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Stormwater Quality Management Plan Update

Report

Marathon County, WI

April 2023

STRAND ASSOCIATES®

Report for

Marathon County, Wisconsin

Stormwater Quality Management Plan Update

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April 2023

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TABLE OF CONTENTS

Page No.
or Following

SECTION 1–INTRODUCTION

1.01 Background 1-1
1.02 Plan Objectives and Criteria 1-2
1.03 Scope of Study 1-5
1.04 Definitions 1-7
1.05 Abbreviations 1-10

SECTION 2–CONTRIBUTING WATERSHED CHARACTERISTICS

2.01 Watershed Description 2-1
2.02 Local Source Areas and Outfalls 2-6
2.03 Topography, Soils, and Precipitation 2-7

SECTION 3–EVALUATION OF CURRENT CITY PRACTICES

3.01 Current Stormwater Policies and Practices 3-1
3.02 Recommended Stormwater Management Report 3-13

SECTION 4–STORMWATER QUALITY MODELING

4.01 Introduction 4-1
4.02 WDNR WinSLAMM Guidance 4-5
4.03 Swale Modeling and Double-Ring Infiltrometer Testing 4-6
4.04 Baseline Conditions Analysis 4-6
4.05 Existing Conditions Analysis 4-6
4.06 Water Quality Modeling Conclusions 4-15

SECTION 5–ALTERNATIVES ANALYSIS

5.01 Introduction 5-1
5.02 Alternatives Considered 5-2
5.03 Alternative Components 5-3
5.04 Evaluation of Alternatives 5-15
5.05 Evaluation of Water Quality Trading (WQT) and Watershed Adaptive Management (WAM) 5-17
5.06 Identification of Potential WQT Partners 5-21
5.07 Rib Mountain Metropolitan Sewerage District WWTP and City of Wausau WWTP WQT Potential 5-21
5.08 Agricultural Lands WQT Potential 5-22
5.09 WAM Potential 5-22
5.10 Recommendations 5-23

SECTION 6–CONCLUSIONS AND RECOMMENDATIONS

6.01 General 6-1

TABLE OF CONTENTS Continued

Page No.
or Following

6.02 Recommendations for Achieving Stormwater Management Goals 6-1
6.03 Implementation Plan..... 6-2
6.04 Program Funding Options 6-5
6.05 Policies and Practices 6-6
6.06 Conclusion 6-7

TABLES

2.01-1 WinSLAMM Land Use by Subbasin (Acres) to County MS4 Boundary (Including Exempt Areas) 2-3
2.01-2 Wisconsin River Basin TMDL Wasteload Allocations per Reach 2-4
2.01-3 Impaired Waters..... 2-5
2.03-1 Soil Types 2-9
2.03-2 Expected Rainfall Depths from NOAA Atlas 14 2-10

3.01-1 Illicit Discharge Ordinance Status of Participating Municipalities 3-4
3.01-2 Erosion Control and Stormwater Management Ordinance Status of Participating Municipalities 3-6
3.01-3 Public Works Department Inspection and Maintenance Activities..... 3-7
3.01-4 Street Sweeping Quantity Summary..... 3-7
3.01-5 Catch Basin Cleaning Quantity Summary..... 3-8
3.01-6 Winter Roadway Maintenance Details..... 3-9
3.01-7 Deicer Usage by County per Winter Season 3-10
3.01-8 Rainfall and Snowfall at Wausau Automated Surface Observation System (inches)..... 3-10
3.01-9 Amount of Fertilizer Used in County's Stormwater-Permitted Area..... 3-12
3.02-1 Public Information and Education Plan and Measurable Goals..... 3-14
3.02-2 Public Involvement and Participation Plan and Measurable Goals 3-15
3.02-3 Typical Land Uses and Activities that Produce Illicit Discharges (Excerpt)* 3-18
3.02-4 MS4 Permit and WDNR Guidance Document Screening Frequencies 3-19
3.02-5 Illicit Discharge Detection and Elimination Expected Ranges 3-21
3.02-6 County Outfalls..... 3-23
3.02-7 County Outfall Screening Schedule..... 3-27
3.02-8 IDDE Plan and Measurable Goals..... 3-30
3.02-9 Construction Site Pollution Control Plan and Measurable Goals..... 3-31
3.02-10 Postconstruction Stormwater Management Plan and Measurable Goals.. 3-31
3.02-11 Pollution Prevention for Municipal Operations Plan and Measurable Goals 3-32
3.02-12 SQMP and Measurable Goal..... 3-33
3.02-13 Storm Sewer System Map Plan and Measurable Goal 3-33
3.02-14 Annual Report and Permit Fee Plan and Measurable Goals..... 3-34

4.01-1 Source Area by Land Use 4-3
4.01-2 Distribution of Impervious Source Areas by Land Use Class 4-3
4.01-3 Distribution of Pervious Source Areas by Land Use Class..... 4-4
4.02-1 WinSLAMM Parameter Files 4-6
4.05-1 Street Sweeping Parameters..... 4-7
4.05-2 Catch Basin Cleaning Parameters..... 4-7
4.05-3 County Detention Basin Properties..... 4-8
4.05-4 TSS and TP Equivalency Factors at Stormwater BMPs..... 4-12
4.05-5 Swale and Undeveloped Roadside Modeling Parameters 4-13

TABLE OF CONTENTS Continued

		Page No. or Following
4.06-1	Baseline Conditions Modeling Results Summary Per Reach	4-15
4.06-2	TSS Loading Calculation Results Baseline and Existing Controls Conditions	4-16
4.06-3	Phosphorus Loading Results Baseline and Existing Controls Conditions	4-18
4.06-4	Existing Conditions Modeling Results Summary Per Reach	4-20
4.06-5	MS4 Permit and Wisconsin River TMDL Average Annual Percent Pollutant Reductions and Pollutant Reduction Gap Per Reach	4-21
5.01-1	Required and Existing Conditions Pollutant Reductions According to Wisconsin River TMDL Reach	5-1
5.02-1	Alternatives Analysis Summary of Components	5-2
5.03-1	Camp Phillips Road Wet Pond Contributing Areas Proration	5-5
5.03-2	Marathon County Park Wet Pond Contributing Areas Proration	5-6
5.03-3	Additional TP Reductions from HDS	5-9
5.03-4	CTH R HDS Contributing Areas Proration	5-10
5.04-1	Summary of Alternatives	5-16
5.06-1	Potential Trading Partners	5-21
6.03-1	Stormwater Program Budget	6-3
6.03-2	TMDL Implementation Plan (lb TP)	6-4

FIGURES

1.01-1	Location Map	1-1
2.01-1	Watershed Map	2-1
2.01-2	Land Use Map	2-1
2.01-3	General Land Use Classification	2-2
2.02-1	Drainage Type	2-6
2.03-1	Soils Map	2-8
3.01-1	Snow Disposal Location	3-8
3.01-2	Marathon County Highway Department and the Wausau and Marathon County Parks, Recreation, and Forestry Department	3-11
4.05-1	TSS and TP Equivalency Factor Analysis	4-11
4.06-1	Baseline Conditions Total Suspended Solids	4-19
4.06-2	Baseline Conditions Total Phosphorus	4-19
4.06-3	Existing Conditions Total Suspended Solids	4-19
4.06-4	Existing Conditions Total Phosphorus	4-19
5.03-1	Proposed BMPs Map	5-3
5.03-2	Marathon County Park–Master Plan	5-7
5.03-3	Enhanced Bioretention Basins in Cleveland, Ohio Serving 19-Acre and 59-Acre Drainage Areas, Respectively	5-8
5.03-4	Underground Detention Options	5-8
5.03-5	HDS Options	5-10
5.03-6	Permeable Pavement Options	5-11
5.03-7	Traffic-Calming Bioretention Basin Bumpout System Design Rendering	5-12
5.03-8	Traffic-Calming Bioretention Basin Bumpout System	5-13
5.03-9	Example of Iron-Enhanced Sand Filter at Pond's Edge	5-14

TABLE OF CONTENTS Continued

		Page No. or Following
5.05-1	Timeline and Process to Begin Using WQT to Demonstrate Compliances with WQBELs	5-20
5.06-1	Upstream Watersheds for Water Quality Trading	5-21
5.06-2	Water Quality Trading Opportunities (TMDL Reaches)	5-21
5.06-3	TMDL Reaches	5-21
5.08-1	Fenwood Creek Pilot Project Area	5-22
5.08-2	Mill Creek Watershed	5-22

APPENDICES

APPENDIX A–WPDES PERMIT
APPENDIX B–WISCONSIN ADMINISTRATIVE CODE NR 151
APPENDIX C–SWPPP
APPENDIX D–POSTCONSTRUCTION STORMWATER MANAGEMENT FACILITIES: LONG-TERM MAINTENANCE, INSPECTION, AND ENFORCEMENT PROCEDURES
APPENDIX E–MAINTENANCE AND INSPECTION OF STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES
APPENDIX F–IDDE DOCUMENTS FORMS
APPENDIX G–DOUBLE-RING INFILTROMETER TESTING
APPENDIX H–DETENTION BASIN SHEETS
APPENDIX I–SIGNED MOA–WAUSAU AREA MS4S
APPENDIX J–2021 NCWSC ANNUAL REPORT–PUBLIC EDUCATION AND OUTREACH
APPENDIX K–BASELINE AND EXISTING CONDITIONS WATER QUALITY RESULTS (PROVIDED ON FLASH DRIVE)
APPENDIX L–WDNR MODELING APPROVAL
APPENDIX M–ALTERNATIVE ANALYSIS FIGURES
APPENDIX N–ALTERNATIVE ANALYSIS OPCC
APPENDIX O–DRAINAGE EVALUATION FORM

SECTION 1
INTRODUCTION

1.01 BACKGROUND

This project has been prompted by the need for Marathon County, Wisconsin (County) to update previous stormwater planning efforts (MS4 Stormwater Pollution Analysis most recently submitted to Wisconsin Department of Natural Resource [WDNR] in 2011) for purposes of the Wisconsin River Basin Total Maximum Daily Load (TMDL) compliance. In addition, the County is a United States Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES)/Wisconsin Pollutant Discharge Elimination System (WPDES) permitted area. The County is considered a significant contributor under Wisconsin Administrative Code (WAC) 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 (NPS) stormwater runoff. The effective date of the current permit is May 1, 2019, and it is subject to renewal on 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 NPS stormwater runoff discharging to the Wisconsin River as well as the Eau Claire River, Cedar Creek, Bull Junior Creek, Lake Wausau, and other County natural resources while being consistent with the requirements of the permit. An overview of current stormwater management infrastructure, policies, and programs in the County is included within this report, as well as a plan for future improvements. Figure 1.01-1 shows the County boundary, County 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 County, 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 County and summarizes the pollutant reductions each condition achieves in their Wisconsin River Basin TMDL reaches.

5. Section 5 discusses stormwater management alternatives investigated and the potential for water quality trading (WQT).

6. Section 6 provides a possible funding and implementation plan.

This project is funded by a Wisconsin Department of Natural Resources Urban Nonpoint Source and Stormwater (WDNR UNPS&SW) Grant (No. USP-37000-Y20) and the County.

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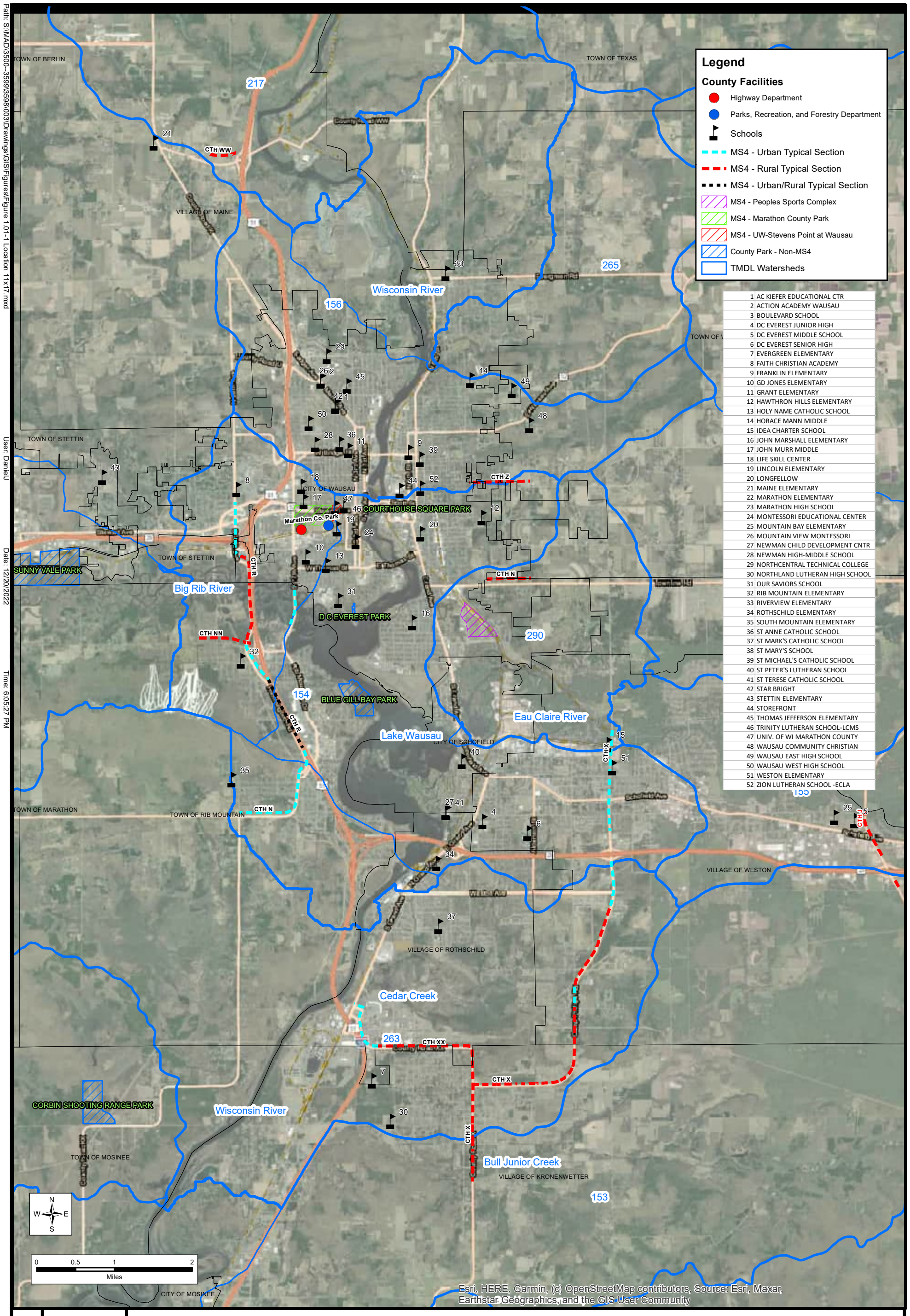

LOCATION MAP

STORMWATER QUALITY MANAGEMENT PLAN
MARATHON COUNTY, WISCONSIN

FIGURE 1.01-1
3598.003

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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 our streams, lakes, ponds, and other water resources. While not common within the County MS4 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), the 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 (US) 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 County is considered a Phase 2 municipality.

The County'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 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 1 acre. This includes requesting authority to regulate erosion control at public buildings from the Wisconsin Department of Commerce pursuant to s. 101.1205(4), Wisconsin Statutes It should be noted that the County is required to administer a program as restrictive as the requirements in WDNR's NR 151 (see Appendix B). The County administers these requirements via a Memorandum of Agreement with Wausau-area MS4 communities.

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 1 acre. It should be noted that the County is required to administer a program as restrictive as the requirements in WDNR's NR 151 (see Appendix B). The County administers these requirements via a Memorandum of Agreement with Wausau-area MS4 communities.

6. Pollution Prevention: Development and implementation of an operation and maintenance (O&M) 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 County 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 TMDL.

8. Storm Sewer System Map: Development of a storm sewer system map of the MS4.

9. Annual Report: Submittal of an annual report to the WDNR documenting permit-related activities.

10. Cooperation: By written agreement, implement the County's permit with another municipality or contract with another entity to perform one or more of the conditions of the permit.

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

As part of the permit, the County must also comply with Impaired Waterbodies and TMDL Requirements. The Impaired Waterbody requirements require the County to include a written section in the stormwater management program that describes the control measures and practices that will be implemented to collectively eliminate the pollutant of concern from discharging into the impaired waterbody. The County is within the Wisconsin River Basin TMDL, which was approved in April 2019.

To comply with the TMDL requirements, the County must adhere to the compliance schedule in the following.

Submitted with the annual report due on March 31, 2021, 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 exclusions.

Included with the annual report due March 31, 2022, the County 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 County'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 any stormwater control measures.

3. The modeled MS4 annual average pollutant load with existing stormwater control measures.

4. The percent reduction in pollutant load achieved calculated from the no-controls condition and the existing controls condition.

5. The existing stormwater 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.

If the County 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 the WDNR that describes how the County will make progress toward achieving compliance and must include the following by March 31, 2022:

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 the USEPA and the WDNR in addressing NPS runoff sources. These objectives include the following:

1. Improve the quality of water in receiving waterways, which include the Big Rib River, Eau Claire River, Cedar Creek, Bull Junior Creek, Lake Wausau, and the Wisconsin 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

The 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 report will discuss or recommend a series of County-wide and basin-specific BMPs to reduce NPS runoff to the Big Rib River, Eau Claire River, Cedar Creek, Bull Junior Creek, Lake Wausau, the Wisconsin 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 Stormwater Quality Management Plan (SQMP) for the County, which are summarized as follows.

A. Administration and Meetings

1. Assist in submittal of up to two grant 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 to the County Highway Department and County Conservation, Planning, and Zoning Department

B. Double Ring Infiltrometer Testing

1. Provide field infiltration testing on existing grass swales at 12 locations throughout County limits and communicate final results to WDNR.

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

1. Provide an updated stormwater system map for the County consistent with the proposed WPDES Permit No. WI-S050075-3 based on information provided by the County.

2. Provide a tabular summary for County consistent with the proposed WPDES Permit No. WI-S050075-3.

3. Provide updated County-wide stormwater quality modeling to be consistent with the WDNR's MS4-TMDL guidance. Modeling will be performed in WinSLAMM for TSS and TP.

4. Identify and analyze up to three alternatives for TMDL compliance within the County's stormwater-permitted area consisting of a combination of the various implementation methods being considered listed below. Provide a figure, analysis, and opinion of probable construction cost (OPCC) for each alternative.

   a. Structural management practices
   b. Operational management practices.
   c. Streambank stabilization.

5. Provide a written section in the plan discussing the mechanism for achieving TMDL compliance through water quality trading. A concept level cost to achieve TMDL compliance through pollutant trading will be developed for comparison with TMDL compliance within the County's stormwater-permitted area.

6. Develop a stormwater quality implementation plan considering amount of benefit, available funding, land availability, and related issues for the County. The implementation plan will include prioritization of improvements, potential schedule of improvements, and a budgeting plan including identification of potential funding sources. This plan will consist of a table within the SQMP Update for the County.

D. Stormwater Program Updates

1. Review and discuss revisions to the County's Public Education and Outreach and Public Involvement and Participation programs that are complementary to the North Central Wisconsin Stormwater Coalition efforts.

2. Provide narrative on the current status of construction site pollutant control and postconstruction stormwater management programs based on information provided by Wausau-area MS4 communities. Provide a standard form for inspection of County BMPs.

3. Review and discuss revisions to the County's Illicit Discharge Detection and Elimination (IDDE) programs including standard IDDE inspection form to be consistent with the WDNR's March 2012 guidance document.

4. Review and discuss revisions to the existing County's Stormwater Pollution Prevention programs. Prepare a Stormwater Pollution Prevention Plan at two County facilities.

5. Provide information on the County's deicing activities based on information provided by the County.

E. Field Survey/Inventory of Stormwater BMPs and Conveyance Features

Provide field survey/inventory of County's existing BMPs within the County's stormwater-permitted area. Provide global positioning system and structure poling field survey/inventory of County storm sewer structures, outfalls, and culvert ends. Prepare a geographic information system (GIS) shapefile of surveyed storm sewer structures, storm sewer, and culverts populated with data collected in survey.

F. Stormwater Plan Update

Prepare a TMDL Stormwater Plan and submit to the County in draft and final formats. Submit one copy of the draft and final plan to the County in a hard-copy format. Provide a portable document format file copy of the draft and final plan to the County.

1.04 DEFINITIONS

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.

- BMP–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 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 land forms 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.

1.05 ABBREVIATIONS

AMSL	above mean sea level
APWA	American Public Works Association
BB	Bioretention Basin
BMP	Best Management Practice
cfs	cubic feet per second
cfu	colony forming units
CMP	corrugated metal pipe
County	Marathon County
CPZ	Conservation, Planning and Zoning
CTH	County Highway
CWA	Clean Water Act
CWF	Clean Water Fund
CWFP	Clean Water Fund Program
CWP	Center for Watershed Protection
CY	cubic yard
DAF	daily average flow
EIF	Environment Improvement Fund
ERU	Equivalent Runoff Units
ERW	Exceptional Resource Water
ES	enforcement standard
FAA	Federal Aviation Administration
FAL	Fish and Aquatic Life
FEMA	Federal Emergency Management Agency
Ft	foot, feet
GIS	Geographic Information System
GPS	global positioning system
HD	Hydrodynamic Device
HDPE	high density polyethylene
HDRNA	high density residential without alley
HDRWA	high density residential with alley
HDS	hydrodynamic separator
HSG	Hydrologic Soils Groups

HUC	Hydrologic Unit Code
Hwy	highway
IB	Infiltration Basin
ID	Internally Drained
IDDE	Illicit Discharge Detection and Elimination
in/hr	inches per hour
ITA	Intent to Apply
lb	pounds
lb/acre	pounds per acre
lb/year	pounds per year
LF	linear feet
MDR	medium density residential
MDV	multidischarger variance
MEP	maximum extent practicable
mg/l	milligrams per liter
MGD	million gallons per day
ml	milliliter
MOA	Memorandum of Agreement
MS4	Municipal Separate Storm Sewer System
NA	not applicable
NCWSC	Northcentral Wisconsin Stormwater Coalition
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	Nonpoint source
NPW	net present worth
NRCS	National Resource Conservation Service
O&M	operation and maintenance
OD	Other Control Device
OPCC	opinion of probable construction costs
ORW	Outstanding Resource Water
PA	Planning Analyst
PAH	polynuclear aromatic hydrocarbons
PCB	polychlorinated biphenyls
PERF	Priority Evaluation Review Form
RCN	runoff curve number
ROW	right-of-way
RR	Remediation and Redevelopment
SAFER	South Area Fire & Emergency Response
SF	square feet
SLAMM	Source Loading and Management Modeling
SMP	stormwater management practices
SOC	Standards Oversight Committee
SS	Street Sweeping
SSC	Site Specific Criteria
Strand	Strand Associates, Inc.®

SW	Swale
SWPPP	Stormwater Pollution Prevention Plan
SWU	stormwater utility
Tc	time of concentration
TMDL	total maximum daily load
TP	total phosphorus
TSS	total suspended solids
UA	urbanized areas
UNPS	Urban Nonpoint Source
UR	Undeveloped Roadside
US	United States
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USH	United States Highway
UWSP	University of Wisconsin–Stevens Point
WAC	Wisconsin Administrative Code
WAM	watershed adaptive management
WDNR UNPS&SW	WDNR Urban Nonpoint Source and Stormwater Construction Grant
WDNR	Wisconsin Department of Natural Resources
WDOA	Wisconsin Department of Administration
WisDOT	Wisconsin Department of Transportation
WPDES	Wisconsin Pollutant Discharge Elimination System
WQBEL	water quality-based effluent limitations
WQT	water quality trading
WWSF	Warm Water Sport Fishery
WWTF	wastewater treatment facility
WWTP	wastewater treatment plant

SECTION 2
CONTRIBUTING WATERSHED CHARACTERISTICS

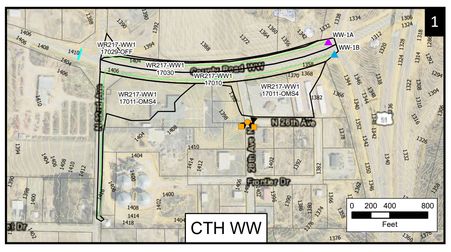
2.01 WATERSHED DESCRIPTION

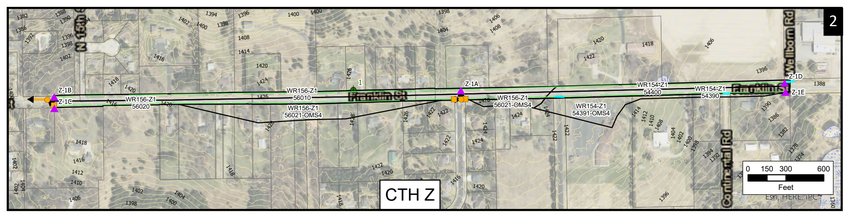
This section describes land characteristics in the County that impact stormwater runoff. Stormwater runoff and nonpoint pollutant loading from a watershed depend on physical characteristics such as watershed size and topography, land use, soil types, degree of saturation, and type of drainage system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

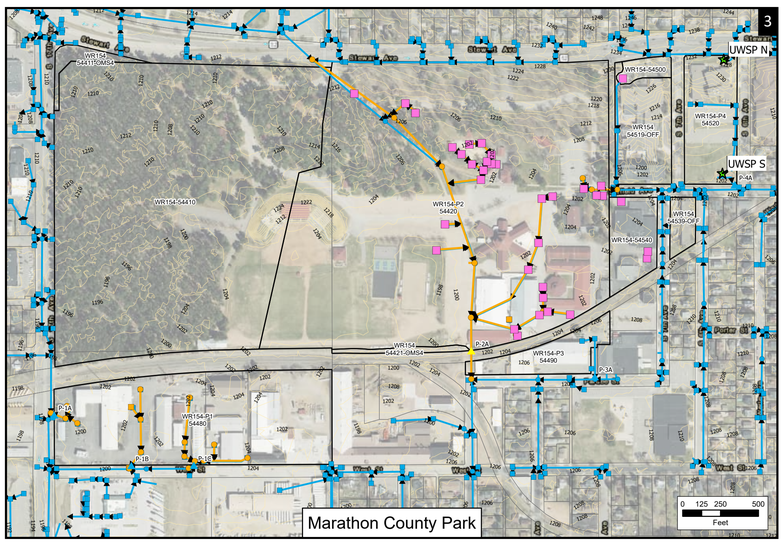
A. Population and Land Use

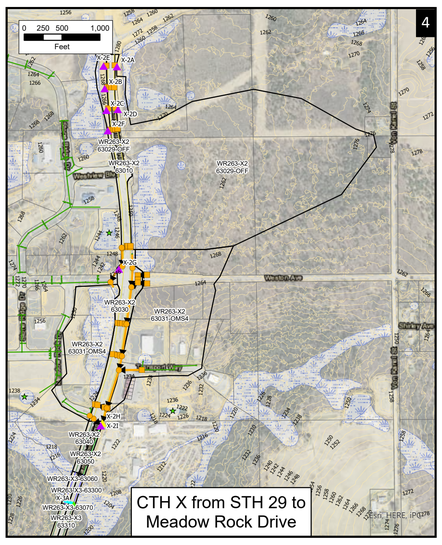
According to the Year 2020 Census, the population of the County is 138,013. The total area of the County is approximately 1,576 square miles and the UA within the County is approximately 50.2 square miles.

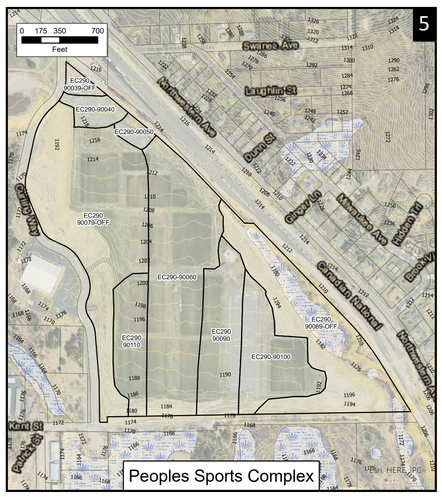
Existing land use in the County is shown in Figure 2.01-2 and graphically summarized in Figure 2.01-3. It should be noted this figure is not a zoning map; rather is identifies WinSLAMM land use designations. Detailed land use for each watershed is included in Table 2.01-1.











Legend

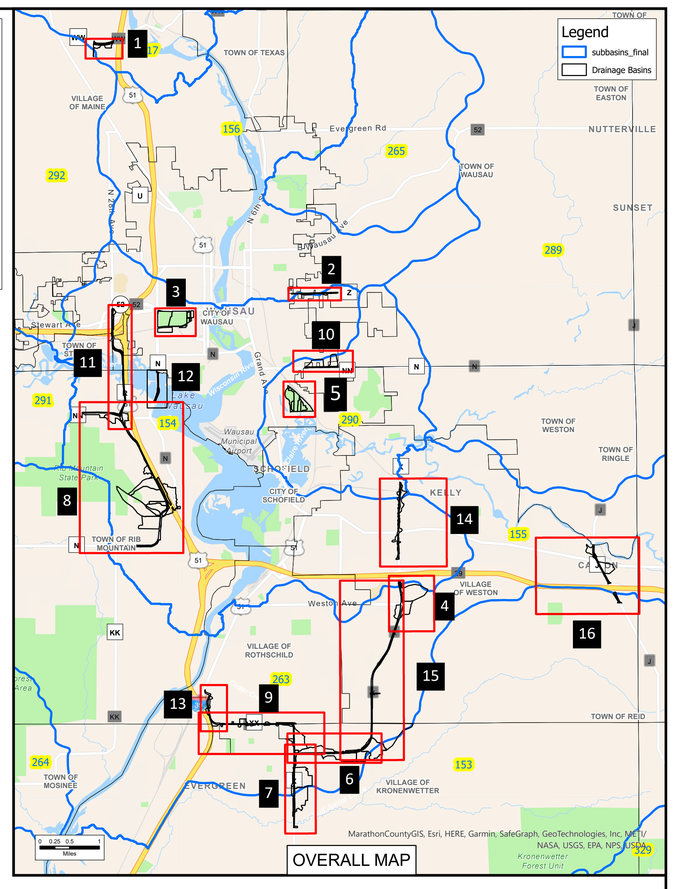
- Weston BMP Locations
- Weston Discharge Point
- Weston Inlet
- Weston Storm Manhole
- Weston Storm Main
- Catchbasins Modeled in WinSLAMM
- BMPs
- Catch Basin
- Inlet
- Junction Chamber
- Manhole
- Storm Sewer
- Culvert
- SAI Drainage Basins
- Wetlands

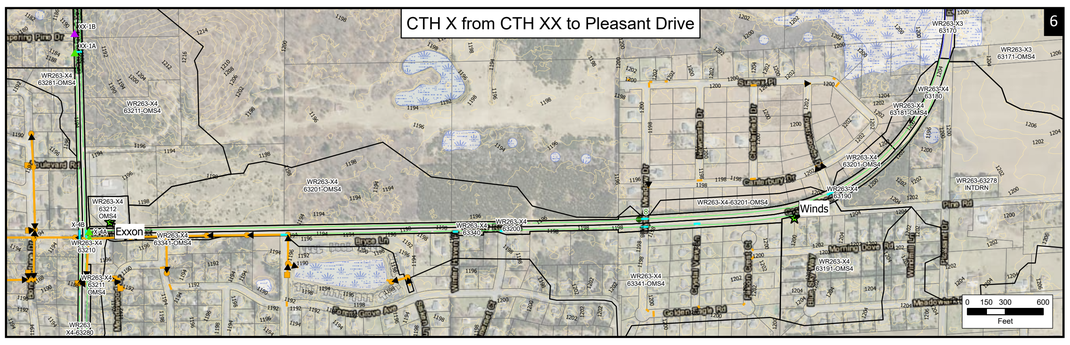
Category, Priority

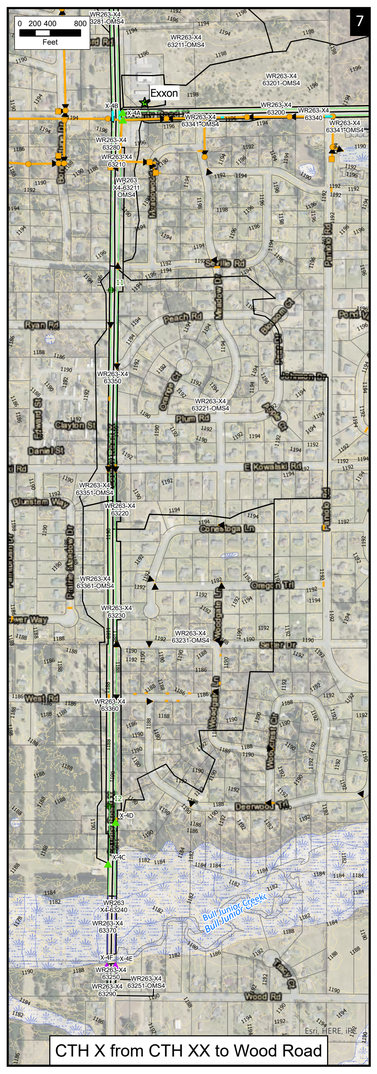
- Major, Non-Priority (12)
- Major, Priority (6)
- Minor, Non-Priority (73)
- Minor, Priority (13)

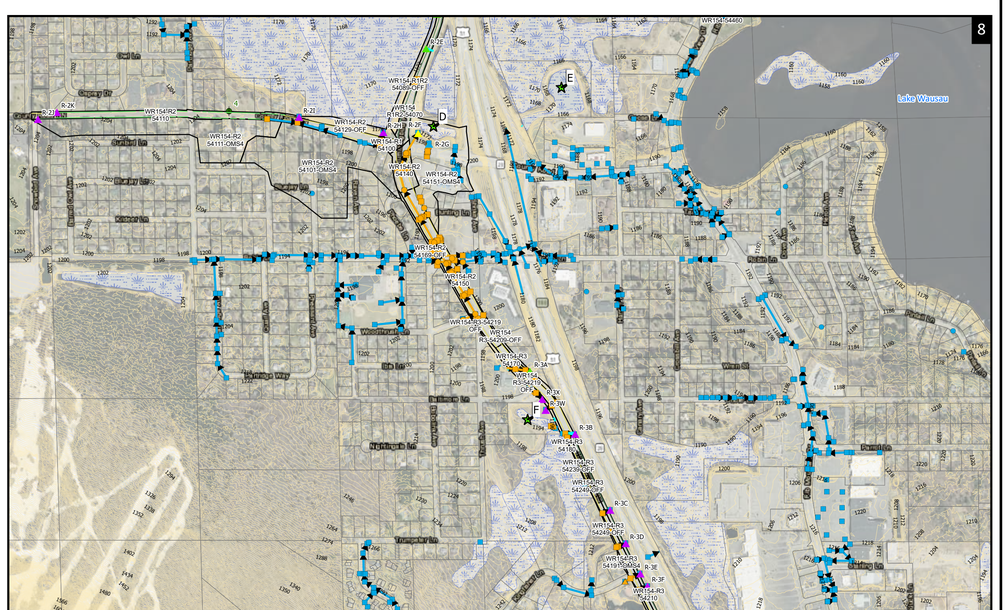
Drainage Type

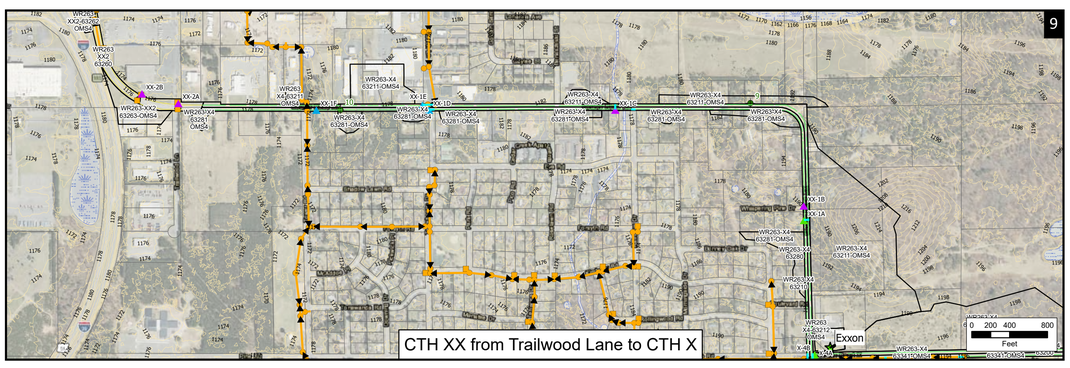
- Curb and Gutter
- Grass Swale
- Undeveloped
- Wet Swale
- Modeled BMPs

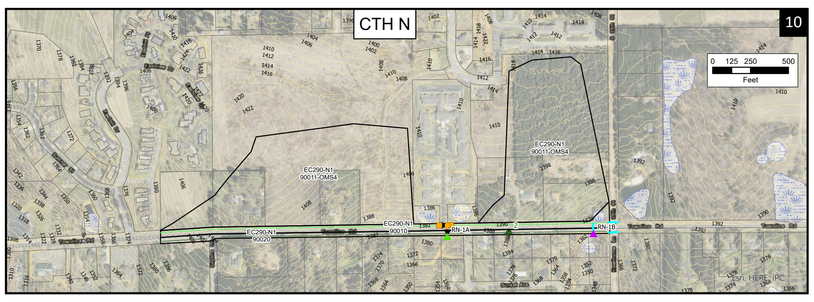


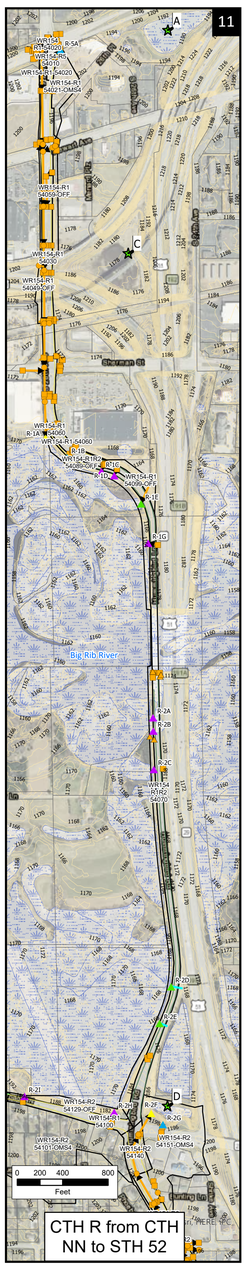


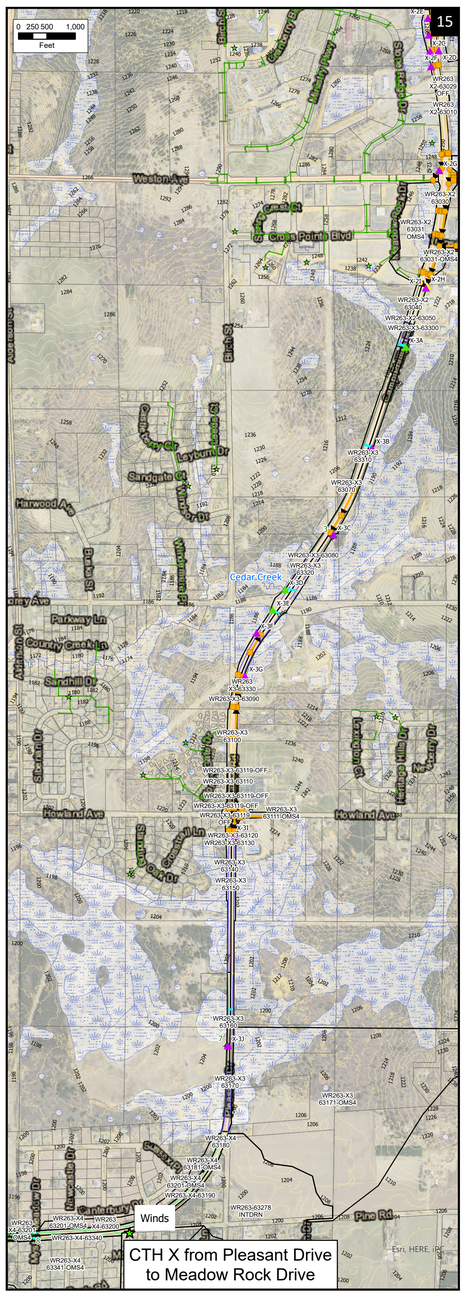


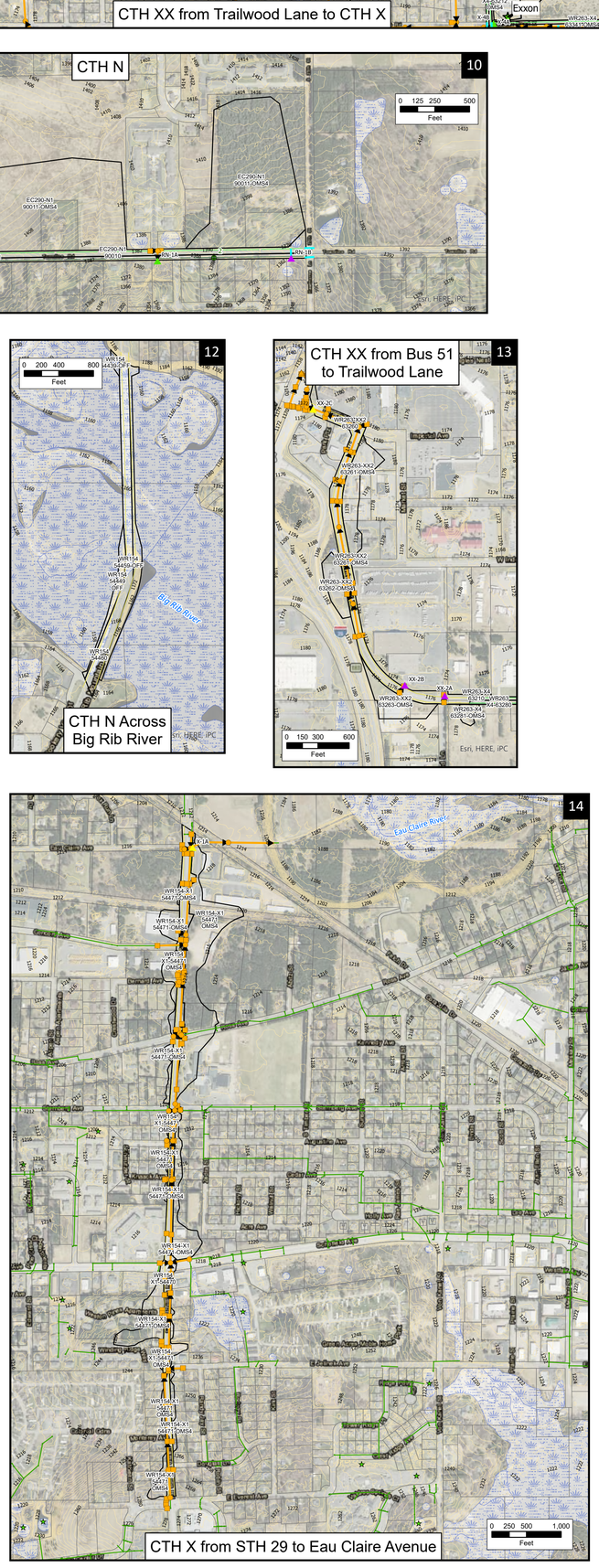












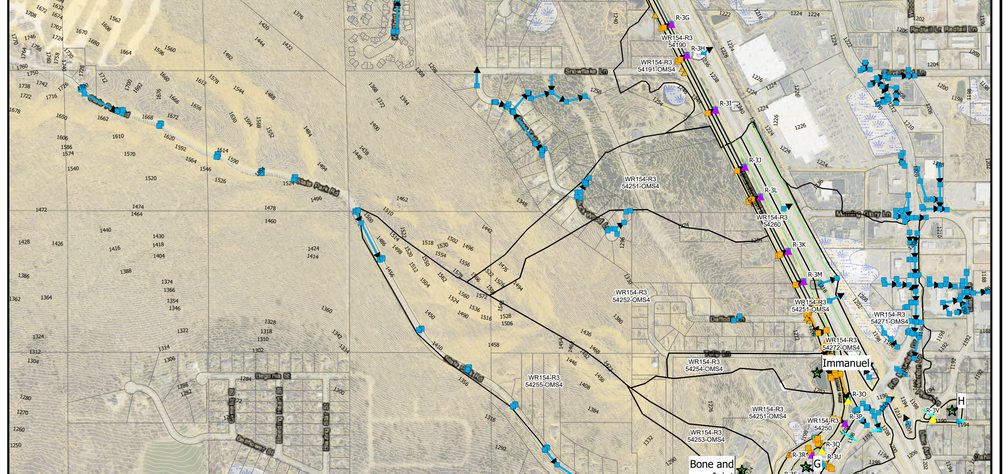


FIGURE 2.01-1
WATERSHED MAP
STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

STRAND ASSOCIATES®

3598.003

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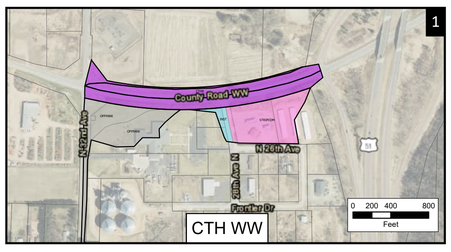

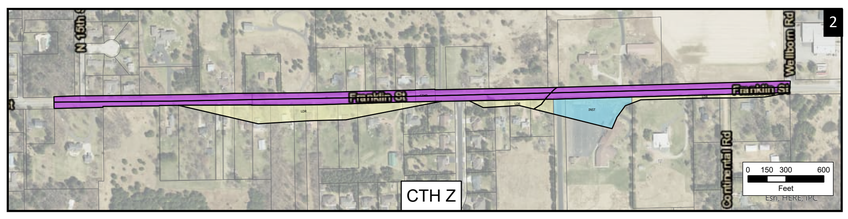

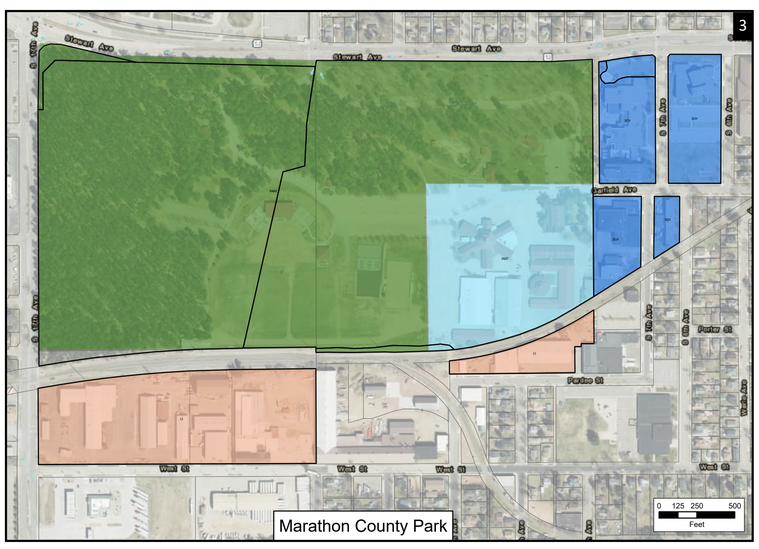

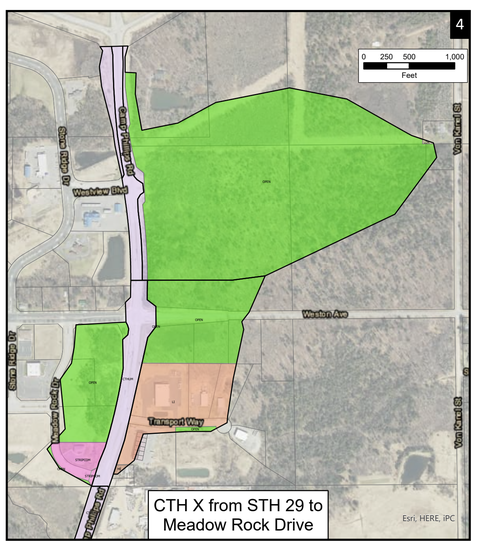

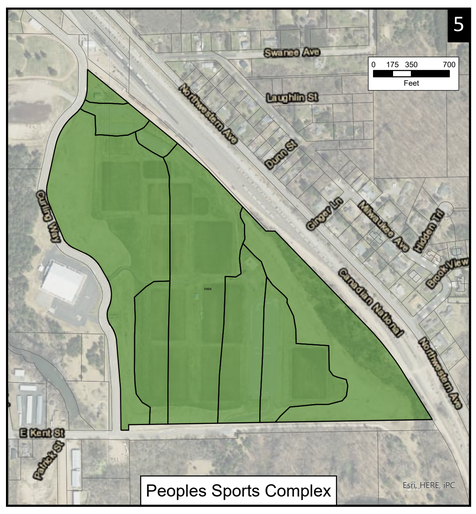

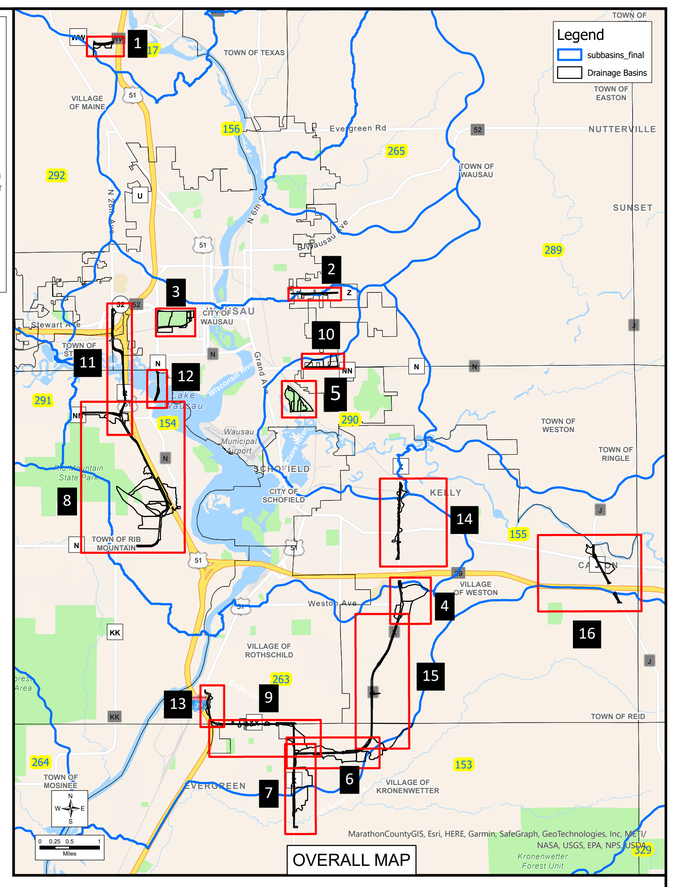

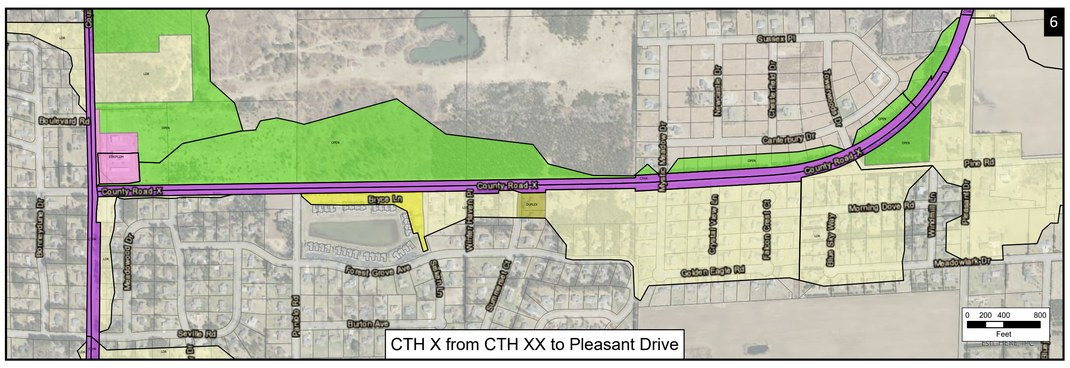

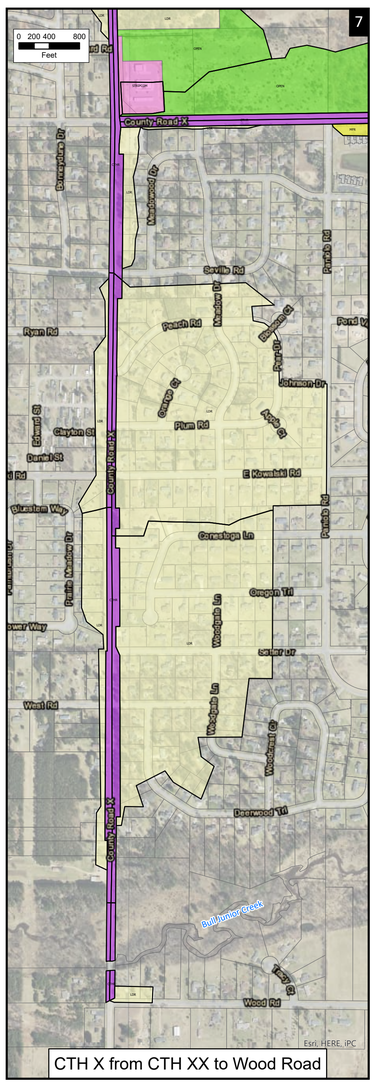

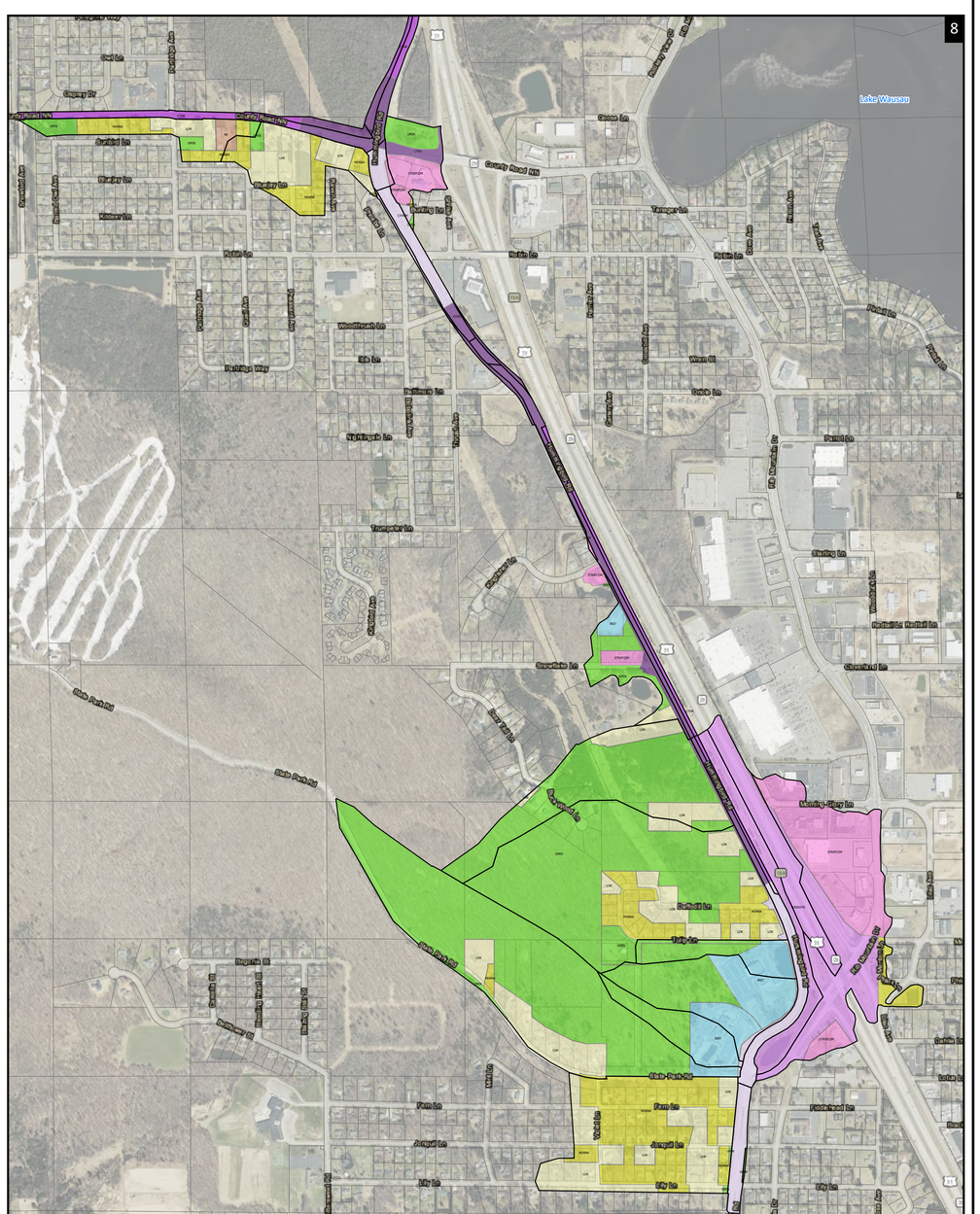

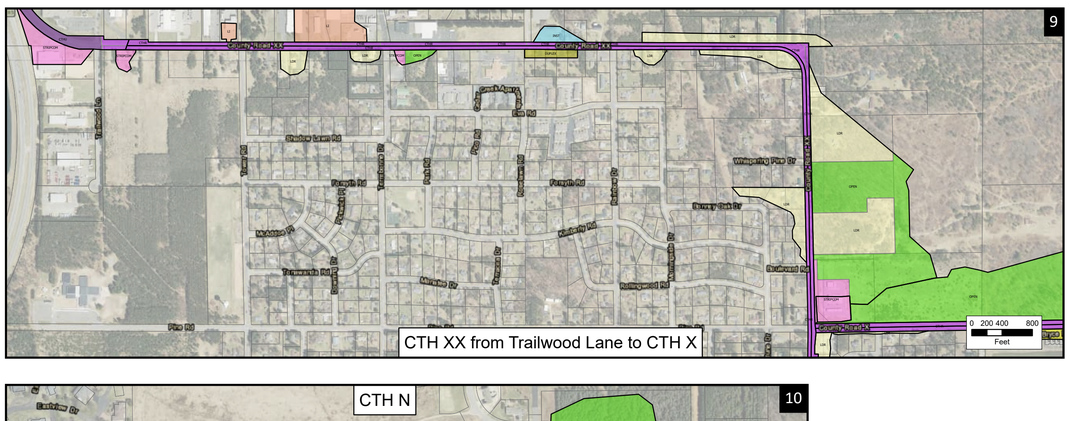

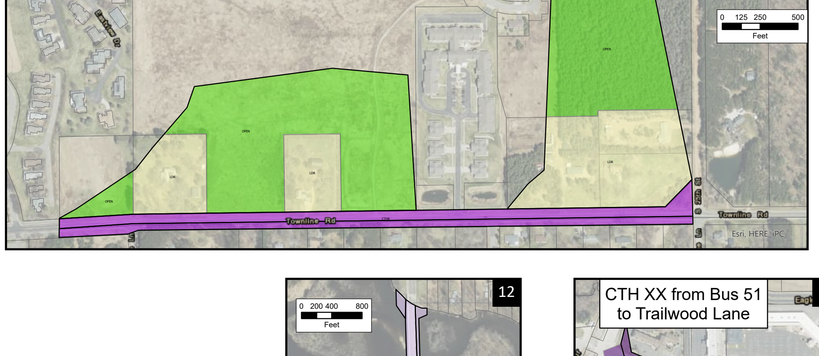

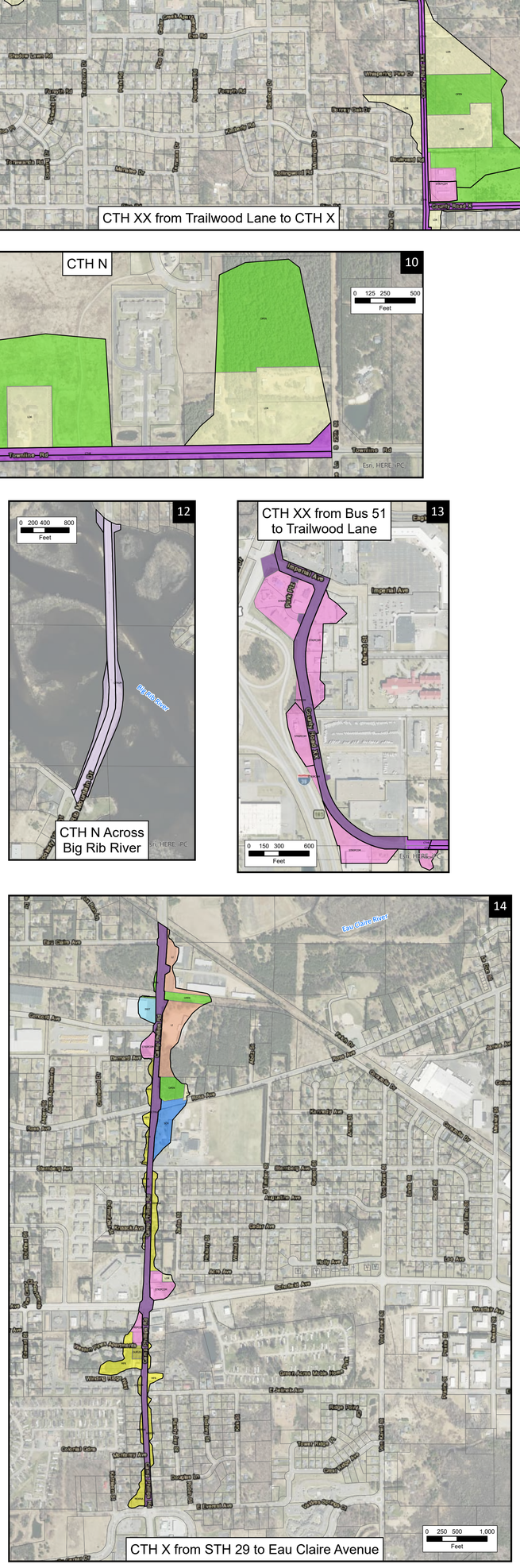

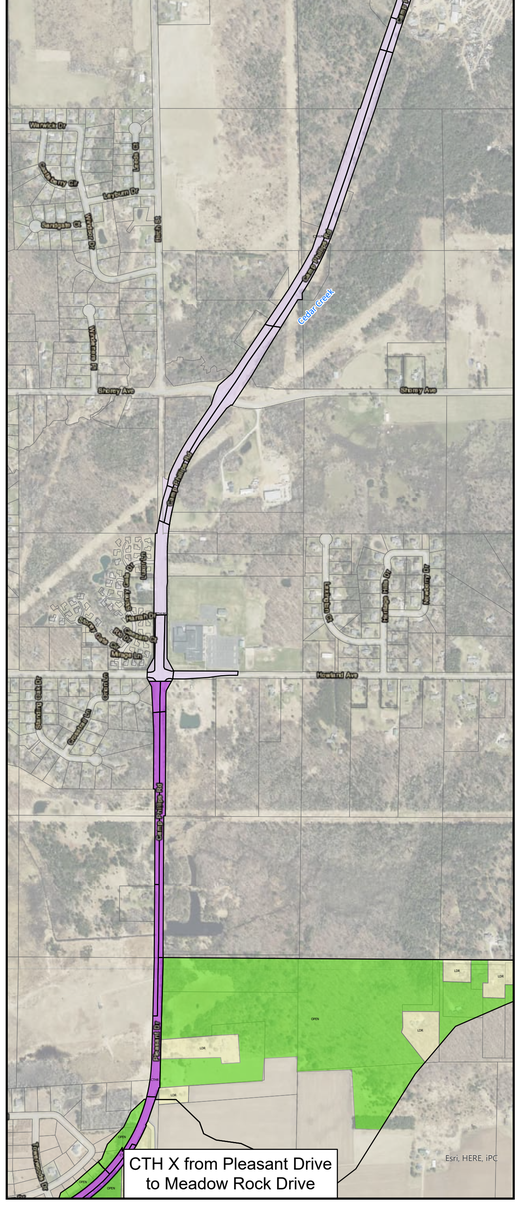

FIGURE 2.01-2
LAND USE MAP
STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

STRAND ASSOCIATES®

3598.003

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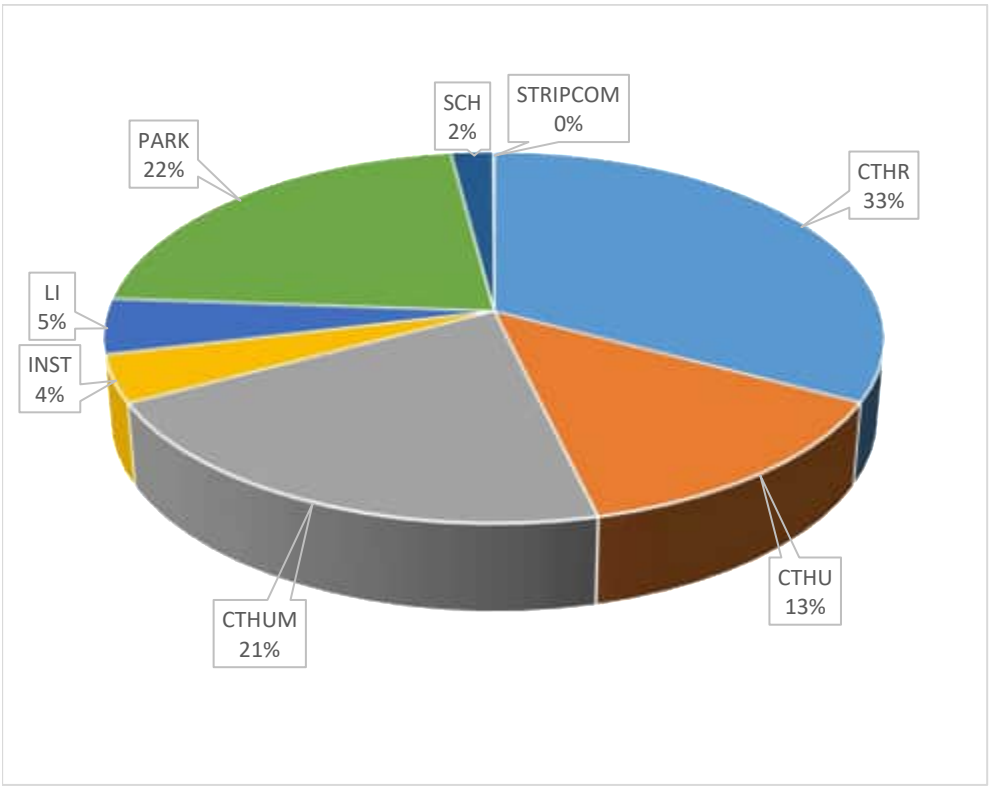

Note:

CTHR: County Highway Rural Cross Section
CTHU: County Highway Urban Cross Section
CTHUM: County Highway Urban Cross Section with Median
INST: Miscellaneous Institutional
LI: Light Industrial
PARK: Park
SCH: School
STRIPCOM: Strip Commercial

Figure 2.01-3 General Land Use Classification

Table 2.01-1 SLAMM Land Use by Subbasin (Acres) to County MS4 Boundary (Including Exempt Areas)

	CTHR	CTHU	CTHUM	INST	LI	PARK	SCH	STRIPCOM	Grand Total
WR153-J3-53010	2.0								2.0
WR153-J3-53020	2.3								2.3
WR154-R5-54010			0.6						0.6
WR154-R1-54020			0.7						0.7
WR154-R1-54030			6.9						6.9
WR154-R1-54060			1.4						1.4
WR154-R1R2-54070	7.1	1.4	0.6						9.1
WR154-R1-54100	0.5	1.6							2.2
WR154-R2-54110	3.7								3.7
WR154-R2-54140		0.1	1.5					0.2	1.8
WR154-R2-54150		0.9	3.4						4.3
WR154-R3-54170		0.6							0.6
WR154-R3-54180		1.8							1.8
WR154-R3-54190		2.9							2.9
WR154-R3-54220	2.3								2.3
WR154-R3-54250		1.6	5.0						6.6
WR154-R3-54260	1.0		0.1						1.1
WR154-N1-54280			3.7						3.7
WR154-N1-54290			3.0						3.0
WR154-N1-54300		1.3	0.7						2.0
WR154-N1-54320		2.2							2.2
WR154-N1-54340		2.4							2.4
WR154-N1-54370		2.6							2.6
WR154-Z1-54390	1.0								1.0
WR154-Z1-54400	1.0								1.0
WR154-P2-54420				12.4		31.1			43.5
WR154-54460			4.9						4.9
WR154-X1-54470		12.5							12.5
WR154-P1-54480					12.5				12.5
WR154-P3-54490					2.0				2.0
WR154-54500							0.5		0.5
WR154-P4-54520							3.4		3.4
WR154-54540							2.0		2.0
EC155-J2-55010	3.0								3.0
EC155-J1-55020	1.9								1.9
EC155-J1-55030	1.8								1.8
EC155-J2-55040	2.9								2.9
WR156-Z1-56010	2.2								2.2
WR156-Z1-56020	2.0								2.0
WR217-WW1-17010	3.4								3.4
WR217-WW1-17030	2.8								2.8
WR263-X2-63010			3.5						3.5
WR263-X2-63030			5.6						5.6
WR263-X2-63040			0.7						0.7
WR263-X2-63050			0.7						0.7
WR263-X3-63060			0.5						0.5
WR263-X3-63070			4.7						4.7
WR263-X3-63080			3.0						3.0
WR263-X3-63090			0.4						0.4
WR263-X3-63100			2.4						2.4
WR263-X3-63110			1.5						1.5
WR263-X3-63120	0.4								0.4
WR263-X3-63130	0.5								0.5
WR263-X3-63140	1.8								1.8
WR263-X3-63150	2.5								2.5
WR263-X3-63160	1.1								1.1
WR263-X3-63170	2.0								2.0
WR263-X4-63180	1.3								1.3
WR263-X4-63190	1.3								1.3
WR263-X4-63200	7.3								7.3
WR263-X4-63210	9.0								9.0
WR263-X4-63220	1.5								1.5
WR263-X4-63230	3.1								3.1
WR263-X4-63240	0.4								0.4
WR263-X4-63250	0.2								0.2
WR263-XX2-63260	0.5	8.7							9.3
WR263-X4-63280	8.0								8.0
WR263-X4-63290	0.1								0.1
WR263-X3-63300			0.4						0.4
WR263-X3-63310			3.9						3.9
WR263-X3-63320			2.8						2.8
WR263-X3-63330			0.4						0.4
WR263-X4-63340	6.1								6.1
WR263-X4-63350	1.4								1.4
WR263-X4-63360	2.9								2.9
WR263-X4-63370	0.3								0.3
EC290-N1-90010	3.3								3.3
EC290-N1-90020	2.3								2.3
EC290-90040						1.5			1.5
EC290-90050						0.8			0.8
EC290-90060						15.2			15.2
EC290-90090						6.4			6.4
EC290-90100						6.4			6.4
EC290-90110						4.3			4.3
Grand Total	98.6	40.7	62.9	12.4	14.5	65.8	6.0	0.2	301.1

B. Watershed Description

The County is located within the Wisconsin River Watershed. The drainage systems for the County drain to the Big Rib River, Eau Claire River, Cedar Creek, Bull Junior Creek, Lake Wausau, and the Wisconsin River. The Wisconsin River Watershed includes a 9,156-square-mile area that drains ALL or portions of Adams, Clark, Columbia, Dane, Forest, Jackson, Juneau, Langlade, Lincoln, Marathon, Monroe, Oneida, Portage, Price, Richland, Sauk, Shawano, Taylor, Vernon, Vilas, Waushara, and Wood Counties.

The Wisconsin River is 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. The 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 WDNR has released a draft Wisconsin River TMDL that is available on the WDNR Web site. TMDL basins are broken up into separate reachsheds that are delineated based from the stream segment, lake, or reservoir the area drains to. The County MS4 area is located in seven reachsheds: Reaches 153, 154, 155, 156, 217, 263, and 290. These reaches represent the Wisconsin River. Within the County's MS4 limits, the drainage basins drain the Eau Claire River, Cedar Creek, Bull Junior Creek, Lake Wausau, and the Wisconsin River, or another MS4. Basin designations define where the basin drains with the following nomenclature Receiving Waterbody-xx (e.g. WR-01). The Wisconsin River Basin TMDL wasteload allocations for each reach in the form of a percent reduction are included in Table 2.01-3.

Reach	Wisconsin River TMDL TSS	Wisconsin River TMDL TP (%)
(153) Wisconsin River	NA	68.6
(154) Wisconsin River	NA	68.6
(155) Wisconsin River	NA	68.6
(156) Wisconsin River	NA	68.6
(217) Wisconsin River	NA	68.6
(263) Wisconsin River	NA	68.6
(290) Wisconsin River	NA	68.6

Table 2.01-2 Wisconsin River Basin TMDL Wasteload Allocations per Reach

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, the WDNR identifies how it will implement the TMDL. Wasteload allocations will be implemented through the WPDES permit program. Load allocations will be implemented through Wisconsin's NPS program. The USEPA provides final approval of all TMDLs.

Table 2.01-3 Impaired Waters

Water Body	Major Watershed	Attainable Use	Supporting Attainable Use	NPS Rank	303d Listed/Category/Impairment/ Pollutant/Sources	Priority Watershed	TMDL Priority	ORW/ ERW
Wisconsin River	Wisconsin River	WWSF	Fully Supporting	Not Ranked	▪ Yes ▪ Contaminated Sediment ▪ Contaminated Fish Tissue ▪ PCBs, Mercury ▪ Atmospheric Deposition–Toxics	No	Low	No

ERW Exceptional Resource Water
WWSF Warm Water Sport Fishery
ORW Outstanding Resource Water
PCBs 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: (1) total impervious area, or (2) 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 County consist of a storm sewer system and grass-lined ditch system that discharge to Big Rib River, Bull Junior Creek, Cedar Creek, the Eau Claire River, the Wisconsin River. Figure 2.02-1 shows the locations of the existing curb and gutter and grass-lined ditch system.

Historically, stormwater management in the County 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 County's participation in the Memorandum of Agreement has required construction of stormwater BMPs as required by local municipal ordinance if applicable to a development. Stormwater BMPs in the County are thus a mix of privately-maintained BMPs, publicly-owned by municipalities in the County, and County-owned BMPs. Stormwater

Path: S:\MAD\3500-3599\3598\003\Drawings\GIS\Figures\Figure 2.02-1 Drainage Type 11x17.mxd

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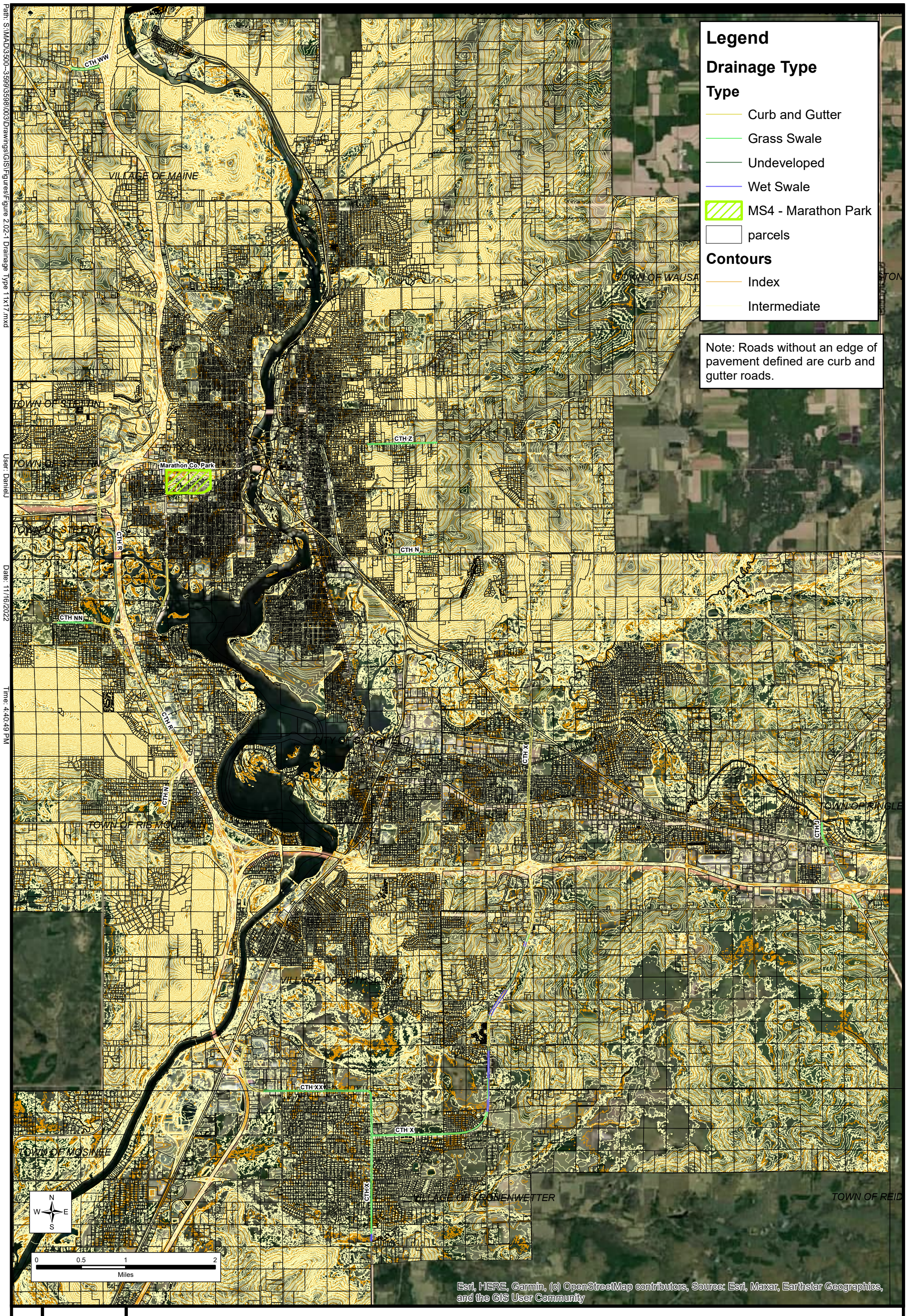

DRAINAGE TYPE

STORMWATER QUALITY MANAGEMENT PLAN
MARATHON COUNTY, WISCONSIN

FIGURE 2.02-1
3598.003

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maintenance agreements with owners of the privately maintained BMPs are required through local municipal codes.

2. Outfall Locations

According to the County's GIS data, it was determined there are 107 storm sewer outfalls (ditches, storm sewers, or culverts) in the County's MS4 area which are listed in Table 3.02-4. Outfalls are defined as ditches or culverts that discharge either to a water of the state or to an adjacent MS4. Outfalls will be characterized as major or minor as part of the stormwater plan project. Major outfalls are defined as outfalls that are 36-inch-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.

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

3. Existing Stormwater Management Issues

a. Stormwater Quantity Issues

(1) There are no known areas of significant flooding concerns in the County MS4 area.

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 County 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 County's MS4 area are Bull Junior Creek, Cedar Creek, Big Rib River, the Eau Claire River, and the Wisconsin River. For the most part, land within the MS4 area drains toward these waterways. Elevations in the urbanized area in the Wisconsin River TMDL range from 1,114 feet above mean sea level (AMSL) along the banks of the Wisconsin River in the City of Mosinee to 1,488 AMSL north of County Highway (CTH) R in the City of Wausau. The existence of internally drained areas within the County MS4 area is examined in Section 4.

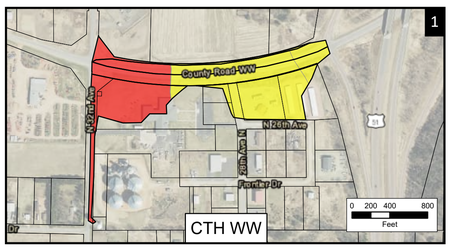
B. Soils

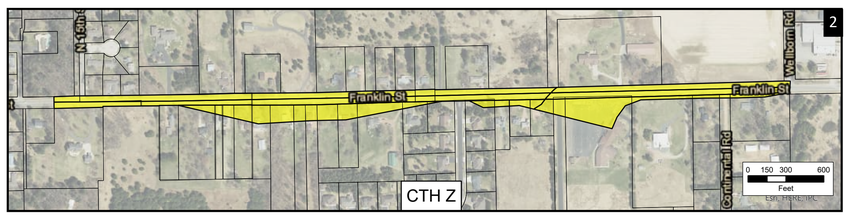
The amount of stormwater runoff produced by a storm event is impacted by the types of soil infiltrate a higher percentage of stormwater runoff than will soils having high clay content. This means that sandy soil generally produces less runoff than clayey soil.

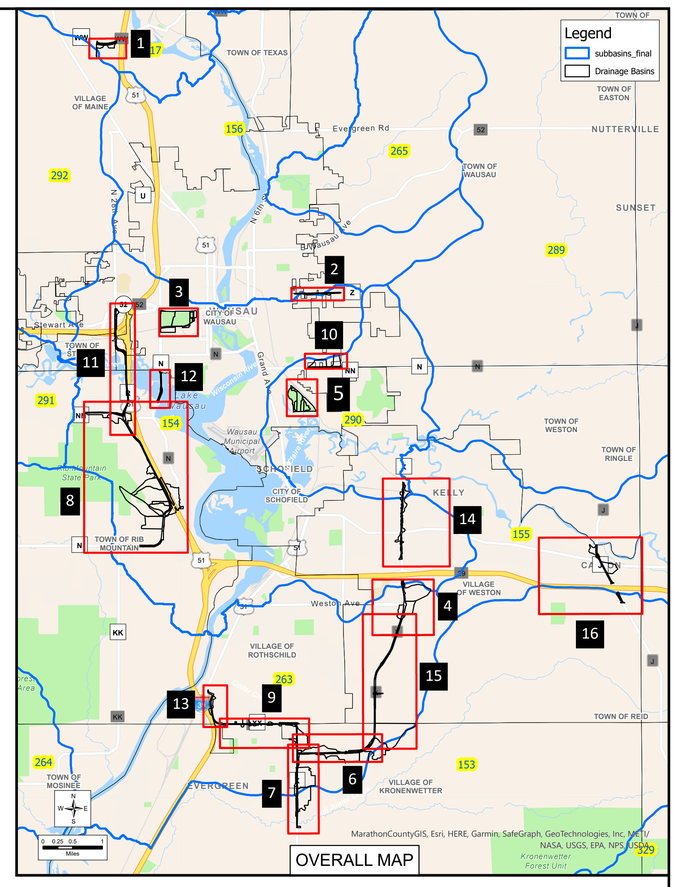
The Natural Resource Conservation Service (NRCS) classifies soil types in categories known as Hydrologic Soil Groups (HSG). Group A soils consist of sandy soils having high infiltration rates and low runoff potential. Group B soils have moderately fine to moderately coarse textures and moderate runoff potential. Group C soils are typically sandy clay loam soils having moderately fine to fine textures and a low infiltration rate. Group D soils have a very low infiltration rate 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.

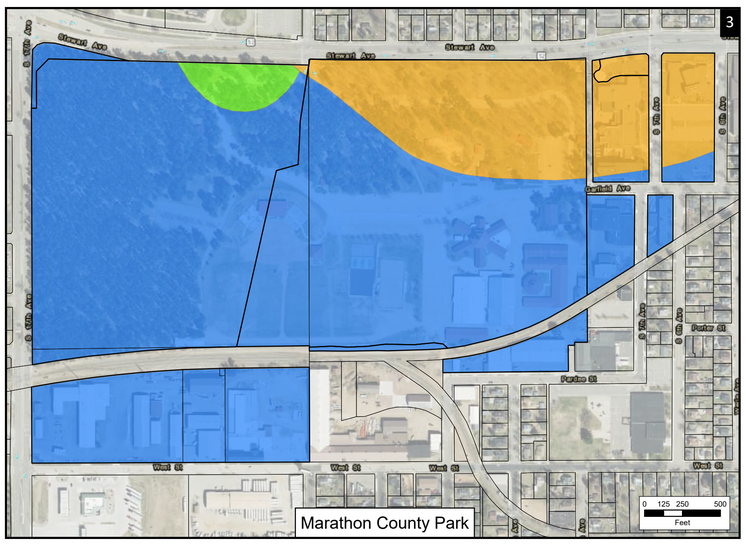
Soil types in the County were determined by NRCS soils maps based on their respective amount of silt, sand, and clay. Soils used for the purposes of this plan are identified in Table 2.03-1 and illustrated in Figure 2.03-1. Soils within the County MS4 are predominately sandy and HSG A soils.

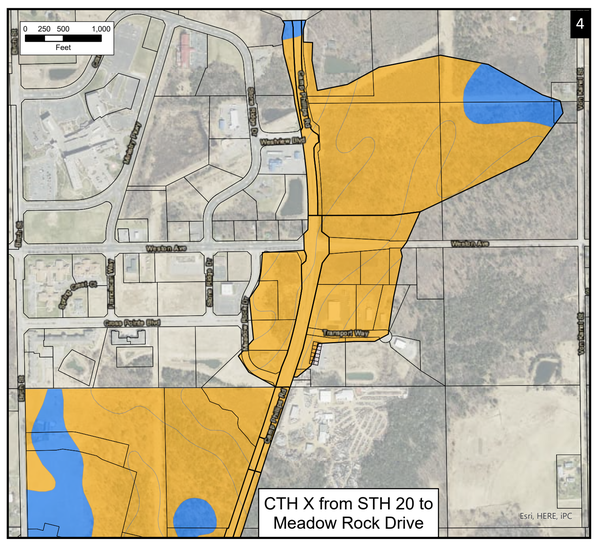
In August 2020, double-ring infiltrometer testing was completed at various locations within the County shown on Figure 2.03-1. The field infiltration testing resulted in a large range of static infiltration rates. Because of this range, it was agreed upon through discussions with Teagan Senczko from the WDNR, an average dynamic infiltration rate of 2.06 inches per hour (in/hr) should be used for the SLAMM modeling. The double-ring infiltrometer testing is discussed in more detail in Section 4 and the results are included in Appendix G.

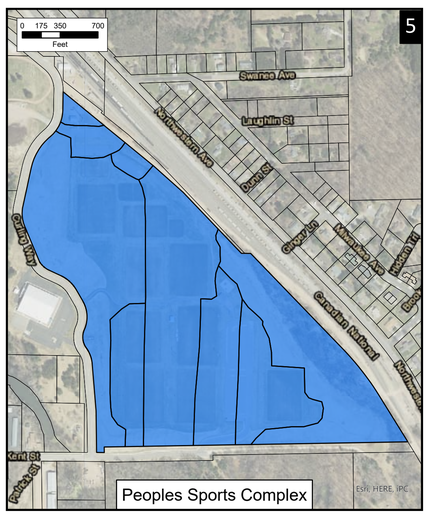


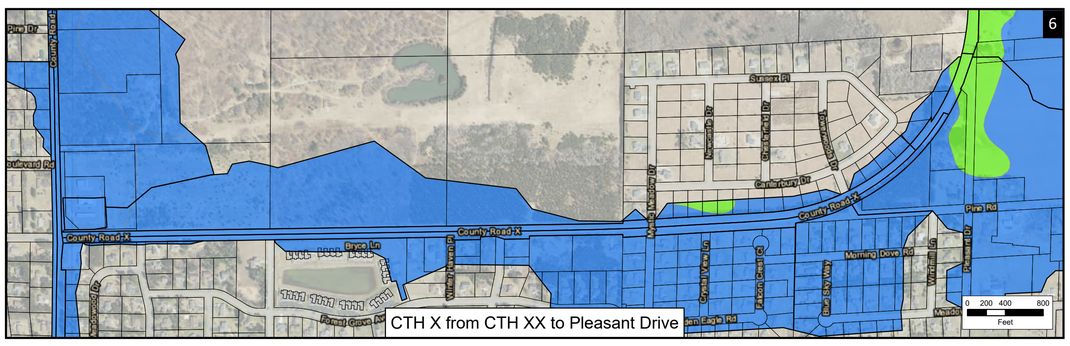


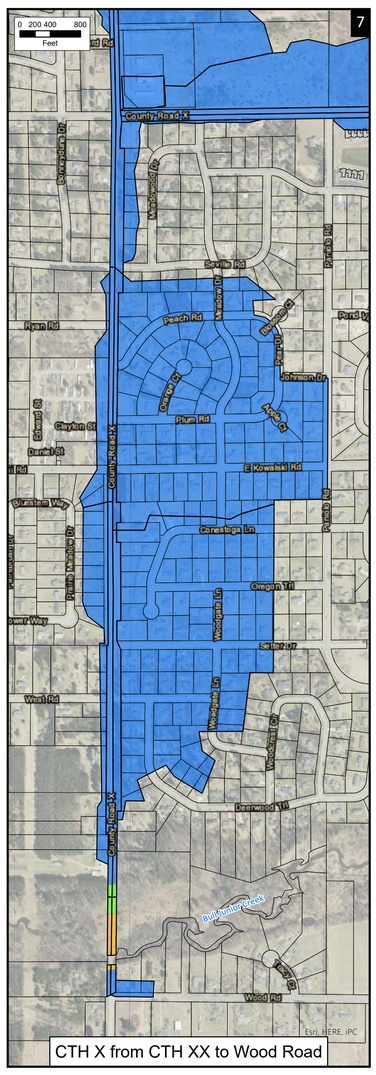


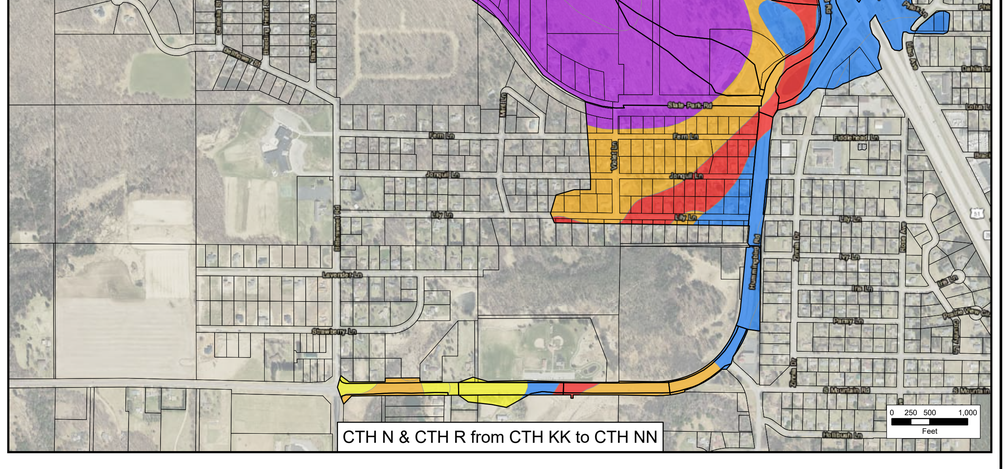


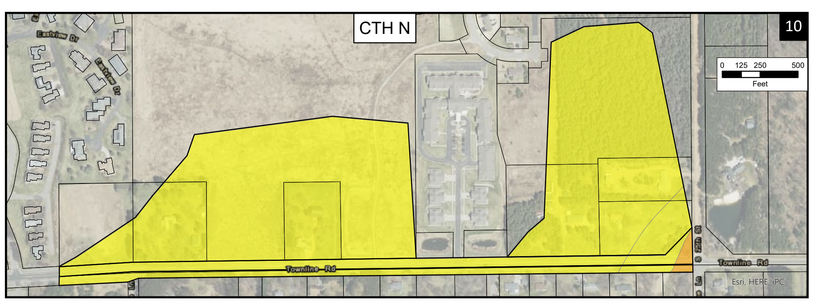


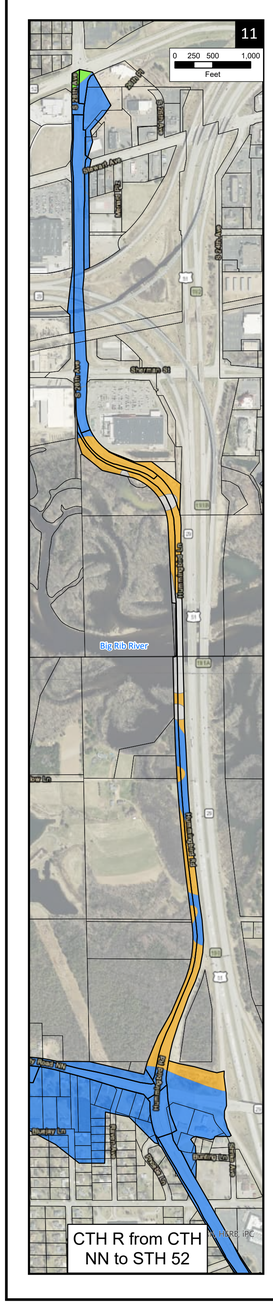


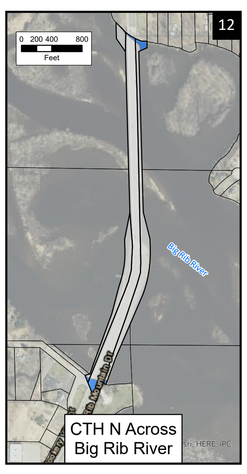


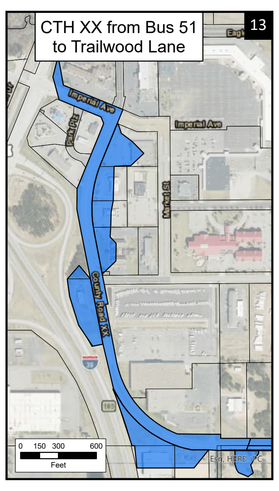


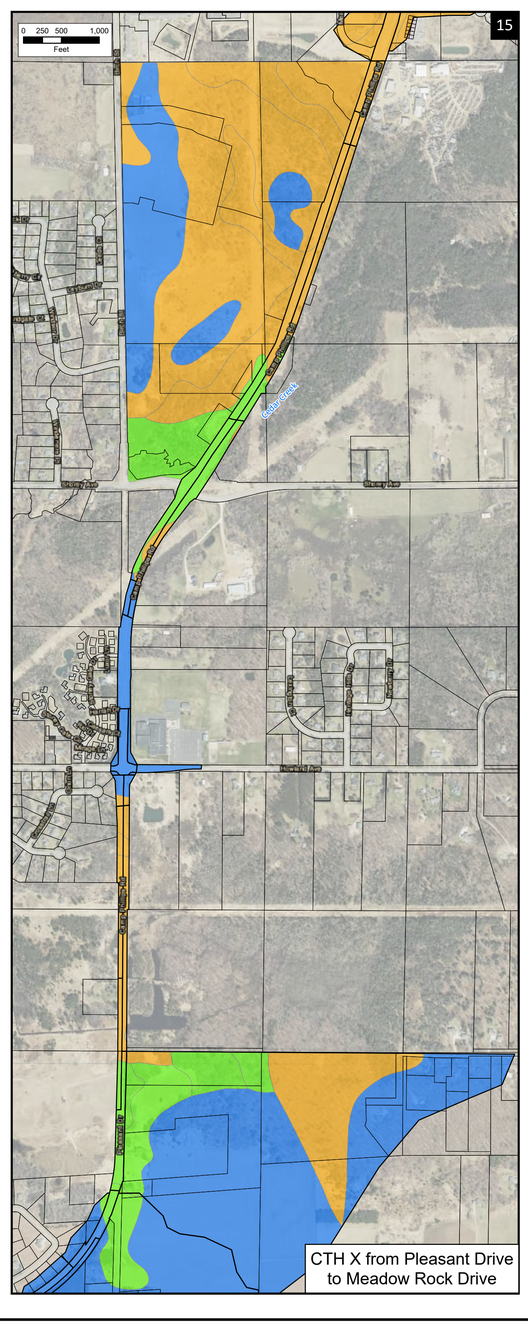












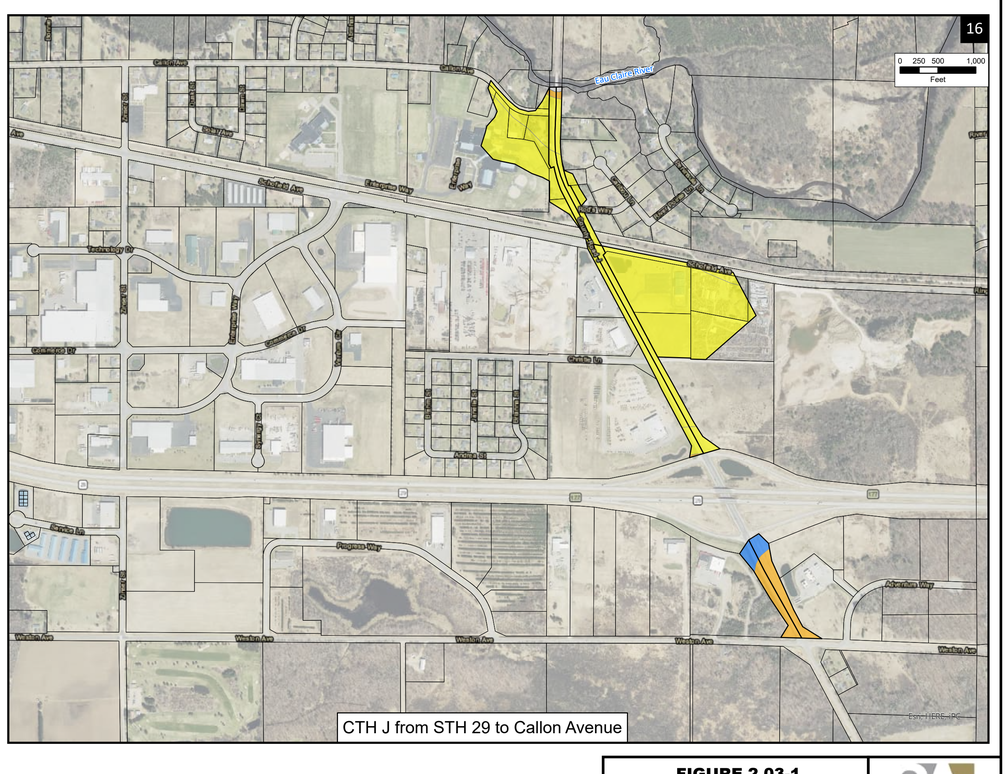


FIGURE 2.03-1
SOILS MAP
STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

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Table 2.03-1 Soil Types

Symbol	Soil Name	HSG	Area (acres)	Percent of Total Area (%)
Ch	Cathro muck	B/D	8.62	2.86
CkA	Chetek sandy loam	B	9.15	3.04
CkB	Chetek sandy loam	B	1.31	0.43
Da	Dancy sandy loam	B/D	9.36	3.11
DuB	Dunnville fine sandy loam	A	1.95	0.65
FeC	Fenwood silt loam	B	2.01	0.67
FgB	Fenwood-Rozellville silt loams	B	16.98	5.64
Fh	Fordum silt loam	B/D	5.23	1.74
LoB	Loyal silt loam	C/D	1.94	0.64
MbB	Mahtomedi loamy sand	A	130.93	43.45
MbE	Mahtomedi loamy sand	A	0.02	0.01
McA	Mahtomedi loamy sand	A	32.61	10.82
MgA	Meadland loam	B/D	31.64	10.50
MhA	Meadland loam	B/D	1.24	0.41
Mm	Meehan loamy sand	A/D	11.62	3.86
Mn	Minocqua muck	B/D	0.00	0.00
MsB	Mosinee sandy loam	A	10.29	3.42
MsC	Mosinee sandy loam	A	0.60	0.20
Ne	Newson mucky loamy sand	A/D	1.32	0.44
RcB	Rietbrock silt loam	B/D	0.27	0.09
ReB	Rietbrock silt loam	B/D	1.13	0.37
RhA	Rockers loamy sand	C/D	9.05	3.00
ScA	Scott Lake sandy loam	B	1.05	0.35
St	Sturgeon silt loam	B/D	0.01	0.00
UoB	Udorthents, loamy	A	6.71	2.23
W	Water		6.01	2.08
Total			**301.07**	**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 County 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	0.37	0.46	0.55	0.68	0.78	0.89
10 Minutes	0.54	0.68	0.81	0.99	1.14	1.30
15 Minutes	0.66	0.83	0.98	1.21	1.39	1.58
30 Minutes	0.94	1.18	1.40	1.72	1.98	2.26
60 Minutes	1.20	1.51	1.78	2.19	2.52	2.88
2 Hours	1.46	1.83	2.16	2.65	3.06	3.50
3 Hours	1.61	2.01	2.36	2.90	3.35	3.83
6 Hours	1.90	2.35	2.76	3.38	3.90	4.45
12 Hours	2.24	2.77	3.24	3.95	4.54	5.17
24 Hours	2.62	3.21	3.74	4.53	5.18	5.87
48 Hours	3.02	3.66	4.24	5.10	5.80	6.55
72 Hours	3.30	4.00	4.63	5.54	6.30	7.09
7 Days	4.23	5.04	5.75	6.76	7.57	8.41
10 Days	4.87	5.72	6.45	7.48	8.31	9.15

[1]Precipitation 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 Green Bay area (WisReg–Green Bay Five Year Rainfall.ran) is used with run dates for our modeling of March 30 to November 24 (nonwinter season) as required by the WDNR.

SECTION 3
EVALUATION OF CURRENT COUNTY PRACTICES

3.01 CURRENT STORMWATER POLICES AND PRACTICES

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

The County administers certain stormwater policies through the participating municipalities of the North Central Wisconsin Stormwater Management Coalition (NCWSC) Memorandum of Agreement (MOA), most recently renewed in 2019 and effective through December 31, 2026 (see Appendix I). This agreement between the County, the City of Wausau, the Villages of Weston, Kronenwetter, and Rothschild, and the Town of Rib Mountain delegates administrative authority of various permit requirements to enable a cooperative approach to regional stormwater management through the NCWSC.

A. Public Education and Outreach

The County is a member of the NCWSC and participates in the outreach and education plan. The existing County program consists of the following.

1. Illicit Discharges

The County welcomes any comments, questions, or concerns from the public and employees about any type of illicit discharges into the County's stormwater system.

2. Material Management

The County distributes information and education materials on the stormwater management program through the County's Web site: (https://www.co.marathon.wi.us/Departments/ConservationPlanningZoning/PlanningServices/StormwaterManagement.aspx). As a member of NCWSC, the County participates in publishing stormwater education materials on http://www.ncwrpc.org/NCWSC/. The group also creates public service announcements.

3. Yard Waste and Fertilizer/Pesticide Use

The County stores organic material such as tree trimmings and grass clippings at the Parks Department. The County manages nutrient application at Marathon County (Peoples) Sports Complex and Sunny Vale Park according to nutrient management plans based on soil testing, though Sunny Vale Park is outside of the County's stormwater-permitted area. The County manages Marathon County Park, Courthouse Square Park, DC Everest Park, and Blue Gill Bay Park naturally and without the application of nutrients. Of these parks, only the Marathon County (Peoples) Sports Complex has a MS4 within the park lands. The County administers an animal waste management ordinance but does not have a formal program to regulate the use of lawn and garden fertilizers, pesticides, and herbicides in UAs. The County publicizes lawn care and grass recycling practices via the County Web site:

https://www.co.marathon.wi.us/Portals/0/Departments/CPZ/Documents/grasscycling.pdf?ver=2011-08-22-104250-390.

4. Management of Streambanks/Shorelines

The County Shoreland, Wetland, and Floodplain Ordinance (Chapter 22) provides authority for enforcing streambank and shoreline management requirements. The County distributes information and education materials on streambank and shoreline management education via the educational activities through regional efforts. The County in general encourages appropriate management of streambanks and shorelines within the County.

https://www.co.marathon.wi.us/Portals/0/Departments/CPZ/Documents/SHORELAND_ZONING_CODE_DRAFT.pdf

5. Promotion of Infiltration

As a member of NCWSC, the County encourages infiltration through its Conservation, Planning, and Zoning page of the County web site: (https://www.co.marathon.wi.us/Departments/ConservationPlanningZoning.aspx), which provides information to residents looking to install rain gardens and rain barrels, plant native species, and learn about nutrient management. Educational signs are provided by the NCWSC for publicly installed rain gardens.

The County encourages all applicable new development within MS4 municipalities participating in the MOA to comply with applicable municipal ordinances and WAC NR 151 regarding infiltration requirements.

6. Design/Installation/Maintenance Information and Education Program

Developers of new building or redevelopment sites are required to submit an erosion control and stormwater management application to MS4 municipalities in the MOA before land disturbing activities occur. As required by the application, developers must prepare a grading, drainage, and erosion control plan and a pre and postdevelopment flow analysis to document there will be no adverse impacts to neighboring properties, municipal stormwater system, or to the County's stormwater management system. The analysis also requires identification of the appropriate erosion control measures for the development activity**.** During the preparation of the grading, drainage, and erosion control plan, developers are encouraged to drain downspouts, driveways, and other impervious areas to pervious surfaces and perform other activities that might reduce the amount of stormwater draining to the municipality's and County's stormwater management system.

7. Locations of Stormwater Concern

The County MS4 discharges into the Wisconsin River as well as the Big Rib River, Eau Claire River, Cedar Creek, Bull Junior Creek, and Lake Wausau, of which the Wisconsin River is an impaired waterbody. TP is a main pollutant in these waterbodies**.** Additional areas of concern and potential solutions are contained in the *2018 Lake Wausau Protection and Improvement Plan*

prepared for the Lake Wausau Association and the WDNR by Nancy Turyk from the Center for Watershed Science and Education at the University of Wisconsin-Stevens Point.

8. Promotion of Environmentally Sensitive Land Development

The County educates developers on environmentally sensitive land development by requiring conformance with WAC NR 216 and NR 151 on County projects and through the MOA.

The following existing plans promote environmentally sensitive land development designs by developers and designers.

a. *Marathon County Comprehensive Plan,* 2016

This plan outlines the County's goals, objectives, and policies for protecting agricultural lands, natural resources, and environmentally sensitive areas.

b. *Marathon County MS4 Stormwater Pollution Analysis, AECOM, Inc.,* November 2011.

This pollution loading analysis establishes the base pollution load and the pollution reduction resulting from the existing stormwater management measures within the MS4.

c. *Marathon County Land and Water Resource Management Plan*, 2020.

This plan includes goals and objectives related to keeping sediments and nutrients out of wetlands and to improve public awareness of the value and importance of wetlands.

B. Public Involvement and Participation

The County board meets twice a month, the second or third Thursday of the month and then the following Tuesday, during which residents may voice concerns or complaints regarding stormwater issues and NCWSC members update elected officials on changes in stormwater regulation. The County then proactively deals with these concerns or complaints and changes. In addition, the County provides public notice of all public meetings.

NCWSC provides public involvement and participation events including maintenance of the http://www.ncwrpc.org/NCWSC/ Web site. Past efforts include sponsoring a Rubber Ducky event, Wisconsin River Cleanup and presentation, tours with service and community groups, Farm Tech Days events, sponsorship of and presentation at water quality events, MS4-related training events, nonpoint pollution presentations to various school groups, storm drain marking, rain barrel and rain garden workshops, public rain garden displays, and grants. The group also conducts media campaigns through television and movie short clips regarding stormwater BMPs and the importance of lake water quality. Annual NCWSC activities are reported in the County's annual report. See Appendix J for the 2021 NCWSC activities report.

C. Illicit Discharge Detection and Elimination

1. Continued Enforcement of the IDDE Program

a. The current County program prohibits illicit discharges and/or connections to the MS4 and waters of the state through an MOA enforcing the IDDE municipal codes of participating municipalities. The program follows the required activities outlined in Section 2.3 of the County's stormwater permit. The County partners with municipalities to implement this program. County Highway Department employees are instructed to report any type of illicit discharge into the County's stormwater system. The County also receives input from concerned County residents. Table 3.01-1 provides a summary of the status of IDDE ordinances for participating municipalities.

MS4 Community in MOA	Ordinance Status (Updates Needed?)	Program Status
City of Wausau Illicit Discharge-Chapter 15.60	No	Appears acceptable
Village of Weston Illicit Discharge-Section 86.5.400	Yes	Updates recommended in 2022
Village of Kronenwetter Illicit Discharge-Chapter 270, Article III	Yes	Updates recommended in 2022
City of Schofield (Not a MOA participant) Illicit Discharge-Chapter 45, Article III	No	Appears acceptable
Village of Rothschild Illicit Discharge-Chapter 590, Article V	Yes	Updates recommended in 2021
Town of Rib Mountain Illicit Discharge-Chapter 24.03	No	Appears acceptable

Table 3.01-1 Illicit Discharge Ordinance Status of Participating Municipalities

b. The County maintains a Web page for garbage, recycling, and disposal of other materials (https://www.co.marathon.wi.us/Departments/SolidWaste.aspx)

c. The South Area Fire & Emergency Response (SAFER) District serving the Village of Weston, Town of Rib Mountain, Village of Kronenwetter, and Towns of Easton, Ringle, Guenther, Stettin, and Marathon, is the first responder for all major nonhazardous material spills and has a policy in place to contain and clean up most spills. Fire Districts serving the County MS4 area other than SAFER include Wausau, Wausau (Town), Maine, Maine/SAFER, Riverside, and Kronenwetter. The Highway Department and Parks Department staff respond to minor spills.

2. Dry Weather Field Screening

The County storm sewer system is mapped with all County-maintained outfalls noted. The County partners with municipalities to manage dry weather screening. Dry weather screening appears to have been performed informally in 2017, 2018, 2019, and 2021, and formally in 2020. Between informal and formal inspections there were neither flows detected nor were there reported illicit connections to the County's stormwater management system.

3. Procedures for Responding to Known or Suspected Illicit Discharges

At the present time, the County is following the procedures included in Section 2.3 of its MS4 permit.

D. Construction Site Erosion Pollutant Control and Postconstruction Stormwater Management

1. Erosion Control and Postconstruction Stormwater Management Ordinances

The County cooperates with participating municipalities under the MOA to comply with municipal construction site erosion ordinances. As such, eligible County facilities in the MS4 area must comply with municipal ordinance requirements and the County does not implement a construction site erosion control ordinance or a postconstruction stormwater management ordinance of its own. Table 3.01-2 provides a summary of the status of erosion control and stormwater management ordinances for participating municipalities.

MS4 Community in MOA	Ordinance Status (Updates Needed?)	Program Status
City of Wausau		
Erosion Control-Chapter 15.56.065	Yes	Potential update in 2024
Stormwater-Chapter 15.56	Yes	Potential update in 2024
Village of Weston		
Erosion Control-Section 86.5.300-316	Yes	Updates recommended in 2022
Stormwater-Section 86.5.200-216	Yes	Updates recommended in 2022
Village of Kronenwetter		
Erosion Control-Chapter 270, Article I	Yes	Updates recommended in 2023
Stormwater-Chapter 270, Article II	Yes	Updates recommended in 2023
City of Schofield (Not a MOA participant)		
Erosion Control-Chapter 45, Article I	Yes	Updates recommended in 2022
Stormwater-Chapter 45, Article II	Yes	Updates recommended in 2022
Village of Rothschild		
Erosion Control-Chapter 590, Article IV, 590-49	Yes	Updates recommended in 2021
Stormwater-Chapter 590, Article IV, 590-51 & 52	Yes	Updates recommended in 2021
Town of Rib Mountain		
Erosion Control-Chapter 24.01	Yes	Potential update in 2024
Stormwater-Chapter 24.02	Yes	Potential update in 2024

Table 3.01-2 Erosion Control and Stormwater Management Ordinance Status of Participating Municipalities

2. Erosion Control Ordinance Site Review Procedures and Enforcement

The participating municipalities under the MOA currently administer their municipal ordinances for construction site erosion control and postconstruction stormwater management. Applicable development plans are reviewed for conformance with the construction site erosion control and postconstruction stormwater management ordinances. During construction, municipal staff check for conformance with approved plans for erosion control on a periodic basis and site visits are documented. During site inspections, staff members recommend proactive steps and corrective actions as necessary. If violations are noted, they are required to be fixed before the continuation of construction activities. After construction, municipal staff check for conformance of the as-built plans with the approved construction plans' consideration of stormwater management. The participating municipalities' erosion control and postconstruction stormwater management ordinances include enforcement provisions.

3. Permits Issued

The County is not responsible for construction site or postconstruction stormwater permitting and enforcement as this is delegated to participating municipalities under the MOA.

F. Pollution Prevention–County Operations

1. Maintenance of Existing County-Owned/Operated Stormwater BMPs

The County Highway Department has been assigned as the department to handle inspections and maintenance of public stormwater facilities. Specifically, the Maintenance Manager is directly responsible for inspection and maintenance activities. Currently, the County provides maintenance on an as-needed basis. The Highway Department performs the inspection and maintenance activities shown in Table 3.01-3.

Activity	Frequency	Responsible Party
Catch Basin Inspection/Cleaning	Every 2 to 5 years.	MM
Storm Sewer Maintenance	As needed.	MM
Road Crossing Culverts	As needed.	MM
Grass-Lined Swale/Ditch/Driveway Culvert maintenance (County Right-of-Way)	As needed.	MM
Dry Detention Basins	As needed	MM
Wet Detention Basins	As needed	MM
Bioretention Basin	As needed	MM

MM=Maintenance Manager

Table 3.01-3 Public Works Department Inspection and Maintenance Activities

Private stormwater BMPs are maintained by the property owner or appropriate municipality in accordance with Stormwater Ordinances of applicable Municipal Codes.

2. Street Sweeping

Street sweeping, while historically conducted primarily for aesthetic and maintenance purposes, is an effective stormwater management practice. However, in rural road sections drained by grass-lined drainage swales, this practice is not practical because of the lack of curb and gutter. The County MS4 area is drained partially by curb and gutter and partially by grass swales or undeveloped roadside. The County's curb and gutter roads and bridges are swept with a high efficiency street sweeper every spring. Sweepings are staged at the County Highway Department yard and disposed of in a licensed landfill (Marathon County Landfill). Figure 2.01-1 shows the street drainage type in the County-permitted area. Table 3.01-4 summarizes the materials collected for the past seven years.

	Year						
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Solids Captured (tons)	Not available	Not available	Unsure	Unsure	Unsure	Unsure	Unsure

Table 3.01-4 Street Sweeping Quantity Summary

3. Catch Basin Cleaning

In general, the following is included in the County's Maintenance Policy: catch basin sumps are cleaned every two to five years, outfalls are inspected, and inlets are repaired. Current Source Loading and Management Modeling (WinSLAMM) modeling incorporates catch basin cleaning as an existing stormwater quality control.

Figure 3.01-1 Snow Disposal Location

Table 3.01-5 provides information on the County's catch basin cleaning program. Figure 2.01-1 shows the locations of catch basins with sumps that were modeled in WinSLAMM as an existing stormwater quality control. It should be noted the WDNR only allows water quality credit in WinSLAMM for sumps that are greater than 1 foot in depth. In general, modeling will show that sumps are most effective in areas where streets are not or are minimally swept (the County sweeps all curb and gutter streets, in the spring and periodically through the year) and where there are not downstream BMPs (portions of older parts of the County, for example).

	Year						
	2015	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Number of Catch Basins Cleaned	0	0	20	0	0	Unsure	Unsure
Solids Captured (tons)	--	--	Unsure	--	--	Unsure	Unsure

Table 3.01-5 Catch Basin Cleaning Quantity Summary

4. Deicing and Snow Removal

Table 3.01-6 provides a summary of the County's winter roadway maintenance program. Table 3.01-7 shows the County's deicer usage in the period from 2015 to 2021. Table 3.01-8 shows the rainfall and snowfall amounts at the Wausau Automated Surface Observation System for the Wausau Downtown Airport (AUW). as obtained from the National Oceanic and Atmospheric Administration (NOAA) Web site. The average rainfall amount is 39.82 inches a year and the average snowfall each winter season is 68.70 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 the WDNR.

Table 3.01-6 Winter Roadway Maintenance Details

Item	Description
Winter Roadway Maintenance Contact	James Griesbach Marathon County Highway Department Commissioner 715-261-1800
Enclosed Salt Storage Building	Marathon County Highway Department 1430 West Street Wausau, WI 54401 Capacity: 8,000 tons
Lane-Miles of Roadway Managed	1,300
County Owned Parking Lots Managed	Sunnyvale Softball Complex–1000 South 66th Avenue, Wausau, WI 54401 Bluegill Bay Park–226300 Bluegill Avenue, Wausau WI 54401 Peoples Soccer Complex–602 East Kent Street, Wausau, WI 54401 Social Services–400 East Thomas Street, Wausau, WI 54403 Conservation, Planning, and Zoning (CPZ), Parks, Veteran Affairs, etc.–210 and 212 River Drive, Wausau WI Library–300 North 1st Street, Wausau, WI 54403 Courthouse–500 Forest Street, Wausau, WI 54403 North Central Health Care (NCHC)–1000 Lake View Drive, Wausau, WI 54403 Sheriff Storage–7255 Stewart Avenue, Wausau, WI 54403 Marathon County Highway Main Office–1430 West Street, Wausau WI 54401 Parks Department Maintenance–900 Pardee Street, Wausau, WI 54401 Medical Examiner-Emergency Management–1308 West Street, Wausau WI 54401 University of Wisconsin–Stevens Point (UWSP) Marathon County Ownership–518 South 7th Avenue, Wausau WI 54401 Library, Parks, Parks Shop, Social Services, Northcentral Health Care, Airport, Highway Shop, Court House
Snow Disposal Location and Spring Cleanup	Highway right-of-way (ROW) located under the STH 29 west/United States Highway (USH) 51 interchange ramps between 24th Avenue, 28th Avenue, Sherman Street and Stewart Avenue. Site is also used and maintained by City of Wausau (See Figure 3.01-1).
Deicing Products Used and Amount	Sand and/or salt, brine (see Table 3.01-3). Applied as appropriate for conditions.
Type of Deicing Equipment Used	36 single and tandem axle plow trucks, all equipped with sand and/or salt spreading and brine application 2 large capacity brine trucks (>3,500 gallons each) and 2 small capacity brine trucks (250 gallons each) 2 snowblowers on large loaders 6 graders 2 four-wheel-drive V-plows
Anti-Icing, Equipment Calibration, and Salt Reduction Strategies Considered	Anti-Icing: Wisconsin Department of Transportation (WisDOT) practices for anti-icing are followed using brine. Equipment Calibration: Equipment is calibrated at the recommended frequency in accordance with WisDOT practices. Salt Reduction Strategies: WisDOT practices for winter maintenance including anti-icing before storms, prewetting salt during storms, brine for de-icing on frost on minimal snow events, use rubber blades where practical for maximum mechanical removal of snow and ice, use of underbodies on all plow trucks.
Most Recent Staff Training	September 2021–Annual fall training with full department workforce (65 attendees)

	Solid Products (Tons) Per Year										Brine (Gallons) Per Year					Other Liquid (Gallons) Per Year		
Month	2015 to 2016 (Salt)	2015 to 2016 (Salt/Sand)	2016 to 2017 (Salt)	2016 to 2017 (Salt/Sand)	2017 to 2018 (Salt and Salt/Sand)	2018 to 2019 (Salt)	2019 to 2020 (Salt)	2019 to 2020 (Salt/Sand)	2020 to 2021 (Salt/ Sand)	2021 to 2022 (Salt/ Sand)	2017 to 2018	2018 to 2019	2019 to 2020	2020 to 2021	2021 to 2022	2018 to 2019	2020 to 2021	2021 to 2022
October	-	-	0	0	453	0	4	0	219	0	4,000	1	2,741	2,907	116	1	36	8
November	-	-	195.85	0	1082	860	740	11	324	280	8,000	1	28,585	9,998	1,053	1	20	192
December	-	-	1355.45	0	2030	1,140	2727	667	1,042	2,860	16,000	1	51,097	21,360	53,812	1	620	1,013
January	1,461.95	640.64	1859.76	163.65	3074	1,570	1449	597	971	650	24,000	13,703	25,850	41,689	13,298	1755	860	376
February	606.75	122.43	1329.47	131.24	1937	2,713	64	570	2,543	1,100	15,000	36,357	16,142	42,119	18,256	413	681	455
March	534.12	15.86	793.14	0	500	1,000	240	35	0	0	4,000	9,999	1	0	0	1	0	0
April	97.7	0	625.16	0	-	-	-	-	0	0	-	-	-	0	0	-	0	0
Total	**2,700.52**	**778.93**	**6,158.83**	**294.89**	**9,076**	**7,283**	**5224**	**1880**	**5,099**	**4,305**	**71,000**	**60,062**	**124,416**	**118,073**	**86,535**	**2,172**	**2,217**	**2,044**

Table 3.01-7 Deicer Usage by County per Winter Season

	2016 Rainfall	2016 Snowfall	2017 Rainfall	2017 Snowfall	2018 Rainfall	2018 Snowfall	2019 Rainfall	2019 Snowfall	2020 Rainfall	2020 Snowfall	2021 Rainfall	2021 Snowfall
January	0.85	5.8	2.35	18.9	1.3	13.2	1.1	8.8	1.7	19.3	0.62	5.7
February	0.6	9	1.6	7.7	1.2	11.5	4.1	54.4	0.6	11.3	1.16	12.5
March	4.96	13.2	2.18	5	1.6	12.2	1.7	6.9	3.3	2.2	1.78	2.4
April	2.39	5.8	5.8	1.7	3.2	34.5	4.7	13.1	2.6	5.5	2.68	0.3
May	2.89	0	3.89	0	3.1	0	5.5	0	3.0	0	3.52	0
June	5.22	0	5.34	0	5.1	0	4.4	0	7.5	0	7.80	0
July	4.61	0	4.57	0	3.3	0	6.5	0	6.2	0	7.96	0
August	3.87	0	3.62	0	5.8	0	3.1	0	1.9	0	9.60	0
September	4.77	0	1.96	0	5.5	0	7.7	0	2.5	0	1.93	0
October	2.29	0	3.61	0	6.0	0.5	4.2	0	2.7	4.5	1.63	4.5
November	1.89	3.1	1.23	8.3	1.9	6.2	2.4	9.6	2.6	2.1	1.33	2.1
December	2.66	22.4	1.17	9.6	1.3	7.0	2.8	22.9	0.5	5.5	2.72	5.5
Totals	**37**	**59.3**	**37.32**	**51.2**	**39.3**	**85.1**	**48.2**	**115.7**	**35.1**	**50.4**	**42.73**	**33.0**

Table 3.01-8 Rainfall and Snowfall at Wausau Automated Surface Observation System (inches)

5. Leaf and Yard Waste Management

The County does not provide leaf and yard waste collection services. Tree trimmings and grass clippings collected during park maintenance is stored at the Parks Department in bunkers. Tree trimmings are chipped on-site and all organic materials are removed by Hsu Ginseng Farms.

6. Municipal Garage and Storage Area Management

The County owns and operates the Marathon County Highway Department at 1430 West Street and the joint Wausau and Marathon County Parks, Recreation, and Forestry Department at 900 West Pardee Street. The Highway Department includes the salt storage shed. Both the Highway Department and Parks Department contain external and internal material storage, and equipment and vehicle storage. Figures 1.01-1 and 3.01-2 show the Marathon County Highway Department and the Wausau and Marathon County Parks, Recreation, and Forestry Department, respectively. A copy of the Stormwater Pollution Prevention Plan (SWPPP) for these facilities is included in Appendix C.

Figure 3.01-2 Marathon County Highway Department and the Wausau and Marathon County Parks, Recreation, and Forestry Department

7. Turf Maintenance Policies

Table 3.01-9 summarizes the amount of fertilizer used in the County's stormwater-permitted area.

Year	Property Type	Amount of Fertilizer (lb/acre)	Amount of Fertilizer (lb)	Acreage
2017	Marathon County (Peoples) Sports Complex	0.297	5.65	19
2018	Marathon County (Peoples) Sports Complex	Unknown	Unknown	Unknown
2019	Marathon County (Peoples) Sports Complex	Unknown	Unknown	Unknown
2020	Marathon County (Peoples) Sports Complex	Unknown	Unknown	Unknown
2021	Marathon County (Peoples) Sports Complex	Unknown	Unknown	Unknown

lb/acre=pounds per acre

Table 3.01-9 Amount of Fertilizer Used in County's Stormwater-Permitted Area

8. Environmentally Sensitive Development

The County promotes environmentally sensitive development in municipalities through the 2016 Marathon County Comprehensive Plan.

9. Internal Training and Education

Appropriate County staff attend periodic training relative to pollution prevention.

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

Seventeen municipal water treatment facilities in Marathon County rely on groundwater for drinking water. Additionally, approximately 11,470 private wells were constructed in Marathon County between 1987 and 2020. Marathon County's *2020 Land and Water Resource Management Plan* includes groundwater protection to improve drinking water safety. Marathon County's *2001 Groundwater Protection Guide* provides recommendations for groundwater protection. The municipal sanitary sewer systems within the County MS4 area discharge to the City of Wausau Wastewater Treatment Plant or the Rib Mountain Metropolitan Sanitary District Wastewater Treatment Plant.

G. Stormwater Quality Management

The County adopted a stormwater management plan in 2011. The report, herein, updates the *2011 Stormwater Management Plan.*

H. Storm Sewer System Map

The County 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 are included on participating municipalities' maps.

I. Annual Report

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

J. Cooperation

The County is cooperating with the NCWSC communities in permit compliance efforts.

3.02 RECOMMENDED STORMWATER MANAGEMENT PROGRAM

To comply with state regulations and requirements, 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.

A. Public Education and Outreach

Strand recommends enhancing the program to educate County residents of measures they can take to reduce nonpoint source discharges to County 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. Strand recommends that the County implement the recommended activities and measurable goals listed in Table 3.02-1. In addition, Strand recommends the continuation of the County's participation in the NCWSC.

The County's MS4 permit requires that all eight topics listed in Item 4 in Table 3.02-1 be addressed at least once during the 5-year permit term including the requirement that six topics be addressed each year. When delivering the information, at least four public education delivery mechanisms must be used each year, one of which must be active/interactive mechanisms (the others can be passive). It is anticipated that these requirements will be met through the NCWSC public information and education efforts in combination with completing the activities listed in Table 3.02-1.

B. Public Involvement and Participation

Strand recommends the following activities with their associated measurable goal, responsible party, and anticipated completion date in Table 3.02-2.

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

	Activity	Measurable Goal	Delivery Mechanism	Target Audience	Responsible Party	Anticipated Completion Date
1	Continue membership and active participation in NCWSC. This includes events such as the annual No Farms No Food presentation and Rubber Ducky commercials.	One County membership and meeting attendance.	A/I	Public Employees	PA	Ongoing
2	Complete one presentation to County Board and interested citizens upon completion of this plan and NCWSC efforts during the preceding year.	One meeting.	A/I	Residents and Public Employees	PA	February 2023
3	Annually, dedicate a portion of one County Board meeting to the discussion of the Annual Report submitted for the previous year's permit compliance activities.	One meeting each year.	A/I	Residents and Public Employees	PA	Annually in March.
4	Have stormwater management-related materials prepared by organizations such as WDNR, UW-Extension, and NCWSC available at the County courthouse and track their usage related to the following eight topic areas: IDDE, household hazardous waste disposal and pet waste management, vehicle washing, yard waste management/pesticide and fertilizer application, stream and shoreline management, residential infiltration, construction sites and postconstruction stormwater management, pollution prevention, and green infrastructure/low impact development.	Provide efforts to address the eight topic areas once per permit term, a minimum of six topics per year, using a minimum of one active/interactive mechanisms per year from Table 2 of the MS4 permit, including identification of target audience.	P	Residents	PA	Ongoing
5	Update the County's stormwater Web page to include links to the County's stormwater permit, annual reports, SQMP Update, and stormwater management-related materials.	Update Web page in 2023.	P	Residents	PA	December 2023
6	The County will promote environmentally sensitive land development designs by developers and designers by providing resources on the County Web site and at the County courthouse.	Update Web site and provide brochures starting in 2023.	P	Developers	PA	Ongoing
7	Track public education and outreach activities for annual reporting to the WDNR including NCWSC activities. Tracking should include amount of materials distributed and related information regarding the items listed in Activity 4.	Once each year.	P	Public Employees	PA	Once each year.
8	Continue illicit discharge identification and stormwater inlet protection training for Marathon County Highway Department staff led by the County Conservation, Planning, and Zoning Department.	Record attendance at annual staff training.	A/I	Public Employees	CPZ Staff	Once each year.

A/I=Active/Interactive
P=Passive
PA=Planning Analyst

Activity	Measurable Goal	Delivery Mechanism	Target Audience	Responsible Party	Anticipated Completion Date
Continue to public notice all public meetings.	Ongoing.	A/I	Residents	County Staff	Ongoing.
Coordinate with NCWSC for planning and participating in public involvement events.	Ongoing.	A/I	Residents	PA	Ongoing.
Implement one of the following volunteer activities: group BMP installation or maintenance, storm drain stenciling, planting community rain garden, clean up event, stream monitoring, citizen committee meeting, public workshop, presentation of stormwater information, or other hands-on event.	Once each year.	A/I	Residents	PA	December, annually.
Hold an annual meeting to update County officials, residents, regulatory agencies, local contractors, and interested stakeholders on progress of the County's stormwater program.	One meeting per year, starting in 2023. Hold in conjunction with annual meeting described in Public Education and Outreach above.	A/I	Residents, Public Employees, Contractors	PA	First meeting in April or May 2023.
Track public involvement and participation activities for annual reporting to WDNR.	Once per year.	P	Public Employees	PA	Once per year.

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

B. Illicit Discharge Detection and Elimination Plan

1. Introduction

a. Background and Definitions

As discussed in Section 2, the County's storm drainage system discharges to the Big Rib River, Eau Claire River, Cedar Creek, Bull Junior Creek, Lake Wausau, and the Wisconsin River at approximately 104 outfall locations throughout the County's stormwater-permitted area as shown on Figure 2.01-1 and in Table 3.02-6. 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 County), 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.

Table 3.02-3, 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 Table 3.02-3, such as individual residential car washing.

Table 3.02-3 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	• Apartments • Multi-family • Single Family Detached	• 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	• 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	• 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	• 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	• All commercial activities • Industrial process water or rinse water • Loading and un-loading area washdowns • Outdoor material storage (fluids)
Institutional	• Cemeteries • Churches • Corporate Campuses • Hospitals • Schools and Universities	• Building Maintenance (e.g., power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Parking Lot Maintenance (power washing) • Vehicle Washing
Municipal	• Airports • Landfills • Maintenance Depots • Municipal Fleet Storage Areas • Ports • Public Works Yards • Streets and Highways	• 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 County's Stormwater Discharge permit. Specific program requirements are included in Section 2.3 of the WPDES MS4 Permit No. WI-S050075-3 (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 3.02-4.

Outfall Type	MS4 Permit Screening Frequency	WDNR Guidance Document Screening Frequency	Number of Outfalls
Priority Minor	Annual	Annual	17
Nonpriority Minor	NA	NA	63
Priority Major	Once during 5-year permit term.	Annual	10
Non-Priority Major	Once during 5-year permit term.	Once every 5 years	14
		Total	**104**

Table 3.02-4 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 maximum extent practicable).

(6) Immediately notify WDNR in accordance with Chapter NR 706 WAC. 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 municipal separate storm sewer 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 Conservation, Planning, and Zoning Department.

2. IDDE Ordinance

The County currently administers Illicit Discharge requirements through an MOA with Wausau area MS4 communities.

3. Initial Field Screening Procedures, 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 3.02-7 identifies recommended field screening points. Field screening shall be documented on the form included in Appendix F 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 3.02-5 provides expected ranges for the analytes.

c. Database–The County will maintain a file or database of all field screening forms. Field screening results will be reported to the WDNR annually in the Annual Report.

Parameter	Indicator Parameters Action Levels[1]	City of Sheboygan Expected Ranges[2]	Enforcement Standard (ES)[3]	Preventative Action Limit (PAL)[3]
Ammonia	0.1 mg/L	--	9.7 mg/L	0.97 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	--	--	--
E. coli	10,000 MPN/100 mL	200 cfu/100 mL[5]	--	--
Human Bacteriodes	Detection or positive test	--	--	--

mg/L=milligrams per liter
MPN=most probable number
mL=milliliters
cfu=colony forming units

[1]WNDR Program Guidance Document 3800-2012-01, March 15, 2012
[2]Illicit Storm Water Discharge Inspection and Sampling Report for 2018, Cardinal Environmental, December 5, 2008 (expected ranges reference values used by City of Milwaukee)
[3]Public Health Groundwater Quality Standards (NR 140, Table 1)
[4]Detection above background groundwater or drinking water. In southeast Wisconsin, fluoride concentrations in groundwater from glacial sediments typically range from 0.7 mg/L 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
[5]Expected range from NR 102.04 (5a) Standards for Recreational Use

Table 3.02-5 Illicit Discharge Detection and Elimination Expected Ranges

4. Ongoing Dry Weather Screening Program

Outfall Screening Priorities: Beginning in 2023, it is proposed to screen all (27 of these) priority outfalls (major and minor) once per year, and all (14 of these) nonpriority major outfalls once per 5-year permit term as required by the County's MS4 permit (see Table 3.02-7). 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. Depending on the number of outfalls where flow is present during screening, the County may want to entertain sampling outfalls where flow is present once per 5-year permit term if the first sampling shows no evidence of an illicit discharge.

Table 3.02-6 County Outfalls

Outfall ID	Outfall Number	Original ID	Location	Contributing Subbasins	Drainage Area	Predominant Land Use	Priority	Reason for Priority	Major/Minor	Size (in)	Recommended Screening Frequency
J-1A	1	J-1	West of CTH-J, 60 yards north of Callon Avenue by bridge	EC155-J1-55020, EC155-J1-55021-OMS4	<50	Residential	Priority	Hospital	Minor	Swale	Every Year
J-1B	2		East of CTH-J, 60 yards north of Callon Avenue by bridge	EC155-J1-55030, EC155-J1-55031-OMS4	<50	County ROW	Non-Priority		Minor	Swale	Screening Not Required
J-2A	3	J-2	South of Schofield Avenue, east of CTH J	EC155-J2-55010, EC155-J2-55011-OMS4	<50	Industrial	Priority	Scrap Yard	Minor	18	Every Year
J-2B	4		Weston Storm Sewer under Christie Lane East of CTH J	EC155-J2-55040	<50	Commercial	Priority	Gas Station, Outdoor Storage	Minor	24	Every Year
J-2C	5	J-3	West of CTH J, North of Highway (Hwy) 29 west bound on-ramp	EC155-J2-55040	<50	County ROW	Priority	Outdoor Storage	Minor	Swale	Every Year
J-3A	6		West of CTH J, South of Hwy 29 east bound off-ramp	WR153-J3-53010	<50	County ROW	Non-Priority		Minor	Swale	Screening Not Required
J-3B	7	J-4	West of CTH J, South of Hwy 29 east bound on-ramp	WR153-J3-53020	<50	County ROW	Non-Priority		Minor	Swale	Screening Not Required
N-1A	8		East of CTH N, South of Fern Lane	WR154-N1-54280, WR154-N1-54281-OMS4	<50	Residential	Non-Priority		Minor	18	Screening Not Required
N-1B	9		East of CTH N, North of Jonquil Lane	WR154-N1-54280, WR154-N1-54281-OMS4	<50	Residential	Non-Priority		Minor	21	Screening Not Required
N-1C	10	N-1A	West of CTH N, Across the Street from Ivy Lane, storm sewer outfall into wetland	WR154-N1-54280, WR154-N1-54281-OMS4	<50	Residential	Non-Priority		Minor	24	Screening Not Required
N-1D	11	N-1B	East of CTH N, outfall into SAFER N infiltration basin	WR154-N1-54290	<50	County ROW	Non-Priority		Minor	15	Screening Not Required
N-1E	12	N-1C	Southeast of CTH N, western inlet to SAFER S	WR154-N1-54300	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
N-1F	13		South of CTH N, across the street from Doepke Recreation Lane at storm sewer outfall	WR154-N1-54340, WR154-N1-54341-OMS4	<50	County ROW	Non-Priority		Minor	30	Screening Not Required
N-1G	14		South of CTH N, west of Magnolia Avenue at storm sewer outfall to pond	WR154-N1-54370	<50	County ROW	Non-Priority		Major	36	Every 5 Years
P-1A	15		Marathon County Highway Department western outfall to Wausau's storm sewer	WR154-P1-54480	<50	Industrial	Priority	Industrial	Minor	12	Every Year
P-1B	16		Marathon County Highway Department western southern outfall to Wausau's storm sewer	WR154-P1-54480	<50	Industrial	Priority	Industrial	Minor	12	Every Year
P-1C	17		Marathon County Highway Department eastern southern outfall to Wausau's storm sewer	WR154-P1-54480	<50	Industrial	Priority	Industrial	Minor	12	Every Year
P-2A	18		Marathon County Park storm sewer outfall to Wausau's storm sewer	WR154-P2-54420	>50	Park	Priority	Institutional	Major	54	Every Year
P-3A	19		Marathon County Park Department southern outfall to Wausau's storm sewer	WR154-P3-54490	<50	Industrial	Priority	Industrial	Minor	10	Every Year
P-4A	20		UW-Stevens Point Wausau storm sewer outfall to Wausau's storm sewer	WR154-P4-54520	<50	School	Priority	Schools	Minor	12	Every Year
R-1A	21	R-1A	CTH R storm sewer outfall south of O'Brien Steel and west of Home Depot	WR154-R1-54030	>50	County ROW	Priority	Outdoor Storage	Major	60	Every Year
R-1B	22		CTH R storm sewer outfall southwest of Home Depot	WR154-R1-54060	<50	County ROW	Priority	Outdoor Storage	Minor	18	Every Year
R-1C	23		CTH R storm sewer outfall south of Home Depot western of two close outfalls	WR154-R1-54060	<50	County ROW	Non-Priority		Minor	12	Screening Not Required
R-1D	24		CTH R storm sewer outfall south of Home Depot eastern of two close outfalls	WR154-R1-54060	<50	County ROW	Non-Priority		Minor	15	Screening Not Required
R-1E	25	R-1B	CTH R storm sewer outfall south of Home Depot furthest east outfall from Home Depot Area	WR154-R1-54060	<50	County ROW	Non-Priority		Major	36	Every 5 Years
R-1G	26		CTH R storm sewer outfall into Big Rib River north of bridge	WR154-R1R2-54070	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-2A	27	R-2A	CTH R storm sewer outfall into Big Rib River south of bridge, northern most outfall in section	WR154-R1R2-54070	<50	County ROW	Non-Priority		Minor	6	Screening Not Required
R-2B	28		CTH R storm sewer outfall into Big Rib River south of bridge, central outfall in section	WR154-R1R2-54070	<50	County ROW	Non-Priority		Minor	6	Screening Not Required
R-2C	29	R-2B	CTH R storm sewer outfall into Big Rib River south of bridge, southern outfall in section	WR154-R1R2-54070	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-2D	30	R-2C	CTH R cross culvert outfall at northern tip of County Road Nn's interchange pond/wetland	WR154-R1R2-54070	<50	County ROW	Non-Priority		Major	36	Every 5 Years
R-2E	31		CTH R cross culvert outfall at central portion of County Road Nn's interchange pond/wetland	WR154-R1R2-54070	<50	County ROW	Non-Priority		Major	36	Every 5 Years
R-2F	32	R-3	CTH R storm sewer outfall into Pond D at southwest portion of pond	WR154-R2-54140, WR154-R2-54150	<50	County ROW	Priority	Institutions	Major	36	Every Year
R-2G	33		CTH R cross culvert outfall into Pond D at southern portion of pond across the street from The Store	WR154-R2-54151-OMS4	<50	Commercial	Priority	Gas Station	Minor	18	Every Year
R-2H	34		CTR Nn cross culvert outfall into wetland west of CTH R, just west of R/Nn intersection	WR154-R1-54100, WR154-R2-54101-OMS4	<50	Residential	Non-Priority		Minor	24	Screening Not Required
R-2I	35	NN-2	CTR Nn cross culvert outfall into wetland west of CTH R at bend of Nn and west of the power lines	WR154-R1-54100, WR154-R2-54101-OMS4	<50	Residential	Non-Priority		Minor	24	Screening Not Required

R-2J	36		CTR Nn southern swale outlet at snowbird Avenue (east of snowbird Avenue)	WR154-R2-54110, WR154-R2-54111-OMS4	<50	Residential	Non-Priority		Minor	Swale	Screening Not Required
R-2K	37		CTR Nn northern swale outlet at snowbird Avenue (east of snowbird Avenue and curb and gutter section)	WR154-R2-54110, WR154-R2-54111-OMS4	<50	Residential	Non-Priority		Minor	Swale	Screening Not Required
R-3A	38		CTH R storm sewer outfall into swale east of CTH R and east of CoVantage Credit Union	WR154-R3-54170, WR154-R3-54170	>50	County ROW	Non-Priority		Major	42	Every 5 Years
R-3B	39		CTH R storm sewer outfall into swale east of CTH R and east of Pond E	WR154-R3-54180	<50	County ROW	Non-Priority		Minor	30	Screening Not Required
R-3C	40		CTH R storm sewer outfall into swale east of CTH R and east of 226552 Hummingbird Road	WR154-R3-54190	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-3D	41	R-5	CTH R storm sewer outfall into swale east of CTH R and northeast of Azura Memory Care	WR154-R3-54190	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-3E	42	R-4	CTH R storm cross culvert outfall into swale east of CTH R and just south of Kingfisher Lane	WR154-R3-54190, WR154-R3-54191-OMS4	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-3F	43		CTH R storm cross culvert outfall into swale east of CTH R and east of Clements Insurance	WR154-R3-54190, WR154-R3-54191-OMS4	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-3G	44		CTH R storm cross culvert outfall into swale east of CTH R and southeast of Kingdom Hall	WR154-R3-54190, WR154-R3-54191-OMS4	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-3H	45		CTH R storm cross culvert outfall into swale east of CTH R and east of financial design	WR154-R3-54190, WR154-R3-54191-OMS4	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-3I	46		CTH R storm sewer outfall into swale east of CTH R and southeast of pond south of Snowflake Lane	WR154-R3-54190, WR154-R3-54191-OMS4	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-3J	47		CTH R storm cross culvert outfall into swale east of CTH R and 330 yards south of Snowflake Lane	WR154-R3-54250	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-3K	48		CTH R storm cross culvert outfall into swale east of CTH R and northeast of 4502 Hummingbird Road	WR154-R3-54250, WR154-R3-54251-OMS4	<50	Open	Non-Priority		Minor	18	Screening Not Required
R-3L	49		CTH R storm cross culvert outfall into swale east of CTH R and east of 4602 Hummingbird Road	WR154-R3-54250, WR154-R3-54252-OMS4	<50	Open	Non-Priority		Minor	24	Screening Not Required
R-3M	50		CTH R storm cross culvert outfall into swale east of CTH R and east of 225490 Hummingbird Road	WR154-R3-54250	<50	County ROW	Non-Priority		Minor	18	Screening Not Required
R-3O	51		CTH R storm sewer outfall into Pond G's northeast corner and just southeast of Immanuel Church's Pond	WR154-R3-54250, WR154-R3-54251-OMS4, WR154-R3-54252-OMS4	>50	Open	Priority	Institutions	Major	24	Every Year
R-3P	52	Discharge	CTH R storm sewer outfall into Pond G's northeast corner and south of Immanuel Church's Pond	WR154-R3-54250	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-3Q	53	R-6D	CTH R storm sewer outfall into Pond G's northeast part of the wet pond south of the church. Twin culverts	WR154-R3-54250, WR154-R3-54251-OMS4	<50	Institutional	Priority	Institutional	Major	36	Every Year
R-3R	54	R-6A	CTH R storm sewer outfall into Pond G's north part of the wet pond west of outfall R-3Q	WR154-R3-54250	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
R-3S	55	R-6B	CTH R storm sewer outfall into Pond G's southwest corner at intersection of R/N	WR154-R3-54250, WR154-R3-54255-OMS4	>50	Open	Priority	Institutional	Major	30	Every Year
R-3T	56	R-6C	CTH R storm sewer outfall into Pond G's south part of the wet pond east of R/N intersection	WR154-R3-54271-OMS4	<50	WisDOT ROW	Non-Priority		Minor	24	Screening Not Required
R-3U	57		CTH R storm sewer outfall into Pond G's south part of the wet pond northwest of the Wausau DMV	WR154-R3-54271-OMS4	<50	WisDOT ROW	Priority	Institutions	Minor	12	Every Year
R-3V	58		CTH R storm sewer outfall into Pond H	WR154-R3-54250, WR154-R3-54251-OMS4, WR154-R3-54252-OMS4, WR154-R3-54253-OMS4, WR154-R3-54254-OMS4,WR154-R3-54255-OMS4, WR154-R3-54260, WR154-R3-54271-OMS4, WR154-R3-54271-OMS4	>50	Open	Priority	Institutions	Major	36x60	Every Year
R-3W	59		CTH R storm sewer outfall into Pond F	WR154-R3-54180	<50	County ROW	Non-Priority		Minor	15	Screening Not Required
R-3X	60		CTH R dog park parking lot swale outfall into Pond F	WR154-R3-54180	<50	County ROW	Non-Priority		Minor	15	Screening Not Required
R-5A	61		CTH R storm sewer outfall into Wausau's storm sewer	WR154-R5-54010	<50	County ROW	Priority	Hospital	Minor	12	Every Year
RN-1A	62		South of County Road N, west of Glenwood Rn at culvert outfall	EC290-N1-90010, EC290-N1-90011-OMS4	<50	Open	Non-Priority		Major	36	Every 5 Years
RN-1B	63		South of County Road N, west of Hawthorne Rn at culvert outfall	EC290-N1-90010, EC290-N1-90011-OMS4	<50	Open	Non-Priority		Minor	24	Screening Not Required
WW-1A	64		CTR WW northern swale outfall at 51's southbound off ramp	WR217-WW1-17030	<50	County ROW	Non-Priority		Minor	Swale	Screening Not Required
WW-1B	65		CTR WW southern swale outfall at 51's southbound on ramp	WR217-WW1-17010, WR217-WW1-17011-OMS4	<50	County ROW	Priority	Gas Station	Minor	Swale	Every Year
X-1A	66	X-5	CTH X outfall into Weston's storm sewer east of Eau Claire Avenue	WR154-X1-54470, WR154-X1-54471-OMS4	<50	County ROW	Priority	Institutions, Gas Station	Major	72	Every Year
X-2A	67		CTH X storm sewer outfall east of CTH X south of STH-29 east bound on ramp	WR263-X2-63010	<50	County ROW	Non-Priority		Minor	15	Screening Not Required
X-2B	68		CTH X storm sewer outfall west of CTH X east of Peoples State Bank	WR263-X2-63010	<50	County ROW	Non-Priority		Minor	15	Screening Not Required

X-2C	69		CTH X storm sewer outfall west of CTH X 70 yards south of X-2B	WR263-X2-63010	<50	County ROW	Non-Priority		Minor	15	Screening Not Required
X-2D	70		CTH X storm sewer outfall east of CTH X on other side of road from X-2C	WR263-X2-63010	<50	County ROW	Non-Priority		Minor	15	Screening Not Required
X-2E	71		CTH X storm sewer outfall west of CTH X south of STH-29 east bound off ramp	WR263-X2-63010	<50	County ROW	Non-Priority		Minor	12	Screening Not Required
X-2F	72		CTH X storm sewer outfall west of CTH X 60 yards south of X-2C	WR263-X2-63010	<50	County ROW	Non-Priority		Minor	12	Screening Not Required
X-2G	73		CTH X storm sewer outfall northwest of the intersection of CTH X and Weston Avenue	WR263-X2-63010	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
X-2H	74		CTH X storm sewer outfall from north at Yaeger Auto Salvage driveway	WR263-X2-63030, WR263-X2-63031-OMS4	<50	Open	Priority	Outdoor Storage	Major	42	Every Year
X-2I	75		CTH X storm sewer outfall from west at Yaeger Auto Salvage driveway	WR263-X2-63030, WR263-X2-63031-OMS4	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
X-3A	76		CTH X east side, twin cross culverts southwest of Yaeger Auto Salvage	WR263-X3-63060	<50	County ROW	Non-Priority		Major	40	Every 5 Years
X-3B	77		CTH X east side, twin cross culverts 440 yards south of outfall X-3A	WR263-X3-63070	<50	County ROW	Non-Priority		Minor	30	Screening Not Required
X-3C	78		CTH X east side, storm sewer outfall 360 yards northeast of Shorey Avenue	WR263-X3-63310	<50	County ROW	Non-Priority		Minor	12	Screening Not Required
X-3D	79		CTH X west side, northwest of Shorey Avenue and CTH X, cross culverts 60 yards north of outfall Shorey	WR263-X3-63320	<50	County ROW	Non-Priority		Major	60x120	Every 5 Years
X-3E	80		CTH X west side at southwest intersection of Shorey Avenue and CTH X	WR263-X3-63320	<50	County ROW	Non-Priority		Major	40	Every 5 Years
X-3F	81		CTH X west side 150 yards southwest of intersection of Shorey Avenue and CTH X	WR263-X3-63080	<50	County ROW	Non-Priority		Minor	15	Screening Not Required
X-3G	82		CTH X storm sewer outfall east of CTH X just south of power lines crossing	WR263-X3-63090, WR263-X3-63100, WR263-X3-63330	<50	County ROW	Non-Priority		Minor	18	Screening Not Required
X-3I	83		CTH X storm sewer outfall east of CTH X south of Howland Avenue / CTH X intersection	WR263-X3-63110	<50	County ROW	Non-Priority		Minor	15	Screening Not Required
X-3J	84		CTH X swale outfall west of CTH X east of towers	WR263-X3-63160	<50	County ROW	Non-Priority		Minor	Swale	Screening Not Required
X-4A	85		CTH X swale outfall south of CTH X, east of CTR XX at intersection	WR263-X4-63340, WR263-X4-63341-OMS4, WR263-X4-63191-OMS4	>50	Residential	Non-Priority		Major	Swale	Every 5 Years
X-4B	86		CTH X swale outfall north of CTH X, east of CTR XX at intersection, southwest of gas station	WR263-X4-63200, WR263-X4-63201-OMS4	>50	Open	Non-Priority		Major	Swale	Every 5 Years
X-4C	87		CTH X swale outfall west of CTH X at south end of development on CTH X north of Bull Junior Creek	WR263-X4-63360, WR263-X4-63361-OMS4	<50	Residential	Non-Priority		Major	Swale	Every 5 Years
X-4D	88		CTH X swale outfall east of CTH X at south end of development on CTH X north of Bull Junior Creek	WR263-X4-63230, WR263-X4-63231-OMS4	>50	Residential	Non-Priority		Major	Swale	Every 5 Years
X-4E	89		CTH X swale outfall east of CTH X at southern shores of Bull Junior Creek next to the bridge	WR263-X4-63250, WR263-X4-63250	<50	Residential	Non-Priority		Minor	Swale	Screening Not Required
X-4F	90	X-6	CTH X swale outfall west of CTH X at southern shores of Bull Junior Creek next to the bridge	WR263-X4-63290	<50	County ROW	Non-Priority		Minor	Swale	Screening Not Required
XX-1A	91		CTR XX cross culvert outfall west of CTR XX north of 2125 CTR XX	WR263-X4-63210, WR263-X4-63211-OMS4	<50	Open	Non-Priority		Major	24	Every 5 Years
XX-1B	92		CTR XX swale outfall west of CTR XX north of 2125 CTR XX	WR263-X4-63280	<50	County ROW	Non-Priority		Minor	Swale	Screening Not Required
XX-1C	93		CTR XX swale outfall south of CTR XX north of On Q Solutions	WR263-X4-63210	<50	County ROW	Non-Priority		Minor	24	Screening Not Required
XX-1D	94		CTR XX cross culvert outfall on south side of road at Tesch Lane	WR263-X4-63280, WR263-X4-63281-OMS4	<50	County ROW	Priority	Hospital	Minor	15	Every Year
XX-1E	95		CTR XX cross culvert outfall on north side of road at Tesch Lane	WR263-X4-63210, WR263-X4-63211-OMS4	<50	County ROW	Priority	Commercial	Minor	18	Every Year
XX-1F	96		CTR XX swale outfall south of CTR XX west of tower road	WR263-X4-63280, WR263-X4-63281-OMS4	<50	County ROW	Priority	Industrial	Minor		Every Year
XX-2A	97		CTR XX cross culvert outfall north of CTR XX at Trailwood Lane	WR263-XX2-63260	<50	County ROW	Non-Priority		Minor	12	Screening Not Required
XX-2B	98		CTR XX cross culvert outfall north of CTR XX at southwest of Harley-Davidson	WR263-XX2-63260, WR263-XX2-63263-OMS4	<50	County ROW	Non-Priority		Minor	12	Screening Not Required
XX-2C	99		CTR XX storm sewer outfall into Rothschild Storm Sewer at northeast end of CTR XX	WR263-XX2-63260, WR263-XX2-63261-OMS4, WR263-XX2-63262-OMS4	<50	County ROW	Priority	Commercial, Industrial	Major	42	Every Year
Z-1A	100		CTH Z storm sewer outfall north of CTH Z at Independence Lane	WR156-Z1-56021-OMS4, WR156-Z1-56021-OMS4	<50	Residential	Non-Priority		Minor	24	Screening Not Required
Z-1B	101		CTH Z swale outfall north of CTH Z west of N. 15th St	WR156-Z1-56010	<50	County ROW	Non-Priority		Minor	Swale	Screening Not Required
Z-1C	102		CTH Z swale outfall south of CTH Z west of N. 15th St	WR156-Z1-56021-OMS4, WR156-Z1-56021-OMS4	<50	Residential	Non-Priority		Minor	Swale	Screening Not Required
Z-1D	103		CTH Z swale outfall north of CTH Z west of Wellborn Road	WR154-Z1-54400	<50	County ROW	Non-Priority		Minor	Swale	Screening Not Required

Z-1E	104		CTH Z swale outfall south of CTH Z west of Wellborn Road	WR154-Z1-54390, WR154-Z1-54390	<50	County ROW	Non-Priority		Minor	Swale	Screening Not Required
	105	N-2	Southeast of CTH N, main cross culvert inlet to SAFER S				Non-Priority		Major	3x48	Every 5 Years

Notes:

[1]Major 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.

[2]Priority 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 5 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. However, this is interpreted to mean CTH ROW that on its own has 80 or more percent impervious does not constitute a priority designation.
-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.

Table 3.02-7 County Outfall Screening Schedule

Outfall ID	Outfall Number	Original ID	Location	Contributing Subbasins	Drainage Area	Predominant Land Use	Priority	Reason for Priority	Major/Minor	Size (in)	Recommended Screening Frequency	Future Screening Schedule						
												2023	2024	2025	2026	2027	2028	2029
J-1A	1	J-1	West of CTH-J, 60 yards north of Callon Avenue by bridge	EC155-J1-55020, EC155-J1-55021-OMS4	<50	Residential	Priority	Hospital	Minor	Swale	Every Year	x	x	x	x	x	x	x
J-2A	3	J-2	South of Schofield Avenue, east of CTH J	EC155-J2-55010, EC155-J2-55011-OMS4	<50	Industrial	Priority	Scrap Yard	Minor	18	Every Year	x	x	x	x	x	x	x
J-2B	4		Weston Storm Sewer under Christie Lane East of CTH J	EC155-J2-55040	<50	Commercial	Priority	Gas Station, Outdoor Storage	Minor	24	Every Year	x	x	x	x	x	x	x
J-2C	5	J-3	West of CTH J, North of Hwy 29 west bound on-ramp	EC155-J2-55040	<50	County ROW	Priority	Outdoor Storage	Minor	Swale	Every Year	x	x	x	x	x	x	x
N-1G	14		South of CTH N, west of Magnolia Avenue at storm sewer outfall to pond	WR154-N1-54370	<50	County ROW	Non-Priority		Major	36	Every 5 Years	x					x	
P-1A	15		Marathon County Highway Department western outfall to Wausau's storm sewer	WR154-P1-54480	<50	Industrial	Priority	Industrial	Minor	12	Every Year	x	x	x	x	x	x	x
P-1B	16		Marathon County Highway Department western southern outfall to Wausau's storm sewer	WR154-P1-54480	<50	Industrial	Priority	Industrial	Minor	12	Every Year	x	x	x	x	x	x	x
P-1C	17		Marathon County Highway Department eastern southern outfall to Wausau's storm sewer	WR154-P1-54480	<50	Industrial	Priority	Industrial	Minor	12	Every Year	x	x	x	x	x	x	x
P-2A	18		Marathon County Park storm sewer outfall to Wausau's storm sewer	WR154-P2-54420	>50	Park	Priority	Institutional	Major	54	Every Year	x	x	x	x	x	x	x
P-3A	19		Marathon County Park Department southern outfall to Wausau's storm sewer	WR154-P3-54490	<50	Industrial	Priority	Industrial	Minor	10	Every Year	x	x	x	x	x	x	x
P-4A	20		UW-Stevens Point Wausau storm sewer outfall to Wausau's storm sewer	WR154-P4-54520	<50	School	Priority	Schools	Minor	12	Every Year	x	x	x	x	x	x	x
R-1A	21	R-1A	CTH R storm sewer outfall south of O'Brien Steel and west of Home Depot	WR154-R1-54030	>50	County ROW	Priority	Outdoor Storage	Major	60	Every Year	x	x	x	x	x	x	x
R-1B	22		CTH R storm sewer outfall southwest of Home Depot	WR154-R1-54060	<50	County ROW	Priority	Outdoor Storage	Minor	18	Every Year	x	x	x	x	x	x	x
R-1E	25	R-1B	CTH R storm sewer outfall south of Home Depot furthest east outfall from Home Depot Area	WR154-R1-54060	<50	County ROW	Non-Priority		Major	36	Every 5 Years	x					x	
R-2D	30	R-2C	CTH R cross culvert outfall at northern tip of County Road Nn's interchange pond/wetland	WR154-R1R2-54070	<50	County ROW	Non-Priority		Major	36	Every 5 Years	x					x	
R-2E	31		CTH R cross culvert outfall at central portion of County Road Nn's interchange pond/wetland	WR154-R1R2-54070	<50	County ROW	Non-Priority		Major	36	Every 5 Years	x					x	
R-2F	32	R-3	CTH R storm sewer outfall into Pond D at southwest portion of pond	WR154-R2-54140, WR154-R2-54150	<50	County ROW	Priority	Institutions	Major	36	Every Year	x	x	x	x	x	x	x
R-2G	33		CTH R cross culvert outfall into Pond D at southern portion of pond across the street from The Store	WR154-R2-54151-OMS4	<50	Commercial	Priority	Gas Station	Minor	18	Every Year	x	x	x	x	x	x	x
R-3A	38		CTH R storm sewer outfall into swale east of CTH R and east of CoVantage Credit Union	WR154-R3-54170, WR154-R3-54170	>50	County ROW	Non-Priority		Major	42	Every 5 Years	x					x	
R-3O	51		CTH R storm sewer outfall into Pond G's northeast corner and just southeast of Immanuel Church's Pond	WR154-R3-54250, WR154-R3-54251-OMS4, WR154-R3-54252-OMS4	>50	Open	Priority	Institutions	Major	24	Every Year	x	x	x	x	x	x	x
R-3Q	53	R-6D	CTH R storm sewer outfall into Pond G's northeast part of the wet pond south of the church. Twin culverts	WR154-R3-54250, WR154-R3-54251-OMS4	<50	Institutional	Priority	Institutional	Major	36	Every Year	x	x	x	x	x	x	x
R-3S	55	R-6B	CTH R storm sewer outfall into Pond G's southwest corner at intersection of R/N	WR154-R3-54250, WR154-R3-54255-OMS4	>50	Open	Priority	Institutional	Major	30	Every Year	x	x	x	x	x	x	x
R-3U	57		CTH R storm sewer outfall into Pond G's south part of the wet pond northwest of the Wausau DMV	WR154-R3-54271-OMS4	<50	WisDOT ROW	Priority	Institutions	Minor	12	Every Year	x	x	x	x	x	x	x

R-3V	58		CTH R storm sewer outfall into Pond H	WR154-R3-54250, WR154-R3-54251-OMS4, WR154-R3-54252-OMS4, WR154-R3-54253-OMS4, WR154-R3-54254-OMS4,WR154-R3-54255-OMS4, WR154-R3-54260, WR154-R3-54271-OMS4, WR154-R3-54271-OMS4	>50	Open	Priority	Institutions	Major	36x60	Every Year	x	x	x	x	x	x	x
R-5A	61		CTH R storm sewer outfall into Wausau's storm sewer	WR154-R5-54010	<50	County ROW	Priority	Hospital	Minor	12	Every Year	x	x	x	x	x	x	x
RN-1A	62		South of County Road N, west of Glenwood Rn at culvert outfall	EC290-N1-90010, EC290-N1-90011-OMS4	<50	Open	Non-Priority		Major	36	Every 5 Years	x					x	
WW-1B	65		CTR WW southern swale outfall at 51's southbound on ramp	WR217-WW1-17010, WR217-WW1-17011-OMS4	<50	County ROW	Priority	Gas Station	Minor	Swale	Every Year	x	x	x	x	x	x	x
X-1A	66	X-5	CTH X outfall into Weston's storm sewer east of Eau Claire Avenue	WR154-X1-54470, WR154-X1-54471-OMS4	<50	County ROW	Priority	Institutions, Gas Station	Major	72	Every Year	x	x	x	x	x	x	x
X-2H	74		CTH X storm sewer outfall from north at Yaeger Auto Salvage driveway	WR263-X2-63030, WR263-X2-63031-OMS4	<50	Open	Priority	Outdoor Storage	Major	42	Every Year	x	x	x	x	x	x	x
X-3A	76		CTH X east side, twin cross culverts southwest of Yaeger Auto Salvage	WR263-X3-63060	<50	County ROW	Non-Priority		Major	40	Every 5 Years	x					x	
X-3D	79		CTH X west side, northwest of Shorey Avenue and CTH X, cross culverts 60 yards north of outfall Shorey	WR263-X3-63320	<50	County ROW	Non-Priority		Major	60x120	Every 5 Years	x					x	
X-3E	80		CTH X west side at southwest intersection of Shorey Avenue and CTH X	WR263-X3-63320	<50	County ROW	Non-Priority		Major	40	Every 5 Years	x					x	
X-4A	85		CTH X swale outfall south of CTH X, east of CTR XX at intersection	WR263-X4-63340, WR263-X4-63341-OMS4, WR263-X4-63191-OMS4	>50	Residential	Non-Priority		Major	Swale	Every 5 Years	x					x	
X-4B	86		CTH X swale outfall north of CTH X, east of CTR XX at intersection, southwest of gas station	WR263-X4-63200, WR263-X4-63201-OMS4	>50	Open	Non-Priority		Major	Swale	Every 5 Years	x					x	
X-4C	87		CTH X swale outfall west of CTH X at south end of development on CTH X north of Bull Junior Creek	WR263-X4-63360, WR263-X4-63361-OMS4	<50	Residential	Non-Priority		Major	Swale	Every 5 Years	x					x	
X-4D	88		CTH X swale outfall east of CTH X at south end of development on CTH X north of Bull Junior Creek	WR263-X4-63230, WR263-X4-63231-OMS4	>50	Residential	Non-Priority		Major	Swale	Every 5 Years	x					x	
XX-1A	91		CTR XX cross culvert outfall west of CTR XX north of 2125 CTR XX	WR263-X4-63210, WR263-X4-63211-OMS4	<50	Open	Non-Priority		Major	24	Every 5 Years	x					x	
XX-1D	94		CTR XX cross culvert outfall on south side of road at Tesch Lane	WR263-X4-63280, WR263-X4-63281-OMS4	<50	County ROW	Priority	Hospital	Minor	15	Every Year	x	x	x	x	x	x	x
XX-1E	95		CTR XX cross culvert outfall on north side of road at Tesch Lane	WR263-X4-63210, WR263-X4-63211-OMS4	<50	County ROW	Priority	Commercial	Minor	18	Every Year	x	x	x	x	x	x	x
XX-1F	96		CTR XX swale outfall south of CTR XX west of tower road	WR263-X4-63280, WR263-X4-63281-OMS4	<50	County ROW	Priority	Industrial	Minor		Every Year	x	x	x	x	x	x	x
XX-2C	99		CTR XX storm sewer outfall into Rothschild Storm Sewer at northeast end of CTR XX	WR263-XX2-63260, WR263-XX2-63261-OMS4, WR263-XX2-63262-OMS4	<50	County ROW	Priority	Commercial, Industrial	Major	42	Every Year	x	x	x	x	x	x	x

Notes:

[1]Major 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.

[2]Priority 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. However, this is interpreted to mean CTH ROW that on its own has 80 or more percent impervious does not constitute a priority designation.
-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.

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) The WDNR shall be notified immediately in accordance with NR 706, WAC, 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. The WDNR shall be notified via the 24-hour toll free spill hotline at 1-800-943-0003. The County will cooperate with WDNR staff in efforts to investigate and prevent such discharges from polluting waters of the state.

(5) The County shall take appropriate action to remove illicit discharges from its MS4 system as soon as possible. If it will take more than 3 days to remove an illicit connection, the County will contact the WDNR to discuss an appropriate action and/or timeframe for removal.

(6) If a suspected illicit discharge that originates from the County's permitted area is found to discharge directly to a storm sewer or property under the jurisdiction of another municipality, the County 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 maximum extent practicable. Any actions taken to eliminate sanitary conveyance leakage will be recorded and reported to the WDNR in the Annual Report.

c. Dye Testing Notification

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

6. Responsible Parties

Jeff Pritchard
Planning Analyst (PA)
Marathon County
210 River Drive
Wausau, WI 54403
715-261-6042

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 3.02-8.

	Activity	Measurable Goal	Responsible Party	Anticipated Completion Date
1	Implement the IDDE program described in Section 3.02.C.	See above	PA	Ongoing
2	Conduct field screening for illicit discharges as described in Section 3.02.C. using the blank field screening form in Appendix F.	See above	PA	By November 15, annually
3	Track the IDDE program activities for annual reporting to WDNR.	Once each year	PA	Once each year
4	To promote, publicize, and facilitate public reporting of illicit discharges or water quality impacts of discharges to/from the MS4, provide a reporting form on the County's Web site using the Online Reporting Form Template and verbiage included in Appendix F.	Ongoing	PA	Ongoing
5	Provide a training memorandum to County staff using the Reporting Form Publicizing Narrative verbiage in Appendix F.	Once each year	PA	Ongoing

Table 3.02-8 IDDE Plan and Measurable Goals

C. Construction Site Pollution Control

1. Ordinance Revisions

The County does not currently have a Construction Site Erosion Control Ordinance and no changes are recommended by this plan.

2. Measurable Goals

Section 3.01 documents existing County activities. It is recommended that the County continue those activities and supplement them with the recommendations included in Table 3.02-9.

	Activity	Measurable Goal	Responsible Party	Anticipated Completion Date
1	Continue participation in the Memorandum of Agreement	Ongoing	MM	Ongoing

Table 3.02-9 Construction Site Pollution Control Plan and Measurable Goals

D. Postconstruction Stormwater Management

1. Ordinance Revisions

The County does not currently have a Postconstruction Stormwater Management Ordinance and no changes are recommended by this plan.

2. Measurable Goals

Section 3.01 documents existing County activities. It is recommended that the County 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 participation in the MOA	Ongoing	MM	Ongoing
2	Implement the Post-Construction Stormwater Management Facilities: Long-Term Maintenance, Inspection, and Enforcement Procedures contained in Appendix D and E.	Implement New Program	MM	Implement program in 2023.

Table 3.02-10 Postconstruction Stormwater Management Plan and Measurable Goals

E. Pollution Prevention for Municipal Operations

In Section 3.01, Strand documented existing County activities. Strand recommends that the County continue those activities and supplement them with the recommendations included in Table 3.02-11.

	Activity	Measurable Goal	Responsible Party	Anticipated Completion Date
1	Stormwater Management Facilities (County-Owned)-Continue to maintain existing County-owned or operated stormwater BMPs. Maintenance of stormwater facilities should be in accordance with Appendices D and E.	Ongoing.	MM	Ongoing.
3	County-Owned Public Works Facilities–Implement the recommended activities listed in the SWPPP provided in Appendix C. Track the quantity of used oil recycled each year.	Ongoing and report annually.	MM	Ongoing.
4	Storm Sewer System Maintenance Activities–Continue existing programs for street sweeping, catch basin cleaning, and material handling and disposal. Increase frequency of catch basin cleaning. Begin tracking the quantities of street sweeping and catch basin cleaning in 2023. Continue to promote home composting.	Ongoing. Track identified quantities.	MM	Ongoing and begin tracking quantities of catch basin cleaning in 2023.
5	Winter Road Management–See program details in Table 3.01-5. Continue current operations and look for possible ways to decrease deicer use while still maintaining public safety. References regarding deicers include: ▪ https://dnr.wi.gov/topic/stormwater/publications.html ▪ https://wisconsindot.gov/Pages/doing-bus/local-gov/hwy-mnt/mntc-manual/chapter06.aspx Continue tracking the quantity of sand, salt, and brine used by the County each year.	Ongoing and report annually.	MM	Ongoing.
6	Nutrient Management–Continue existing program, including tracking the type, quantity, and location of fertilizer usage each year. Obtain soil tests to determine fertilizer need at any County parks or other County-owned properties before application in 2023 and for any future application.	Ongoing and report annually.	Parks Department	Ongoing
7	Environmentally sensitive development–Continue to promote environmentally sensitive development.	Ongoing.	PA	Ongoing.
8	Internal Training and Education–Hold one annual training event for appropriate staff regarding the County's SWPPP.	Once each year.	MM	Once each year.
9	Track Pollution Prevention for County Operations for annual report to WDNR.	Once each year.	MM	Once each year.

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

F. Stormwater Quality Management

The County currently meets the 20 percent reduction in the annual average mass of TSS discharging from the County'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 TP reduction

requirements. Section 6 recommends stormwater planning activities to meet the TMDL TSS and TP 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 County into compliance with the Wisconsin River TMDL TP reduction requirements.	Achieve Wisconsin River TMDL TP reduction requirements.	MM	To Be Determined, Ongoing.

Table 3.02-12 SQMP and Measurable Goal

G. Storm Sewer System Map

The storm sewer system maps submitted in this plan meet the WPDES permit requirements. Strand recommends 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 or expansion of lands within the County's stormwater-permitted area.	MM	Yearly by March 1, if needed, for submittal to WDNR on an annual basis.

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

H. Annual Report

The WPDES stormwater permit requires the County 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 County is 138,013 (Year 2020 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	PA and MM	Once each year, by March 1.
2	Preparation and submittal of annual report.	Once each year	PA and MM	Annually, by March 31.
3	Phase I Permit Fee ($500) under NR 216.08 for a County system.	Once each year	PA and MM	Payable by June 30 each year.

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

I. Cooperation

The County participates with the NCWSC for public education and outreach and public involvement and participation activities. The County also contributed to the development of the Lake Wausau Protection and Improvement Plan of 2018 and is supportive of its implementation.

SECTION 4
STORMWATER QUALITY MODELING

4.01 INTRODUCTION

A. General

Water quality analysis for the County was completed using the Source Loading and Management Model (WinSLAMM v10.4.1), herein referred to as WinSLAMM. WinSLAMM is a computer model approved by WDNR to address the requirements of NR 151 that analyzes nonpoint source 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 nonpoint source 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 County'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 County 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 County's stormwater management system with no controls or BMPs applied. The controls condition must estimate the County's current level of pollutant reductions based on current County 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 County's case, its *November 2011 Stormwater Pollution Analysis* documented the achievement of the WDNR-mandated 20 percent TSS reduction requirement by submittal of MS4 existing conditions modeling in WinSLAMM 9.4.0 showing a 20 percent TSS reduction. As such, the County does not need to maintain the MS4 model. Rather, the scope of services for this project includes performing MS4/TMDL modeling using WDNR's current guidance to assess conformance with the Wisconsin River TMDL. The MS4/TMDL modeling will document the existing conditions pollutant loadings using the WDNR's current MS4/TMDL guidance.

The pollutant loading analysis will be used to evaluate compliance with the Wisconsin River TMDL wasteload allocations. As discussed in Section 1, the County will eventually be required to implement stormwater management practices so the 'with controls' condition meets the wasteload allocations to ultimately gain compliance with the Wisconsin River TMDL requirements.

C. Analysis Methodology

County 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 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.

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 4.01-1 Source Area by Land Use

Class	Land Use	Pitched Roofs		Flat Roofs		Driveways		Sidewalks		Parking/Storage		Unpaved Parking/Storage		
		Connected (percent)	Unconnected (percent)	Connected (percent)	Unconnected (percent)	Connected (percent)	Unconnected (percent)	Connected (percent)	Unconnected (percent)	Connected (percent)	Unconnected (percent)	Connected (percent)	Unconnected (percent)	Total (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 4.01-2 Distribution of Impervious Source Areas by Land Use Class

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

Class	Land Use	Playground		Pervious Areas							
		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)	Total (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 County'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 County lands can be exempted from inclusion in the lands required to be modeled in WinSLAMM. Figure 2.01-1 shows the watersheds modeled in WinSLAMM. Exempted watersheds are identified with a numeric reference followed by the word "OFF" or "Exempt RIP" (for example: WR154-R1-54049-OFF). In all cases, exempt watersheds are exempted because they drain to riparian lands without going through an MS4. Areas upstream of and draining into or through County MS4 areas have watershed identifiers ending in OMS4 (for example: WR154-R1-54021-OMS4).

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

Land Use	Parking Density	Start/End Dates	Winter Season Range
Rain File	WisReg-Green Bay Five Year Rainfall.ran	1/1/68 to 12/30/72	11/25 to 3/29
Pollutant Probability Distribution File	WI_GEO03.ppdx	--	--
Runoff Coefficient File	WI_SL06 Dec 06.rsvx	--	--
Particulate Solids Concentration File	V10.1 WI_AVG01.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	--	--

Notes: PSD=Particle Size Distribution
Link to WisDOT Transportation Traffic Count Map:
https://wisdot.maps.arcgis.com/apps/webappviewer/index.html?id=2e12a4f051de4ea9bc865ec6393731f8

Table 4.02-1 WinSLAMM Parameter Files

4.03 SWALE MODELING AND DOUBLE-RING INFILTROMETER TESTING

In August 2020, double-ring infiltrometer testing was completed at various locations within the County shown on Figure 2.03-1 with a testing approach approved by Teagan Seneczko of the WDNR in an August 6, 2020, e-mail. The results of the field infiltration testing calculated an average dynamic infiltration rate of 2.06 in/hr, excluding the highest and lowest test results. This infiltration rate was approved by Teagan Seneczko of the WDNR in an October 6, 2020, e-mail and are 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 G.

4.04 BASELINE CONDITIONS ANALYSIS

To evaluate the effectiveness of the County'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 County 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 provides a map showing the locations of the County-owned or municipally owned BMPs within the County's stormwater-permitted area. Appendix H includes photographs of the various BMPs in the County.

A. Street Sweeping

The County currently performs street sweeping on curb and gutter areas and bridges once every spring with a high efficiency regenerative air street sweeper (Schwarze A 7000). Street sweepings are disposed of at the Marathon County Landfill. Table 4.05-1 provides the street sweeping parameters used in the modeling.

Land Use	Parking Density	Parking Controls
CTH ROW	None	Yes

Table 4.05-1 Street Sweeping Parameters

B. Wet Detention Basins

There are three County-owned and one Town of Rib Mountain-owned wet detention basins in the County's stormwater-permitted area as shown on Figure 2.01-1 and listed in Table 4.05-3.

C. Inlet and Catch Basin Sumps

As described in Section 3.01, inlet and catch basin sumps are included in our modeling effort. The catch basins and inlets with sumps locations are shown on Figure 2.01-1. Table 4.05-2 summarizes the County's catch basin cleaning program parameters for catch basins at Marathon County Park.

Parameter	Value
Average sump depth below catch basin outlet invert (ft)	2.0
Depth of sediment in catch basin sump at beginning of study period (ft)	0
Typical outlet pipe diameter (ft)	1.0
Typical outlet pipe Manning's n	0.013
Typical outlet pipe slope (ft/ft)	0.02 (2%)
Typical catch basin sump surface area (sf)	7.07 (3-foot-diameter)
Catch basin depth from sump bottom to street level (ft)	5.1
Leakage rate through sump bottom (in/hr)	0.0
Catch basin cleaning frequency	Once every 2 years

ft=feet
ft/ft=feet per foot
sf=square feet

Table 4.05-2 Catch Basin Cleaning Parameters

Table 4.05-3 County Detention Basin Properties

BMP Name	Basin	Approximate Year constructed	Owner	BMP Type	BMP Modeled As	Modeled in Existing Conditions	O&M Plan (with Inspection Procedures and Schedule)	Record Drawings	Maintenance Agreement	Potential Retrofit	Note
Pond D	WR154-R2-54140 & WR154-R2-54150	2006	Marathon County	Wet Pond	Wet Pond	Yes	Yes	Yes	Yes	No	
Pond F	WR154-R3-54180	2005	Marathon County	Wet Pond	Wet Pond	Yes	Yes	Yes	Yes	No	
Pond G	WR154-R3-54250 & WR154-R3-54260	2005	Marathon County	Wet Pond	Wet Pond	Yes	Yes	Yes	Yes	No	
Pond H	WR154-R3-54250 & WR154-R3-54260	2005	Town of Rib Mountain	Wet Pond	Wet Pond	Yes	Yes	Yes	Yes	No	See Appendix I for Memorandum of Agreement (Item 6 Pollution Prevention)
SAFER N	WR154-N1-54290	2005	Marathon County	Bioretention Basin	Bioretention Basin	Yes	Yes	Yes	Yes	No	
UWSP N	WR154-P4-54520	2010	Marathon County	Bioretention Basin	Bioretention Basin	Yes	Yes	Yes	Yes	No	
UWSP S	WR154-P4-54520	2010	Marathon County	Bioretention Basin	Bioretention Basin	Yes	Yes	Yes	Yes	No	
Exxon Mobil	WR263-X4-63212-OMS4	2016	Exxon Mobil	Bioretention Basin	Bioretention Basin	Yes	No	No	No	No	This pond was not modeled for treatment, it was modeled for flow reduction.
Whispering Winds	WR263-X4-63191-OMS4	2013	Whispering Winds	Bioretention Basin	Bioretention Basin	Yes	No	No	No	No	This pond was not modeled for treatment, it was modeled for flow reduction.

D. Infiltration Basins

There are no infiltration basins in the County's stormwater-permitted area as shown on Figure 2.01-1 and listed in Table 4.05-3.

E. Dry Detention Basins

There are no dry detention basins in the County's stormwater-permitted area as shown on Figure 2.01-1 and listed in Table 4.05-3.

F. Grass-Lined Ditches/Swales

Areas drained by grass-lined ditches/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 County's stormwater-permitted area. Table 4.05-5 shows the swale parameters used in the modeling.

It should be noted that WDNR does not allow infiltration credit for grass-lined ditches/swales that have less than a 1 percent longitudinal slope where visual evidence indicates the infiltration rate has been reduced (for example, significant duration of ponded water or evidence of wetland vegetation). If there is evidence of reduced infiltration rate, infiltration rates appropriate for clay soils should be used. Based on the review of the County'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 some of the ditches in watersheds with a weighted average of less than 1 percent longitudinal slope had evidence of ponded water or wetland vegetation requiring use of a clay dynamic infiltration rate (0.035 in/hr) in those watersheds.

As described above, a WDNR-approved dynamic infiltration rate of 2.06 in/hr was used for all other watersheds based on the results of infiltration testing included in Appendix G.

G. Bioretention Basins

There are three bioretention basins in the County's stormwater-permitted area as shown on Figure 2.01-1 and listed in Table 4.05-3.

H. Hydrodynamic Separators

There are no hydrodynamic separators within the County's stormwater permitted area as shown on Figure 2.01-1 and listed in Table 4.05-3.

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

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

I. Use of Other Device (OD)

In cases where WinSLAMM modeling uses an OD to reflect the percent TSS reduction of a stormwater BMP based on information contained in a stormwater quality plan or other equivalency, a second WinSLAMM model was run changing the OD to reflect an equivalent TP reduction. Most municipal ordinances did not historically include a requirement for TP reduction nor a requirement to report TP performance of a stormwater BMP with submitted stormwater plans. For the municipalities that Strand has assisted in updating stormwater quality management plans (Rothschild, Schofield, Kronenwetter, Weston), Strand has recommended that ordinance modifications include the requirement to report TP performance of a stormwater BMP with submitted stormwater plans.

The WDNR has used a factor of 40 percent TSS reduction being equivalent to a 27 percent TP reduction in a number of modeling guidance documents. WDNR states that the original genesis of this equivalency factor was based on a wet detention basin with medium-density residential-no alleys WinSLAMM standard land use in silty soils. Discussions with WDNR's Eric Rortvedt and Tim Linskens on August 11, 2022, indicate that this equivalency factor should be refined based on a series of theoretical WinSLAMM runs with various WinSLAMM standard land uses in silty soils served by a 40 percent and 80 TSS reduction wet detention basin (basin geometry consistent with WDNR Technical Standard 1001). Analysis to address the WDNR's request for refinement is included in Figure 4.04-1 for a theoretical 10-acre development site in the various WinSLAMM standard land uses in silty soils using the 1-year Madison rainfall file (WisReg–Madison WI 1981). As can be seen, in all cases the equivalency factor yields a higher TP reduction than the WDNR's previously stated standard (40 percent TSS/27 percent TP; 80 percent TSS/54 percent TP). The average of all modeled WinSLAMM standard land uses averages 40-percent TSS/30.1-percent TP and 80 percent TSS/60.5 percent TP as shown in Figure 4.05-1.

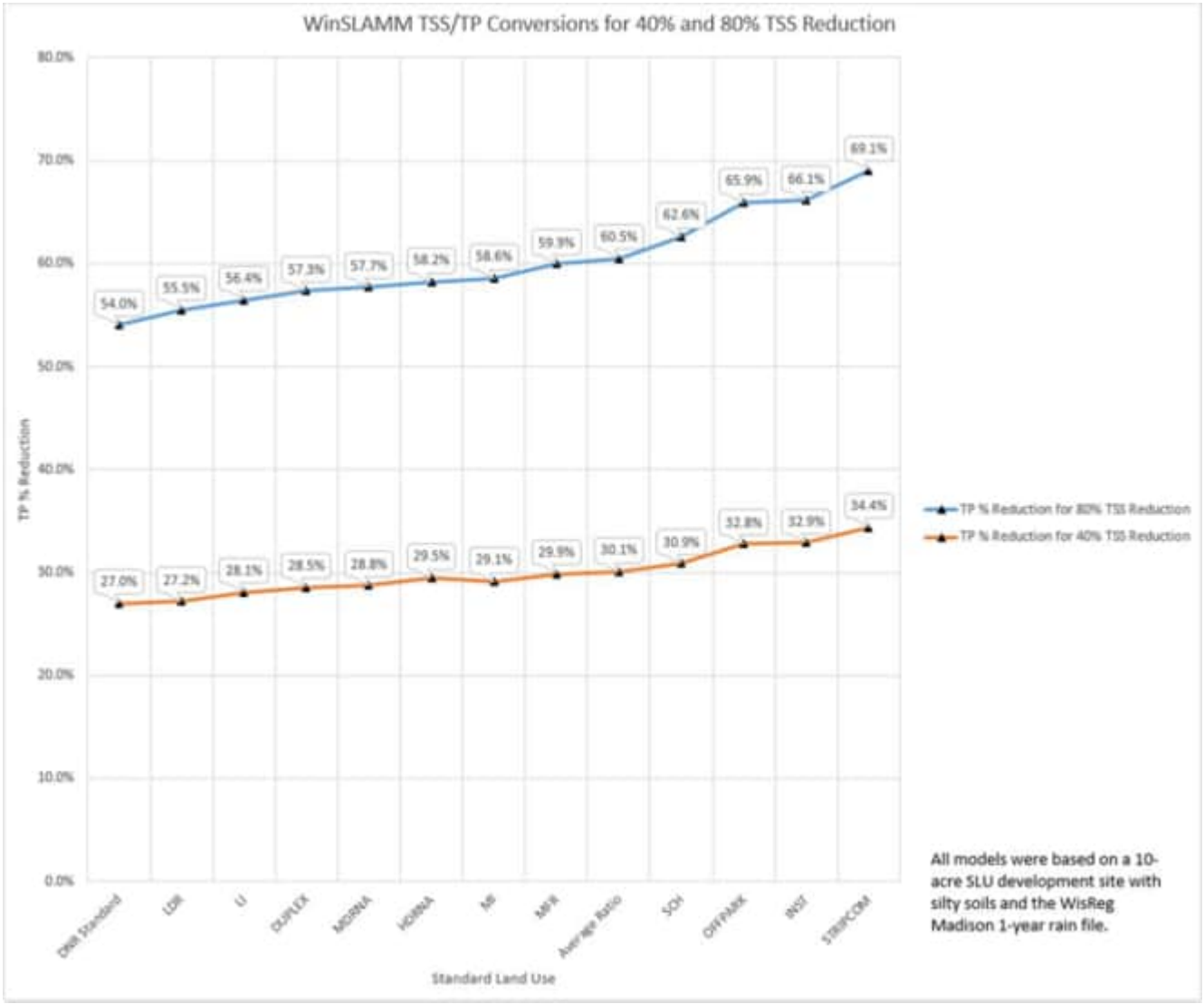


Figure 4.05-1 TSS and TP Equivalency Factor Analysis

The modeling herein uses a prorated equivalency factor based on the amount of WinSLAMM standard land use within the stormwater BMP's watershed as shown in Table 4.05-4. The same equivalency factors are used regardless of BMP type.

Reach	Basin	Stormwater BMP	BMP Type	OD: TSS Reduction (%)	OD: Equivalent TP Reduction Factor (%)
154	WR154-R3-54254-OMS4	Immanuel Baptist Church	Wet Pond	80.00	65.90
154	WR154-R3-54253-OMS4	Bone and Joint	Wet Pond	80.00	65.90

Note: Equivalent TP Reduction Factor based on prorated amount of WinSLAMM standard land use within the stormwater BMP's watershed and prorated performance per Figure 4.04-1. In general, use of OD should be limited to standalone stormwater BMPs. Use of OD for stormwater BMPs in series will not track the particle size distribution to the downstream stormwater BMPs.

Table 4.05-4 TSS and TP Equivalency Factors at Stormwater BMPs

Table 4.05-5 Swale and Undeveloped Roadside Modeling Parameters

Basin	Length (feet)	Average Swale Length	Typical Bottom Width	Typical Swale Side Slope (_ft H: 1 ft V)	Typical Slope (ft/ft)	Swale Retardance Factor	Typical Grass Height (inches)	Percent Drainage Area Treated	Dynamic Infiltration Rate (in/hr)	Evidence of Ponding	Percent Undeveloped Roadside	Length of Wet Swale
WR217-WW1-17010	1664	313	8.8	5.5	0.037	C	3	100%	2.06	No	0%	0
WR217-WW1-17011-OMS4	1038	313	7.3	7.1	0.009	C	3	100%	2.06	No	0%	0
WR217-WW1-17030	1646	313	8.8	5.5	0.039	C	3	100%	2.06	No	0%	0
WR153-J3-53010	949	313	9.7	7.8	0.007	C	3	100%	2.06	No	0%	0
WR153-J3-53020	1041	313	9.7	7.8	0.005	C	3	100%	2.06	No	0%	0
WR154-R2-54110	3813	313	4.9	6.1	0.005	C	3	100%	2.06	No	0%	0
WR154-R3-54251-OMS4	2530	313	8.9	6.6	0.015	C	3	100%	2.06	No	0%	0
WR154-R3-54272-OMS4	2609	313	6.5	12.5	0.008	C	3	100%	2.06	No	0%	0
WR154-R3-54272-OMS4	1690	313	6.5	12.5	0.018	C	3	100%	2.06	No	0%	0
WR154-Z1-54390	1162	313	3.4	9.2	0.025	C	3	100%	2.06	No	0%	0
WR154-Z1-54400	1261	313	3.4	9.4	0.023	C	3	100%	2.06	No	0%	0
EC155-J1-55020	1084	313	6.0	8.6	0.020	C	3	100%	2.06	No	0%	0
EC155-J1-55021-OMS4	650	313	6.0	8.6	0.024	C	3	100%	2.06	No	0%	0
EC155-J1-55030	1263	313	6.0	8.6	0.019	C	3	100%	2.06	No	0%	0
WR156-Z1-56010	2382	313	4.3	10.7	0.013	C	3	100%	2.06	No	0%	0
WR156-Z1-56020	2404	313	4.3	10.7	0.012	C	3	100%	2.06	No	0%	0
WR263-X2-63050	467	313	6.7	10.6	0.014	C	3	100%	2.06	No	0%	0
WR263-X3-63060	315	313	6.7	10.6	0.022	C	3	100%	2.06	No	0%	0
WR263-X3-63140	1591	313	5.4	7.4	0.016	C	3	100%	2.06	No	0%	0
WR263-X3-63150	2256	313	5.4	7.4	0.011	C	3	100%	2.06	No	0%	0
WR263-X4-63200	6351	313	4.2	8.2	0.001	C	3	100%	2.06	No	0%	0
WR263-X4-63210	9041	313	5.7	10.8	0.004	C	3	100%	2.06	No	0%	0
WR263-X4-63220	1753	313	5.4	10.3	0.007	C	3	100%	2.06	No	0%	0
WR263-X4-63230	2595	313	2.1	9.9	0.005	C	3	100%	2.06	No	0%	0
WR263-X4-63280	8687	313	4.8	11.0	0.006	C	3	100%	2.06	No	0%	0
WR263-X3-63300	311	156	6.7	10.6	0.022	C	3	100%	2.06	No	0%	0
WR263-X4-63340	5221	313	4.2	8.2	0.002	C	3	100%	2.06	No	0%	0
WR263-X4-63350	1436	313	5.4	10.3	0.008	C	3	100%	2.06	No	0%	0
EC290-N1-90010	2781	313	4.3	7.7	0.021	C	3	100%	2.06	No	0%	0
EC290-90040	234	117	1.0	10.0	0.010	C	3	100%	2.06	No	0%	0
EC290-90050	851	313	1.0	10.0	0.004	C	3	100%	2.06	No	0%	0
EC290-90060	1177	313	1.0	10.0	0.017	C	3	100%	2.06	No	0%	0
EC290-90090	734	313	1.0	10.0	0.024	C	3	100%	2.06	No	0%	0
EC290-90100	648	313	1.0	10.0	0.021	C	3	100%	2.06	No	0%	0
EC290-90110	286	143	1.0	10.0	0.020	C	3	100%	2.06	No	0%	0
WR263-X3-63080	1641	313	4.6	19.2	0.006	C	3	100%	0.035	Yes	0%	1641
WR263-X3-63170	2042	313	5.4	7.4	0.003	C	3	100%	0.035	Yes	0%	2042
WR263-X4-63180	1206	313	5.4	7.4	0.009	C	3	100%	0.035	Yes	0%	1206
WR263-X4-63240	422	313	2.5	8.9	0.009	C	3	100%	0.035	Yes	0%	422
WR263-X3-63320	1701	313	4.6	19.2	0.006	C	3	100%	0.035	Yes	0%	1701
WR263-X4-63360	2702	313	2.5	8.9	0.002	C	3	100%	0.035	Yes	0%	2702
WR263-X4-63370	426	313	2.1	9.9	0.009	C	3	100%	0.035	Yes	0%	426
WR154-R1-54060	305	51			0.200	C	3	100%	2.06	No	100%	0
WR154-R1R2-54070	10133	52			0.096	C	3	100%	2.06	No	100%	0
WR154-R2-54110	186	20			0.088	C	3	100%	2.06	No	100%	0
WR154-R3-54180	1350	31			0.069	C	3	100%	2.06	No	100%	0
WR154-R3-54219-OFF	3312	37			0.131	C	3	100%	2.06	No	100%	0

WR154-R3-54260	1713	48			0.179	C	3	100%	2.06	No	100%	0
EC155-J2-55010	1936	39			0.064	C	3	100%	2.06	No	100%	0
EC155-J2-55040	1936	34			0.052	C	3	100%	2.06	No	100%	0
WR263-X2-63040	501	2			0.206	C	3	100%	2.06	No	100%	0
WR263-X3-63070	2801	18			0.036	C	3	100%	2.06	No	100%	0
WR263-X3-63090	335	21			0.116	C	3	100%	2.06	No	100%	0
WR263-X3-63120	291	16			0.133	C	3	100%	2.06	No	100%	0
WR263-X3-63130	289	36			0.157	C	3	100%	2.06	No	100%	0
WR263-X3-63160	1205	26			0.104	C	3	100%	2.06	No	100%	0
WR263-X4-63190	1290	29			0.105	C	3	100%	2.06	No	100%	0
WR263-X4-63250	211	29			0.052	C	3	100%	2.06	No	100%	0
WR263-X4-63290	235	17			0.086	C	3	100%	2.06	No	100%	0
WR263-X3-63310	2789	28			0.140	C	3	100%	2.06	No	100%	0
WR263-X3-63330	339	16			0.068	C	3	100%	2.06	No	100%	0
EC290-N1-90020	2627	24			0.197	C	3	100%	2.06	No	100%	0
WR263-X4-63221-OMS4	15674	313	6.7	9.3	0.001	C	3	100%	2.27	No	0	0
WR263-X4-63231-OMS4	11534	313	6.7	9.3	0.001	C	3	100%	2.27	No	0	0
WR263-X4-63341-OMS4	8201	313	8.3	9.2	0.004	C	3	100%	2.27	No	0	0

4.06 WATER QUALITY MODELING CONCLUSIONS

Tables 4.06-2 and 4.06-3 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 through 4.06-4.

A. Baseline Conditions

Baseline or no controls water quality modeling estimates the County-wide TSS load to be approximately 127,652 pounds as modeled. This translates to an average unit load of 424 pounds per acre (lb/acre) for the 301 acres of County land modeled as indicated in Table 4.06-1. The County-wide total annual TP load was modeled to be 322 pounds, which translates to 1.07 lb/acre. Table 4.06-1 summarizes the baseline/no controls water quality modeling results per reach for the County's stormwater-permitted area, and the baseline annual TP and TSS loads are shown graphically in Figures 4.06-1 through 4.06-4.

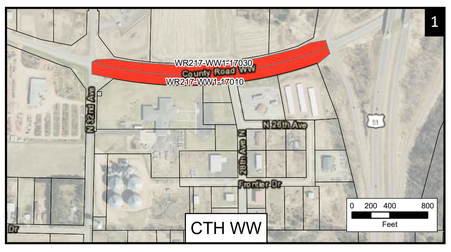
Reach	Regulatory MS4 Area (acre)	Annual Baseline TSS Load (lb)	Baseline TSS Load Concentration (lb/acre)	Annual Baseline TP Load (lb)	Baseline TP Load Concentration (lb/acre)
153	4.37	2,572	589	6.44	1.47
154	145.12	59,887	413	145.36	1.00
155	9.59	5,649	589	14.13	1.47
156	4.16	2,450	589	6.13	1.47
217	6.19	3,647	589	9.12	1.47
263	91.35	49,843	546	130.34	1.43
290	40.29	3,603	89	10.48	0.26
Entire County	301.07	127,652	424	322.01	1.07

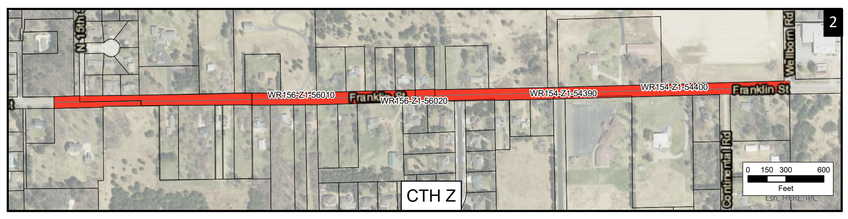
Table 4.06-1 Baseline Conditions Modeling Results Summary Per Reach

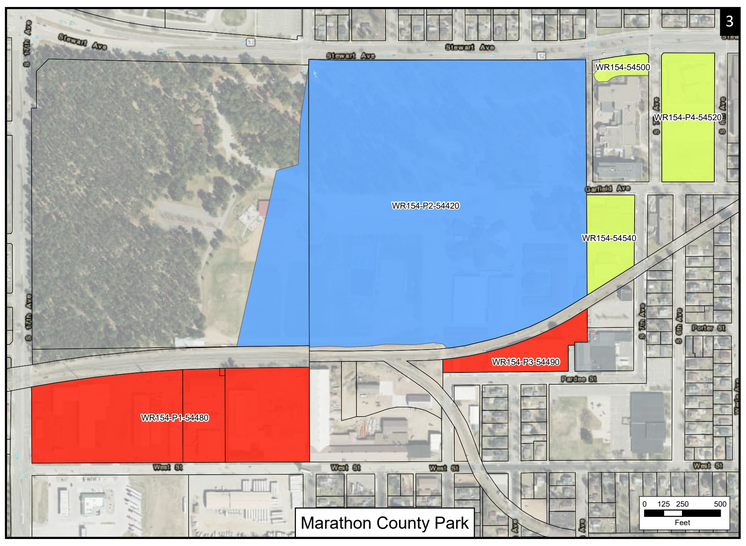
Of the 81 subbasins modeled, the TSS unit loads ranged from approximately 2 lb/acre in open land at the Peoples Sports Complex to 590 lb/acre in basins that contained exclusively rural county highway cross sections. As shown in Figure 4.06-1, higher unit loads of TSS are found in the areas of commercial, industrial, and county ROW land use. Baseline and existing conditions modeling output is provided on a flash drive (with final report only) in Appendix K.

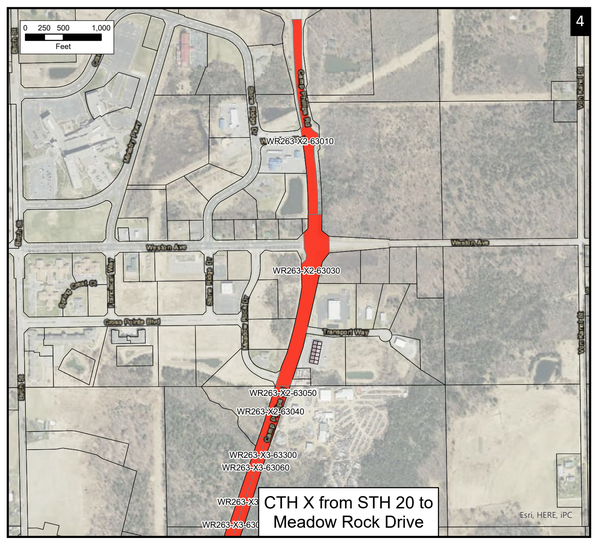
B. Existing Conditions

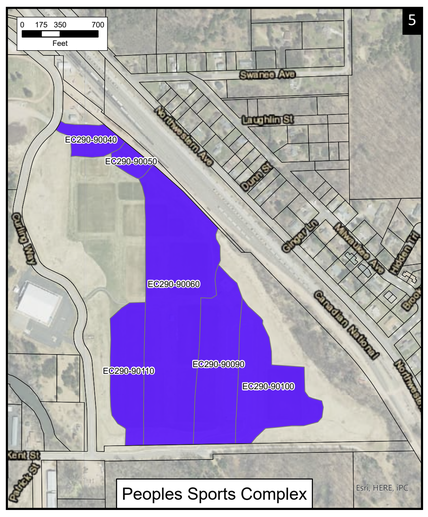
Table 4.06-4 summarizes the existing conditions water quality modeling results per watershed and for the County's stormwater-permitted area in terms of total TSS and TP load (lb) and TSS and TP Load Concentration (lb/acre). Water quality modeling of current conditions shows that the County's current 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 County in terms of percent reduction and pollutant reduction gap in meeting the Wisconsin 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 County-wide results show a 65.1 percent TSS reduction and a 59.2 percent TP reduction.

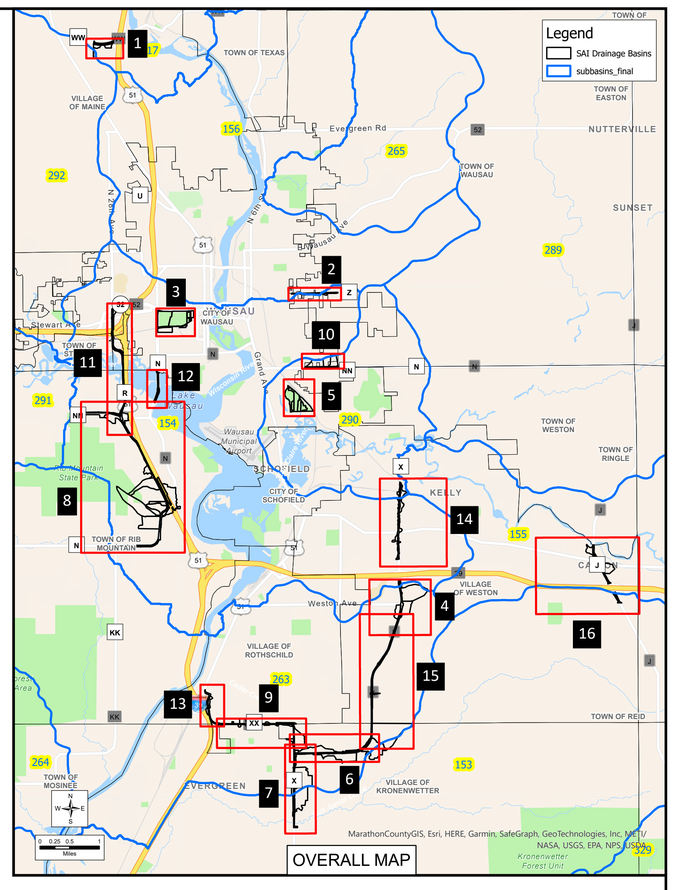


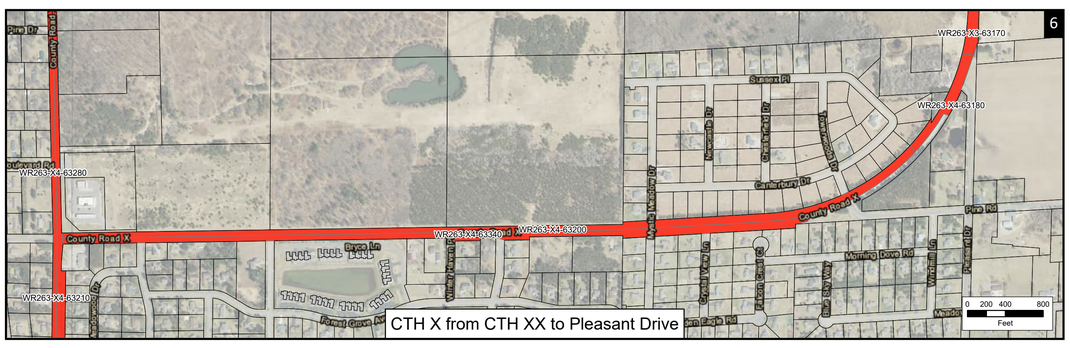


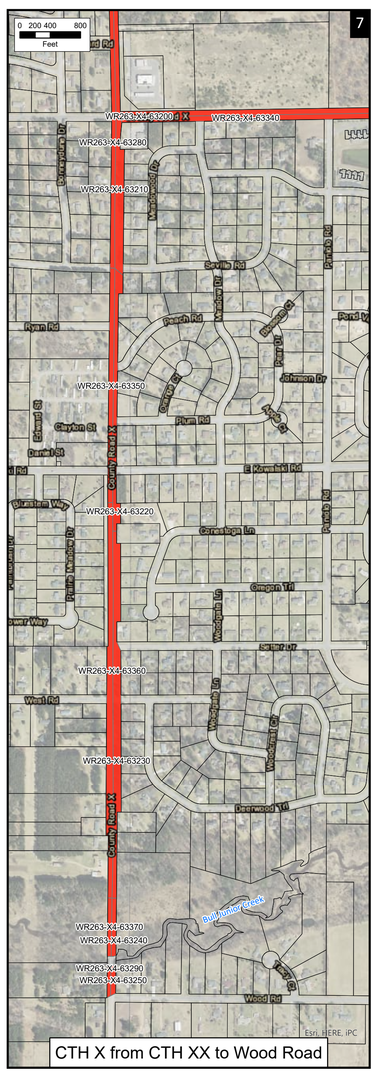


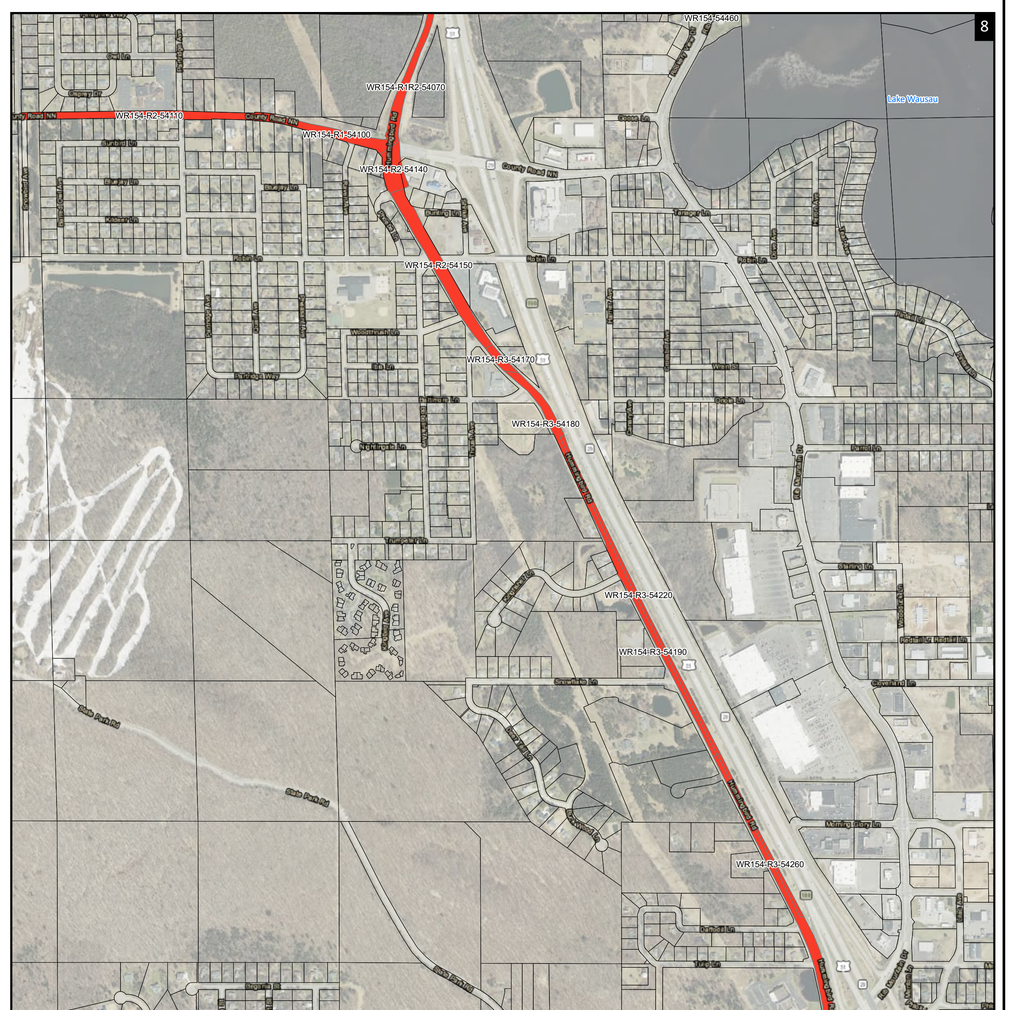


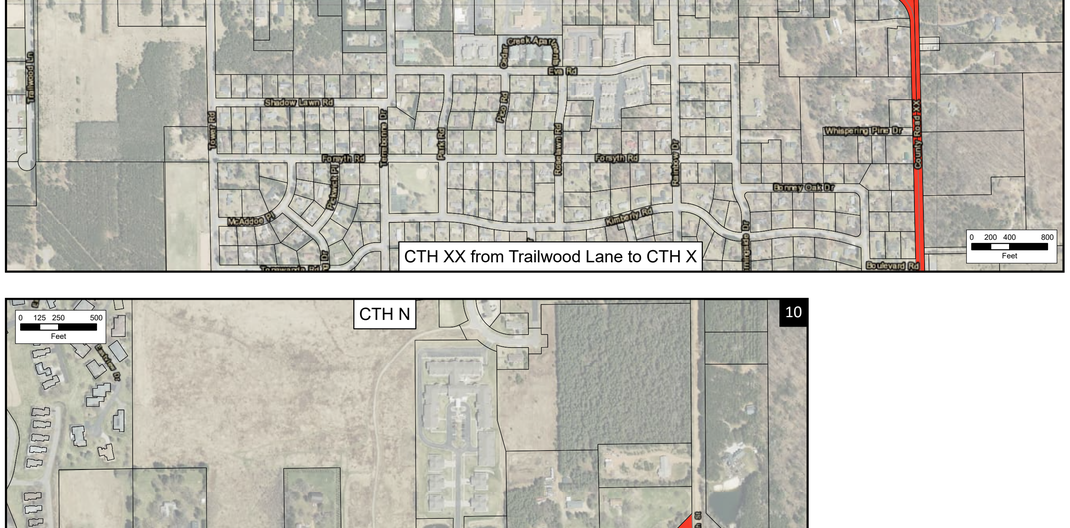


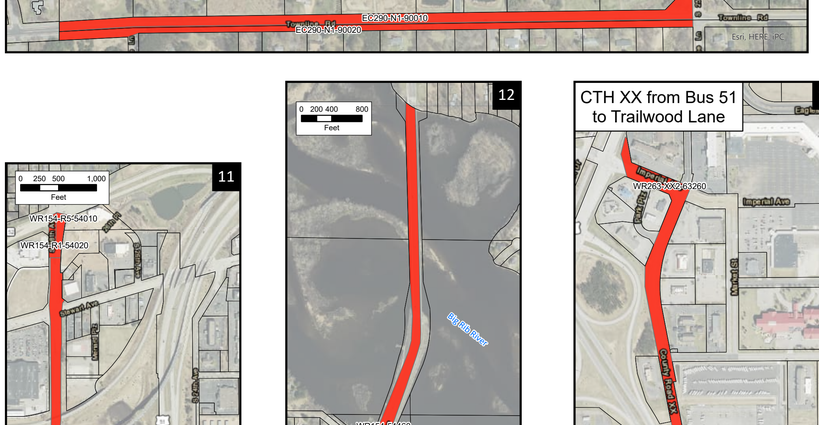


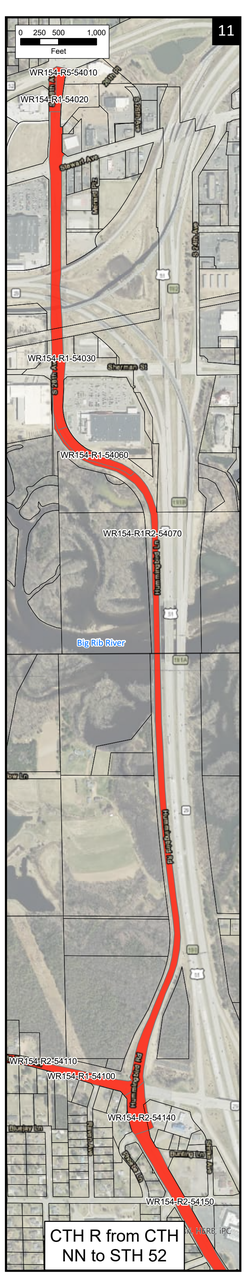


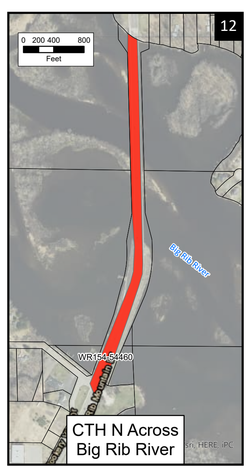


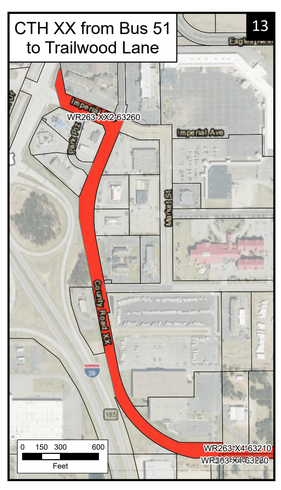


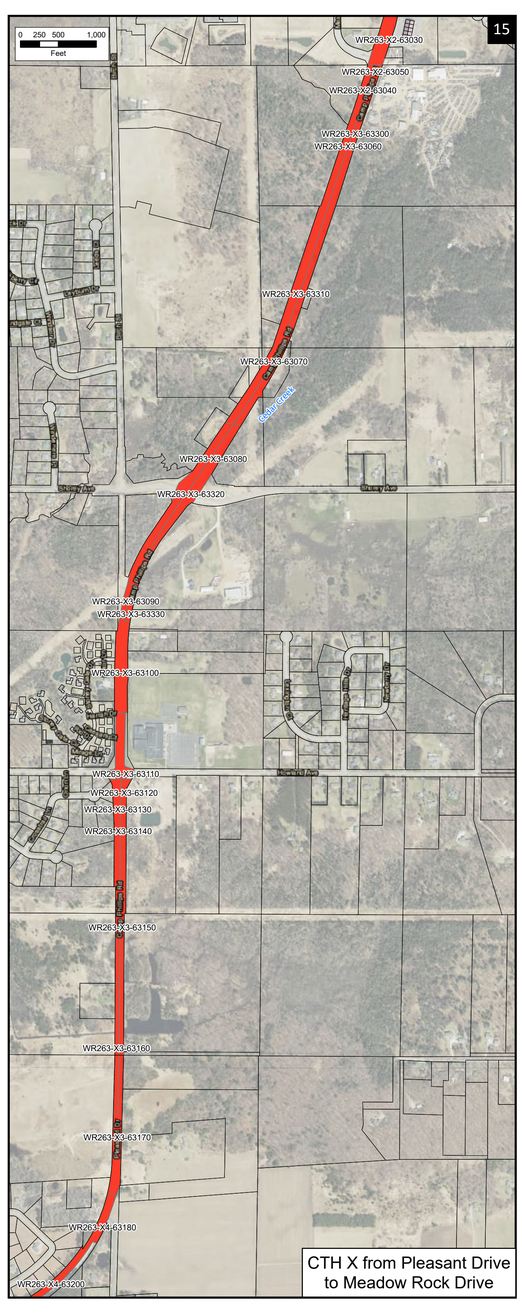


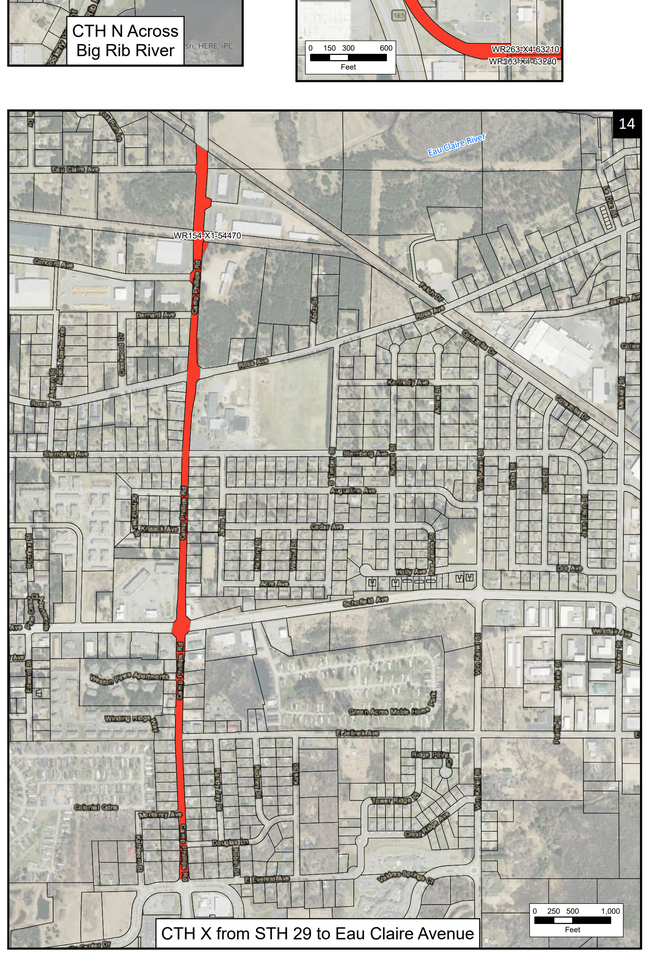












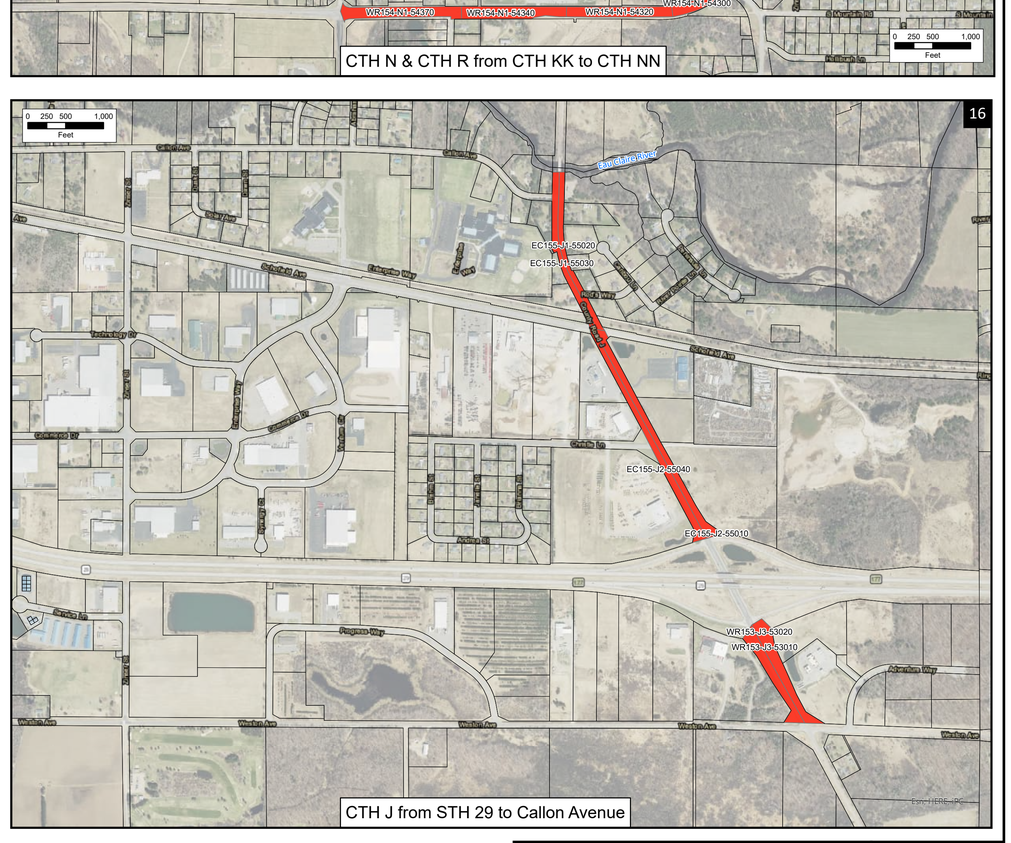


FIGURE 4.06-1
BASELINE CONDITIONS
TOTAL SUSPENDED SOLIDS
STORMWATER QUALITY
MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

STRAND ASSOCIATES®

3598.003

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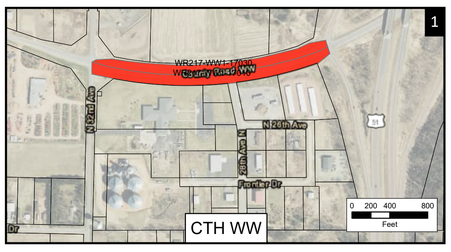
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N 7088th Ave
N 7092nd Ave
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N 7104th Ave
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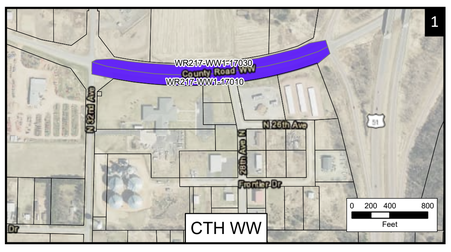
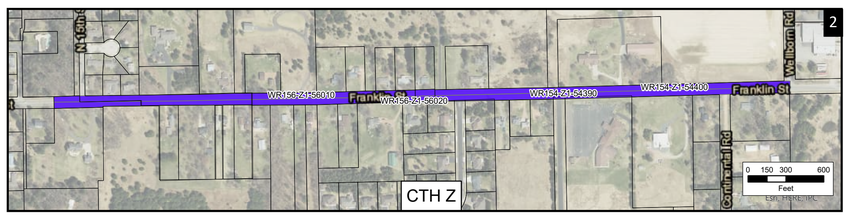
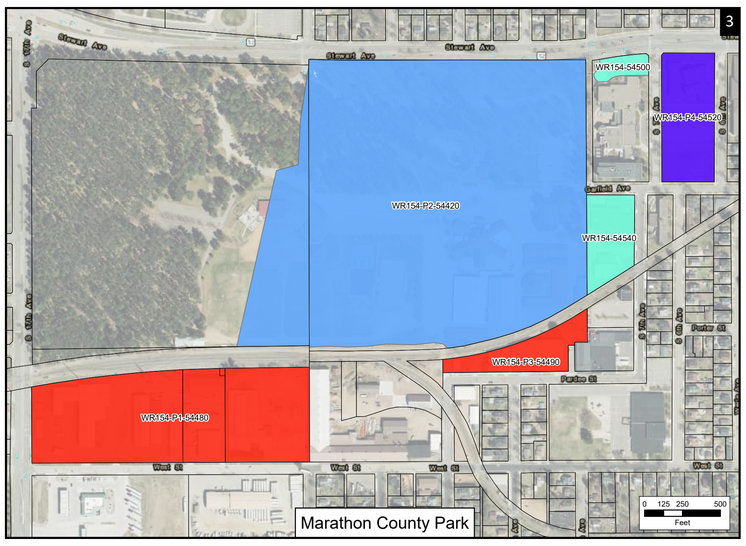
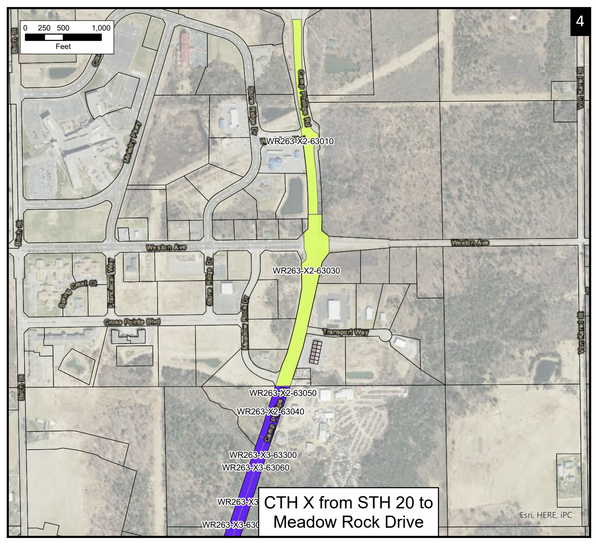
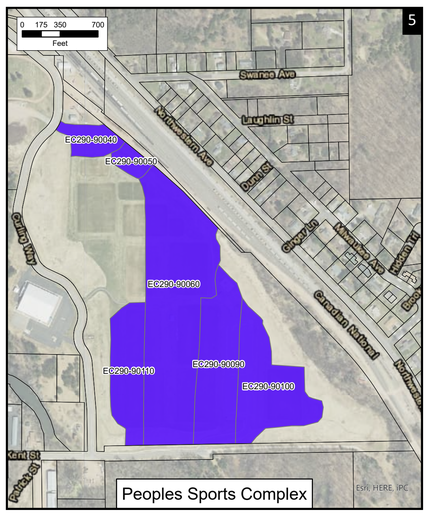
N 7112th Ave
N 7116th Ave
N 7120th Ave
N 7124th

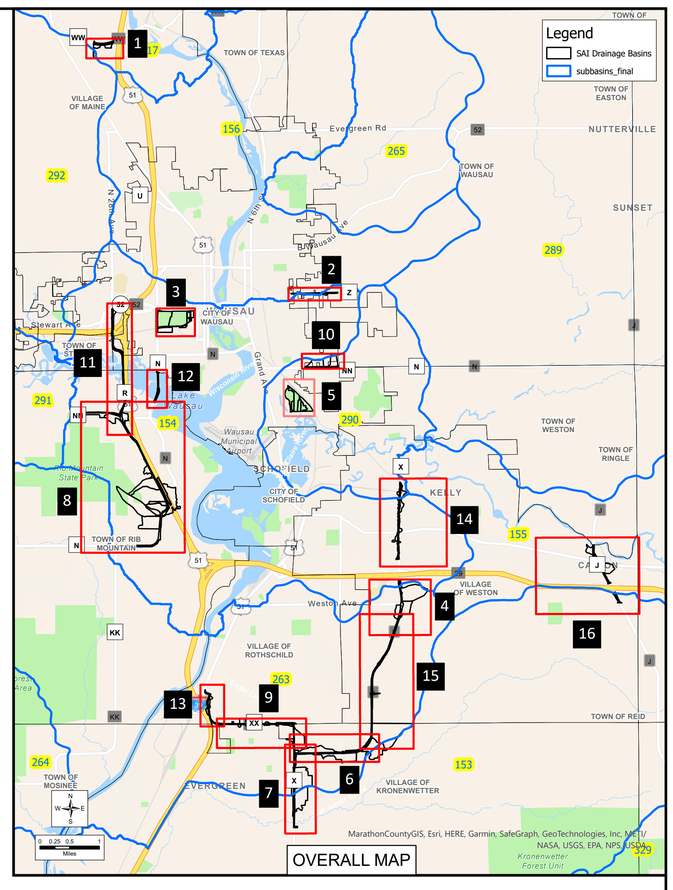


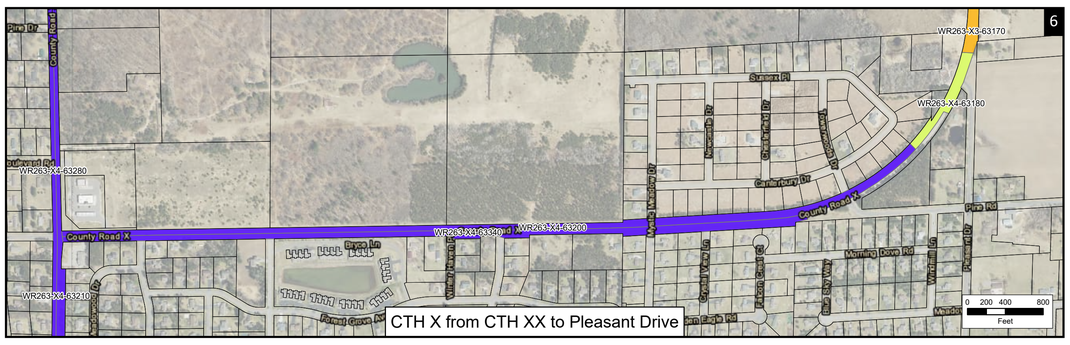


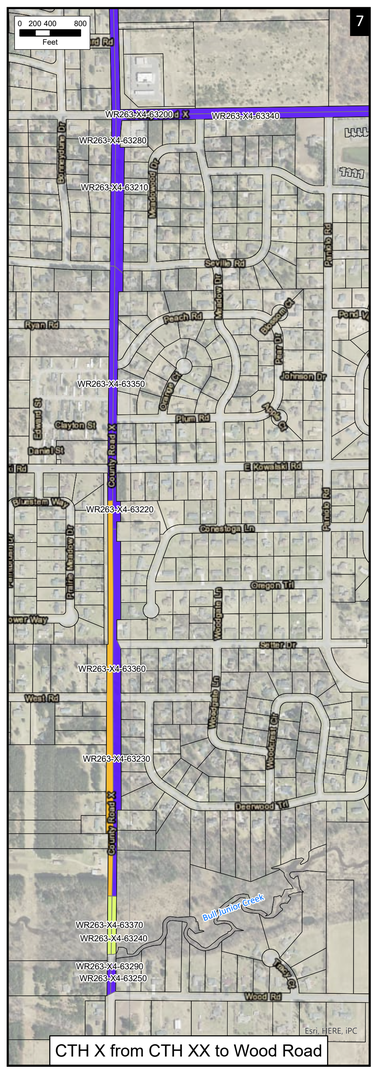


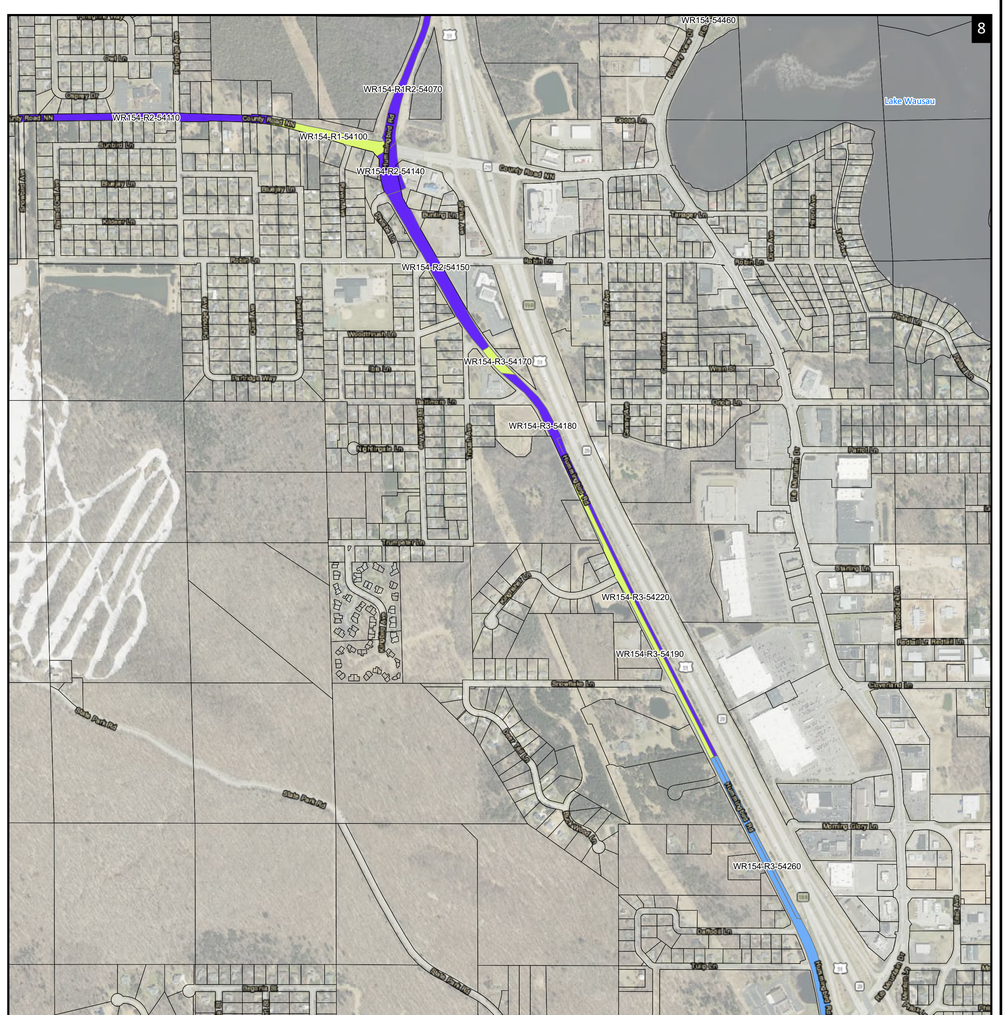


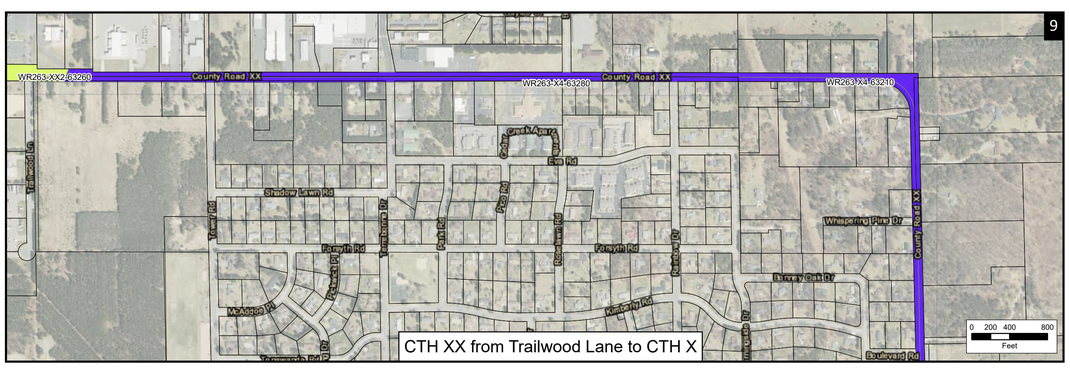


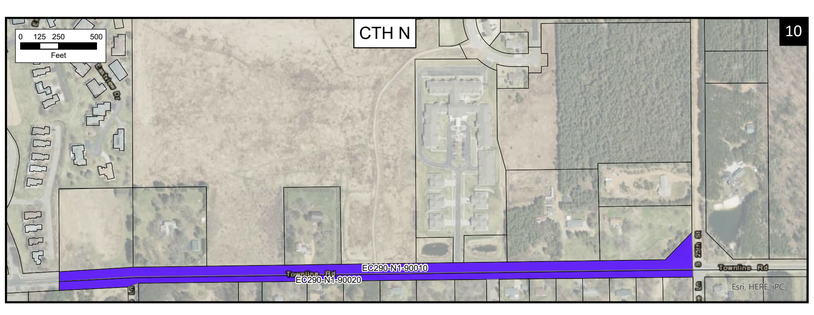


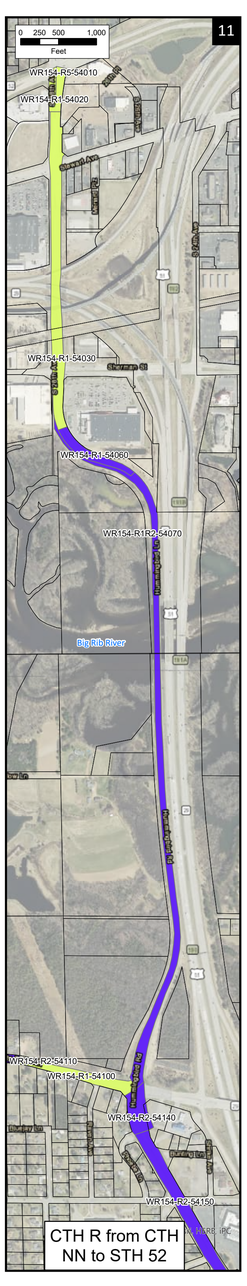


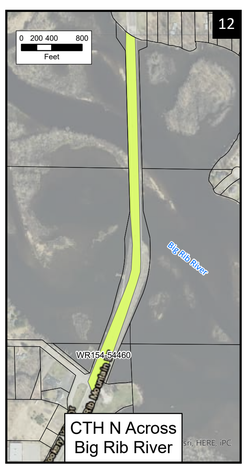


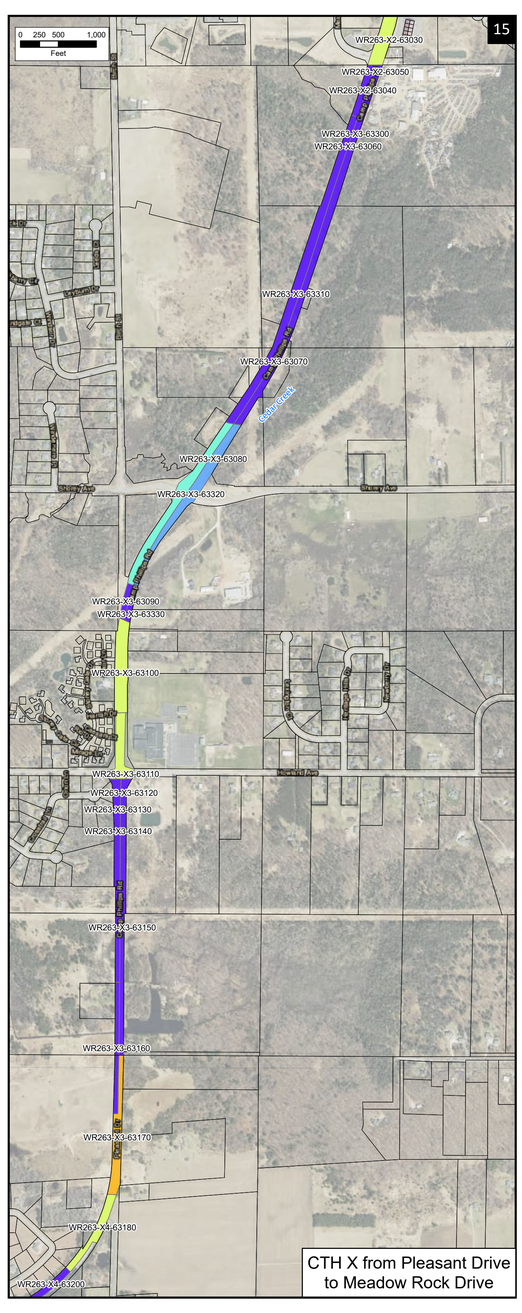


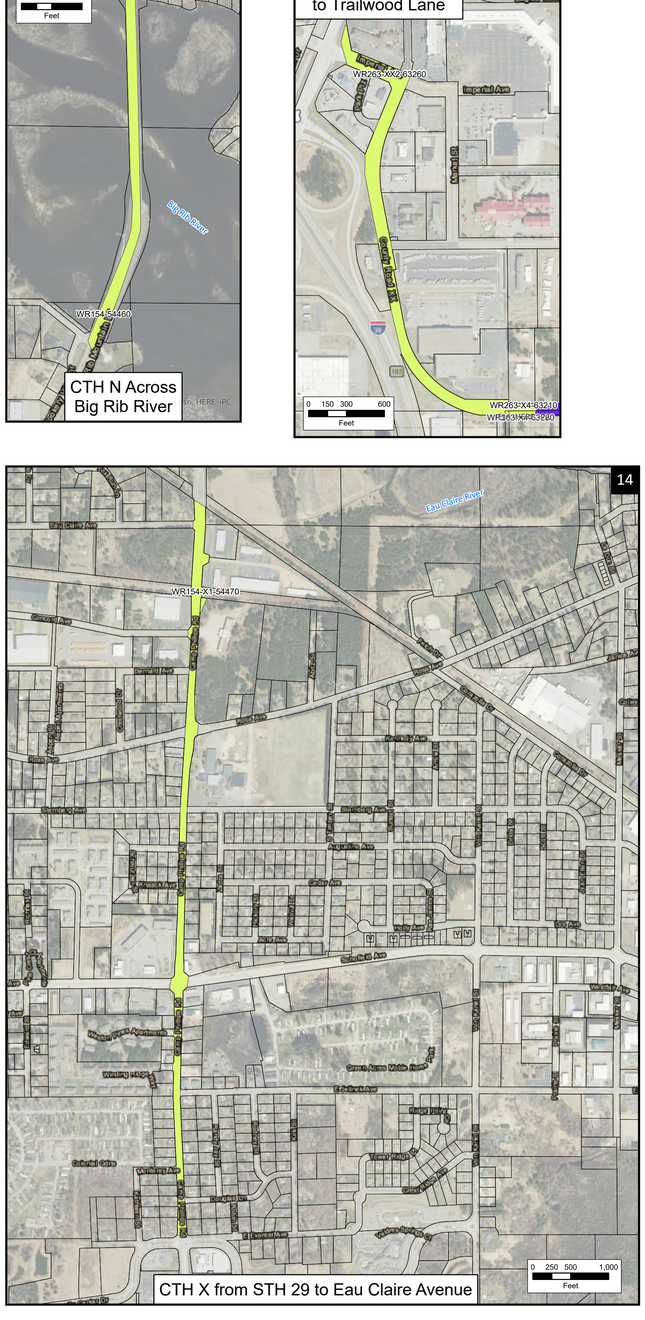












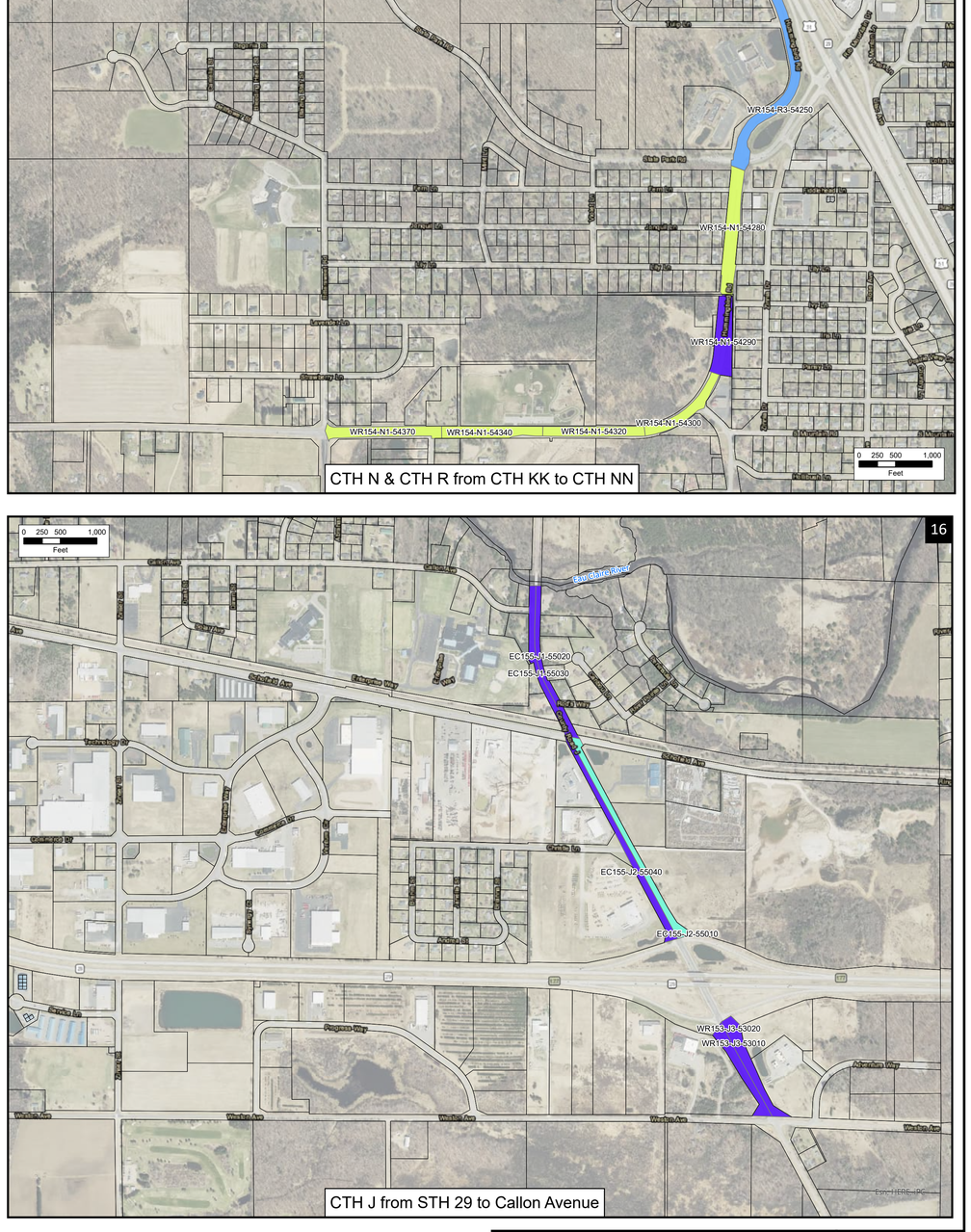


FIGURE 4.06-13
EXISTING CONDITIONS
TOTAL SUSPENDED SOLIDS
STORMWATER QUALITY
MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

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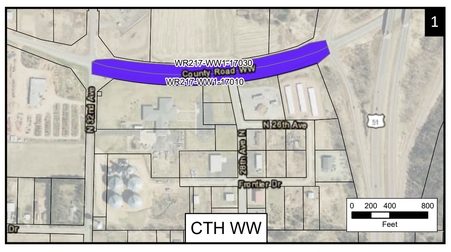

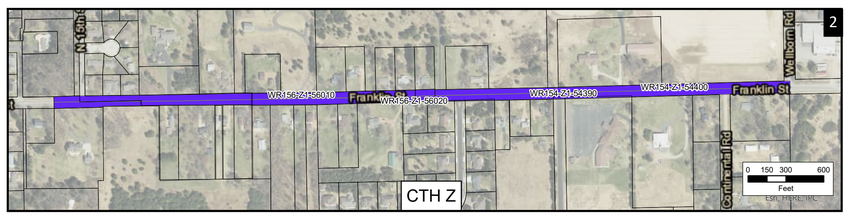

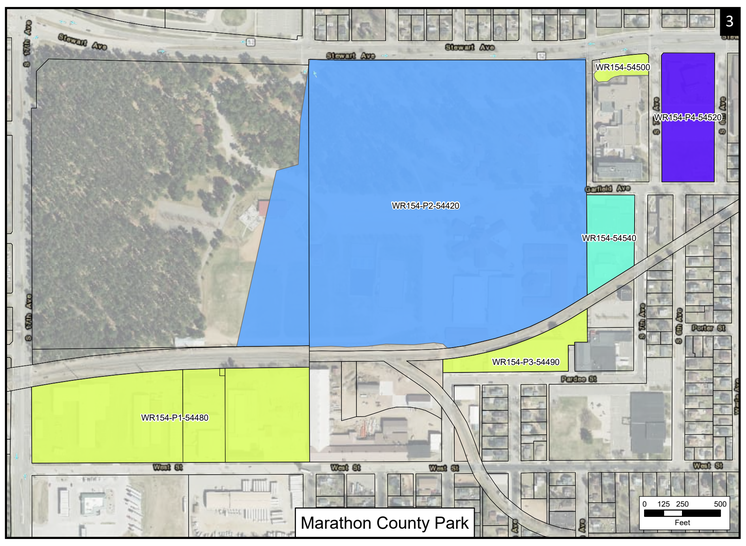

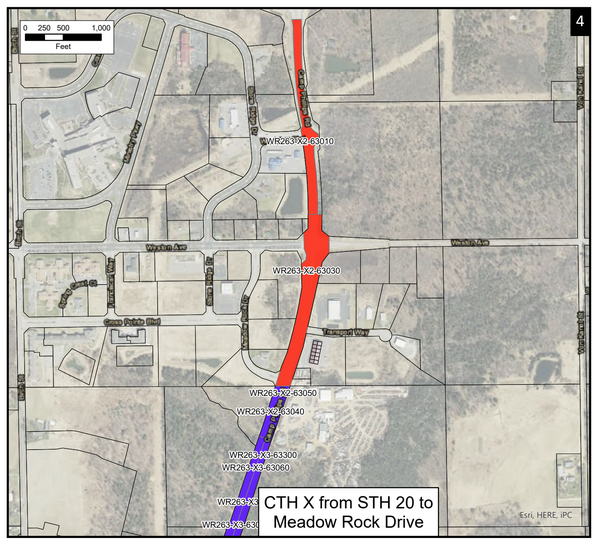

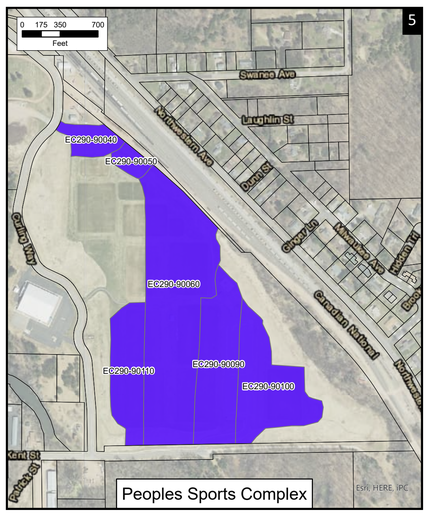

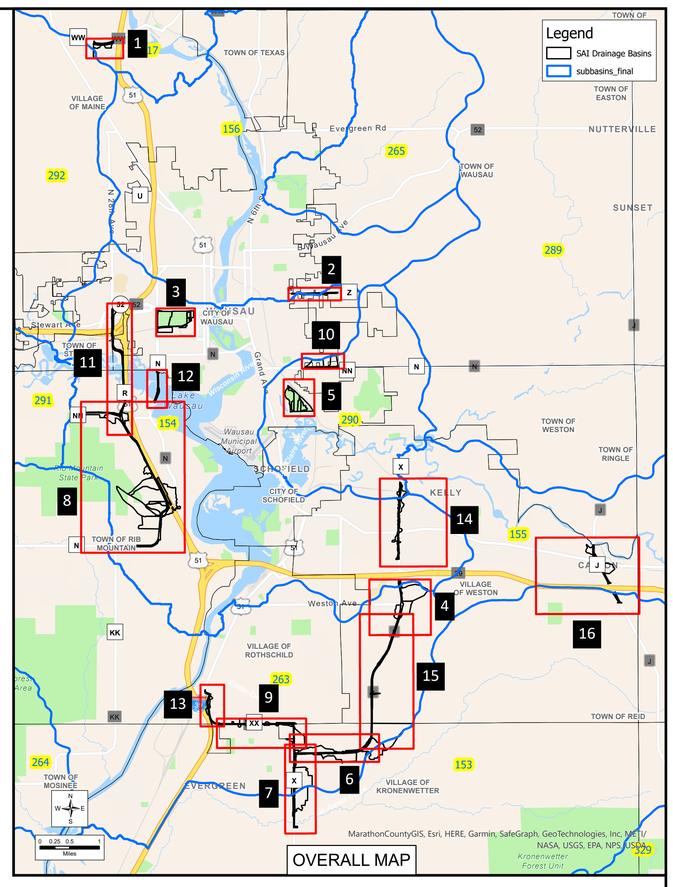

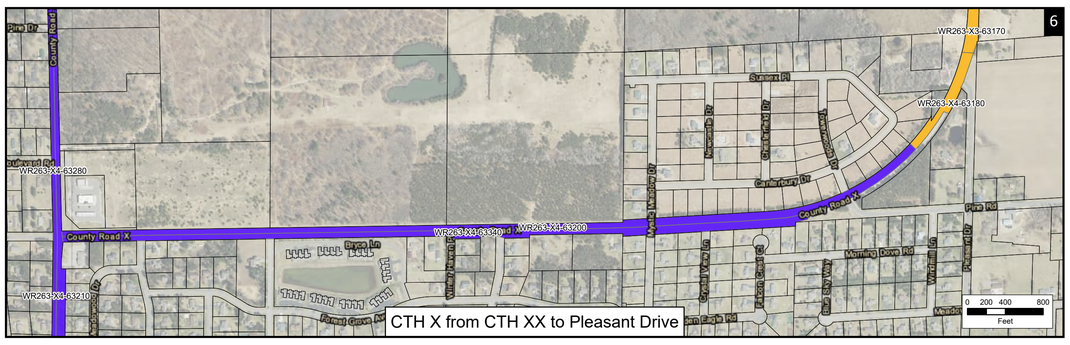

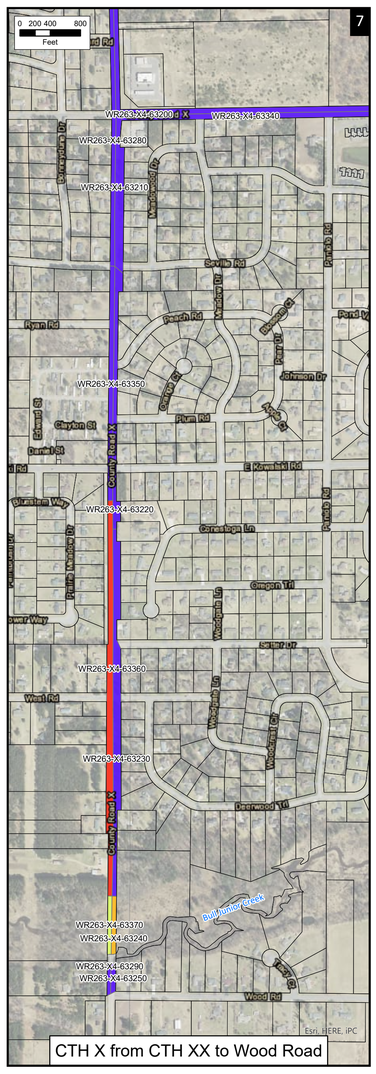

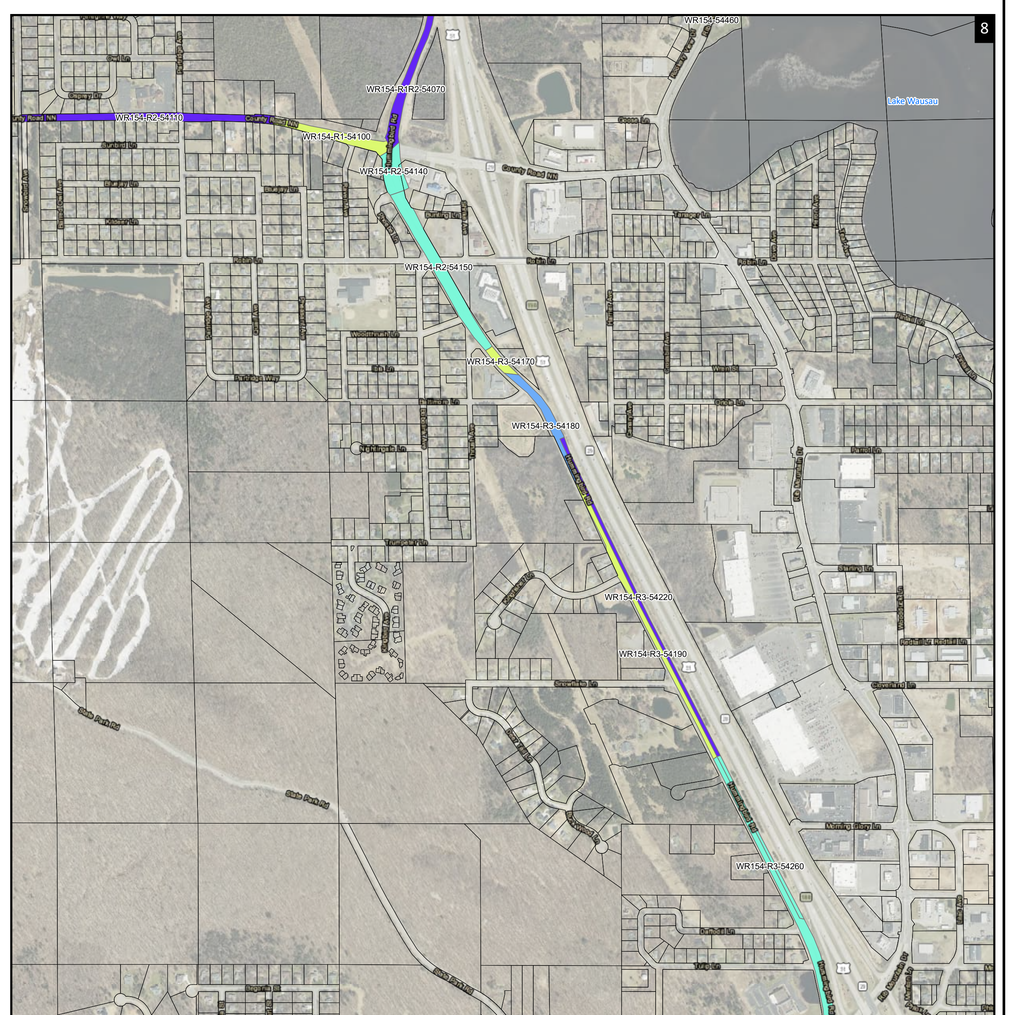

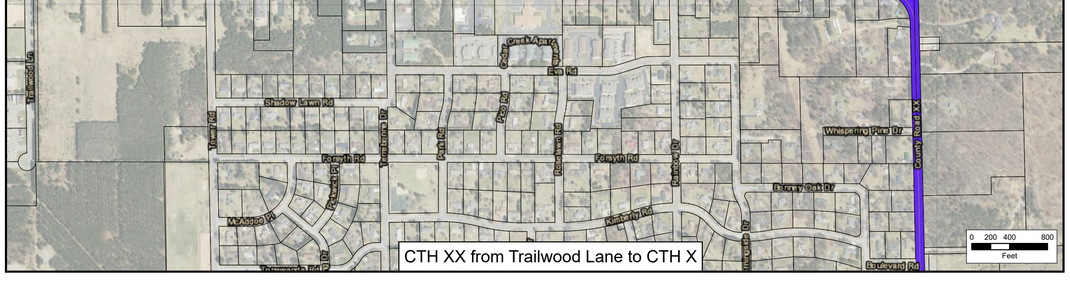

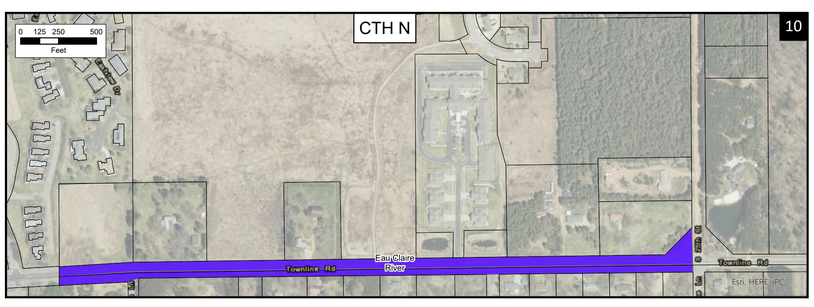

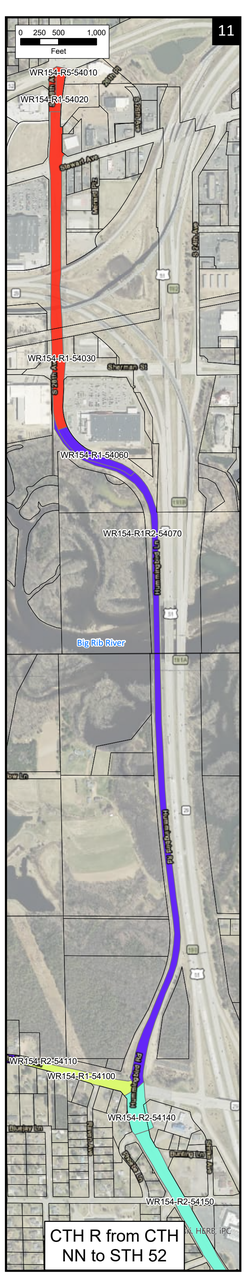

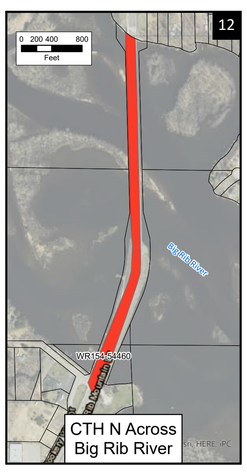

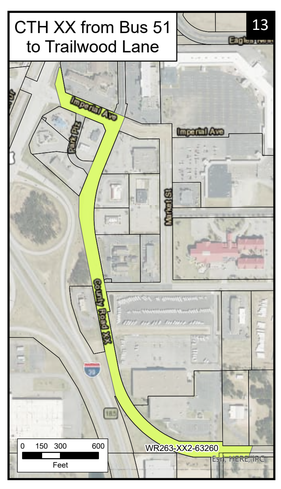

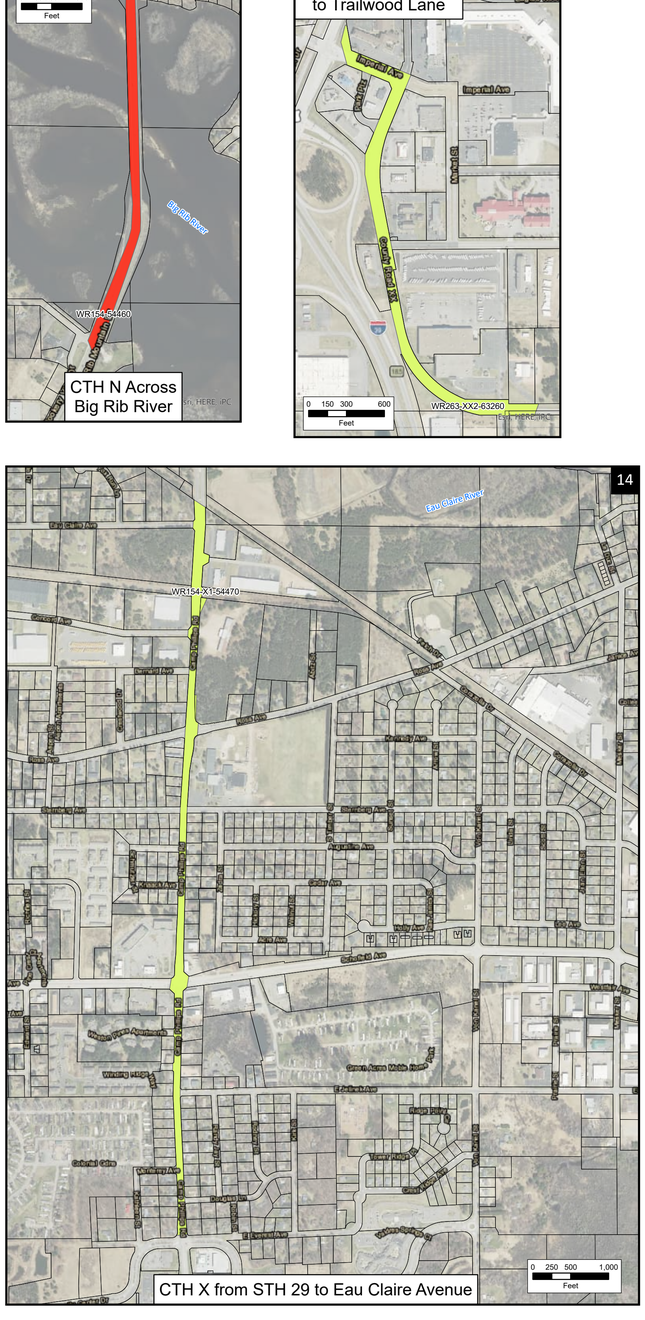

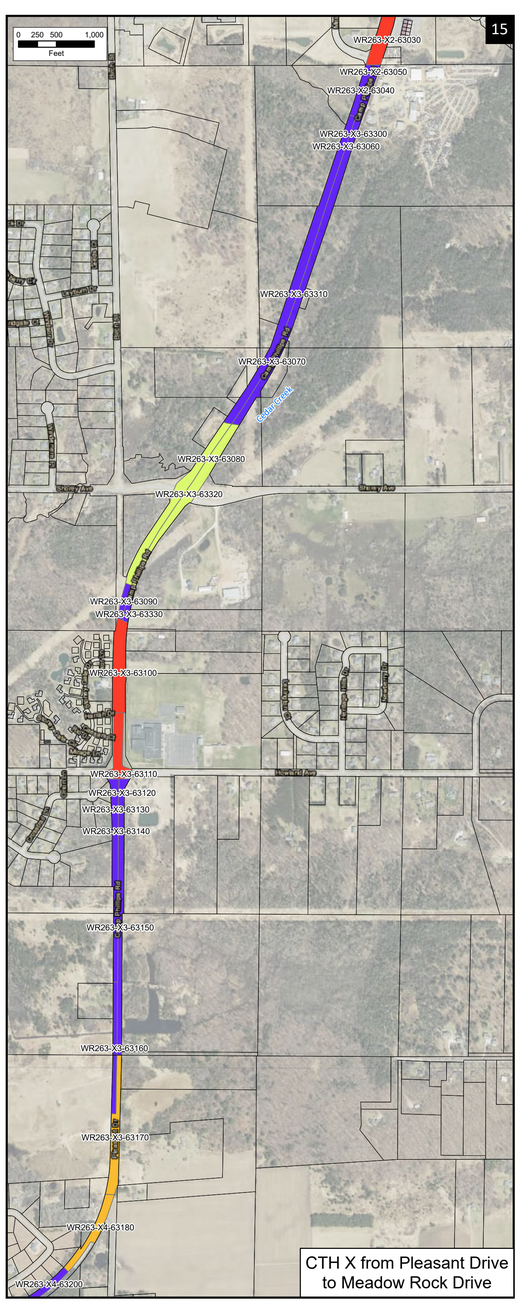

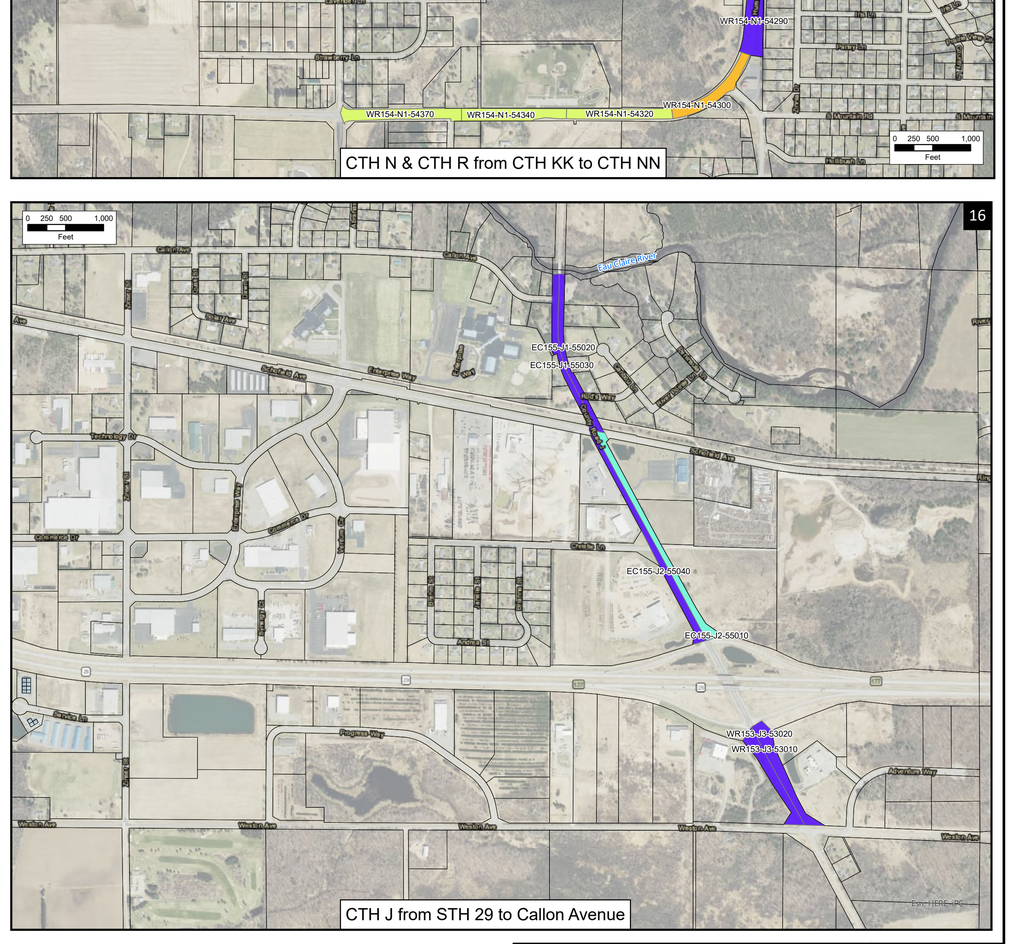

FIGURE 4.06-4
EXISTING CONDITIONS
TOTAL PHOSPHOROUS
STORMWATER QUALITY
MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

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3598.003

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Table 4.06-2 TSS Loading Calculation Results Baseline and Existing Controls Conditions

Basin	Basin (Report Name)	Total MS4 Area[1] (acres)	Off-Site Drainage Area[1] (acres)	Exempt MS4[1] Area (acres)	Reason for exempt MS4 area	Regulatory MS4 Area[1] (acres)	2022 Baseline Conditions			2022 Existing Conditions			Percent Reduction	Major Soil Type	Control Practices	Swale Dynamic Infiltration Rate
							5-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)	5-Year TSS (lb)	Annual TSS (lb)	Annual TSS Loading (lb/acre)				(in/hr)
53010	WR153-J3-53010	2.02	-	-	-	2.02	5949.96	1189.99	589.10	25.11	5.02	2.49	99.58%	Clayey	GS	2.06
53020	WR153-J3-53020	2.35	-	-	-	2.35	6910.64	1382.13	589.14	20.49	4.10	1.75	99.70%	Clayey	GS	2.06
Reach 153		**4.37**	**-**	**-**	**-**	**4.37**	**12860.59**	**2572.12**	**589.12**	**45.60**	**9.12**	**2.09**	99.65%			
54010	WR154-R5-54010	0.57	-	-	-	0.57	1434.44	286.89	501.55	1030.72	206.14	360.39	28.14%	Sandy	SS	
54020	WR154-R1-54020	0.73	2.11	-	-	0.73	1830.58	366.12	501.53	1345.70	269.14	368.68	26.49%	Sandy	SS	
54030	WR154-R1-54030	6.88	-	-	-	6.88	17237.07	3447.41	501.44	12385.79	2477.16	360.31	28.14%	Sandy	SS	
54060	WR154-R1-54060	1.38	-	-	-	1.38	3460.83	692.17	501.57	11.76	2.35	1.70	99.66%	Clayey	UR	2.06
54070	WR154-R1R2-54070	9.09	-	-	-	9.09	26092.12	5218.42	573.96	0.00	0.00	0.00	100.00%	Clayey	UR	2.06
54100	WR154-R1-54100	18.29	16.13	-	-	2.16	5847.88	1169.58	541.72	4289.91	857.98	397.40	26.64%	Sandy	SS	
54110	WR154-R2-54110	14.25	10.53	-	-	3.72	10967.71	2193.54	589.03	1.10	0.22	0.06	99.99%	Silty	GS, UR	2.06
54140	WR154-R2-54140 & WR154-R2-54150	14.84	8.84	-	-	6.01	15175.92	3035.18	505.44	2530.65	506.13	84.28	83.32%	Silty	SS, WP	
54170	WR154-R3-54170	0.59	-	-	-	0.59	1553.63	310.73	525.76	985.40	197.08	333.47	36.57%	Sandy	SS	
54180	WR154-R3-54180	1.77	-	-	-	1.77	4659.18	931.84	526.16	358.26	71.65	40.46	92.31%	Sandy	SS, WP	
54190	WR154-R3-54190	12.07	9.14	-	-	2.93	7708.00	1541.60	526.86	4889.00	977.80	334.18	36.57%	Clayey	SS	
54220	WR154-R3-54220	2.25	-	-	-	2.25	6633.92	1326.78	589.16	0.00	0.00	0.00	100.00%	Clayey	UR	2.06
54250	WR154-R3-54250 & WR154-R3-54260	276.47	268.71	-	-	7.76	20097.40	4019.48	518.24	5370.59	1074.12	138.49	73.28%	Clayey	GS, UR, WP	2.06
54280	WR154-N1-54280	45.55	41.88	-	-	3.67	9185.68	1837.14	500.58	6607.78	1321.56	360.10	28.06%	Sandy	SS	
54290	WR154-N1-54290	2.98	-	-	-	2.98	7478.78	1495.76	501.43	153.19	30.64	10.27	97.95%	Sandy	BF	
54300	WR154-N1-54300	2.01	-	-	-	2.01	5208.67	1041.73	517.76	3449.66	689.93	342.91	33.77%	Clayey	SS	
54320	WR154-N1-54320	2.16	-	-	-	2.16	5684.83	1136.97	526.13	3605.71	721.14	333.71	36.57%	Clayey	SS	
54340	WR154-N1-54340	3.90	1.45	-	-	2.45	6440.52	1288.10	526.19	4094.70	818.94	334.53	36.42%	Silty	SS	
54370	WR154-N1-54370	2.62	-	-	-	2.62	6893.74	1378.75	526.24	4372.40	874.48	333.77	36.57%	Silty	SS	
54390	WR154-Z1-54390	1.03	-	-	-	1.03	3046.54	609.31	589.27	137.12	27.42	26.52	95.50%	Silty	GS	
54400	WR154-Z1-54400	1.00	-	-	-	1.00	2940.60	588.12	589.30	22.54	4.51	4.52	99.23%	Silty	GS	
54420	WR154-P2-54420	43.86	0.35	-	-	43.51	38014.39	7602.88	174.73	30456.63	6091.33	140.00	19.88%	Sandy	CB	
54460	WR154-54460	4.88	-	-	-	4.88	12224.97	2444.99	501.43	8784.32	1756.86	360.31	28.14%	Sandy	SS	
54470	WR154-X1-54470	38.80	26.29	-	-	12.51	32909.50	6581.90	526.13	20873.95	4174.79	333.72	36.57%	Sandy	SS	
54480	WR154-P1-54480	12.49	-	-	-	12.49	31721.61	6344.32	508.03	31721.61	6344.32	508.03	0.00%	Sandy		
54490	WR154-P3-54490	1.99	-	-	-	1.99	5056.59	1011.32	507.94	5056.59	1011.32	507.94	0.00%	Sandy		
54500	WR154-54500	0.54	-	-	-	0.54	928.94	185.79	342.78	730.43	146.09	269.53	21.37%	Clayey	CB	
54520	WR154-P4-54520	3.41	-	-	-	3.41	5763.51	1152.70	338.33	307.90	61.58	18.07	94.66%	Clayey	BB	
54540	WR154-54540	2.04	-	-	-	2.04	3239.62	647.92	317.77	2580.42	516.08	253.11	20.35%	Sandy	CB	
Reach 154		**528.44**	**385.43**	**-**	**-**	**145.12**	**299437.15**	**59887.43**	**412.67**	**156,153.82**	**31,230.76**	**215.20**	**47.85%**			
55010	EC155-J2-55010	24.04	21.02	-	-	3.02	8886.32	1777.26	589.08	3193.39	638.68	211.69	64.06%	Silty	UR	2.06
55020	EC155-J1-55020	11.04	9.11	-	-	1.92	5667.02	1133.40	589.09	657.75	131.55	68.37	88.39%	Silty	GS	2.06
55030	EC155-J1-55030	2.32	0.54	-	-	1.78	5235.30	1047.06	589.23	101.11	20.22	11.38	98.07%	Silty	GS	2.06
55040	EC155-J2-55040	2.87	-	-	-	2.87	8458.49	1691.70	589.24	0.00	0.00	0.00	100.00%	Silty	UR	2.06
Reach 155		**40.26**	**30.67**	**-**	**-**	**9.59**	**28247.13**	**5649.43**	**589.16**	**3952.25**	**790.45**	**82.43**	86.01%			
56010	WR156-Z1-56010	2.19	-	-	-	2.19	6447.41	1289.48	589.07	1.22	0.24	0.11	99.98%	Silty	GS	2.06
56020	WR156-Z1-56020	4.46	2.49	-	-	1.97	5802.52	1160.50	587.89	2.72	0.54	0.28	99.95%	Silty	GS	2.06
Reach 156		**6.65**	**2.49**	**-**	**-**	**4.16**	**12249.93**	**2449.99**	**588.51**	**3.94**	**0.79**	**0.19**	99.97%			
17010	WR217-WW1-17010	12.30	8.86	-	-	3.44	10130.32	2026.06	588.97	362.62	72.52	21.08	96.42%	Silty	GS	2.06
17030	WR217-WW1-17030	2.75	-	-	-	2.75	8105.96	1621.19	589.10	213.28	42.66	15.50	97.37%	Silty	GS	2.06
Reach 217		**15.05**	**8.86**	**-**	**-**	**6.19**	**18236.28**	**3647.26**	**589.03**	**575.90**	**115.18**	**18.60**	96.84%			
63010	WR263-X2-63010	37.98	34.44	-	-	3.55	8889.85	1777.97	501.40	6387.85	1277.57	360.29	28.14%	Clayey	SS	
63030	WR263-X2-63030	5.63	-	-	-	5.63	14114.36	2822.87	501.40	10142.25	2028.45	360.29	28.14%	Clayey	SS	
63040	WR263-X2-63040	0.74	-	-	-	0.74	1844.86	368.97	501.32	10.51	2.10	2.86	99.43%	Clayey	UR	2.06
63050	WR263-X2-63050	0.73	-	-	-	0.73	1831.00	366.20	501.64	11.44	2.29	3.13	99.38%	Clayey	GS	2.06
63060	WR263-X3-63060	0.46	-	-	-	0.46	1159.00	231.80	501.73	19.81	3.96	8.57	98.29%	Clayey	GS	2.06
63070	WR263-X3-63070	4.73	-	-	-	4.73	11868.09	2373.62	501.40	96.73	19.35	4.09	99.18%	Clayey	UR	2.06
63080	WR263-X3-63080	3.01	-	-	-	3.01	7557.36	1511.47	501.48	3918.27	783.65	260.00	48.15%	Clayey	GS	0.035
63090	WR263-X3-63090	0.40	-	-	-	0.40	1003.62	200.72	501.81	3.20	0.64	1.60	99.68%	Sandy	UR	2.06
63100	WR263-X3-63100	2.37	-	-	-	2.37	5946.19	1189.24	501.37	4272.67	854.53	360.26	28.14%	Sandy	SS	
63110	WR263-X3-63110	2.31	0.81	-	-	1.50	3764.02	752.80	501.53	2704.00	540.80	360.29	28.16%	Sandy	SS	
63120	WR263-X3-63120	0.41	-	-	-	0.41	1218.59	243.72	588.69	27.39	5.48	13.23	97.75%	Sandy	UR	2.06

63130	WR263-X3-63130	0.51	-	-	-	0.51	1498.96	299.79	588.98	1.26	0.25	0.50	99.92%	Sandy	UR	2.06
63140	WR263-X3-63140	1.81	-	-	-	1.81	5329.06	1065.81	589.17	38.27	7.65	4.23	99.28%	Clayey	GS	
63150	WR263-X3-63150	2.49	-	-	-	2.49	7346.41	1469.28	589.13	9.66	1.93	0.77	99.87%	Clayey	GS	
63160	WR263-X3-63160	1.14	-	-	-	1.14	3358.97	671.79	589.29	1.63	0.33	0.29	99.95%	Clayey	UR	2.06
63170	WR263-X3-63170	83.37	81.34	-	-	2.03	5981.80	1196.36	589.05	4599.07	919.81	452.89	23.12%	Clayey	GS	0.035
63180	WR263-X4-63180	3.06	1.74	-	-	1.32	3880.57	776.11	589.30	2521.60	504.32	382.93	35.02%	Sandy	GS	0.035
63200	WR263-X4-63200	42.49	35.18	-	-	7.31	21539.92	4307.98	589.17	0.00	0.00	0.00	100.00%	Sandy	GS	2.06
63210	WR263-X4-63210	59.48	50.45	-	-	9.03	26599.12	5319.82	589.19	1.25	0.25	0.03	100.00%	Sandy	GS	2.06
63220	WR263-X4-63220	57.48	55.93	-	-	1.55	4560.70	912.14	589.24	0.00	0.00	0.00	100.00%	Sandy	GS	2.06
63230	WR263-X4-63230	49.22	46.09	-	-	3.14	9237.37	1847.47	589.12	5.34	1.07	0.34	99.94%	Sandy	GS	2.06
63240	WR263-X4-63240	0.36	-	-	-	0.36	1045.22	209.04	588.85	631.74	126.35	355.91	39.56%	Clayey	GS	0.035
63250	WR263-X4-63250	0.99	0.80	-	-	0.19	551.27	110.25	589.59	3.63	0.73	3.88	99.34%	Sandy	GS	2.06
63260	WR263-XX2-63260	18.67	9.41	-	-	9.26	24530.61	4906.12	529.88	15703.84	3140.77	339.21	35.98%	Sandy	SS	2.06
63280	WR263-X4-63280	18.04	10.01	-	-	8.03	23663.40	4732.68	589.15	0.00	0.00	0.00	100.00%	Sandy	GS	2.06
63290	WR263-X4-63290	0.15	-	-	-	0.15	433.95	86.79	590.40	0.54	0.11	0.73	99.88%	Sandy	GS	2.06
63300	WR263-X3-63300	0.41	-	-	-	0.41	1035.30	207.06	501.36	14.40	2.88	6.97	98.61%	Clayey	GS	2.06
63310	WR263-X3-63310	3.86	-	-	-	3.86	9671.61	1934.32	501.38	14.41	2.88	0.75	99.85%	Clayey	UR	2.06
63320	WR263-X3-63320	2.80	-	-	-	2.80	7029.45	1405.89	501.39	2760.18	552.04	196.87	60.73%	Clayey	GS	0.035
63330	WR263-X3-63330	0.40	-	-	-	0.40	1008.11	201.62	501.55	13.28	2.66	6.61	98.68%	Sandy	UR	2.06
63340	WR263-X4-63340	44.53	38.43	-	-	6.10	17954.42	3590.88	589.15	0.00	0.00	0.00	100.00%	Sandy	GS	2.06
63350	WR263-X4-63350	4.83	3.38	-	-	1.45	4265.02	853.00	589.09	3.36	0.67	0.46	99.92%	Sandy	GS	2.06
63360	WR263-X4-63360	8.65	5.73	-	-	2.92	8600.79	1720.16	589.10	6793.65	1358.73	465.32	21.01%	Sandy	GS	0.035
63370	WR263-X4-63370	0.31	-	-	-	0.31	897.02	179.40	588.21	519.97	103.99	340.97	42.03%	Clayey	SS	0.035
Reach 263		**482.18**	**390.84**	**-**	**-**	**91.35**	**249215.99**	**49843.20**	**545.66**	**61231.20**	**12246.24**	**134.07**	75.43%			
90010	EC290-N1-90010	36.04	32.77	-	-	3.27	9640.81	1928.16	589.11	827.87	165.57	50.59	91.41%	Silty	GS	2.06
90020	EC290-N1-90020	2.35	-	-	-	2.35	6913.87	1382.77	589.17	1.26	0.25	0.11	99.98%	Silty	UR	2.06
90040	EC290-90040	1.55	-	-	-	1.55	58.60	11.72	7.57	0.00	0.00	0.00	100.00%	Sandy	GS	2.06
90050	EC290-90050	0.82	-	-	-	0.82	31.90	6.38	7.80	0.00	0.00	0.00	100.00%	Sandy	GS	2.06
90060	EC290-90060	15.21	-	-	-	15.21	758.40	151.68	9.97	0.00	0.00	0.00	100.00%	Sandy	GS	2.06
90090	EC290-90090	6.44	-	-	-	6.44	278.80	55.76	8.66	0.00	0.00	0.00	100.00%	Sandy	GS	2.06
90100	EC290-90100	6.40	-	-	-	6.40	287.90	57.58	9.00	0.00	0.00	0.00	100.00%	Sandy	GS	2.06
90110	EC290-90110	4.25	-	-	-	4.25	42.60	8.52	2.00	0.00	0.00	0.00	100.00%	Sandy	GS	2.06
Reach 290		**73.06**	**32.77**	**-**	**-**	**40.29**	**18012.88**	**3602.58**	**89.41**	**829.13**	**165.83**	**4.12**	95.40%			
Total		**1,150.01**	**851.06**	**-**	**-**	**301.07**	**638,259.95**	**127,651.99**	**3,403.56**	**222,791.84**	**44,558.37**	**456.70**	65.09			

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
PWP	Private Wet Pond	OD	Other Control Device for Undeveloped Areas to be Developed with 80 percent TSS Reduction Controls (See WinSLAMM Land Use map)
UR	Undeveloped Roadside	BB	Bioretention Basin
ID	Internally Drained		

Table 4.06-3 Phosphorus Loading Results Baseline and Existing Controls Conditions

Basin (Report Name)	Total MS4 Area[1] (acres)	Off-Site Drainage Area[1] (acres)	Exempt MS4[1] Area (acres)	Reason for exempt MS4 area	Regulatory MS4 Area[1] (acres)	Annual Particulate Phosphorus			Annual Dissolved Phosphorus			Annual Total Phosphorus			Major Soil Type	Control Practices	Swale Dynamic Infiltration Rate (in/hr)
						Baseline Particulate Phosphorus (lb)	2022 Existing Particulate Phosphorus (lb)	Reduction in Particulate Phosphorus (%)	Baseline Dissolved Phosphorus (lb)	2022 Existing Dissolved Phosphorus (lb)	Reduction in Dissolved Phosphorus (%)	Baseline TP (lb)	2022 Existing TP	Reduction in TP (%)			
WR153-J3-53010	2.02	0.00	0.00	0.00	2.02	2.08	0.01	99.48%	0.89	0.01	99.35%	2.98	0.02	99.44%	Clayey	GS	2.06
WR153-J3-53020	2.35	0.00	0.00	0.00	2.35	2.42	0.01	99.62%	1.04	0.01	99.51%	3.46	0.01	99.59%	Clayey	GS	2.06
Reach 153	**4.37**	**0.00**	**0.00**	**0.00**	**4.37**	**4.51**	**0.02**	99.56%	**1.93**	**0.01**	99.44%	**6.44**	**0.03**	99.52%			
WR154-R5-54010	0.57	0.00	0.00	0.00	0.57	0.59	0.50	15.29%	0.28	0.28	0.00%	0.87	0.78	10.40%	Sandy	SS	
WR154-R1-54020	0.73	2.11	0.00	0.00	0.73	0.76	0.65	13.33%	0.35	0.35	0.00%	1.11	1.02	8.34%	Sandy	SS	
WR154-R1-54030	6.88	0.00	0.00	0.00	6.88	7.11	6.03	15.29%	3.34	3.34	0.00%	10.45	9.37	10.40%	Sandy	SS	
WR154-R1-54060	1.38	0.00	0.00	0.00	1.38	1.43	0.01	99.50%	0.67	0.01	99.12%	2.10	0.01	99.38%	Clayey	UR	2.06
WR154-R1R2-54070	9.09	0.00	0.00	0.00	9.09	8.92	0.00	100.00%	3.88	0.00	100.00%	12.80	0.00	100.00%	Clayey	UR	2.06
WR154-R1-54100	18.29	16.13	0.00	0.00	2.16	1.69	1.34	20.59%	0.77	0.77	-0.19%	2.46	2.11	14.09%	Sandy	SS	
WR154-R2-54110	14.25	10.53	0.00	0.00	3.72	3.84	0.00	99.99%	1.65	0.00	99.98%	5.49	0.00	99.98%	Silty	GS, UR	2.06
WR154-R2-54140 & WR154-R2-54150	14.84	8.84	0.00	0.00	6.01	5.69	1.30	77.18%	2.67	2.67	0.15%	8.36	3.97	52.56%	Silty	SS, WP	
WR154-R3-54170	0.59	0.00	0.00	0.00	0.59	0.41	0.29	30.81%	0.19	0.19	0.00%	0.61	0.48	20.98%	Sandy	SS	
WR154-R3-54180	1.77	0.00	0.00	0.00	1.77	1.24	0.11	90.91%	0.58	0.58	-0.14%	1.82	0.69	61.87%	Sandy	SS, WP	
WR154-R3-54190	12.07	9.14	0.00	0.00	2.93	2.05	1.42	30.82%	0.96	0.96	0.00%	3.01	2.38	20.90%	Clayey	SS	
WR154-R3-54220	2.25	0.00	0.00	0.00	2.25	2.32	0.00	100.00%	0.99	0.00	100.00%	3.32	0.00	100.00%	Clayey	UR	2.06
WR154-R3-54250 & WR154-R3-54260	276.47	268.71	0.00	0.00	7.76	7.47	2.30	69.21%	3.46	2.97	14.22%	10.94	5.27	51.83%	Clayey	GS, UR, WP	2.06
WR154-N1-54280	45.55	41.88	0.00	0.00	3.67	3.79	3.22	15.19%	1.78	1.78	-0.11%	5.57	5.00	10.31%	Sandy	SS	
WR154-N1-54290	2.98	0.00	0.00	0.00	2.98	3.09	0.11	96.32%	1.45	0.07	95.18%	4.54	0.18	95.96%	Sandy	BF	
WR154-N1-54300	2.01	0.00	0.00	0.00	2.01	1.64	1.25	24.04%	0.77	0.77	0.00%	2.41	2.02	16.37%	Clayey	SS	
WR154-N1-54320	2.16	0.00	0.00	0.00	2.16	1.51	1.05	30.81%	0.71	0.71	0.00%	2.22	1.76	20.98%	Clayey	SS	
WR154-N1-54340	3.90	1.45	0.00	0.00	2.45	1.71	1.19	30.64%	0.80	0.80	-0.24%	2.52	1.99	20.79%	Silty	SS	
WR154-N1-54370	2.62	0.00	0.00	0.00	2.62	1.83	1.27	30.81%	0.86	0.86	0.00%	2.69	2.13	20.98%	Silty	SS	
WR154-Z1-54390	1.03	0.00	0.00	0.00	1.03	1.07	0.05	94.85%	0.46	0.03	93.67%	1.52	0.08	94.50%	Silty	GS	
WR154-Z1-54400	1.00	0.00	0.00	0.00	1.00	1.03	0.01	99.09%	0.44	0.01	98.84%	1.47	0.01	99.01%	Silty	GS	
WR154-P2-54420	43.86	0.35	0.00	0.00	43.51	16.69	13.47	19.27%	4.49	4.49	0.00%	21.18	17.96	15.18%	Sandy	CB	
WR154-54460	4.88	0.00	0.00	0.00	4.88	5.05	4.27	15.29%	2.37	2.37	0.00%	7.41	6.64	10.40%	Sandy	SS	
WR154-X1-54470	38.80	26.29	0.00	0.00	12.51	8.76	6.06	30.80%	4.10	4.10	-0.01%	12.86	10.16	20.98%	Sandy	SS	
WR154-P1-54480	12.49	0.00	0.00	0.00	12.49	7.53	7.53	0.00%	2.92	2.92	0.00%	10.45	10.45	0.00%	Sandy		
WR154-P3-54490	1.99	0.00	0.00	0.00	1.99	1.20	1.20	0.00%	0.46	0.46	0.00%	1.67	1.67	0.00%	Sandy		
WR154-54500	0.54	0.00	0.00	0.00	0.54	0.43	0.34	20.67%	0.11	0.11	0.00%	0.54	0.45	16.30%	Clayey	CB	
WR154-P4-54520	3.41	0.00	0.00	0.00	3.41	2.62	0.15	94.15%	0.68	0.22	67.87%	3.30	0.37	88.73%	Clayey	BB	
WR154-54540	2.04	0.00	0.00	0.00	2.04	1.38	1.11	19.92%	0.30	0.30	0.00%	1.68	1.40	16.39%	Sandy	CB	
Reach 154	**528.44**	**385.43**	**0.00**	**0.00**	**145.12**	**102.86**	**56.24**	**45.33%**	**42.50**	**32.11**	**24.44%**	**145.36**	**88.36**	**39.21**			
EC155-J2-55010	24.04	21.02	0.00	0.00	3.02	3.11	1.27	59.15%	1.33	0.63	52.66%	4.45	1.90	57.21%	Silty	UR	2.06
EC155-J1-55020	11.04	9.11	0.00	0.00	1.92	1.99	0.26	86.71%	0.85	0.14	83.76%	2.84	0.40	85.82%	Silty	GS	2.06
EC155-J1-55030	2.32	0.54	0.00	0.00	1.78	1.83	0.04	97.76%	0.79	0.02	97.23%	2.62	0.06	97.60%	Silty	GS	2.06
EC155-J2-55040	2.87	0.00	0.00	0.00	2.87	2.96	0.00	100.00%	1.27	0.00	100.00%	4.23	0.00	100.00%	Silty	UR	2.06
Reach 155	**40.26**	**30.67**	**0.00**	**0.00**	**9.59**	**9.90**	**1.58**	**84.07%**	**4.24**	**0.79**	**81.34%**	**14.13**	**2.37**	**83.25%**			
WR156-Z1-56010	2.19	0.00	0.00	0.00	2.19	2.26	0.00	99.97%	0.97	0.00	99.96%	3.23	0.00	99.97%	Silty	GS	2.06
WR156-Z1-56020	4.46	2.49	0.00	0.00	1.97	2.03	0.00	99.93%	0.87	0.00	99.91%	2.90	0.00	99.93%	Silty	GS	2.06
Reach 156	**6.65**	**2.49**	**0.00**	**0.00**	**4.16**	**4.29**	**0.00**	**99.96%**	**1.84**	**0.00**	**99.94%**	**6.13**	**0.00**	**99.95%**			
WR217-WW1-17010	12.30	8.86	0.00	0.00	3.44	3.55	0.14	96.06%	1.52	0.07	95.64%	5.07	0.21	95.94%	Silty	GS	2.06
WR217-WW1-17030	2.75	0.00	0.00	0.00	2.75	2.84	0.09	96.99%	1.22	0.04	96.32%	4.06	0.13	96.79%	Silty	GS	2.06
Reach 217	**15.05**	**8.86**	**0.00**	**0.00**	**6.19**	**6.39**	**0.23**	**96.48%**	**2.73**	**0.11**	**95.94%**	**9.12**	**0.34**	**96.32%**			
WR263-X2-63010	37.98	34.44	0.00	0.00	3.55	3.67	3.11	15.29%	1.72	1.72	0.00%	5.39	4.83	10.40%	Clayey	SS	
WR263-X2-63030	5.63	0.00	0.00	0.00	5.63	5.83	4.94	15.28%	2.73	2.73	0.00%	8.56	7.67	10.40%	Clayey	SS	
WR263-X2-63040	0.74	0.00	0.00	0.00	0.74	0.76	0.01	99.23%	0.36	0.00	98.80%	1.12	0.01	99.09%	Clayey	UR	2.06
WR263-X2-63050	0.73	0.00	0.00	0.00	0.73	0.76	0.01	99.18%	0.35	0.00	98.89%	1.11	0.01	99.09%	Clayey	GS	2.06
WR263-X3-63060	0.46	0.00	0.00	0.00	0.46	0.48	0.01	97.87%	0.22	0.01	97.22%	0.70	0.02	97.66%	Clayey	GS	2.06
WR263-X3-63070	4.73	0.00	0.00	0.00	4.73	4.90	0.05	98.98%	2.30	0.04	98.31%	7.20	0.09	98.77%	Clayey	UR	2.06
WR263-X3-63080	3.01	0.00	0.00	0.00	3.01	3.12	1.79	42.59%	1.46	1.05	28.12%	4.58	2.84	37.97%	Clayey	GS	0.035
WR263-X3-63090	0.40	0.00	0.00	0.00	0.40	0.41	0.00	99.57%	0.19	0.00	99.30%	0.61	0.00	99.48%	Sandy	UR	2.06
WR263-X3-63100	2.37	0.00	0.00	0.00	2.37	2.45	2.08	15.29%	1.15	1.15	0.00%	3.61	3.23	10.40%	Sandy	SS	
WR263-X3-63110	2.31	0.81	0.00	0.00	1.50	1.55	1.32	15.31%	0.73	0.73	0.02%	2.28	2.04	10.43%	Sandy	SS	

WR263-X3-63120	0.41	0.00	0.00	0.00	0.41	0.43	0.01	97.45%	0.18	0.01	96.50%	0.61	0.02	97.17%	Sandy	UR	2.06
WR263-X3-63130	0.51	0.00	0.00	0.00	0.51	0.53	0.00	99.89%	0.22	0.00	99.75%	0.75	0.00	99.84%	Sandy	UR	2.06
WR263-X3-63140	1.81	0.00	0.00	0.00	1.81	1.87	0.02	99.14%	0.80	0.01	98.94%	2.67	0.02	99.08%	Clayey	GS	
WR263-X3-63150	2.49	0.00	0.00	0.00	2.49	2.57	0.00	99.82%	1.10	0.00	99.76%	3.68	0.01	99.80%	Clayey	GS	
WR263-X3-63160	1.14	0.00	0.00	0.00	1.14	1.18	0.00	99.93%	0.50	0.00	99.86%	1.68	0.00	99.91%	Clayey	UR	2.06
WR263-X3-63170	83.37	81.34	0.00	0.00	2.03	2.10	1.67	20.44%	0.90	0.83	7.84%	2.99	2.49	16.66%	Clayey	GS	0.035
WR263-X4-63180	3.06	1.74	0.00	0.00	1.32	1.36	0.96	29.31%	0.58	0.55	6.16%	1.94	1.51	22.37%	Sandy	GS	0.035
WR263-X4-63200	42.49	35.18	0.00	0.00	7.31	7.55	0.00	100.00%	3.23	0.00	100.00%	10.78	0.00	100.00%	Sandy	GS	2.06
WR263-X4-63210	59.48	50.45	0.00	0.00	9.03	9.32	0.00	99.99%	3.99	0.00	99.99%	13.31	0.00	99.99%	Sandy	GS	2.06
WR263-X4-63220	57.48	55.93	0.00	0.00	1.55	1.60	0.00	99.92%	0.68	0.00	100.00%	2.28	0.00	100.00%	Sandy	GS	2.06
WR263-X4-63230	49.22	46.09	0.00	0.00	3.14	3.24	0.00	99.96%	1.39	0.00	99.89%	4.62	0.00	99.91%	Sandy	GS	2.06
WR263-X4-63240	0.36	0.00	0.00	0.00	0.36	0.37	0.23	35.96%	0.16	0.13	19.82%	0.52	0.36	31.12%	Clayey	GS	0.035
WR263-X4-63250	0.99	0.80	0.00	0.00	0.19	0.19	0.00	99.22%	0.08	0.00	98.87%	0.28	0.00	99.12%	Sandy	GS	2.06
WR263-XX2-63260	18.67	9.41	0.00	0.00	9.26	6.67	4.69	29.63%	3.10	3.11	-0.44%	9.76	7.80	20.09%	Sandy	SS	
WR263-X4-63280	18.04	10.01	0.00	0.00	8.03	8.29	0.00	100.00%	3.55	0.00	100.00%	11.84	0.00	100.00%	Sandy	GS	2.06
WR263-X4-63290	0.15	0.00	0.00	0.00	0.15	0.15	0.00	99.83%	0.07	0.00	99.71%	0.22	0.00	99.79%	Sandy	GS	2.06
WR263-X3-63300	0.41	0.00	0.00	0.00	0.41	0.43	0.01	98.27%	0.20	0.00	97.74%	0.63	0.01	98.10%	Clayey	GS	2.06
WR263-X3-63310	3.86	0.00	0.00	0.00	3.86	3.99	0.01	99.79%	1.87	0.01	99.64%	5.87	0.02	99.74%	Clayey	UR	2.06
WR263-X3-63320	2.80	0.00	0.00	0.00	2.80	2.90	1.47	49.29%	1.36	0.95	30.40%	4.26	2.42	43.26%	Clayey	GS	0.035
WR263-X3-63330	0.40	0.00	0.00	0.00	0.40	0.42	0.01	98.32%	0.20	0.00	97.47%	0.61	0.01	98.04%	Sandy	UR	2.06
WR263-X4-63340	44.53	38.43	0.00	0.00	6.10	6.29	0.00	100.00%	2.69	0.00	100.00%	8.98	0.00	100.00%	Sandy	GS	2.06
WR263-X4-63350	4.83	3.38	0.00	0.00	1.45	1.49	0.00	99.89%	0.64	0.00	99.85%	2.13	0.00	99.88%	Sandy	GS	2.06
WR263-X4-63360	8.65	5.73	0.00	0.00	2.92	3.01	2.79	7.49%	1.29	1.26	2.13%	4.30	4.05	5.88%	Sandy	GS	0.035
WR263-X4-63370	0.31	0.00	0.00	0.00	0.31	0.31	0.19	38.25%	0.13	0.10	22.36%	0.45	0.30	33.48%	Clayey	SS	0.035
Reach 263	**482.18**	**390.84**	**0.00**	**0.00**	**91.35**	**90.18**	**25.37**	**71.86%**	**40.16**	**14.41**	**64.11%**	**130.34**	**39.78**	**69.48%**			
EC290-N1-90010	36.04	32.77	0.00	0.00	3.27	3.38	0.36	89.47%	1.45	0.19	86.74%	4.82	0.55	88.65%	Silty	GS	2.06
EC290-N1-90020	2.35	0.00	0.00	0.00	2.35	2.42	0.00	99.97%	1.04	0.00	99.95%	3.46	0.00	99.97%	Silty	UR	2.06
EC290-90040	1.55	0.00	0.00	0.00	1.55	0.04	0.00	100.00%	0.02	0.00	100.00%	0.06	0.00	100.00%	Sandy	GS	2.06
EC290-90050	0.82	0.00	0.00	0.00	0.82	0.02	0.00	100.00%	0.01	0.00	100.00%	0.03	0.00	100.00%	Sandy	GS	2.06
EC290-90060	15.21	0.00	0.00	0.00	15.21	0.68	0.00	100.00%	0.41	0.00	100.00%	1.09	0.00	100.00%	Sandy	GS	2.06
EC290-90090	6.44	0.00	0.00	0.00	6.44	0.22	0.00	100.00%	0.13	0.00	100.00%	0.35	0.00	100.00%	Sandy	GS	2.06
EC290-90100	6.40	0.00	0.00	0.00	6.40	0.23	0.00	100.00%	0.13	0.00	100.00%	0.37	0.00	100.00%	Sandy	GS	2.06
EC290-90110	4.25	0.00	0.00	0.00	4.25	0.19	0.00	99.82%	0.11	0.00	99.79%	0.31	0.00	99.81%	Sandy	GS	2.06
Reach 290	**73.06**	**32.77**	**0.00**	**0.00**	**40.29**	**7.19**	**0.36**	**95.04%**	**3.29**	**0.19**	**94.16%**	**10.48**	**0.55**	**94.76%**			
Total	**1,150.01**	**851.06**	**-**	**-**	**301.07**	**225.32**	**83.79**	**62.81%**	**96.68**	**47.63**	**50.74%**	**322.01**	**131.44**	**59.18%**			

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.

Reach	Area (acre)	Annual Existing TSS Existing Load (lb)	Existing TSS Load Concentration (lb/acre)	Annual Existing TP Load (lb)	TP Load Concentration (lb/acre)
153	4.37	9.12	2.09	0.03	0.01
154	145.12	31,230.76	215.20	88.36	0.61
155	9.59	790.45	82.43	2.37	0.25
156	4.16	0.79	0.19	0.00	0.00
217	6.19	115.18	18.60	0.34	0.05
263	91.35	12,246.24	134.07	39.78	0.44
290	40.29	165.83	4.12	0.55	0.01
Entire County	301.07	44,558.37	148.00	131.44	0.44

Table 4.06-4 Existing Conditions Modeling Results Summary Per Reach

The current County-wide level of TSS reduction meets the 20 percent TSS reduction requirement in the County's stormwater permit. However, the current County-wide TSS and TP reductions do not meet the Wisconsin River TMDL requirements. Baseline and existing conditions modeling output is provided on a flash drive (for final report only) in Appendix K.

	TMDL Reach	MS4 Permit Required Reductions	TMDL Required Reductions (%)	Existing Conditions Percent Reduction (%)	TMDL Pollutant Reduction Gap (%)	TMDL Pollutant Reduction Gap (lb)
TSS	Reach 153	20%		99.65%	-79.6%	-2,049
	Reach 154			47.85%	-27.9%	-16,679
	Reach 155			86.01%	-66.0%	-3,729
	Reach 156			99.97%	-80.0%	-1,959
	Reach 217			96.84%	-76.8%	-2,803
	Reach 263			75.43%	-55.4%	-27,628
	Reach 290			95.40%	-75.4%	-2,716
	County Total			65.09%		-57,563
TP	Reach 153	NA	68.6%	99.52%	-30.9%	-2.0
	Reach 154		68.6%	39.21%	29.4%	42.7
	Reach 155		68.6%	83.25%	-14.6%	-2.1
	Reach 156		68.6%	99.95%	-31.4%	-1.9
	Reach 217		68.6%	96.32%	-27.7%	-2.5
	Reach 263		68.6%	69.48%	-0.9%	-1.1
	Reach 290		68.6%	94.76%	-26.2%	-2.7
	County Total			59.18%		42.7

Table 4.06-5 MS4 Permit and Wisconsin River TMDL Average Annual Percent Pollutant Reductions and Pollutant Reduction Gap Per Reach

The current levels of pollutant reduction are the result of existing BMPs within the County's stormwater-permitted area. To meet the Wisconsin River TMDL pollutant reduction requirements, the County needs to implement additional BMPs to meet the assumed reduction targets. Section 5 outlines different alternatives the County may investigate to further reduce pollutant loads. The WDNR's January 17, 2023, existing conditions modeling approval is included in Appendix L.

SECTION 5
ALTERNATIVES ANALYSIS

5.01 INTRODUCTION

The County is required to meet the Wisconsin 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 County is in compliance with the MS4 Stormwater Permit's required 20 percent TSS reduction requirement, but not in compliance with the TMDL-required TP reduction. 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 TMDL-required 68.6 percent TP reduction, the County may need to implement WQT and a number of new BMPs that 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 (for Wausau-area MS4 communities) as further described in this section.

Pollutant	MS4 Permit Required Reductions (%)	Wisconsin River TMDL (SSC) Required Reductions (%)	Existing Conditions Reductions (%)	TMDL Pollutant Reduction Gap or Excess (-) (%)	TMDL Pollutant Reduction Gap or Excess (-) (lb)
TSS	20	Reach 153: NA Reach 154: NA Reach 155: NA Reach 156: NA Reach 217: NA Reach 263: NA Reach 290: NA **Countywide**	99.65 47.85 86.01 99.97 96.84 75.43 95.40 **65.09**	In Compliance	In Compliance
TP	NA	Reach 153: 68.6 Reach 154: 68.6 Reach 155: 68.6 Reach 156: 68.6 Reach 217: 68.6 Reach 263: 68.6 Reach 290: 68.6 **Countywide**	99.52 39.21 83.25 99.95 96.32 69.48 94.76 **59.18**	-30.9 29.4 -14.6 -31.4 -27.7 -0.9 -26.2	-2.0 42.7 -2.1 -1.9 -2.5 -1.1 -2.7 **42.7**

Note: SSC=Site Specific Criteria

Table 5.01-1 Required and Existing Conditions Pollutant Reductions According to Wisconsin River TMDL Reach

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

Section 5.02 discusses alternatives considered for the County. Section 5.03 discusses components that make up the alternatives for the County. Section 5.04 provides an evaluation of alternatives for the County. 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 Rib Mountain Metropolitan Sewerage District Wastewater Treatment Plant (WWTP) and City of Wausau 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 OPCC. 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 County with the information required to initiate the budgeting and planning phase for facility improvements. All costs are presented in first quarter 2023 dollars. 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 NPW in Table 5.04-1. Appendix M includes figures (Figures M-1 to M-5) showing the layout of each alternative component. Appendix N includes detailed OPCC breakouts for each alternative. Future construction costs should be adjusted for inflation when final project schedules are determined. OPCCs should be updated during the design phase.

5.02 ALTERNATIVES CONSIDERED

Table 5.02-1 shows three alternatives seeking to close the TP pollutant reduction gaps identified in Table 5.01-1 for Reach 154. 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 (HDSs), traffic-calming bioretention basin bumpouts, improved leaf collection, and 80 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 RR Sites Map), property acquisition need, and wetland delineation need. Table 5.04-1 also packages the BMPs into Alternative Nos. 1, 2, and 3 to achieve closing the TP reduction gaps to achieve TMDL compliance. Appendix M includes Figures M-1 to M-5 showing the layout of each alternative component. Appendix N includes the detailed OPCC for each alternative component.

Alternative No.	Structural BMPs	Nonstructural BMP: Increased Street Sweeping Frequency	WQT with Agricultural Lands
1	5 in Reach 154	Yes	No
2	3 in Reach 154	Yes	Yes
3	3 in Reach 154	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 County involve many different components. Assumptions for these components are described in this section.

1. Increased Frequency of Vacuum Street Sweeping

As described in Section 4.05, the County currently performs street sweeping with a high-efficiency regenerative air street sweeper on curb and gutter streets once every spring. These frequencies are considered a below-average frequency. The potential increase in pollutant reduction of switching to twice-monthly frequency of high-efficiency regenerative air street sweeping on curb and gutter streets within the County's MS4 area was analyzed, as shown in Table 5.04-1.

2. Catch Basins with Sumps

Figure 2.01-1 shows the locations of existing catch basins with sumps in the County that are included in the modeling with results in Section 4, all of which are in Marathon County Park. It is envisioned that the County could, over time during street reconstructions, replace existing catch basins with catch basins with sumps. In general, modeling will show that sumps are most effective in areas where streets are not or are minimally swept (the County sweeps all curb and gutter streets in the County MS4 area once per year in the spring) and where there are not downstream BMPs. If additional catch basins with sumps are added to the County's MS4 system, it is recommended that future WinSLAMM modeling incorporate their pollutant reduction performance. At a 20-year NPW cost of more than $5,000/lb TP, catch basins are generally less cost effective than other structural BMPs.

3. Redevelopment

WDNR allows TMDL pollutant reduction credit to be taken for redevelopment. If any of the County's modeled properties redevelop in the future (noting that most land is road ROW), the County can get pollutant reduction credit toward TMDL compliance. This plan does not include projecting future redevelopment plans. However, potential wet ponds at the Highway Department site and at Marathon County Park associated with potential future redevelopment of those areas are included in the discussion under 4. Construction of Stormwater BMPs in the following.

NR 151 requires MS4s to have stormwater ordinances that require redevelopment to achieve 40 percent TSS reduction. Some Wausau area MS4 communities have contemplated changing their redevelopment requirement to 80 percent TSS reduction to assist in meeting the Wisconsin River TMDL.

4. Construction of Stormwater BMPs

Figure 5.03-1 shows the locations of proposed and analyzed structural stormwater BMPs. It also shows the location of structural stormwater BMPs considered but not analyzed. Appendix M includes figures for each of the proposed structural stormwater BMPs. These figures show existing wetlands, floodplains, storm sewer, sanitary sewer, and water main. Inclusion of this

Path: S:\MAD\3500-3599\3598\003\Drawings\GIS\Figures\Figure 5.03-1 Proposed BMP Map.mxd

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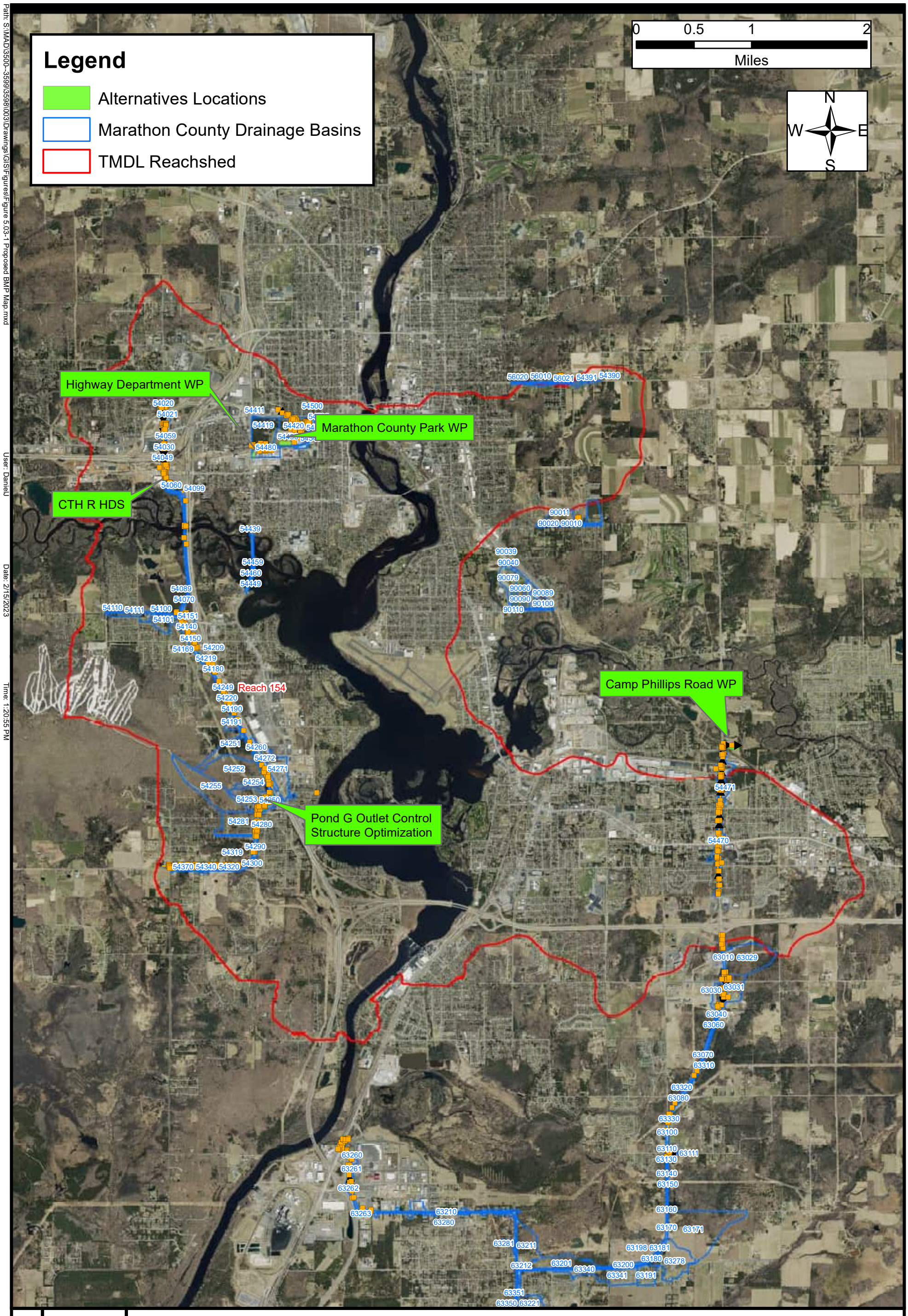


PROPOSED BMPs MAP

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY,
WISCONSIN

STRAND ASSOCIATES®

FIGURE 5.03-1
3598.003

information allows preliminary siting of proposed stormwater BMPs outside of wetlands and floodplains and to avoid or reroute existing public utilities. It is recommended that stormwater BMPs within applicable proximity to the Wausau Downtown Airport follow the Federal Aviation Administration (FAA) Advisory Circular No. 150/5200-33C regarding Hazardous Wildlife Attractants on or near Airports.

a. Dry Detention Basin to Wet Detention Basin Conversion

Because there are no existing dry detention basins within the County's MS4 area, dry to wet detention basin conversions were not analyzed. However, in 2022, the WDNR convened a Standards Oversight Committee (SOC) to develop a stormwater postconstruction technical standard related to enhanced dry detention basins that would achieve pollutant reduction credit that may be released sometime in 2023.

b. Inclusion of Privately Owned BMPs

Because modeled lands are either road ROW or County-owned property, inclusion of privately owned BMPs is not analyzed nor allowed by WDNR guidance.

c. Camp Phillips Road Wet Pond

A wet detention basin is proposed northeast of the Eau Claire Avenue and Camp Phillips Road intersection in the agricultural land that is privately-owned to treat approximately 566 acres of a large mix of residential and commercial land use, most of which is in Reach 154 (see Figure M-1 in Appendix M). While the pond is located within Reach 290, most of the County MS4 lands draining to the pond are in Reach 154. It is assumed that low flows from smaller storm events would be diverted into the pond from the 72-inch-diameter storm sewer pipe that runs west to east on the south side of the pond. The estimated cost of acquiring this property was included in the OPCC. This cost was based on the fair market value listed on the Marathon County GIS Web site. Because of the depth of this wet detention basin, Figure M-1 shows use of 3H:1V side slopes to maximize the wet pond size. The cost of a clay liner is included in this alternative. It is recommended that a geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner.

The wet detention basin (and upstream BMPs) is modeled to achieve an 80 percent TSS and 71 percent TP reduction for the 566 acres draining to it as shown in Table 5.03-1. Table 5.03-1 also shows the portion of the watershed draining from County MS4 lands and Village of Weston lands which would be the basis for the pollutant reduction performance and cost prorations.

Figure M-1 also shows a potential alternative pond location that would make use of the triangular parcel to the south that has the same property owner as the north parcel. The alternative pond location appears advantageous in avoiding land locking the triangular parcel, decreasing land needed on the north parcel, and preserving more land along the Camp Phillips Road for access to future development. Should the north parcel develop in

the future, the developer would likely be interested in providing stormwater quality management via an enlarged version of this wet pond that would accommodate the future development.

Municipality	Contributing Area (acres)	Contributing Area (%)	Wet Pond Performance at 71 percent TP reduction (additional lb TP Reduction)	Prorated Cost Based on Percent of Contributing Area
Marathon County	12	2.2	9.1	$64,574
Village of Weston	554	97.8	54.7	$2,871,091
Total	566	100.00	63.8	$2,935,666

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

Table 5.03-1 Camp Phillips Road Wet Pond Contributing Areas Proration

d. Marathon County Park Wet Pond

Construction of a new wet detention basin in Marathon County Park is proposed as shown on Figure M-2 in Appendix M. The wet detention basin proposed in the Marathon County Park Master Plan as part of the 2022 Marathon County West Side Master Plan is superimposed on the figure. The layout of the pond in Figure M-2 is modeled to achieve a 67.5 percent TSS reduction and is set at elevations that allows diversion of low flows to the pond from the 48-inch-diameter mainline storm sewer to the east of the pond. The pond and contributing watershed area is entirely within Reach 154. Because of the depth of this wet detention basin, Figure M-2 shows use of 3H:1V side slopes to maximize the wet pond size. The cost of a clay liner is included in this alternative. It is recommended that a geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner.

The wet detention basin (and County catch basins in Marathon County Park) is modeled to achieve a 68.3 percent TSS and 52.2 percent TP reduction for the 211 acres draining to it as shown in Table 5.03-2. Table 5.03-2 also shows the portion of the watershed draining from County MS4 lands and City of Wausau lands which would be the basis for the pollutant reduction performance and cost prorations.

Figure M-2 shows a potential alternative location of the wet pond in a north-south orientation similar to the arrangement shown in the *2022 West Side Master Plan*. It is anticipated that the layout of the wet pond will evolve and be coordinated with future revisions of the *2022 West Side Master Plan*. It is also anticipated that the wet pond size will change to fit into an overall plan for the area with corresponding decrease or increase in stormwater quality treatment performance.

Municipality	Contributing Area (acres)	Contributing Area (%)	Wet Pond Performance at 51.1 percent TP reduction (additional lb TP Reduction)	Prorated Cost Based on Percent of Contributing Area
Marathon County	44	20.9	8.1	$332,700
City of Wausau	167	79.1	70.2	$1,262,600
Total	211	100.00	78.3	$1,595,300

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

Table 5.03-2 Marathon County Park Wet Pond Contributing Areas Proration

e. Pond G Outlet Structure Optimization

The current Pond G outlet consists of two 24-inch-diameter storm sewers discharging southeasterly beneath Rib Mountain Drive as shown on Figure M-4 in Appendix M. The combination of treatment via swales and other BMPs upstream of this pond allow this pond to achieve a 66.8 percent TSS reduction for flows reaching it and County lands get additional downstream treatment from Pond H (approximately 1.1 TSS reduction). In these regards, optimizing the outlet of Pond G appears to have little overall effect. Regardless, we modeled Pond G with a 6-inch-diameter orifice and an additional sharp crested weir and it improved performance by 0.9 lb TP.

The Pond G outlet structure optimization provides additional treatment (0.9 lb/year TP) to the basins flowing to it in Reach 154. The wet detention basin (with outlet structure optimization) is modeled to achieve an overall 80.2 percent TSS and 52.9 percent TP reduction for the 223 acres of land draining to it.

f. Wet Detention Basin at Highway Department Site

Construction of a new wet detention basin on the Highway Department site is proposed as shown on Figure M-5 in Appendix M. This wet detention basin would potentially be integrated into the redevelopment of the site for Highway Department purposes. Should this site be redeveloped as shown in the Marathon County Park Master Plan as part of the 2022 Marathon County West Side Master Plan as shown on Figure 5.03-2, this site would appear to be subject to a 40 percent TSS reduction as a private redevelopment site, though the County could potentially mandate an 80 percent TSS reduction requirement. is superimposed on the figure. The layout of the pond in Figure M-5 is modeled to achieve an 80 percent TSS reduction and is set at an elevation that allows existing on-site storm sewers to discharge into it before conveyance into the existing storm sewer system in South 17th Avenue. The pond and contributing watershed area is entirely within Reach 154. The cost of a clay liner is included in this alternative. It is recommended that a geotechnical investigation be completed during design of wet detention basins to determine the need for and cost of a clay liner.

The Highway Department site wet detention basin provides additional treatment (6.0 lb/year TP) to Basin WR154-P1-54480. The wet detention basin is modeled to achieve an overall 80.3 percent TSS and 57.8 percent TP reduction for the 12.5 acres of land draining to it.

Figure 5.03-2 Marathon County Park–Master Plan

During design, the County may want to consider the idea of using a bioretention basin instead of a wet detention basin (if conditions allow for this and other wet detention basins). A bioretention basin of this nature would have similar performance. The WDNR Bioretention For Infiltration Technical Standard 1004 recommends a maximum drainage area of 2 acres. However, Strand has had success in implementing enhanced bioretention basins for drainage areas up to 60 acres when the following are incorporated into the design: diversion of large storm events around the bioretention basin; pretreatment of low flows upstream of bioretention basin with a HDS; level spreading and energy dissipation of low flows entering the bioretention basin; sufficient drawdown time; and confirmation of adequate vertical grade to incorporate an underdrain. Possible benefits of a bioretention basin instead of a wet detention basin include potentially less opposition in residential and institutional areas, potential to be more aesthetically pleasing, and potential to couple with park-like amenities (outdoor classrooms and overlooks). Figure 5.03-3 shows two examples of enhanced bioretention basins incorporating these features on Strand-designed projects in Cleveland, Ohio.

Figure 5.03-3 Enhanced Bioretention Basins in Cleveland, Ohio Serving 19-Acre and 59-Acre Drainage Areas, Respectively

k. Underground Wet Detention Basin

Underground wet detention basins were considered but not analyzed as part of this plan. Underground wet detention basins are (in general) considerably more expensive than traditional wet detention basins, but are considered when there is little open land available to site a wet detention basin or the surface over the pond is to be used for a parking lot. Figure 5.03-4 shows several typical underground wet detention basin options.

Source: Stormbloc, Stormtech, ADS N-12, Contech CMP Storage, Stormtrap (clockwise from top left)

Figure 5.03-4 Underground Detention Options

l. Hydrodynamic Separator (HDS)

A HDS was analyzed at the 84-inch-diameter outfall to the Big Rib River along CTH R south of Sherman Street as shown on Figure M-3 in Appendix M. Also shown on Figure M-3, a low flow bypass is necessary to divert low flows to a HDS and back to the mainline storm sewer. HDSs 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. HDSs typically will treat only low flows (1- to 2-year storm events) while bypassing high flows around or through the unit. Appropriately sized HDSs generally can expect to achieve a 10 to 20 percent TSS reduction and a 5 to 15 percent TP reduction, though this performance goes down in areas already treated by street sweeping and catch basins with sumps, or other upstream BMPs. HDSs 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. HDSs 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 HDSs. Catch basins, however, do little to capture oil/grease, trash, and floatables. Besides the location shown in Figure M-3, HDSs should be considered during street reconstruction projects at locations with no treatment at existing outfalls.

Typical options for HDSs as shown in Figure 5.03-5 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 HDS at a given location while considering performance, need for bypass, ease of maintenance, and cost. Costs shown in Tables 5.03-4 and 5.04-1 assume construction of Nutrient Separating Baffle Boxes as manufactured by Oldcastle Infrastructure as they have an internal bypass mechanism.

The HDS is modeled to achieve a 10.8 percent TSS and 5.5 percent TP reduction for the 352.6 acres draining to it as shown in Table 5.03-3. Table 5.03-4 shows the portion of the watershed draining from County MS4 lands, City of Wausau lands, and Town of Stettin lands which would be the basis for the pollutant reduction performance and cost prorations.

Location	Reach	Figure No.	Watershed Area (acres)	TP Reduction (lb/year)	Percent TSS Reduction (%)	Percent TP Reduction (%)
CTH R HDS	154	M-3	345	9.4	10.8	5.5

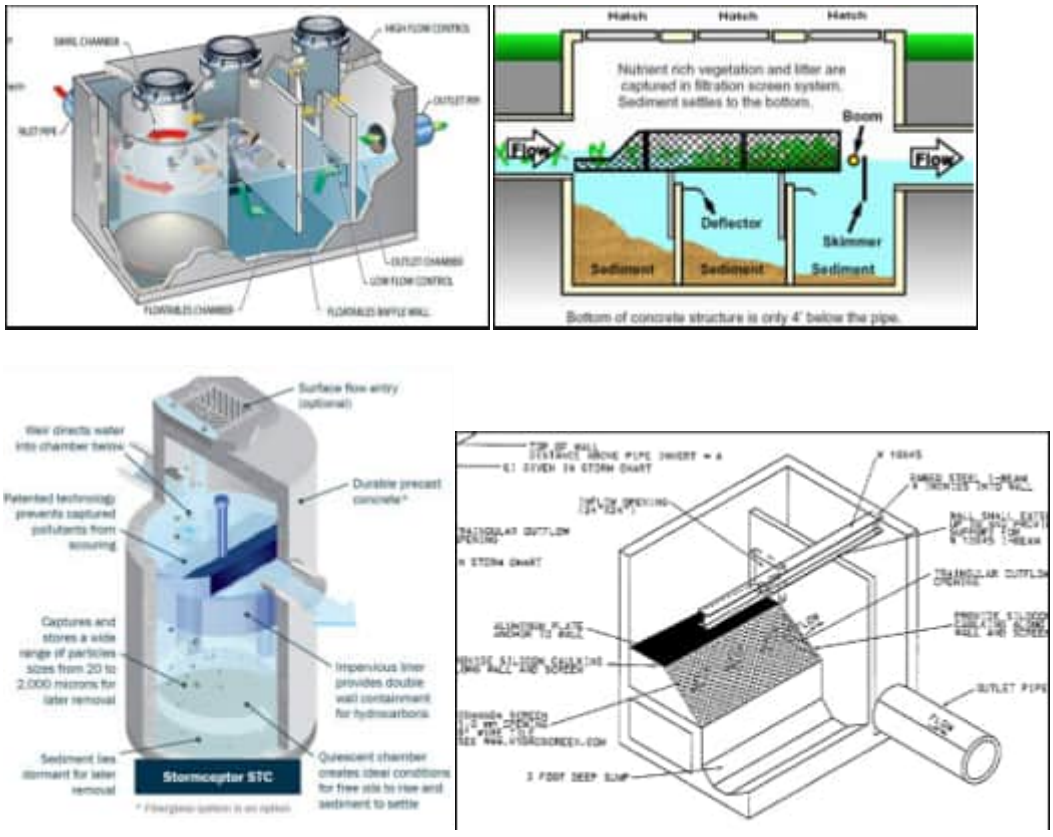
Note: See Table 5.04-1 for detailed alternatives analysis information.

Table 5.03-3 Additional TP Reductions from HDS

Municipality	Contributing Area (acres)	Contributing Area (%)	HDS Performance at 10.8 percent TP reduction (additional lb TP Reduction)	Prorated Cost Based on Percent of TP Removed by HDS
Marathon County	7.6	2.2	6.9	$661,300
City of Wausau	268.8	76.2	0.1	$7,600
Town of Stettin	76.2	21.6	2.3	$224,200
Total	352.6	100.00	9.3	$893,100

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

Table 5.03-4 CTH R HDS Contributing Areas Proration



Source: Vortech, Nutrient Separating Baffle Box, Stormceptor, Coanda Screen (clockwise from top left)

Figure 5.03-5 HDS Options

m. Permeable Pavement

Permeable pavement was considered, but not analyzed, as part of this plan. Permeable pavement would likely be best implemented through County projects during redevelopment, if applicable. 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 5.03-6 include permeable asphalt, permeable concrete, and paver blocks.

Source: Permeable Asphalt, Permeable Concrete, Permeable Paver Blocks (from left to right)

Figure 5.03-6 Permeable Pavement Options

n. 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 Figures 5.03-7 and 5.03-8. 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 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."

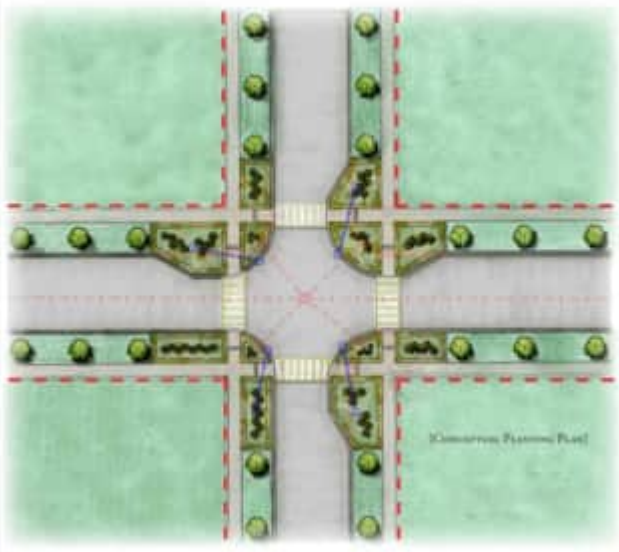


Figure 5.03-7 Traffic-Calming Bioretention Basin Bumpout System Design Rendering

Figure 5.03-8 Traffic-Calming Bioretention Basin Bumpout System

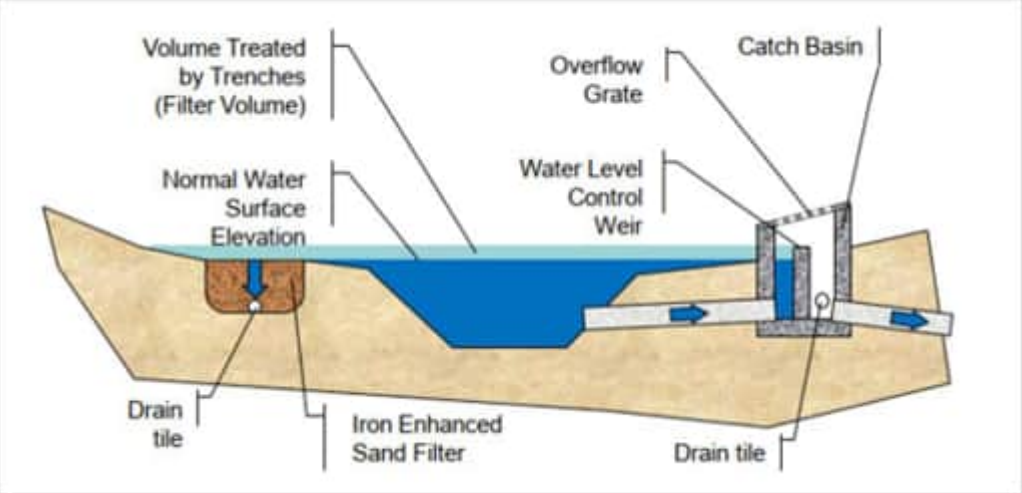
o. Enhanced Phosphorus Removal Through Chemical Addition At Wet Ponds

Enhanced phosphorus removal through chemical addition was considered but not analyzed. Typical candidates for enhanced phosphorus removal through chemical addition 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 an enhanced phosphorus removal through chemical addition system is that wet detention basins will settle out particulate phosphorus, but without chemical addition, will allow dissolved phosphorus to pass through. With the additional of a chemical feed system, a 90 percent TSS and 90 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. This type of system could also be included in the proposed wet detention basins, if desired, though the initial and ongoing cost would increase.

Another upcoming similar technology to consider is an iron-enhanced sand filter around the perimeter of a wet detention basin as shown in Figure 5.03-9. Iron-enhanced sand filters treat dissolved phosphorous but can be maintenance intensive at the surface of the sand filter.

In 2023, the WDNR is planning to convene a Standards Oversight Committees (SOCs) to develop stormwater postconstruction technical standards related to enhanced phosphorus

removal through chemical addition at wet ponds and iron enhanced sand filters to provide guidance on how these BMPs might achieve pollutant reduction credit. The release of these technical standards could potentially occur in 2024.



Source: University of Minnesota, "Monitoring an Iron-Enhanced Sand Filter Trench for the Capture of Phosphate from Stormwater Runoff", September 2015, p.18

Figure 5.03-9 Example of Iron-Enhanced Sand Filter at Pond's Edge

p. 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 County discretionarily pursue design and construction of shoreline restoration projects to combat erosion problem areas on waterways in the area, as applicable.

q. Pollutant Reduction Credit for Improved Leaf Collection

On February, 17, 2022, the WDNR released the Municipal Phosphorus Reduction Credit for Leaf Management Programs guidance. The guidance states that a 17 percent or 25 percent TP reduction credit would be given for leaf collection in any type of residential land use under certain conditions. This credit is generally applicable to city-, village-, and town-based MS4s that collect leaves in residential neighborhoods. Because the County does not collect leaves, this credit is not applicable.

5.04 EVALUATION OF ALTERNATIVES

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

Alternative 1 relies on enhanced street sweeping, constructed structural BMPs, and agricultural WQT (6.1 lb TP) to achieve the TMDL TP requirements.

Alternative 2 is similar to Alternative 1 but does not include some of the less cost-effective structural BMPs (Pond G outlet structure optimization and Highway Department wet detention basin for a redeveloped site).. In doing so, additional agricultural WQT (13.1 lb TP) is included.

Alternative 3 is similar to Alternative 2 but eliminates enhanced street sweeping and replaces it with additional agricultural WQT (18.6 lb TP).

It appears the most cost-effective alternative to meet the Wisconsin River TMDL is Alternative 2 if not eliminating enhanced street sweeping. All alternatives rely on agricultural WQT due to limited cost-effective stormwater quality BMP opportunities within the County and high TMDL limits. For purposes of developing a TMDL Implementation Plan required by the County's MS4 Permit, it may make sense to outline pursuit of Alternative 2 because it optimizes BMPs within the County by providing treatment at three outfalls to protect surrounding waterways while seeking a complimentary amount of agricultural WQT. It is expected that as technologies further develop over the years and other WQT opportunities present themselves, the County 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

Condition or BMP	Proposed BMP Type	Figure Number	Basin Treated	Treated Area (acres)	Property Acquisition or Easement Needed?	Navigable Stream	Wetlands or Wetland Indicator Soils	Wetland Delineation Needed?	Soil Contamination On-Site Per WDNR RR Sites Map?	Additional TP Removed (lb)	2023 BMP Cost	BMP Cost (20-Year NPW)	20-Year NPW Cost-Effectiveness ($/lb TSS Removed)	20-Year NPW Cost-Effectiveness ($/lb TP Removed)		Alternative No. 1 TP (lb/yr)	Alternative No. 2 TP (lb/yr)	Alternative No. 3 TP (lb/yr)
Reach 154															TMDL Reduction Gap:	42.7	42.7	42.7
Camp Philips Rod Wet Detention Basin (Joint with Weston)	Wet Pond	H-1	WR154-X1-54470	12.51	Yes	No	No	No	No	9.1	$64,574	$69,694		$2,483		9.1	9.1	9.1
Marathon County Park Wet Detention Basin (Joint with Wausau)	Wet Pond	H-2	WR154-P2-54420	43.86	No	No	No	No	Adjacent	8.0	$332,669	$387,890		$1,188		8.0	8.0	8.0
CTH R Hydrodynamic Separator (Joint with Wausau and Stettin)	Wet Pond	H-3	WR154-R1-54030	6.88	No	No	Adjacent	Maybe	Adjacent	6.9	$661,250	$661,610		$4,793		6.9	6.9	6.9
Pond G Outlet Structure Optimization	Outlet Structure Optimization	H-4	WR154-R3-54250 & WR154-R3-54260	7.76	No	No	No	Yes	Adjacent	0.9	$54,900	$69,133		$3,774		0.9		
Highway Department Wet Detention Basin	Wet Pond	H-5	WR154-P1-54480	12.49	No	No	No	Yes	Yes	6.0	$665,100	$785,046		$6,499		6.0		
Weekly Vacuum Sweeping in County MS4 Areas with Curb and Gutter (Increase from Once Yearly in Spring to Twice Per Month)	Street Sweeping	NA	Varies	50.16	NA	NA	NA	NA	NA	5.6	$16,988	$287,829		$2,582		5.6	5.6	
Trade Excess TP from Reaches 155, 156, 217, and 290 to Downstream Reach 154 (Internal County Trade)		NA									$0	$0		$0		9.2	9.2	9.2
Agricultural Water Quality Trading (lb of Interim Credits)												$0		$150		0.0		
Agricultural Water Quality Trading (lb of Interim Credits)												$11,634		$150			3.9	
Agricultural Water Quality Trading (lb of Interim Credits)												$28,347		$150				9.4
															TP Reduction Subtotal (Reach 154):	**45.8**	**42.7**	**42.7**
															TP Reduction Subtotal (Reach 154):	**45.8**	**42.7**	**42.7**
														Total 2023 Cost		**$1,795,482**	**$1,075,482**	**$1,058,494**
														Total 20-Year NPW Cost		**$2,261,203**	**$1,418,658**	**$1,147,542**
														20-Year NPW Cost Per Pound Captured		**$2,470**	**$1,661**	**$1,344**

5.05 EVALUATION OF WATER QUALITY TRADING (WQT) AND WATERSHED ADAPTIVE MANAGEMENT (WAM)

A. Water Quality Trading (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 5 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 County's case, trading with upstream partners could have multiple benefits such as improving Big Rib River, Eau Claire River, Cedar Creek, Bull Junior Creek, and Lake Wausau water quality adjacent to the County's MS4 area while meeting WPDES permit requirements at a lower overall cost.

Differing from typical WQT, the Wisconsin River TMDL allows trading downstream without or at a reduced downstream trading factor if there is impact on Petenwell/Castle Rock Lakes.

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. According to the WDNR Web site, the WDNR was accepting proposals from third-party entities for initiating the clearinghouse until January 13, 2022. The web site also states that the contract will be awarded by March 3, 2022, which would appear to be

setting the WQT clearinghouse in motion sometime in mid-2023. As of January 2023, it is understood that the WDNR has a pending contract with a company and the Wisconsin Department of Administration (WDOA) is planning a press release upon contract signing.

B. Watershed Adaptive Management (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 Wisconsin Statute 283.13(7). 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 County's case, WAM could have multiple benefits such as improving Big Rib River, Eau Claire River, Cedar Creek, Bull Junior Creek, and Lake Wausau water quality while meeting WPDES permit requirements at a lower overall cost, and significantly delaying or eliminating the effective date of the stringent effluent phosphorus limit at the Rib Mountain Metropolitan Sewerage District WWTP and City of Wausau WWTP.

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 (3 to 4 years) compliance schedule is typically granted for this.

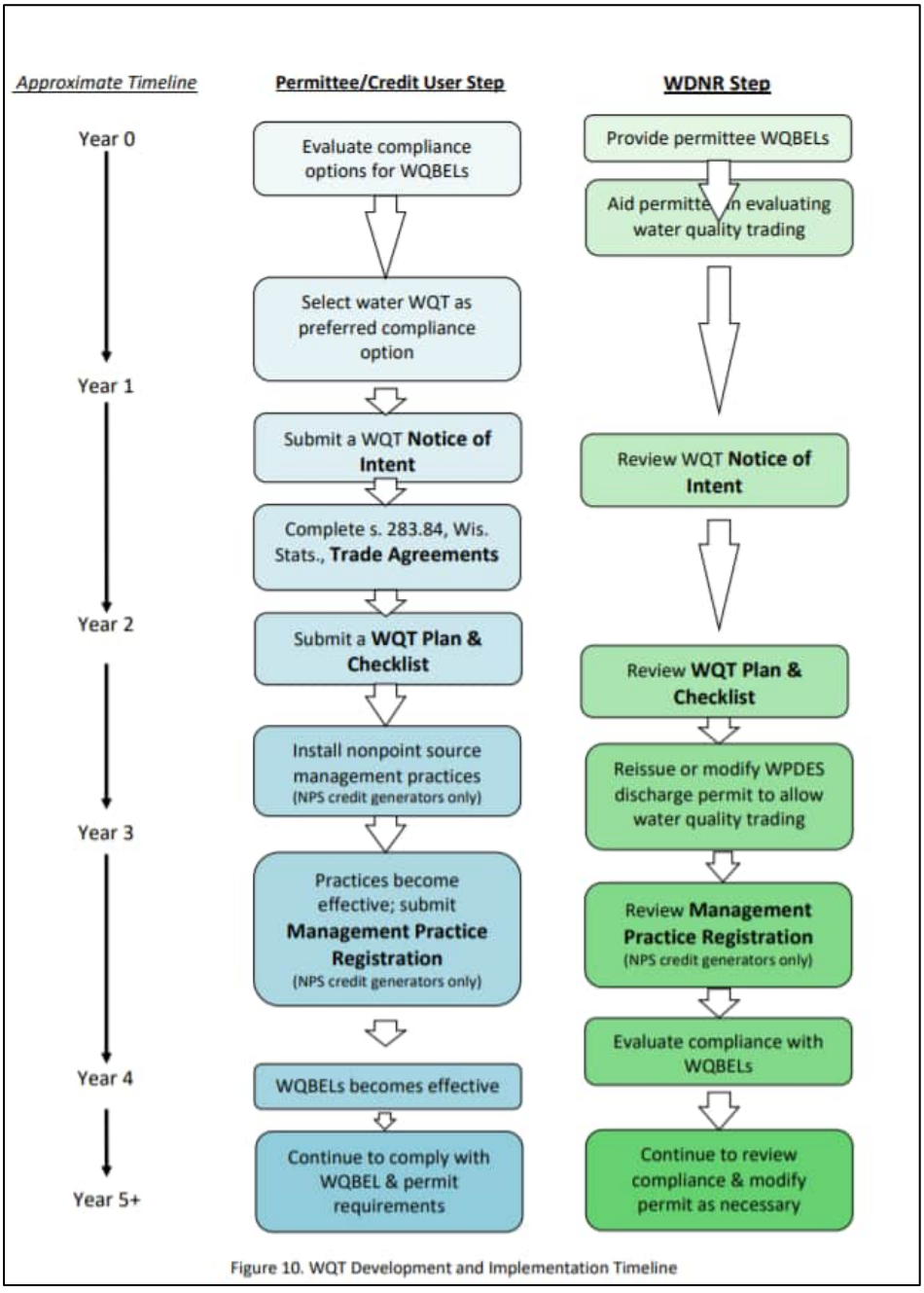
WAM allows permittees to reduce phosphorus and TSS over three terms (15 years) of the permit. WQT and WAM both take credit for phosphorus and TSS reductions within the watershed. Both also allow point source dischargers (including WWTPs and MS4s) to work with NPS dischargers (i.e., the agricultural community). 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 s.283.84(1) Wisconsin Statutes. As stated in ss.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 document (*Guidance for Implementing Water Quality Trading in WPDES Permits,* WDNR*,* June 1, 2020*)* and appears to be continually evolving as trades are developed and reviewed by WDNR.

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



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

5.06 IDENTIFICATION OF POTENTIAL WQT PARTNERS

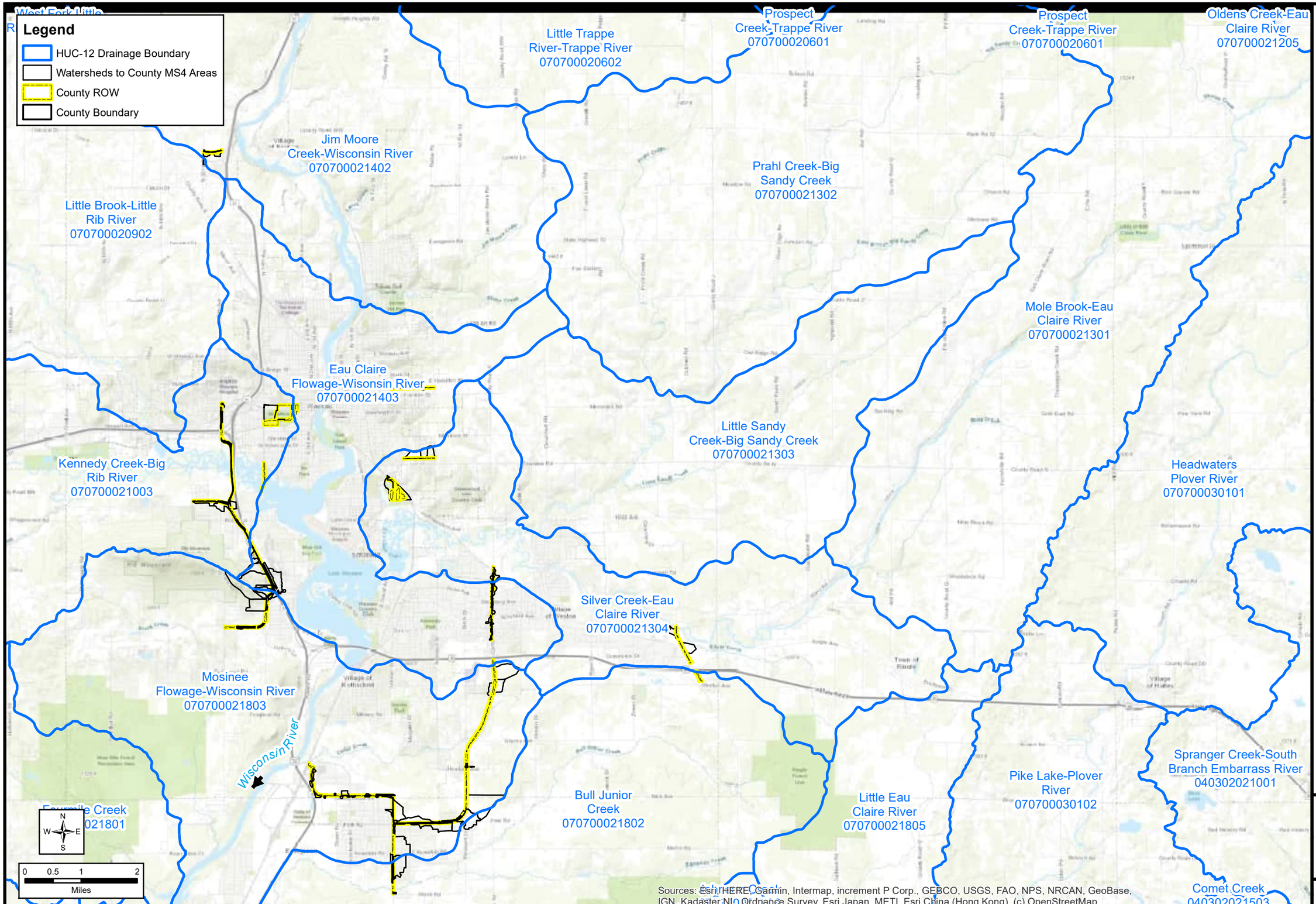
WQT may occur with MS4s or point dischargers downstream or upstream if they are in the County's Hydrologic Unit Code (HUC)-12 (070700021003, 070700021403, 070700021304, 070700021803, and 070700021802) area or the same TMDL Reachshed (84, 85, 275, 307, and 331) as shown in Figures 5.06-1, 5.06-2, and 5.06-3. Potential nearby MS4 and point source trading partners that may be able to generate credits are listed in Table 5.06-1. However, current WDNR guidelines only appear to allow generation of credits through construction of new BMPs. Trading guidance for the Wisconsin River TMDL is unique in the state because WDNR enables WQT both upstream of an MS4 and downstream to Petenwell Lake without any downstream trading factor that would reduce the effectiveness of the trade.

Facility	HUC-12	Available TSS or TP for WQT (lb)	Reachshed
MS4s			
Town of Rib Mountain	070700021403 070700021803	To Be Determined	154
Village of Kronenwetter	070700021802 070700021803	To Be Determined	153, 263
Village of Rothschild	070700021403 070700021803	To Be Determined	154, 263
Village of Weston	070700021403 070700021803	To Be Determined	154, 155, 290
City of Schofield	070700021403 070700021304	To Be Determined	154, 290
City of Wausau	070700021403 070700021304	To Be Determined	154, 156, 265, 290, 291, 292
WWTPs			
Rib Mountain Metropolitan Sewerage District WWTP	070700021803	To Be Determined	263
City of Wausau WWTP	070700021403	To Be Determined	154
Private Point Dischargers			
See Table J-3 in Appendix J of the Wisconsin River TMDL document for a listing of potential trading partners.	070700021003 070700021403 070700021304 070700021803 070700021802	See Table J-3 in Appendix J.	154, 156, 263, 265, 290, 291, 292

Table 5.06-1 Potential Trading Partners

5.07 RIB MOUNTAIN METROPOLITAN SEWERAGE DISTRICT WWTP AND CITY OF WAUSAU WWTP WQT POTENTIAL

The Rib Mountain Metropolitan Sewerage District WWTP and the City of Wausau WWTP represent potential WQT partners. With optimized TP treatment at the WWTP(s), the WWTP(s) may be in a position to generate TP credits. If the cost for the WWTP(s) to generate these credits is less than the cost to achieve TMDL compliance with stormwater BMPs in the County MS4 area, then this should be considered, though a study would likely be needed to better understand potential synergies.



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

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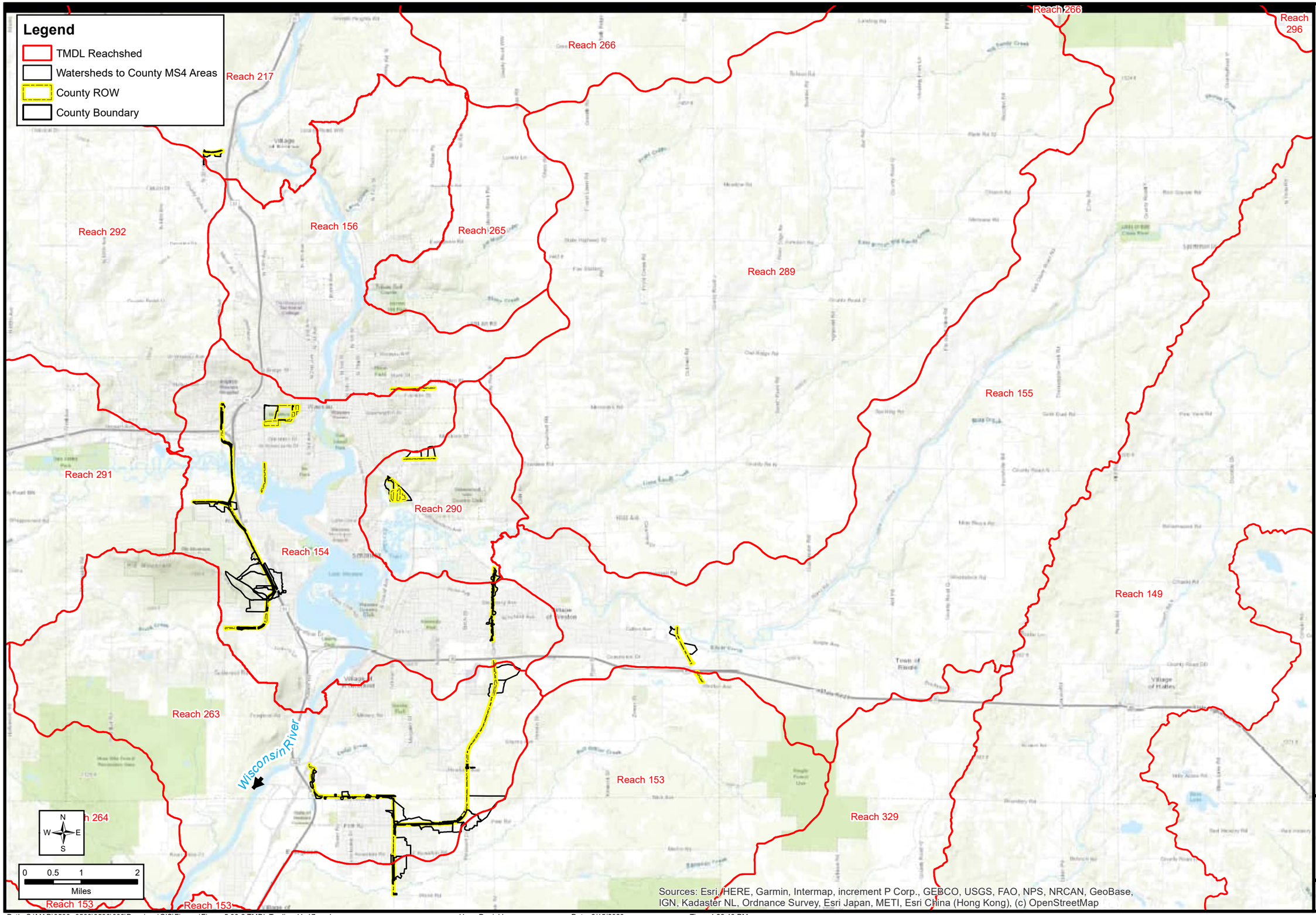
UPSTREAM WATERSHEDS FOR WATER QUALITY TRADING

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY,
WISCONSIN

STRAND ASSOCIATES®

FIGURE 5.06-1
4603.002



WATER QUALITY TRADING OPPORTUNITIES (TMDL REACHES)

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY,
WISCONSIN

STRAND ASSOCIATES®

FIGURE 5.06-2
4603.002

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Legend

- TMDL Reachshed
- Watersheds to County MS4 Areas
- County ROW
- County Boundary

Reach 269 Reach 269 Reach 268 Reach 297 Reach 298 Reach 108 Reach 296 Reach 216
Reach 158 Reach 321
Reach 267 Reach 266
Reach 104 Reach 104 Reach 215 Reach 102 Reach 217 Reach 107
Reach 292
Reach 157 Reach 156 Reach 265 Reach 289
Reach 97 Reach 103 Reach 214 Reach 155
Reach 94 Reach 106 Reach 291 Reach 290
Reach 105 Reach 154
Reach 92 Reach 101
Reach 90
Reach 264 Reach 263
Wisconsin River
Reach 91 Reach 325 Reach 151 Reach 153
Reach 152 Reach 326 Reach 327 Reach 89 Reach 262 Reach 149
Reach 88 Reach 329
Reach 85 Reach 328 Reach 87 Reach 86
Reach 83 Reach 81
Reach 84 Reach 150 Reach 80
Reach 79 Reach 82 Reach 211 Reach 261
Reach 331 Reach 207 Reach 148
Reach 332
Reach 307 Reach 314 Reach 146 Reach 148
Reach 313 Reach 201 Reach 78
Reach 72 Reach 210 Reach 260
Reach 67 Reach 258 Reach 330
Reach 200 Reach 259
Reach 65 Reach 62 Reach 208
Reach 64 Reach 145
Reach 200 Reach 256
Reach 206
Reach 63 Reach 144
Reach 205 Reach 257
Reach 140 Reach 204
Reach 203 Reach 333
Reach 143 Reach 142
Reach 199 Reach 255
Reach 61
Reach 76 Reach 77
Reach 60 Reach 73 Reach 74
Reach 141
Reach 60

N W E S

0 1 2 4 Miles

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

FIGURE 5.06-3
4603.002

STRAND ASSOCIATES®

TMDL REACHES

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY,
WISCONSIN

5.08 AGRICULTURAL LANDS WQT POTENTIAL

WQT may also occur with agricultural producers upstream of the County and downstream to Petenwell Lake as described previously and shown in Figures 5.06-1, 5.06-2, and 5.06-3. 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 $150/lb TP range on a 20-year present worth basis.

It is understood that the County completed a 9-Key Element Plan for the Fenwood Creek watershed (see Figure 5.08-1) in 2016 and Marathon County has proceeded with grant-funded nonpoint pollution control pilot project in the watershed under the multidischarger variance (MDV) while accepting funding from WPDES permittees (WWTPs only) using MDV. There may be opportunities for WQT within the Fenwood Creek pilot project area if projects are not already credited through MDV or additional projects are implemented. Likewise, in 2019 Wood County completed a 9-Key Element Plan for the Mill Creek watershed (see Figure 5.08-2) titled *Mill Creek Nonpoint Source Watershed Implementation Plan*. This document includes a watershed inventory, an implementation plan that lays out recommendations for a variety of agricultural BMP and streambank restoration projects in the Mill Creek watershed, and quantification of load reductions to achieve a 40 percent reduction in TP.

Figure 5.08-1 Fenwood Creek Pilot Project Area

Figure 5.08-2 Mill Creek Watershed

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 $70 to $130/lb 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 Wood and Marathon Counties 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 Rib Mountain Metropolitan Sewerage District or City of Wausau WWTPs.

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 WQT with agricultural lands to achieve TMDL compliance ranges from $2.3 million ($2,470/lb TP) to $1.2 million ($1,344/lb TP). 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 County's MS4 Permit. Appendix C requires, at a minimum, that 20 percent of the remaining TSS reduction (already in compliance) and 10 percent of the remaining TP reduction (10 percent of 43=4.3 lb TP) be achieved over the next permit term (May 1, 2025 to April 30, 2030). With Urban Nonpoint Source (UNPS) grants funding up to $150,000 for each constructed stormwater BMP (and an additional $50,000 for BMPs requiring land acquisition), the County would see an increase in the cost effectiveness of the four alternatives. Each of the three BMPs as part of Alternative No. 2 would require collaboration with neighboring MS4 communities depending on the location of the BMP (Village of Weston, City of Wausau, Town of Stettin) and cost-sharing between the communities described above.

2. Consider enhanced phosphorus reduction through chemical treatment of proposed wet ponds or iron-enhanced sand filter around proposed pond edges, noting that the WDNR's SOC is convening a workgroup in 2023 for creation of stormwater post-construction technical standards related to enhanced phosphorus removal through chemical addition at wet ponds and iron-enhanced sand filters.

3. For purposes of agricultural WQT, further investigate opportunities through the WQT clearinghouse.

4. Further investigate potential WQT opportunities with the Rib Mountain Metropolitan Sewerage District WWTP and City of Wausau WWTP given each entity's plan for TMDL compliance.

5. Further investigate potential WQT opportunities with surrounding MS4s, noting that modeled excess TP reduction from an MS4 does not appear tradeable under current WDNR guidelines that appear to only allow generation of credits through construction of new BMPs.

6. Discretionarily pursue design and construction of streambank restoration projects to combat erosion problem areas on surrounding waterways to receive nonnumeric benchmark credit toward MS4/TMDL compliance.

7. It is recommended that the County convert catch basins to catch basins with sumps during street reconstruction projects over time.

SECTION 6
CONCLUSIONS AND RECOMMENDATIONS

6.01 GENERAL

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

6.02 RECOMMENDATIONS FOR ACHIEVING STORMWATER MANAGEMENT GOALS

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

1. Continue to implement the County's existing public education and outreach and public involvement and participation programs identified in Section 3 (see Tables 3.02-1 and 3.02-2). Meet the measurable goals for the programs.

2. Perform illicit discharge inspections at the frequency identified in Table 3.02-7. 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 D. Meet the measurable goals for the program described in Table 3.02-8.

3. Continue to participate with participating municipalities under the MOA included in Appendix I for construction site erosion control and post construction stormwater management as shown in Tables 3.02-9 and 3.02-10, noting that the County does not have its own construction site erosion control and postconstruction stormwater management ordinances. Implement the Post-Construction Stormwater Management Facilities: Long-Term Maintenance, Inspection, and Enforcement Procedures contained in Appendix D and E as shown in Table 3.02-10 for County-owned stormwater BMPs within the County's MS4 area.

4. Implement the recommended pollution prevention for municipal operations program identified in Table 3.02-11.

5. Proceed with recommendations in Section 5.10 to achieve MS4 and TMDL compliance related to TSS and TP reduction. These recommendations include installing a variety of stormwater BMPs (including bonding/financing for the projects and submitting grant applications to offset project costs), increased frequency of street sweeping with a high-efficiency street sweeper, among others described in Section 5. Maintain the existing conditions TSS and TP reduction performance of BMPs in the County's MS4 area. Consider officially mapping proposed wet pond locations to preserve them for future implementation.

6. Update the County's storm sewer system map on an annual basis.

7. Submit an annual report to WDNR documenting and tracking permit-related activities.

8. Maintain stormwater BMPs according to the Maintenance and Inspection of Stormwater Management Facilities documents provided in Appendices D and E.

9. Leverage funds from general funds and grants for design and construction of the improvements necessary.

10. In the next stormwater quality modeling update, include all stormwater BMPs constructed since the WDNR approval of existing conditions modeling in January 2023.

6.03 IMPLEMENTATION PLAN

Tables 6.03-1 and 6.03-2 include a breakdown of implementation of Alternative 2 for TMDL compliance (and 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 County should consider other opportunities for TP reductions as they arise including consideration of components of Alternatives 1 or 3 if they make sense for the County.

Table 6.03-1 Stormwater Program Budget

Activity	Permit Deadlines		Current Status		2021	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	2047	2048	2049	2050	Potential Funding Source
	Planning	Implementation	Planning	Implementation																														
Public Education and Outreach																																		
In-Kind Facilitation Services to North Central Wisconsin Stormwater Coalition (NCWSC)			Ongoing	Ongoing	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	General Fund
Strand Presentation of Stormwater Management Plan Update to County Board				2023	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	Funded
County Board Meeting to Discuss Annual Report			Ongoing	Ongoing	$1,000	$1,100	$1,133	$1,167	$1,202	$1,238	$1,275	$1,313	$1,353	$1,393	$1,435	$1,478	$1,523	$1,568	$1,615	$1,664	$1,714	$1,765	$1,818	$1,873	$1,929	$1,987	$2,046	$2,108	$2,171	$2,236	$2,303	$2,372	$2,443	$2,517	General Fund
Public Education Addressing Eight Topic Areas Including Brochures			Ongoing	2022	$3,500	$5,200	$5,356	$5,517	$5,682	$5,853	$6,028	$6,209	$6,395	$6,587	$6,785	$6,988	$7,198	$7,414	$7,636	$7,865	$8,101	$8,344	$8,595	$8,853	$9,118	$9,392	$9,674	$9,964	$10,263	$10,571	$10,888	$11,214	$11,551	$11,897	General Fund
Update Stormwater-Related Web Page on County's Web Site			Ongoing	2023	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	General Fund
Promote Environmentally Sensitive Development During Concept Plan Review			Ongoing	Ongoing	$500	$600	$618	$637	$656	$675	$696	$716	$738	$760	$783	$806	$831	$855	$881	$908	$935	$963	$992	$1,021	$1,052	$1,084	$1,116	$1,150	$1,184	$1,220	$1,256	$1,294	$1,333	$1,373	General Fund
Track Public Education and Outreach Activities for Annual Report			Ongoing	Ongoing	$1,500	$1,600	$1,648	$1,697	$1,748	$1,801	$1,855	$1,910	$1,968	$2,027	$2,088	$2,150	$2,215	$2,281	$2,350	$2,420	$2,493	$2,568	$2,645	$2,724	$2,806	$2,890	$2,976	$3,066	$3,158	$3,252	$3,350	$3,451	$3,554	$3,661	General Fund
					$6,500	**$8,500**	**$8,755**	**$9,018**	**$9,288**	**$9,567**	**$9,854**	**$10,149**	**$10,454**	**$10,768**	**$11,091**	**$11,423**	**$11,766**	**$12,119**	**$12,483**	**$12,857**	**$13,243**	**$13,640**	**$14,049**	**$14,471**	**$14,905**	**$15,352**	**$15,813**	**$16,287**	**$16,775**	**$17,279**	**$17,797**	**$18,331**	**$18,881**	**$19,447**	
Public Involvement and Participation																																		
NCWSC Meeting Attendance and Coordination			Ongoing	Ongoing	$250	$250	$258	$265	$273	$281	$290	$299	$307	$317	$326	$336	$346	$356	$367	$378	$389	$401	$413	$426	$438	$452	$465	$479	$493	$508	$523	$539	$555	$572	General Fund
Implement Volunteer-Related Activity			Ongoing	2023	$0	$0	$1,000	$1,030	$1,061	$1,093	$1,126	$1,159	$1,194	$1,230	$1,267	$1,305	$1,344	$1,384	$1,426	$1,469	$1,513	$1,558	$1,605	$1,653	$1,702	$1,754	$1,806	$1,860	$1,916	$1,974	$2,033	$2,094	$2,157	$2,221	General Fund
County Board Meeting to Discuss Stormwater Issues			Ongoing	Ongoing	$100	$100	$103	$106	$109	$113	$116	$119	$123	$127	$130	$134	$138	$143	$147	$151	$156	$160	$165	$170	$175	$181	$186	$192	$197	$203	$209	$216	$222	$229	General Fund
Track Public Education and Outreach Activities for Annual Report			Ongoing	Ongoing	$150	$150	$155	$159	$164	$169	$174	$179	$184	$190	$196	$202	$208	$214	$220	$227	$234	$241	$248	$255	$263	$271	$279	$287	$296	$305	$314	$323	$333	$343	General Fund
					$500	**$500**	**$1,515**	**$1,560**	**$1,607**	**$1,655**	**$1,705**	**$1,756**	**$1,809**	**$1,863**	**$1,919**	**$1,977**	**$2,036**	**$2,097**	**$2,160**	**$2,225**	**$2,292**	**$2,360**	**$2,431**	**$2,504**	**$2,579**	**$2,657**	**$2,736**	**$2,818**	**$2,903**	**$2,990**	**$3,080**	**$3,172**	**$3,267**	**$3,365**	
IDDE																																		
Perform IDDE Inspections At Outfalls (2023 Program: 27 Priority-Annual and 14 Non-Priority Major-1x per 5 year; 2020: 29 Screened)			Ongoing	Ongoing	$950	$950	$10,250	$7,442	$7,814	$8,205	$8,615	$13,082	$9,498	$9,973	$10,471	$10,995	$16,696	$12,122	$12,728	$13,365	$14,033	$21,309	$15,471	$16,245	$17,057	$17,910	$27,196	$19,746	$20,733	$21,769	$22,858	$34,710	$25,201	$26,461	General Fund
Track IDDE Activities for Annual Report			Ongoing	Ongoing	$50	$50	$100	$103	$106	$109	$113	$116	$119	$123	$127	$130	$134	$138	$143	$147	$151	$156	$160	$165	$170	$175	$181	$186	$192	$197	$203	$209	$216	$222	General Fund
					$1,000	**$1,000**	**$10,350**	**$7,545**	**$7,920**	**$8,314**	**$8,727**	**$13,198**	**$9,617**	**$10,096**	**$10,598**	**$11,126**	**$16,831**	**$12,260**	**$12,871**	**$13,511**	**$14,184**	**$21,465**	**$15,632**	**$16,410**	**$17,227**	**$18,085**	**$27,377**	**$19,932**	**$20,924**	**$21,967**	**$23,061**	**$34,920**	**$25,416**	**$26,683**	
Construction Site Erosion Control																																		
Continue to Participate with Participating Municipalities under MOA in Appendix I			In Report	Ongoing	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	General Fund
					$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Postconstruction Stormwater Management																																		
Continue to Participate with Participating Municipalities under MOA in Appendix I			In Report	Ongoing	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	General Fund
					$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	
Pollution Prevention Program and Operation and Maintenance																																		
Ongoing Operation and Maintenance of County Stormwater BMPs			In Report	Ongoing	$2,500	$2,500	$2,575	$2,652	$2,732	$2,814	$2,898	$2,985	$3,075	$3,167	$3,262	$3,360	$3,461	$3,564	$3,671	$3,781	$3,895	$4,012	$4,132	$4,256	$4,384	$4,515	$4,651	$4,790	$4,934	$5,082	$5,234	$5,391	$5,553	$5,720	General Fund
Operation and Maintenance of Storm Sewer System (Culverts and Outfalls)			In Report	Ongoing	$2,500	$2,500	$2,575	$2,652	$2,732	$2,814	$2,898	$2,985	$3,075	$3,167	$3,262	$3,360	$3,461	$3,564	$3,671	$3,781	$3,895	$4,012	$4,132	$4,256	$4,384	$4,515	$4,651	$4,790	$4,934	$5,082	$5,234	$5,391	$5,553	$5,720	General Fund
Initiate Public BMP Maintenance Program per Appendices D and E of the Stormwater Management Plan Update: 9 BMPs			In Report	2023	$0	$0	$500	$515	$530	$546	$563	$580	$597	$615	$633	$652	$672	$692	$713	$734	$756	$779	$802	$826	$851	$877	$903	$930	$958	$987	$1,016	$1,047	$1,078	$1,111	General Fund
Assessment of County's stormwater BMPs for Necessary Routine Maintenance per Appendix D and E of the Stormwater Management Plan Update: 3 BMPs Once Per Year	**2023 Cost:**		In Report	2023	$0	$0	$1,500	$1,545	$1,591	$1,639	$1,688	$1,739	$1,791	$1,845	$1,900	$1,957	$2,016	$2,076	$2,139	$2,203	$2,269	$2,337	$2,407	$2,479	$2,554	$2,630	$2,709	$2,790	$2,874	$2,960	$3,049	$3,141	$3,235	$3,332	General Fund
Assessment of County's Stormwater BMPs for Necessary Nonroutine Maintenance per Appendices D and E of the Stormwater Management Plan Update: 3 BMPs Once Every 5 years	$9,000		In Report	2023	$0	$0	$9,000	$0	$0	$0	$0	$10,940	$0	$0	$0	$0	$13,962	$0	$0	$0	$0	$18,710	$0	$0	$0	$0	$23,880	$0	$0	$0	$0	$30,477	$0	$0	General Fund
Design of County-Owned Stormwater BMP Non-Routine Maintenance (Dredging)	**2023 Cost:**	$200,000			$0	$0	$0	$0	$0	$0	$120,000	$0	$0	$0	$0	$156,835	$0	$0	$0	$0	$204,977	$0	$0	$0	$0	$267,897	$0	$0	$0	$0	$350,131	$0	$0	$0	General Fund
County-Owned Stormwater BMP Nonroutine Maintenance (Project No. 1–2028)	$231,855				$0	$0	$0	$0	$0	$0	$0	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$16,910	$0	$0	$0	General Fund
County-Owned Stormwater BMP Nonroutine Maintenance (Project No. 2–2033)	$238,810				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	$17,417	General Fund
County-Owned Stormwater BMP Nonroutine Maintenance (Project No. 3–2038)	$245,975				$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$17,939	$17,939	$17,939	$17,939	$17,939	$17,939	$17,939	$17,939	$17,939	$17,939	$17,939	$17,939	$17,939	General Fund
SWPPP–Install Erosion Control BMPs at Public Works Facilities			In Report	2022	$0	$0	$2,225	$0	$0	$0	$0	$2,579	$0	$0	$0	$0	$2,990	$0	$0	$0	$0	$3,466	$0	$0	$0	$0	$4,019	$0	$0	$0	$0	$4,659	$0	$0	General Fund
Deicing and Snow Removal Operations Administration and Tracking			In Report	Ongoing	$500	$500	$515	$530	$546	$563	$580	$597	$615	$633	$652	$672	$692	$713	$734	$756	$779	$802	$826	$851	$877	$903	$930	$958	$987	$1,016	$1,047	$1,078	$1,111	$1,144	General Fund
Leaf and Grass Clipping Management-No County Program			In Report	Ongoing	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	General Fund
Street Sweeping Once Each Spring			In Report	Ongoing	$1,500	$1,500	$1,545	$1,591	$1,639	$1,688	$1,739	$1,791	$1,845	$1,900	$1,957	$2,016	$2,076	$2,139	$2,203	$2,269	$2,337	$2,407	$2,479	$2,554	$2,630	$2,709	$2,790	$2,874	$2,960	$3,049	$3,141	$3,235	$3,332	$3,432	General Fund
Stormwater Pollution Prevention Training for County Staff			In Report	Ongoing	$250	$250	$258	$265	$273	$281	$290	$299	$307	$317	$326	$336	$346	$356	$367	$378	$389	$401	$413	$426	$438	$452	$465	$479	$493	$508	$523	$539	$555	$572	General Fund
Track Pollution Prevention Activities for Annual Report			In Report	Ongoing	$750	$750	$773	$796	$820	$844	$869	$896	$922	$950	$979	$1,008	$1,038	$1,069	$1,101	$1,134	$1,168	$1,204	$1,240	$1,277	$1,315	$1,355	$1,395	$1,437	$1,480	$1,525	$1,570	$1,617	$1,666	$1,716	General Fund
					$8,000	**$8,000**	**$21,465**	**$10,547**	**$10,864**	**$11,190**	**$131,525**	**$42,299**	**$29,137**	**$29,503**	**$29,881**	**$187,106**	**$65,040**	**$48,501**	**$48,926**	**$49,364**	**$254,793**	**$90,396**	**$68,698**	**$69,191**	**$69,699**	**$338,119**	**$98,659**	**$71,315**	**$71,887**	**$72,475**	**$423,212**	**$91,932**	**$57,440**	**$58,102**	
Stormwater Quality Management																																		
Stormwater Quality Management Plan Update (Not Including $64,730 Funded By Grant)			In Report	In Compliance	$64,730	$64,730	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	General Fund
UNPS Planning Grant Funding SQMP Update					-$32,365	-$32,365	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	UNPS Grant
WDNR UNPS Grant Application for WinSLAMM Modeling Update				2027	$0	$0	$0	$0	$0	$0	$10,500	$0	$0	$0	$0	$0	$14,071	$0	$0	$0	$0	$0	$18,856	$0	$0	$0	$0	$0	$25,270	$0	$0	$0	$0	$0	General Fund
WDNR UNPS Grant for WinSLAMM Modeling Update	**2023 Cost:**			2028	$0	$0	$0	$0	$0	$0	$0	-$42,476	$0	$0	$0	$0	$0	-$56,922	$0	$0	$0	$0	$0	-$76,281	$0	$0	$0	$0	$0	-$102,224	$0	$0	$0	$0	UNPS Grant
WinSLAMM Modeling Update	$65,000			2028	$0	$0	$0	$0	$0	$0	$0	$84,952	$0	$0	$0	$0	$0	$113,844	$0	$0	$0	$0	$0	$152,562	$0	$0	$0	$0	$0	$204,448	$0	$0	$0	$0	General Fund
WDNR UNPS Grant Application for High-Efficiency Street Sweeper	$8,900		In Report	2024	$0	$0	$0	$9,345	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	General Fund
High-Efficiency Street Sweeper Purchase	$316,165		In Report	2025	$0	$0	$0	$0	$335,419	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	General Fund
UNPS Grant for High-Efficiency Street Sweeper			In Report	2025	$0	$0	$0	$0	-$40,757	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	UNPS Grant
Enhanced Street Sweeper Program	$16,988		In Report	2026	$0	$0	$0			$18,563	$19,120	$19,694	$20,285	$20,893	$21,520	$22,166	$22,831	$23,516	$24,221	$24,948	$25,696	$26,467	$27,261	$28,079	$28,921	$29,789	$30,682	$31,603	$32,551	$33,528	$34,533	$35,569	$36,636	$37,736	General Fund
WDNR UNPS Grant Application for Design and Construction of Stormwater BMPs	$8,900			Ongoing	$0	$0	$0	$0	$0	$0	$10,818	$0	$11,927	$0	$13,149	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	General Fund
WDNR UNPS Grant for Stormwater BMP				Ongoing	$0	$0	$0	$0	$0	$0	$0	-$3,299	$0	-$31,280	$0	-$111,060	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	UNPS Grant
	2023 Cost	**Reach**																																
Implementation of BMPs Identified in Alternative 2			In Report																																
Design and Construct Camp Phillips Road Wet Detention Basin (Joint with Village of Weston)	$64,574	154	In Report	2028	$0	$0	$0	$0	$0	$0	$0	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$5,460	$0	$0	$0	General Fund
Design and Construct Marathon County Park Wet Detention Basin (Joint with City of Wausau)	$332,669	154	In Report	2030	$0	$0	$0	$0	$0	$0	$0	$0	$0	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$29,839	$0	General Fund
Design and Construct CTH R Hydrodynamic Separator (Joint with City of Wausau and Town of Stettin)	$661,250	154	In Report	2032	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	$62,924	General Fund
Agricultural WQT for TP (3.9 lb at $150/lb TP; 0.195 lb in 2030 Then 1/19 Per Year Starting in 2031 with Full Implementation in 2049 per Table 6.03-2)	$150		In Report		$0	$0	$0	$0	$0	$0	$0	$0	$0	$36	$74	$114	$157	$202	$250	$301	$354	$410	$469	$532	$598	$667	$740	$816	$897	$981	$1,070	$1,164	$1,262	$1,299	General Fund
					$32,365	**$32,365**	**$0**	**$9,345**	**$294,663**	**$18,563**	**$40,438**	**$64,330**	**$37,671**	**$24,949**	**$70,042**	**$9,443**	**$135,282**	**$178,863**	**$122,694**	**$123,471**	**$124,273**	**$125,100**	**$144,810**	**$203,115**	**$127,742**	**$128,679**	**$129,645**	**$130,642**	**$156,940**	**$234,956**	**$133,827**	**$129,496**	**$130,662**	**$101,959**	
Storm Sewer Map																																		
Submit and Maintain Updated Storm Sewer System Map			In Report	Ongoing	$0	$0	$2,500	$2,575	$2,652	$2,732	$2,814	$2,898	$2,985	$3,075	$3,167	$3,262	$3,360	$3,461	$3,564	$3,671	$3,781	$3,895	$4,012	$4,132	$4,256	$4,384	$4,515	$4,651	$4,790	$4,934	$5,082	$5,234	$5,391	$5,553	General Fund
Annual Report																																		
Compilation of Tracked Permit Activities			In Report	Ongoing	$0	$0	$200	$206	$212	$219	$225	$232	$239	$246	$253	$261	$269	$277	$285	$294	$303	$312	$321	$331	$340	$351	$361	$372	$383	$395	$407	$419	$431	$444	General Fund
Prepare Annual Report			In Report	Ongoing	$0	$0	$200	$206	$212	$219	$225	$232	$239	$246	$253	$261	$269	$277	$285	$294	$303	$312	$321	$331	$340	$351	$361	$372	$383	$395	$407	$419	$431	$444	General Fund
Permit Fee			In Report	Ongoing	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	$500	General Fund
					$500	**$500**	**$900**	**$912**	**$924**	**$937**	**$950**	**$964**	**$978**	**$992**	**$1,007**	**$1,022**	**$1,038**	**$1,054**	**$1,070**	**$1,087**	**$1,105**	**$1,123**	**$1,142**	**$1,161**	**$1,181**	**$1,201**	**$1,222**	**$1,244**	**$1,266**	**$1,289**	**$1,313**	**$1,338**	**$1,363**	**$1,389**	
TOTAL					**$48,865**	**$50,865**	**$45,485**	**$41,502**	**$327,919**	**$52,958**	**$196,014**	**$135,595**	**$92,651**	**$81,245**	**$127,705**	**$225,358**	**$235,352**	**$258,355**	**$203,768**	**$206,188**	**$413,671**	**$257,080**	**$250,773**	**$310,984**	**$237,589**	**$508,476**	**$279,967**	**$246,889**	**$275,486**	**$355,890**	**$607,372**	**$284,423**	**$242,420**	**$216,499**	
	2021	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	2047	2048	2049	2050				

Table 6.03-2 TMDL Implementation Plan (lb TP)

	Reach	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Internal County WQT		9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
Ag WQT	154								0.2	0.4	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.7	3.9	3.9
Camp Philips Road WP*	154						9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
Marathon County Park WP*	154								8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
CTH R HDS*	154										6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Enhanced Street Sweeping	154				5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Total		**9.2**	**9.2**	**9.2**	**14.8**	**14.8**	**23.9**	**23.9**	**32.1**	**32.3**	**39.4**	**39.6**	**39.8**	**40.0**	**40.2**	**40.4**	**40.6**	**40.8**	**41.0**	**41.2**	**41.4**	**41.6**	**41.7**	**41.9**	**42.1**	**42.3**	**42.5**	**42.7**	**42.7**
Cumulative County-Wide % TP Reduction		**45.5%**	**45.5%**	**45.5%**	**49.4%**	**49.4%**	**55.7%**	**55.7%**	**61.3%**	**61.4%**	**66.3%**	**66.5%**	**66.6%**	**66.7%**	**66.9%**	**67.0%**	**67.1%**	**67.3%**	**67.4%**	**67.5%**	**67.7%**	**67.8%**	**67.9%**	**68.1%**	**68.2%**	**68.3%**	**68.5%**	**68.6%**	**68.6%**
% Closure of TP Reduction Gap		**21.5%**	**21.5%**	**21.5%**	**34.6%**	**34.6%**	**56.0%**	**56.0%**	**75.2%**	**75.7%**	**92.3%**	**92.7%**	**93.2%**	**93.7%**	**94.1%**	**94.6%**	**95.0%**	**95.5%**	**95.9%**	**96.4%**	**96.9%**	**97.3%**	**97.8%**	**98.2%**	**98.7%**	**99.1%**	**99.6%**	**100.1%**	**100.1%**
					Permit Required (10% of TP Reduction Gap by 2030)				**4.3**																				

Note: WP=wet pond
*If projects do not come to fruition, pursue other comparable project or additional agricultural WQT.

6.04 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 and Stormwater, Healthy Lakes and Rivers, Surface Water Restoration, Management Plan Implementation, Surface Water Planning, Comprehensive Management Planning for Lakes and Watersheds, and Municipal Flood Control grant programs. The WDNR UNPS and Stormwater 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 County be successful in obtaining a grant. Land acquisition is also funded through this grant program. The remaining percentage would be covered by County funds. Scoring criteria dictates that if the County 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 municipalities participating in the MOA in Appendix I, 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 (SWU). 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 County may want to entertain conducting a SWU feasibility study to provide guidance on whether it makes sense for the County to pursue a SWU for funding the implementation of this plan. It should be noted that Wisconsin Act 20 that was passed in 2013 limited municipalities ability to establish new fees (including SWU fees) without commensurately lowering their tax levy. If communities wish to not adjust the tax levy down, they are required to pass a referendum as the City of Middleton, Wisconsin, did in 2014. SWU feasibility studies are eligible for up to 50 percent funding through the WDNR UNPS and Stormwater grant program.

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 Clean Water Fund Program (CWFP). This is one of the subsidized loan programs included in 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.

6.05 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 that the County 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 County. 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 County 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 O). The resident should complete Parts A, B, and C of the form and return it to the County.

   b. Within 30 calendar days of receiving the form with completed Parts A, B, and C, a County representative will inspect the location and review the information submitted by the resident. The County representative will complete Part D of the form based upon this review.

   c. The County 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 County's files and the form and complaint location will be incorporated into the County's GIS database for future analysis of drainage problem area trends.

2. County Authority

The County authority in addressing individual drainage issues should be determined on a case-by-case basis. Before the County takes corrective action, the ownership of the properties causing the problem and being damaged should be verified. Where the County has easement rights and the issue involves the obstruction of a natural watercourse (under Section 88.90 of the WAC), the County can move to correct the problem. If the drainage issue results from an activity that is not located on a County property or ROW, does not violate a County ordinance, or does not involve obstruction of a natural watercourse, the County may be without jurisdiction to act.

3. Determination of County Responsibility

In cases where it is determined the County 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 County 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.

6.06 CONCLUSION

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

Funding of the stormwater program is at the discretion of the County. 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 TP reduction gaps and maintain permit compliance.

APPENDIX A
WPDES 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 _____ 5/1/19

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

Date Permit Signed

PERMIT EFFECTIVE DATE: May 1, 2019 **EXPIRATION DATE:** April 30, 2024

TABLE OF CONTENTS

SECTION			PAGE
1.	APPLICABILITY CRITERIA		3
	1.1	Permitted area	3
	1.2	Authorized Discharges	3
	1.3	Water Quality Standards	3
	1.4	Outstanding and Exceptional Resource Waters	3
	1.5	Impaired Waterbodies and Total Maximum Daily Load Requirements	4
	1.6	Wetlands	5
	1.7	Endangered and Threatened Resources	5
	1.8	Historic Property	5
	1.9	General Storm Water Discharge Limitations	5
	1.10	Obtaining Permit Coverage	6
	1.11	Transfers	6
	1.12	Exclusions	6
	1.13	Compliance with Permit Requirements	7
2.	PERMIT CONDITIONS		8
	2.1	Public Education and Outreach	8
	2.2	Public Involvement and Participation	10
	2.3	Illicit Discharge Detection and Elimination	10
	2.4	Construction Site Pollutant Control	13
	2.5	Post-Construction Storm Water Management	15
	2.6	Pollution Prevention	17
	2.7	Storm Water Quality Management	22
	2.8	Storm Sewer System Map	23
	2.9	Annual Report	23
	2.10	Cooperation	24
	2.11	Amendments	25
	2.12	Reapplication for Permit Coverage	25
3.	COMPLIANCE SCHEDULE		26
4.	GENERAL CONDITIONS		30
5.	DEFINITIONS USED IN THIS PERMIT		34

APPENDICES

Appendix A: MS4 Permittees Subject to a TMDL Approved Prior to May 1, 2014 including Applicable Updates **37**
Appendix B: MS4 Permittees Subject to Milwaukee River Basin TMDL **49**
Appendix C: MS4 Permittees Subject to the Wisconsin River Basin TMDL or a TMDL Approved After May 1, 2019 **59**

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
• 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	• 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	• 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	• 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	• 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 WDPES 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 summitted 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 WDPES 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 is 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	Maunesha 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 summitted by the permittee includes the policies, procedures, and regulatory mechanisms that the permittee ill 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 tapper 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 summitted by the permittee includes the policies, procedures, and regulatory mechanisms that the permittee ill 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.

APPENDIX B
WISCONSIN ADMINISTRATIVE CODE NR 151

Chapter NR 151

RUNOFF MANAGEMENT

Subchapter I — General Provisions
NR 151.001 Purpose.
NR 151.002 Definitions.
NR 151.003 BMP Location.
NR 151.004 State targeted performance standards.
NR 151.005 Performance standard for total maximum daily loads.
NR 151.006 Applicability of maximum extent practicable.

Subchapter II — Agricultural Performance Standards and Prohibitions
NR 151.01 Purpose.
NR 151.015 Definitions.
NR 151.02 Sheet, rill and wind erosion performance standard.
NR 151.03 Tillage setback performance standard.
NR 151.04 Phosphorus index performance standard.
NR 151.05 Manure storage facilities performance standards.
NR 151.055 Process wastewater handling performance standard.
NR 151.06 Clean water diversion performance standard.
NR 151.07 Nutrient management.
NR 151.075 Silurian bedrock performance standards.
NR 151.08 Manure management prohibitions.
NR 151.09 Implementation and enforcement procedures for cropland performance standards.
NR 151.095 Implementation and enforcement procedures for livestock performance standards and prohibitions.
NR 151.096 Local livestock operation ordinances and regulations.
NR 151.097 Variances.

Subchapter III — Non–Agricultural Performance Standards
NR 151.10 Purpose.
NR 151.105 Construction site performance standard for non–permitted sites.
NR 151.11 Construction site performance standard for sites of one acre or more.
NR 151.12 Post–construction performance standard for new development and redevelopment.
NR 151.121 Post–construction performance standards.
NR 151.122 Total suspended solids performance standard.
NR 151.123 Peak discharge performance standard.
NR 151.124 Infiltration performance standard.
NR 151.125 Protective areas performance standard.
NR 151.126 Fueling and vehicle maintenance areas performance standard.
NR 151.127 Location.
NR 151.128 Timing.
NR 151.13 Developed urban area performance standard for municipalities.
NR 151.14 Turf and garden nutrient management performance standard.
NR 151.15 Implementation and enforcement.

Subchapter IV — Transportation Facility Performance Standards
NR 151.20 Purpose and applicability.
NR 151.21 Definitions.
NR 151.22 Responsible party.
NR 151.225 Construction site performance standard for non–permitted sites and routine maintenance.
NR 151.23 Construction site performance standard for sites of one acre or more.
NR 151.24 Post–construction performance standard.
NR 151.241 Post–construction performance standards.
NR 151.242 Total suspended solids performance standard.
NR 151.243 Peak discharge performance standard.
NR 151.244 Infiltration performance standard.
NR 151.245 Protective areas performance standard.
NR 151.246 Fueling and vehicle maintenance areas performance standard.
NR 151.247 Location.
NR 151.248 Timing.
NR 151.249 Swale treatment performance standard.
NR 151.25 Developed urban area performance standard for transportation facilities.
NR 151.26 Enforcement.

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–µm (No. 200) Sieve in Material Aggregates by Washing". Copies can be obtained by contacting the American society for testing and materials, 100 Barr Harbor Drive, Conshohocken, PA 19428–2959, or phone 610–832–9585, or on line at: http://www.astm.org/.

(33) "Performance standard" means a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

(34) "Pervious surface" means an area that releases as runoff a small portion of the precipitation that falls on it. Lawns, gardens, parks, forests or similar vegetated areas are examples of surfaces that typically are pervious.

(35) "Pollutant" has the meaning given in s. 283.01 (13), Stats.

(36) "Pollution" has the meaning given in s. 281.01 (10), Stats.

(37) "Population" has the meaning given in s. 281.66 (1) (c), Stats.

(38) "Preventive action limit" has the meaning given in s. NR 140.05 (17).

(39) "Redevelopment" means areas where development is replacing older development.

(40) "Runoff" means storm water or precipitation including rain, snow, ice melt or similar water that moves on the land surface via sheet or channelized flow.

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

(42) "Separate storm sewer" means a conveyance or system of conveyances including roads with drainage systems, streets,

catch basins, curbs, gutters, ditches, constructed channels or storm drains, which meets all of the following criteria:

(a) Is designed or used for collecting water or conveying runoff.

(b) Is not part of a combined sewer system.

(c) Is not 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 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.

(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 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 ft^3 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 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 backfilled 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.

Table 1. Silurian Bedrock Maximum Liquid Manure Application Rates

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 noncompliance 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 subds. 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 maximum extent practicable, as compared to pre–development conditions for the 2–year, 24–hour design storm applicable to the post–construction site. Pre–development conditions shall assume "good hydrologic conditions" for appropriate land covers as identified in TR–55 or an equivalent methodology. The meaning of "hydrologic soil group" and "runoff curve number" are as determined in TR–55. However, when pre–development land cover is cropland, rather than using TR–55 values for cropland, the runoff curve numbers in Table 2 shall be used.

Table 2 – Maximum Pre–Development Runoff Curve Numbers for Cropland Areas

Hydrologic Soil Group	A	B	C	D
Runoff Curve Number	56	70	79	83

Note: The curve numbers in Table 2 represent mid–range values for soils under a good hydrologic condition where conservation practices are used and are selected to be protective of the resource waters.

2. This paragraph does not apply to:

a. A post–construction site where the change in hydrology due to development does not increase the existing surface water elevation at any point within the downstream receiving water by more than 0.01 of a foot for the 2–year, 24–hour storm event.

Note: Hydraulic models such as HEC–RAS or another methodology may be used to determine the change in surface water elevations.

b. A redevelopment post–construction site.

c. An in–fill development area less than 5 acres.

Note: The intent of par. (b) is to minimize streambank erosion under bank full conditions.

(c) *Infiltration.* BMPs shall be designed, installed and maintained to infiltrate runoff to the maximum extent practicable in accordance with the following, except as provided in subds. 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.

Table 1. TSS Reduction Standards

Development Type	TSS Reduction
New Development	80 percent
In–fill ≥ 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.

Table 2. Maximum Pre–Development Runoff Curve Numbers

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:

Table 3. Separation Distances and Soil Characteristics

Source Area	Separation Distance	Soil Characteristics
Industrial, Commercial, Institutional Parking Lots and Roads	5 feet or more	Filtering Layer
Residential Arterial Roads	5 feet or more	Filtering Layer

Roofs Draining to Subsurface Infiltration Practices	1 foot or more	Native or Engineered Soil with 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 "bikeway" 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 facil-

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 performance standards of this subchapter. However, BMPs no longer necessary for erosion and sediment control shall be removed by the maintenance authority.

History: CR 00–027: cr. Register September 2002 No. 561, eff. 10–1–02; 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 downgradient of karst features.

5. Areas with less than 3 feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock.

6. Areas with runoff from industrial, commercial and institutional parking lots and roads and residential arterial roads with less than 5 feet separation distance from the bottom of the infiltration system to the elevation of seasonal high groundwater or the top of bedrock.

7. Areas within 400 feet of a community water system well as specified in s. NR 811.16 (4) or within 100 feet of a private well as specified in s. NR 812.08 (4) for runoff infiltrated from commercial, industrial and institutional land uses or regional devices for residential development.

8. Areas where contaminants of concern, as defined in s. NR 720.03 (2), are present in the soil through which infiltration will occur.

9. Any area where the soil does not exhibit one of the following characteristics between the bottom of the infiltration system and seasonal high groundwater and top of bedrock:

a. At least a 3–foot soil layer with 20% fines or greater.

b. At least a 5–foot soil layer with 10% fines or greater.

c. Where the soil medium within the infiltration system does not provide an equivalent level of protection.

Note: The areas listed in par. (d) are prohibited from infiltrating runoff due to the potential for groundwater contamination.

(e) Transportation facilities located in the following areas and otherwise subject to the requirements of this subchapter are not required to meet the requirements of this subsection:

1. Areas where the infiltration rate of the soil is less than 0.6 inches/hour measured at the bottom of the infiltration system.

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

3. Redevelopment post–construction sites.

4. In–fill development areas less than 5 acres.

5. Infiltration areas during periods when the soil on the site is frozen.

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

7. Highways.

(f) Where alternate uses of runoff are employed, such as for toilet flushing, laundry or irrigation, such alternate use shall be given equal credit toward the infiltration volume required by this subsection.

(g) 1. Infiltration systems designed in accordance with this subsection shall, to the extent technically and economically feasible, minimize the level of pollutants infiltrating to groundwater and shall maintain compliance with the preventive action limit at a point of standards application in accordance with ch. NR 140. However, if site specific information indicates that compliance with a preventive action limit is not achievable, then the infiltration BMP may not be installed or shall be modified to prevent infiltration to the maximum extent practicable.

2. Notwithstanding subd.1., the discharge from BMPs shall remain below the enforcement standard at the point of standards application.

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

1. For outstanding resource waters and exceptional resource waters, and for wetlands in areas of special natural resource interest as specified in s. NR 103.04, 75 feet.

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

3. For lakes, 50 feet.

4. For highly susceptible wetlands, 50 feet. Highly susceptible wetlands include the following types: fens, sedge meadows, bogs, low prairies, conifer swamps, shrub swamps, other forested wetlands, fresh wet meadows, shallow marshes, deep marshes and seasonally flooded basins. Wetland boundary delineation shall be made in accordance with s. NR 103.08 (1m). This paragraph does not apply to wetlands that have been completely filled in accordance with all applicable state and federal regulations. The protective area for wetlands that have been partially filled in accordance with all applicable state and federal regulations shall be measured from the wetland boundary delineation after fill has been placed.

5. For less susceptible wetlands, 10% of the average wetland width, but no less than 10 feet nor more than 30 feet. Less susceptible wetlands include degraded wetlands dominated by invasive species such as reed canary grass.

6. In subds. 1., 4. and 5., determinations of the extent of the protective area adjacent to wetlands shall be made on the basis of the sensitivity and runoff susceptibility of the wetland in accordance with the standards and criteria in s. NR 103.03.

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

(b) 1. Beginning with land acquired within a protective area for a transportation facility on or after October 1, 2002, no impervious surface of a transportation facility may be constructed within a protective area, unless the transportation facility authority determines, in consultation with the department, that there is no practical alternative. If there is no practical alternative to locating a transportation facility within a protective area, the transportation facility may be constructed in the protective area only to the extent the transportation facility authority, in consultation with the department, determines is reasonably necessary, and the transportation facility authority shall state in the design plan prepared pursuant to s. NR 151.22 (1) (a), why it is necessary to construct the transportation facility within a protective area.

2. If a transportation facility is constructed within a protective area, adequate sod or self–sustaining vegetative cover of 70% or greater shall be established and maintained in the area that is the width of the protective area, or the greatest width practical, and throughout the length of the protective area in which the transportation facility is located. The adequate sod or self–sustaining vegetative cover required under this paragraph shall be sufficient to provide for bank stability, maintenance of fish habitat and filtering of pollutants from upslope overland flow areas under sheet flow conditions. Non–vegetative materials, such as rock riprap, may be employed on the bank as necessary to prevent erosion such as on steep slopes or where high velocity flows occur.

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

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

Note: Other regulations, such as ch. 30, Stats., and chs. NR 103, 115, 116 and 117 and their associated review and approval process may apply in the protective area.

4. This subsection does not apply to:

a. Non–highway transportation redevelopment sites.

b. Transportation facilities that cross or access surface waters, such as boat landings, bridges and culverts.

c. Structures constructed in accordance with s. 59.692 (1v), Stats.

d. Transportation facilities from which runoff does not enter the surface water, except to the extent that vegetative ground cover is necessary to maintain bank stability.

Note: A vegetated protective area to filter runoff pollutants from transportation facilities described in subd. 4. d. is not necessary since runoff is not entering the surface water at that location. Other practices necessary to meet requirements of this section, such as a swale or basin, will need to be designed and implemented to reduce runoff pollutants prior to runoff entering a surface water of the state.

(7) FUELING AND VEHICLE MAINTENANCE AREAS. Fueling and vehicle maintenance areas shall, to the maximum extent practicable, have BMPs designed, installed and maintained to reduce petroleum within runoff, such that the runoff that enters waters of the state contains no visible petroleum sheen.

Note: A combination of the following BMPs may be used: oil and grease separators, canopies, petroleum spill cleanup materials, or any other structural or non–structural method of preventing or treating petroleum in runoff.

(8) LOCATION. To comply with the standards required under this section, BMPs may be located on–site or off–site as part of a regional storm water device, practice or system, but shall be installed in accordance with s. NR 151.003.

(9) TIMING. The BMPs required under this section shall be installed before the construction site has undergone final stabilization.

(10) SWALE TREATMENT. (a) *Applicability.* Except as provided in par. (b), transportation facilities that use swales for runoff conveyance and pollutant removal meet all of the requirements of this section, if the swales are designed to the maximum extent practicable to do all of the following:

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

Note: It is preferred that tall and dense vegetation be maintained within the swale due to its greater effectiveness at enhancing runoff pollutant removal.

2. Carry runoff through a swale for 200 feet or more in length that is designed with a flow velocity no greater than 1.5 feet per second for the peak flow generated using either a 2–year, 24–hour design storm or a 2–year design storm with a duration equal to the time of concentration as appropriate. If a swale of 200 feet in length cannot be designed with a flow velocity of 1.5 feet per second or less, the flow velocity shall be reduced to the maximum extent practicable.

Note: Check dams may be included in the swale design to slow runoff flows and improve pollutant removal. Transportation facilities with continuous features such as curb and gutter, sidewalks or parking lanes do not comply with the design requirements of this subsection. However, a limited amount of structural measures such as curb and gutter may be allowed as necessary to account for other concerns such as human safety or resource protection.

(b) *Exemptions.* 1. Notwithstanding par. (a), the department may, consistent with water quality standards, require other provisions of this section, in addition to swale treatment, be met on a transportation facility with an average daily traffic rate greater than 2500 and where the initial surface water of the state that the runoff directly enters is any of the following:

a. An outstanding resource water.

b. An exceptional resource water.

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

d. Waters where targeted performance standards are developed pursuant to s. NR 151.004.

2. The transportation facility authority shall contact the department's regional storm water staff or the department's liaison to the department of transportation to determine if additional BMPs beyond a water quality swale are needed under this paragraph.

History: CR 00–027: cr. Register September 2002 No. 561, eff. 10–1–02; 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.

Table 2. Maximum Pre–Development Runoff Curve Numbers				
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.

APPENDIX C
SWPPP

C.01 PURPOSE

Marathon County (County) has prepared the following Stormwater Pollution Prevention Plan (SWPPP) to provide the status of the County's Highway Department Office and the joint City of Wausau and Marathon County Parks, Recreation, and Forestry Department Operations. This report is prepared in compliance with the conditions of the Wisconsin Administrative Code (WAC) NR 216 permit pursuant to Section 2.6.3 of Wisconsin Pollutant Discharge Elimination System (WPDES) Permit Issuance No. WI-S050075-3. This report provides information related to the daily operations and maintenance (O&M) activities for the Highway Department Office, established in the 1950s, and the Parks Department Office, established in 1998. The Highway Department purchased the adjacent property with the intent of demolishing the buildings that had been damaged in a fire. There is ongoing discussion regarding whether the site should expand to include more of the adjacent property or relocate to an entirely new site.

A. Site Location and Contact Information

Name of Facility: Marathon County Highway Department
Facility Address: 1430 West Street, Wausau, WI 54401

Facility Contact: Kevin Lang
Title: Project Superintendent
Telephone: 715-261-1809

Name of Facility: Wausau and Marathon County Parks,
Recreation, and Forestry Department Operations
Facility Address: 900 West Pardee Street, Wausau, WI 54403

Facility Contact: Greg Freix
Title: Assistant Director of Operations
Telephone: 715-261-1573

B. Aerial Photograph/Map of the Yard

Attachment A includes a site map of the Highway Department Office, Attachment B includes a site map of the Parks Department Office, and Attachments C and D show site photographs at the Highway Department Office and Parks Department Office, respectively, 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.

C. Overview

This SWPPP covers the O&M at the County's Highway Department and Parks Department Offices. This SWPPP describes the 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 County'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 facility.
2. Identification and recommendation of appropriate "source area control" BMPs designed to reduce or prevent stormwater contamination from occurring.
3. Identification and recommendation of "stormwater treatment" BMPs to reduce potential pollutants within contaminated stormwater before discharging to the MS4 system and to waters of the state.

D. Potential Sources of Contamination

The following have been identified as potential sources of contamination at the Highway Department and Parks Department Offices.

1. Salt Storage Shed–The County's deicing and snow removal operations are described in Section 3.01 F. 4. and Table 3.01-3 of the County's Stormwater Quality Management Plan. The salt storage shed at the Highway Department site is owned by the State of Wisconsin and the County, and has a capacity of 8,000 tons of material. Salt is delivered in the shed and there is little material migration. Salt/sand mix is stored in a separate shed with a 300-ton capacity. Salt and sand are mixed in the salt storage shed or in the salt/sand shed, depending on the available space.

2. Drain Oil and Used Oil

    a. Highway Department–Used oil is collected in a barrel and pumped to the used oil tank. Used oil filters are compressed and the drained oil is pumped to the tank. Filters are stored in a barrel and are collected by Rock Oil Refining, Inc. when the barrel is full. Used oil is burned in the winter by the Highway Department for heat. Used coolant is stored in tanks and hauled out by Rock Oil Refining, Inc. when the tank is full.

    b. Parks Department–Used oil is collected in a cart and stored in a tank. Used oil is sent to the Highway Department for burning in the winter. Gas and diesel cans for handheld equipment are stored in cabinets in the cold storage garage.

3. Exterior Materials Storage Area

   a. Highway Department–A number of materials are stored on-site in unenclosed areas of the adjacent yard. These include 3/4-inch gravel, 1-inch clear stone, 6 to 9-inch riprap, manufactured sand, and gravel. Little material migration occurs and any material that has migrated is scraped back into the designated pile. If the Highway Department remains at this site, building bunkers to contain the materials will be considered.

   b. Parks Department–A number of materials are stored on-site in bunkers. These include concrete scrap, organics, topsoil, mulch, concrete sand, 3/4-inch stone, and ball diamond mix. The organic materials include tree trimmings, grass clippings, and topsoil. Tree trimmings are chipped on site and all organics are removed by Hsu Ginseng Farms. Some miscellaneous equipment is stored outside and is not a stormwater contamination threat.

4. Internal Materials Storage Area

   a. Highway Department–Miscellaneous materials used in everyday operations are stored in storage areas within covered buildings at the Highway Department site. These materials are properly stored, used, and disposed of and are not a stormwater contamination threat. The wash bay is connected to the sanitary sewer and the sump is cleaned based on need, approximately eight times per year. The drains in the heated garage were connected to the sanitary sewer in 2010. Cold patch is stored in small piles in bunkers on either side of the entrance of the heated garage and in bulk in a nearby shed. If spills occur during loading, the material is scraped back into the pile. Solidified cold patch resulting from any spills at the shed is scraped and added to the gravel pile. Flammables are stored in a designated cabinet near the oil, tool, and tire storage rooms.

   b. Parks Department–Miscellaneous materials used in everyday operations are stored in storage areas within covered buildings at the Highway Department site. These materials are properly stored, used, and disposed of and are not a stormwater contamination threat. The wash bay is connected to the sanitary sewer and the sump is pumped by the City of Wausau at least once per year.

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 online since 2014, with hard copies that are no longer updated stored in the stock room.

E. Inspection Frequency

Table 1 provides the current inspection schedule implemented by County Highway Department staff. It is recommended that all items are inspected a minimum of two times a year supplemented with a full inspection of the Highway Department and Parks Department yards once a year. Inspections are documented using the form in Attachments E and F.

Facility/Potential Source of Contamination	Inspection Frequency
Salt storage shed	Annual by the State
Drain oil and used oil	Twice per year
Used oil filter container	Twice per year
External materials storage area	Twice per year
Highway Department buildings	Twice per year
Highway Department yard	Twice per year
Parks Department buildings	Twice per year
Parks Department yard	Twice per year
Vehicles	Twice per year
Equipment	Lifts at Parks Department garage inspected annually
Catch basin sumps	Twice per year
Various bulk liquid storage containers	Fuel island inspected annually

Table 1 Highway Department and Parks Department Facility Inspection Frequency Schedule

F. Employee Training on Stormwater Pollution Prevention

The County Highway Department employees annually receive spill prevention, control, and countermeasure training and training for the operation, spill prevention, and spill procedures of the fuel island. Training is documented in the form shown in Attachment G. 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 County should periodically review this existing program and consider improvements.

G. Spills Prevention Plan and Response Procedures

Spills and leaks together can be a significant source of stormwater pollution. The County'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. Jeff Koppa, the Equipment and Facilities Supervisor, is responsible for maintenance and implementation of this plan. The following general procedures have been developed for spill response for the Highway Department and Parks Department Offices.

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 (spill kits, sand, floor dry, absorbent pads). Spill kits in the Highway Department Garage are stored above the flammables cabinet. Contact REI for removal from site and disposal.

See Attachments H and I for the Spills Documentation Form.

H. 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 Highway Department and Parks Department Offices from entering the County'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 stormwater conveyance system and discharging from the site. Perimeter sediment reduction devices, such as a silt sock as shown in Figure 1, are recommended at the Highway Department yard. Inlets filters, as shown in Figures 2 and 3, are recommended at both the Highway Department and the Parks Department. See suggested placement of perimeter protection controls and inlet filters in Attachments A and B.

Figure 1 Example of Perimeter Sediment Reduction Device

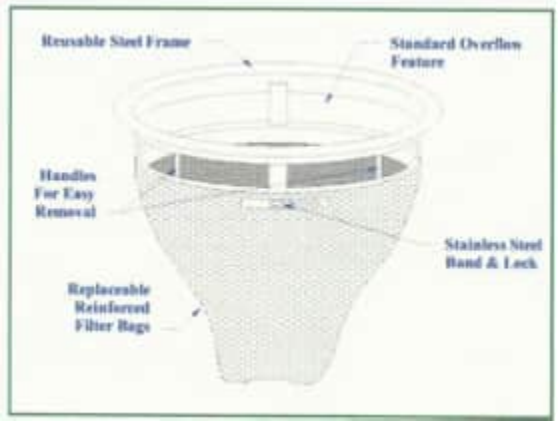


Figure 2 Example of Inlet Filter (Catch-All from C&H Fabrication)

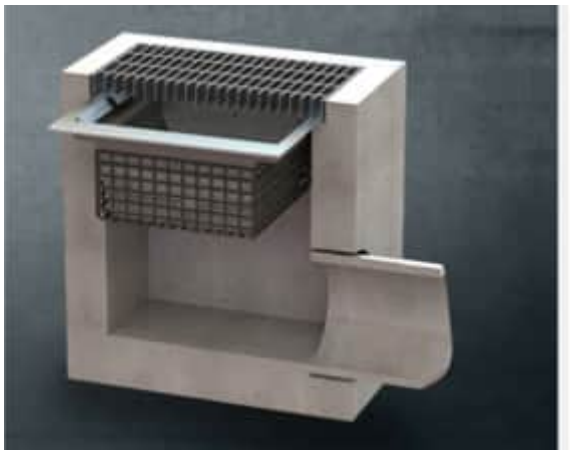


Figure 3 Example of Inlet Filter (Flogard from Old Castle)

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 Highway Department and Parks Department Offices' good housekeeping routine.

1) Routine sweeping is done in the County'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 any materials that migrated from exterior storage piles or that spilled during loading or unloading.

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 Attachments E and F.

It is recommended that a facility inspection schedule be established and that inspections be documented. This schedule shall include the following equipment/activities:

1) Vehicles
2) Equipment
3) Catch basin sumps
4) Dry bulk storage
5) Liquid bulk storage

d. Spill Prevention and Response Procedures

No additional spills prevention and response procedures are currently recommended.

e. Bulk Storage

At the Highway Department, dry bulk storage is limited on the site. Salt is stored in a covered building. The State of Wisconsin inspects the salt storage annually. Various materials are stored on the site as described in Section D.

At the Parks Department, dry bulk storage is limited on site and contained in concrete bunkers. Various materials are stored on the site as described in Section D.

Liquid bulk storage at the Highway Department and Parks Department is used for fuels and used oil. Used oil is collected in a tank and disposed of properly. The fuel tanks are inspected regularly by Highway Department staff and annually by the State of Wisconsin.

In addition to inspections, it is recommended that perimeter sediment control devices be installed around the dry bulk storage locations, as shown in Attachments A and B. A containment system, such as covered, partitioned bunkers, for dry bulk storage can be considered for further pollution prevention.

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.

There are no structural control measures currently on-site at the Highway Department and the Parks Department garages.

No additional stormwater treatment BMPs are recommended at this time. It is recommended that structural control measures be considered upon the redevelopment of the property adjacent to the Highway Department garage (east side) or the relocation of the garage.

I. Installation/Implementation of Recommendations Timeline

It is recommended that the County Highway 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 County may consider implementing.

Activity	Installation/Implementation Schedule
Existing Highway Department and Parks Department Offices pollution prevention activities.	Continue to implement at frequencies in Table 1. Provide inspections and spills documentation using forms herein.
Install perimeter sediment control devices and inlet filters as shown on Attachments A and B.	Install perimeter sediment control devices by June 30, 2023. Monitor for degradation and replace/maintain in the future as necessary. Install two inlet filters by June 30, 2023, and maintain semi-annually.
Install spills kit at the fueling station as shown on Attachment A.	Purchase and place by June 30, 2023
Consider updating bulk storage practices.	Document potential improvements in the March 31, 2024, MS4 Annual Report
Review existing County Highway Department staff training for stormwater pollution prevention at the Highway Department and Parks Department Offices for improvements.	Document potential improvements in the March 31, 2024, MS4 annual report. At a minimum, training improvements must include: provide annual trainings to all County Highway 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 Project Superintendent. Documentation shall include name and role of attendees, date of training, and content of training using the tracking form in Attachment G.
Periodically replace perimeter sediment control devices shown on Attachments A and B.	Every 5 years after installation (2028, 2033, 2038, 2043, etc.)

Table 2 BMP Activities and Installation/Implementation Schedule

J. Attachments

A–Highway Department Map
B–Parks Department Map
C–Highway Department Photos
D–Parks Department Photos
E–Highway Department Inspection Documentation Forms
F–Parks Department Inspection Documentation Forms
G–Training Documentation Form
H–Highway Department Spills Documentation Form
I–Parks Department Spills Documentation Form

Signature: _____ Date: _____

Attachment A - Highway Department Site Map

Marathon County Park

Chicago, Milwaukee, St. Paul and Pacific Railroad Company

Discharge to City of Wasau MS4

Proposed Perimeter Sediment Control Device (92 ft)

Proposed Inlet Filter

Discharge to City of Wasau MS4

Discharge to City of Wasau MS4

S. 17th Ave.

West St.

N
W E
S

0 25 50 100
Feet

Legend

- SWPPP Sediment Control
- Flow_Arrows
- SWPPP Drainage Basins
- Sanitary Manhole

Sanitary Gravity Main

- Collector
- Interceptor
- Storm Outfall
- Storm Manhole
- Storm Inlet
- Storm Main
- Parcels

Contours

- Index
- Intermediate
- Storage Basins

Key Notes Legend

No.	Description	No.	Description
1	Sign Shop	26	Empty Brine Tanks
2	Signs and Crack Filler Storage	27	Tire Storage
3	Wash Bay	28	Recycling Bins
4	Maintenance Garage	29	Distillate Tank (Unused)
5	Mechanics, Fuel, and Lube Storage	30	Dumpster
6	Tools	31	Equipment
7	Tires	32	Vehicles
8	Oil Room	33	Erosion Control Equipment
9	Flammables	34	Offices
10	Stock Room	35	Construction Materials
11	Paint	36	Vehicles
12	Welding	37	Signs
13	Offices	38	Epoxy
14	Heated Vehicle Storage	39	Bridge Crew Garage
15	Brine	40	Salt Shed
16	Fuel Island	41	Guard Rail Storage
17	Scale	42	Sign Overflow
18	Heated Vehicle and Equipment Storage	43	3/4" Gravel
19	Concrete Sealer	44	1" Clear Stone
20	Cold Patch	45	6 to 9" Rip Rap
21	Epoxy	46	Manufactured Sand
22	Cold Patch	47	Gravel
23	Salt/Sand Mix	48	Recycled Asphalt & Concrete
24	Cold Patch	49	Parks Equipment
25	Patch Trailers	50	Street Sweeping Staging

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MARATHON COUNTY HIGHWAY DEPARTMENT
STORMWATER POLLUTION PREVENTION PLAN

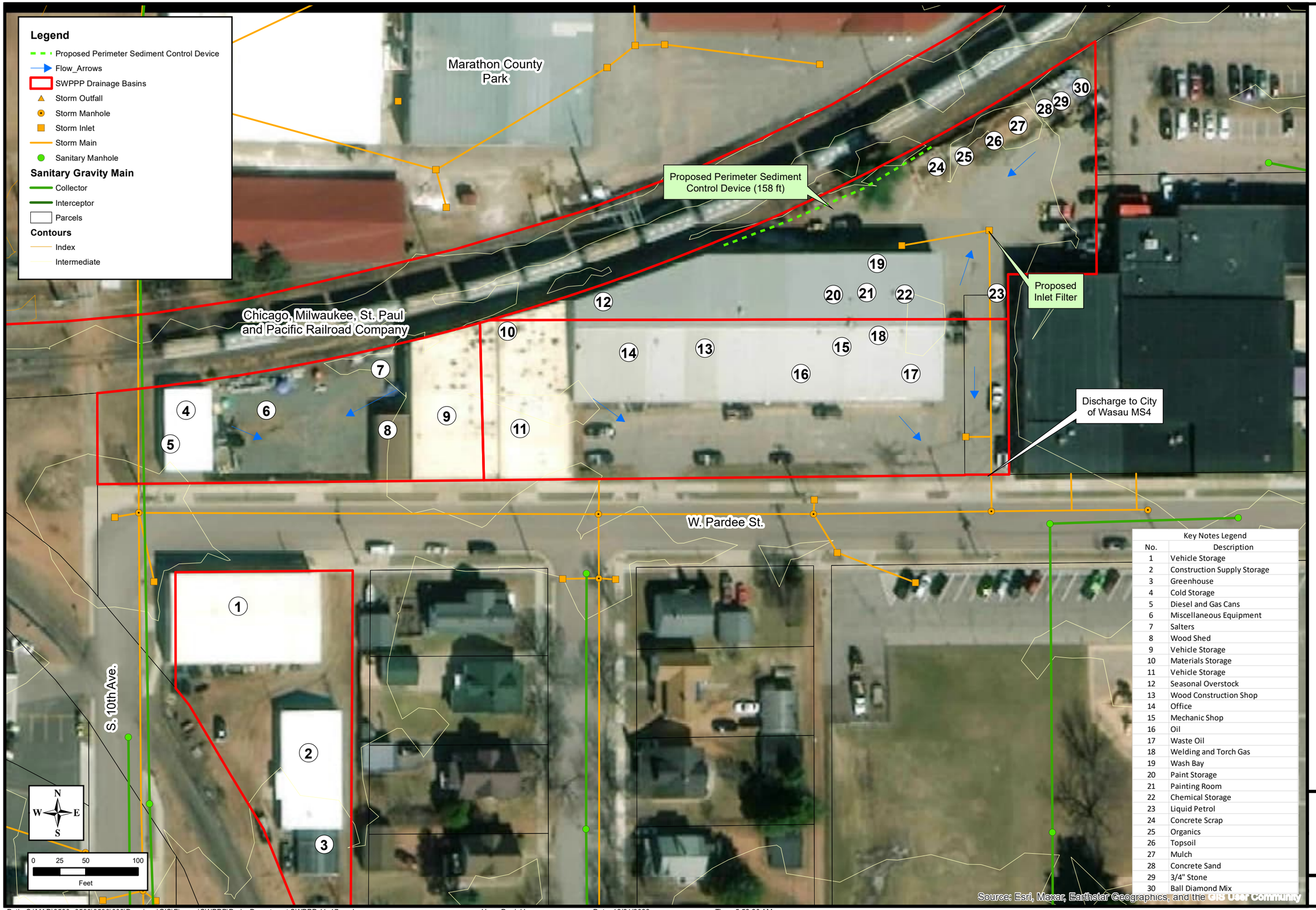
STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

STRAND ASSOCIATES®

ATTACHMENT A
3598.003

Path: S:\MAD\3500--3599\3598\003\Drawings\GIS\Figures\SWPPP\Highway Department SWPPP 11x17.mxd User: DanielJ Date: 12/21/2022 Time: 5:51:59 AM

Attachment B - Parks Department Site Map



Key Notes Legend	
No.	Description
1	Vehicle Storage
2	Construction Supply Storage
3	Greenhouse
4	Cold Storage
5	Diesel and Gas Cans
6	Miscellaneous Equipment
7	Salters
8	Wood Shed
9	Vehicle Storage
10	Materials Storage
11	Vehicle Storage
12	Seasonal Overstock
13	Wood Construction Shop
14	Office
15	Mechanic Shop
16	Oil
17	Waste Oil
18	Welding and Torch Gas
19	Wash Bay
20	Paint Storage
21	Painting Room
22	Chemical Storage
23	Liquid Petrol
24	Concrete Scrap
25	Organics
26	Topsoil
27	Mulch
28	Concrete Sand
29	3/4" Stone
30	Ball Diamond Mix

WAUSAU AND MARATHON COUNTY PARKS, RECREATION, & FORESTRY DEPARTMENT
STORMWATER POLLUTION PREVENTION PLAN
STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

STRAND ASSOCIATES®

ATTACHMENT B
3598.003

Path: S:\MAD\3500--3599\3598\003\Drawings\GIS\Figures\SWPPP\Parks Department SWPPP 11x17.mxd User: DanielJ Date: 12/21/2022 Time: 5:52:20 AM

Attachment C - Highway Department Photos

Date: August 25, 2020

Time: 9:15 A.M.

Description:

Wash bay

Date: August 25, 2020

Time: 9:17 A.M.

Description:

Oil and used oil storage

ATTACHMENT C-1

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 9:20 A.M.

Description:

Oil filter compressor and used oil tanks

Date: August 25, 2020

Time: 9:22 A.M.

Description:

Used coolant storage

ATTACHMENT C-2

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 9:23 A.M.

Description:

Oil room

Date: August 25, 2020

Time: 9:25 A.M.

Description:

Tire room, flammables cabinet, spill kits, and oil room

ATTACHMENT C-3

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 9:38 A.M.

Description:

Garage with inlet to sanitary sewer

Date: August 25, 2020

Time: 9:43 A.M.

Description:

Unknown material storage in barrels

ATTACHMENT C-4

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 9:40 A.M.

Description:

Epoxy and cold patch

Date: August 25, 2020

Time: 9:40 A.M.

Description:

Cold patch and concrete sealer

ATTACHMENT C-5

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 9:44 A.M.

Patch trailers and empty brine tanks

Date: August 25, 2020

Time: 9:47 A.M.

Description:

Cold patch

ATTACHMENT C-6

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 9:49 A.M.

Description:

Cold patch

Date: August 25, 2020

Time: 9:50 A.M.

Description:

Salt/sand mix

ATTACHMENT C-7

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 9:53 A.M.

Description:

Unused distillate tank

Date: August 25, 2020

Time: 9:53 A.M.

Description:

Tires and recycle bins

ATTACHMENT C-8

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 9:55 A.M.

Description:

Salt storage shed

Date: August 25, 2020

Time: 9:59 A.M.

Description:

Guardrail storage

ATTACHMENT C-9

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 10:02 A.M.

Description:

Construction materials storage

Date: August 25, 2020

Time: 10:07 A.M.

Description:

Recycle asphalt and concrete

ATTACHMENT C-10

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 10:10 A.M.

Description:

Street sweeping staging

Date: August 25, 2020

Time: 10:10 A.M.

Description:

6 to 9” rip rap, manufactured sand

ATTACHMENT C-11

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 10:06 A.M.

Description:

3/4” gravel

Date: August 25, 2020

Time: 10:06 A.M.

Description:

1” clear stone

ATTACHMENT C-12

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 10:17 A.M.

Description:

Brine tanks

Date: August 25, 2020

Time: 10:22 A.M.

Description:

Fuel island

ATTACHMENT C-13

STORMWATER POLLUTION PREVENTION PLAN

HIGHWAY DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Attachment D - Parks Department Photos

Date: August 25, 2020

Time: 10:47 A.M.

Description:

Diesel and gas can storage

Date: August 25, 2020

Time: 10:50 A.M.

Description:

Miscellaneous equipment

ATTACHMENT D-1

STORMWATER POLLUTION PREVENTION PLAN

PARKS DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES®

Date: August 25, 2020

Time: 10:50 A.M.

Description:

Salters

Date: August 25, 2020

Time: 10:51 A.M.

Description:

Materials storage

ATTACHMENT D-2

STORMWATER POLLUTION PREVENTION PLAN

PARKS DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

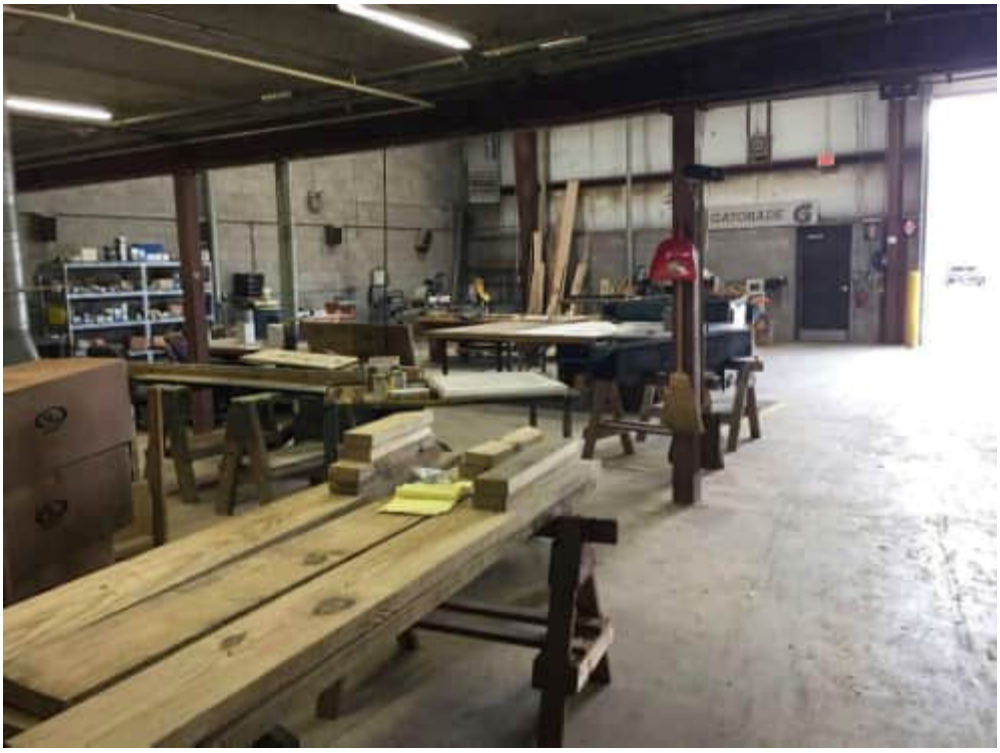
STRAND ASSOCIATES

Date: August 25, 2020

Time: 10:53 A.M.

Description:

Wood construction shop



Date: August 25, 2020

Time: 10:54 A.M.

Description:

Paint storage

ATTACHMENT D-3

STORMWATER POLLUTION PREVENTION PLAN

PARKS DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 10:55 A.M.

Description:

Petrol

Date: August 25, 2020

Time: 10:56 A.M.

Description:

Organics

ATTACHMENT D-4

STORMWATER POLLUTION PREVENTION PLAN

PARKS DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 10:57 A.M.

Description:

Topsoil and mulch

Date: August 25, 2020

Time: 10:58 A.M.

Description:

Concrete sand, 3/4” stone, ball diamond mix

ATTACHMENT D-5

STORMWATER POLLUTION PREVENTION PLAN

PARKS DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020 **Time:** 11:00 A.M. **Description:** Welding and torch gas	
Date: August 25, 2020 **Time:** 11:01 A.M. **Description:** Used oil cart and tank	

ATTACHMENT D-6	**STORMWATER POLLUTION PREVENTION PLAN** **PARKS DEPARTMENT** **MARATHON COUNTY, WISCONSIN** **SITE PHOTOGRAPHS**	STRAND ASSOCIATES

Date: August 25, 2020

Time: 11:02 A.M.

Description:

Drain in garage

Date: August 25, 2020

Time: 11:02 A.M.

Description:

Oil storage

ATTACHMENT D-7

STORMWATER POLLUTION PREVENTION PLAN

PARKS DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Date: August 25, 2020

Time: 11:02 A.M.

Description:

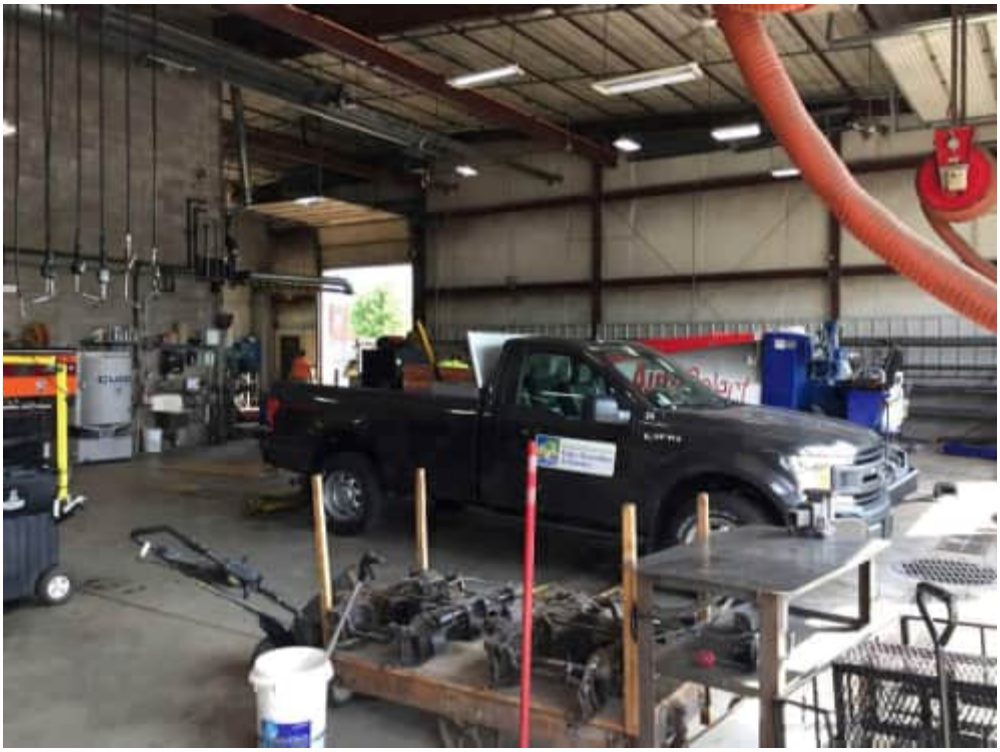
Quart oil

Date: August 25, 2020

Time: 11:04 A.M.

Description:

Mechanic shop



ATTACHMENT D-8

STORMWATER POLLUTION PREVENTION PLAN

PARKS DEPARTMENT
MARATHON COUNTY, WISCONSIN
SITE PHOTOGRAPHS

STRAND ASSOCIATES

Attachment E - Highway Department Inspection Documentation Forms

Inspection Documentation Form
Marathon County Highway Department
Highway Department Garage

Date:

Inspected By:

Inspection Type:

- □ Salt storage shed
- □ Drain oil and used oil
- □ Used oil filter container
- □ External materials storage area
- □ Highway Department buildings
- □ Highway Department yard
- □ Vehicles
- □ Equipment
- □ Catch basin sumps
- □ Various bulk liquid storage containers

Inspection Comments:

Action Taken:

Attachment F - Parks Department Inspection Documentation Forms

Inspection Documentation Form
City of Wausau and Marathon County Parks, Recreation, and Forestry Department
Wausau and Marathon County Parks Operations

Date:

Inspected By:

Inspection Type:

- □ Drain oil and used oil
- □ Used oil filter container
- □ External materials storage area
- □ Parks Operations buildings
- □ Parks Operations yard
- □ Vehicles
- □ Equipment
- □ Catch basin sumps
- □ Various bulk liquid storage containers

Inspection Comments:

Action Taken:

Attachment G - Training Documentation Forms

Training Documentation Form
Marathon County Highway Department

Date	# Attending	Names of Attendees	Roles of Attendees	Content of Training	Location of Training	Sponsor

Attachment H - Highway Department Spills Documentation Form

Spill Documentation Form
Marathon County Highway Department
Highway Department Garage

Date	Location	Material Spilled	Quantity	Action Taken

Attachment I - Parks Department Spills Documentation Form

Spill Documentation Form
City of Wausau and Marathon County Parks, Recreation, and Forestry Department
Wausau and Marathon County Parks Operations

Date	Location	Material Spilled	Quantity	Action Taken

APPENDIX D
POSTCONSTRUCTION STORMWATER MANAGEMENT FACILITIES: LONG-TERM MAINTENANCE, INSPECTION, AND ENFORCEMENT PROCEDURES

D.01 POSTCONSTRUCTION STORMWATER MANAGEMENT FACILITIES: LONG-TERM MAINTENANCE, INSPECTION, AND ENFORCEMENT PROCEDURES (MARCH 19, 2021)

1. Postconstruction Site Stormwater Management Contact:

   Maintenance Manager
   Kevin Lang
   kevin.lang@co.marathon.wi.us
   715-261-1809

2. Preconstruction Erosion Control Plan Review- For all construction sites greater than 1 acre of land disturbance, a meeting shall be held before commencement of construction between municipal staff, developer, and contractor. Per the Memorandum of Agreement, the County complies with municipal erosion control and stormwater management ordinances, but does not administer its own program.

3. Postconstruction Stormwater Management Facilities Inspection Frequency

Postconstruction Stormwater Management Facility Type	Inspection Frequency, Documentation, and Corrective Maintenance Timeframe
Public	▪ Inspect as defined in Appendix E–Maintenance and Inspection of Stormwater Management Best Management Practices ▪ Once every 5 years, the County shall assess and provide documentation by a qualified professional that the facility is operating as designed according to the design drawings. ▪ Routine maintenance shall be provided by the County. ▪ If not operating as designed, the County will develop a plan and present it to the County Board for corrective maintenance within 3 months of the assessment. For nonroutine maintenance (ie: dredging or bioretention basin sediment removal/replanting), corrective maintenance must be completed within 18 months of presentation of the plan to the County Board.

Table D-1 Postconstruction Stormwater Management Facilities Inspection Frequency

4. Postconstruction Stormwater Management Facilities

BMP Name	Owner	Approximate Year Constructed	Record Drawing on File?	Comments (Long-Term Maintenance Agreement?)	5-Year Assessments Due	Annual Assessments Due
Pond D, Hwy 51/29 Corridor	Public-Marathon County	2006	Yes	Yes	2028, 2033, 2038, 2043, 2048, 2053, etc.	Yearly
Pond F, Hwy 51/29 Corridor	Public-Marathon County	2005	Yes	Yes	2028, 2033, 2038, 2043, 2048, 2053, etc.	Yearly
Pond G, Hwy 51/29 Corridor	Public-Marathon County	2005	Yes	Yes	2028, 2033, 2038, 2043, 2048, 2053, etc.	Yearly
Pond H, Hwy 51/29 Corridor	Public-Town of Rib Mountain (MOU with Marathon County)	2005	Yes	Yes	2028, 2033, 2038, 2043, 2048, 2053, etc.	Yearly
South Area Fire and Emergency Response North	Public	2005	Yes	Yes	2028, 2033, 2038, 2043, 2048, 2053, etc.	Yearly

5. Enforcement–Provide enforcement per the applicable Municipality's Post-Construction Stormwater Management Ordinance and the recorded stormwater maintenance agreements.

The County will keep a file or database documenting complaints and responses, including the date the complaint was received and the date the complaint was responded to. Response should occur within five business days of receiving a complaint.

Date	Site	Complaint	Response	Date of Response

APPENDIX E
MAINTENANCE AND INSPECTION OF STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES

APPENDIX E-MAINTENANCE AND INSPECTION OF STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES MARATHON COUNTY DECEMBER 2022

1. BEST MANAGEMENT PRACTICE (BMP) OWNERSHIP

    a. County-owned/maintained stormwater BMP.
        i. Develop a site specific maintenance plan/program, if necessary
        ii. Follow the maintenance plan/program, herein.
    b. Privately-owned/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/program, herein.

2. MAINTENANCE

The cornerstone of a preventive maintenance program is establishment of a routine inspection program. This program must contain routine and non-routine 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 documenting the previous year's inspections to the Marathon County Highway Administration Maintenance Manager 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/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.

iv. Erosion Control/Revegetation

Eroded areas of the basin edges, embankments, bottom (for dry detention basins), emergency spillway, and rip rapped areas shall be repaired in a timely manner. Consider reseeding/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 3 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 Village 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/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 /excavation to original depth (typically 5 feet or more). See as-builts for original elevations.
c. Sediment Removal/Excavation Frequency: Every 3 to 5 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.

3. Sediment Removal/Excavation/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 DNR for confirmation.
    b. Contact DNR 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 DNR to determine if sediment sampling is necessary.
        i. Sediment and parent material sampling procedures should follow DNR 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
    e. Sediment Disposal-See NR 528 and the above resources. Contact the WDNR.

iii. Sediment Removal/Excavation from Dry Detention Basins-Remove sediment and dispose of properly to maintain the originally-designed flood-storage capacity of the facility.

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 per WDNR Bioretention for Infiltration Technical Standard 1004 as necessary, (4) replace hardwood mulch layer per WDNR Bioretention for Infiltration Technical Standard 1004. Maintenance shall occur only during dry conditions while taking measures to minimize compaction of remaining engineered soil.

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 due to 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 per 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
Marathon County, 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/trimming					
3. Need for reseeding					
4. Ruts					
5. Dead vegetation at water's edge					
C. Shoreline					
1. Erosion and rip rap 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. Shoreline problems					
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 F
IDDE DOCUMENTS FORMS

FIELD SCREENING—VISUAL OBSERVATION

NAME		WEATHER	
DATE		TIME	
OUTFALL # (Type this # in GPS Unit)		LOCATION	
WISDOT # (leave blank unless structure plate is present)			

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 response procedures.)

IF THERE IS A FLOW, PROVIDE A NARRATIVE DESCRIPTION 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

……

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

SPILL AND ILLICIT DISCHARGE REPORTING FORM

NAME		WEATHER	
DATE		TIME	
WISDOT # (leave blank unless structure plate is present)		LOCATION	

SPILL

Describe material spilled:

ILLICIT DISCHARGE

Outfall Type (Pick One)

Swale Pipe Box Culvert Elliptical Buried Sewer Other: _____

If Outfall includes pipe: Pipe Size_____ Material: _____

IS THERE A FLOW PRESENT? ☐ Yes ☐ No

IF THERE IS A FLOW, PROVIDE A NARRATIVE DESCRIPTION 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

Illicit Discharge Reporting Publicizing Information

For publication on County website, in local newspapers, and printed brochures:

Have you ever seen something unusual entering our waterways from the storm sewer system? Or a spilled material entering the storm sewer system? There is a way to report this! It's as easy as describing what you saw and where.

Please visit [*website*] for the reporting form to help us keep our waterways clear!

Reach out to the Marathon County Highway Department with any questions or concerns at 715-261-1809 or [*email address*].

For distribution to internal staff:

Under the County's Municipal Separate Storm Sewer System Permit, the County is required to perform Illicit Discharge Detection and Elimination Screenings at certain outfalls according to the schedule set by the Stormwater Quality Management Plan Update. To aid in identifying illicit discharges beyond this schedule, and to track and respond to spills across the County, the Marathon County Highway Department is publicizing an online reporting form for the public to enter information about any suspicious material they see entering the local waterways. Reports will be followed up by Highway Department staff. Any suspected illicit discharges will be investigated, documented, and eliminated and spills will be addressed as necessary. Please feel free to report any illicit discharges or spills at [*website*] and reach out to the Highway Department with any questions or concerns at 715-261-1809 or [*email address*].

Illicit Discharge Detection and Elimination Tracking
Marathon County-Highway Department

Outfall # Location	Date of Illicit Discharge Report	Illicit Discharge Report Details	Discharge Verification Date	Source of Discharge	Date of Action Taken	Action Taken

APPENDIX G
DOUBLE-RING INFILTROMETER TESTING

John, Raveena

From: Seneczko, Teagan M - DNR <Teagan.Seneczko@wisconsin.gov>
Sent: Tuesday, October 6, 2020 8:31 AM
To: John, Raveena
Cc: Kevin.Lang@co.marathon.wi.us; Jeff.Pritchard@co.marathon.wi.us; Lindert, Jon; Gutoski, Justin J.
Subject: RE: Marathon County Infiltrometer Testing Results

[EXTERNAL EMAIL]: Verify sender before opening links or attachments.

Hi Raveena,

The approach for using Option 5 appears reasonable.

Thanks,

We are committed to service excellence.
Visit our survey at http://dnr.wi.gov/customersurvey to evaluate how I did.

Teagan Seneczko
Pronouns: she/her/hers
Phone: (715) 839-3724
Teagan.Seneczko@Wisconsin.gov

From: John, Raveena <Raveena.John@strand.com>
Sent: Tuesday, September 22, 2020 4:49 PM
To: Seneczko, Teagan M - DNR <Teagan.Seneczko@wisconsin.gov>
Cc: Kevin.Lang@co.marathon.wi.us; Jeff.Pritchard@co.marathon.wi.us; Lindert, Jon <Jon.Lindert@strand.com>; Gutoski, Justin J. <Justin.Gutoski@strand.com>
Subject: Marathon County Infiltrometer Testing Results

Hi Teagan,

We performed infiltration testing in Marathon County for their Stormwater Quality Management Plan Update the week of August 17. Attached are the results of the testing and the location maps for reference.

The first tab of the spreadsheet summarizes the results. We have developed for options for consideration by the WDNR:

Option 1 is the geometric mean of all twelve tests;
Option 2 calculates two geometric means based on location (north, east, and south regions);
Option 3 calculates the geometric means based on soil type (sandy and silty);
Option 4 is to use the book values from Tech Standard 1002, Table 2; and
Option 5 is to use the geometric mean of ten of the twelve tests, excluding the highest and lowest test result.

We request approval for Option 5 as best representing conditions within areas served by grass-lined swales within the County, and seek your input and review of this submittal. If you could provide your review by October 9, 2020, it would be appreciated.

Please let us know if you have any questions.

Thank you,
Raveena

Raveena John
Strand Associates, Inc.®
608.251.4843 ext. 1217
Raveena.John@strand.com | www.strand.com

Excellence in Engineering Since 1946.

Infiltration Testing Summary
Marathon County TMDL Stormwater Plan
Strand Associates, Inc.
22-Sep-20

Table 1: Infiltration Summary						
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	24.61	12.31	FgB	Fenwood Rozelville silt loams	B	Silty
2	5.27	2.64	FgB	Fenwood Rozelville silt loams	B	Silty
3	7.04	3.52	Mm	Meehan loamy sand	A/D	Sandy
4	7.32	3.66	MbB	Mahtomedi loamy sand	A	Sandy
5	2.65	1.33	CkA	Chetek sandy loam	B	Sandy
6	0.43	0.22	CkA	Chetek sandy loam	B	Sandy
7	4.90	2.45	Mm	Meehan loamy sand	A/D	Sandy
8	7.07	3.54	McA	Mahtomedi loamy sand	A	Sandy
9	4.36	2.18	MbB	Maho	A	Sandy
10	1.08	0.54	MbB	Maho	A	Sandy
11	12.10	6.05	MbB	Maho	A	Sandy
12	0.97	0.48	McA	Mahtomedi loamy sand	A	Sandy

Option No. 1	Geometric Mean (All Test Locations)	3.96	1.98
Option No. 2	North Tests Geometric Mean (1, 2, 4)	9.83	4.92
	East Tests (5, 6)	1.07	0.54
	South Tests (3, 7, 8, 9, 10, 11, 12)	3.89	1.95
Option No. 3	Sandy Soils (Tests 3, 4, 5, 6, 7, 8, 9, 10, 11, 12)	3.20	1.60
	Silty Soils (Tests 1, 2)	11.39	5.70
	Clayey Soils (none)	N/A	N/A
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)	4.11	2.06

John, Raveena

From:	John, Raveena
Sent:	Monday, August 3, 2020 3:43 PM
To:	Seneczko, Teagan M - DNR
Cc:	Kevin S. Lang; Jeff Pritchard; Lindert, Jon; Gutoski, Justin J.
Subject:	Marathon County--infiltration testing
Attachments:	Marathon County-Infiltrometer Testing Approach with Figures.pdf

Hi Teagan,

We are sending an infiltrometer testing approach for Marathon County's Stormwater Quality Management Plan Update for your approval, attached. We are hoping to perform the testing starting August 12, 2020, so we are requesting your review by August 7, 2020. Once we have completed field testing, we will provide the WDNR with the results and proposed infiltration rate for use in modeling for approval as well. Please feel free to reach out with any questions.

Thanks,
Raveena

Raveena John
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608.251.4843 ext. 1217
Raveena.John@strand.com | www.strand.com

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Marathon County
Double-Ring Infiltrometer Testing Approach
Strand Associates, Inc.
August 2020

Marathon County hired Strand Associates to prepare a TMDL Stormwater Plan geared toward Wisconsin River TMDL compliance that updates the County's 2011 MS4 Stormwater Pollution Analysis. To maximize the full potential of the County's existing drainage systems and the County MS4-wide percent total suspended (TSS) and total phosphorus (TP) reduction, we plan to conduct in-field infiltration tests on various grass swales in the County. It is anticipated that the in-field infiltration testing will show higher infiltration rates than that utilized in the previous WinSLAMM models which are based on the use of allowable infiltration rates per WDNR's guidance.

Current guidance from the WDNR indicates that in-field testing of the native infiltration rates can have a positive effect on the modeled TSS reduction in the County. We propose that infiltration testing be completed on various swales in the County in accordance with the guidance provided by the WDNR:

- *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,* November 24, 2010

Within the project area, there are 48 different soil types with the dominant soil being Mahtomedi loamy sand (MdB). Most of the soils are sandy soils and classified as Hydrological Soil Group A. Table 1 provides a complete list of the soils within the County limits.

Table 1: Soil Types and Infiltration Test Locations

Test	Symbol	Soil Name and Description	Sandy/Silty/Clayey Per ArcSLAMM Plus	HSG	Area (acres)	Percent of Total Area	Number of Tests in Soil
	AbB	Alban loam	Sandy	C	8.39	0.03%	
	AmC	Amery silt loam	Silty	C	75.90	0.24%	
	Ch	Cathro muck	N/A	B/D	206.72	0.64%	
5, 6	CkA	Cheteck sandy loam	Sandy	B	409.43	1.28%	2
	CkB	Chetek sandy loam	Sandy	B	992.54	3.09%	
	CkC	Rosholt sandy loam	Sandy	A	16.70	0.05%	
	CkE	Rosholt sandy loam	Sandy	A	57.88	0.18%	
	Da	Dancy sandy loam	Sandy	B/D	208.09	0.65%	
	DuB	Dunnville fine sandy loam	Sandy	A	954.82	2.97%	
	FeC	Fenwood silt loam	Silty	B	1146.72	3.57%	
	FeD	Fenwood silt loam	Silty	B	462.29	1.44%	
	FfC	Fenwood silt loam	Silty	B	62.48	0.19%	
	FfE	Fenwood silt loam	Silty	B	52.31	0.16%	
1, 2	FgB	Fenwood Rozelville silt loams	Silty	B	1063.31	3.31%	3
	Fh	Fordum silt loam	Silty	B/D	769.71	2.40%	
	GuB	Guenther loamy sand	Sandy	B	217.55	0.68%	

	LDF	Landfill	N/A	A	70.36	0.22%	
	LoB	Loyal silt loam	Silty	B	51.94	0.16%	
	MaB	Magnor silt loam	Sandy	C/D	25.12	0.08%	
4, 9, 10, 11	MbB	Mahtomedi loamy sand	Sandy	A	10454.97	32.57%	3
	MbC	Mahtomedi loamy sand	Sandy	A	120.04	0.37%	
	MbE	Mahtomedi loamy sand	Sandy	A	492.35	1.53%	
8, 12	McA	Mahtomedi loamy sand	Sandy	A	2277.30	7.10%	2
	MdB	Marathon silt loam	Silty	B	5.00	0.02%	
	MgA	Meadland loam	Sandy	B/D	1463.10	4.56%	
	MhA	Meadland loam	Sandy	B/D	110.51	0.34%	
3, 7	Mm	Meehan loamy sand	Sandy	A/D	410.53	1.28%	1
	Mn	Minocqua muck	Sandy	B/D	276.10	0.86%	
	MsB	Mosinee sandy loam	Sandy	A	2123.66	6.62%	
	MsC	Mosinee sandy loam	Sandy	A	481.08	1.50%	
	MsD	Mosinee sandy loam	Sandy	A	77.63	0.24%	
	MtC	Mosinee sandy loam	Sandy	A	244.34	0.76%	
	Ne	Newson mucky loamy sand	Sandy	B/D	75.20	0.23%	
	Oe	Oesterle	Sandy	A	393.35	1.23%	
	Pg	Pits, gravel	N/A	A	210.29	0.66%	
	Po	Plover sandy loam	Sandy	C	51.06	0.16%	
	RbC	Ribhill cobbly silt loam	Silty	C	10.26	0.03%	
	RcB	Rietbrock silt loam	Silty	A	733.22	2.28%	
	ReB	Rietbock silt loam	Silty	B/D	141.76	0.44%	
	RhA	Rockers loamy sand	Sandy	C/D	274.40	0.85%	
	RsB	Antigo silt loam	Sandy	A	58.69	0.18%	
	ScA	Scott Lake sandy loam	Sandy	A/D	126.66	0.39%	
	Se	Seelyeville muck	N/A	A/D	582.45	1.81%	
	ShA	Sherry silt loam	Silty	C/D	45.44	0.14 %	
	St	Sturgeon silt loam	Silty	A	506.10	1.58%	
	UoB	Udorthents	Sandy	A	1217.15	3.79%	
	W	Water	Water	A	2272.83	7.08%	
	WtA	Withee silt loam	Silty	C/D	7.43	0.02%	
Total					**4185.84**	**100.00%**	

Much of the County is drained by curb and gutter, grass swales, undeveloped roadside, and wetlands. We are proposing performing a total of twelve tests in five of the 48 soil types within the project area. Ten of the tests are in sandy soils and two tests are in silty soils. Attached is a map showing the twelve proposed locations to conduct the in-field double-ring infiltrometer tests overlaid with SLAMM soil types. The locations are approximate and will be verified and modified where necessary during field testing. Please note that the WDNR-approved professional services

agreement includes a total of 12 double-ring infiltrometer tests which matches the County's grant application.

We would like to conduct the testing starting August 12, 2020 so would appreciate your review, comments, and approval on our approach and locations of each test by the end of the day on August 7, 2020.

Upon completion of the field testing, we will provide the WDNR with the results and our proposed infiltration rate to input in the SLAMM model for WDNR approval.

Path: S:\MAD\3500--3599\3598\003\Drawings\GIS\Figures\Infiltration Testing\Figure 1.01 - 1-Testing Locations 8x11.mxd

User: RaveenaJ

Date: 7/29/2020

Time: 4:30:20 PM

Pond	Facility Type	Drainage Area (acres)	Storage Volume (acre-feet)	Owned/ Maintained By
A	Dry Pond/ Infiltration	199	9.2	City of Wausau
B	Wet Pond	550	19	City of Wausau
C	Dry Pond/ Infiltration	39	43.4	WisDOT
D	Wet Pond	18.8	4.4	Marathon County
E	Wet Pond	671	16.6	Town of Rib Mountain
F	Wet Pond	249	19.7	Marathon County
G	Wet Pond	123	6.1	Marathon County
H	Wet Pond	286	2.2	Town of Rib Mountain
M	Wet Pond	50	17.2	City of Wausau
Wetland D	Wetland Creation	1100	96.4	WisDOT
Total		3383.9	236.2	

INFILTROMETER TESTING LOCATIONS

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

FIGURE 1.01
3598.003

STRAND ASSOCIATES®

Path: S:\MAD\3500--3599\3589\003\Drawings\GIS\Figures\Infiltration Testing\Figure 1-Testing Locations 8x11.mxd

User: RaveenaJ

Date: 7/29/2020

Time: 10:23:22 AM

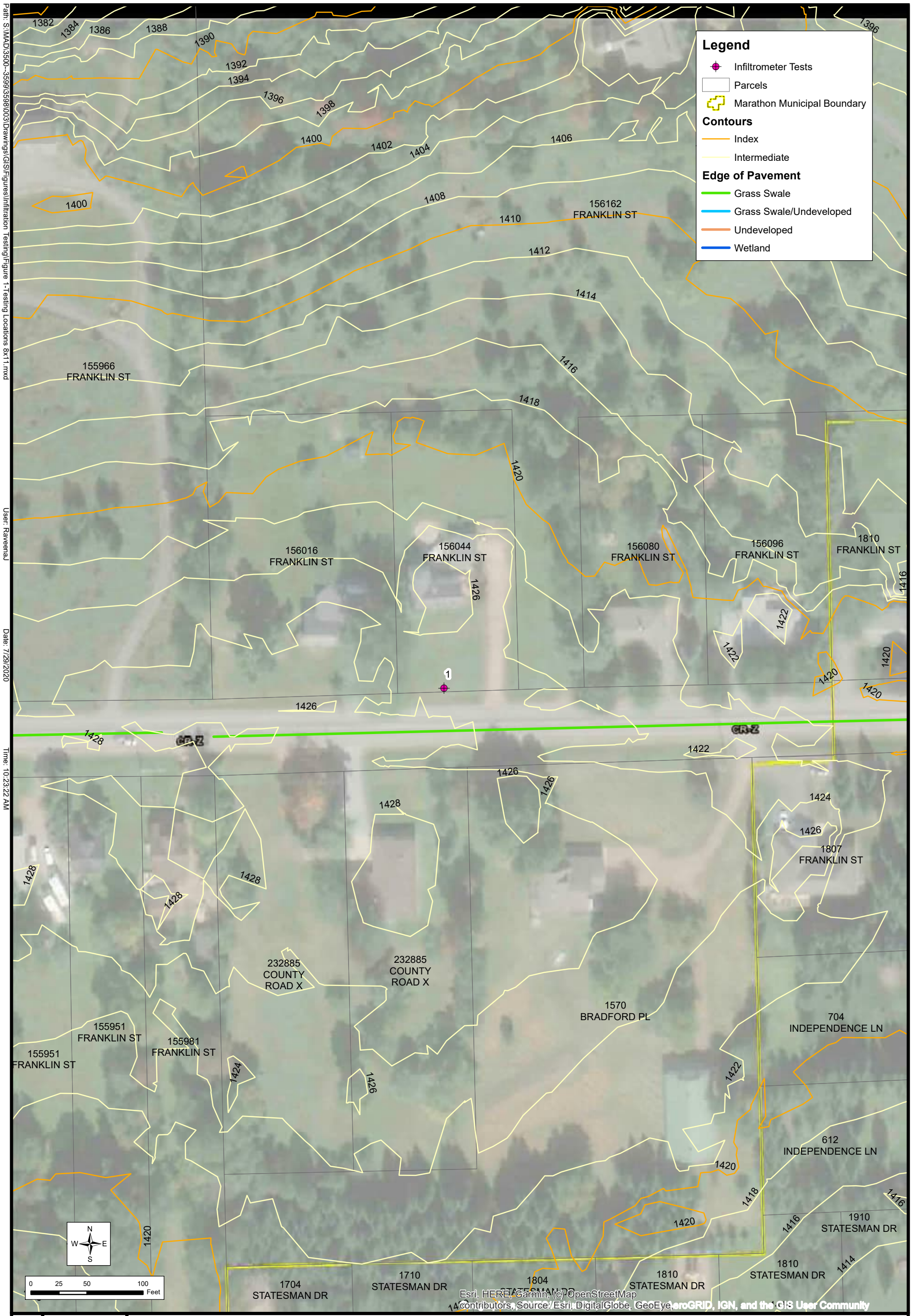


FIGURE 1
3589.003

STRAND ASSOCIATES®

INFILTROMETER TESTING LOCATION 1

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

Path: S:\MAD\3500-3599\3589\003\Drawings\GIS\Figures\Infiltration Testing\Figure 2 Testing Locations 8x11.mxd

User: gabriellas

Date: 7/22/2020

Time: 1:23:55 PM

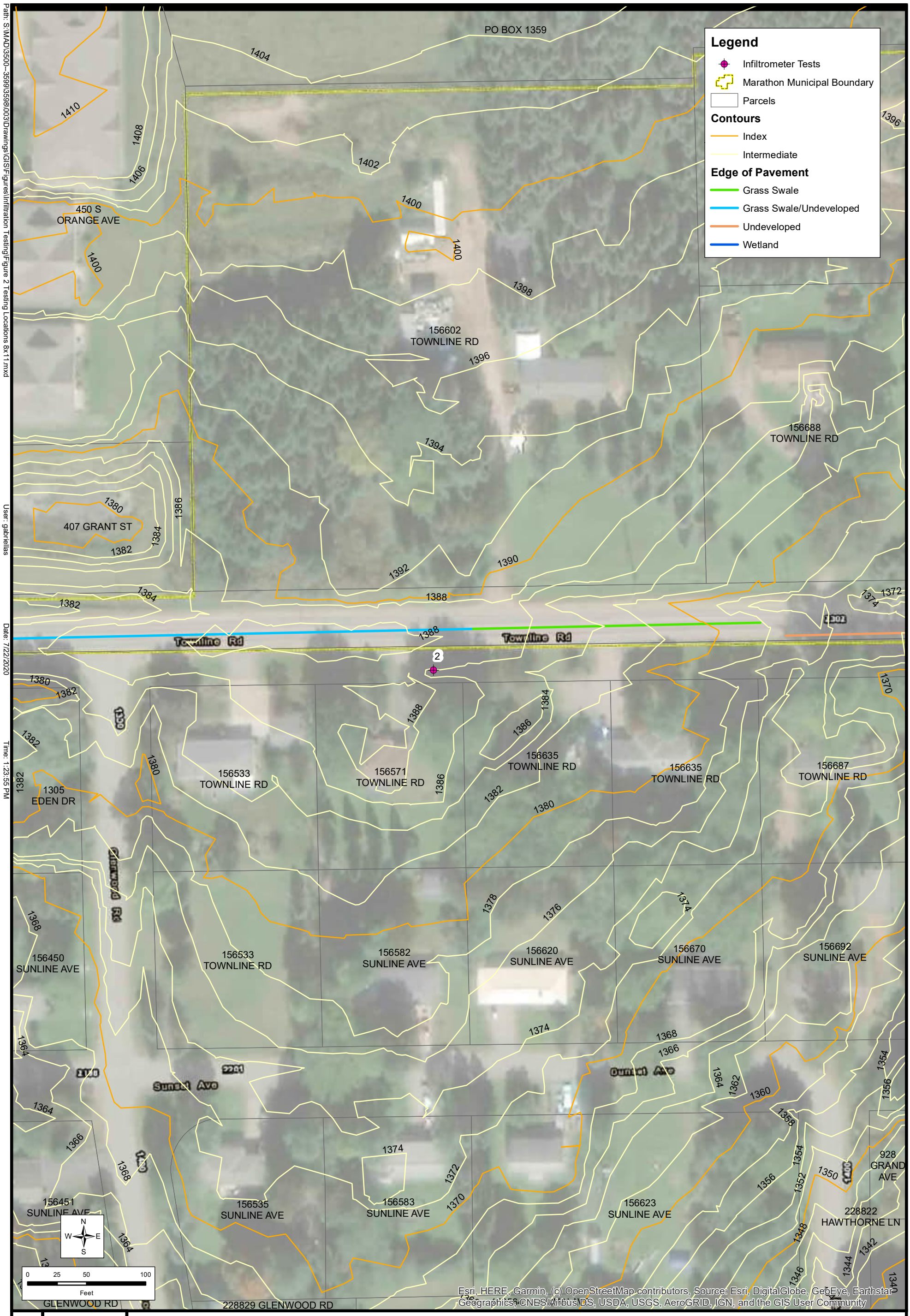


FIGURE 2
3589.003

STRAND ASSOCIATES®

INFILTROMETER TESTING LOCATION 2

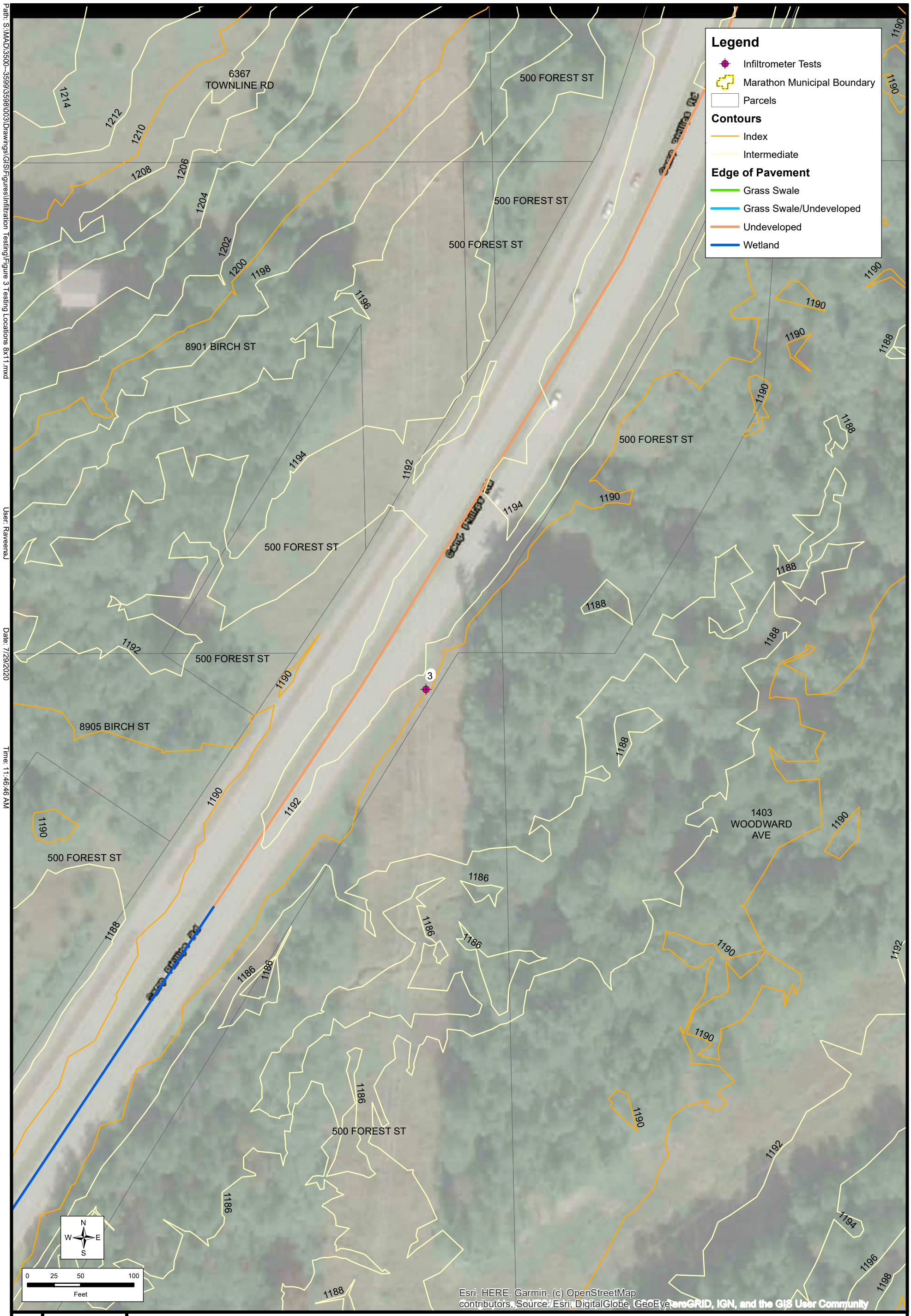
STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

Path: S:\MAD\3500--3599\3589\003\Drawings\GIS\Figures\Infiltration Testing\Figure 3 Testing Locations 8x11.mxd

User: RavenaJ

Date: 7/29/2020

Time: 11:46:46 AM

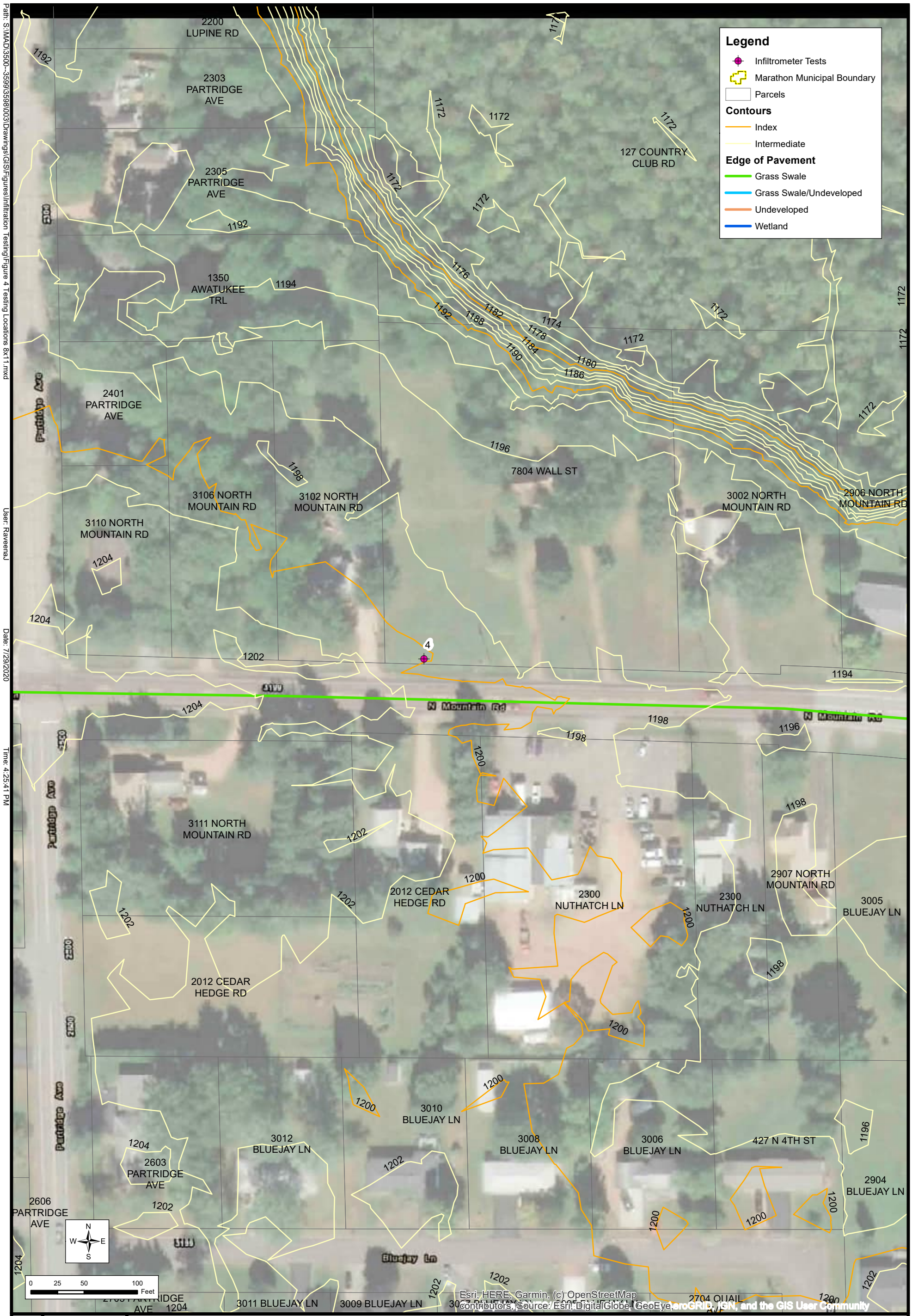


INFILTROMETER TESTING LOCATION 3

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

FIGURE 3
3589.003

STRAND ASSOCIATES®



Path: S:\MAD\3500--3599\3589\003\Drawings\GIS\Figures\Infiltration Testing\Figure 4 Testing Locations 8x11.mxd

User: RavenaJ

Date: 7/29/2020

Time: 4:25:41 PM

FIGURE 4
3589.003

STRAND ASSOCIATES

INFILTROMETER TESTING LOCATION 4

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

Path: S:\MAD\3500--3599\3589\003\Drawings\GIS\Figures\Infiltration Testing\Figure 5 Testing Locations 8x11.mxd

User: RaveenaJ

Date: 7/29/2020

Time: 11:10:17 AM

Legend

- Infiltrometer Tests
- Catch Basin
- Storm Sewer
- Marathon Municipal Boundary

Contours

- Index
- Intermediate
- Parcels

Edge of Pavement

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

1740 HERFORD RD
6602 CARIBOU LN
6605 CARIBOU LN
6211 COUNTY ROAD J
6604 CARIBOU LN
6300 ALDERSON ST
6306 COUNTY ROAD J
9302 RODS WAY
9304 RODS WAY
6404 COUNTY ROAD J
6608 CARIBOU LN
101 S WEBSTER ST
PO BOX 100
7306 ZINSER ST
1005 N 28TH AVE

5

J

N
W E
S

0 25 50 100 Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS,

INFILTROMETER TESTING LOCATION 5

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

FIGURE 5
3589.003

STRAND ASSOCIATES®

Path: S:\MAD\3500--3599\3598\003\Drawings\GIS\Figures\Infiltration Testing\Figure 6 Testing Locations 8x11.mxd

User: RaveenaJ

Date: 7/29/2020

Time: 11:11:07 AM

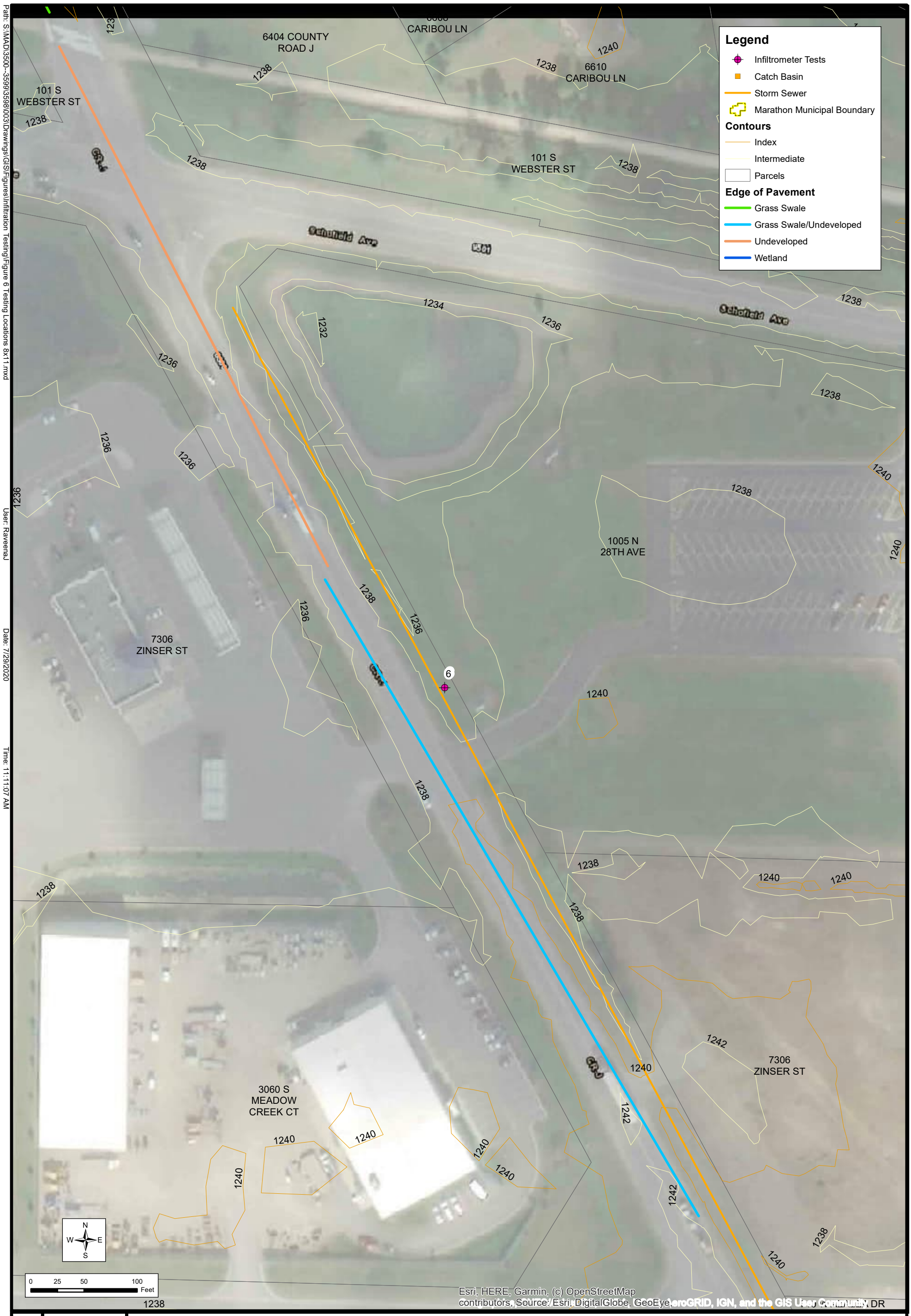


FIGURE 6
3598.003

STRAND ASSOCIATES®

INFILTROMETER TESTING LOCATION 6

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

Path: S:\MAD\3500--3599\3598\003\Drawings\GIS\Figures\Infiltration Testing\Figure 7 Testing Locations 8x11.mxd

User: RaveenaJ

Date: 7/29/2020

Time: 11:24:13 AM

INFILTROMETER TESTING LOCATION 7

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

FIGURE 7
3598.003

STRAND ASSOCIATES®

Path: S:\MAD\3500-3599\3598\003\Drawings\GIS\Figures\Infiltration Testing\Figure 8 Testing Locations 8x11.mxd

User: gabriellas

Date: 7/21/2020

Time: 9:37:04 AM

FIGURE 8
3598.003

STRAND ASSOCIATES®

INFILTROMETER TESTING LOCATION 8

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

Path: S:\MAD\3500-3599\3598\003\Drawings\GIS\Figures\Infiltration Testing\Figure 9 Testing Locations 8x11.mxd

User: gabriellas

Date: 7/23/2020

Time: 8:51:31 AM

FIGURE 9
3598.003

STRAND ASSOCIATES®

INFILTROMETER TESTING LOCATION 9

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

Path: S:\MAD\3500--3599\3598\003\Drawings\GIS\Figures\Infiltration Testing\Figure 10 Testing Locations 8x11.mxd

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Date: 7/29/2020

Time: 11:37:00 AM

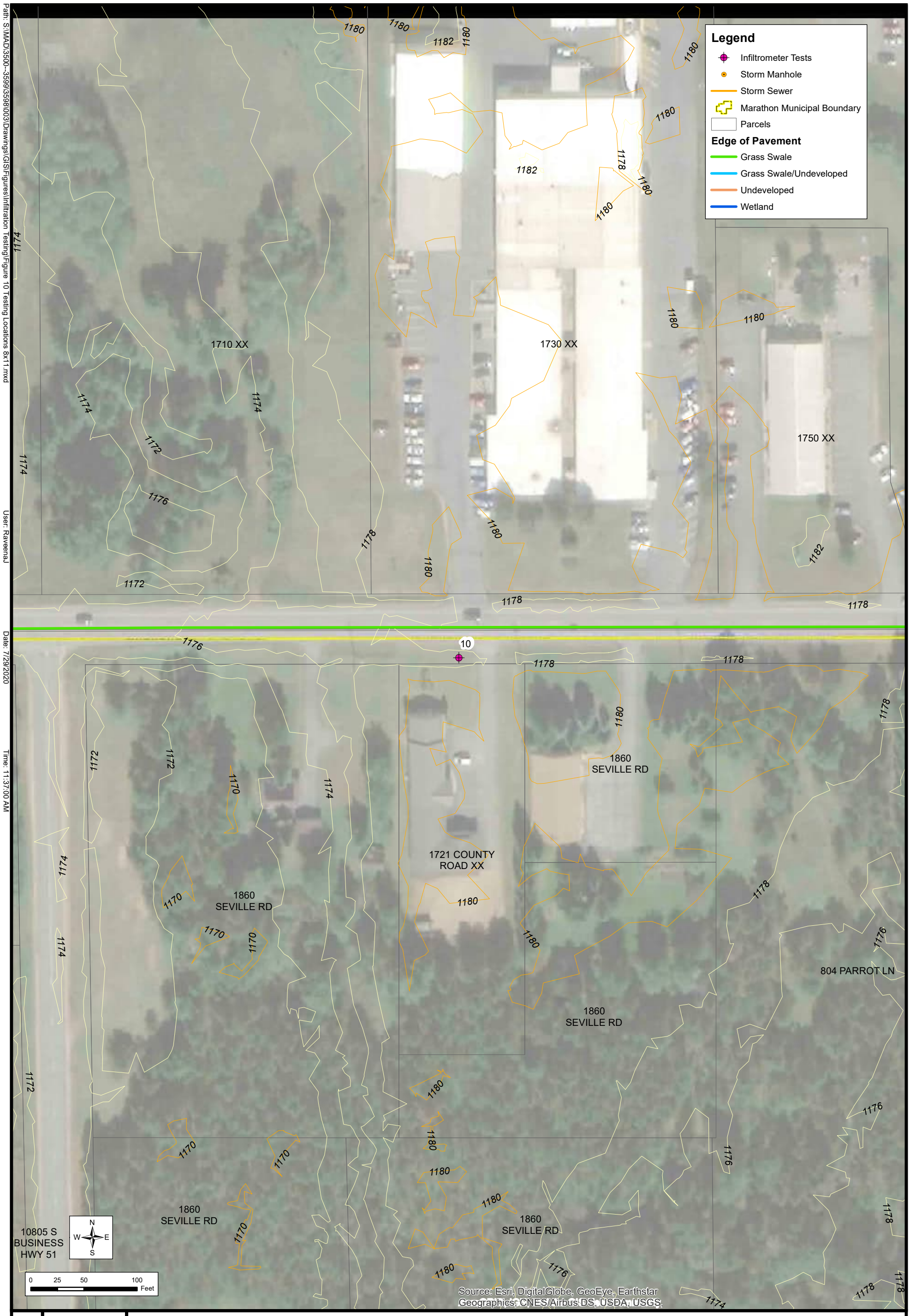

FIGURE 10
3598.003

STRAND ASSOCIATES®

INFILTROMETER TESTING LOCATION 10

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

Path: S:\MAD\3500--3599\3598\003\Drawings\GIS\Figures\Infiltration Testing\Figure 11 Testing Locations 8x11.mxd

User: RavenaJ

Date: 7/29/2020

Time: 11:39:39 AM

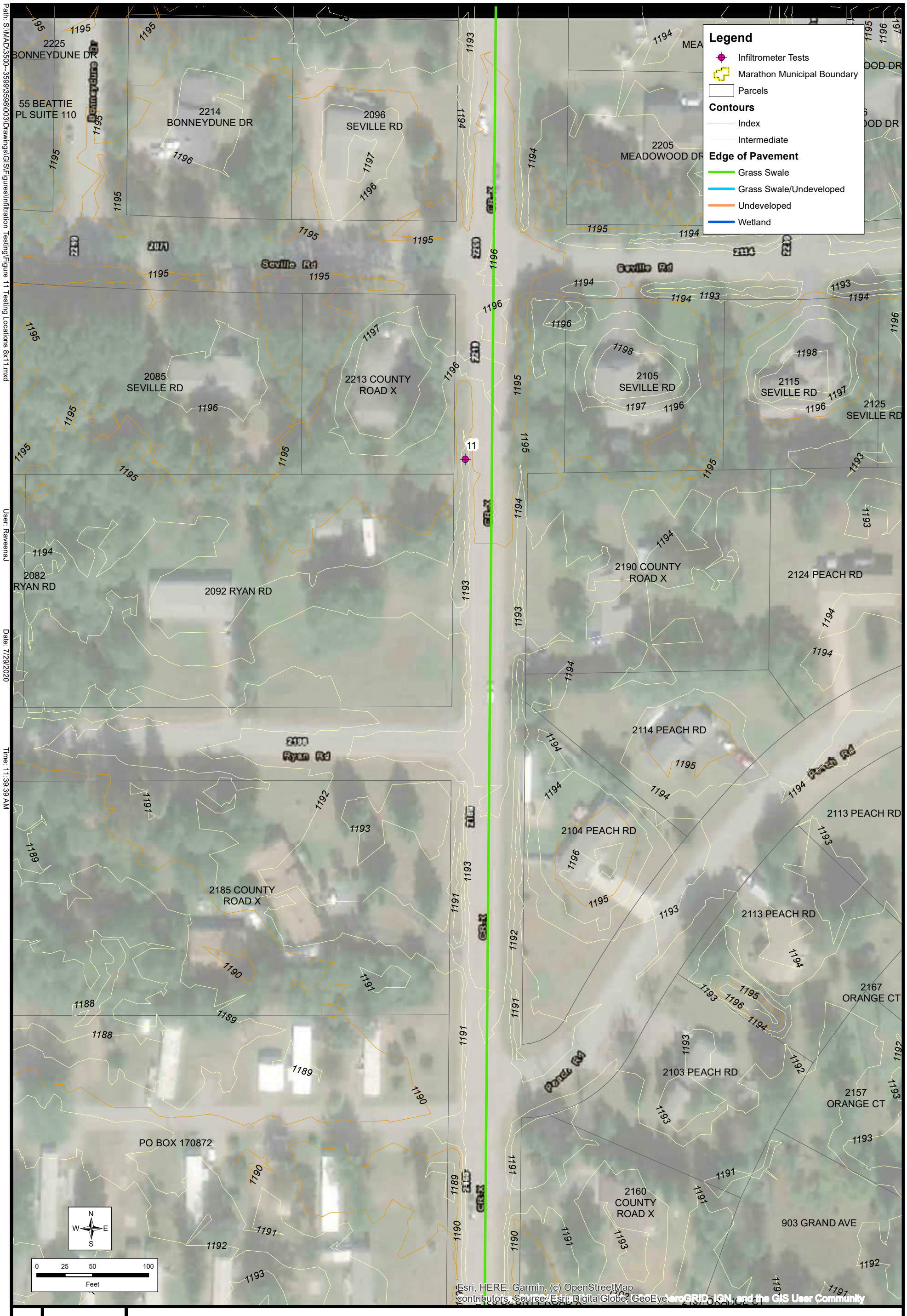

FIGURE 11
3598.003

STRAND ASSOCIATES®

INFILTROMETER TESTING LOCATION 11

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

Path: S:\MAD\3500-3599\3598\003\Drawings\GIS\Figures\Infiltration Testing\Figure 12 Testing Locations 8x11.mxd

User: gabriellas

Date: 7/21/2020

Time: 10:03:28 AM

Legend

- Infiltrometer Tests
- Marathon Municipal Boundary
- Parcels

Contours

- Index
- Intermediate

Edge of Pavement

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

1975 DEERWOOD TRL
1967 DEERWOOD TRL
1961 DEERWOOD TRL
1946 DEERWOOD TRL
1953 DEERWOOD TRL
1947 DEERWOOD TRL
1939 DEERWOOD TRL
1931 DEERWOOD TRL
1937 COUNTY ROAD X
1935 COUNTY ROAD X
1909 COUNTY ROAD X
1897 COUNTY ROAD X
1887 COUNTY ROAD X
1898 COUNTY ROAD X
1877 COUNTY ROAD X
CR-X
12
1190
1185

N W E S

0 25 50 100 Feet

Esri, HERE, Garmin, (c) OpenStreetMap contributors, Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 12
3598.003

STRAND ASSOCIATES®

INFILTROMETER TESTING LOCATION 12

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

APPENDIX H
DETENTION BASIN SHEETS

Date: October 2, 2020

Time: 12:07 P.M.

Description:

BMP D (Wet Pond)

TMDL Reach: 154

Date: Google

Time: 2019

Description:

BMP D (Wet Pond)

TMDL Reach: 154

APPENDIX H

COUNTYWIDE STORMWATER MANAGEMENT PLAN-TMDL ANALYSIS MARATHON COUNTY, WISCONSIN BMP PHOTOGRAPHS

STRAND ASSOCIATES

Date: Google

Time: 2022

Description:

BMP F (Wet Pond)

TMDL Reach: 154

Date: Google

Time: 2022

Description:

BMP G (Wet Pond)

TMDL Reach: 154

APPENDIX H

COUNTYWIDE STORMWATER MANAGEMENT PLAN-TMDL ANALYSIS MARATHON COUNTY, WISCONSIN BMP PHOTOGRAPHS

STRAND ASSOCIATES

Date: November 11, 2020

Time: 4:30 P.M.

Description:

BMP H (Wet Pond)

TMDL Reach: 154

Date: October 2, 2020

Time: 11:00 A.M.

Description:

South Area Fire and Emergency Response North BMP (Bioretention Basin)

TMDL Reach: 154

APPENDIX H

COUNTYWIDE STORMWATER MANAGEMENT PLAN-TMDL ANALYSIS MARATHON COUNTY, WISCONSIN BMP PHOTOGRAPHS

STRAND ASSOCIATES

APPENDIX I
SIGNED MOA–WAUSAU AREA MS4S

MARATHON COUNTY

Kim Trueblood, Marathon County Clerk

Marathon County Courthouse
500 Forest Street
Wausau, WI 54403
715.261.1500 (Telephone)
715.261.1515 (Fax)
Kim.Trueblood@co.marathon.wi.us

MARATHON COUNTY

November 15, 2019

Secretary Preston Coles
Wisconsin Department of Natural Resources
101 S. Webster Street
PO Box 7921
Madison, WI 53707-7921

Dear Secretary Coles:

Enclosed is a certified copy of Resolution #R-62-19 approving Northcentral Wisconsin Stormwater Management Coalition Memorandum of Agreement Among Marathon County, the City of Wausau, the Villages of Weston, Kronenwetter, and Rothschild, and the Town of Rib Mountain.

This resolution was adopted by the Marathon County Board of Supervisors at their Adjourned Annual meeting which was held November 14, 2019.

Yours truly,

Kim Trueblood

Kim Trueblood
Marathon County Clerk

kjt
enc

cc: Toni Rayala, City of Wausau Clerk
Sherry Weinkauf, Village of Weston Clerk
Cindy Falkowski, Village of Kronenwetter Clerk
Elizabeth Felkner, Village of Rothschild Clerk
Joanne Ruechel, Town of Rib Mountain Clerk

RESOLUTION #R- 102 -19

APPROVING
NORTHCENTRAL WISCONSIN STORMWATER MANAGEMENT COALITION
MEMORANDUM OF AGREEMENT
AMONG MARATHON COUNTY, THE CITY OF WAUSAU, THE VILLAGES OF WESTON, KRONENWETTER, AND ROTHSCHILD, AND THE TOWN OF RIB MOUNTAIN

WHEREAS, the Wisconsin Department of Natural Resources regulates municipal storm sewer systems discharging water to surface or ground waters through the Wisconsin Pollutant Discharge Elimination System (WPDES) permit program, and

WHEREAS, the goal of the WPDES Stormwater Program is to prevent the transportation of pollutants to Wisconsin's water resources via stormwater runoff, and

WHEREAS, Marathon County owns stormwater facilities that are required to be permitted under the Wisconsin Pollutant Discharge Elimination System (WPDES), and

WHEREAS, the Memorandum of Agreement is between Marathon County; the City of Wausau; the Villages of Kronenwetter, Rothschild, and Weston; and the Town of Rib Mountain, and

WHEREAS, the purpose of the Memorandum of Agreement, which is authorized pursuant to ss.66.0301, Wis. Stats., is to develop and implement a single information and outreach program meeting the requirements of the Wisconsin Administrative Code and to increase awareness of stormwater impacts on waters of the state while avoiding duplication of efforts and saving costs, and

WHEREAS, the coalition will cooperate to adapt and revise operating procedures and municipal ordinances to comply with the requirements of the WPDES General Permits held by each party to the agreement and any changes made to the Wisconsin Administrative Code;

NOW THEREFORE BE IT RESOLVED, the Board of Supervisors of the County of Marathon hereby authorizes and executes a Memorandum of Agreement from January 1, 2020 to December 31, 2026 among Marathon County; the City of Wausau; the Villages of Kronenwetter, Rothschild, and Weston; and the Town of Rib Mountain.

Respectfully submitted this 14th day of November 2019.

ENVIRONMENTAL RESOURCES COMMITTEE

Fiscal Impact to Marathon County: Pay actual sampling and field screening costs of outfalls serving county owned facilities

MEMORANDUM OF AGREEMENT

BETWEEN MARATHON COUNTY, THE CITY OF WAUSAU, THE VILLAGES OF WESTON, KRONENWETTER, AND ROTHSCHILD, AND THE TOWN OF RIB MOUNTAIN

I. PURPOSE

THIS MEMORANDUM OF AGREEMENT is entered into for the purpose of minimizing discharge of pollutants carried by stormwater runoff and to develop and implement a single information and outreach program for all participating municipalities. The Agreement allows the parties to work together on a program that meets permit requirements of Wis. Admin. Code NR 216.

II. TERM OF AGREEMENT

This Agreement shall run January 1, 2020 to December 31, 2026. The terms of the Agreement may be reviewed and amended if necessary. This Agreement may be terminated by any party on thirty (30) days written notice to the group, subject only to the payment of any obligations due to the group under this Agreement up to the point of said termination.

III. APPLICABILITY

The process defined by this MOA addresses the requirements of Section 402 of the Federal Clean Water Act and the Storm Water Discharge Permit Program under Wis. Admin. Code NR 216. Through the Wisconsin Pollutant Discharge Elimination System (WPDES) permit program, the DNR regulates municipal, industrial, and animal waste operations discharging water to surface or groundwaters.

IV. SUMMARY OF THE PERMIT PARTNERSHIP PROCESS

Each of the participating municipalities and Marathon County will hold a municipal separate storm sewer system (MS4) permit. Marathon County will be responsible for achieving and maintaining compliance of its MS4 eligible facilities within each community.

V. PROGRAM SUMMARY

The program is designed to fulfill the permit requirements 1-9 as defined in of Wis. Admin. Code NR 216.07 as efficiently and effectively as possible through intergovernmental cooperation.

VI. ALLOCATION OF RESPONSIBILITY

For and in consideration of the terms and conditions in this Memorandum of Agreement, Marathon County and the participating municipalities have the following responsibilities:

1. **PUBLIC EDUCATION AND OUTREACH**

   Marathon County will:

   - Coordinate the development and updates of the Wausau Urban Area Stormwater Education and Outreach Plan and future plan updates at no cost to the municipalities;
   - Coordinate the implementation of the Wausau Urban Area Stormwater Education and Outreach Plan.

   The municipalities will:

   - Appoint one representative to the Northcentral Wisconsin Stormwater Coalition;

5. **POST-CONSTRUCTION SITE STORM WATER MANAGEMENT**

Marathon County will:

- Work with the participating municipalities to develop and update as necessary, post construction storm water management ordinances in accordance with NR 216;
- Comply with municipal post construction storm water management ordinance as they apply to MS4 eligible County facilities as defined in NR 216.

The municipalities will:

- Adopt and update as necessary, a municipal post construction storm water management ordinance.

6. **POLLUTION PREVENTION**

Marathon County will perform the following tasks on MS-4 eligible county owned facilities to the specifications of the individual municipalities in which the facilities exist:

- Install and maintain source area controls and regional best management practices;
- Roadway maintenance including street sweeping and de-icer management;
- Collection and management of leaf and grass clippings;
- Management of county garages, storage areas and other potential sources of pollution;
- Management of the application of lawn and garden fertilizers on county controlled properties in accordance with s. NR 151.13 (1) (b) 3;
- Implement inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with municipal permit conditions;
- Conduct an assessment of the actions taken using a pollutant loading analysis model (SLAMM).

The municipalities will perform the following tasks on municipal facilities:

- Install and maintain source area controls and regional best management practices;
- Roadway maintenance including street sweeping and de-icer management;
- Collection and management of leaf and grass clippings;
- Management of municipal garages, storage areas and other municipal sources of pollution;
- Management of the application of lawn and garden fertilizers on municipal controlled properties in accordance with s. NR 151.13 (1) (b) 3;
- Implement inspection, surveillance and monitoring procedures necessary to determine compliance and noncompliance with permit conditions;
- Conduct assessments of the actions taken using a pollutant loading analysis model (SLAMM) on municipal MS4 facilities within their respective MS4 boundaries.

7. **STORM SEWER SYSTEM MAP**

Marathon County will:

- Identify and map MS-4 eligible county owned facilities and outfalls as defined in NR 216;
- Provide the municipalities with geographical data of county owned MS-4 eligible facilities and outfalls.

The municipalities will:

- Identify and map municipal facilities and outfalls;

STATE OF WISCONSIN)
)SS.
COUNTY OF MARATHON)

I, Kim Trueblood, County Clerk in and for Marathon County, Wisconsin, hereby certify that the attached Resolution #R-62-19 was adopted by the Marathon County Board of Supervisors at their Adjourned Annual meeting which was held November 14, 2019.

Kim Trueblood

SEAL

Kim Trueblood
Marathon County Clerk

APPENDIX J
2021 NCWSC ANNUAL REPORT–PUBLIC EDUCATION AND OUTREACH

2021 Annual Report – Public Education and Outreach Activities
Northcentral Wisconsin Stormwater Coalition

Delivery Mechanism	Target Audience	Active or Passive	Measurement Tools
1. Illicit Discharge Detection and Elimination			
a. Notice on website (http://www.ncwrpc.org/NCWSC/) under Local Contacts.	Members of the public who may be looking for it.	Passive	The Local Contacts page was viewed about 110 times throughout the year.
2. Household Hazardous Waste Disposal/Pet Waste Management/Vehicle Washing			
a. Rubber Ducky, 30-second TV commercials.	General Public for following counties: Lincoln, Marathon, Wood, and Portage.	Passive	1-week campaign in spring on the following stations: WAOW, WSAW, & WZAW
b. Rubber Ducky, 30-second TV commercials.	General Public in Baraboo	Passive	1-week campaign on Retro TV43
c. Rubber Ducky, 30-second TV commercials.	General Public for following counties: Lincoln, Marathon, Wood, and Portage.	Passive	2-week campaign on WJFW during Summer Olympics.
3. Yard Waste Management/Pesticide and Fertilizer Application			
a. _____.			
4. Stream and Shoreline Management			
a. _____.			
b. _____.			

2021 Annual Report – Public Education and Outreach Activities
Northcentral Wisconsin Stormwater Coalition

Delivery Mechanism	Target Audience	Active or Passive	Measurement Tools
5. Residential Infiltration			
a. Rain garden located at Prairie River Middle School, Merrill.	General population of Merrill's middle school.	Passive	About 550 students are enrolled in middle school.
b. Rain garden located at Doepke Park, Town of Rib Mountain.	General population that attends Doepke Park.	Passive	Since this rain garden is at the Town's most prominent park, then most Town residents may see this annually.
c. Rain garden located outside Marathon County's CPZ offices in Wausau.	All staff and visitors to CPZ offices.	Passive	???
d. Rain garden prominently located outside the Baraboo Zoo.	General population attending zoo in Baraboo.	Passive	???
e. Rain garden located at the Kronenwetter Municipal Center.	All staff and some visitors to Village of Kronenwetter Municipal Center.	Passive	Since this rain garden is in the back of the building, at the main secondary entrance, then all Village staff and many committee attendees pass by this location annually.
f. Rain garden located at the Weston Municipal Center.	All staff and visitors to Village of Weston Municipal center.	Passive	Since this rain garden is at the place where all Village meetings occur, then many Village residents may see this annually.
g. Rain garden _____, Stevens Point	???	Passive	???
h. Rain garden at fire station, Marshfield.	???	Passive	???
i. Website has rain garden information on it.	General Public for following counties: Lincoln, Marathon, Wood, and Portage.	Passive	The Rain Gardens page was viewed about 140 times throughout the year.

Delivery Mechanism	Target Audience	Active or Passive	Measurement Tools
6. Construction Sites and Post-Construction Storm Water Management			
a. _____.			
7. Pollution Prevention			
a. Salt Wise lunch webinar titled: **Get Salt Wise with Private Contractors. August 4, 2021**	Targeted group training of all Coalition Member community Chamber businesses that have parking lots that are cleared of snow & ice.	Passive	Each Coalition Member community advertised this webinar at least once to that Chamber's membership.
b. Salt Wise lunch webinar titled: **Mayo Clinic says, "Hold the Salt". September 1, 2021**	Targeted group training of all Coalition Member community Chamber businesses that have parking lots that are cleared of snow & ice.	Active	Each Coalition Member contacted a variety of employers either through a direct mailer or by a specific email. • 41 letters mailed for Baraboo. • 35 emails and 19 letters for Rothschild. • 57 letters mailed for Schofield. • About 15 individual business contacts (email, text, and phone calls) for Mosinee. • Email blast to Chamber members in Merrill, and Wisconsin Rapids. • Marshfield directly contacted a major employer. • Weston directly contacted a major employer and 2 winter maintenance providers. • DC Everest school district was directly invited to this webinar by Weston on behalf of Weston, Rothschild, Schofield, & Kronenwetter.

8. Green Infrastructure/ Low Impact Development			
• See all the public rain gardens listed under Topic Area #5 Residential Infiltration.			

APPENDIX K
BASELINE AND EXISTING CONDITIONS WATER QUALITY RESULTS
(PROVIDED ON FLASH DRIVE)

APPENDIX L
WDNR MODELING APPROVAL

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
West Central Region Headquarters
1300 W. Clairemont Ave.
Eau Claire, WI 54701

Tony Evers, Governor
Adam N. Payne, Secretary
Telephone (715) 684-2914
Toll Free 1-888-936-7463
TTY Access via relay - 711

January 17, 2023

Marathon County
Attn: Lance Leonhard
500 Forest Street
Wausau WI 54403

SUBJECT: Marathon County Municipal Separate Storm Sewer Discharge (MS4) Permit Pollutant Modeling Assessment Review (TMDL)

FIN: 33647

Dear Mr. Leonhard,

Thank you for submitting the Marathon County Total Maximum Daily Load (TMDL) assessment to the Wisconsin Department of Natural Resources (Department). The Department has conducted a review of targeted portions of sections 1-4 of the "Draft Stormwater Quality Management Plan Update" assessment submitted and prepared by Strand Associates Inc. dated December 2022, along with supporting data files.

This letter serves to document that the County's pollutant load analysis appears to be consistent with Department guidance on TMDL modeling for the purpose of compliance with Section 1.5 of WPDES Permit No.WI-S050075-3.

Please note that the modeling demonstrates that the County is not achieving the percent reductions needed to comply with the TMDL waste load allocations for the 154 reach shed. 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 reach shed, 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.

Thank you for your attention to this matter. If you have any questions concerning the contents of this letter please contact Teagan Wagner at Teagan.Wagner@wisconsin.gov .

Sincerely,

Teagan Wagner, PE
Northern & West Central Region
Water Resources Engineer

Cc: Jon Lindert, Strand (via email)
Daniel Johnstone, Strand (via email)
Kevin Lang, Marathon County (via email)
Jeff Pritchard, Marathon County (via email)
John Eaton, DNR Storm Water Specialist (via email)
Terence Kafka, DNR Nonpoint Source Program Regional Coordinator (via email

APPENDIX M
ALTERNATIVE ANALYSIS FIGURES

Path: S:\MAD\3500-3599\3598\003\Drawings\GIS\Figures\Alternatives Analysis\Camp Phillips Rd 11x17.mxd

User: DanielJ

Date: 3/10/2023

Time: 4:27:06 PM

LOCATION MAP

WET POND LOCATION

TOTAL DRAINAGE AREA: 566.0 ACRES

2.2% County ROW
97.8% Village of Weston

Legend

Marathon County ROW

Source: Esri, Maxar, Earthstar Geographics, and the GIS User

Legend

- Proposed Storm Sewer
- Proposed Manhole
- Sanitary Manhole
- Sanitary Sewer
- Water Valve
- Hydrant
- Water Main
- Wetland Class Areas
- Wetland Indicators
- 1 PCT ANNUAL CHANCE
- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- FLOODWAY
- Potential Alternative Pond Location
- Outfalls
- Storm Discharge Point
- Storm Inlet
- Storm Manhole
- Storm Gravity Main
- Index
- Intermediate
- Basins
- Parcels

OUTLET CONTROL STRUCTURE

WET DETENTION POND
WET POOL AREA: 1.06 ACRES
WATER SURFACE ELEVATION: 1195

36" RCP
LENGTH: 80 LF
SLOPE: 1.0%

36" ENDWALL
IE: 1195

36" RCP
LENGTH: 62 LF
SLOPE: 0.8%

EX IE: 1183.78

LOW FLOW DIVERSION STRUCTURE
RIM: 1214.00
36" N IE: 1195.5
72" W IE: 1195.5
72" E IE: 1195.5

PROPOSED MH
RIM: 1214.00
36" NW IE: 1194.20
72" W IE: 1194.20
72" E IE: 1194.20

Discharge to Unnamed Tributary to Eau Claire River

POTENTIAL ALTERNATE APPROXIMATE POND LOCATION

N
W E
S

0 25 50 100
Feet

Esri, HERE, Garmin, (c) OpenStreetMap contributors, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

CAMP PHILLIPS ROAD WET POND

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY,
WISCONSIN

FIGURE M-1
3598.003

STRAND ASSOCIATES®

MARATHON COUNTY PARK WET POND

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

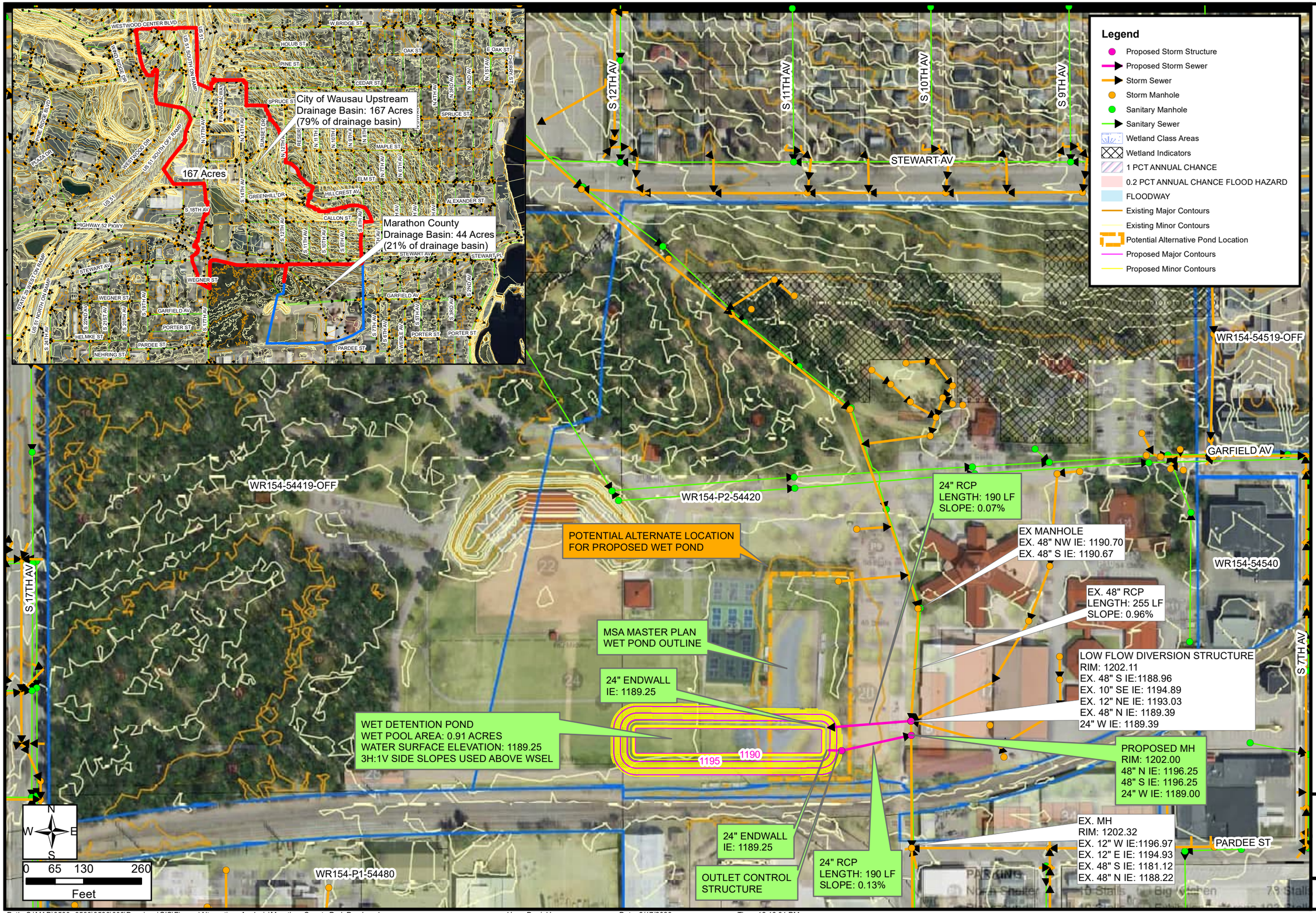

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FIGURE M-2
3598.003

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SHERMAN ST

EX SANITARY MANHOLE
15" IE: 1161.27

EX MANHOLE
EX. 84" N IE: 1161.12
EX. 84" S IE: 1161.12
EX. 12" W IE: 1161.12

EX. 84" RCP
LENGTH: 229 LF
SLOPE: 0.058%

EX MANHOLE
EX. 84" N IE: 1160.99
EX. 84" S IE: 1160.99

EX. 84" RCP
LENGTH: 231 LF
SLOPE: 0.058%

PROPOSED 120" MH
RIM: 1171.8
84" N IE: 1160.86
18" E IE: UNKNOWN
84" S IE: 1160.86
48" SE IE: 1160.86

48" RCP
LENGTH: 35 LF
SLOPE: 0.09%

PROPOSED 84" MH
RIM: 1170.00
24" N IE: 1160.83
24" SW IE: 1160.83

48" RCP
LENGTH: 5 LF
SLOPE: 0.0%

EX. 84" RCP
LENGTH: 85 LF
SLOPE: 0.058%

PROPOSED 120" MH
RIM: 1168.8
84" N IE: 1160.82
84" S IE: 1160.82
48" NE IE: 1160.82

EX OUTFALL
EX. 84" N IE: 1160.78

PROPOSED 12' X 24' OLDCASTLE
NUTRIENT SEPARATING BAFFLE BOX

48" RCP
LENGTH: 4 LF
SLOPE: 0.0%

PROPOSED 84" MH
RIM: 1170.00
24" N IE: 1160.83
24" SW IE: 1160.83

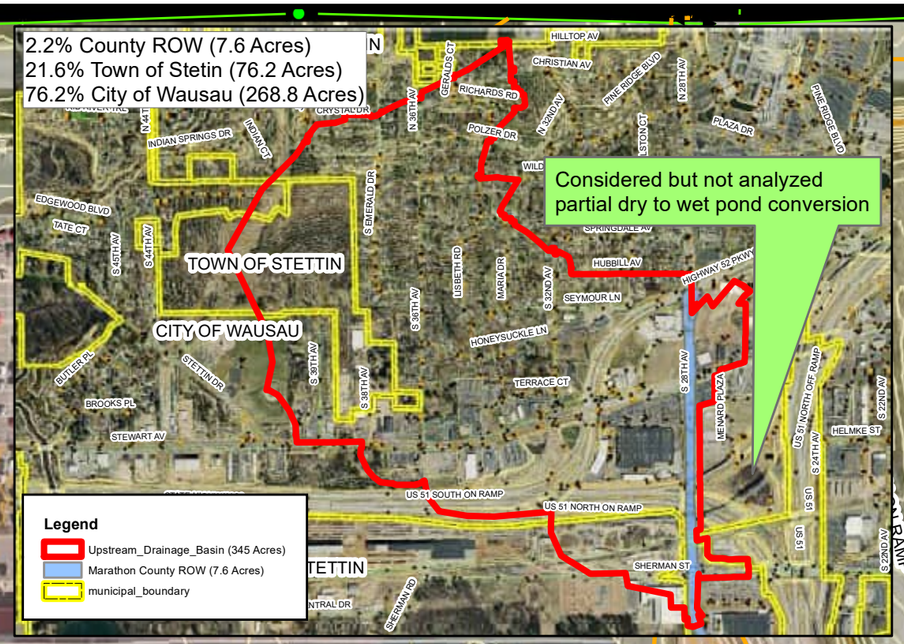
48" RCP
LENGTH: 25 LF
SLOPE: 0.04%

AN EXPANSION OF THE EXISTING WET POND WAS CONSIDERED; HOWEVER, THE EXISTING WET POND IS 4 FEET HIGHER THAN THE LOCAL STORM SEWER MAINLINE TO THE WEST.

EX WSEL: 1164

S 28TH AV

Big Rib River



Legend
- Proposed Storm Structure
- Proposed Storm Sewer
- Storm Manhole
- Storm Sewer
- Sanitary Manhole
- Sanitary Sewer
- Existing Major Contours
- Wetland Class Areas
- Wetland Indicators
- 1 PCT ANNUAL CHANCE
- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- FLOODWAY
- Existing Minor Contours
- Hydrodynamic Separator

N W E S

0 50 100 200
Feet

CTH R AND SHERMAN ST HYDRODYNAMIC SEPARATOR

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY,
WISCONSIN

STRAND ASSOCIATES®

FIGURE M-3
3598.003

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POND G OUTLET CONTROL STRUCTURE OPTIMIZATION

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

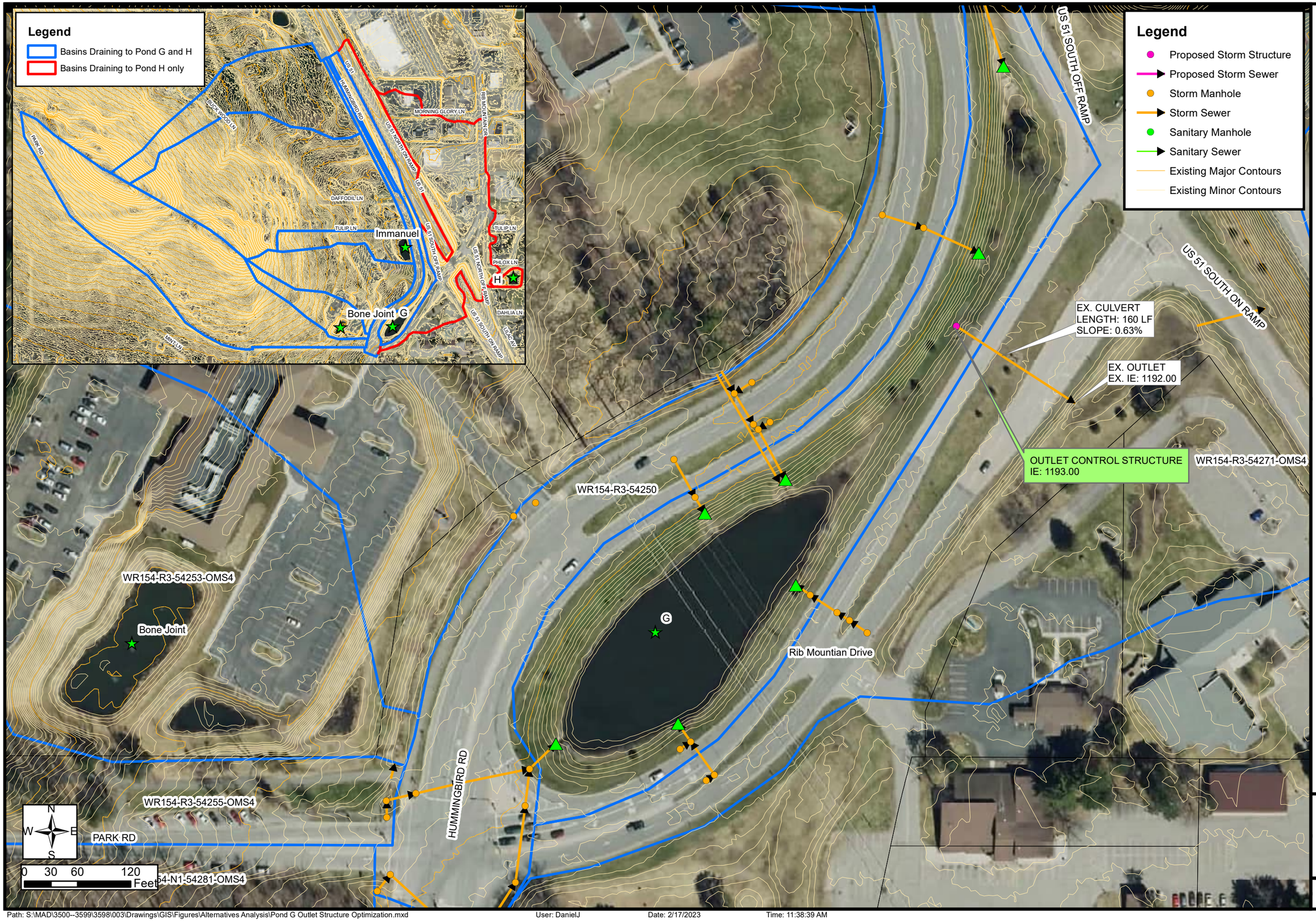

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FIGURE M-4
3598.003

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PARDEE ST

WR154-54419-OFF

THIS POND CAN ONLY BE IMPLEMENTED IF THE ENTIRE SITE IS REDEVELOPED. THERE ARE PLANS TO EITHER RELOCATE IF THE MARATHON COUNTY PARK MASTER PLAN GETS IMPLEMENTED IN ITS FULL EXTENTS, OR REDEVELOP THE SITE FOR THE MARATHON COUNTY HIGHWAY DEPARTMENT. IF THE HIGHWAY DEPARTMENT STAYS ON THIS PROPERTY, THEN A POND OF THE SIZE PORTRAYED WOULD ACHIEVE 80% TSS REDUCTION, WHICH WOULD COVER THE REDEVELOPMENT STANDARDS, AND WOULD HELP THE COUNTY ACHIEVE COMPLIANCE WITH THE WISCONSIN RIVER TMDL. THE POND OUTLINE CAN BE MOVED TO ANOTHER PART OF THE SITE UPON REDEVELOPMENT, BUT THIS AREA OF THE SITE PROVIDES AN OPTIMAL DRAINAGE PATTERN.

PROPOSED MH
RIM: 1200.39
24" SE IE: 1195.00
EX. 24" SW IE: 1189.29
EX. 24" N IE: 1191.60

BULKHEAD EXISTING 12" RCP
LENGTH: 74 LF
SLOPE: 0.96%

PROPOSED MH
RIM: 1200.24
EX. 12" NE IE: 1196.25
12" S IE: 1196.25

PROPOSED MH
RIM: 1200.24
24" W IE: 1196.20
24" E IE: 1196.20

EX MH
RIM: 1201.42
EX. 12" N IE: 1197.32
EX. 24" SW IE: 1196.96

12" RCP
LENGTH: 283 LF
SLOPE: 0.60%

PROPOSED MH
RIM: 1204.60
12" W IE: 1199.15
EX. 12" E IE: 1199.25
EX. 12" NW IE: 1199.28

WR154-P1-54480

24" RCP
LENGTH: 71 LF
SLOPE: 1.41%

OUTLET CONTROL STRUCTURE

24" ENDWALL
IE: 1296.00

12" RCP
LENGTH: 19 LF
SLOPE: 1.32%

12" ENDWALL
IE: 1296.00

PROPOSED MH
RIM: 1200.24
12" N IE: 1196.47
12" S IE: 1196.47
12" E IE: 1197.45
24" W IE: 1196.47

24" ENDWALL
IE: 1296.00

WET DETENITON POND
WET POOL AREA: 0.41 ACRES
WATER SURFACE ELEVATION: 1196.00

WEST ST

EX MH
RIM: 1203.94
EX. 15" W IE: 1197.92
EX. 12" E IE: 1198.64
EX. 12" S IE: 1199.69
EX. 12" N IE: 1199.74

BULKHEAD EXISTING 12" PVC
LENGTH: 53 LF
SLOPE: 0.96%

BULKHEAD EXISTING 12" RCP
LENGTH: 94 LF
SLOPE: 0.96%

EX MH
RIM: 1201.46
EX. 12" N IE: 1196.41
EX. 24" W IE: 1194.41
EX. 12" SE IE: 1196.11
EX. 15" E IE: 1195.16

24" RCP
LENGTH: 141 LF
SLOPE: 0.20%

24" RCP
LENGTH: 102 LF
SLOPE: 0.20%

S 17TH AV

N
W E
S

0 50 100 200
Feet

Legend

- Proposed Storm Structure
- Proposed Storm Sewer
- Storm Manhole
- Storm Sewer
- Sanitary Manhole
- Sanitary Sewer
- Wetland Class Areas
- Wetland Indicators
- 1 PCT ANNUAL CHANCE
- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- FLOODWAY
- Existing Major Contours
- Existing Minor Contours
- Proposed Major Contours
- Proposed Minor Contours

HIGHWAY DEPARTMENT WET POND

STORMWATER QUALITY MANAGEMENT PLAN UPDATE
MARATHON COUNTY, WISCONSIN

STRAND ASSOCIATES®

FIGURE M-5
3598.003

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APPENDIX N
ALTERNATIVE ANALYSIS OPCC

ALTERNATIVE: CAMP PHILLIPS ROAD WET POND (See Figure M-1)

VILLAGE OF WESTON

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL

Item No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	$ 49,500.00	$ 49,500.00
2	Construction Layout	1	LS	$ 3,500.00	$ 3,500.00
3	Traffic Control	1	LS	$ 3,000.00	$ 3,000.00
4	Dewatering	1	LS	$ 5,000.00	$ 5,000.00
5	Dust Control	1	LS	$ 2,400.00	$ 2,400.00
6	Tree Removal	2.78	AC	$ 8,600.00	$ 23,850.00
7	Stone Tracking Pad	2	EA	$ 3,000.00	$ 6,000.00
8	Inlet Protection	4	EA	$ 255.00	$ 1,000.00
9	Silt Fence	380	LF	$ 3.65	$ 1,400.00
10	Straw Wattle/Silt Sock (Around Perimeter of Pond 2 ft above WSEL)	212	LF	$ 12.50	$ 2,650.00
11	Outlet Control Structure	1	EA	$ 13,000.00	$ 13,000.00
12	Stone Weeper at Outfall	1	EA	$ 265.00	$ 250.00
13	36-IN RCP	169	LF	$ 138.00	$ 23,300.00
14	36-IN RCP Endwall	1	EA	$ 4,400.00	$ 4,400.00
15	120-IN DIA Manhole	1	EA	$ 20,600.00	$ 20,600.00
16	Diversion Manhole	1	EA	$ 13,000.00	$ 13,000.00
17	Common Excavation and Grading (Hauled out)	61,397	CY	$ 24.00	$ 1,473,550.00
18	Excavation for 2' Clay Liner	3,407	CY	$ 29.00	$ 98,800.00
19	2' Clay Liner (Hauled-in and installed)	3,407	CY	$ 29.00	$ 98,800.00
20	Rip Rap at Outlet Structure	16	SY	$ 73.00	$ 1,150.00
21	Rip Rap at Incoming Pipes	16	SY	$ 73.00	$ 1,150.00
22	Erosion Control Mat for Turf Restoration	280	SY	$ 5.50	$ 1,550.00
23	Turf Reinforcement Mat for Emergency Spillway	44	SY	$ 24.00	$ 1,050.00
24	6-IN Salvaged Topsoil Placement (50%)	4,731	SY	$ 3.45	$ 16,300.00
25	6-IN Hauled-in Topsoil Placement (50%)	4,731	SY	$ 8.25	$ 39,050.00
26	Detention Basin Native Mix (Elevation 1195-1214)	9,181	SY	$ 3.10	$ 28,450.00
27	Erosion Control Mat at Native Restoration	9,181	SY	$ 2.65	$ 24,350.00
28	Native Plugs at Water's Edge (1 per lf around pond perimeter)	1,556	EA	$ 9.00	$ 14,000.00
29	Landscaping Trees/Bushes	1	LS	$ 5,000.00	$ 5,000.00
30	Turf Restoration - Seed and Fertilizer	280	SY	$ 1.80	$ 500.00
31	Native Vegetation Maintenance (3 Years)	1.90	AC	$ 27,500.00	$ 52,150.00
				Subtotal Project Cost	$ 2,028,700
				35% Contingency and Technical Services Allowance	$ 710,045
				Construction Cost	$ 2,738,745
				Soil Borings	$ 10,000
				Land Purchase (3.28 Acres)	$ 186,921
				Grand Total	**$ 2,935,666**

ALTERNATIVE : MARATHON COUNTY PARK WET POND (See Figure M-2)

MARATHON COUNTY, WISCONSIN

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL

Item No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	$ 28,600.00	$ 28,600.00
2	Construction Layout	1	LS	$ 3,500.00	$ 3,500.00
3	Traffic Control	1	LS	$ 2,000.00	$ 2,000.00
4	Dewatering	1	LS	$ 5,000.00	$ 5,000.00
5	Dust Control	1	LS	$ 2,900.00	$ 2,900.00
6	Tree Removal	0.00	AC	$ 8,600.00	$ -
7	Stone Tracking Pad	2	EA	$ 3,000.00	$ 6,000.00
8	Inlet Protection	4	EA	$ 255.00	$ 1,000.00
9	Silt Fence	1051	LF	$ 3.65	$ 3,850.00
10	Straw Wattle/Silt Sock (Around Perimeter of Pond 2 ft above WSEL)	1083	LF	$ 12.50	$ 13,550.00
11	Stone Weeper at Outfall	1	EA	$ 265.00	$ 250.00
12	Outlet Control Structure	1	EA	$ 13,000.00	$ 13,000.00
13	24-IN RCP	382	LF	$ 89.00	$ 34,000.00
14	24-IN RCP Apron Endwall	2	EA	$ 3,400.00	$ 6,800.00
15	30-IN RCP	0	LF	$ 107.00	$ -
16	30-IN RCP Apron Endwall	0	LF	$ 3,800.00	$ -
17	48-IN DIA Manhole	0	EA	$ 2,900.00	$ -
18	84-IN DIA Manhole	2	EA	$ 6,400.00	$ 12,800.00
19	Diversion Structure	1	EA	$ 11,000.00	$ 11,000.00
20	Clay Bedding Dike	2	EA	$ 660.00	$ 1,300.00
21	Asphalt Utility Trench Patch	0	LS	$ 2,000.00	$ -
22	Common Excavation and Grading (Hauled out)	30,387	CY	$ 24.00	$ 729,300.00
23	Excavation for 2' Clay Liner @ 1' above NWSEL	3,365	CY	$ 24.00	$ 80,750.00
24	2' Clay Liner (Hauled-in and installed)	3,365	CY	$ 29.00	$ 97,600.00
25	Rip Rap at Outlet Structure	67	SY	$ 73.00	$ 4,850.00
26	Rip Rap at Incoming/Outgoing Pipes	62	SY	$ 73.00	$ 4,550.00
27	Erosion Control Mat for Turf Restoration	1,225	SY	$ 1.45	$ 1,800.00
28	Turf Reinforcement Mat for Emergency Spillway	97	SY	$ 24.00	$ 2,350.00
29	6-IN Salvaged Topsoil Placement (50%)	2,830	SY	$ 3.45	$ 9,750.00
30	6-IN Hauled-in Topsoil Placement (50%)	2,830	SY	$ 8.25	$ 23,350.00
31	Detention Basin Native Mix (Elevation 1189.25 - 1202))	4,436	SY	$ 3.10	$ 13,750.00
32	Erosion Control Mat at Native Restoration	4,436	SY	$ 2.65	$ 11,750.00
33	Native Plugs at Water's Edge (1 per lf around pond perimeter)	1,051	EA	$ 9.00	$ 9,450.00
34	Goose Fence Around Pond Perimeter	1,051	LF	$ 6.75	$ 7,100.00
35	Landscaping Trees/Bushes	1	LS	$ 5,000.00	$ 5,000.00
36	Turf Restoration - Seed and Fertilizer	1,225	SY	$ 1.80	$ 2,200.00
37	Native Vegetation Maintenance (3 Years)	0.92	AC	$ 27,500.00	$ 25,200.00
				Subtotal Project Cost	$ 1,174,300
				35% Contingency and Technical Services Allowance	$ 411,005
				Construction Cost	**$ 1,585,305**
				Soil Borings	$ 10,000
				Wetland Delineation	$ -
				Easement Acquisition (0.0 acres)	$ -
				Grand Total	**$ 1,595,300**

ALTERNATIVE: CTH R HYDRODYNAMIC SEPARATOR (See Figure M-3)

MARATHON COUNTY, WISCONSIN

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL

Item No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	$ 16,100.00	$ 16,100
2	Construction Layout	1	LS	$ 1,750.00	$ 1,750
3	Traffic Control	1	LS	$ 1,500.00	$ 1,500
4	Dewatering	1	LS	$ 1,500.00	$ 1,500
5	Dust Control	1	LS	$ 900.00	$ 900
6	Clearing and Grubbing	1	LS	$ 2,000.00	$ 2,000
7	Stone Tracking Pad	1	EA	$ 3,000.00	$ 3,000
8	Silt Fence	72	LF	$ 3.65	$ 250
9	Inlet Protection	2	EA	$ 255.00	$ 500
10	48-IN RCP	69	LF	$ 200.00	$ 13,800
11	84-IN DIA Manhole	2	EA	$ 6,400.00	$ 12,800
12	120-IN DIA Manhole	2	EA	$ 20,600.00	$ 41,200
13	Excavation w/ Offsite Disposal	173	CY	$ 39.00	$ 6,750
14	Excavation w/ Offsite Disposal	175	CY	$ 39.00	$ 6,800
15	Excavation w/ On-Site Backfill	175	CY	$ 15.00	$ 2,600
16	Embankment Fill	218	CY	$ 23.00	$ 5,000
17	NSBB 12x24 (Delivered Cost)	1	EA	$ 247,698.14	$ 247,700
18	NSBB 12x24 (Installation Cost)	1	EA	$ 268,656.83	$ 268,650
19	Pipe Removal	10	LF	$ 26.25	$ 250
20	Concrete Collar	2	EA	$ 1,350.00	$ 2,700
21	Erosion Control Mat for Turf Restoration	32	SY	$ 2.65	$ 80
22	6-IN Salvaged Topsoil Placement (50%)	16	SY	$ 3.45	$ 60
23	6-IN Hauled-in Topsoil Placement (50%)	16	SY	$ 8.25	$ 130
24	Turf Restoration - Seed and Fertilizer	32	SY	$ 1.50	$ 50
25	Concrete Sidewalk Restoration	170	SY	$ 63.00	$ 10,720
26	Asphalt Restoration (Roadway)	207	SY	$ 4.60	$ 950
27	Curb and Gutter Restoration	100	LF	$ 112.00	$ 11,200
				Subtotal Project Cost	$ 658,940
				35% Contingency	$ 230,629
				Construction Cost	$ 889,569
				Land Purchase	
				Soil Borings	$ 3,500
				Grand Total	**$ 893,100**

ALTERNATIVE : POND G OUTLET STRUCTURE OPTIMIZATION (Figure M-4)
MARATHON COUNTY, WISCONSIN
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL

Item No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	$ 900.00	$ 900.00
2	Construction Layout	1	LS	$ 1,750.00	$ 1,750.00
3	Traffic Control	1	LS	$ 3,000.00	$ 3,000.00
4	Dewatering	1	LS	$ 1,500.00	$ 1,500.00
5	Dust Control	1	LS	$ 1,900.00	$ 1,900.00
6	Tree Removal	0.00	AC	$ 8,600.00	$ -
7	Stone Tracking Pad	1	EA	$ 3,000.00	$ 3,000.00
8	Inlet Protection	8	EA	$ 255.00	$ 2,050.00
9	Silt Fence	0	LF	$ 3.65	$ -
10	Straw Wattle/Silt Sock (Around Perimeter of Pond 2 ft above WSEL)	0	LF	$ 12.50	$ -
11	Stone Weeper at Outfall	0	EA	$ 265.00	$ -
12	Outlet Control Structure	1	EA	$ 16,000.00	$ 16,000.00
13	24-IN RCP	0	LF	$ 89.00	$ -
14	24-IN RCP Apron Endwall	0	EA	$ 3,400.00	$ -
15	30-IN RCP	0	LF	$ 107.00	$ -
16	30-IN RCP Apron Endwall	0	LF	$ 3,800.00	$ -
17	48-IN DIA Manhole	0	EA	$ 2,900.00	$ -
18	60-IN DIA Manhole	0	EA	$ 3,200.00	$ -
19	Diversion Structure	0	EA	$ 11,000.00	$ -
20	Clay Bedding Dike	0	EA	$ 660.00	$ -
21	Asphalt Utility Trench Patch	0	LS	$ 2,000.00	$ -
22	Common Excavation and Grading (Hauled out)	0	CY	$ 24.00	$ -
23	Excavation for 2' Clay Liner @ 1' above NWSEL	0	CY	$ 24.00	$ -
24	2' Clay Liner (Hauled-in and installed)	0	CY	$ 29.00	$ -
25	Rip Rap at Outlet Structure	100	SY	$ 73.00	$ 7,300.00
26	Rip Rap at Incoming/Outgoing Pipes	0	SY	$ 73.00	$ -
27	Erosion Control Mat for Turf Restoration	200	SY	$ 1.45	$ 300.00
28	Turf Reinforcement Mat for Emergency Spillway	0	SY	$ 24.00	$ -
29	6-IN Salvaged Topsoil Placement (50%)	0	SY	$ 3.45	$ -
30	6-IN Hauled-in Topsoil Placement (50%)	0	SY	$ 8.25	$ -
31	Detention Basin Native Mix (Elevation 1250-1242))	0	SY	$ 3.10	$ -
32	Erosion Control Mat at Native Restoration	0	SY	$ 2.65	$ -
33	Native Plugs at Water's Edge (1 per lf around pond perimeter)	0	EA	$ 9.00	$ -
34	Goose Fence Around Pond Perimeter	0	LF	$ 6.75	$ -
35	Landscaping Trees/Bushes	0	LS	$ 5,000.00	$ -
36	Turf Restoration - Seed and Fertilizer	200	SY	$ 1.80	$ 350.00
37	Native Vegetation Maintenance (3 Years)	0	AC	$ 27,500.00	$ -
				Subtotal Project Cost	$ 38,050
				35% Contingency and Technical Services Allowance	$ 13,318
				Construction Cost	**$ 51,368**
				Soil Borings	$ 3,500
				Wetland Delineation	$ -
				Easement Acquisition (0.31 acres)	$ -
				Grand Total	**$ 54,900**

ALTERNATIVE : MARATHON COUNTY HIGHWAY DEPARTMENT WET POND (See Figure M-5)

MARATHON COUNTY, WISCONSIN

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST: PLANNING-LEVEL

Item No.	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization/Demobilization	1	LS	$ 11,900.00	$ 11,900.00
2	Construction Layout	1	LS	$ 3,500.00	$ 3,500.00
3	Traffic Control	1	LS	$ 2,000.00	$ 2,000.00
4	Dewatering	1	LS	$ 5,000.00	$ 5,000.00
5	Dust Control	1	LS	$ 2,900.00	$ 2,900.00
6	Tree Removal	0.00	AC	$ 8,600.00	$ -
7	Stone Tracking Pad	2	EA	$ 3,000.00	$ 6,000.00
8	Inlet Protection	4	EA	$ 255.00	$ 1,000.00
9	Silt Fence	516	LF	$ 3.65	$ 1,900.00
10	Straw Wattle/Silt Sock (Around Perimeter of Pond 2 ft above WSEL)	566	LF	$ 12.50	$ 7,100.00
11	Stone Weeper at Outfall	1	EA	$ 265.00	$ 250.00
12	Outlet Control Structure	1	EA	$ 10,000.00	$ 10,000.00
13	12-IN RCP	302	LF	$ 89.00	$ 26,900.00
14	12-IN RCP Apron Endwall	1	EA	$ 3,400.00	$ 3,400.00
15	24-IN RCP	314	LF	$ 107.00	$ 33,600.00
16	24-IN RCP Apron Endwall	2	LF	$ 3,800.00	$ 7,600.00
17	48-IN DIA Manhole	4	EA	$ 2,900.00	$ 11,600.00
18	60-IN DIA Manhole	1	EA	$ 3,200.00	$ 3,200.00
19	Diversion Structure	0	EA	$ 11,000.00	$ -
20	Clay Bedding Dike	1	EA	$ 660.00	$ 650.00
21	Asphalt Utility Trench Patch	0	LS	$ 2,000.00	$ -
22	Common Excavation and Grading (Hauled out)	5,794	CY	$ 34.00	$ 197,000.00
23	Excavation for 2' Clay Liner @ 1' above NWSEL	1,474	CY	$ 34.00	$ 50,100.00
24	2' Clay Liner (Hauled-in and installed)	1,474	CY	$ 34.00	$ 50,100.00
25	Rip Rap at Outlet Structure	67	SY	$ 73.00	$ 4,850.00
26	Rip Rap at Incoming/Outgoing Pipes	76	SY	$ 73.00	$ 5,500.00
27	Erosion Control Mat for Turf Restoration	697	SY	$ 1.45	$ 1,000.00
28	Turf Reinforcement Mat for Emergency Spillway	97	SY	$ 24.00	$ 2,350.00
29	6-IN Salvaged Topsoil Placement (50%)	882	SY	$ 3.45	$ 3,050.00
30	6-IN Hauled-in Topsoil Placement (50%)	882	SY	$ 8.25	$ 7,300.00
31	Detention Basin Native Mix (Elevation 1196 - 1201))	1,068	SY	$ 3.10	$ 3,300.00
32	Erosion Control Mat at Native Restoration	1,068	SY	$ 2.65	$ 2,850.00
33	Native Plugs at Water's Edge (1 per lf around pond perimeter)	516	EA	$ 9.00	$ 4,650.00
34	Goose Fence Around Pond Perimeter	516	LF	$ 6.75	$ 3,500.00
35	Landscaping Trees/Bushes	1	LS	$ 5,000.00	$ 5,000.00
36	Turf Restoration - Seed and Fertilizer	697	SY	$ 1.80	$ 1,250.00
37	Native Vegetation Maintenance (3 Years)	0.22	AC	$ 27,500.00	$ 6,050.00
				Subtotal Project Cost	$ 486,350
				35% Contingency and Technical Services Allowance	$ 170,223
				Construction Cost	**$ 656,573**
				Soil Borings	$ 8,500
				Wetland Delineation	$ -
				Easement Acquisition (0.0 acres)	$ -
				Grand Total	**$ 665,100**

Stormwater Quality Management Plan
Marathon County, Wisconsin
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST

Alt.1

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	Alternative 1-Vacuum Sweeper: Twice Every Month				
1	Machine Cost (already own high efficiency vacuum sweeper)	0	LS	$0	$0
2	Manhours	184	HR	$42.29	$7,779
3	Vacuum Machine Maintenance (Existing Sweeping)	1	LS	$9,197	$9,197
	Mechanical Machine Maintenance (City doesn't have one)	1	LS	$0	$0
	Fuel	1	LS	$294	$294
4	Landfill/Tipping Fees	1	LS	$613	$613
5	Hauling Costs	1	LS	$613	$613
				Subtotal Project Costs	**$18,497**
	Additional Annual Cost $16,988			**Annual Cost**	**$18,497**
				Curb Miles Swept	184
				Increased Curb Miles Swept (Multiplier)	12.26
				Cost/Mile Swept	$100.56

Existing Conditions

ITEM NO.	DESCRIPTION	Quantity	Units	Unit Price	Total
	Existing Conditions-Vacuum Sweeper Once in the Spring in Curb and Gutter Areas				
1	Manhours (1.0 employee, 100 mi/year, 1 mi/hr avg with dumping)	15	HR	$42.29	$634
2	Mechanical Machine Maintenance (Existing Sweeping)	1	LS	$750	$750
3	Fuel (Existing Sweeping)	1	LS	$24	$24
4	Landfill/Tipping Fees	1	LS	$50	$50
5	Hauling Costs (Existing Sweeping)	1	LS	$50	$50
6				**Subtotal Project Costs**	**$1,508**
				Curb Miles Swept	15
				Cost/Mile Swept	$100.56
				Additional Cost	$16,988.14

APPENDIX O
DRAINAGE EVALUATION FORM

Marathon County, Wisconsin

Drainage Evaluation Form
(Applicable to County-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)

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?

Marathon County, Wisconsin

Drainage Evaluation Form

(Applicable to County-Owned Property and ROW Only)

Part C–Attachments

1. Photographs Attached?____Yes_____No
2. Building or Utility Plans (if available) Attached?____Yes_____No
3. Reports/Records (if available) Attached?____Yes_____No
4. Other (Describe)

Part D–City (Marathon County Highway Department)Inspection

Name of Inspector:

Date of Field Inspection:

Inspector's Notes:

List of properties affected:

Photos: Attached or N/A

Is drainage problem:

1. Located on County property? _____Yes_____No
2. Associated with a County-owned or -maintained storm sewer facility or drainage way? _____Yes_____No
3. Caused by damage to the storm sewer or obstruction of the drainage way?_____Yes____No

Marathon County, Wisconsin

Drainage Evaluation Form

(Applicable to County-Owned Property and ROW Only)

Part E–Evaluation/Responsibility (To be completed by Marathon Highway County Highway Department)

Recommended Action:
Comments:

ROUTING: (PLACE CHECK MARK BY APPLICABLE REVIEWERS)

Marathon County Highway Department-Project Superintendent (All Submittals)

REVIEWED BY:

_____

Marathon County Highway Department-Project Superintendent Date

For more location information
please visit www.strand.com

Office Locations

Ames, Iowa | 515.233.0000

Brenham, Texas | 979.836.7937

Cincinnati, Ohio | 513.861.5600

Columbus, Indiana | 812.372.9911

Columbus, Ohio | 614.835.0460

Joliet, Illinois | 815.744.4200

Lexington, Kentucky | 859.225.8500

Louisville, Kentucky | 502.583.7020

Madison, Wisconsin* | 608.251.4843

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