure adequate performance and to prevent nuisance conditions.

(Code 1990, § 15-2-6)

Sec. 10-227. - Control or erosion and pollutants during land disturbance and development.

(a) *Applicability.* This section applies to the following sites of land development or land disturbing activities:

- (1) Those requiring a subdivision plat approval or the construction of houses or commercial, industrial or institutional buildings on lots of approved certified surveys.
- (2) Those requiring a certified survey approval or the construction of houses of commercial, industrial or institutional buildings on lots of approved certified surveys.
- (3) Those involving grading, removal of protective ground cover or vegetation, excavation, land filling or other land disturbing activity affecting a surface area of 4,000 square feet or more.
- (4) Those involving excavation or filling or a combination of excavation and filling affecting 400 cubic yards or more of dirt, sand or other excavation or fill material.
- (5) Those involving street, highway, road or bridge construction, enlargement, relocation or reconstruction.
- (6) Those involving the laying, repairing, replacing or enlarging of an underground pipe or facility for a distance of 300 feet or more.

The above applicability criteria are specifically stated in 1983 Wisconsin Act 416 for inclusion in this article. Utility companies responsible for energy repair work should enter into a "memorandum of agreement" with the department of inspection clearly stating their responsibilities if their activities may be included under any of the above applicability criteria.

(b) *Erosion and other pollutant control requirements.* The following requirements shall be met on all sites described in subsection (a) of this section:

- (1) *Site dewatering.*
 - a. Water pumped from the site shall be treated by temporary sedimentation basins, grit chambers, sand filters, up-slope chambers, hydrocyclones, swirl concentrators, or other appropriate controls designed and used to remove particles of 100 microns or greater for the highest dewatering pumping rate. If

the water is demonstrated to have no particles greater than 100 microns during dewatering operations, then no control is needed before discharge, except as determined by the city. Water may not be discharged in a manner that causes erosion of the site or receiving channels.

- b. There are several ways to meet the particle size performance objective of subsection (b)(1)a of this section, depending on the pumping rate. As an example, if the pumping rate is very low (one gallon/minute), then an inclined or vertical enlargement pipe (about eight inches in diameter for one gallon/minute) several feet long would be an adequate control device to restrict the discharge of 100 micron, and larger, particles. As the pumping rate increases, then the "device" must be enlarged. At a moderate (100 gallons/minute) pumping rate, a vertical section of corrugated steel pipe, or concrete pipe section, or other small "tank" (about 4½ feet across for a 100 gallons/minute pumping rate) several feet tall would be adequate. With these pipe sections or small tanks, inlet baffles would be needed to minimize turbulence. With very large pumping rates (10,000 gallons/minute), sediment basins (about 35 feet in diameter for a pumping rate of 10,000 gallons/minute) at least three feet in depth with a simple (but adequately sized) pipe outlet would be needed. More sophisticated control devices (such as swirl concentrators or hydrocyclones) could be specially fabricated that would generally be smaller than the simple sedimentation devices described above, but they would not be required.
 - c. The performance standard of 100 micron maximum particles in the dewatering water at the maximum pumping rate significantly reduces the liability of the contractor when compared to a standard of "no visible particulate matter." If a properly sized device is correctly used, based on the 100 micron particle size performance standard, then discharges of visible particulate matter would not constitute a violation. It is not possible to design a control device that would ensure "no visible particulate matter" discharges. This 100 micron standard is intended to significantly reduce sedimentation problems in downstream drainage systems and in the receiving waters that are caused by large particles. "Visible particulate matter" will probably still occur in water meeting this standard, as most turbidity effects are caused by very small particles that usually do not cause as severe a sedimentation problem as larger particles. This 100 micron particle size performance standard was therefore selected to be easily met and enforced, and to reduce sedimentation problems. A "no visible particulate matter" standard in contrast could not be met easily or cheaply, violations would frequently occur, and inspectors would have to make frequent site visits and require frequent control device changes. In addition, particle size measurements would not be required to prove compliance with the 100 micron performance standard. Only the proper use of a device designed to meet this particle size criteria is needed. However, if a contractor or site engineer feels that the dewatering water does not contain any particles larger than 100 microns, no control device would be needed if optional frequent particle size analyses confirm that fact. In most cases, the use of the simple control devices described previously would be less expensive and less bothersome than performing frequent particle size analyses.
- (2) *Waste and material disposal.* All waste and unused building materials (including garbage, debris, cleaning wastes, wastewater, toxic materials, or hazardous materials) shall be properly disposed and not allowed to be carried by runoff into a receiving channel or storm sewer system.
 - (3) *Tracking.* Each site shall have graveled roads, access drives and parking areas of sufficient width and length to prevent sediment from being tracked onto public or private roadways.

- (4) *Drain inlet protection.* All storm drain inlets shall be protected with a straw bale, filter fabric, or equivalent b meeting accepted design criteria, standards and specifications.
- (5) *Site erosion control.* The following criteria apply only to land development or land disturbing activities that result in runoff leaving the site:
- a. Channelized runoff from adjacent areas passing through the site shall be diverted around disturbed areas, if practical. Otherwise, the channel shall be protected as described below in subsection (b)(5)c.3 of this section. Sheetflow runoff from adjacent areas greater than 10,000 square feet in area shall also be diverted around disturbed areas unless shown to have resultant runoff velocities of less than 0.5 feet/second across the disturbed area for the set of one year design storms. Diverted runoff shall be conveyed in a manner that will not erode the conveyance and receiving channels. Soil and conservation service guidelines for allowable velocities in different types of channels should be followed.
 - b. All activities on the site shall be conducted in a logical sequence to minimize the area of bare soil exposed at any one time.
 - c. Runoff from the entire area disturbed area on the site shall be controlled by the meeting either of the following:
 1. All disturbed ground left inactive for seven or more days shall be stabilized by seeding or sodding (only available prior to September 15) or by mulching or covering, or other equivalent control measure.
 2. For sites with ten acres or more disturbed at one time, or if a channel originates in the disturbed area, one or more sedimentation basins shall be constructed. Seeding or sodding prior to May 1 shall require written approval from the director public works for sites with ten acres or more. Each sedimentation basin shall have a surface area of at least one percent of the area draining to the basin and at least three feet of depth and constructed in accordance with accepted design specifications. Sediment shall be removed to maintain a depth of three feet. The basin shall be designed to trap sediment greater than 15 microns in size, based on the set of one year design storms having durations from 0.5 to 24 hours. The basin discharge rate shall also be sufficiently low as to not cause erosion along the discharge channel or the receiving water.
 3. For sites with less than ten acres disturbed at one time, filter fences, straw bales, or equivalent control measures shall be placed along all sideslope and downslope sides of the site. If a channel or area of concentrated runoff passes through the site, filter fences shall be placed along the channel edges to reduce sediment reaching the channel.
 - d. Any soil or dirt storage piles containing more than ten cubic yards of material should not be located with a downslope drainage length of less than 25 feet to a roadway or drainage channel. If remaining for more than seven days, they shall be stabilized by fabric fences, straw bales, vegetative cover, tarps or other means. Erosion from piles which will be in existence for less than seven days shall be controlled by placing straw bales or filter fence barriers around the pile. If the piles are in existence for extended periods, the fences or bales may need to be replaced. In-street utility repair or construction soil or dirt storage piles located closer than 25 feet of a roadway or drainage channel must be covered with tarps or suitable alternative control if exposed for more than seven days, and the storm drain inlets must be protected with straw bales or other appropriate filtering barriers.

(Code 1990, § 15-2-7)

Sec. 10-228. - Permit application, control plan, and permit issuance.

- (a) *Permit application.* No landowner or land user may commence a land disturbance or land development activity subject to this article without receiving prior approval of a control plan for the site and a permit from the department of public works. At least one landowner or land user controlling or using the site and desiring to undertake a land disturbing or land developing activity subject to this article shall submit an application for a permit and a control plan and pay an application fee to the department of public works. By submitting an application, the applicant is authorizing the director of public works to enter the site to obtain information required for a review of the control plan.
- (b) *Content of the control plan for land disturbing activities covering one or more acres.*
- (1) *Existing site map.* A map of existing site conditions on a scale of at least one inch equals 100 feet showing the site and immediately adjacent areas:
- Site boundaries of adjacent lands which accurately identify site location;
 - Lakes, streams, wetlands, channels, ditches and other watercourses. The local unit of government should identify sensitive local waters that may need to be further addressed by the control plan;
 - 100-year floodplains, flood fringes and floodways;
 - Location of the predominant soil types;
 - Vegetative cover;
 - Location and dimensions of stormwater drainage systems and natural drainage patterns;
 - Locations and dimensions of utilities, structures, roads, highways, and paving; and
 - Site topography at a contour interval not to exceed five feet.
- (2) *Plan of final site conditions.* A plan of final site conditions on the same scale as the existing site map showing the site changes.
- (3) *Site construction plan.* A site construction plan including:
- Locations and dimensions of all proposed land disturbing activities;
 - Locations and dimensions of all temporary soil or dirt stockpiles;
 - Locations and dimensions of all construction site management control measures necessary to meet the requirements of this article;
 - Schedule of anticipated starting and completion date of each land disturbing or land developing activity including the installation of construction site control measures needed to meet the requirements of this article; and
 - Provisions of maintenance of the construction site control measures during construction.
- (c) *Content of control plan statement for land disturbing activities covering less than one acre, but meeting the applicability requirements stated in section 10-227(a).* An erosion control plan statement (with simple map) shall be submitted to briefly describe the site and erosion controls (including the site development schedule) that will be used to meet the requirements of this article.
- (d) *Review of control plan.* Within 45 days of receipt of the application, control plan and fee, the director of public works shall review the application and control plan to determine if the requirements of this article are met.

The director of public works shall approve the plan, inform the applicant and issue a permit. If the conditions are not met, the director of public works shall inform the applicant in writing and may either require needed information or disapprove the plan. Within 30 days of receipt of needed information, the director of public works shall again determine if the plan meets the requirements of this article. If the plan is disapproved, the director of public works shall inform the applicant in writing of the reasons for the disapproval.

(e) *Permits.*

- (1) *Duration.* Permits shall be valid for a period of 180 days, or the length of the building permit or other construction authorizations, whichever is longer, from the date of issuance. The director of public works may extend the period one or more times for up to an additional 180 days. The director of public works may require additional control measures as a condition of the extension if they are necessary to meet the requirements of this article.
- (2) *Surety bond.* As a condition of approval and issuance of the permit, the director of public works may require the applicant to deposit a surety bond or irrevocable letter of credit to guarantee a good faith execution of the approved control plan and any permit conditions.
- (3) *Permit conditions.* All permits shall require the permittee to:
 - a. Notify the director of public works within 48 hours of commencing any land disturbing activity;
 - b. Notify the director of public works of completion of any control measures within 14 days after their installation;
 - c. Obtain permission in writing from the director of public works prior to modifying the control plan;
 - d. Install all control measures as identified in the approved control plan;
 - e. Maintain all road drainage systems, stormwater drainage systems, control measures and other facilities identified in the control plan;
 - f. Repair any situation or erosion damage to adjoining surfaces and drainageways resulting from land developing or disturbing activities;
 - g. Inspect the construction control measures after each rain of 0.5 inches or more and at least once each week and make needed repairs;
 - h. Allow the director of public works to enter the site for the purpose of inspecting compliance with the control plan or for performing any work necessary to bring the site into compliance with the control plan; and
 - i. Keep a copy of the control plan on the site.

(Code 1990, § 15-2-8)

Sec. 10-229. - Inspection.

The director of public works shall inspect construction sites at least once a month during the period starting March 1 and ending October 31 and at least two times during the period starting November 1 and ending February 28 to ensure compliance with the control plan. If land disturbing or land development activities are being carried out without a permit, the director of public works shall enter the land pursuant to the provisions of Wis. Stats. §§ 66.122 and 66.123.

(Code 1990, § 15-2-9)

Sec. 10-230. - Enforcement.

- (a) The director of public works may post a stop work order if:
 - (1) Any land disturbing or land developing activity regulated under this article is being undertaken without a permit;
 - (2) The control plan is not being implemented in a good faith manner; or
 - (3) The conditions of the permit are not being met.
- (b) If the permittee does not cease the activity or comply with the control plan or permit conditions within ten days, the director of public works may revoke the permit.
- (c) If the landowner or land user where no permit has been issued does not cease the activity within ten days, the director of public works may request the city attorney to obtain a cease and design order.
- (d) The director of public works or the board of appeals upon appeal may retract the stop work order or the revocation.
- (e) Ten days after posting a stop work order, the director of public works may issue a notice of intent to the permittee or landowner or land user of the director of public works' intent to perform work necessary to comply with this article. The director of public works may go on the land and commence the work after 14 days from issuing the notice of intent. The costs of the work performed by the department of public works, plus interest at the rate authorized by the department of public works, shall be billed to the permittee or the landowner. In the event a permittee or landowner fails to pay the amount due, the city clerk shall enter the amount due on the tax rolls and collect as a special assessment against the property pursuant to Wis. Stats. § 66.60(16). Any person violating any of the provisions of this article shall be subject to a forfeiture as provided in section 1-15. Each day a violation exists shall constitute a separate offense.
- (f) Compliance with the provisions of this article may also be enforced by injunction.

(Code 1990, § 15-2-10)

Sec. 10-231. - Appeals.

- (a) *Generally.* The municipal services and utilities committee shall hear and decide appeals where it is alleged that there is error in any order, decision or determination made by the director of public works in administering this article. Upon appeal, the municipal services and utilities committee may authorize variances from the provisions of this article which are not contrary to the public interest and where owing to special conditions a literal enforcement of the provisions of this article will result in unnecessary hardship. The municipal services and utilities committee shall use the rules, procedures, duties and powers authorized by statute for municipal services and utilities committee in hearing and deciding appeals and authorizing variances.
- (b) *Who may appeal.* Appeals to the zoning board of appeals may be taken by any aggrieved person or by any city officer, department, board or agency of the city affected by any decision of the department of public works.

(Code 1990, § 15-2-11)

Secs. 10-232—10-260. - Reserved.

**APPENDIX E—PORTAGE EXISTING POSTCONSTRUCTION
STORMWATER MANAGEMENT ZONING ORDINANCE**

ARTICLE VIII. - STORMWATER MANAGEMENT

Footnotes:

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Cross reference— *Utilities, ch. 78.*

Sec. 10-261. - Authority.

This article is adopted under the authority granted by Wis. Stats. § 62.11(5).

(Ord. No. 03-003, § 15-6-1, 6-12-2003)

Sec. 10-262. - Title.

This article shall be known as, referred to, and may be cited as the "stormwater management ordinance" and is hereinafter referred to as "this article."

(Ord. No. 03-003, § 15-6-2, 6-12-2003)

Sec. 10-263. - Findings and declarations of policy.

The city finds that urbanizing land uses have accelerated the process of soil erosion, runoff and sediment deposition in the waters of the city. It is, therefore, declared to be the policy of this article to provide for the control and, if possible, the prevention of soil erosion, and thereby to preserve the natural resources, control floods and prevent impairment of dams and reservoirs, protect the quality of public waters, preserve wildlife, protect the tax base, and protect and promote the health, safety and general welfare of the people of the city.

(Ord. No. 03-003, § 15-6-3, 6-12-2003)

Sec. 10-264. - Intent and purpose.

The purpose of this article is to promote the public health, safety, prosperity, and general welfare of the citizens of the city and to conserve the soil, water and related resources, minimize flooding, as well as controlling erosion and transportation of sediment.

(Ord. No. 03-003, § 15-6-4, 6-12-2003)

Sec. 10-265. - Applicability.

This article applies to the use of lands within the incorporated boundaries of the city, and, to the extent allowed by law, to lands subject to extraterritorial plat approval jurisdiction if said lands are within a drainage basin or watershed that discharges stormwater into or out of the city.

(Ord. No. 03-003, § 15-6-5, 6-12-2003)

Sec. 10-266. - Abrogation and greater restrictions.

It is not intended by this article to repeal, abrogate, annul, impair or interfere with any existing covenants, deed restrictions, agreements, rules, regulations, ordinances or permits previously adopted or issued pursuant to law. However, whenever this article imposes greater restrictions, the provisions of this article shall govern.

(Ord. No. 03-003, § 15-6-6, 6-12-2003)

Sec. 10-267. - Interpretation.

In their interpretation and application, the provisions of this article shall be held to be the minimum requirements and shall be liberally construed in favor of the city and shall not be deemed a limitation or repeal of any other power granted by the state statutes.

(Ord. No. 03-003, § 15-6-7, 6-12-2003)

Sec. 10-268. - Severability of ordinance provisions.

If any section, provisions or portion of this article is adjudged unconstitutional or invalid by a court, the remainder of this article shall not be affected thereby.

(Ord. No. 03-003, § 15-6-8, 6-12-2003)

Sec. 10-269. - Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Agricultural lands means the land used for the production of food and fiber, including, but not limited to, general farming, livestock and poultry enterprises, grazing, nurseries, horticulture, viticulture, truck farming, forestry, sod production, cranberry production and wild crop harvesting and includes lands used for on-site structures necessary to carry out such activities.

Closed watershed means a drainage basin or watershed which does not discharge stormwater during a storm of 24-hour duration and two-year recurrence interval occurring over the basin with the land in its predevelopment condition.

Commercial land use means use of the land for the retail or wholesale of goods or services.

Approved control plan means approved by the city engineer and (erosion and sediment control plan and/or runoff control plan) is a written description with summarized conclusions, supporting calculations, and methodology for improving water quality, controlling sediment pollution from accelerated erosion on a development area and/or from erosion caused by accelerated runoff from a development area as well as controlling runoff.

Cubic yards means the amount of material in excavation and/or fill measured by the method of "average end areas."

Curve number means as used in the runoff calculation methodology promulgated by the United States Soil Conservation Service National Engineering Handbook and/or Technical Release 55, utilizing the most current edition.

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

Excavation means any act by which organic matter, earth, sand, gravel, rock or any other similar material is cut into, dug, quarried, uncovered, removed, displaced, relocated or bulldozed and shall include the conditions resulting therefrom.

Existing grade means the vertical location of the existing ground surface prior to excavation or filling.

Fill means any act by which earth, sand, gravel, rock or any other material is deposited, placed, replaced, pushed, dumped, pulled, transported or moved by humans to a new location and shall include the conditions resulting therefrom.

Grading means altering the elevation of the land surface by stripping, excavating, filling, stockpiling of soil materials or any combination thereof and shall include the land from which the material was taken or upon which it was placed.

Greenspace means lawns, landscape areas, wooded natural growth areas, and bioretention areas.

Governing body means the city common council.

Hydrologic soil group means as used in the runoff calculation methodology promulgated by the United States Soil Conservation Service National Engineering Handbook or Technical Release 55.

Industrial land use means industrial building development, exterior storage areas, loading and unloading areas, equipment washing areas or other area or surface directly associated with an industrial process or a land use activity covered under the state pollutant discharge elimination system.

Land disturbing activities or uses means any land alterations or disturbances which may result in soil erosion, sedimentation and/or the increase in runoff, including but not limited to tilling, removal of ground cover, grading, excavating and filling of land, except that the term shall not include such minor land disturbing activities as home gardens and repair or maintenance of private roads. Additionally, this term does not include agricultural land uses.

Land occupier or occupier of land means any person, partnership, firm or corporation that has a fee simple interest in the land either as sole owner, as a tenant in common or a joint tenant or holds as a trustee, assignee, or holds as a land contract vendee.

Land treatment measures means structural or vegetative practices, or combinations of both, used to control erosion and sediment movement, including areas to be protected by fencing.

Land users means those who use land, individually or collectively as owners, operators, lessors, renters, occupiers who are providing a service that requires access or alterations of the land in order to perform the service, or by other arrangement which gives them the responsibility of private or public land use.

Manual of practice means the Wisconsin Stormwater Manual published by the state department of natural resources, utilizing the most current addition.

Open watershed means a drainage basin or watershed which does discharge stormwater during any storm of 24-hour duration and less than two-year recurrence interval occurring over the basin with the land in its predevelopment condition.

Parcel means all contiguous lands under the ownership or control of a land occupier or land user.

Peak flow means the maximum rate of flow of water at a given point in a channel, watercourse, or conduit resulting from the predetermined storm or flood.

Permit means the signed, written statement issued under this article authorizing the applicant to engage in general land disturbing uses specified and for a specified period of time.

Permittee means any person to whom a permit is issued under this article.

Person means any individual, corporation, partnership, joint venture, agency, unincorporated association, municipal corporation, county, or state agency within the state, the federal government, or any combination thereof.

Predevelopment conditions means land which has runoff characteristics equivalent to runoff curve numbers (CN) that most accurately reflect the predevelopment conditions. If the predevelopment land is unimproved, the runoff curve numbers (CN) assigned shall be not greater than 30, 58, 71, and 78 for hydrologic soil groups A, B, C and D, respectively.

Public lands means all lands that are subject to regulation by the city, including, but not limited to:

- (1) All lands owned or controlled by the city; and
- (2) All land, within the boundaries or extraterritorial control of the city, which are owned by another unit of government if that unit of government is acting in a proprietary rather than governmental function.

Recurrence interval means a storm of given intensity and duration is the average period of time between storms of the same duration and equal or greater intensity.

Sediment means solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity or ice, and has come to rest on the earth's surface at a different site.

Sedimentation means the transportation and deposition of sediment that may ultimately degrade water quality by the presence of suspended solid particles, derived from soils by erosion or discharged into surface waters from other sources; or the deposition of water borne sediments in stream channels, lakes, reservoirs, or on floodplains, usually because of a decrease in the velocity of the water.

Soil loss means soil moved from a given site because of land disturbing activities or by the forces of erosion and redeposited at another site on land or in a body of water.

Stop work order means a means of giving notice to the permittee that an authorized designee of the city believes that the permittee has violated one or more provisions of this article. Notice is given both by posting upon the lands where the disturbing activity occurs one or more copies of a poster so stating the violation and by mailing a copy of this poster by certified mail to the permittee at the address shown on the permit.

Storm runoff means the portion of rainfall that reaches a stream, lake or other water body during and soon after a storm.

Storm sewer means a closed conduit for conducting collected stormwater.

Stormwater drainage facility means any element in a stormwater drainage system that is made or improved by humans.

Stormwater drainage system means all facilities used for conducting stormwater to, through and from a drainage area to the point of final outlet, including but not limited to, any of the following: conduits and appurtenant features, canals, channels, ditches, streams, culverts, streets and pumping stations.

Structural measures means works of improvement for land stabilization to prevent erosion, sediment or runoff which includes, but are not limited to, gully control structures, grass waterways, riprap, detention basins, sediment basins, flood retention dams, diversions, lining channels with rock, concrete or other materials. Contour strip cropping

is not a structural measure.

(Ord. No. 03-003, § 15-6-9, 6-12-2003)

Cross reference— Definitions generally, § 1-2.

Sec. 10-270. - Land disturbing activities subject to stormwater management.

- (a) *General requirement.* Any landowner, land occupier or land user who undertakes, begins, commences or performs land disturbing activities; or who permits another person to do the same, on land subject to this section, shall be subject to the provisions of this article.
- (b) *Land disturbance activities subject to on-site detention and runoff control.* Land disturbing activities on public lands as defined in this article and on all private lands shall be subject to the on-site detention and runoff control provisions of this article if:
- (1) The land disturbing activity will be a residential development having a gross area of five acres or more or five lots or more in a subdivision, or a residential development of five or more housing units or apartment units or single-family units within a planned unit development, condominium, or other cluster development, in all cases whichever is greater;
 - (2) The land disturbing activity will be a residential development having a gross area of less than five acres having 40 percent or more of the area as impervious surfaces, or construction of houses or apartment units on the subdivision, certified survey map, planned unit development, condominium or other development with a gross area of less than five acres having 40 percent or more of the area as impervious surfaces, including roads, buildings, parking facilities and other improvements;
 - (3) The land disturbing activity will be an industrial development proposed with a gross aggregate area of 1.0 acres or more. Sites less than 1.0 acre in size are subject to onsite detention and runoff control unless the site has more than 30 percent greenspace;
 - (4) The land disturbing activity will be a commercial development proposed with a gross aggregate area of 1.0 acre or more. Sites less than 1.0 acre in size are subject to onsite detention and runoff control unless the site has more than 30 percent greenspace;
 - (5) All nonresidential, noncommercial, and nonindustrial developments with a gross aggregate area of three acres or more; or
 - (6) In the opinion of the city engineer, the runoff from the land disturbing activity will increase the downstream flood hazard; or will cause undue channel erosion or an undue increase in water pollution by increased scour and transport of particles; or will otherwise significantly impact the downstream property owners or their property.
- (c) *Water quality.* All land disturbing activities are subject to the following minimum standards:
- (1) Preserve predevelopment vegetation to the extent practical.
 - (2) Use shallow grassed swales to convey surface water whenever possible.
 - (3) Discharge impervious surfaces and roof water to pervious areas, natural buffers, and bioretention areas.
 - (4) Maintain natural buffers between development sites and water or wetland bodies.
 - (5) Utilize natural drainage flow paths.
 - (6) Restore soil permeability by utilizing deep tilling, chisel plowing and incorporating organic matter in the

upper soil layer.

- (7) Use bioretention and other practices to increase infiltration. Bioretention practices use landscape processes, including microbial soil processes, infiltration, and evapotranspiration to enhance stormwater quality.
- (8) Proof of compliance with state department of transportation, department of commerce, department of natural resources and other state or federal requirements, as may apply.
- (d) *Compliance with this section.* The owner, land occupier or land user shall be in compliance with this section if she or he follows the procedure of section 10-272 and receives from the city engineer an approved control plan and a permit from the city before commencement of any land disturbing activities on lands subject to control under this section.

(Ord. No. 03-003, § 15-6-10, 6-12-2003)

Sec. 10-271. - Standards and criteria.

- (a) *Effect of compliance.* Compliance with the standards and criteria of this section shall not bar a nuisance action or other civil action brought by any injured public or private party for damage to property or other rights that were damaged by runoff.
- (b) *Standards for on-site detention and runoff control for land disturbing activity.* Land disturbing activities subject to on-site detention and runoff control regulation as described in section 10-270 shall, at a minimum, meet the following requirements:
 - (1) Residential and other nonindustrial, noncommercial certified surveys shall, at least, incorporate the following stormwater control measures in addition to on-site detention, where required by this article:
 - a. All roof drainage shall discharge to either:
 - 1. Pervious surfaces to the extent practicable; or
 - 2. An infiltration device.
 - b. All driveways shall slope to adjacent lawns to the extent practicable.
 - c. Where conditions are such that the depth to the water table is three feet or greater during at least nine months of the year, the stormwater drainage system for the development shall include grassed swales for area drainage and underground perforated drainage pipe for storm runoff conveyance, infiltration measures, and other recognized erosion control practices. Where the city engineer finds the above to be impracticable, conveyance shall be by traditional means.
 - (2) Industrial and commercial sites of less than five acres and with commercial or industrial paved parking and storage areas with surface areas totaling 20,000 to 200,000 square feet shall incorporate one or both of the following additional requirements, as required by the city engineer:
 - a. Site discharge shall be directed to one or more grit chambers and/or oil and grease traps. Each grit chamber and/or oil and grease trap shall be designed to remove all particles greater than 100 microns in size and shall be cleaned at least once every three months. The pumped liquids from cleaning shall be discharged to a licensed wastewater treatment plant.
 - b. Provide the control measures to the extent practicable as described in subsection (b)(1) of this section.
 - (3) New industrial and commercial sites of more than five acres and with commercial or industrial paved

parking and storage areas with surface areas totaling more than 200,000 square feet; and industrial roofs larger than 50,000 square feet shall discharge to one or more wet detention basins. These basins shall have an aggregate area respectively of: at least 1.5 percent of the contributing surface area of the industrial/commercial site or three percent of the contributing paved industrial/commercial areas, whichever is greater; at least three percent of the nonindustrial paved area draining to it; and at least three percent of the industrial/commercial roof area draining to it. Also provide to the extent practical, the control measures as described in subsections (b)(1) and (2) of this section.

- (4) Regardless of proposed land use, the proposed development shall either:
- a. Not increase peak flow rates of storm runoff from that which would have resulted from the same storm occurring over the site with the land in its predevelopment condition, for storms of 24-hour duration and recurrence intervals of two, five, ten, 25 years, and 50 years, and, where on-site detention is used for runoff control, the detention facilities shall safely contain and safely pass the runoff of a 100-year storm of any duration.
 - b. Limit peak flow rates of storm runoff after development to 80 percent of that which would have resulted from the same storm occurring over the site with the land in its predevelopment condition, for storms of 24-hour duration and recurrence intervals of two, five, ten and 25 years.
- (c) *Calculation procedures.* Determination of peak flow rates and volume runoff and on-site detention volumes shall be computed by procedures based on those established by the Natural Resource Soil Conservation Service in its National Engineering Handbook or the technical publication entitled "Urban Hydrology for Small Watersheds, TR-55" or other methodology accepted by the city engineer.
- (d) *Design criteria, engineering standards and general principles.* This article does, in some cases, require the use of particular types of structural or nonstructural measures. In addition to these measures, the applicant for a permit may employ any structural or nonstructural measures that he believes to be necessary to achieve all applicable standards set out in this article. However, use of these measures is subject to review and approval by the city engineer to ensure consistency with currently accepted design criteria and engineering standards.
- (e) *Exceptions.* Where special requirements of this article are found to be unacceptable, detrimental to the environment, or infeasible by the city engineer or where the city engineer determines that adequate stormwater facilities have been provided by the city downstream of the proposed development or where the development is a redevelopment of an impervious site, the applicant shall be required to pay an alternative stormwater fee to the city, as determined in negotiation with the city engineer and the plan commission. This fee shall be based on stormwater management improvements that would have been required on a vacant, undeveloped site with no impervious area and the fee may be used for stormwater collection and stormwater management improvements within the city, in any manner deemed appropriate by the common council.

(Ord. No. 03-003, § 15-6-11, 6-12-2003)

Sec. 10-272. - Application for issuance of permits.

(a) *Permit required; procedure and fee.*

- (1) Unless specifically excluded by this article, no land occupier or land user may undertake a land disturbing activity subject to this article without receiving a permit from the city prior to commencing the proposed

activity. The building inspector shall not issue a building permit or construction site permit involving any land disturbing activity unless and until a determination has been made by the city engineer whether a permit is required under this subchapter. Each land occupier or land user desiring to undertake a regulated activity subject to this article shall submit to the city an application for a permit together with the appropriate fee required by the fee schedule as adopted by the city common council.

(2) Exceptions to these requirements are as follows:

- a. The owner and occupier of public lands are exempt from payment of any permit fees;
- b. For its convenience, the city engineer may enter into an agreement with public or private utilities and governmental units to waive the need for a permit for each individual land disturbing activity, if the utility or governmental unit will agree to adopt and follow a procedure for each land disturbing activity which meets all applicable standards contained in this article. Further, the agreement shall provide that in the event that a utility or governmental unit activity fails to meet the standard, the agreement shall terminate and the utility or governmental unit shall be subject to the penalties set forth herein.

(b) *Control plan required.*

- (1) Unless specifically exempted by this article, every applicant for a permit under this article shall develop or have developed for him and shall submit a plan to control runoff that would result from the proposed activity.
- (2) Permit applicants are exempted from the requirement of development and submission of a control plan if the permit applicant elects to have the city engineer prepare the control plan under the procedures of this section.

(c) *Contents of the control plan.* The control plan required shall contain any such information that the city engineer may need to determine requirements for runoff control. Any required map shall be at a scale appropriate for the site and as approved by the city engineer, but not smaller than one inch equals 100 feet. The city engineer may require the following, as well as any other information, including items described in the "plan commission developer checklist," which, in his judgment, is needed to evaluate the control plan:

- (1) A map of the site showing the location of the predominant soil types and the existing vegetative cover and existing impervious surfaces and structures.
- (2) A topographic map of the site location, including enough of the adjacent contiguous properties to show existing drainage patterns and watercourses that may affect or be affected by the proposed development of the site, and also show the site boundaries. Existing topography shall be shown as contours at an interval suitable to the site and as approved by the city engineer up to a maximum of two-foot contour interval.
- (3) A plan of the site showing:
 - a. Name, address and telephone number of the land occupier, along with the name and telephone number of the party responsible for maintaining erosion control structures.
 - b. Limits of natural floodplain, based on a 100-year flood, if any.
 - c. A timing schedule indicating the anticipated starting and completion dates of the development sequence and the time of exposure of each area of soil disturbing activity prior to the completion of effective measures for erosion and sediment control.
 - d. Proposed topography of the site location showing:

1. Proposed vertical topography at a contour interval suitable to the site and as approved by the city engineer up to a maximum two foot contour interval.
 2. Location of proposed land disturbing activity, proposed disturbance of protective cover, any proposed additional structure on the site, areas to be seeded or mulched, areas to be vegetatively stabilized and areas to be left undisturbed.
 3. Elevations, dimensions, locations of all proposed soil disturbing activities including where topsoil will be stockpiled, so it will not contribute to erosion and sedimentation.
 4. The finished grade, stated in feet horizontal to the vertical, or cut and fill slopes.
 5. Types of utilities and proposed areas of installation.
 6. Proposed paved and covered areas in square feet or to scale on a plan map.
 7. Makeup of proposed surface soil (upper six inches) on areas not covered by buildings, structures, or pavement. Description shall be in such terms as: original surface soil, subsoil, sandy, heavy clay, stony, etc.
 8. Proposed type of cover on areas not covered by buildings, structures or pavement. Description shall be in such terms as: lawn, turfgrass, shrubbery, trees, forest cover, riprap, mulch, etc.
- e. Plans and hydraulic computations of all temporary or permanent structural or nonstructural devices to be constructed in connection with, or as part of, the proposed work showing:
1. Estimated peak flow rates and surface runoff of the area based on two-year, five-year, ten-year, 25-year, 50-year, and 100-year recurrence interval storm events. Peak flows based upon the recurrence interval of synthetic storm frequency events shall be required in the event that storm runoff or stream flow data is not available in the area.
 2. Predevelopment and post-development watershed areas used in the TR-55 computations, clearly marked and labeled in a consistent manner.
 3. The storm event recurrence interval and discharge rate in cubic feet per second which the design of plans for the site location is based upon.
 4. Proposed provisions to carry runoff to the nearest adequate outlet, such as a curbed street, storm drain or natural drainage way, including the routing of roof drainage.
 5. Design computations and applicable assumptions for all structural measures for erosion and sediment pollution control and water management. Volume and velocity of flow must be given for all surface water conveyance measures and pipe outfalls.
 6. Estimate of cost of erosion and sediment control and water management structures and features.
 7. Provisions for maintenance of control facilities including easements to ensure short as well as long-term stormwater management. The future maintenance plan shall describe the recommended periods for inspection and maintenance as well as list the responsible parties to perform the work. Anticipated costs for regular maintenance shall be included in the plan.
 8. Seeding mixtures and rates, lime and fertilizer application rates, and type and quantity of mulching for both temporary and permanent vegetative control measures.
- (d) *Plans prepared by city engineer.* As an alternative to submitting the control plan for parcels of one-half acre or less, the city engineer may, if time permits, prepare a runoff control plan for the applicant's proposed land disturbing activity, adequate to meet the appropriate standards of this article. The city engineer may require

the applicant to submit any data or information that is necessary to prepare such a plan. Also, the applicant must submit the permit application and appropriate application fee as specified in the fee schedule as adopted by the common council. In addition to the permit application fee, the applicant must pay the plan preparation fee as specified in the schedule as adopted by the common council.

(e) *Review of application.*

- (1) The city engineer shall receive and review all permit applications that are accompanied by the control plan and the appropriate fee. The city engineer shall determine if measures included in the plan to control erosion, sedimentation and runoff during and after the land disturbing activities are adequate to meet all the applicable standards as set out in this article. The city engineer shall, within 30 calendar days from the receipt of the control plan or the completed permit application and the appropriate fee, inform the applicant in writing whether the plan is approved, disapproved or modified. If the city engineer approves the control plan, he shall issue the permit. If additional information is required, he shall so notify the applicant and the city engineer has 30 days from the receipt of additional information in which to approve, disapprove or modify the plan. Failure to render a written decision within 30 days shall be deemed to mean approval of the plan, as submitted, and the applicant may proceed as if a permit had been issued.
- (2) In the event that the plan is disapproved, the applicant may submit a new control plan or may appeal the city engineer's decision as provided in this article. If the control plan is modified by the city engineer, the applicant must modify his permit application and control plan accordingly and reapply for the permit; however, no additional permit fee is required, or he may appeal the decision as provided in this article.

(f) *Consultant services.* If the city retains the services of professional consultants, including, but not limited to, planners, engineers, architects, attorneys, environmental specialists, and/or other experts to assist the city in its review of a proposed permit application and/or runoff control plan, and/or if the city engineer prepares or assists in the preparation of a runoff control plan for the development, the applicant/developer may be required to reimburse the city for the city engineer's time and for the costs incurred by the city to retain the services of such professional consultants and such reimbursement shall be in addition to the permit fees and other fees paid by the applicant/developer. The applicant/developer shall reimburse the city for said costs promptly upon being invoiced for the same and the city may withhold issuance of a permit or delay final approval of a permit until the said costs and fees are reimbursed to the city in full. If the costs and fees are not reimbursed to the city within 30 days of the date of billing, an additional administrative collection charge of ten percent of the charge shall be added to the amount due, plus interest shall accrue thereon at the rate of one percent per month until paid and such charge shall be extended upon the current or next tax roll as a charge against the subject property for current services as provided in Wis. Stats. § 66.60(16). The city may require the applicant/developer to enter into an agreement providing for the reimbursement to the city for said costs and the said agreement may require the applicant/developer to file with the city an irrevocable letter of credit or other appropriate sureties meeting the approval of the city attorney equal to the estimated cost of said services.

(g) *Permit; conditions.* All permits issued under this article shall be issued subject to the following conditions and requirements and any permittee who begins to perform any land disturbing activity authorized by permit shall be deemed to have accepted all of these conditions:

- (1) That all land disturbances, construction and development will be done pursuant to the control plan as approved by the city engineer.

- (2) That the permittee shall give at least two working days notice to the city engineer in advance of the start of a disturbing activity.
 - (3) That the permittee shall file a notice of completion of all land disturbing activities and/or the completion of installation of all on-site detention facilities within ten days after completion.
 - (4) That approval in writing must be obtained from the city engineer prior to any modifications to the approved control plan.
 - (5) That the permittee will be responsible for maintaining all roads, road rights-of-way, streets, runoff and drainage facilities and drainageways as specified in the approved plan until they are accepted and become the responsibility of a governmental entity.
 - (6) That the permittee will be responsible for repairing any damage at his expense to all adjoining surfaces and drainageways caused by runoff and/or sedimentation.
 - (7) That the permittee must provide and install at his expense all drainage, and runoff control improvements as required by this article and the approved control plan, and also must bear his proportionate share of the total cost of off site improvements to drainageways based upon the existing developed drainage area or planned development of the drainage area, as determined by the city engineer.
 - (8) That no work will be done on the site during any period of time that the average hourly wind velocity at the location of the land disturbing activity exceeds 20 miles per hour, unless provision has been made to eliminate dust and blowing dirt.
 - (9) That no portion of the land which undergoes the land disturbing activity will be allowed to remain uncovered for greater than two weeks after notice is given to the city engineer that the land disturbing activity is completed.
 - (10) That the permittee agrees to permit the city engineer or his designee to enter onto the land regulated under this article for the purpose of inspecting for compliance with the approved control plan and permit.
 - (11) That the permittee authorizes the city engineer or his designee to perform any work or operations necessary to bring the condition of the lands into conformity with the approved control plan or plan as modified by the city engineer and further consents to the city placing the total of the costs and expenses of such work and operations upon the tax roll as a special tax against the property.
- (h) *Permit duration.* Permits issued under this article shall be valid for a period of six months from the date of issuance by the city engineer and all work must be completed prior to the expiration date of the permit. However, the city engineer is authorized to extend the expiration date of the permit if he finds that such an extension will not cause an increase in runoff. The city engineer is further authorized to modify the plans if necessary to prevent any increase in runoff resulting from any extension.

(Ord. No. 03-003, § 15-6-12, 6-12-2003)

Sec. 10-273. - Administration.

- (a) *Delegation of authority.* The common council hereby designates the city engineer to administer the provisions of this article, under the direction of the plan commission. The city engineer may appoint assistants to aid in the performance of duties and may seek technical advice from other professional consultants, the state, and county agencies as to the adequacy of any proposed plan and permit application submitted to him.

- (b) *Administrative duties.* In the administration of this article, the city engineer shall perform the following duties:
- (1) Keep an accurate record of all plan data received, plans approved, permits issued, other official actions and make a periodic permit activity report to the plan commission, when requested.
 - (2) Prepare plans for runoff control when requested to do so by the permit application pursuant to this article, but only after the appropriate fee is received.
 - (3) Review all plans and permit applications received when accompanied with the necessary information and the appropriate fee and authorize the appropriate city administrative staff to issue the permits required by this article in accordance with the procedure as set out in this article.
 - (4) Revoke any permit granted under this article if it is found that the holder of the permit has misrepresented any material fact in his permit application or plan; or has failed to comply with the plan as originally approved or as modified in writing subsequently by the city engineer; or has violated any of the other conditions of the permit as issued to the applicant.
- (c) *Inspection authority.* The city engineer, the building inspector, and the fire inspector are authorized to enter upon any public or private lands affected by this article to inspect the land prior to permit issuance for the purpose of determining whether to approve the plan and after permit issuance to determine compliance with this article. If permission cannot be received from the land occupier or user, entry by the city engineer, the building inspector, or the fire inspector shall be according to Wis. Stats. §§ 66.122 and 66.123.
- (d) *Enforcement authority.* The building inspector is authorized to post a stop work order upon land which has had a permit revoked by the city engineer or to post a stop work order upon land which is currently undergoing any land disturbing activity in violation of this article. The building inspector shall supply a copy of each stop work order to the legal counsel for the city. In lieu of the stop work order, the city engineer or building inspector or fire inspector may issue a written, letter form, cease and desist order to any land occupier or land user whose activity is in violation of this article. These orders shall specify that the activity must be ceased or brought into compliance with this article within seven days. Any revocation, stop work order or cease and desist order shall remain in effect unless retracted by the inspecting authority or by a court of general jurisdiction; or until the land disturbing activity is brought into compliance with this article. The city engineer, building inspector or fire inspector is authorized to refer any violation of this article or of a stop order or cease and desist order issued pursuant to this article to the city attorney for the commencement of further legal proceedings.

(Ord. No. 03-003, § 15-6-13, 6-12-2003)

Sec. 10-274. - Violations.

- (a) *Penalties.* Any person, firm, corporation, either owner or occupant of the premises, who violates, disobeys, omits, neglects or refuses to comply with or resists the enforcement of any of the provisions of this article shall be subject to a forfeiture as provided by section 1-15. Each day that a violation exists or continues shall constitute a separate offense.
- (b) *Enforcement by injunction.* Compliance with the provisions of this article may also be enforced by injunctive order at the suit of the city. It shall not be necessary to prosecute for forfeiture before resorting to injunctive proceedings.
- (c) *Performance of work by the city engineer.* Where the city engineer determines that the holder of a permit

issued pursuant to this article has failed to make any improvements or follow practices as approved in the plan; or has failed to comply with the time schedule as included in the plan, the city engineer or a party designated by him may enter upon the land and perform the work or other operations necessary to bring the condition of said lands into conformity with the requirements of the approved plan. The city engineer shall keep a detailed accounting of the costs and expenses of performing this work and these costs and expenses shall be entered on the tax roll as a special tax against the property and collected with any other taxes levied thereon for the year in which the work is completed.

(Ord. No. 03-003, § 15-6-14, 6-12-2003)

Sec. 10-275. - Appeals.

(a) *Authority.* The plan commission shall:

- (1) Hear and decide appeals where it is alleged that there is error in any order, requirement, decision or determination made by the city engineer in administering this article.
- (2) Authorize upon appeal in specific cases such variances from the terms of this article as will not be contrary to the public interest, where owing to special conditions a literal enforcement of the provisions of this article will result in unnecessary hardship, so that the spirit of this article shall be observed, public safety and welfare secured, and substantial justice done.
- (3) The rules, procedures, duties, and powers established by the city for the board of zoning appeals shall apply to appeals to the plan commission under this article.

(b) *Who may appeal.* Appeals may be taken by any person aggrieved or by any officer, department, board or bureau of the city affected by the order, requirement, decision or determination made by the city engineer. For the purpose of this article, aggrieved person shall include applicant and property owners who own land that is subject to this article.

(Ord. No. 03-003, § 15-6-15, 6-12-2003)

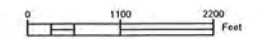
Secs. 10-276—10-300. - Reserved.

APPENDIX F
SNOW STORAGE AND REMOVAL ROUTES

City of Portage

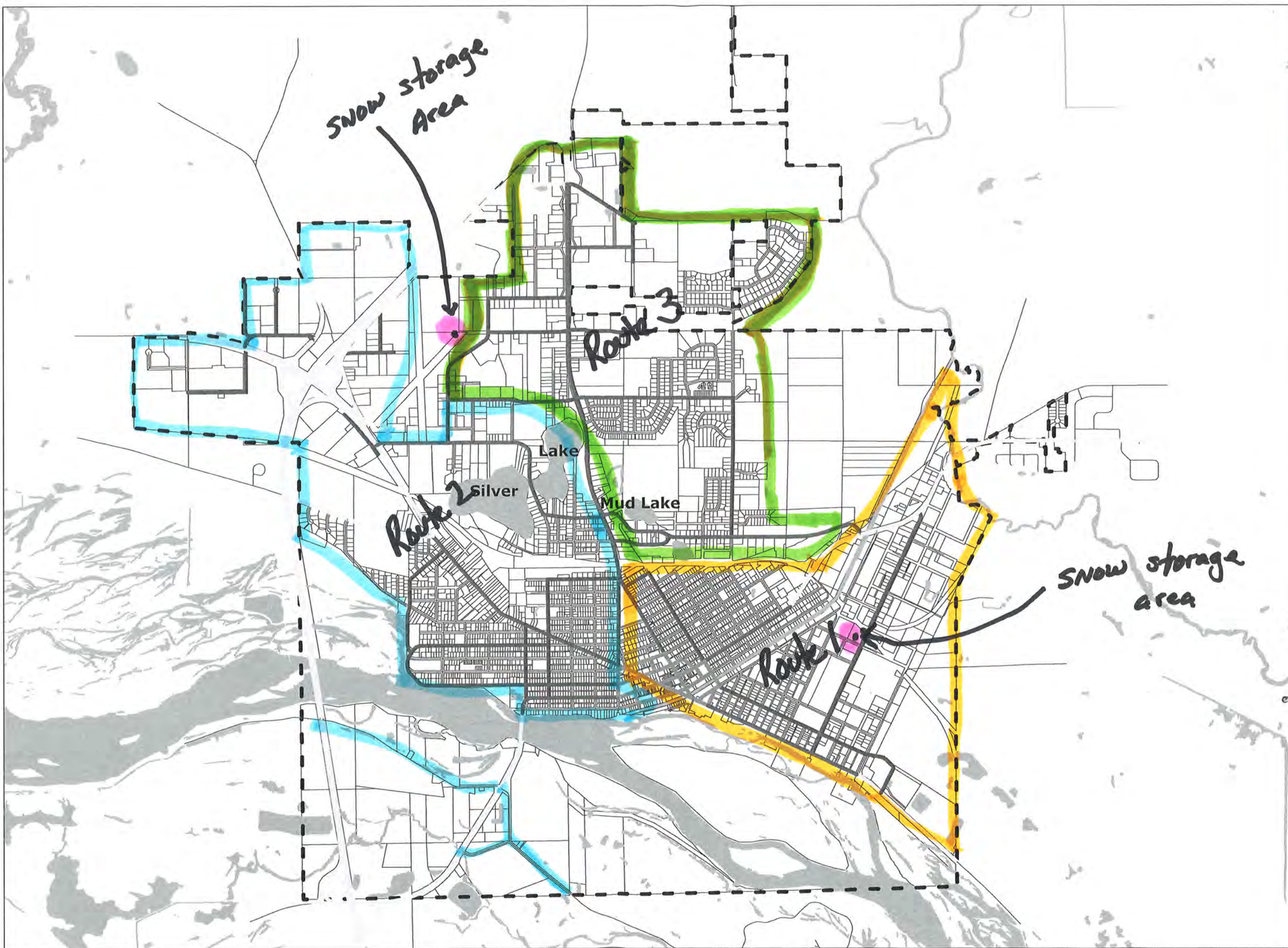
Snow Routes

January 26, 2016



LEGEND

Snow Routes	
	Central Business District
	Primary City Route (Designated)
	Secondary Route
	WisDOT Route
	Streets
	City Limits
	Water
	Parcels 1-13-15



- 118 Road lane miles for City Roads
- Application rates 300lbs per lane mile

PRE WET ON RTE 2
210# RD/LN/mile
25 gallons/ton



A. Purpose

The City of Portage (City) has prepared the following Stormwater Pollution Prevention Plan (SWPPP) to provide the status of the City's Department of Public Works Yard and Storage Area, as well as the City's Yard Waste and Compost Sites. This report is prepared in compliance with the conditions of the NR 216 permit pursuant to Section 3.6 of Wisconsin Pollutant Discharge Elimination System (WPDES) Permit Issuance No. WI-S050075-3. This report provides information related to the daily operations and maintenance activities for the Department of Public Works Yard and the Yard Waste and Compost Sites.

B. Site Locations and Contact Information

Name of Facility: Department of Public Works Yard and Storage Area
Facility Address: 606 Washington Street, Portage, WI 53901
Facility Contact: Aaron Jahncke
Title: Director of Department of Public Works/City Engineer
Telephone: 608-742-2176

Name of Facility: Yard Waste and Compost Sites
Facility Address: Airport Road, Portage, WI 53901
Facility Contact: Aaron Jahncke
Title: Director of Department of Public Works/City Engineer
Telephone: 608-742-2176

C. Air Photo/Map of the Yard

Attachment A includes site maps and Attachment B shows site photos describing the following:

1. Locations of major activities and storage areas.
2. Identification of drainage patterns and potential stormwater runoff source and discharge areas.
3. Identification of any wetlands and/or waterways on-site or nearby.
4. Identification of Municipal Separate Storm Sewer System (MS4) connections and where this portion of the MS4 system drains.

D. Overview

This SWPPP covers the operations at the Department of Public Works Yard and Storage Area and the City's Yard Waste and Compost sites. This SWPPP describes these facilities and associated operations, identifies potential sources of stormwater pollution, recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in stormwater runoff, and provides for periodic review of this SWPPP with the annual report.

The primary goal of the stormwater permit program is to improve the quality of surface waters in the City's MS4 by reducing the amount of pollutants potentially contained in the stormwater runoff. The purpose of this SWPPP is to provide the following:

1. Identification of potential sources of stormwater and nonstormwater contamination to the MS4 system from the facilities.

2. Identification of and recommendation of appropriate “source area control” BMPs designed to reduce or prevent stormwater contamination from occurring.
3. Identification of and recommendation of “stormwater treatment” BMPs to reduce potential pollutants within contaminated stormwater prior to discharging to the MS4 system and to waters of the state.

E. Potential Sources of Contamination

The following have been identified as potential sources of contamination at the Department of Public Works Yard and Storage Area.

1. Salt storage shed—The City’s deicing and snow removal operations are described in Section 3.01 F. 4. and Table 3.01-7 of the City’s 2021 Stormwater Quality Management Plan. Salt is stored in the salt storage building and salt brine equipment and tanks are stored inside the municipal garage on-site. The salt and sand are delivered in bulk separately to the storage sheds. The salt is loaded into the salt storage shed. The sand is ordered as needed during the winter seasons and the salt-sand mixture is mechanically mixed on-site. The facility does not experience problems with salt leaking. If spilling occurs during loading, it is followed by sweeping.
2. Exterior materials storage area—A number of materials are stored on the site in unenclosed areas. These include wood chips, crushed material, concrete manholes and pipes, cast manhole lids, miscellaneous metals, trash and recycling bins, and miscellaneous equipment.
3. Internal materials storage area—Miscellaneous materials used in everyday public works operations are stored in storage areas within covered buildings on the Public Works Facility site. These materials are properly stored, used, and disposed of and are not a stormwater contamination threat.

The following have been identified as potential sources of contamination at the Yard Waste and Compost Sites.

1. Yard Waste and Compost Sites—Brush, leaves, and grass clippings are stored on the Yard Waste Site in unenclosed areas until they are brought to the Compost Site. Compost is stored in unenclosed areas until transferred offsite.

Various materials require a Material Safety Data Sheet (SDS) such as brake cleaner, solvents, and lubricants. A full list of these items along with their SDS is available at the Department of Public Works Yard facility.

F. Inspection Frequency

Table 1 provides the current inspection schedule implemented by Public Works Department staff. It is recommended that all items are inspected a minimum of four times a year supplemented with a full inspection of the Department of Public Works Yard once a year. Inspections are documented using the form in Attachment C.

Facility/Potential Source of Contamination	Inspection Frequency
Salt storage shed	Inspected annually by the state. Inspect area after delivery and/or removal of salt.
Drain oil and used oil	Inspect annually.
Used oil filter container	Disposal by licensed contractor. Inspect regularly.
External materials storage area	Inspect regularly.
Public Works Facility buildings	Inspect regularly.
Public Works Facility yard	Inspect annually.
Vehicles	Wash vehicles indoors in areas that drain to sanitary sewer. Inspect vehicles during maintenance using inspection form in Attachment D.
Equipment	Inspect as equipment is used.
Catch basin sumps	Clean twice per year.
Various bulk liquid storage containers	Inspect regularly.

Table 1 Public Works Facility Inspection Frequency Schedule

G. Employee Training on Stormwater Pollution Prevention

The City's Public Works Department employees annually receive instruction for good housekeeping procedures, material storage techniques, stormwater management practices, and related topics. Training is documented in the form shown in Attachment E. It is recommended employees receive training on an annual basis for spill prevention and response procedures, erosion control, winter road maintenance, and illicit discharge detection and reporting. The City should periodically review this existing program and consider improvements.

H. Spills Prevention Plan and Response Procedures

Spills and leaks together can be a significant source of stormwater pollution. The City's existing spill prevention and response plan provides procedures to prevent, contain, and respond to spills that may discharge into the MS4 and downstream receiving waters. The Director of Public Works is responsible for maintenance and implementation of this plan. The following general procedures have been developed for spill response for the Department of Public Works Yard and Storage Area.

1. Emergency—Dial 911 (major spills are defined as an emergency condition and generally include hazardous materials).
2. Nonemergency—Use on-site materials to contain the spill and pick up (floor dry or oil sorb napkins). Dispose in an appropriate container and contact a licensed contractor to remove from the site.

See Attachment F for the Spills Documentation Form.

I. Recommendations to Prevent Polluted Runoff from Reaching Nearby Water Resources

Stormwater management controls or BMPs will be implemented to reduce the amount of pollutants associated with the Department of Public Works Yard and the Yard Waste and Compost Sites from entering the City's MS4 and from reaching nearby water resources.

1. Source Area Control

To the maximum extent practicable and where cost-effective, source area control BMPs designed to prevent stormwater from becoming contaminated will be used.

a. Erosion Control Measures

Material storage areas prone to erosion shall be protected and the material prevented from entering the storm sewer and discharging from the site. Potential improvements are shown on Attachment A including perimeter sediment control devices (for example, silt sock), and sewer inlet filters at the Department of Public Works Yard and the Yard Waste and Compost Sites.

b. Good Housekeeping

Good housekeeping practices are designed to maintain a clean and orderly work environment. This reduces the potential for significant materials to come in contact with stormwater. The following practices are included in the Department of Public Works Yard good housekeeping routine.

- (1) Routine sweeping is done in the City's storage buildings.
- (2) Used oil rags and oil filters are drained and disposed of properly.
- (3) Miscellaneous metals are periodically recycled
- (4) Vehicle batteries and tires are routinely recycled.

It is recommended that housekeeping practices include regularly clearing sediment and debris from all washing areas.

c. Preventive Maintenance

Preventive maintenance involves the inspection, testing, and cleaning of facility equipment and operational systems before use. These inspections will help to uncover conditions that might lead to a release of materials. Section E describes inspection information and a form to document inspections is included in Attachment C.

No additional preventative maintenance practices are currently recommended.

d. Spill Prevention and Response Procedures

No additional spills prevention and response procedures are currently recommended.

e. Bulk Storage

At the Department of Public Works Yard, dry bulk storage is limited on the site. Salt is stored in a covered building. The State of Wisconsin inspects the salt storage annually.

Liquid bulk storage at the Department of Public Works Yard is used for fuels and used oil. Used oil is collected in an interior tank and disposed of properly.

No additional bulk storage control practices are recommended at this time.

2. Stormwater Treatment BMPs

Structural control measures control pollutants that are still present in the stormwater after the nonstructural controls have been implemented. These types of controls are physical features that control and prevent stormwater pollution. Structural controls can include a range of application such as preventive measures, collection structures, or stormwater treatment systems. Structural controls may require the construction of a physical feature or barrier.

Currently, there are no structural control measures at the Department of Public Works Yard or the Yard Waste and Compost Sites.

No additional stormwater treatment BMPs are recommended at this time.

J. Suggested Retrofits to Current Stormwater Practices

No retrofits are currently recommended.

K. Installation and Implementation of Recommendations Timeline

It is recommended that the City Public Works Department implement the BMPs previously described and continue its current practices of preventing stormwater contamination from the site. Table 2 lists possible BMP activities and measurable goals the City may consider implementing.

Activity	Installation/Implementation Schedule
Existing Department of Public Works Yard and Yard Waste and Compost Sites pollution prevention activities.	Continue to implement.
Review existing spill prevention and response procedures for improvements.	Document potential improvements in the March 31, 2021 MS4 Annual Report.
Review existing Public Works Department staff training for stormwater pollution prevention at the Department of Public Works Yard and the Yard Waste and Compost Sites for improvements.	Document potential improvements in the March 31, 2021, MS4 annual report. At a minimum, training improvements must include: provide annual trainings to all Public Works Department staff with topics including but not limited to, spill prevention and response, BMP inspection and maintenance, winter road maintenance, and construction erosion control. All training events and attendance will be documented by the City Engineer. Documentation shall include name and role of attendees, date of training, and content of training using the tracking form in Attachment E.
Install perimeter sediment control devices and catch basin filters as shown in Attachment A.	Install perimeter sediment control devices by April 15, 2022. Monitor for degradation and replace or maintain in the future as necessary. Install inlet filter by April 15, 2022, and maintain semi-annually.

Table 2 BMP Activities and Installation and Implementation Schedule

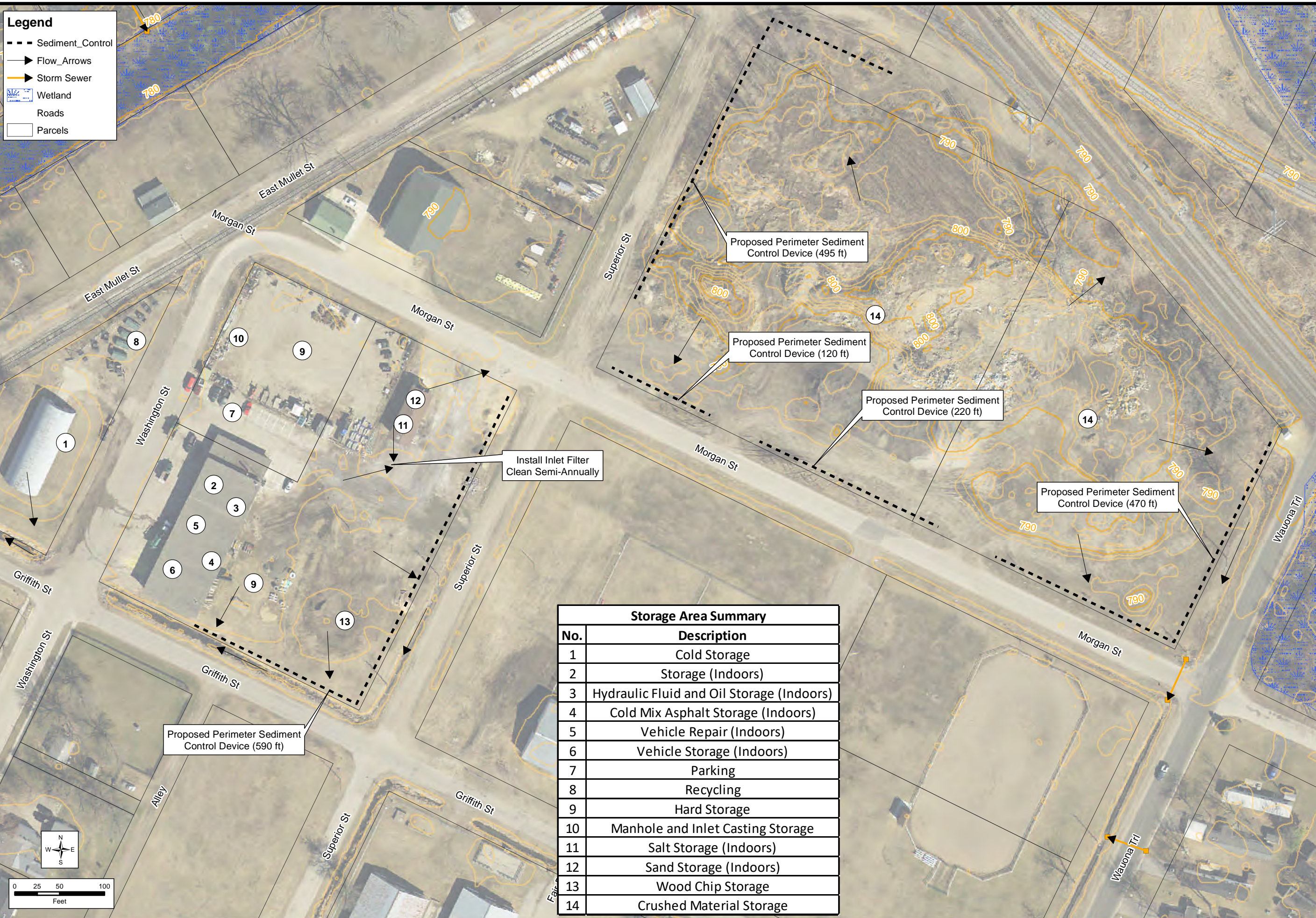
L. Attachments

- A–Site Map
- B–Photos
- C–Inspection Documentation Forms
- D–Vehicle Inspection Forms
- E–Training Documentation Form
- F–Spills Documentation Form






Attachment A–Site Map

Legend

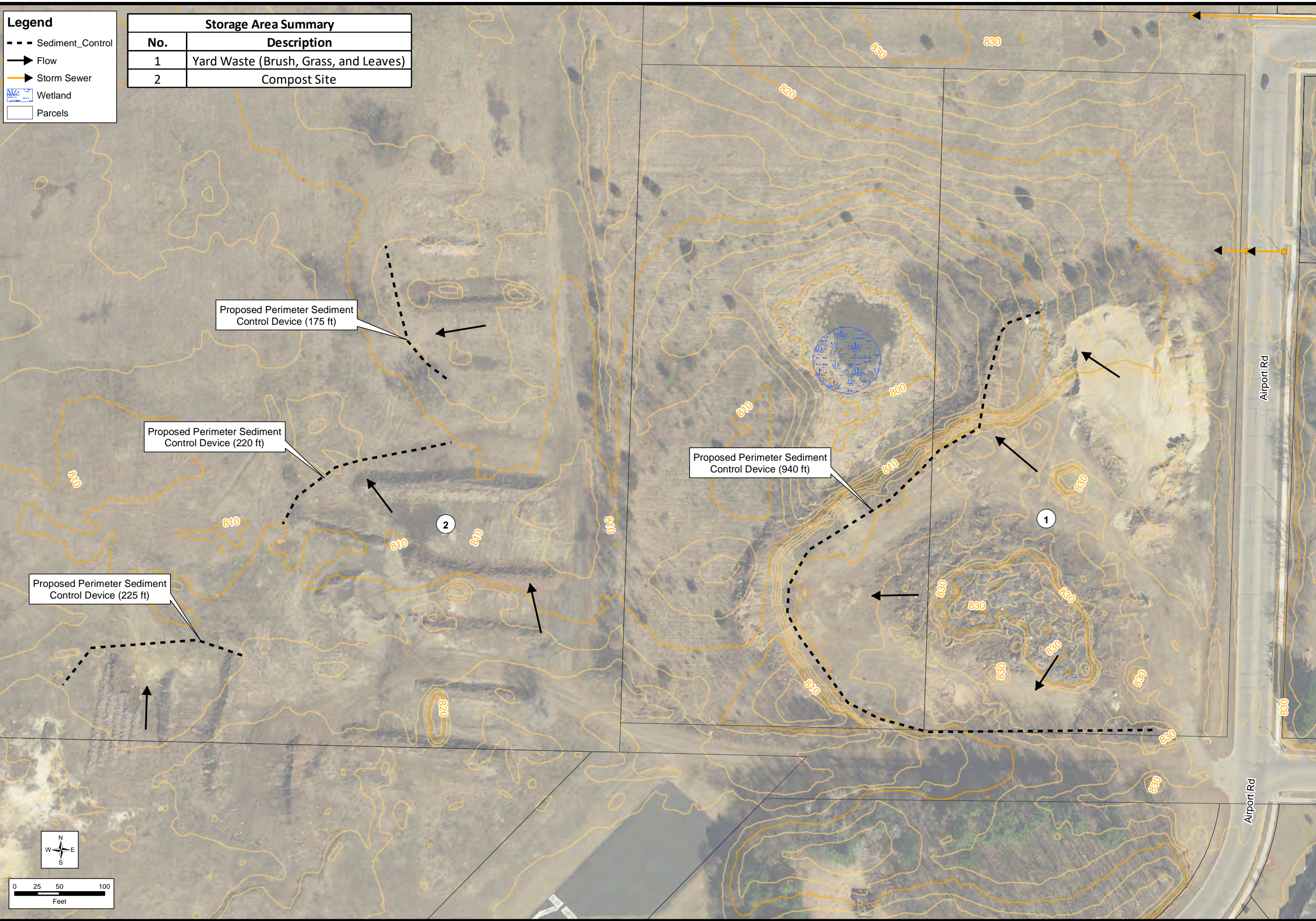
- Sediment_Control
- Flow_Arrows
- Storm Sewer
- Wetland
- Roads
- Parcels



Legend

-  Sediment_Control
-  Flow
-  Storm Sewer
-  Wetland
-  Parcels

Storage Area Summary	
No.	Description
1	Yard Waste (Brush, Grass, and Leaves)
2	Compost Site



YARD WASTE AND COMPOST SITES

CITY OF PORTAGE STORMWATER MANAGEMENT PLAN UPDATE
 CITY OF PORTAGE
 COLUMBIA COUNTY, WISCONSIN



Attachment B–Facility Photos

Date: June 11, 2019

Time: 12:28 P.M.

Description:

Municipal garage at Department of Public Works Yard, looking south.



Date: June 11, 2019

Time: 12:21 P.M.

Description:

Cold patch storage inside municipal garage with drain to sanitary sewer.



ATTACHMENT B-1

**STORMWATER POLLUTION PREVENTION PLAN
DEPARTMENT OF PUBLIC WORKS YARD AND
STORAGE AREA
CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS**



Date: June 11, 2019

Time: 12:29 P.M.

Description:

Cold storage building at
Department of Public Works
Yard, looking southwest.



Date: June 11, 2019

Time: 12:29 P.M.

Description:

Inside cold storage building.
No internal drains.



ATTACHMENT B-2

STORMWATER POLLUTION PREVENTION PLAN
DEPARTMENT OF PUBLIC WORKS YARD AND
STORAGE AREA
CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS



Date: June 11, 2019

Time: 12:36 P.M.

Description:

Salt storage area and storm sewer inlet.



Date: June 11, 2019

Time: 12:37 P.M.

Description:

Sand storage area.



ATTACHMENT B-3

**STORMWATER POLLUTION PREVENTION PLAN
DEPARTMENT OF PUBLIC WORKS YARD AND
STORAGE AREA
CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS**



Date: June 11, 2019

Time: 12:34 P.M.

Description:

Wood chip storage area, looking south.



Date: June 11, 2019

Time: 12:29 P.M.

Description:

Recycling area, looking north.



ATTACHMENT B-4

**STORMWATER POLLUTION PREVENTION PLAN
DEPARTMENT OF PUBLIC WORKS YARD AND
STORAGE AREA
CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS**



Date: June 11, 2019

Time: 12:25 P.M.

Description:

Cold storage area, looking north.



Date: June 11, 2019

Time: 12:31 P.M.

Description:

Wet swale along south edge of Department of Public Works Yard.



ATTACHMENT B-5

**STORMWATER POLLUTION PREVENTION PLAN
DEPARTMENT OF PUBLIC WORKS YARD AND
STORAGE AREA
CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS**



Date: June 11, 2019

Time: 12:39 P.M.

Description:

Crushed material storage area, facing south.



Date: June 11, 2019

Time: 12:39 P.M.

Description:

Crushed material storage area, facing east.



ATTACHMENT B-6

**STORMWATER POLLUTION PREVENTION PLAN
DEPARTMENT OF PUBLIC WORKS YARD AND
STORAGE AREA
CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS**



Date: June 11, 2019

Time: 1:10 P.M.

Description:

Yard Waste Site, facing west.



Date: June 11, 2019

Time: 1:09 P.M.

Description:

Yard Waste Site, facing north.



ATTACHMENT B-7

STORMWATER POLLUTION PREVENTION PLAN
DEPARTMENT OF PUBLIC WORKS YARD AND STORAGE AREA
CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS



Date: June 11, 2019

Time: 1:14 P.M.

Description:

Compost Site, facing west.



Date: June 11, 2019

Time: 1:16 P.M.

Description:

Compost Site, facing north.



ATTACHMENT B-8

STORMWATER POLLUTION PREVENTION PLAN
DEPARTMENT OF PUBLIC WORKS YARD AND
STORAGE AREA
CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS



Attachment C–Inspection Documentation Form

**Inspection Documentation Form
City of Portage Public Works Department**

Date:

Inspected By:

Inspection Type:

- Salt storage shed
- Drain oil and used oil
- Used oil filter container
- External materials storage area
- Department of Public Works Yard buildings
- Department of Public Works Yard
- Vehicles
- Equipment
- Catch basin sumps
- Various bulk liquid storage containers
- Compost site
- Yard waste site

Inspection Comments:

Action Taken:

Attachment D–Vehicle Inspection Forms

Automotive / Light Truck P.M. Check

<u>Fleet #</u>	<u>Miles</u>
<u>Dept :</u>	<u>Hours</u>
<u>Date</u>	<u>Inspector</u>

- | | | |
|----|--------------------------|--|
| 1 | <input type="checkbox"/> | Instrument warning lights & buzzers |
| 2 | <input type="checkbox"/> | Reverse alarm |
| 3 | <input type="checkbox"/> | horn |
| 4 | <input type="checkbox"/> | Wiper blades & washer nozzles |
| 5 | <input type="checkbox"/> | Fire extinguisher, first aid, road triangles |
| 6 | <input type="checkbox"/> | Inspect windshield & windows |
| 7 | <input type="checkbox"/> | Inspect mirrors |
| 8 | <input type="checkbox"/> | Check lights |
| 9 | <input type="checkbox"/> | Battery & terminal condition |
| 10 | <input type="checkbox"/> | Coolant level & condition, 3-way test |
| 11 | <input type="checkbox"/> | Belts |
| 12 | <input type="checkbox"/> | Coolant hoses & clamps |
| 13 | <input type="checkbox"/> | Charge air hoses, tubes & clamps |
| 14 | <input type="checkbox"/> | Brake fluid level & condition |
| 15 | <input type="checkbox"/> | Power steering fluid level & condition |
| 16 | <input type="checkbox"/> | Air filter (s) |
| 17 | <input type="checkbox"/> | Washer fluid |
| 18 | <input type="checkbox"/> | Inspect radiator condition, core cleanliness |
| 19 | <input type="checkbox"/> | Engine oil level |
| 20 | <input type="checkbox"/> | Transmission fluid level & condition |
| 21 | <input type="checkbox"/> | Hydraulic fluid level |
| 22 | <input type="checkbox"/> | measure steer tire tread depth |
| 23 | <input type="checkbox"/> | Measure rear tire tread depth |
| 24 | <input type="checkbox"/> | |
| 25 | <input type="checkbox"/> | Record tire production dates (Fire dept) |
| 26 | <input type="checkbox"/> | Tire condition & air pressure |
| 27 | <input type="checkbox"/> | Inspect wheels & fasteners |
| 28 | <input type="checkbox"/> | Inspect & lube steering |
| 29 | <input type="checkbox"/> | Inspect & lube driveline |
| 30 | <input type="checkbox"/> | Inspect & lube P.T.O. driveline |
| 31 | <input type="checkbox"/> | Inspect & lube suspension |
| 32 | <input type="checkbox"/> | Inspect exhaust system & hangers |
| 33 | <input type="checkbox"/> | Inspect fuel tank & straps |
| 34 | <input type="checkbox"/> | Rear differential fluid level & condition |
| 35 | <input type="checkbox"/> | Front differential fluid level & condition |
| 36 | <input type="checkbox"/> | Transercase fluid level & condition |
| 37 | <input type="checkbox"/> | Inspect hydraulic hoses |
| 38 | <input type="checkbox"/> | Inspect brake hoses & lines |

left		right	
L.I.		L.O.	
R.I.		R.O.	

Notes

from Bryce
6/18/19

Medium Duty Truck P.M. Check

Fleet # _____ Miles _____
Dept : _____ Hours _____
Date _____ Inspector _____

- | | | | | | | |
|----|--------------------------|--|-------|-------|-------|-------|
| 1 | <input type="checkbox"/> | Instrument warning lights & buzzers | | | | |
| 2 | <input type="checkbox"/> | Perform DOT air brake check | | | | |
| 3 | <input type="checkbox"/> | Reverse alarm | | | | |
| 4 | <input type="checkbox"/> | Fire extinguisher, first aid, road triangles | | | | |
| 5 | <input type="checkbox"/> | horn | | | | |
| 6 | <input type="checkbox"/> | Wiper blades & washer nozzles | | | | |
| 7 | <input type="checkbox"/> | Inspect windshield & windows | | | | |
| 8 | <input type="checkbox"/> | Inspect mirrors | | | | |
| 9 | <input type="checkbox"/> | Check lights | | | | |
| 10 | <input type="checkbox"/> | Battery & terminal condition | | | | |
| 11 | <input type="checkbox"/> | Coolant level & condition, 3-way test | | | | |
| 12 | <input type="checkbox"/> | Belts | | | | |
| 13 | <input type="checkbox"/> | Coolant hoses & clamps | | | | |
| 14 | <input type="checkbox"/> | Charge air hoses, tubes & clamps | | | | |
| 15 | <input type="checkbox"/> | Brake fluid level & condition | | | | |
| 16 | <input type="checkbox"/> | Power steering fluid level & condition | | | | |
| 17 | <input type="checkbox"/> | Check air compressor | | | | |
| 18 | <input type="checkbox"/> | Air filter (s) | | | | |
| 19 | <input type="checkbox"/> | Washer fluid | | | | |
| 20 | <input type="checkbox"/> | Inspect radiator condition, core clean | | | | |
| 21 | <input type="checkbox"/> | Engine oil level | | | | |
| 22 | <input type="checkbox"/> | Transmission fluid level & condition | | | | |
| 23 | <input type="checkbox"/> | Hydraulic fluid level | | | | |
| 24 | <input type="checkbox"/> | measure steer tire tread depth | left | _____ | right | _____ |
| 25 | <input type="checkbox"/> | Measure front drive tire tread depth | L.I. | _____ | L.O. | _____ |
| 26 | <input type="checkbox"/> | | R.I. | _____ | R.O. | _____ |
| 27 | <input type="checkbox"/> | Measure rear drive tire tread depth | L.I. | _____ | L.O. | _____ |
| 28 | <input type="checkbox"/> | | R.I. | _____ | R.O. | _____ |
| 29 | <input type="checkbox"/> | Record tire production dates (Fire dept) | _____ | | | |
| 30 | <input type="checkbox"/> | Tire condition & air pressure | | | | |
| 31 | <input type="checkbox"/> | Inspect wheels & fasteners | | | | |
| 32 | <input type="checkbox"/> | Check front hub oil & condition | left | _____ | right | _____ |
| 33 | <input type="checkbox"/> | Inspect & lube steering | | | | |
| 34 | <input type="checkbox"/> | Inspect & lube driveline | | | | |
| 35 | <input type="checkbox"/> | Inspect & lube P.T.O. driveline | | | | |
| 36 | <input type="checkbox"/> | Inspect & lube suspension | | | | |
| 37 | <input type="checkbox"/> | Differential (s) fluid level & condition | | | | |
| 38 | <input type="checkbox"/> | Transercase / Pump fluid level & cond. | | | | |
| 39 | <input type="checkbox"/> | Inspect exhaust system & hangers | | | | |
| 40 | <input type="checkbox"/> | Inspect for fluid leaks | | | | |
| 41 | <input type="checkbox"/> | Inspect fuel tank & straps | | | | |

- 42 Inspect hydraulic hoses
- 43 Inspect brake shoe/pad life
- 44 Inspect brake hoses & lines
- 45 Inspect hoist trunion
- 46 Inspect hoist link pins and cross bolts
- 47
- 48
- 49

Attachment E–Training Documentation Form

Attachment F–Spills Documentation Form

**APPENDIX H-PORTAGE EXISTING
SEWER CONSTRUCTION AND CONNECTIONS ORDINANCE**

Sec. 78-130. - Sewer construction and connections.

(a)

Work authorized; permit required. No unauthorized person shall uncover, make any connections with or opening into, use, alter or disturb the public sewers or appurtenances thereof without first obtaining a written permit from the department of public works.

(b)

Cost of sewer connection. All costs and expenses incident to the installation and connection of the building sewer shall be borne by the person making the connection.

(c)

Use of old building sewers. Old building sewers may be used in connection with new buildings only when they are found, on examination and test by the approving authority, to meet the requirements for this article.

(d)

Materials and methods of construction. The size, slope, alignment, materials of construction of a building sewer, and the methods to be used in excavating, placing of the pipe, jointing, testing and backfilling the trench shall conform to the requirements of the municipality's building and plumbing code or other applicable rules and regulations of the municipality. In the absence of Code provisions or in amplification thereof, the materials and procedures set forth in appropriate specifications of the ASTM and Water Environment Federation (formerly Water Pollution Control Federation (WPCF)) Manual of Practice No. 9 shall apply.

(e)

Building sewer grade. Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage carried by such building drain shall be lifted by an approved means and discharged to the building sewer.

(f)

Stormwater and groundwater drains.

(1)

No persons shall make connection of roof downspouts, exterior foundation drains, areaway drains or other sources of surface runoff or groundwater to a building sewer or building drain which is connected directly or indirectly to a sanitary sewer.

(2)

All existing downspouts or groundwater drains, etc., connected directly or indirectly to a sanitary sewer must be disconnected within 60 days of the date of an official written notice from the approving authority.

(g)

Conformance to plumbing codes. The connection of the building sewer into the sanitary sewer shall conform to the requirements of the building and plumbing code or other applicable rules and regulations of the municipality or other procedures set forth in appropriate specifications of the ASTM and Water Environment Federation (formerly Water Pollution Control Federation (WPCF)) Manual of Practice No. 9. All such connections shall be

made gastight and watertight. Any deviation from the prescribed procedures and materials must be approved by the approving authority before installation.

(h)

Inspection of connection. The person making a connection to a public sewer shall notify the approving authority when the building sewer is ready for inspection and connection to the public sewer. The connection shall be inspected and approved by the approving authority.

(i)

Barricades; restoration. All excavations for the building sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, parkways and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the approving authority.

(Code 1990, § 9-2-10)

FIELD SCREENING—VISUAL OBSERVATION

NAME

DATE

OUTFALL #

(Type this # in GPS Unit)

WISDOT #

(leave blank unless structure plate is present)

WEATHER

TIME

LOCATION

Outfall Type (Circle One)

Swale

Pipe

Box Culvert

Elliptical

Buried Sewer

Other: _____

If Outfall includes pipe: Pipe Size _____

Material: _____

Major or Minor? (Major is any outfall which is greater than 36". Use best guess when you can't determine pipe sizes.)

Describe below how storm water flows to Outfall and where it goes.

IS THERE A FLOW PRESENT? Yes No
(If flow is present, then refer to illicit discharge notification procedures.)

IF THERE IS A FLOW, PROVIDE A NARRATIVE DESCRIPITON OF:

COLOR _____

ODOR _____

TURBIDITY _____

OIL SHEEN Yes No

SURFACE SCUM Yes No

DESCRIBE ANY OTHER RELEVANT OBSERVATIONS REGARDING POTENTIAL PRESENCE OF NON-STORM WATER DISCHARGES OR ILLEGAL DUMPING

GPS Point #:

Photos Taken:

If screening of a flow (for color, odor, turbidity, oil sheen, and surface scum) gives indication of a suspected illicit discharge, the discharge shall be field analyzed for pH, total chlorine, total copper, total phenol, detergents, and ammonia as illicit discharge indicator parameters. FIELD ANALYSIS COMPLETED? Yes No

**MAINTENANCE AND INSPECTION OF
STORMWATER BEST MANAGEMENT PRACTICES**

**CITY OF PORTAGE
MARCH 2021**

**MAINTENANCE AND INSPECTION OF
STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES
CITY OF PORTAGE
MARCH 2021**

1. BEST MANAGEMENT PRACTICE (BMP) OWNERSHIP

- a. Municipality-owned and maintained stormwater BMP.
 - i. Develop a site specific maintenance plan or program, if necessary
 - ii. Follow the maintenance plan or program, herein.
- b. Privately owned and maintained BMP.
 - i. Obtain a maintenance agreement that has an attached maintenance plan as required by the stormwater management ordinance.
 - ii. Follow the maintenance plan or program, herein.

2. MAINTENANCE

The cornerstone of a preventive maintenance program is establishment of a routine inspection program. This program must contain routine and nonroutine maintenance. The program is defined below. Use the attached Inspection and Maintenance Documentation Form to document the inspections and maintenance performed. Submit the forms by February 15 of each year to the City of Portage (City) City Engineer documenting the previous year's activities.

- a. Routine Maintenance
 - i. Inspections
 - 1. Inspect wet and dry detention basins, bioretention basins, and grass-lined swales after major storm events (2-year, 24 hour storm event: 2.6 inches) and at a minimum once per year.
 - 2. Obtain the construction as-built plans for reference during the inspection.
 - ii. Mowing
 - 1. Wet Detention Basins–Mow the side slopes, embankments, and swales on a regular basis to discourage weeds, woody plants, and invasive species.
 - 2. Dry Detention Basins–Mow the side slopes, embankments, bottom, and swales on a regular basis to discourage weeds, woody plants, and invasive species.
 - 3. Grass-Lined Swales–Mow the side slopes and bottom twice per year to maintain a dense stand of grass.
 - 4. Bioretention Basins–Mow the side slopes on a regular basis to discourage weeds, woody plants, and invasive species. With a string trimmer, trim the bottom of basin to height of 6 to 9 inches in the fall of each year.
 - 5. Mow at heights beneficial to the planted and desired vegetation cover.
 - a. 3 to 4 inches for grasses.
 - b. 6 inches for native plantings

iii. Debris and Litter Removal

Remove debris and litter on a monthly basis from the basin edges, embankments, bottom (for dry detention basins) and outlet structure including the emergency spillway, as applicable.

MAINTENANCE AND INSPECTION OF STORMWATER BEST MANAGEMENT PRACTICES

CITY OF PORTAGE MARCH 2021

iv. Erosion Control and Revegetation

Eroded areas of the basin edges, embankments, bottom (for dry detention basins), emergency spillway, and riprapped areas shall be repaired in a timely manner. Consider reseeding or replanting with native vegetation with appropriate erosion control mat suited to site condition with possible consultation with an ecological-restoration company. For grass-lined swales, reseed and repair eroded areas with appropriate erosion control mat.

- v. Nuisance Control–Provide control of algae and mosquitoes per recommendations from a pond maintenance contractor, as necessary.

b. Non-Routine Maintenance (Dry and Wet Detention Basins)

It is recommended that a more detailed inspection be done every five years on wet detention basins (forebay and permanent pool) to determine sediment depth. A forebay is typically located where flows enter the detention basin and has the purpose of settling out sediment in a more convenient location for ease of maintenance. At this time, a sediment depth survey should be performed to determine the approximate average depth of sediment. The survey would normally be done by obtaining the water surface elevation by surveyor's level and then measuring the distance from water surface to top of sediment from a boat using applicable safety standards. The depth is converted to an elevation to determine depth of sediment and to determine the permanent pool depth. The survey can be completed by the City if the capability exists. Otherwise, this would be consulted out. Sediment survey and sampling would normally be consulted out once a sediment removal project is necessary.

- i. Outlet Structure–Provide maintenance, as needed. Replace outlet structure when not performing as originally intended.
- ii. Sediment Removal and Excavation from Wet Detention Basins

1. Sediment Forebay

- a. Maintain 3 feet of water depth except on safety shelves, which will be shallower.
- b. When the forebay accumulates sediment and there is 3 feet or less water depth, perform sediment removal or excavation to original depth (typically 5 feet or more). See as-builts for original elevations.
- c. Sediment Removal/Excavation Frequency: Every three to five years, depending on source area loadings. Maintain records of sediment loading.

2. Permanent Pool

- a. Maintain 3 feet of water depth except on safety shelves which will be shallower.
- b. When the forebay accumulates sediment and there is 3 feet or less water depth, perform sediment removal /excavation to original depth (typically 5 feet or more). See record drawings for original elevations.
- c. Sediment Removal/Excavation Frequency: Every 15 to 20 years, depending on source area loadings. Maintain records of sediment removal.

MAINTENANCE AND INSPECTION OF STORMWATER BEST MANAGEMENT PRACTICES

CITY OF PORTAGE
MARCH 2021

3. Sediment Removal, Excavation, and Disposal Regulations–Perform sediment removal/excavation according to applicable state, federal and local regulations.
 - a. NR 103.06(4) (a)-Artificial wetland exemptions–Allows maintenance of ponds that revert to wetlands. Contact Wisconsin Department of Natural Resources (WDNR) for confirmation.
 - b. Contact WDNR for Chapter 30 jurisdictional determination.
 - c. NR 216 Stormwater Discharge Permit (NOI) necessary for disturbance of one or more acres of land.
 - d. Sediment Sampling–Contact WDNR to determine if sediment sampling is necessary.
 - i. Sediment and parent material sampling procedures should follow WDNR guidance documents and NR 347 and NR 528.
 - ii. Resources:
 1. *Guidance for Applying the Sediment Sampling Requirements of NR 347*, Wisconsin Administrative Code, WDNR Publication WT-778, 2003.
 2. *Technical Guidance for Contaminated Sediment Cleanup Decisions in Wisconsin*. WDNR. December 21, 1995.
 3. *Consensus-Based Sediment Quality Guidelines (CBSQG), Recommendations for Use and Application, Interim Guidance*, WDNR, December 2003.
 4. Laboratory results to be checked for conformance with NR 204.07(5) pollutant concentration limits. Consult NR 204 land application standards.
 5. NR 528-Management of Accumulated Sediment From Stormwater Management Structures
 - iii. Sediment Removal and Excavation from Dry Detention Basins–Remove sediment and dispose of properly to maintain the originally designed flood-storage capacity of the facility.
 - e. Sediment Disposal–See NR 528 and the above resources. Contact the WDNR.

c. Non-Routine Maintenance (Bioretention Basins)

Bioretention basins are designed to capture sediment on the surface of the bioretention basin. Plug planting in the bottom of the basins is typically initially protected with a hardwood mulch layer. Over time, a bioretention basin may become clogged causing ponding on the surface of the bioretention basin. Bioretention basins are typically designed to drawdown within 24 hours of the end of a storm event. If the drawdown time of a bioretention basin is greater than 36 hours, maintenance shall occur consisting of: (1) remove all hardwood mulch material while not disturbing established native vegetation, (2) gently scarify the engineered soil surface to promote infiltration into the engineered soil while not disturbing established native vegetation, (3) replace bioretention soil mixture in accordance with WDNR Bioretention for Infiltration Technical Standard 1004 as necessary, and (4) replace hardwood mulch layer in accordance with WDNR Bioretention for Infiltration Technical Standard 1004. Maintenance shall occur only during dry conditions while taking measures to minimize compaction of remaining engineered soil.

**MAINTENANCE AND INSPECTION OF
STORMWATER BEST MANAGEMENT PRACTICES**

**CITY OF PORTAGE
MARCH 2021**

If bioretention basins are experiencing scour, consider removing mulch and engineered soil in those areas to allow for replacing with geotextile and appropriately sized stone to provide energy dissipation.

If bioretention basins have appreciable bare areas, plant with appropriate native plugs.

If bioretention basins appear to be experiencing compaction because of snow storage in the footprint of the bioretention basin, reinforce with the property owner that snow storage is not allowed within the footprint of the bioretention basin.

If bioretention basins appear to be experiencing clogging due to underdrain failure, underdrains shall be inspected. If necessary, underdrains shall be jetted to remove debris. If needed, the underdrain and all components of the bioretention basin above the underdrain shall be replaced in accordance with the WDNR Bioretention for Infiltration Technical Standard 1004.

Inspection and Maintenance Documentation Form
 Stormwater Best Management Practices (BMPs)
 Wet and Dry Detention Basins, Bioretention Basins, and Grass-Lined Swales
 City of Portage, Wisconsin

Inspection Date: _____
 Maintenance Date: _____

Inspector Name: _____ Maintenance Provided by: _____
 Company Name: _____ Phone Number: _____
 Company Address: _____

 Company Phone Number: _____
 Company Fax Number: _____

Stormwater Facility Location: _____

- Wet Detention Basin
- Dry Detention Basin
- Bioretention Basin
- Grass-Lined Swale

Items Inspected	Checked		Maintenance Needed		Remarks
	Yes	No	Yes	No	
Wet and Dry Detention Basin (Items below are applicable to both wet and dry basins. Items in italics are applicable to only wet basins)					
A. Berms					
1. Settlement					
2. Breaks					
3. Erosion					
4. Signs of Piping Leakage					
5. Signs of Seepage					
B. Vegetation					
1. Woody Growth on Berm					
2. Need for Cutting or Trimming					
3. Need for Reseeding					
4. Ruts					
5. <i>Dead Vegetation at Water's Edge</i>					
C. Shoreline					
1. Erosion and Riprap Failure					
2. Undermining					
3. Damage or Deterioration					
4. Rodent or Wildlife Damage					

Items Inspected	Checked		Maintenance Needed		Remarks
	Yes	No	Yes	No	
Wet and Dry Detention Basin					
D. Outlet Structure and Emergency Outlet					
1. Obstruction blocking outlet pipe, channel, or spillway					
2. Condition of outlet and inlet structure					
a. Seepage					
b. Separation of joints					
c. Cracks, breaks or deterioration					
d. Differential settlement					
e. Sediment level in relation to crest of inlet structure					
f. Sediment level in relation to crest of inlet structure					
g. Scour and erosion at outlet					
h. Condition of trash racks					
i. Gates or valves (operate them twice per year)					
j. Damage by debris, ice, or freezing					
k. Outlet channel condition downstream					
E. Inlets					
1. Is trash on or inside pipe grate?					
2. Any ice damage to pipe outlet?					
3. Undermining of any of the pipe?					
F. Sediment Forebay					
1. Approximate depth of sediment = _____					
2. Sediment Removal Necessary					
3. Floating debris					
G. Permanent Pool					
1. Approximate depth of sediment = _____					
2. Sediment Removal Necessary					
3. Floating debris					

Items Inspected	Checked		Maintenance Needed		Remarks
	Yes	No	Yes	No	
Wet and Dry Detention Basin					
H. Access for Maintenance Equipment					
1. Obstructions					
2. Soft Areas					
3. Visible pollution					
4. <i>Shoreline problems</i>					
5. Other (specify)					
I. Safety Features					
1. Access Controls to Hazardous Areas					
2. Fences					
a. Loose or damaged posts					
b. Loose or broken wires					
c. Accumulated debris in fences?					
d. Condition of gates					
Bioretention Basins					
A. Sediment Buildup					
B. Clogging/Ponding of Water					
C. Eroded Areas					
D. Bare Spots					
E. Trash					
F. Overflow Structure					
G. Plant Health					
H. Compaction due to Snow Storage					
I. Adequate Mulch Layer					
Grass-Lined Swales					
A. Eroded Areas					
B. Bare Spots					
C. Mowing Necessary					

NOTES:

1. Inspection/Maintenance Comments:

2. Overall Condition of Facility (Check One)

_____ Acceptable _____ Unacceptable _____ Maintenance Completed

**APPENDIX K—PORTAGE INFILTRATION
TEST RESULTS COMBINED WITH WDNR APPROVAL**

Sunderland, Anna

Subject: FW: City of Portage, WI - Infiltrometer Testing Results

From: Bekta, Eugene D - DNR <Eugene.Bekta@wisconsin.gov>
Sent: Monday, July 20, 2020 5:00 PM
To: Williams, Mike <Mike.Williams@strand.com>
Cc: Aaron Jahncke <Aaron.Jahncke@portagewi.gov>
Subject: RE: City of Portage, WI - Infiltrometer Testing Results

[EXTERNAL EMAIL]: Verify sender before opening links or attachments.

Good afternoon Mike,

Thank you for submitting the Infiltrometer Test Results. After review, I concur with your request to use Option 5, geometric mean of 4 tests (without the lowest and highest infiltration test results) to represent average infiltration conditions for areas served by grass-lined swales in the City.

Please contact me with additional questions or concerns.

We are committed to service excellence.
Visit our survey at <http://dnr.wi.gov/customersurvey> to evaluate how I did.

E. Dan Bekta, P.E.
Cell: (608)333-6579
Eugene.Bekta@Wisconsin.gov



From: Williams, Mike <Mike.Williams@strand.com>
Sent: Monday, June 22, 2020 9:14 PM
To: Bekta, Eugene D - DNR <Eugene.Bekta@wisconsin.gov>
Cc: Aaron Jahncke <Aaron.Jahncke@portagewi.gov>
Subject: City of Portage, WI - Infiltrometer Testing Results

Hi Dan,

Strand Associates is helping the City of Portage update their Stormwater Management Plan. Last fall we performed infiltration testing throughout the City for use in their water quality models. Attached are the results of the infiltration testing in spreadsheet format that were conducted. The infiltration testing was completed following the approach approved by the WDNR on June 28, 2019. The location maps are also attached for your reference. As you will see in the spreadsheet and described below, five options have been developed for consideration by the WDNR.

Option 1 is the geometric mean of all 6 tests.
Option 2 calculates two geometric means based on location (East and West)
Option 3 calculates three geometric means based on soil type (sandy, silty, and clayey).

Option 4 is to use the book values from Tech Standard 1002, Table 2.

Option 5 is the geometric mean of 4 tests (without the lowest and highest infiltration test results).

We request approval of Option 5 (as best representing average conditions within areas served by grass-lined swales in the City) but seek your input and review of this submittal. If you could provide your review by July 6, 2020, it would be appreciated.

Please let us know if you have any questions.

Mike



Mike Williams, P.E.

Strand Associates, Inc.®

608.251.4843 ext. 1182

mike.williams@strand.com | www.strand.com

P.E. (IL, WI)

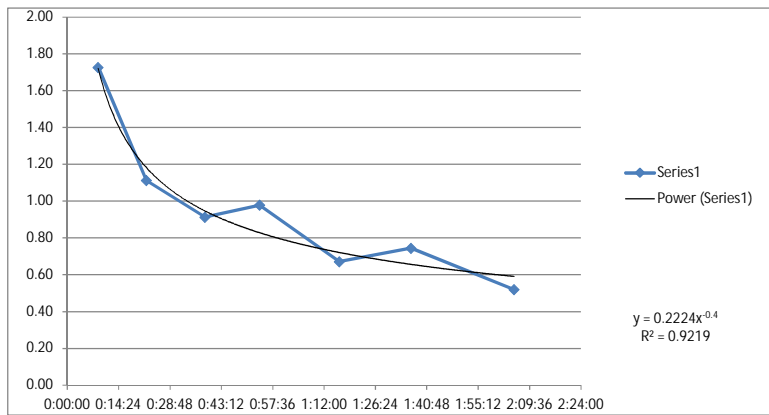
Excellence in Engineering Since 1946.

Location	Static Infiltration Rate @ 2 Hours (in/hr)	Dynamic Infiltration Rate at 2 Hours (in/hr)	Soil Symbol	Soil Type	HSG	Silty/Sandy/Clayey (Based on HSG)
1	0.60	0.30	PfB	Plainfield Loamy Fine Sand	A	Sandy
2	2.37	1.19	BtB2	Briggsville Silt Loam	C	Clayey
3	0.15	0.08	DrC2	Dresden Loam	B/D	Silty
4	4.55	2.28	BpB	Boyer Loamy Sand	A	Sandy
5	0.06	0.03	Gb	Granby Loamy	B/D	Clayey
6	6.81	3.41	DrB	Dresden Loam	B/D	Silty

Option No. 1	Geometric Mean (All Test Locations)	0.86	0.43
Option No. 2	East Tests Geometric Mean (1, 2, 4)	1.86	0.93
	West Tests (3, 5, 6)	0.39	0.20
Option No. 3	Sandy Soils (Tests 1 & 4)	1.65	0.83
	Silty Soils (Test 3 & 6)	1.01	0.51
	Clayey Soils (Tests 2 & 5)	0.38	0.19
Option No. 4- Book Values From Tech Standard 1002 (Table 2)	Sandy Soils	3.6	1.8
	Silty Soils	0.13	0.065
	Clayey Soils	0.07	0.035
Option No. 5	Geometric Mean (All Test Locations Minus Lowest & Highest)	0.99	0.50

Field Data Sheet: Double-Ring Infiltrometer Testing									
Location:	Site # 1: 3000 Boeck Rd, Portage, WI								
Date:	10/23/2019								
Time:	8:02 AM to 10:02 PM								
Conditions (Temp., etc.):	Cool, clear								
Field Staff:	Steve Small								
Most Recent Rainfall Event (Date/Amount):									
Equipment Used:	Double Ring Infiltrometer								
Gallons Used During Test (12-Inch Ring):									

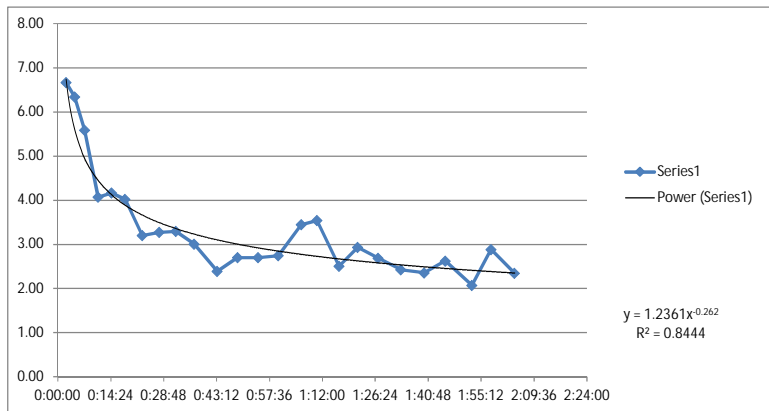
Fill In	Fill In	= Formula		INFORMATION ONLY						
Note: measured from ground to wsel inside the inside ring.	Water Level (Inches)	Time (hh:mm:ss)	Change In Time (min:ss)	Change in Time (hours)	Water Level Change (inches)	Time Interval Midpoint (mm:ss)	Cumulative Time To Midpoint (hh:mm:ss)	Infiltration Rate (in/hr)	For Chart Time	Infiltration Rate
8.75	0:08:41	08:41	0.1447	0.25	04:21	0:04:21	1.73	0:08:41	1.73	
8.5	0:22:10	13:29	0.2247	0.25	06:45	0:15:26	1.11	0:22:10	1.11	
8.25	0:38:35	16:25	0.2736	0.25	08:13	0:30:22	0.91	0:38:35	0.91	
8	0:53:55	15:20	0.2556	0.25	07:40	0:46:15	0.98	0:53:55	0.98	
7.75	1:16:15	22:20	0.3722	0.25	11:10	1:05:05	0.67	1:16:15	0.67	
7.5	1:36:23	20:08	0.3356	0.25	10:04	1:26:19	0.75	1:36:23	0.75	
7.25	2:05:14	28:51	0.4808	0.25	14:25	1:50:48	0.52	2:05:14	0.52	



Infiltration after 2 hr
0.60 in/hr

Note: 0.0833 in the formula above is 2hr/24hr
The formula above is the equation for the best fit line in chart.

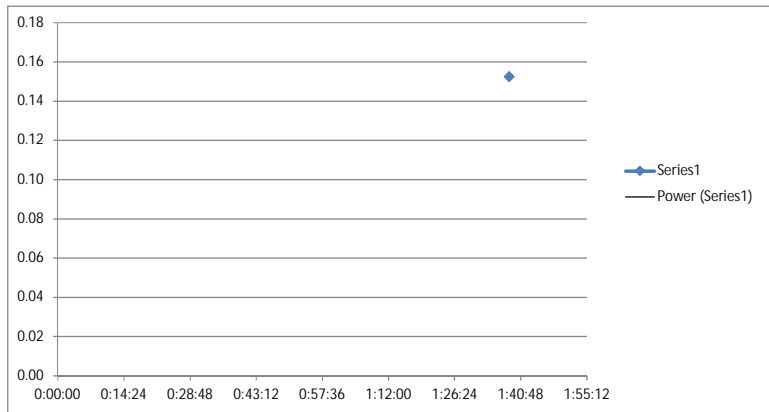
Field Data Sheet: Double-Ring Infiltrometer Testing										
Location		Site # 2: 2777 Columbia Dr, Portage, WI								
Date:		10/23/2019								
Time:		10:45 AM to 12:24 PM								
Conditions (Temp., etc.):		Cool, clear								
Field Staff:		Steve Small								
Most Recent Rainfall Event (Date/Amount):										
Equipment Used:		Double Ring Infiltrometer								
Gallons Used During Test (12-Inch Ring):										
Fill In	Fill In	= Formula			INFORMATION ONLY					
Note: measured from ground to wsel inside the inside ring.										
Water Level (Inches)	Time (hh:mm:ss)	Change In Time (min:ss)	Change in Time (hours)	Water Level Change (inches)	Time Interval Midpoint (mm:ss)	Time To Midpoint (hh:mm:ss)	Infiltration Rate (in/hr)	For Chart		
								Time	Infiltration Rate	
9	0:00:00									
8.75	0:02:15	02:15	0.0375	0.25	01:07	0:01:07	6.67	0:02:15	6.67	
8.5	0:04:37	02:22	0.0394	0.25	01:11	0:03:26	6.34	0:04:37	6.34	
8.25	0:07:18	02:41	0.0447	0.25	01:20	0:05:58	5.59	0:07:18	5.59	
8	0:10:59	03:41	0.0614	0.25	01:51	0:09:08	4.07	0:10:59	4.07	
7.75	0:14:35	03:36	0.0600	0.25	01:48	0:12:47	4.17	0:14:35	4.17	
7.5	0:18:19	03:44	0.0622	0.25	01:52	0:16:27	4.02	0:18:19	4.02	
7.25	0:23:00	04:41	0.0781	0.25	02:21	0:20:40	3.20	0:23:00	3.20	
7	0:27:35	04:35	0.0764	0.25	02:17	0:25:18	3.27	0:27:35	3.27	
6.75	0:32:08	04:33	0.0758	0.25	02:17	0:29:52	3.30	0:32:08	3.30	
6.5	0:37:07	04:59	0.0831	0.25	02:29	0:34:37	3.01	0:37:07	3.01	
6.25	0:43:24	06:17	0.1047	0.25	03:08	0:40:15	2.39	0:43:24	2.39	
6	0:48:57	05:33	0.0925	0.25	02:47	0:46:11	2.70	0:48:57	2.70	
5.75	0:54:30	05:33	0.0925	0.25	02:46	0:51:44	2.70	0:54:30	2.70	
5.5	0:59:58	05:28	0.0911	0.25	02:44	0:57:14	2.74	0:59:58	2.74	
								1:06:17	3.45	
9	1:01:56	01:58	0.0328		00:59	1:00:57		1:10:31	3.54	
8.75	1:06:17	04:21	0.0725	0.25	02:11	1:04:07	3.45	1:16:30	2.51	
8.5	1:10:31	04:14	0.0706	0.25	02:07	1:08:24	3.54	1:21:37	2.93	
8.25	1:16:30	05:59	0.0997	0.25	02:59	1:13:31	2.51	1:27:12	2.69	
8	1:21:37	05:07	0.0853	0.25	02:33	1:19:04	2.93	1:33:23	2.43	
7.75	1:27:12	05:35	0.0931	0.25	02:48	1:24:25	2.69	1:39:45	2.36	
7.5	1:33:23	06:11	0.1031	0.25	03:06	1:30:17	2.43	1:45:28	2.62	
7.25	1:39:45	06:22	0.1061	0.25	03:11	1:36:34	2.36	1:52:42	2.07	
7	1:45:28	05:43	0.0953	0.25	02:51	1:42:36	2.62	1:57:54	2.88	
6.75	1:52:42	07:14	0.1206	0.25	03:37	1:49:05	2.07	2:04:18	2.34	
6.5	1:57:54	05:12	0.0867	0.25	02:36	1:55:18	2.88			
6.25	2:04:18	06:24	0.1067	0.25	03:12	2:01:06	2.34			



Infiltration after 2 hr
2.37 in/hr

Note: 0.0833 in the formula above is 2hr/24hr
The formula above is the equation for the best fit line in chart.

Field Data Sheet: Double-Ring Infiltrometer Testing										
Location	Site # 3: 673 Mooreland Cir, Portage, WI									
Date:	10/4/2019									
Time:	8:48 AM to 10:48 AM									
Conditions (Temp., etc.):	Cool, clear									
Field Staff:	Steve Small									
Most Recent Rainfall Event (Date/Amount):										
Equipment Used:	Double Ring Infiltrometer									
Gallons Used During Test (12-Inch Ring):										
Fill In	Fill In	= Formula	INFORMATION ONLY							
Note: measured from ground to wsel inside the inside ring.			Change In	Change in	Water Level	Time Interval	Cumulative			
Water Level	Time		Time	Time	Change	Midpoint	Midpoint	Infiltration		For Chart
(Inches)	(hh:mm:ss)		(min:ss)	(hours)	(inches)	(mm:ss)	(hh:mm:ss)	(in/hr)		Time Rate
	9		0:00:00							
	8.75		1:38:17	38:17	1.6381	0.25	49:08	0:49:08	0.15	1:38:17 0.15



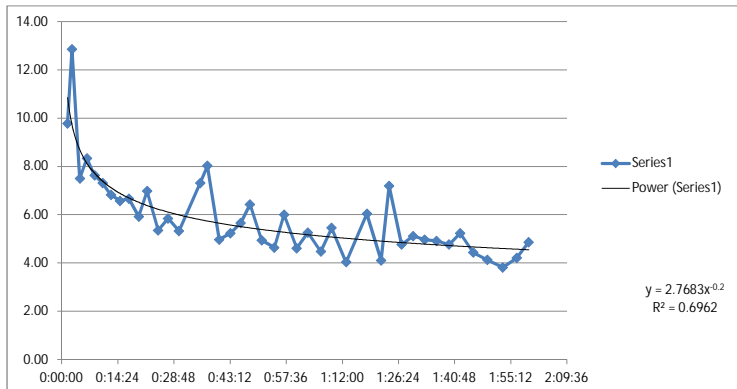
Infiltration after 2 hr
0.15 in/hr

Note: only one data point

Field Data Sheet: Double-Ring Infiltrometer Testing

Location	Site # 4: Silver Lake Cemetary, Portage, WI
Date:	10/24/2019
Time:	11:05 AM to 1:05 PM
Conditions (Temp., etc.):	Cool, overcast
Field Staff:	Steve Small
Most Recent Rainfall Event (Date/Amount):	
Equipment Used:	Double Ring Infiltrometer
Gallons Used During Test (12-Inch Ring):	

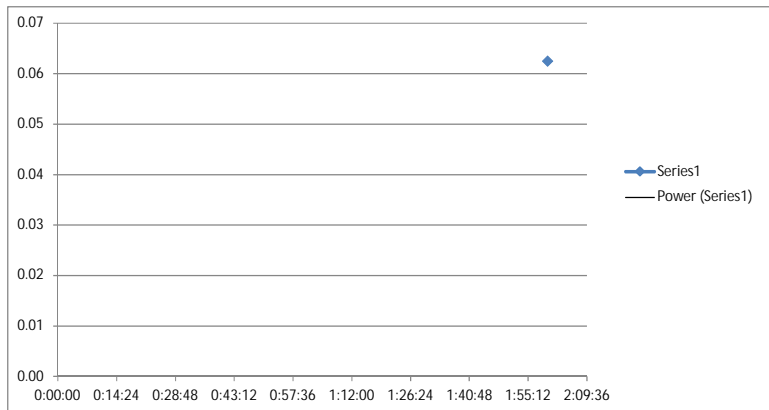
Fill In	Fill In	= Formula			INFORMATION ONLY					
Note: measured from ground to wsel inside the inside ring.		Change In	Change in	Water Level	Time Interval	Cumulative	Infiltration		For Chart	
Water Level	Time	Time	Time	Change	Midpoint	Midpoint	Rate		Infiltration	
(Inches)	(hh:mm:ss)	(min:ss)	(hours)	(inches)	(mm:ss)	(hh:mm:ss)	(in/hr)		Time	
									Rate	
9	0:00:00									
8.75	0:01:32	01:32	0.0256	0.25	00:46	0:00:46	9.78		0:01:32 9.78	
8.5	0:02:42	01:10	0.0194	0.25	00:35	0:02:07	12.86		0:02:42 12.86	
8.25	0:04:42	02:00	0.0333	0.25	01:00	0:03:42	7.50		0:04:42 7.50	
8	0:06:30	01:48	0.0300	0.25	00:54	0:05:36	8.33		0:06:30 8.33	
7.75	0:08:28	01:58	0.0328	0.25	00:59	0:07:29	7.63		0:08:28 7.63	
7.5	0:10:31	02:03	0.0342	0.25	01:02	0:09:30	7.32		0:10:31 7.32	
7.25	0:12:43	02:12	0.0367	0.25	01:06	0:11:37	6.82		0:12:43 6.82	
7	0:15:00	02:17	0.0381	0.25	01:09	0:13:51	6.57		0:15:00 6.57	
6.75	0:17:15	02:15	0.0375	0.25	01:07	0:16:07	6.67		0:17:15 6.67	
6.5	0:19:47	02:32	0.0422	0.25	01:16	0:18:31	5.92		0:19:47 5.92	
6.25	0:21:56	02:09	0.0358	0.25	01:05	0:20:52	6.98		0:21:56 6.98	
6	0:24:44	02:48	0.0467	0.25	01:24	0:23:20	5.36		0:24:44 5.36	
5.75	0:27:18	02:34	0.0428	0.25	01:17	0:26:01	5.84		0:27:18 5.84	
5.5	0:30:07	02:49	0.0469	0.25	01:24	0:28:42	5.33		0:30:07 5.33	
									0:35:33 7.32	
9	0:33:30	03:23	0.0564		01:42	0:31:48			0:37:25 8.04	
8.75	0:35:33	02:03	0.0342	0.25	01:01	0:34:32	7.32		0:40:26 4.97	
8.5	0:37:25	01:52	0.0311	0.25	00:56	0:36:29	8.04		0:43:18 5.23	
8.25	0:40:26	03:01	0.0503	0.25	01:30	0:38:55	4.97		0:45:57 5.66	
8	0:43:18	02:52	0.0478	0.25	01:26	0:41:52	5.23		0:48:17 6.43	
7.75	0:45:57	02:39	0.0442	0.25	01:20	0:44:37	5.66		0:51:19 4.95	
7.5	0:48:17	02:20	0.0389	0.25	01:10	0:47:07	6.43		0:54:33 4.64	
7.25	0:51:19	03:02	0.0506	0.25	01:31	0:49:48	4.95		0:57:03 6.00	
7	0:54:33	03:14	0.0539	0.25	01:37	0:52:56	4.64		1:00:18 4.62	
6.75	0:57:03	02:30	0.0417	0.25	01:15	0:55:48	6.00		1:03:09 5.26	
6.5	1:00:18	03:15	0.0542	0.25	01:37	0:58:41	4.62		1:06:30 4.48	
6.25	1:03:09	02:51	0.0475	0.25	01:26	1:01:44	5.26		1:09:15 5.45	
6	1:06:30	03:21	0.0558	0.25	01:41	1:04:50	4.48		1:12:58 4.04	
5.75	1:09:15	02:45	0.0458	0.25	01:23	1:07:53	5.45		1:18:18 6.04	
5.5	1:12:58	03:43	0.0619	0.25	01:51	1:11:07	4.04		1:21:57 4.11	
									1:24:02 7.20	
9	1:15:49	02:51	0.0475		01:25	1:14:24			1:27:11 4.76	
8.75	1:18:18	02:29	0.0414	0.25	01:15	1:17:04	6.04		1:30:07 5.11	
8.5	1:21:57	03:39	0.0608	0.25	01:49	1:20:08	4.11		1:33:08 4.97	
8.25	1:24:02	02:05	0.0347	0.25	01:03	1:23:00	7.20		1:36:11 4.92	
8	1:27:11	03:09	0.0525	0.25	01:35	1:25:37	4.76		1:39:20 4.76	
7.75	1:30:07	02:56	0.0489	0.25	01:28	1:28:39	5.11		1:42:12 5.23	
7.5	1:33:08	03:01	0.0503	0.25	01:31	1:31:37	4.97		1:45:35 4.43	
7.25	1:36:11	03:03	0.0508	0.25	01:31	1:34:39	4.92		1:49:13 4.13	
7	1:39:20	03:09	0.0525	0.25	01:34	1:37:45	4.76		1:53:09 3.81	
6.75	1:42:12	02:52	0.0478	0.25	01:26	1:40:46	5.23		1:56:43 4.21	
6.5	1:45:35	03:23	0.0564	0.25	01:42	1:43:53	4.43		1:59:48 4.86	
6.25	1:49:13	03:38	0.0606	0.25	01:49	1:47:24	4.13			
6	1:53:09	03:56	0.0656	0.25	01:58	1:51:11	3.81			
5.75	1:56:43	03:34	0.0594	0.25	01:47	1:54:56	4.21			
5.5	1:59:48	03:05	0.0514	0.25	01:33	1:58:15	4.86			



Infiltration after 2 hr
4.55 in/hr

Note: 0.0833 in the formula above is 2hr/24hr
The formula above is the equation for the best fit line in chart.

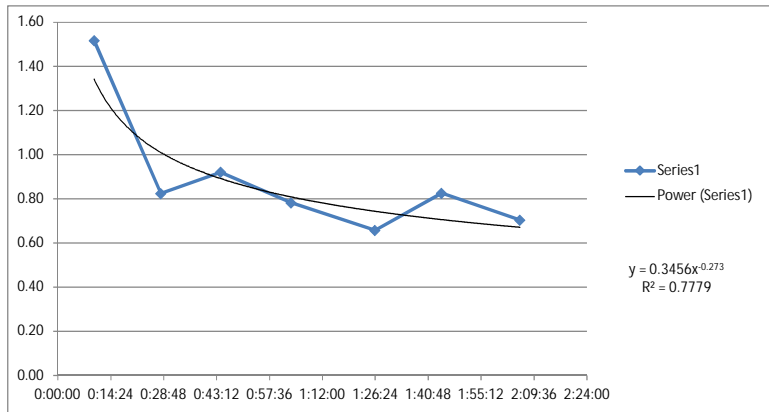
Field Data Sheet: Double-Ring Infiltrometer Testing										
Location:	Site # 5: 800 Morgan St, Portage, WI									
Date:	10/23/2019									
Time:	4:01 PM to 6:01 PM									
Conditions (Temp., etc.):	Overcast, mild									
Field Staff:	Steve Small									
Most Recent Rainfall Event (Date/Amount):										
Equipment Used:	Double Ring Infiltrometer									
Gallons Used During Test (12-Inch Ring):										
Fill In	Fill In	= Formula	INFORMATION ONLY							
Note: measured from ground to wsel inside the inside ring.			Change In Time	Change in Time	Water Level Change	Time Interval Midpoint	Cumulative Time To Midpoint	Infiltration Rate	For Chart	
Water Level (Inches)	Time (hh:mm:ss)		(min:ss)	(hours)	(inches)	(mm:ss)	(hh:mm:ss)	(in/hr)	Time	Infiltration Rate
9	0:00:00									
8.875	2:00:00		00:00	2.0000	0.125	00:00	1:00:00	0.06	2:00:00	0.06



Infiltration after 2 hr
0.06 in/hr

Note: Only about 1/8" infiltration over 2 hours

Field Data Sheet: Double-Ring Infiltrometer Testing											
Location		Site # 6: 2417 Wild Rose Ct, Portage, WI									
Date:		10/23/2019									
Time:		1:36 PM to 3:36 PM									
Conditions (Temp., etc.):											
Field Staff:		Steve Small									
Most Recent Rainfall Event (Date/Amount):											
Equipment Used:		Double Ring Infiltrometer									
Gallons Used During Test (12-Inch Ring):											
Fill In	Fill In	= Formula			INFORMATION ONLY						
Note: measured from ground to wsel inside the inside ring.		Change In	Change in	Water Level	Time Interval	Cumulative			For Chart		
Water Level	Time	Time	Time	Change	Midpoint	Midpoint	Infiltration			Infiltration	
(Inches)	(hh:mm:ss)	(min:ss)	(hours)	(inches)	(mm:ss)	(hh:mm:ss)	(in/hr)	Time	Rate		
9	0:00:00										
8.75	0:09:53	09:53	0.1647	0.25	04:57	0:04:57	1.52	0:09:53	1.52		
8.5	0:28:04	18:11	0.3031	0.25	09:05	0:18:59	0.82	0:28:04	0.82		
8.25	0:44:21	16:17	0.2714	0.25	08:08	0:36:13	0.92	0:44:21	0.92		
8	1:03:31	19:10	0.3194	0.25	09:35	0:53:56	0.78	1:03:31	0.78		
7.75	1:26:18	22:47	0.3797	0.25	11:24	1:14:55	0.66	1:26:18	0.66		
7.5	1:44:27	18:09	0.3025	0.25	09:04	1:35:22	0.83	1:44:27	0.83		
7.25	2:05:45	21:18	0.3550	0.25	10:39	1:55:06	0.70	2:05:45	0.70		



Infiltration after 2 hr
6.81 in/hr

Note: 0.0833 in the formula above is 2hr/24hr
The formula above is the equation for the best fit line in chart.

APPENDIX L
PORTAGE DETENTION BASIN SHEETS

Name: Industrial Park
Wet Pond (E47)

Location: Boeck Road

**Approximate Year
Constructed:** No Record



Name: Grace Bible
Church Wet Pond
(E1)

Location: CTH CX

**Approximate Year
Constructed:** 2003

No Photo Available

Name: Walmart Wet
Pond (E2)

Location: 2950 New Pinery
Road

**Approximate Year
Constructed:** 2002



APPENDIX L

EXISTING STORMWATER DETENTION BASINS

**CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS**



Name: Kmart Wet Pond (E4)

Location: 2935 New Pinery Road

Approximate Year Constructed: 2002



Name: Festival Foods Wet Pond (E7)

Location: 2915 New Pinery Road

Approximate Year Constructed: No Record



Name: Braund Development Dry Pond (E8)

Location: Henry Drive

Approximate Year Constructed: 2005



APPENDIX L

EXISTING STORMWATER DETENTION BASINS

**CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS**



Name: Divine Savior
Nursing Home
North Dry Pond
(E9)

Location: 2817 New Pinery
Road

**Approximate Year
Constructed:** 2009



Name: Divine Savior
Nursing Home
North Dry Pond
(E10)

Location: 2817 New Pinery
Road

**Approximate Year
Constructed:** 2009



Name: Portage Plastics
Dry Pond (E12)

Location: 3000 Boeck
Road

**Approximate Year
Constructed:** 2002



APPENDIX L

EXISTING STORMWATER DETENTION BASINS

**CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS**



Name: La Dawn Drive
Dry Pond (E13)

Location: 1640 La Dawn
Drive

**Approximate Year
Constructed:** 2002



Name: Dawn's Food
Biofiltration Basin
(E14)

Location: 1530 La Dawn
Drive

**Approximate Year
Constructed:** 2018



Name: Flexible Foam Dry
Pond

Location: 2626 Murphy
Road

**Approximate Year
Constructed:** No Record




No Photo Available

APPENDIX L

EXISTING STORMWATER DETENTION BASINS

CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS



<p>Name: Cardinal FG Wet Pond (E16)</p> <p>Location: 1650 Mohr Road</p> <p>Approximate Year Constructed: 2017</p>		
<p>Name: Cardinal FG Dry Pond (E16)</p> <p>Location: 1650 Mohr Road</p> <p>Approximate Year Constructed: No Record</p>		
<p>Name: Manchester Place Wet Pond (E17)</p> <p>Location: 601 West Slifer Street</p> <p>Approximate Year Constructed: 2006</p>	<p style="text-align: center;">No Photo Available</p>	
<p style="text-align: center;">APPENDIX L</p>	<p style="text-align: center;">EXISTING STORMWATER DETENTION BASINS</p> <p style="text-align: center;">CITY OF PORTAGE, WISCONSIN</p> <p style="text-align: center;">SITE PHOTOGRAPHS</p> <div style="text-align: right;">  </div>	

Name: Southtown North
Dry Pond (E20)

Location: Southtown Road

**Approximate Year
Constructed:** No Record



Name: Southtown South
Dry Pond (E21)

Location: Southtown Road

**Approximate Year
Constructed:** No Record



Name: Hamilton Park
Place BMPs (E22)

Location: 2525 Hamilton
Street

**Approximate Year
Constructed:** 2013



APPENDIX L

EXISTING STORMWATER DETENTION BASINS

**CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS**



Name: Thompson_Mullett
Parking Lot Bio
Basin (E24)

Location: Thompson
Street

**Approximate Year
Constructed:** 2018



Name: Albert_Haertel
Wet Pond (E25)

Location: East Albert
Street

**Approximate Year
Constructed:** No Record



Name: Cardinal FG Wet
Pond (E26)

Location: 1650 Mohr Road

**Approximate Year
Constructed:** 2017





APPENDIX L



EXISTING STORMWATER DETENTION BASINS


**CITY OF PORTAGE, WISCONSIN
SITE PHOTOGRAPHS**







<p>Name: Heritage House BMPs (E27)</p> <p>Location: 2685 Airport Road</p> <p>Approximate Year Constructed: 2005</p>	<p>No Photo Available</p>	
<p>Name: Saint-Gobain Wet and Dry Ponds (E28)</p> <p>Location: East Albert Street</p> <p>Approximate Year Constructed: No Record</p>	<p>No Photos Available</p>	
<p>Name: Kwik Trip Wet Pond (E29)</p> <p>Location: 1223 East Wisconsin Street</p> <p>Approximate Year Constructed: 2010</p>	<p>No Photo Available</p>	
<p>APPENDIX L</p>	<p>EXISTING STORMWATER DETENTION BASINS</p> <p>CITY OF PORTAGE, WISCONSIN</p> <p>SITE PHOTOGRAPHS</p>	

<p>Name: FM Solutions Dry Pond (E29)</p> <p>Location: 2652 Murphy Road</p> <p>Approximate Year Constructed: 2000</p>	<p>No Photo Available</p>	
<p>Name: Parkside Subdivision Dry Pond (E31)</p> <p>Location: West Slifer Street</p> <p>Approximate Year Constructed: 2005</p>	<p>No Photo Available</p>	
<p>Name: Divine Savior North Wet Pond (E33)</p> <p>Location: 2800 Hunters Trail</p> <p>Approximate Year Constructed: 2002</p>		
<p>APPENDIX L</p>	<p>EXISTING STORMWATER DETENTION BASINS</p> <p>CITY OF PORTAGE, WISCONSIN</p> <p>SITE PHOTOGRAPHS</p> 	

<p>Name: Divine Savior South Wet Pond (E33)</p> <p>Location: 2800 Hunters Trail</p> <p>Approximate Year Constructed: 2002</p>		
<p>Name: Hilife Investments Underground Pond (E34)</p> <p>Location: 2875 Village Road</p> <p>Approximate Year Constructed: 2002</p>	<p style="text-align: center;">No Photo Available</p>	
<p>Name: Erath Office Building (E36)</p> <p>Location: 2639 New Pinery Road</p> <p>Approximate Year Constructed: 2003</p>	<p style="text-align: center;">No Photo Available</p>	
<p style="text-align: center;">APPENDIX L</p>	<p style="text-align: center;">EXISTING STORMWATER DETENTION BASINS</p> <p style="text-align: center;">CITY OF PORTAGE, WISCONSIN</p> <p style="text-align: center;">SITE PHOTOGRAPHS</p>	

<p>Name: Labbeemint Dry Pond (E37)</p> <p>Location: 1620 La Dawn Drive</p> <p>Approximate Year Constructed: 2003</p>	<p>No Photo Available</p>	
<p>Name: Columbia County Jail Sediment Chambers (E38)</p> <p>Location: 2925 Columbia Drive</p> <p>Approximate Year Constructed: 2003</p>	<p>No Photo Available</p>	
<p>Name: Hill Ford Body Shop Dry Pond (E39)</p> <p>Location: 3015 CTH CX</p> <p>Approximate Year Constructed: 2004</p>	<p>No Photo Available</p>	
<p>APPENDIX L</p>	<p>EXISTING STORMWATER DETENTION BASINS</p> <p>CITY OF PORTAGE, WISCONSIN</p> <p>SITE PHOTOGRAPHS</p>	

<p>Name: Tractor Supply Dry Pond (E40)</p> <p>Location: 3033 CTH CX</p> <p>Approximate Year Constructed: 2004</p>	<p>No Photo Available</p>	
<p>Name: Encapsys Wet Pond (E42)</p> <p>Location: 2500 West Wisconsin Street</p> <p>Approximate Year Constructed: 2018</p>	<p>No Photo Available</p>	
<p>Name: Columbia County Administration Building Bioretention Basin (E43)</p> <p>Location: 111 East Mullett Street</p> <p>Approximate Year Constructed: 2015</p>		
<p>APPENDIX L</p>	<p>EXISTING STORMWATER DETENTION BASINS</p> <p>CITY OF PORTAGE, WISCONSIN</p> <p>SITE PHOTOGRAPHS</p>	
		

<p>Name: Portage Community School Infiltration Basin (E44)</p> <p>Location: 305 East Slifer Street</p> <p>Approximate Year Constructed: 2011</p>	<p>No Photo Available</p>	
<p>Name: Kwik Trip Car Wash Wet Pond (E45)</p> <p>Location: 124 Ontario Street</p> <p>Approximate Year Constructed: 2010</p>		
<p>Name: Dan Roeker Site Wet Pond (E46)</p> <p>Location: 740 East Albert Street</p> <p>Approximate Year Constructed: 2014</p>	<p>No Photo Available</p>	
<p>APPENDIX L</p>	<p>EXISTING STORMWATER DETENTION BASINS</p> <p>CITY OF PORTAGE, WISCONSIN</p> <p>SITE PHOTOGRAPHS</p>	

Best management practice ("BMP") maintenance.

(a)

All BMPs shall be maintained and cared for by the developer and subsequently, at such time as the developer passes control of the property and responsibility for general maintenance to a homeowner's association, condominium association, or owner(s) (the "responsible party"), by such responsible party .

(b)

If, in the opinion of the City of Portage, either the developer or the responsible party fail to maintain such BMP, the city is authorized to give the developer and/or the responsible party written notice requiring either or both within 30 days thereafter, to cure the failure and to maintain and to provide the required care. If the developer or the responsible party fails to comply with the demands of the notice, the city shall have the right to provide the required maintenance and to include in the annual tax bill for each lot in the subdivision or condominium unit a proportionate share of the cost of such maintenance.

(c)

A homeowner's association or condominium association created by the developer shall be a non-profit, non-stock, Wisconsin corporation; the members of which will be the individual owners of the lots in the subdivision or condominium units.

(d)

The developer or responsible party shall, at its expense, provide normal, visual and customary cleaning, maintenance and certification to the BMPs located in subdivision/property, which may include weed and algae control, dam stabilization, outlet structure (including trash rack), dredging and biological control.

(e)

Dredging of the detention basin/pond requires approval under Wis. Stats. § 30.20, a permit to remove materials from the bed of a pond ultimately connected to navigable waters from the Wisconsin Department of Natural Resources (WDNR).

(f)

The application of EPA/state registered chemicals to detention basins/ponds or lakes is regulated by the WDNR. With few exceptions, a permit must be filed with, and approved by the WDNR, prior to chemical treatment. In certain circumstances, a representative of the department will monitor or supervise the chemical treatment. Contact the department for additional information.

(g)

BMPs shall be inspected and checked by an independent engineer or licensed land surveyor and recertified that the BMP complies with the original design standards before transfer to the homeowner's association or condominium association for residential development, or prior to an occupancy permit for commercial development. Thereafter, the responsible party would be responsible to recertify the BMP as follows:

(1)

All initially constructed BMPs must be inspected within two years from the date of adoption of the ordinance from which this section is derived;

(2)

Thereafter, all BMPs constructed prior to January 1, 1994, shall be required to be inspected and recertified every five years;

(3)

All BMPs constructed after January 1, 1994, shall be inspected and recertified in one additional two-year cycle and every five years thereafter. Any deficiencies shall be corrected immediately. The city engineering department shall be notified three working days in advance of the inspection and no more than five working days after corrections have been made. A written report, not limited to photographs or diagrams of the deficiency and corrections with the certification, shall be submitted to the city engineering department for review and approval. Specific areas shall include, but not be limited to:

Pond containment berms are stable and free of animal burrowings

Detention storage

Erosion

Vegetative cover

Sediment accumulation

Trash rack/culvert functions

Outlet flow

(h)

BMPs may not be altered from the original city approved design without prior written approval by the city engineer. Failure to comply will result in the issuance of a municipal citation as in this section.

(i)

The city engineer has the authority to stop work, amend, or alter remediation measures to the detention basins/ponds. Any person violating any of the provisions of this section shall be subject to a forfeiture as provided in [chapter 2](#) of this Code of Ordinances, and the city may recover all attorneys' fees, court costs, and other expenses associated with enforcement of this section, including sampling and monitoring expenses. Each day a violation exists shall constitute a separate offense.

(j)

If a homeowner's association or condominium association does not exist, the city shall require recertification of the detention basin/pond to the time just prior to the city's release of the developer's drainage financial guarantee.

DISCHARGE OF POLLUTANTS TO THE WATERS OF THE CITY OF PORTAGE

Note: It is anticipated that the City Attorney will format entire ordinance into City standard format.

AN ORDINANCE TO CREATE CHAPTER [NUMBER] OF THE [CODE OR ORDINANCE] OF THE CITY OF PORTAGE RELATING TO THE CONTROL OF ILLICIT DISCHARGES TO THE WATERS OF THE CITY OF PORTAGE.

1.01 PURPOSE. The purpose of this Chapter is to provide for the health, safety, and general welfare of the citizens of and protect surface waters of the City of Portage by preventing potentially polluting substances from reaching the municipal storm sewer system, lakes, streams, wetlands and groundwater as required by federal and state law. This Chapter establishes methods for controlling the discharge of potentially polluting substances into the municipal storm sewer system in order to comply with the requirements of the Clean Water Act, Chapter 283.33, Wis. Stats., and Wisconsin Pollutant Discharge Elimination System municipal storm water discharge permit program under Chapter NR 216, Wis. Adm. Code.

1.02 AUTHORITY. This chapter is enacted pursuant to the authority of s. 33.455, Wis. Stats.

1.03 ADMINISTRATION. This ordinance shall be enforced by the Director of Public Works. The Director of Public works shall have the power and authority to enter upon any public or private premises to inspect potential illicit discharges.

1.04 APPLICABILITY. This ordinance shall apply to all surface and ground waters of the City of Portage.

1.05 DEFINITIONS. As used in this chapter:

(1) *Discharge* means any actions or omissions that cause or allow for the spill, release, escape or other discharge, of any potentially polluting substance.

(2) *Illicit discharge* means any discharge of a potentially polluting substance directly or through stormwater that reaches a municipal storm sewer system, drainage way, wetland, waterbody or groundwater, except those authorized by a Wisconsin Pollutant Discharge Elimination System (WPDES) permit or other discharge not requiring a WPDES permit such as landscape irrigation, individual residential car washing, diverted stream flows, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, flows from riparian habitats and wetlands, and similar discharges. These and other discharge exceptions do not apply if the discharge is identified by the Director of Public Works as a source of pollution to the waters of the City of Portage.

(3) *Municipal storm sewer system* 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 state, city, town, village, county, district, association, or other public body (created by or pursuant to State law) including special districts under state law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act that discharges into waters of the United States.
- b. Designed or used for collecting or conveying stormwater.
- c. Which is not a combined sewer conveying both sanitary wastewater and stormwater.
- d. Which is not part of a publicly owned wastewater treatment works that provides secondary or more stringent treatment.

(4) *Person* means an individual, owner, operator, corporation, partnership, association, limited liability company, municipality, interstate agency, state agency or federal agency.

(5) *Pollution* means human-made or human-induced alteration of the chemical, physical, biological or radiological integrity of water.

(6) *Potentially polluting substance* includes any substance which may cause pollution if discharged to waters of the City of Portage, including but not limited to, fuel oil, gasoline, solvents, industrial liquids or fluids, milk, grease trap and septic tank wastes, sanitary sewer wastes, storm sewer catch basin wastes, oil or petroleum waste, dredged soil, solid waste, incinerator residue, sewage, garbage or garbage leachate, refuse, munitions, chemical wastes, biological materials, radioactive substance, wrecked or discarded equipment, waste from mobile sources, industrial, municipal and agricultural waste.

(7) *Responsible Person* means the person or persons who cause a discharge of a potentially polluting substance, an illicit discharge or both. Responsible person includes the person on whose behalf the activity that results in the discharge was conducted, whether through employment of or contracting with the person who caused the discharge.

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

1.06 DISCHARGE OR RELEASE PROHIBITED. It shall be unlawful for any person to cause or allow an illicit discharge, including permitting the escape of any potential polluting substance into waters of the City of Portage, or into any municipal storm sewer system, or drainage way leading into any lake, wetland or stream, or to permit the same to be so discharged to the ground surface.

1.07 CLEAN-UP OF POTENTIALLY POLLUTING SUBSTANCES. Responsible persons, including the person who causes a discharge of a potentially polluting substance through any means including but not limited to delivering, hauling, disposing, storing, discharging or otherwise handling or maintaining potentially polluting substances shall be responsible for the immediate cleanup of any such spilled material to prevent its becoming an illicit discharge and causing pollution to the waters of the City of Portage.

1.08 DUTY TO NOTIFY. Any person responsible for the illicit discharge or discharge of potentially polluting substances shall immediately report the discharge to the Director of Public Works.

1.09 FINANCIAL LIABILITY. Any person responsible for the illicit discharge or discharge of potentially polluting substances may be held financially liable for the cost of any cleanup or attempted cleanup deemed necessary by the Director of Public Works, or its designated agent, in an effort to minimize the polluting effects of the discharge and restore the environment.

1.10 STORAGE OF POLLUTING SUBSTANCES. It shall be unlawful for any person to store any potentially polluting substance in a manner that allows it to escape onto the ground surface, municipal storm sewer system, drainage way, wetland, lake or stream.

1.11 PENALTIES.

(1) Any person who violates or refuses to comply with the provisions of this ordinance shall be subject to a forfeiture of not less than \$50 nor more than \$2000 and the costs of prosecution. Each day that a violation exists shall constitute a separate offense.

(2) The corporation counsel is authorized to seek enforcement of any part of this ordinance by court action seeking injunctive relief. It shall not be necessary for the Director of Public Works to seek other remedies before seeking injunctive relief.

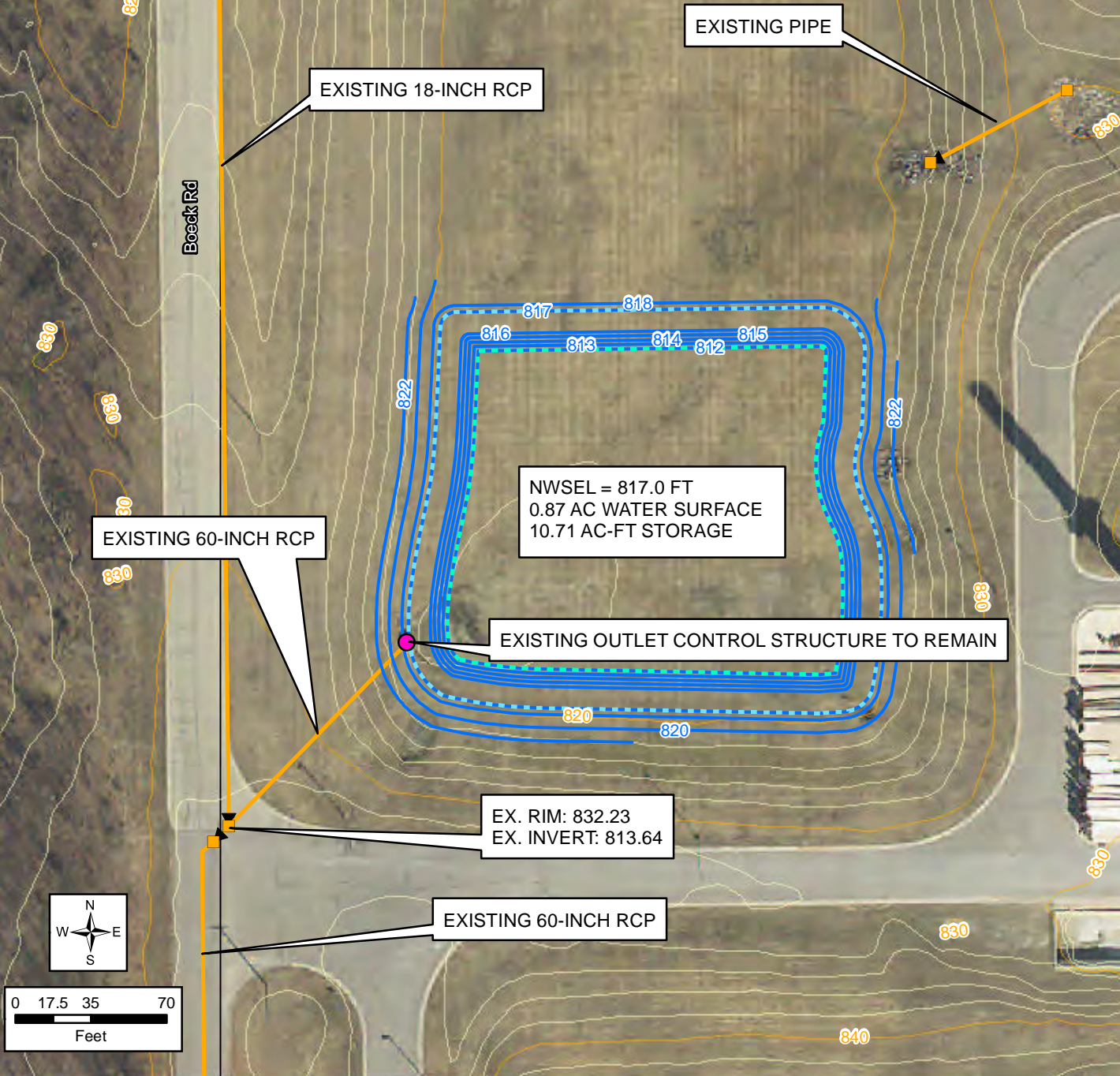
1.12 EFFECTIVE DATE. The effective date of this ordinance shall be **xxx**. The provisions of this ordinance shall apply to any discharge discovered or occurring after that date.

1.13 SEVERABILITY. The provisions of this ordinance are hereby declared to be severable. If any provision, clause, sentence or paragraph of this ordinance or the application thereof to any person, establishment or circumstances shall be held invalid, such invalidity shall not affect the other provisions or application of this ordinance.

APPENDIX O
ALTERNATIVES ANALYSIS FIGURES

Legend

- Storm Structure
- - - Bottom of Pool
- - - Normal Water Surface Elevation (SWSE)
- Proposed BMP Contour (FT)
- Existing Catch Basin
- ▶ Existing Storm Sewer



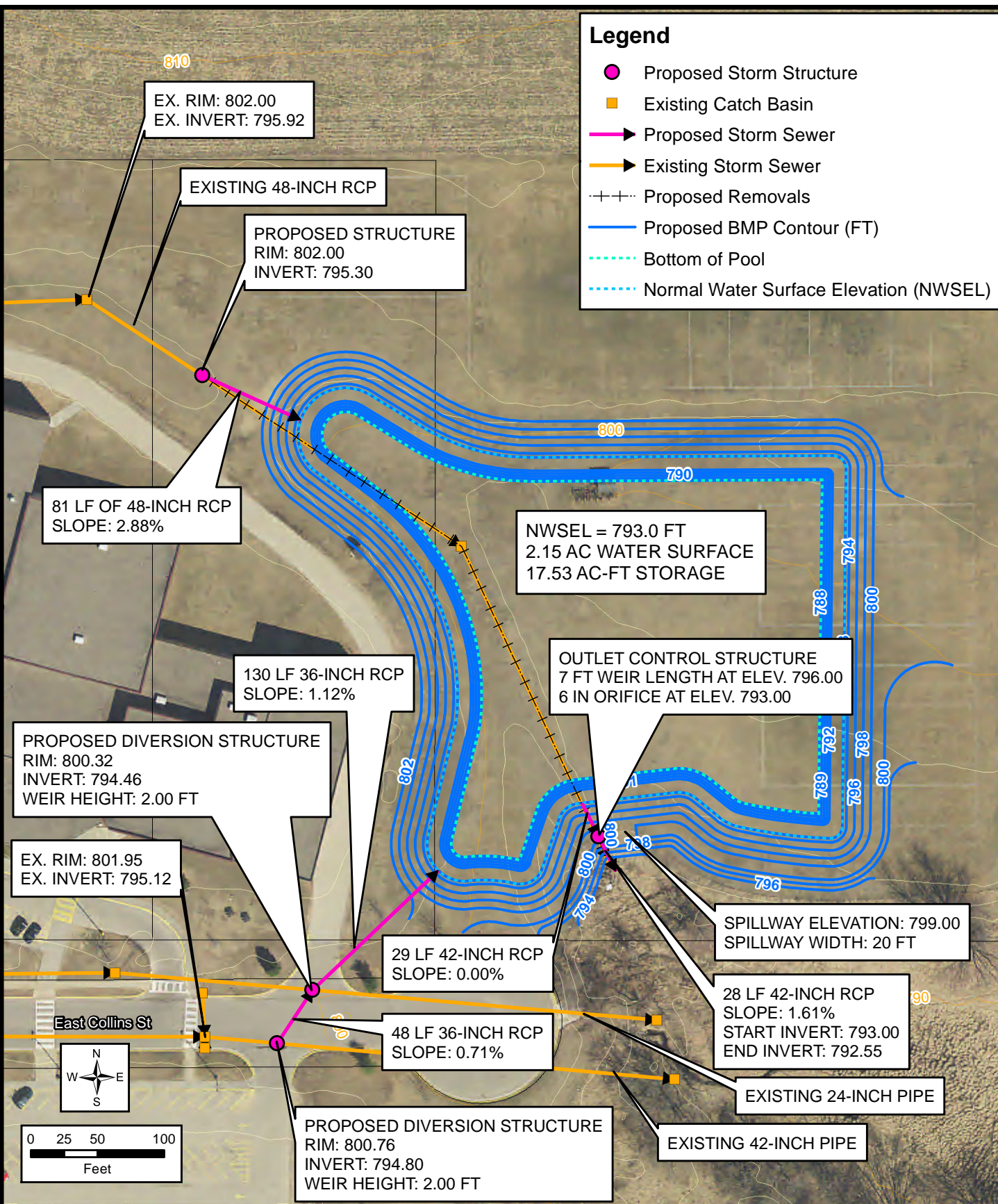
CARDINAL FG BIORETENTION POND RETROFIT TO WET POND
 BASIN(S): LWR-22, LWR-36, LWR-37
 CITY OF PORTAGE STORMWATER MANAGEMENT PLAN
 CITY OF PORTAGE
 COLUMBIA COUNTY, WISCONSIN



FIGURE 5.01-1
1076.017

Legend

- Proposed Storm Structure
- Existing Catch Basin
- ▶ Proposed Storm Sewer
- ▶ Existing Storm Sewer
- ⋯ Proposed Removals
- Proposed BMP Contour (FT)
- ⋯ Bottom of Pool
- ⋯ Normal Water Surface Elevation (NWSEL)



PORTAGE HIGH SCHOOL WET POND
 BASIN(S): BLI-110, BLI-67, BLI-68 (US)
 CITY OF PORTAGE STORMWATER MANAGEMENT PLAN
 CITY OF PORTAGE
 COLUMBIA COUNTY, WISCONSIN

SA
STRAND
ASSOCIATES®

FIGURE 5.01-2
1076.017

Legend

- Proposed Storm Structure
- Existing Catch Basin
- ▶ Proposed Storm Sewer
- ▶ Existing Storm Sewer
- +++ Proposed Removals
- Proposed BMP Contour (FT)
- - - Bottom of Pool
- · - · Normal Water Surface Elevation (NWSEL)

NWSEL = 790.0 FT
 0.20 AC WATER SURFACE
 1.78 AC-FT STORAGE

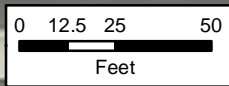
OUTLET CONTROL STRUCTURE
 8 FT WEIR LENGTH AT ELEV. 792.00
 4 IN ORIFICE AT ELEV. 790.00

82 LF 60-INCH RCP
 SLOPE: 0.25%

31 LF 42-INCH RCP
 SLOPE: 0.50%

EXISTING 18-INCH RCP

EXISTING 24-INCH RCP



EAST HAERTEL STREET WET POND
 BASIN(S): BLI-186, BLI-187
 CITY OF PORTAGE STORMWATER MANAGEMENT PLAN
 CITY OF PORTAGE
 COLUMBIA COUNTY, WISCONSIN



Legend

- Proposed Storm Structure
- Existing Catch Basin
- ▶ Proposed Storm Sewer
- ▶ Existing Storm Sewer
- Proposed BMP Contour (FT)
- ⋯ Bottom of Pool
- ⋯ Normal Water Surface Elevation (NWSEL)

129 LF OF 24-INCH RCP
SLOPE: 0.30%

RIM: 786.00
INVERT: 780.66

49 LF OF 24-INCH RCP
SLOPE: 0.30%

RIM: 784.50
INVERT: 780.81

63 LF OF 24-INCH RCP
SLOPE: 0.30%

OUTLET CONTROL STRUCTURE
4 FT WEIR LENGTH AT ELEV. 782.50
4 IN ORIFICE AT ELEV. 781.00

NWSEL = 781.0 FT
0.09 AC WATER SURFACE
0.39 AC-FT STORAGE

20 LF OF 24-INCH RCP
SLOPE: 0.41%

EXISTING 24-INCH RCP

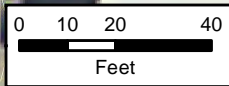
RIM: 784.45
INVERT: 781.08

103 LF OF 24-INCH RCP
SLOPE: 0.41%

PROVIDE 2-FT WEIR IN MANHOLE TO
DIVERT FIRST FLUSH FLOWS TO POND

EX. RIM: 785.12
EX. INVERT: 781.51

EXISTING 18-INCH RCP



EAST MULLET STREET WET POND
BASIN(S): BLI-139
CITY OF PORTAGE STORMWATER MANAGEMENT PLAN
CITY OF PORTAGE
COLUMBIA COUNTY, WISCONSIN



Legend

- Proposed Storm Structure
- Existing Catch Basin
- ▶ Proposed Storm Sewer
- ▶ Existing Storm Sewer
- Proposed Removals
- Proposed BMP

BOTTOM OF POOL: 779.52
 RIM: ~797.57 +/- 2.57
 BOTTOM DEPTH: 18.05 +/- 2.57

LOW POINT AT 794.00

14 LF 30-INCH RCP
 SLOPE: 0.04%

RIM: 796.01
 INVERT: 782.53

62 LF 30-INCH RCP
 SLOPE: 0.04%

NWSEL = 782.52 FT
 0.26 AC WATER SURFACE

OUTLET CONTROL STRUCTURE
 4 FT WEIR LENGTH AT ELEV. 784.52
 4 IN ORIFICE AT ELEV. 782.52

59 LF 18-INCH RCP
 SLOPE: 0.04%

EXISTING 42-INCH RCP

West Edgewater St

RIM: 794.25
 INVERT: 782.50

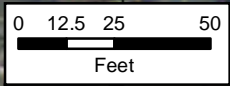
EXISTING 48-INCH RCP

99 LF 18-INCH RCP
 SLOPE: 0.04%

PROVIDE 2-FT WEIR IN
 MANHOLE TO DIVERT FIRST
 FLUSH FLOWS TO POND

RIM: 792.37
 INVERT: 782.46

EXISTING 48-INCH RCP
 SLOPE: 0.40%



PORTAGE PUBLIC LIBRARY UNDERGROUND DETENTION BASIN
 BASIN(S): BLI-204
 CITY OF PORTAGE STORMWATER MANAGEMENT PLAN
 CITY OF PORTAGE
 COLUMBIA COUNTY, WISCONSIN



FIGURE 5.01-5
 1076.017

Legend

- Proposed Storm Structure
- Existing Catch Basin
- ➔ Proposed Storm Sewer
- ➔ Existing Storm Sewer
- Proposed BMP Contour (FT)
- ⋯ Bottom of Pool
- ⋯ Normal Water Surface Elevation

OUTLET CONTROL STRUCTURE
 4 FT WEIR LENGTH AT ELEV. 790.00
 4 IN ORIFICE AT ELEV. 788.00

EXISTING 24-INCH RCP
 SLOPE: 0.80%

140 LF 24-INCH RCP
 SLOPE: 0.54%

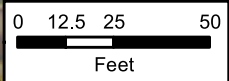
RIM: 793.00
 INVERT: 788.76

PROVIDE 2-FT WEIR IN
 MANHOLE TO DIVERT FIRST
 FLUSH FLOWS TO POND

52 LF 12-INCH RCP
 SLOPE: 1.00%

SPILLWAY ELEVATION: 791.00
 SPILLWAY LENGTH: 20 FT

NWSEL = 788.00 FT
 0.57 AC WATER SURFACE



CTH CX WET DETENTION BASIN

BASIN: BLI-44

CITY OF PORTAGE STORMWATER MANAGEMENT PLAN

CITY OF PORTAGE

COLUMBIA COUNTY, WISCONSIN



FIGURE 5.01-6
1076.017

Portage Stormwater Management Plan
City of Portage, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Cardinal FG Dry to Wet Pond Conversion (see Figure 5.01-1)

Item No.	Description	Quantity	Units	Unit Price	Total
1	Mobilization (2.5% of Construction Cost)	1	LS	\$10,900	\$10,900
2	Construction Layout	1	LS	\$3,000.00	\$3,000
3	Dewatering	1	LS	\$6,900.00	\$6,900
4	Traffic Control	1	LS	\$3,500.00	\$3,500
5	Dust Control	1	EA	\$580.00	\$580
6	Stone Tracking Pad	1	EA	\$3,300.00	\$3,300
7	Inlet Protection	2	EA	\$210.00	\$420
8	Stone Weeper at Outfall	1	EA	\$255.00	\$255
9	Unclassified Excavation	8,621	CY	\$24.00	\$206,912
10	Unclassified Excavation for Clay Liner	3,322	CY	\$24.00	\$79,724
11	Clay Liner	3,322	CY	\$30.00	\$99,656
12	Clay Bedding Dike	1	EA	\$615.00	\$615
13	6-IN Salvaged Topsoil Placement 75%	666	SY	\$3.50	\$2,332
14	6-IN Hauled-In Topsoil Placement 25%	222	SY	\$6.80	\$1,510
15	Erosion Control Mat - Class 1, Urban Type B	888	SY	\$2.50	\$2,221
16	Native Plugs at Water's Edge (2 per lf around pond perimeter)	1,540	EA	\$12.00	\$18,480
17	Wet Edge Seed Mix (Elevation 818 to 820)	541	SY	\$3.00	\$1,622
18	Low Mow Seed Mix w/Natives (820 to Limits of Disturbance)	348	SY	\$1.75	\$609
19	Landscaping Trees/Bushes	1	LS	\$1,500.00	\$1,500
20	Native Vegetation Maintenance (3 Years)	0.11	AC	\$27,000.00	\$3,000

Subtotal Project Cost	\$447,000
Construction Contingency and Technical Services Allowance (35%)	\$156,500
Construction Cost	\$603,500
Property Acquisition	\$753,524
Wetland Delineation	\$0
Sediment Sampling	\$9,270
Soil Borings	\$7,725
Total Project Cost	\$1,374,019

Portage Stormwater Management Plan
City of Portage, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Portage High School Wet Detention Basin (see Figure 5.01-2)

Item No.	Description	Quantity	Units	Unit Price	Total
1	Mobilization (2.5% of Construction Cost)	1	LS	\$39,300	\$39,300
2	Construction Layout	1	LS	\$3,700.00	\$3,700
3	Dewatering	1	LS	\$8,000.00	\$8,000
4	Traffic Control	1	LS	\$3,500.00	\$3,500
5	Dust Control	1	EA	\$580.00	\$580
6	Stone Tracking Pad	1	EA	\$3,300.00	\$3,300
7	Silt Fence	650	LF	\$3.50	\$2,275
8	Inlet Protection	4	EA	\$210.00	\$840
9	Stone Weeper at Outfall	1	EA	\$255.00	\$255
10	Unclassified Excavation	39,921	CY	\$24.00	\$958,105
11	Unclassified Excavation for Clay Liner	7,601	CY	\$24.00	\$182,414
12	Clay Liner	7,601	CY	\$30.00	\$228,018
13	Clay Bedding Dike	1	EA	\$615.00	\$615
14	36" RCP	178	LF	\$130.00	\$23,140
15	42" RCP	57	LF	\$160.00	\$9,120
16	48" RCP	84	LF	\$185.00	\$15,540
17	36" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	\$4,200.00	\$4,200
18	42" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	\$5,200.00	\$5,200
19	48" RCP Apron Endwall with Grate and Cutoff Wall	2	EA	\$5,200.00	\$10,400
20	6-FT DIA Storm Sewer Manhole	2	EA	\$3,500.00	\$7,000
21	Outlet Control Structure (7-FT DIA)	1	EA	\$7,800.00	\$7,800
22	Rip Rap (2 Outfalls and 1 Outlet)	73	SY	\$70.00	\$5,133
23	6-IN Salvaged Topsoil Placement 75%	4,672	SY	\$3.50	\$16,350
24	6-IN Hauled-In Topsoil Placement 25%	1,557	SY	\$6.80	\$10,589
25	Erosion Control Mat - Class 1, Urban Type B	6,229	SY	\$2.50	\$15,572
26	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	\$25.00	\$2,500
27	Native Plugs at Water's Edge (2 per lf around pond perimeter)	2,900	EA	\$12.00	\$34,800
28	Wet Edge Seed Mix (Elevation 793 to 795)	978	SY	\$3.00	\$2,934
29	Low Mow Seed Mix w/Natives (795 to Limits of Disturbance)	5,251	SY	\$2.05	\$10,764
30	Pavement Replacement	92	SY	\$70.00	\$6,450.00
31	Curb and Gutter Replacement	10	LF	\$50.00	\$500.00
32	Landscaping Trees/Bushes	1	LS	\$3,000.00	\$3,000.00
33	Native Vegetation Maintenance (3 Years)	0.20	AC	\$27,000.00	\$5,450.00

Subtotal Project Cost	\$1,627,300
Construction Contingency and Technical Services Allowance (35%)	\$569,600
Construction Cost	\$2,196,900
Property Acquisition	\$748,000
Wetland Delineation	\$0
Soil Borings	\$7,725
Total Project Cost	\$2,952,625

Portage Stormwater Management Plan
City of Portage, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
East Haertel St. Wet Detention Basin (see Figure 5.01-3)

Item No.	Description	Quantity	Units	Unit Price	Total
1	Mobilization (2.5% of Construction Cost)	1	LS	\$7,600	\$7,600
2	Construction Layout	1	LS	\$2,700.00	\$2,700
3	Dewatering	1	LS	\$3,200.00	\$3,200
4	Traffic Control	1	LS	\$4,000.00	\$4,000
5	Dust Control	1	EA	\$580.00	\$580
6	Stone Tracking Pad	1	EA	\$3,300.00	\$3,300
7	Silt Fence	200	LF	\$3.50	\$700
8	Inlet Protection	2	EA	\$210.00	\$420
9	Stone Weeper at Outfall	1	EA	\$255.00	\$255
10	Unclassified Excavation	3,622	CY	\$40.00	\$144,893
11	Unclassified Excavation for Clay Liner	830	CY	\$40.00	\$33,215
12	Clay Liner	830	CY	\$40.00	\$33,215
13	Clay Bedding Dike	1	EA	\$615.00	\$615
14	42" RCP	31	LF	\$160.00	\$4,960
15	60" RCP	82	LF	\$250.00	\$20,500
16	42" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	\$5,200.00	\$5,200
17	60" RCP Apron Endwall with Grate and Cutoff Wall	2	EA	\$3,600.00	\$7,200
18	Outlet Control Structure (8-FT DIA)	1	EA	\$7,800.00	\$7,800
19	Rip Rap (1 Outfall and 1 Outlet)	49	SY	\$70.00	\$3,422
20	6-IN Salvaged Topsoil Placement 75%	1,476	SY	\$3.50	\$5,165
21	6-IN Hauled-In Topsoil Placement 25%	492	SY	\$6.80	\$3,345
22	Erosion Control Mat - Class 1, Urban Type B	1,968	SY	\$2.50	\$4,919
23	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	\$25.00	\$2,500
24	Native Plugs at Water's Edge (2 per lf around pond perimeter)	780	EA	\$12.00	\$9,360
25	Wet Edge Seed Mix (Elevation 653.75 to 655.75)	273	SY	\$3.00	\$818
26	Low Mow Seed Mix w/Natives (655.75 to Limits of Disturbance)	1,695	SY	\$2.05	\$3,475
27	Pavement Replacement	33	SY	\$70.00	\$2,350.00
28	Landscaping Trees/Bushes	1	LS	\$3,000.00	\$3,000.00
29	Native Vegetation Maintenance (3 Years)	0.06	AC	\$27,000.00	\$1,500.00

Subtotal Project Cost	\$320,200
Construction Contingency and Technical Services Allowance (35%)	\$112,100
Construction Cost	\$432,300
Property Acquisition	\$32,670
Wetland Delineation	\$0
Soil Borings	\$7,725
Total Project Cost	\$472,695

Portage Stormwater Management Plan
City of Portage, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
East Mullet St. Wet Detention Basin (see Figure 5.01-4)

Item No.	Description	Quantity	Units	Unit Price	Total
1	Mobilization (2.5% of Construction Cost)	1	LS	\$4,100	\$4,100
2	Construction Layout	1	LS	\$2,700.00	\$2,700
3	Dewatering	1	LS	\$3,200.00	\$3,200
4	Traffic Control	1	LS	\$4,000.00	\$4,000
5	Dust Control	1	EA	\$580.00	\$580
6	Stone Tracking Pad	1	EA	\$3,300.00	\$3,300
7	Silt Fence	300	LF	\$3.50	\$1,050
8	Inlet Protection	3	EA	\$210.00	\$630
9	Stone Weeper at Outfall	1	EA	\$255.00	\$255
10	Unclassified Excavation	1,047	CY	\$40.00	\$41,895
11	Unclassified Excavation for Clay Liner	450	CY	\$40.00	\$18,003
12	Clay Liner	450	CY	\$40.00	\$18,003
13	Clay Bedding Dike	1	EA	\$615.00	\$615
14	24" RCP	364	LF	\$92.00	\$33,488
15	24" RCP Apron Endwall with Grate and Cutoff Wall	3	EA	\$3,250.00	\$9,750
16	4-FT DIA Storm Sewer Manhole	1	EA	\$2,700.00	\$2,700
17	5-FT DIA Storm Sewer Manhole	1	EA	\$3,000.00	\$3,000
18	Outlet Control Structure (4-FT DIA)	1	EA	\$3,500.00	\$3,500
19	Rip Rap (1 Outfall and 1 Outlet)	49	SY	\$70.00	\$3,422
20	6-IN Salvaged Topsoil Placement 75%	302	SY	\$3.50	\$1,057
21	6-IN Hauled-In Topsoil Placement 25%	101	SY	\$6.80	\$684
22	Erosion Control Mat - Class 1, Urban Type B	403	SY	\$2.50	\$1,006
23	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	\$25.00	\$2,500
24	Native Plugs at Water's Edge (2 per lf around pond perimeter)	560	EA	\$12.00	\$6,720
25	Wet Edge Seed Mix (Elevation 653.75 to 655.75)	241	SY	\$3.00	\$723
26	Low Mow Seed Mix w/Natives (655.75 to Limits of Disturbance)	162	SY	\$2.05	\$331
27	Pavement Replacement	72	SY	\$70.00	\$5,050.00
28	Landscaping Trees/Bushes	1	LS	\$3,000.00	\$3,000.00
29	Native Vegetation Maintenance (3 Years)	0.05	AC	\$27,000.00	\$1,350.00

Subtotal Project Cost	\$176,600
Construction Contingency and Technical Services Allowance (35%)	\$61,800
Construction Cost	\$238,400
Property Acquisition	\$57,970
Wetland Delineation	\$0
Soil Borings	\$7,725
Total Project Cost	\$304,095

Portage Stormwater Management Plan
City of Portage, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
Portage Public Library Underground Detention Basin (see Figure 5.01-5)

<u>Item No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Units</u>	<u>Unit Price</u>	<u>Total</u>	<u>Total</u>
1	Mobilization (2.5% of Construction Cost)	1	LS	\$32,600	\$32,600	\$32,600
2	Construction Layout	1	LS	\$2,800.00	\$2,800.00	\$2,800
3	Traffic Control	1	LS	\$3,500.00	\$4,500.00	\$4,500
4	Dewatering	1	LS	\$7,000.00	\$6,400.00	\$6,400
5	Dust Control	1	EA	\$500.00	\$580.00	\$580
6	Stone Tracking Pad	1	EA	\$2,900.00	\$3,300.00	\$3,300
7	Inlet Protection	3	EA	\$185.00	\$210.00	\$630
8	Silt Fence	430	LF	\$3.00	\$3.50	\$1,505
9	Unclassified Excavation (Off-site Disposal)	11,922	CY	\$28.00	\$34.00	\$405,348
10	Unclassified Excavation (On-site Reuse)	654	CY	\$7.50	\$7.50	\$4,908
11	Units (7' 2" and 9' 0" Stormtrap Unit + Delivery + Joint Tape + Joint Wrap)	1	LS	\$523,040.00	\$523,040.00	\$523,040
12	Install Units	1	LS	\$50,000.00	\$50,000.00	\$50,000
13	Backfill (Around and To Top of Unit)	2,313	CY	\$35.00	\$35.00	\$80,955
14	Sub Grade	243	CY	\$35.00	\$35.00	\$8,505
15	Liner	1	LS	\$75,000.00	\$75,000.00	\$75,000
16	18" RCP	158	LF	\$89.00	\$78.00	\$12,324
17	30" RCP	76	LF	\$98.00	\$102.00	\$7,752
18	Outlet Control Structure (4-FT DIA)	1	LS	\$5,650.00	\$3,500.00	\$3,500
19	Diversion Structure (Install 2-FT Weir in Existing Manhole)	1	EA	\$2,000.00	\$2,000.00	\$2,000
20	Storm Sewer Manhole (6-FT DIA)	1	EA	\$2,900.00	\$3,500.00	\$3,500
21	Asphalt Removal	1,200	SY	\$3.00	\$7.00	\$8,400
22	Asphalt Replacement	269	TON	\$55.00	\$250.00	\$67,200
23	Base Course Replacement	1,200	TON	\$0.00	\$25.00	\$30,000
24	6-IN Salvaged Topsoil Placement 75%	200	SY	\$3.00	\$3.50	\$700
25	6-IN Hauled-In Topsoil Placement 25%	67	SY	\$6.00	\$6.80	\$453
26	Erosion Control Mat - Class I, Urban Type B	267	SY	\$2.25	\$1.40	\$373
27	Turf Seed Mix (Area not restored with pavement)	267	SY	\$1.50	\$1.75	\$467

Subtotal Project Cost	\$1,336,700
Construction Contingency and Technical Services Allowance (35%)	<u>\$467,800</u>
Construction Cost	\$1,804,500
Soil Borings	<u>\$7,800</u>
Total Project Cost	\$1,812,300

Portage Stormwater Management Plan
City of Portage, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL
CTH CX Wet Detention Basin (see Figure 5.01-6)

Item No.	Description	Quantity	Units	Unit Price	Total
1	Mobilization (2.5% of Construction Cost)	1	LS	\$10,900	\$10,900
2	Construction Layout	1	LS	\$3,000.00	\$3,000
3	Dewatering	1	LS	\$6,900.00	\$6,900
4	Traffic Control	1	LS	\$5,500.00	\$5,500
5	Dust Control	1	EA	\$580.00	\$580
6	Stone Tracking Pad	1	EA	\$3,300.00	\$3,300
7	Silt Fence	650	LF	\$3.50	\$2,275
8	Inlet Protection	2	EA	\$210.00	\$420
9	Stone Weeper at Outfall	1	EA	\$255.00	\$255
10	Unclassified Excavation	6,426	CY	\$30.00	\$192,780
11	Unclassified Excavation for Clay Liner	2,211	CY	\$30.00	\$66,333
12	Clay Liner	2,211	CY	\$32.00	\$70,756
13	Clay Bedding Dike	1	EA	\$615.00	\$615
14	12" RCP	52	LF	\$69.00	\$3,588
15	24" RCP	140	LF	\$92.00	\$12,880
16	12" RCP Apron Endwall with Grate and Cutoff Wall	2	EA	\$2,350.00	\$4,700
17	24" RCP Apron Endwall with Grate and Cutoff Wall	1	EA	\$3,250.00	\$3,250
18	4-FT DIA Storm Sewer Manhole	1	EA	\$2,700.00	\$2,700
19	6-FT DIA Storm Sewer Manhole	1	EA	\$3,500.00	\$3,500
20	Outlet Control Structure (4-FT DIA)	1	EA	\$3,500.00	\$3,500
21	Rip Rap (1 Outfall and 1 Outlet)	49	SY	\$70.00	\$3,422
22	6-IN Salvaged Topsoil Placement 75%	2,243	SY	\$3.50	\$7,852
23	6-IN Hauled-In Topsoil Placement 25%	748	SY	\$6.80	\$5,085
24	Erosion Control Mat - Class 1, Urban Type B	2,991	SY	\$2.50	\$7,478
25	Turf Reinforcement Mat System of Spillway (30 feet W x 30 feet L)	100	SY	\$25.00	\$2,500
26	Native Plugs at Water's Edge (2 per lf around pond perimeter)	1,260	EA	\$12.00	\$15,120
27	Wet Edge Seed Mix (Elevation 653.75 to 655.75)	581	SY	\$3.00	\$1,743
28	Low Mow Seed Mix w/Natives (655.75 to Limits of Disturbance)	2,410	SY	\$2.05	\$4,941
29	Pavement Removal	35	SY	\$70.00	\$2,450.00
30	Landscaping Trees/Bushes	1	LS	\$3,000.00	\$3,000.00
31	Native Vegetation Maintenance (3 Years)	0.12	AC	\$27,000.00	\$3,250.00

Subtotal Project Cost	\$454,600
Construction Contingency and Technical Services Allowance (35%)	\$159,100
Construction Cost	\$613,700
Wetland Delineation	\$0
Soil Borings	\$7,725
Total Project Cost	\$621,425

APPENDIX Q
APWA WI STORMWATER USER CHARGE SYSTEM INFORMATION



WI Stormwater User Charge System Information

Representative Wisconsin Communities

*Stormwater user charge information changes often!
Contact individual communities to confirm accuracy.*



03/04/21

	Name of Community or Stormwater District	Population (2013)	Created	ERU Size (sf)	Annual \$/ERU or 1 fam home	Credit Policy?		Web site addresses
						Y/ N	Max Amount	
1	Allouez (Village)	13,896	2004	3,333	\$ 90.00	N		www.villageofallouez.com
2	Altoona (City)	7,056	2007		\$ 36.00	Y	75%	www.ci.altoona.wi.us
3	Antigo (City)	8,004	2010	3,069	\$ 42.24	Y	50%	www.antigo-city.org
4	Appleton (City)	74,370	1995	2,368	\$ 175.00	Y	73%	www.appleton.org
5	Ashwaubenon (Village)	17,274	2012	3,316	\$ 50.00	Y	50%	www.Ashwaubenon.com
6	Baraboo (City)	12,100	2005	2,379	\$ 49.24	N		www.cityofbaraboo.com
7	Barron (City)	3,371	2006	10,850	\$ 24.00	Y	75%	www.barronwi.us
8	Bayside (Village)	4,418	2009	5,269	\$ 154.00	N		www.bayside-wi.gov
9	Beaver Dam (City)	16,345	2008	2,637	\$ 48.61	Y	33%	www.cityofbeaverdam.com
10	Belleville (Village)	2,426	2010	2,800	\$ 50.04	Y	50%	www.bellevillewi.org
11	Bellevue (Village)	14,570	2002	3,221	\$ 48.00	Y	100%	www.bellevue-wi.com
12	Beloit (City)	36,888	2006	3,347	\$ 42.00	Y	90%	www.beloitwi.gov
13	Brookfield (Town)	6,390	2003	3,681	\$ 81.60	Y	Undfnd	www.townofbrookfield.com
14	Brown Deer (Village)	12,102	2004	3,257	\$ 106.08	Y	Undfnd	www.browndeerwi.org
15	Butler (Village)	1,838	1999	3,032	\$ 66.00	Y	Undfnd	www.butlerwi.gov
16	Caledonia (Village)	24,737	2013	5,230	\$ 65.25	Y	50%	www.caledoniawi.com
17	Cambridge (Village)	1,498	2005	43,560	\$ 28.00	N		www.ci.cambridge.wi.us
18	Chetek (City)	2,210	2006	15,246	\$ 27.00	Y	75%	www.chetek.net
19	Chippewa Falls (City)	13,718	2005		\$ 36.00	Y	75%	www.ci.chippewa-falls.wi.us
20	Cudahy (City)	18,340	2001	2,700	\$ 94.00	Y	Undfnd	www.ci.cudahy.wi.us
21	De Forest (Village)	9,372	2005	2,900	\$ 60.00	N		www.vi.deforest.wi.us
22	De Pere (City)	24,893	2005	3,861	\$ 82.00	Y	60%	www.de-pere.org
23	Delafield (City)	7,159	2004	1,000	\$ 29.00	Y	Undfnd	www.cityofdelafield.com
24	Denmark (Village)	2,169	2006	3,500	\$ 48.00	N		www.denmark-wi.org
25	Durand (City)	1,878	2010	3,300	\$ 48.00	Y	20%	www.durand-wi.com
26	Eau Claire (City)	67,545	1996	3,000	\$ 86.00	Y	89%	www.ci.eau-claire.wi.us
27	Elm Grove (Village)	5,949	2004	6,235	\$ 122.80	N		www.elmgrovewi.org
28	Fitchburg (City) - Rural	4,000	2002	3,700	\$ 38.83	Y	50%	www.fitchburgwi.gov
29	Fitchburg (City) - Urban	25,260	2002	3,700	\$ 78.00	Y	50%	www.fitchburgwi.gov
30	Fort Atkinson (City)	12,482	2009	3,096	\$ 33.84	Y	50%	www.fortatkinsonwi.net
31	Fox Crossing (Village)	18,498	2009	4,177	\$ 105.00	Y	80%	www.town-menasha.com
32	Fox Point (Village)	6,698	2009	2,988	\$ 126.72	Y	60%	www.vil.fox-point.wi.us
33	Garner's Crk (watershed)	20,922	1998	3,523	\$ 118.00	Y	85%	www.garnerscreekutility.org
34	Glendale (City)	12,920	1996	3,200	\$ 54.00	Y	Undfnd	www.glendale-wi.org
35	Grand Chute (Town)	22,409	1997	3,283	\$ 99.84	Y	85%	www.grandchute.net
36	Grantsburg (Village)	1,317	2004		\$ 24.00	Y	75%	www.grantsburgwi.com
37	Green Bay (City)	105,207	2004	3,000	\$ 82.92	Y	67%	www.greenbaywi.gov
38	Greendale (Village)	14,340	2004	3,941	\$ 79.60	Y	50%	www.greendale.org
39	Greenfield (City)	37,159	2009	3,630	\$ 68.00	Y	66%	www.ci.greenfield.wi.us
40	Greenville (Town)	10,309	2004	4,510	\$ 70.00	Y	85%	www.townofgreenville.com
41	Hales Corners (Village)	7,757	2008	3,952	\$ 14.00	N		www.halescorners.org
42	Harrison (Town of)	5,800	1998		\$ 96.00			www.townofharrison.org
43	Hobart (Village of)	7,365	2007	4,000	\$ 72.00	Y	50%	www.hobart-wi.org
44	Holmen (Village of)	9,423	2007	3,550	\$ 49.00	Y	50%	www.holmenwi.com



WI Stormwater User Charge System Information

Representative Wisconsin Communities

Stormwater user charge information changes often!
Contact individual communities to confirm accuracy.



03/04/21

	Name of Community or Stormwater District	Population (2013)	Created	ERU Size (sf)	Annual \$/ERU or 1 fam home	Credit Policy?		Web site addresses
						Y/ N	Max Amount	
45	Howard (Village)	19,410	2004	3,301	\$ 61.92	Y	67%	www.villageofhoward.com
46	Hudson (City)	13,179	2012	2,890	\$ 30.00	Y	90%	www.ci.hudson.wi.us
47	Janesville (City)	64,000	2003	3,200	\$ 81.28	Y	85%	www.ci.janesville.wi.us
48	Jefferson (City)	7,984	2008	3,220	\$ 40.00	Y	100%	www.jeffersonwis.com
49	Kaukauna (City)	15,900	2009	2,944	\$ 72.00	Y	50%	www.cityofkaukauna.com
50	Kenosha (City)	99,889	2006	2,477	\$ 89.28	Y	44%	www.kenosha.org
51	Kimberly (Village)	6,739	2007	3,350	\$ 110.00	N		www.vokimberly.org
52	La Crosse (City)	51,522	2012	2,841	\$ 53.92	Y	80%	www.cityoflacrosse.org
53	Lake Delton (Village)	2,934	1993	1,685	\$ 18.00	Y	Undfnd	www.lakedelton.org
54	Lancaster (City)	3,809	2008	3,400	\$ 24.00	Y	50%	www.lancasterwisconsin.com
55	Lawrence (Town)	5,037	2010	1,000	\$ 11.00	Y	60%	www.townoflawrence.org
56	Ledgeview (Town)	6,555	2010	5,800	\$ 40.00	Y	50%	www.ledgeviewwisconsin.com
57	Lisbon (Town)	10,157	2006	6,642	\$ 48.00	Y	50%	www.townoflisbonwi.com
58	Little Chute (Village)	11,250	1995	2,762	\$ 99.00	N		www.littlechutewi.org
59	Madison (City)	252,557	2001	Lot Area	\$ 93.01	Y	Undfnd	www.cityofmadison.com
60	Marinette (City)	10,930	2010	3,105	\$ 49.00	N		www.marinette.wi.us
61	McFarland (Village)	8,108	2007	3,456	\$ 84.72	Y	60%	www.mcfarland.wi.us
62	Menasha (City)	18,498	2008	2,980	\$ 99.00	Y	Undfnd	www.cityofmenasha-wi.gov
63	Menomonie (City of)	16,156	2008	3,000	\$ 36.00	Y	20%	www.menomonie-wi.gov
64	Middleton (City of)	19,660	2014	2,106	\$ 45.00	Y	60%	https://www.cityofmiddleton.us/
65	Milton (City of)	5,564	2009	4,081	\$ 62.88	Y	50%	http://www.ci.milton.wi.us
66	Milwaukee (City)	599,164	2006	1,610	\$ 67.76	Y	60%	http://city.milwaukee.gov/mpw
67	Monona (City)	7,745	2004	NA *	\$ 60.00	Y	35%	www.monona.wi.us
68	Monroe (City)	10,832	2007	2,728	\$ 60.00	Y	50%	www.cityofmonroe.org
69	Mount Pleasant (Village)	26,224	2007	3,000	\$ 55.00	N		www.mtpleasantwi.gov
70	Mukwonago (30 cust's)		2006	3,000	\$ 10.31	N		www.villageofmukwonago.com
71	N Fond du Lac (Village)	5,034	2007	3,232	\$ 56.00	Y	70%	www.nfdl.org
72	Neenah (City)	25,501	2003	3,138	\$ 84.00	Y	68%	www.ci.neenah.wi.us
73	Neenah (Town)	3,237	2008	4,040	\$ 85.00	Y	80%	www.townofneenah.com
74	New Berlin (City)	39,834	2001	4,000	\$ 60.00	Y	Undfnd	www.newberlin.org
75	New Glarus (Village)	2,160	2009	3,000	\$ 58.20	Y	100%	www.newglarusvillage.com
76	New Richmond (City)	8,610	2005	13,000	\$ 35.28	Y	75%	www.ci.new-richmond.wi.us
77	Oak Creek (City)	35,008	2003	3,300	\$ 29.00	Y	Undfnd	www.oakcreekwi.org
78	Onalaska (City)	18,312	2010	3,888	\$ 59.63	Y	50%	www.cityofonalaska.com
79	Onalaska (Town)	5,882	2005	3,709	\$ 24.00	Y	Undfnd	www.co.la-crosse.wi.us/townofon
80	Oshkosh (City)	66,778	2003	2,817	\$ 148.88	Y	75%	www.ci.oshkosh.wi.us
81	Palmyra (Village)	1,783	2000	3,387	\$ 117.24	Y	50%	www.villageofpalmyra.com
82	Pewaukee (City)	13,827	2010	5,339	\$ 120.00	Y	40%	www.cityofpewaukee.us
83	Pleasant Prairie (Village)	20,173	2006	TR-55 M	\$ 36.00	Y	30%	www.pleasantprairieonline.com
84	Plymouth (City)	8,419	2019	3,850	\$ 30.00	Y	30%	www.plymouthgov.com
85	Poynette (Village)	2,513	2006	3,550	\$ 60.00	Y	50%	www.poynette-wi.gov
86	Prairie du Sac (Village)	4,188	2002	43,560	(1)	N		www.prairiedusac.net
87	Racine (City)	78,199	2004	2,844	\$ 102.26	Y	45%	www.cityofracine.org
88	Raymond (Town)	3,909	2008	7,000	\$ 25.00	Y	50%	www.raymondtownof.com



WI Stormwater User Charge System Information

Representative Wisconsin Communities

Stormwater user charge information changes often!

Contact individual communities to confirm accuracy.



03/04/21

	Name of Community or Stormwater District	Population (2013)	Created	ERU Size (sf)	Annual \$/ERU or 1 fam home	Credit Policy?		Web site addresses
						Y/ N	Max Amount	
89	Reedsburg (City of)	9,532	2009	3,024	\$ 46.80	Y	50%	www.reedsburgwi.gov
90	Rhineland (City)	7,557	2013	3,305	\$ 39.00	Y	100%	http://rhinelandercityhall.org
91	Rice Lake (City)	8,339	2010	3,701	\$ 57.72	N		www.ci.rice-lake.wi.us
92	River Falls (City)	15,209	1998	NA *	\$ 37.68	Y	100%	www.rfcity.org
93	Rochester (Village)	3,693	2011	4,500	\$ 63.20	Y	50%	www.rochsterwi.us.index.asp
94	Salem (Town)	12,056	2008	6,352	\$ 60.00	Y	50%	www.townofsalem.net
95	Scott (Town)	3,545	2010	4,250	\$ 45.00	Y	50%	
96	Shorewood Hills (Village)	1,799	2007	2,941	\$ 110.00	Y	Undfnd	www.shorewood-hills.org
97	Silver Lake (Village)	2,420	2008	3,870	\$ 94.00	N		www.villageofsilverlakewi.com
98	Slinger (Village)	5,141	2007	4,300	\$ 47.70	Y	50%	www.slinger-wi-usa.org
99	South Milwaukee (City)	21,239	2007	2,964	\$ 72.00	Y	50%	http://smwi.org
100	St. Francis (Village)	9,546	2001	2,500	\$ 48.00	Y	Undfnd	www.ci.stfrancis.wi.gov
101	Stevens Point (City)	26,670	2013	3,364	\$ 59.08	Y	60%	http://stevenspoint.com
102	Stoughton (City)	12,945	2012	3,105	\$ 51.55	Y	50%	www.ci.stoughton.wi.us
103	Suamico (Village)	12,588	2008	5,137	\$ 25.00	N		http://suamico.org/
104	Sun Prairie (City)	30,871	2003	3,468	\$ 90.00	Y	65%	www.cityofsunprairie.com
105	Superior (City)	26,869	2004	2,933	\$ 70.80	Y	85%	www.ci.superior.wi.us
106	Sussex (Village)	10,695	2006	3,897	\$ 60.00	Y	49%	www.village.sussex.wi.us
107	Two Rivers (City)	11,261	2014	3,015	\$ 69.00	Y	60%	www.two-rivers.org
108	Union Grove (Village)	4,884	2010	4,000	\$ 87.32	Y	50%	www.uniongrove.net
109	Vernon (Town)	7,502	2007	6,904	\$ 13.00	Y	50%	www.townofvernon.org
110	Verona (City)	11,775	2011	2,842	\$ 53.06	Y	58%	www.ci.verona.wi.us
111	Washburn (City)	2,098	2005	Lot Area	\$ 63.00	Y	75%	www.cityofwashburn.org
112	Watertown (City)	23,929	2005	2,900	\$ 81.24	Y	60%	www.cityofwatertown.org
113	Waupun (City)	11,330	2005	3,408	\$ 84.00	Y	75%	www.cityofwaupun.org
114	Wauwatosa (City)	47,134	2000	2,174	\$ 78.60	Y	54%	www.wauwatosa.net
115	West Allis (City)	60,697	1997	1,827	\$ 77.16	Y	50%	www.ci.west-allis.wi.us
116	West Milwaukee (Village)	4,215	1998	1,956	\$ 36.00	Y	50%	www.westmilwaukee.org
117	West Salem (Village)	4,980	2007	2,400	\$ 18.00	Y	Undfnd	www.westsalemwi.com
118	Weston (Village)	14,934	2004	3,338	\$ 50.00	Y	68%	www.westonwi.gov
119	Whitefish Bay (Village)	14,125	2013	3,045	\$ 100.00	Y	100%	www.wfbvillage.org
120	Whitewater (City)	14,732	2007	3,875	\$ 74.04	Y	50%	www.whitewater-wi.gov
121	Wind Point (Village)	1,717	2008	3,857	\$ 35.20	N		http://windpointwi.us
122	Wisconsin Rapids (City)	18,039	2009	2,620	\$ 35.04	Y	50%	www.wirapids.org

Information presented here is dependent on your input. Please send updates to jmmazanec@gmail.com.

Reverse numbers indicate entries updated or confirmed since March 4, 2020.

City of Portage, Wisconsin
Drainage Evaluation Form
(Applicable to City-Owned Property and ROW Only)

Part A—General (To be completed by resident)

Today's Date:

Location of Drainage Problem (include building name, parking lot number or feature name):

Building Manager / Contact Name:

Phone Number: _____ (Office)

_____ (Mobile/Pager)

Part B—Description of Problem (To be completed by resident)

Provide detailed description or sketch or photo of the problem in the space below:

How frequently or under what conditions does this problem occur (heavy rain, prolonged wet weather, frozen ground, etc.)?

Provide approximate dates of occurrence:

Describe damages incurred on your property. Note exterior versus interior damage:

Have you attempted to correct this problem? If so, what measures were taken?

City of Portage, Wisconsin
Drainage Evaluation Form
(Applicable to City-Owned Property and ROW Only)

Part E–Evaluation/Responsibility (To be completed by City Engineer)

Recommended Action:

Comments:

ROUTING: (PLACE CHECK MARK BY APPLICABLE REVIEWERS)

City Engineer
City Building Inspector

(All Submittals)
(Where Applicable)

REVIEWED BY:

City Engineer

Date

City Building Inspector

Date