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**Notice:** This application form template was created by the Wisconsin Department of Natural Resources. Application is hereby made to the Wisconsin Department of Natural Resources, Bureau of Watershed Management, for grant assistance consistent with s. 281.66, Wis. Stats., and Chapters NR 151, 154, and 155, Wis. Adm. Code. Collection of this information is authorized under the authority of s. 281.66, Wis. Stats. Personal information collected will be used for administrative purposes and may be provided to requesters to the extent required by Wisconsin's Open Records Law [ss. 19.31 - 19.39, Wis. Stats.]. *Unless otherwise noted, all citations refer to Wisconsin Administrative Code.*

Please read the [instructions](#) prior to completion of this form. Complete all sections as applicable. Tab to each section or click in answer spaces.

**Applicant Information**

Calendar Year of Grant Start 2016

Project Name

Greenfield City-Wide Stormwater Quality Management Plan Update

Applicant (governmental unit applying; name and type, e.g. Wausau, City; Randall, Town; Waunakee, Village)

Greenfield, City

Name of Government Official - Authorized Signatory (First Last)

Jeff Katz

Title

City Engineer

Area Code + Phone Number

(414) 939-8322

E-Mail Address

jeffk@greenfieldwi.us

Mailing Address - Street or PO Box

7325 West Forest Home Avenue

City

Greenfield

State

WI

ZIP Code

53220

Name of Government Official - Grant Contact Person (First Last)

same

Title

Area Code + Phone Number

E-Mail Address

Mailing Address - Street or PO Box

City

State

WI

ZIP Code

**Project Information**

**A. Location of Project**

County		State Senate District number:					State Assembly District number:		
Milwaukee		28					84		
Minor Civil Division (city, town, village, e.g., Wrightstown, Village of)	Township (N)	Range	E or W	Section	Quarter	Quarter- Quarter	Latitude (North, 4 to 7 decimal places)	Longitude (West, 4 to 7 decimal places)	
Greenfield, City of	06 N	21	E				42.962	-87.9843	
	N								
	N								

Method for Determining Latitude & Longitude (check one)

- GPS     DNR Surface Water Data Viewer (<http://dnrm.wi.gov/SL/?Viewer=SWDV>)  
 Other (specify):



**B. Project Summary and Description. Use this space for the project summary and description, not an attachment.**

Mention every activity being proposed in Part II; Question 1.

In December 2008 the City completed a stormwater pollution modeling analysis using WinSLAMM. That analysis was followed up by additional planning work dated November 2011 that included site specific infiltration testing, updated best management practices evaluation and determined that the City of Greenfield was in compliance with water quality discharge requirements at the time. Since then, the WDNR has implemented new policies and procedures for the stormwater pollution analysis under the WDNR MS4 permit.

In addition, the City of Greenfield is the Milwaukee River Basin and a Total Maximum Daily Load (TMDL) analysis is currently underway and anticipated for release in 2015. Stormwater discharges from areas of the City will be assigned a Waste Load Allocation (WLA) for sediment and phosphorus in the Kinnickinnic River and Menomonee River drainage areas.

The City will utilize WinSLAMM to update the pollution loading on a city-wide basis for the WDNR MS4 permit requirement based on the most recent WDNR guidance. Also, a city-wide analysis will be conducted to evaluate the City's pollution loading for purposes of comparison with the WLAs being developed for the Milwaukee River TMDL following the WDR guidance released in 2014. This analysis will allow the City to evaluate compliance with pending TMDL WLAs for the Milwaukee River Basin waters as well as position it for future evaluation of the Root River which is also impaired but does not have a TMDL currently scheduled.

Because it is anticipated that TMDL reduction requirements will be higher than the current levels achieved by existing best management practices, additional practices will be evaluated. Cost estimates will be developed for potential practices and they will be ranked in a matrix that considers a variety of factors including cost, cost effectiveness, land ownership, maintenance, and other criteria.

Additionally, a number of City ordinances require review and update including the City's erosion control, post construction stormwater management, illicit discharge prohibition, and conservation subdivision language of the zoning ordinance. (A detailed scope of services is attached to this application.)

**C. Watershed, Waterbody and Pollutants** (see [Attachment A](#) and <http://dnrmmaps.wi.gov/SL/?Viewer=SWDV>).

*Note: Planning areas may encompass several square miles and may affect multiple watersheds.*

Watershed Name	Watershed Code	12-digit Hydrologic Unit Code (HUC)	% of Project Area	Nearest Waterbody Name
Root River	SE03	040400020301	45	Root River
Menomonee River	MI03	040400030405	25	Honey Creek
Kinnickinnic River	MI01	040400030501	20	Cherokee Creek and Kinnickinnic River
Oak Creek	SE05	040400020102	4	Unnamed and Oak Creek
Root River	SE03	040400020302	6	Unnamed and Root River

Nonpoint Source Pollutant(s) Controlled by the Project

Nutrients     Sediment     Other, specify:

**Part I. Screening Requirements**

**A. Maps and Photographs**

Yes

- An 8.5" x 11" map from the DNR data/map viewers, showing the project area, is attached (link to <http://dnrmmaps.wi.gov/SL/?Viewer=SWDV>).
- Aerial photo maps and project area photos are also included.

**B. Filters** *Note: The applicant must be able to check "Yes" to questions 1 through 8 below to be eligible for a grant. Check "Yes" to question 9, if applicable.*

Yes

- 1. Project is in an area that is urban or will be urban within 20 years (see [Attachment B](#)).
- 2. Project will be completed within 24 months of the start of the grant period.
- 3. Staff and consultants designated to work on this project have adequate training, knowledge, and experience to implement the proposed project.



- 4. Staff or contractual services, in addition to those funded by this grant, will be provided if needed.
- 5. Planning products prepared under this grant will not work at cross-purposes to (are consistent with) the non-agricultural performance standards under ch. NR 151 (see [Attachment D](#)).
- 6. The local DNR District Nonpoint Source Coordinator has been contacted and the project was discussed. See contacts at: <http://dnr.wi.gov/topic/nonpoint/NPScontacts.html>.

Name of the District Nonpoint Source Coordinator Contacted	Date Contacted	Subject of Contact
Jamie Lambert	04/02/2015	Review of proposed grant application and discussion of specific grant questions
Pete Wood	04/02/2015	Municipal budget question for application
Bryan Hartsook	04/01/2015	Review of proposed grant application scope
Maureen McBroom	04/07/2015	Groundwater and drinking water sections clarification

- 7. The applicant can declare that **one** of the two statements below is TRUE.
  - a. Statement A: The grant application is for a local governmental unit that has jurisdiction over the project area. (Jurisdiction over the project area means that the governmental unit has control over whether the planning recommendations are carried out.)
  - b. Statement B: The applicant does not have jurisdiction over the project area; however conditions "i" and "ii" or "i" and "iii" are met
    - i. The applicant is required to obtain a permit under subchapter I. of ch. NR 216; **and**
    - ii. In addition, Inter-Governmental Agreements (IGAs) are in place,
    - iii. **or**, will be put in place prior to the commencement of the grant period, to assure urban best management practices included on the grant are installed and maintained (see [Attachment G](#)).
- 8. The applicant can declare that **one** of the two statements below is TRUE.
  - a. Statement A: The applicant is not the University of Wisconsin Board of Regents.
  - b. Statement B: The applicant is the University of Wisconsin Board of Regents **and** the project will develop recommendations for a UW Campus area located in a municipality that meets **both** of the following criteria:
    - i. The municipality is required to obtain a municipal storm water permit under ch. NR 216 **and**
    - ii. The municipality is located either in a priority watershed or lake area identified under s. 281.65, Wis. Stats., or in an area of concern as identified by the International Joint Commission under the Great Lakes Water Quality Agreement.
- 9. This application is a joint application among local units of government, and
  - If yes, the required Inter-Governmental Agreement (maybe a DRAFT) is attached (see [Attachment G](#)).

If the applicant answered "No" to any of the items in 1-8, above, stop here. This project is ineligible.

**Part II. Competitive Elements**

**Question 1. Project Activities and Extent of Pollutant Control**

A project can consist of one or more of the following planning activity categories (A through F). For each category below, check the boxes that describe the work products which will be produced under **this** grant. **Do not check boxes based on prior work.**

**A. Ordinance Preparation**

Develop Update The project is to develop or update one or more of the following ordinances (must be the applying Governmental New Existing Unit's ordinances), including associated information, education and public participation activities. Check all that apply.

- 1. Construction erosion control ordinance including all the requirements of s. NR 151.11.
- 2. Storm water ordinance for new development and re-development including all the requirements of ss. NR 151.12, NR 151.121-128, and NR 151.241-249. (See NR 151 at: [http://docs.legis.wi.gov/code/admin\\_code/nr/100/151.pdf#page=1.](http://docs.legis.wi.gov/code/admin_code/nr/100/151.pdf#page=1.))



3. Low impact development/conservation subdivision ordinances.
4. Other ordinances such as an illicit discharge ordinance, storm water ordinances affecting runoff from developed urban areas (e.g., pet waste management ordinances, nutrient management ordinances), or ordinances that regulate the application of fertilizers to non-municipal properties in accordance with s. NR 151.14.

**B. Financing Mechanisms**

Develop New Update Existing The project will evaluate financing mechanisms for storm water management, including associated information, education and public participation activities. Recommendations will be presented to the governing board for approval and DNR will be notified of the governing board's action. Check **one** of the following:

1. The project develops a dedicated revenue source, such as a storm water utility, to implement a storm water program focusing on implementation of performance standards in Subchapter III of ch. NR 151.
- OR**
2. The project is a general feasibility analysis of alternative funding mechanisms

**C. Storm Water Plan for Developed Urban Areas (includes redevelopment)**

Develop New Update Existing The project is to develop or update a storm water management plan for developed urban areas, including redevelopment, which addresses all applicable performance standards under NR 151 including associated information, education and public participation activities. Check **one** of the following

1. This project will cover the entire geographic area of the governmental unit.
- OR**
2. This project will cover only part of the geographic area of the governmental unit.

**D. Storm Water Plan for New Development**

Develop New Update Existing The project will develop or update a storm water management plan for new development that addresses all of the performance standards under ss. NR 151.12, NR 151.121-128, and NR 151.241-249, including associated information, education and public participation activities. Check **one** of the following:

1. This project will cover the entire geographic area of the governmental unit.
- OR**
2. This project will cover only part of the geographic area of the governmental unit.

**E. Comprehensive Storm Water Information and Education Program**

- Check this box if the project will develop and/or implement a comprehensive storm water information and education program. *Note: This category may not be checked if any boxes in categories A through D, above, have been checked. Information and education activities are expected to be included as necessary components of projects under categories A through D.*

**F. Inter-Municipal and Watershed-based Cooperation (bonus)**

- Check this box if this project is being conducted as part of an inter-governmental storm water management strategy for a common water resource. This also includes entering into a Watershed-based Storm Water Management Permit with other municipalities. *Note: If more than one local unit of government is joining in this project application (a "joint application"), then an Inter-Governmental Agreement (IGA) meeting the requirements of Attachment G must be submitted with this application.*

Provide a description of the inter-governmental effort that will be used to complete the project.



**Question 2. Fiscal Accountability**

**A. Timeline and Source of Staff**

For each applicable milestone listed below, fill in the appropriate data.

Milestone	Target Completion Date (month/year)	Source(s) of Staff
<b>Basic Milestones</b>		
Prepare preliminary scope of services and discuss with DNR NPS Coordinator	01/2016	City Staff
Prepare Request for Proposal	02/2016	City Staff
Select Consultant	03/2016	City Staff
Finalize Scope of Service and Professional Services Contract	04/2016	City Staff and Consultant
Get DNR approval of Professional Services Contract	04/2016	City Staff and WDNR
Hold "kick-off" meeting	05/2016	City Staff and Consultant
Interim meeting with DNR	06/2016	City Staff, WDNR, and Consultant
Presentation to Municipal Council	05/2017	City Staff and Consultant
Submit project and final report to DNR	07/2017	City Staff and Consultant
<b>Additional Milestones (list below)</b>		
Model MS4 No-controls loads	07/2016	Consultant
Model TMDL no-controls loads	08/2016	Consultant
Model existing MS4 loads	10/2016	Consultant
Model existing TMDL loads	11/2016	Consultant
Evaluate new BMPs, cost, funding, and schedule	04/2017	City Staff and Consultant
Prepare Report	07/2017	City Staff and Consultant
Erosion Control and Post-construction ordinance updates	07/2016	City Staff and Consultant
Illicit Discharge Prohibition and Conservation Ordinance Updates	05/2017	City Staff and Consultant

**B. Adequate Financial Budget**

Provide detailed budget information for every proposed project activity in Question 1. and supporting activities for which DNR funding is requested. Please note: the state share may not exceed 70% of eligible costs. The grant amount is capped at \$85,000 for the eligible planning activities.

**B.1. Financial Budget Table - Planning Activities**

A	B	C
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Project Activity for Which DNR Funding is Requested Use this space, not an attachment.	Estimated Total Cost (\$)	Amount from Column B Eligible for DNR Cost Sharing (\$)
Develop updated MS4 no-controls loadings	11,000	11,000
Develop TMDI no-controls loadings	9,000	9,000
Develop updated MS4 existing conditions (with BMP) loadings	15,000	15,000
Develop TMDL existing conditions loadings	8,500	8,500
Evaluate new BMPs, cost, funding, and implementation plan	34,500	34,500
Prepare Report	14,000	14,000
Review and update ordinances	15,500	15,500
Meetings and Council Presentation	12,500	12,500
<b>1. Total</b>	<b>120,000</b>	<b>120,000</b>

**B.1. (continued) Cost Sharing Worksheet**

**Eligible Costs:**

2. 70% of Column C Total Row 1 above	\$	84,000
Cap Test:		
3. Maximum State Share Row 2 or \$85,000, whichever is less	\$	84,000
State and Local Share:		
4. Requested State Share Amount (Enter Requested Grant Amount)		80,000
5. Local Share Amount (Total of Row 1 Column B less Row 4)	\$	40,000

**B.2. Use of Additional Funding**

- Check this box if both of the following conditions are met.
  - The requested state share amount in row 4 is less than the \$85,000 grant cap.
  - The requested state share amount in row 4 is below the maximum state-share in row 3. (The resulting cost-share rate is less than 70%.)

**B.3. Cost Estimate Quality** Describe the quality of cost estimates including whether the cost estimate is based on a competitive bid, scope of services, similar projects conducted locally, similar projects conducted elsewhere in the state or region, or other more generalized data. Provide documentation.

Based on consultant experience developing scope of services, cost estimates, and completing other similar stormwater management plan updates and TMDL preparedness evaluations within the past 5-years including the City of Appleton, City of Green Bay, City of Beloit, City of Oshkosh.

Identify the source of the local share:  
Greenfield Stormwater Utility



**Question 3. Project Evaluation Strategy**

Information that will be developed and presented to DNR to evaluate the environmental benefits of completing this project. Check all that apply.

- A. Information that quantifies how project implementation is projected to decrease storm water impacts on state waters will be provided to the DNR. The information may be provided as part of the planning product (e.g., storm water plan, I&E plan) or in the Final Report.
- B. Information that tracks progress in carrying out recommendations of this project will be provided to the Department for one or two years after the project is completed. Specify if it is going to be one or two years that tracking information will be provided and describe how this annual post-project tracking process will work:  
 Part of WDNR Annual Report

**Question 4. Water Quality Needs**

The project must be consistent with at least one of the following seven watershed priorities. For each watershed in the project area, identify the category that best identifies the project goals. If more than one category is checked (because the project area contains more than one watershed), estimate the portion of the project area to be assigned to each category.

*Note: For border waters where a State of the Basin Report does not exist, another governmental document acceptable to the District NPS Coordinator may be used to identify the water quality need.*

	Percent of Project Area (Total should equal 100%)	Surface Water Considerations
<input checked="" type="checkbox"/>	100	<p><b>A. Clean Water Act section 303(d) List of Impaired Waters</b>                      Project with water quality goals directly dealing with a water body (lake or stream) on the latest Clean Water Act (CWA) s. 303(d) List of Impaired Waters, where the cause of the impairment is nonpoint source pollution and this project will reduce the type of nonpoint pollutants for which the water is listed (see <a href="#">Attachment A</a> and <a href="http://dnrmaps.wi.gov/SL/?Viewer=SWDV">http://dnrmaps.wi.gov/SL/?Viewer=SWDV</a>).</p> <p><b>Name of Applicable Impaired Water:</b>                      Root River, Kinnickinnic River, Honey River, Oak Creek,</p> <hr/> <p><b>Name of Pollutant Causing Impairment:</b>                      Root River- Sediment/Phosphorus/Chloride, Kinnickinnic- Phosphorus, Honey River- Phosphorus, Oak Creek- Phosphorus, Chloride</p>
<input type="checkbox"/>		<p><b>B. Outstanding or Exceptional Resource Waters or Other Areas of Special Natural Resource Interest</b>                      Prevention of degradation due to nonpoint sources of outstanding resource waters (ORW) (per s. NR 102.10) or exceptional resource waters (ERW) (per s. NR 102.11) or other areas of special natural resource interest (ASNRI).                      To locate ORW/ERW and other ASNRI's see <a href="#">Attachment A</a> and go to DNR's Surface Water Data Viewer Designated Waters Theme at <a href="http://dnrmaps.wi.gov/SL/Viewer.html?Viewer=SWDV&amp;runWorkflow=DesignatedWaters">http://dnrmaps.wi.gov/SL/Viewer.html?Viewer=SWDV&amp;runWorkflow=DesignatedWaters</a>.</p> <p><b>Name of Applicable ORW/ERW or ASNRI:</b></p>



<input type="checkbox"/>		<p><b>C. Not Fully Supporting Uses or NPS Ranking of High or Medium</b> A water body (lake or stream) identified in a DNR-approved Basin/Watershed Plan as not supporting designated uses due to nonpoint sources, but is not on the section 303(d) List. In newer plans, these waters are categorized as "supporting" (as opposed to "fully supporting") designated uses; in plans prior to 2010 they were labeled as "partially meeting" designated uses. Or, the project is located in watershed, lake watershed, or other area ranked high or medium on the NPS Rankings List, where the goals of the project are directly associated with the reason for the ranking on the NPS Rankings List.</p>
<input type="checkbox"/>		<p><b>D. Surface Water Quality</b> Prevention of degradation of surface water quality due to nonpoint sources</p>
		<p><b>Groundwater Considerations</b> For assistance with this section, please consult the DNR District Drinking Water and Groundwater Specialist at: <a href="http://dnr.wi.gov/topic/drinkingWater/documents/CountyContacts.pdf">http://dnr.wi.gov/topic/drinkingWater/documents/CountyContacts.pdf</a> or the County Extension office.</p>
<input type="checkbox"/>		<p><b>E. Exceeds Groundwater Enforcement Standard</b> Groundwater within the project area where representative information indicates that stormwater pollutants in groundwater exceed the Enforcement Standard (ES).</p>
<input type="checkbox"/>		<p><b>F. Exceeds Groundwater Preventive Action Limit</b> Groundwater within the project area where representative information indicates that storm water pollutants in groundwater exceed the Preventative Action Limit (PAL).</p>
<input type="checkbox"/>		<p><b>G. Groundwater Quality (see Attachment F)</b> The project area is within a geological area defined in Attachment F as susceptible to groundwater contamination.</p>
	<b>Total:</b>	
	100	

**Drinking Water Bonus Points (see Attachment E)**

- Yes  Check this box if the project water quality goals identified above relate to the reduction of nonpoint source contaminants in community or non-community public drinking water supplies. This includes any of the following: Municipal supplies governed by chs. NR 809 and 811; Other-Than-Municipal (OTM) water supplies governed by chs. NR 809 and 811; Non-Transient water supplies governed by chs. NR 809 and 811; Transient water supplies governed by chs. NR 809 and 812.
1. If "Yes," and you checked boxes E, F, or G, above, then mark a, b, or c, below and move on to question 6. (You will need assistance from your DNR District NPS Coordinator at <http://dnr.wi.gov/topic/nonpoint/NPSContacts.html> or Water Supply Specialist at <http://dnr.wi.gov/topic/drinkingWater/documents/CountyContacts.pdf> to answer.)
- a. Check this box if the project is located: within the wellhead protection area of a municipal well; or within 1,200 feet of a municipal well for which a wellhead protection area is not delineated; or within 1,200 feet of an Other-Than-Municipal (OTM) water supply well; or within 1,200 feet of a Non-Transient water supply well.
- b. Check this box if the project is located within 200 feet of a Transient water supply well.
- c. Check this box if **neither** a nor b applies
2. If "Yes," and you checked box **A, B, or C or D** above, then place a check mark next to the appropriate drainage area where the project is located. If the project is in more than one drainage area, enter the appropriate percentages in the boxes provided. (See Attachment E.)

Source Water Drainage Area	Portion of Project in Assessment Area (%)
<input type="checkbox"/> Pike River and Creek	<input type="text"/>
<input checked="" type="checkbox"/> Root River	<input type="text" value="51"/>
<input checked="" type="checkbox"/> Oak Creek	<input type="text" value="4"/>
<input checked="" type="checkbox"/> Milwaukee River	<input type="text" value="45"/>
<input type="checkbox"/> Sauk Creek	<input type="text"/>
<input type="checkbox"/> Sheboygan and Onion Rivers	<input type="text"/>
<input type="checkbox"/> Manitowoc River	<input type="text"/>



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- Twin Rivers
- Kewaunee and Ahnapee Rivers
- Menominee River
- Fish Creek
- St. Louis and Nemadji Rivers
- Lake Winnebago


**Question 5. Evidence of Local Support**

For A. and B., check the applicable situation that exists at the time of application. Submit supporting information and documentation with the application.

**A. Government**

- 1. The local-share funds for this project's expenses are already included specifically in an **adopted** budget.
  - Evidence of the adopted budget is included with the application submittal.  
Describe the document and list date of adoption:
- 2. The local-share funds for the project expenses are or will be included in a **proposed** budget.
  - Evidence of the proposed budget is included with the application submittal.  
Describe the document and list date for adoption;  
As part of the resolution for this grant application, the City is committing to funding this project and will establish a budget appropriate to fund the City's share of this project for 2016 and 2017. The budget will be adopted in Fall of 2015.

**B. Community** Supporting information must be submitted with the application.

- 1. There is local community support from community stakeholders specifically for the project.
  - a. There is local support from citizen groups.
  - b. There is local support from municipal committees or councils representing the applicant.
- 2. There is community support for addressing general water resource needs in the community, even though there may not be evidence of support for this specific project.
  - a. There is general support from citizen groups.
  - b. There is general support from municipal committees or councils representing the applicant.

**Question 6. Plans and Regulations**

**A. Consistency With Resource Management Plans**

- Check this box if the proposed project focuses on plans to implement a water quality recommendation from a locally-approved resource management plan. Examples include Smart Growth plans, Legacy Community plans, Water Star plans, local Storm Water Management plans, wellhead protection, lake management, regional water quality plans, Remedial Action plans and other watershed-based nonpoint source control plans.  
*(This question does not include a TMDL report, TMDL implementation plan, or County Land and Water Resource Management Plan.)*

If Yes, summarize the water quality recommendation and describe how it relates to the goals of this proposed project. Cite the title, author and date(s) of publication of the resource management plan. Attach pertinent page(s) or provide URL and page numbers.

This project seeks to further the city-wide water quality planning work initiated by the City of Greenfield in 2008 and updated in 2011. (Storm Water Quality Report, AECOM, December 2008 and City of Greenfield Updated WinSLAMM Assessment of Compliance, AECOM November 2011 Memorandum) See attached selected pages. Additional report materials are available on request.

The project is also consistent with the "Nonpoint Source Control Plan for the Kinnickinnic River Priority

Watershed Project", WDNR 1994 and "A Nonpoint Source Control Plan for the Menomonee River Priority Watershed Project", WDNR 1992. Select relevant pages are attached.

### B. Supporting Regulations

Check the box for the statement(s) that applies to this project. The project is located within an area which has:

1. The applicant (applying governmental unit) has regulations in place to administer and enforce construction erosion controls in the governmental unit that are consistent with the non-agricultural performance standards in s. NR 151.11 Include the web site where the regulation can be found (most direct web page URL) and page number(s).  
[https://www.municode.com/library/#!/wi/greenfield/codes/code\\_of\\_ordinances?nodeId=CH31COSIER](https://www.municode.com/library/#!/wi/greenfield/codes/code_of_ordinances?nodeId=CH31COSIER)
- Or check the box if a copy of the regulation is attached to this application.
2. The applicant (applying governmental unit) has regulations in place to administer and enforce post-construction runoff for areas of new development and redevelopment in the governmental unit consistent with the non-agricultural performance standards in s. NR 151.12. Include the web site where the regulation can be found (most direct web page URL) and page number(s).  
[https://www.municode.com/library/#!/wi/greenfield/codes/code\\_of\\_ordinances?nodeId=CH30PONSSTMA](https://www.municode.com/library/#!/wi/greenfield/codes/code_of_ordinances?nodeId=CH30PONSSTMA)
- Or check the box if a copy of the regulation is attached to this application.

### Question 7. City of Racine

- Check this box if this is an application from the City of Racine for a project that is necessary for the city to comply with state storm water permitting requirements.

### Part III. Eligibility for Multipliers

Completion of this part of the application is optional. However, an applicant can increase the final project score by qualifying for a project multiplier.

**Local Implementation Program** (select all that are in place as of the application submittal date)

- A. The governmental unit is implementing a pollution prevention information and education program targeted for property owners and other residents.
- B. The governmental unit is tracking storm water permitting activity (construction and post-construction) in the governmental unit and can make summary information available to the DNR upon request.
- N/A
- C. The governmental unit is implementing a nutrient management plan for municipally-owned properties of pervious area where nutrients are applied.

### Optional Additional Information

Carefully review the answers to all of the questions above. Is there additional information that will add to the understanding of this project? If so, describe here.

Previous planning efforts have focused on TSS per the NR 216 stormwater discharge permit requirement and NR 151 performance standards. TMDLs are currently under development for the Milwaukee River Basin which will impact the City of Greenfield for areas draining to the Menomonee River and Kinnickinnic River basins. While the final wasteload allocations are not available at the time of this grant application, the City of Greenfield is attempting to be proactive in preparing for the reality that new water quality targets for TSS and TP will be developed as a part of that study. Additionally, while no TMDLs are currently in development for Oak Creek or the Root River, the WDNR guidance for the TMDL analysis process will be followed through on a city-wide basis to be prepared for when those impaired watersheds develop TMDLs.



**Applicant Certification**

A Responsible Governmental Official (authorized signatory) must sign and date the application form prior to submittal to the DNR. The governmental official with signatory authority must be the person authorized by the Governmental Responsibility Resolution. I certify that, to the best of my knowledge, the information contained in this application and attachments is correct and true.

Signature of Government Official - Authorized Signatory <i>Richard Sokol</i> RICHARD SOKOL FOR		Date Signed 4/13/15
Name (Please Print) Jeff Katz	Title City Engineer	

Check this box if the required, completed Governmental Responsibility Resolution (GRR) (see [Attachment H](#)) is attached. Authorized signatory must be approved in the GRR.

**Submittal Directions**

To be considered for funding, provide the following for each application submitted:

- One hard copy of the completed application form [DNR Form 8700-299A (R 1/15) with original signature in blue ink and all attachments.
- Three additional hard copies of the completed, signed application form and all attachments.
- One electronic copy of the completed application form (this saved application form) in PDF format only plus all attachments on CD.

All application materials must be postmarked by midnight **April 15 of the same calendar year.**

Mail to: State of Wisconsin  
Runoff Management Section-WT/3  
Department of Natural Resources  
101 South Webster Street  
Madison, WI 53703

PO Box 7921  
or Madison WI 53707-7921

Project Name:

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**Please use this page to write any constructive comment(s) you might have to improve this application.**

Thank you.

We appreciate how the grant application form has become more user friendly over the last several years, allowing for cut and paste and edit features that were not previously available. Links within the form also assist in the timely location of relevant data. We have no other comments to offer at this time. Thank you.



## **Addendum to Application**

Addendum to UNPS & SW Program: Planning Grant Application

Project Name:

Greenfield City-Wide Stormwater Quality Management Update

### **Project Information**

#### **A. Location of Project**

- The City of Greenfield is located across two State Senate and three State Assembly Districts. The majority of Greenfield is located in State Senate District number 28 and State Assembly District number 84. A southeast portion of the City also resides in State Senate District number 28, but falls under State Assembly District number 82. In addition, a northeast portion of the City resides in State Senate District number 3 and State Assembly District number 7.
- The City of Greenfield is located across multiple sections within Township 06N and Range 21E. The City is within sections: 13, 14, 17-30, 35, and 36. No Quarter or Quarter-Quarter is given because of the large extent of the project.



Addendum to UNPS & SW Program: Planning Grant Application  
Project Name:  
Greenfield City-Wide Stormwater Quality Management Update

## **Part II. Competitive Elements**

### **Question 4: Water Quality Needs**

- Impaired waters are only listed on application if the 303(d) impairment is a traditional non-point source pollutant where estimating loading and BMP reductions is possible. For this reason, it is possible that impairments such as fecal coliform or E. Coli are not listed even if a contribution to loading of the impairment could be due to storm water runoff (i.e. pet waste contributing fecal coliform and E. coli levels). In addition, current WinSLAMM files for Wisconsin do not have reliable data sets for E. coli or fecal coliform. Therefore, the City-wide Storm Water Quality Management Plan will not attempt to estimate E. coli, fecal coliform or other pollutant loading which is not considered a traditional non-point pollutant.

## **Appendix A - Figures**

**Figure 1:** Part I. Screening Requirements: Location Map

**Figure 2:** Part I. Screening Requirements: Aerial Map

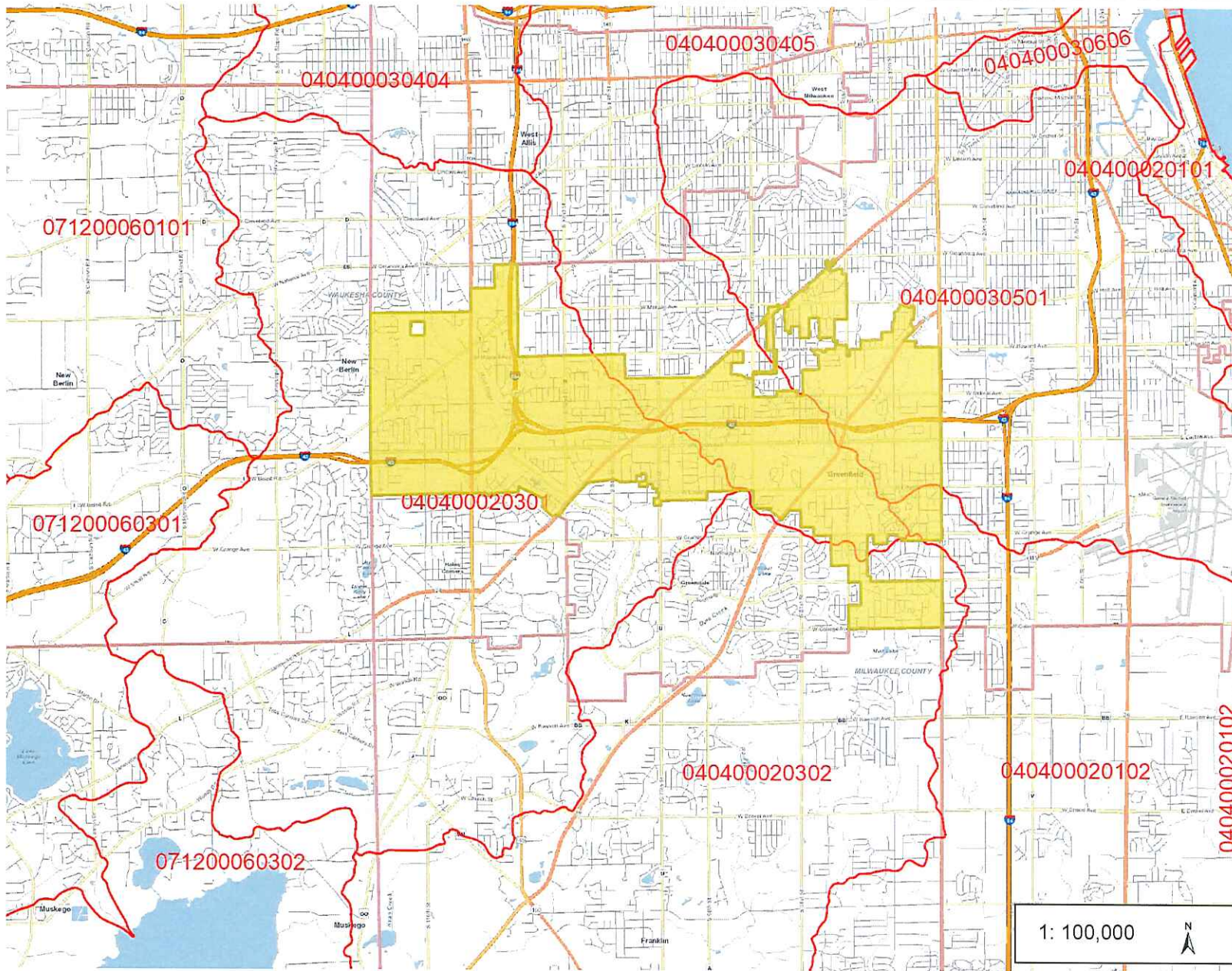


**Figure 1**

Part I. Screening Requirements: Location Map

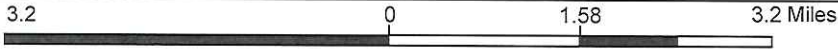


# Greenfield City-Wide Stormwater Quality Management Plan Update



- Legend**
- 12-digit HUCs (Subwatersheds)
  - Cities, Towns & Villages
    - City
    - Village
    - Civil Town
  - Rivers and Streams
  - Open Water

1: 100,000



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**Notes**

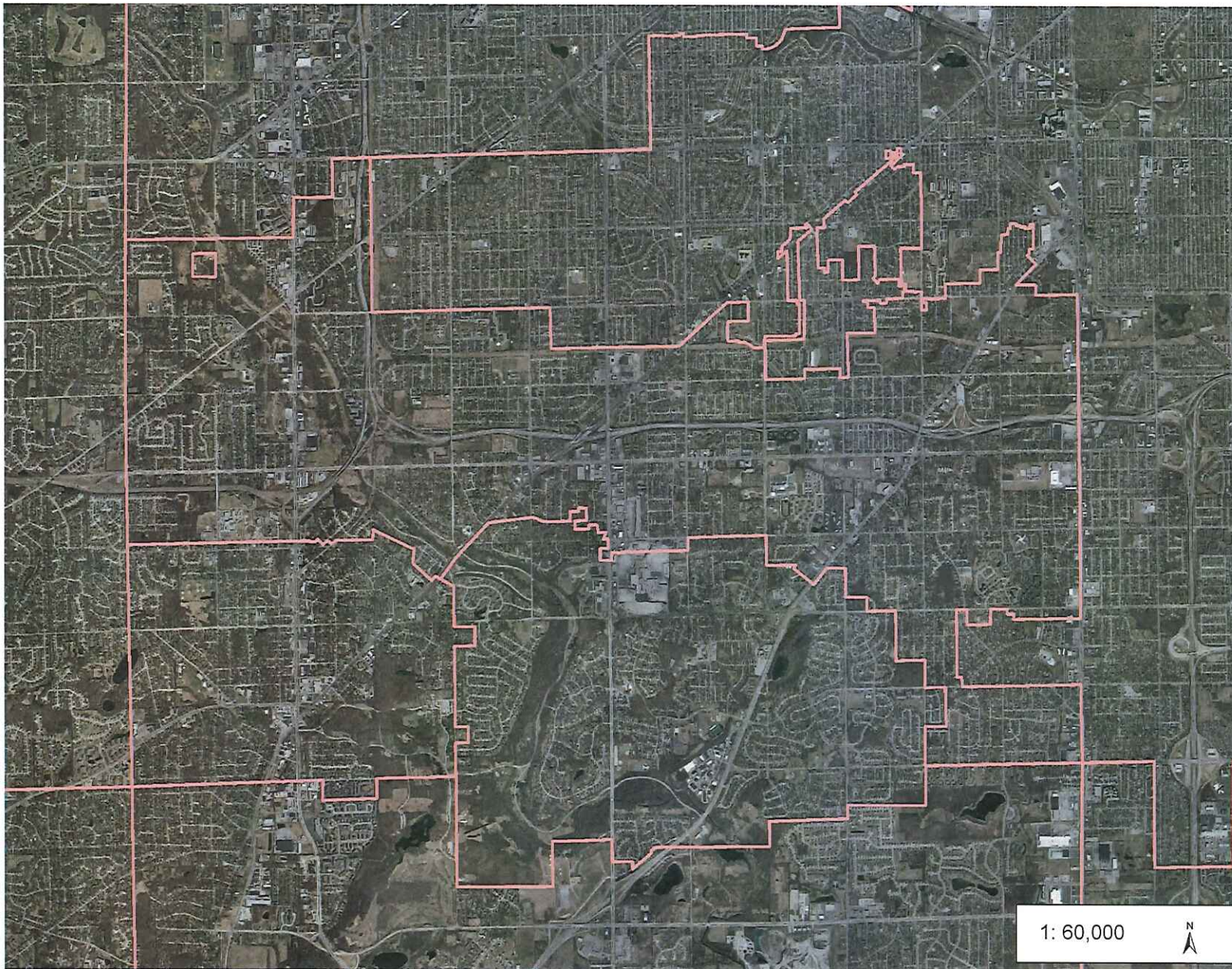


**Figure 2**

Part I. Screening Requirements: Aerial Map



# Aerial Map



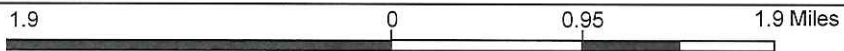
## Legend

### Cities, Towns & Villages

-  City
-  Village
-  Civil Town

2010 Air Photos (WROC)

1: 60,000



NAD\_1983\_HARN\_Wisconsin\_TM  
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## Notes



## **Appendix B - Supporting Documentation**

**B-1** Project Summary and Description: Detailed Scope of Services

**B-2** Part II. Competitive Elements, Question 5B: Local Support (Citizen Groups, Committees and Councils)

**B-3** Part II. Competitive Elements, Question 6A: Consistency with Resource Management Plans, Pertinent Pages from Reports

**B-4** Government Responsibility Resolution

## **Appendix B-1**

### **Project Summary and Description: Detailed Scope of Services**



## A. BACKGROUND

Stormwater pollution from the City of Greenfield's stormwater conveyance system is regulated under a Wisconsin Department of Natural Resources (WDNR) permit (known as the WDNR MS4 permit). The permit requires the City calculate the quantity of stormwater pollution (sediment as TSS and Total Phosphorus) from the City's system under: "base" or "no-controls" and "existing" or "with controls" conditions as described below.

In December 2008 the City completed a stormwater pollution modeling analysis using WinSLAMM. That analysis was followed up by additional planning work dated November 2011 that included site specific infiltration testing and updated best management practices evaluation and determined that the City of Greenfield was in compliance with water quality discharge requirements at the time. Since then, the WDNR has implemented new policies and procedures for the stormwater pollution analysis under the WDNR MS4 permit.

Another factor impacting stormwater pollution requirements for the City of Greenfield is the Milwaukee River Basin Total Maximum Daily Load (TMDL) Analysis which is currently under development and anticipated for release in 2015. Stormwater discharges from areas of the City will be assigned a Waste Load Allocation (WLA) for sediment and phosphorus.

The City will utilize WinSLAMM to update the pollution loading for the WDNR MS4 permit requirement based on the most recent WDNR guidance. Also, an analysis will be conducted to evaluate the City's pollution loading for purposes of comparison with the WLAs being developed for the Milwaukee River TMDL (Menomonee River and Kinnickinnic River).

Because it is anticipated that TMDL reduction requirements will be higher than the current levels achieved by existing best management practices, additional practices will be evaluated.

Additionally, the City's erosion control and post construction stormwater management ordinances need to be updated to align with current state statutes.

The tasks below alternate between the work to be conducted for the WDNR MS4 permit and the work to be conducted for the TMDL analysis. Although the scope language separates the two analyses, the two analyses are intertwined and data from all tasks will be used interchangeably.

## B. TASKS

*Task 1.0 Re-establish WDNR MS4 permit No-Controls (Base) Load using Most Recent WDNR Guidance*

### 1.1 Review GIS data per WDNR Guidance

Consultant will compare the Analyzed Area in the 2011 study to the guidelines in the existing WDNR guidance and modify where needed. Consultant will rely on City staff review of data to aid in the process.

Examples of areas that will be reviewed include:

- October 2004 Land Use
- Undeveloped/Agricultural lands as of October 1, 2004
- Industrial permitted land as of January 2015
- County/State right-of-way areas within the municipal boundary
- Riparian lands

## 1.2 Update Watershed Boundaries

The City will review the watershed boundaries used in the 2011 study based on current storm sewer system mapping. Consultant will update the reviewed / revised watershed boundaries provided by the City. Consultant will then group the boundaries into reachsheds that align with the TMDL analysis.

## 1.3 Re-run MS4 No-Controls Conditions

The WinSLAMM stormwater pollution model will be used to analyze the stormwater pollution discharged from the City's regulated MS4.

The no-controls conditions are defined by NR216 and subsequent policy memos from the WDNR. Consultant will conduct this analysis in accordance with the NR216 and WDNR written guidelines. In general, the "no-controls conditions" represent the urban stormwater pollution that existed under the land use conditions as of October 1, 2004, assuming all roads have curb and gutter drainage, and with no other stormwater control practices in place. The TSS loading under base conditions establishes the benchmark against which the 20 percent TSS reduction is measured.

The results for the study will be reported on an average annual basis for both Total Suspended Solids and Total Phosphorus.

### *Task 2.0 Establish TMDL No-Controls Load Using Most Recent WDNR Guidance*

The data used for the TMDL analysis was different than the data used for the WDNR MS4 permit analysis. The TMDL analysis will follow the WDNR document "TMDL Guidance for MS4 Permits: Planning, Implementation, and Modeling Guidance".

Consultant will update the following GIS coverages used for the TMDL analysis:

- Excluded Areas
- Land use
- Municipal boundary

Consultant will compare the data used for the TMDL analysis against the data used for the WDNR MS4 permit analysis. The comparison will include a table showing the tabular differences as well as a figure showing the graphical differences. Consultant will then set up a meeting with City staff and WDNR staff to review the differences and discuss resolutions to the differences if needed.



## 2.1 Excluded Areas

Review and update required and optional excluded areas to align with the current guidance document.

## 2.2 Update TMDL Land Use

Update land use areas to align with the current guidance document.

## 2.3 Update TMDL Municipal Boundary

Update the municipal boundary used for the TMDL to reflect the most accurate municipal boundary as of January 2015 per WDNR guidance.

## 2.4 Calculate TMDL No-Controls Load

The TMDL no-controls load for each TMDL reachshed will be calculated using data developed in Tasks 2.1 through 2.3.

### *Task 3.0 Re-establish NR216 Existing Conditions (with controls) Load as of January 2015*

Consultant will conduct the following subtasks to re-analyze the pollution reduction achieved by the City's existing stormwater control practices. Practices in existence as of January 2015 will be included in the analysis.

### 3.1 Update Street Cleaning

The model will be updated to reflect the City's current street cleaning practices, schedule, and equipment. Reductions for TSS and TP will be reported.

### 3.2 Evaluate Existing Structural Best Management Practice (BMP) Performance

Consultant will review existing structural BMPs which would have been included in prior analyses to evaluate pollutant management effectiveness. It is assumed that some BMPs may require modification since the prior planning effort, but for the most part, prior developed pollutant removal effectiveness will be used.

### 3.3 Summarize Existing Conditions MS4 Permit Results

Consultant will model annual loadings of stormwater pollutants for Particulate Solids (TSS) and Total Phosphorus (TP) using WinSLAMM for the City's existing stormwater control practices. The results will be presented in the following formats:

- 1) Tabular
  - a. No-controls TSS and TP load for each watershed
  - b. Existing TSS and TP annual load for each watershed
- 2) Graphically
  - a. GIS map of no-controls TSS or TP load by watershed, and by load/acre/yr for each watershed
  - b. GIS map of existing TSS or TP load by watershed, and by load/acre/yr for each watershed

#### *Task 4.0 Establish Existing Conditions TMDL Load*

##### 4.1 Calculate Existing Conditions TMDL Permit Load

Consultant will use the information collected and developed in Tasks 2 and 3 to establish the City's current progress towards meeting the TMDL WLA for each sub-basin. The existing stormwater control practices will be applied to the TMDL base conditions pollution load.

##### 4.2 Analyze Stormwater Control Practices for New Development

Because it is likely that new development will be included in the City's TMDL analysis, the City will provide Consultant with the data needed to model the stormwater control practices treating new development. It is assumed eight (8) sites will be analyzed. The data needed to perform this analysis includes:

- an electronic delineation of the drainage area,
- hard or electronic copies of the design drawings/as-builts, and
- any stormwater management plan data, including model information that was developed as part of the project.

##### 4.3 Summarize Existing Conditions TMDL Results

The TMDL existing load for each TMDL sub-basin will be calculated two ways: 1) the percent reduction from the existing stormwater control practices will be applied to the unit TSS and TP loads published in the TMDL and 2) the percent reduction from the existing stormwater control practices will be applied to the base pollution loaded generated using the WinSLAMM model files developed for the City and used in Task 1.4.

The results will be presented in the following formats:

- 1) Tabular
  - a. No-controls TSS and TP load for each sub-basin
  - b. Existing TSS and TP annual load for each sub-basin
- 2) Graphically
  - a. GIS map of no-controls TSS or TP load by sub-basin, and by load/acre/yr for each sub-basin
  - b. GIS map of existing TSS or TP load by sub-basin, and by load/acre/yr for each sub-basin

#### *Task 5.0 Evaluation of Proposed Stormwater Control Practices Identified in the 2008 Study and Additional Opportunities Identified in this Study*

While the City has met the current 20% TSS reduction goal, it is assumed that additional BMPs will be required to move towards compliance with the pending TMDL WLAs. This task provides for a review of previously identified and new potential BMPs to further reduce stormwater runoff pollutants. Because the extent of treatment needed is unknown at this time, an allocation of time is made towards this effort.



### 5.1 Proposed Stormwater Control Practice Evaluation

A total of 20 potential future BMPs were identified in 2008 should the City need to find additional water quality improvements. Consultant will update the evaluation of the sites with the City for consideration.

Consultant will also review with the City other potential opportunities for pollutant reductions that were not discussed or may have evolved since the prior planning effort.

The evaluation will include additional information available from existing public files including: wetland information, depth of storm sewer entering/exiting the proposed location, size of proposed stormwater control practice and land availability. Consultant will use data that is readily available (such as the WDNR Surface Water Data Viewer or the City's GIS information). Consultant will not conduct field investigations (such as soil borings or wetland delineations) for this evaluation.

This scope assumes no more than 20 total sites will be evaluated as potential locations for stormwater control practices.

### 5.2 Develop TSS and TP Removal for Proposed Stormwater Control Practices

Consultant will update the TSS and TP for the proposed stormwater control practices identified in Task 5.1. This evaluation only includes the re-modeling of the potential wet detention basins for TSS and Total Phosphorus pollution control potential.

This scope assumes no more than 15 sites will ultimately be modeled for their proposed TSS and TP reductions.

### 5.3 Develop Stormwater Control Practice Cost Estimates and Identify Funding Mechanisms

Consultant will develop planning level cost estimates for the proposed stormwater control practices. The cost estimates will be developed with information from recent bid tabs for other stormwater quality projects within the City and surrounding area. The cost estimates will include a contingency to address engineering and other unknown cost items.

A number of potential funding mechanisms are available to the City and a brief review of potential revenue sources will be discussed, including general revenue, grants, and stormwater utility funding.

### 5.4 Develop Alternative Evaluation Matrix

Consultant will develop an Alternative Evaluation Matrix with loadings, costs, and other criteria to aid in ranking projects for potential implementation. The initial ranking will be reviewed with the City for comments on the criteria listed in the matrix. The proposed stormwater control practices will be adjusted based on City input and ranked.

### 5.5 Develop Implementation Schedule

Consultant will work with the City to develop a draft implementation schedule for presentation to the City Common Council for consideration as a roadmap for meeting the TMDL goals.



### *Task 6.0 Prepare Report*

Consultant will prepare a report which: 1) documents modeling methodology, 2) compiles TSS and TP pollution loadings into an appropriate tabular formats, 3) documents the pollution control (TSS and TP) achieved by existing management measures, and 4) summarizes the potential new stormwater control practice removal efficiency and cost.

The report will also contain maps displaying the results of the modeling; and the potential locations of proposed stormwater control practices.

The report will describe the analyses for purposes of both WDNR MS4 NR 216 permit and TMDL compliance.

The City will review this report before it is finalized. Consultant will provide one (1) hard copy draft report and one (1) electronic copy in Adobe format to the City for review. Consultant will provide five (5) hard copies and a complete copy in an Adobe format of the final report to the City. In addition, Consultant will provide GIS files and Tables in Excel format prepared under this scope of work as requested by the City.

### *Task 7.0 Ordinance Updates*

Several municipal ordinances are in need of updating to align with current state regulations or could benefit from a review to evaluate the potential to make improvements that better protect the environment. Ordinances planned for review and potential update include:

- Chapter 21 – Zoning Code (Conservation District section)
- Chapter 30 – Post Construction Stormwater Management
- Chapter 31 - Construction Site Erosion
- Chapter 32 – Illicit Stormwater Discharge

The conservation district section of the zoning code will be reviewed to see if modifications can be incorporated to encourage this type of development and not limit the use of “green infrastructure” best management practices. Finding of other recent studies identifying ways to encourage or remove impediments to low impact developments will also be reviewed.

The Illicit Discharge Prohibition and Disconnection Section of the ordinance will be reviewed for changes in best practices associated primarily with enforcement components.

Model ordinances that are being prepared by the WDNR in 2015 will be compared to the current City Erosion Control and Post-construction Stormwater Management Ordinances and recommend and draft updated ordinances for review by City staff and attorney for presentation and approval by the Common Council to update the current ordinances.

### *Task 8.0 Meetings and Presentation*

Three meetings with City staff and Consultant staff are budgeted during the course of the project. One meeting may also include WDNR staff. The first meeting is anticipated during Task 2. The second meeting is expected to occur during Tasks 5 and 6 to fine tune the proposed stormwater control practice prioritization. The third meeting would take place after the preparation of the final report and prior to a presentation to the City Common Council or other stakeholders.

A presentation to the City Common Council will be conducted at a point in the project that the City feels is appropriate to inform and gain the feedback and concurrence of public officials.

### **C. ASSUMPTIONS**

1. The City shall furnish Consultant all available maps, orthophotographs, stormwater conveyance system drawings, stormwater management plans, parcel graphical and tabular data, and other relevant stormwater management data, all of which may rely upon without independent verification in performing the Scope of Work. It is also assumed that the above information will be provided at no cost to the project. Data files will be provided digitally to Consultant on a CD if available or paper copy format (if a digital format is not available).
2. Some information provided by the City may be inaccurate or unreliable. Consultant cannot be responsible for inaccuracies in the data supplied by the City. Field verification of the data is not included in the Scope of Work.
3. Preparation of design plans, specifications, or construction documents are not included in this scope of work.
4. All budget items assume one review per task by City staff. Consultant will confirm the results of the City's review before proceeding with the next step of the process. If more than one review per task is conducted or additional information is provided after a review task is completed, a budget amendment may be requested.

## **Appendix B-2**

Part II. Competitive Elements, Question 5B: Local Support  
(Citizen Groups, Committees and Councils)



# SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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April 3, 2015

Mr. Jeffrey D. Katz, P.E.  
City Engineer  
City of Greenfield  
7325 West Forest Home Avenue  
Greenfield, WI 53220

Dear Mr. Katz:

We are writing in support of the City of Greenfield's application for a Wisconsin Department of Natural Resources (WDNR) Urban Nonpoint Source and Storm Water Management Planning Grant. The grant would be used to update the City's current water quality management plan to aid in understanding the effects of the total maximum daily load limits that are under development and will affect municipalities and other entities in the Milwaukee River Basin.

The proposed update will build upon previous planning efforts dating back to the December 2008 Storm Water Quality Management Analysis Report when the City conducted its last comprehensive stormwater quality analysis. The plan will also review the findings and recommendations from other regional water quality plans, including the plans documented in SEWRPC Planning Report No. 50, *A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds*, December 2007 and SEWRPC Community Assistance Planning Report No. 316, *A Restoration Plan for the Root River Watershed*, July 2014.

The City has lands tributary to several major watersheds including the Root River, Menomonee River, Kinnickinnic River, and Oak Creek. The plan update will follow the WDNR's TMDL Guidance for MS4 Permits for all watersheds even though the current TMDL efforts will only develop wasteload allocations for reaches in the Kinnickinnic and Menomonee River watersheds. This will result in a comprehensive city-wide plan that positions the City for future TMDLs that will affect other areas of the City. The plan will assess the current level of compliance with TMDL wasteload allocations and will reevaluate the effectiveness and feasibility of implementation of potential best management practices (BMPs) identified in the previous City stormwater study. The study will result in an implementation plan that will guide the City towards the long term goal of cost-effectively meeting TMDL wasteload allocations.

We commend the City on undertaking this update to its plan and support its application for State stormwater management planning funds.

Sincerely,

Kenneth R. Yunker, P.E.  
Executive Director

KRY/MGH/dd  
#00224872



April 10, 2015

**BOARD OF DIRECTORS**

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University Of Wisconsin–Milwaukee

**Tom Grisa, P.E., Vice Chair**  
City of Brookfield

**David Lee, P.E., Secretary, Treasurer**  
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Southeastern Wisconsin Regional  
Planning Commission

**Andy Holschbach**  
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**Peter McAvoy**  
UWM School of Freshwater Sciences

**Ezra Meyer**  
Clean Wisconsin

**Neil Palmer**  
Village of Elm Grove

**Karen Sands**  
Milwaukee Metropolitan Sewerage District

**Dan Stoffel**  
Washington County

**STAFF**

**Melissa Ugland, Interim Executive Director**

600 East Greenfield Avenue  
Milwaukee, WI 53204-2944  
(414) 382-1766  
[swwtwater.org](http://swwtwater.org)

Mr. Jeff Katz, P.E.  
City Engineer  
City of Greenfield  
7325 West Forest Home Avenue  
Greenfield, WI 53220

Dear Mr. Katz,

Sweet Water - Southeastern WI Watersheds Trust, Inc. is pleased to write in support of the City of Greenfield's application for a Wisconsin Department of Natural Resources (WDNR) Urban Nonpoint Source and Storm Water Management Planning Grant. The grant would be used to update the City's current water quality management plan to aid in understanding the impacts of the pending total maximum daily load (TMDL) allocations that are under development and will impact municipalities and other entities in the Milwaukee River Basin.

We understand that the proposed update will build upon previous planning efforts dating back to the December 2008 Storm Water Quality Management Analysis Report when the City conducted its last comprehensive storm water quality analysis. The plan will also review the findings and recommendations from other regional water quality planning documents to maintain consistency with other planning efforts.

With the City having lands tributary to several major watersheds including the Root River, Menomonee River, Kinnickinnic River, and Oak Creek, it will be important to segregate these areas into the appropriate watersheds to evaluate areas with pending and future TMDL allocations. We understand that the plan update will follow the WDNR's TMDL Guidance for MS4 Permits for all watersheds even though the current TMDL efforts will only develop waste load allocations for reaches in the Kinnickinnic River and Menomonee River as part of the greater Milwaukee River Basin TMDL effort. This will position the City for a comprehensive city-wide plan that addresses current and future water quality needs.

We further understand that the plan will modify current city-wide GIS data drainage basins into reach-sheds, update land use and included/excluded areas, and assess the current level of compliance with TMDL waste load allocations. Potential best management practices (BMPs) identified in the previous study will be re-evaluated for effectiveness and feasibility. BMPs will be compared and ranked in a matrix format that looks at a number of factors including capital and operation and maintenance costs. The study will results in an implementation plan that will guide the City towards the long term goal of meeting TMDL waste load allocation targets in a cost-effective manner. With the proposed grant funding, this project is intended to review, protect, and move forward effective storm water management in the City.

We commend the City on undertaking this update to its plan and fully support its application for State storm water management planning funds.

Sincerely,



Melissa Ugland, MPH  
Interim Executive Director



Nancy Frank, Ph.D., AICP  
Board Chair



## **Appendix B-3**

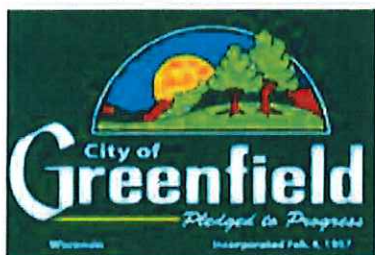
Part II. Competitive Elements, Question 6A: Consistency with Resource Management Plans, Pertinent Pages from Reports

Author

AECOM

# Final Report

## Storm Water Quality Management Analysis



**Prepared for:**  
City of Greenfield  
7325 W. Forest Home Ave.  
Greenfield, WI 53220

**Prepared by:**  
AECOM  
1020 North Broadway, Suite 400  
Milwaukee, WI 53202

December 2008

AECOM Project No. 100935



## 5.0 CONCLUSIONS AND RECOMMENDATIONS

This Storm Water Quality Management Analysis indicates that the city is currently reducing TSS loads to receiving waters by just over 16 percent. The city will need additional structural and non-structural management measures to meet the interim 20 percent and 2013 40 percent TSS reduction requirements. Even after the implementation of the following recommendations, achieving the required 40 percent TSS reduction may not be achievable for the City of Greenfield.

It is recommended that the city continue to take positive steps towards attempting to meet their TSS reduction obligations, but that it be done so in a methodical manner, pursuing lowest cost and highest value alternatives first including finding creative ways to incorporate TSS reductions from existing lands into new or redevelopment projects. Additionally, a number of activities available to aid in achieving the 40 percent TSS reduction are discussed in the following sections.

### Maximize Existing Pond TSS Reduction Credit

**It is recommended that the city pursue an inter-agency agreement that allows the city to take credit for the treatment by the city owned, operated, and maintained wet detention facility at Pondview Park.** The retrofit analysis did not seem to indicate a strong need to make modifications to the existing wet detention pond owned by the city at Pondview Park since it was already operating at relatively high TSS treatment levels (65 percent). However, the pond does provide treatment to Milwaukee County and State of Wisconsin owned lands that must currently be excluded from the city's TSS reduction analysis.

### Swale Infiltration Rate Evaluation

**It is recommended that existing swale infiltration rates be evaluated.** WDNR guidance for the modeling of grassed swales requires some rather conservative assumptions on infiltration capabilities. Approximately half of the drainage in the city is through grassed swales/ditches. Grass swales reduce the runoff volume through infiltration and, therefore, also reduce the pollutant load. If infiltration rates can be increased, an increase in TSS reduction would also occur.

It would be in the city's best interest to take a low level, low cost approach to this effort by developing a small pilot project that would involve just a few infiltration tests in a few different areas throughout the city using a double-ring infiltrometer or other accepted method to check assumed infiltration rates. If this proves to have positive results, follow-up discussions and investigations could allow the city to increase their TSS reductions without any construction and close the gap on the 40 percent TSS reduction goal. This would involve a managed and agreed upon approach by the city and WDNR to investigate swale infiltration rates on a systematic basis.

### Evaluate the Construction of New BMPs

**It is recommended that the city conduct further investigations into the feasibility of constructing water quality catch basins and the twenty potential new wet detention facilities.** Even after implementing the lower cost recommended alternatives, under current WDNR water quality standards, the city will need to explore the construction of new wet detention facilities or other treatment practices to reduce TSS loads throughout the city. Currently, 20 potential locations have been presented for consideration. Collectively, these facilities may provide the TSS reduction of about 130 tons/year, or 23 percent reduction of the city-wide TSS baseline load. However, several of the facilities are in Milwaukee County Parkland, one in Wisconsin DOT right-of-way, and eight are situated in areas that are largely or exclusively privately held at this time. The combined cost of the 20 facilities as presented would exceed \$8 million dollars under the current cost scenario.

Building new wet detention facilities (assuming the projects and TSS removals from Tables 4 and 5) is not an easy task, particularly given the type of land use and lack of available city-owned open space. The

alternatives presented in Section 4.0 reflect how difficult and costly a task this can be. The City of Greenfield is expected to spend about \$600,000 for storm water related services in 2009. The approximately \$8 million dollars of identified new capital projects (including land acquisition, design, and contingency) is 13 times the entire city storm water budget for 2009. This is an extremely costly set of projects for the city to consider. A dialog with Milwaukee County Parks should be initiated to understand opportunities and constraints with utilizing parkland for retention of storm water from the city.



## Memorandum

To Bryan Hartsook, WDNR

Copy Rick Sokol, PE, City of Greenfield

Subject City of Greenfield Updated WinSLAMM Assessment of Compliance  
AECOM Project No. 60147239

From Chuck Boehm

Date November 1, 2011

### Background / Scope of Work

The City of Greenfield has a permit (Permit No. WI-S050130-1) issued by the Wisconsin Department of Natural Resources (WDNR) to discharge storm water to "Waters of the State". The City is one of 8 municipalities covered under this group permit. The municipalities covered under this permit are often collectively referred to as the "Menomonee River Group Municipalities". A condition of the permit (Part III.F) requires the city to achieve a reduction in total suspended solids (TSS) by 40 percent as compared to baseline levels by March 10, 2013, with an interim goal of reducing TSS by 20 percent by March 10, 2008. Recently, the State of Wisconsin repealed the 40 percent TSS reduction requirement.

In December 2008, AECOM (formerly Earth Tech) conducted a Storm Water Quality Management Analysis for the City of Greenfield to evaluate the City's level of compliance with the WDNR TSS reduction requirements. For the 2008 analysis, estimated pollutant loads were developed under two scenarios, baseline pollutant loads and pollutant load reductions under "existing" conditions through the implementation of existing best management practices (BMPs). All modeling and estimations utilized the "Source Loading and Management Model for Windows" (WinSLAMM) Version 9.3.2, and were performed in accordance with WDNR guidance available at that time. The 2008 analysis indicated that the City had not achieved the required 20% TSS reduction and was at a reduction of 16.3%.

The City has chosen to complete this updated assessment of compliance for three reasons: 1) the 2008 study indicated that the 20 percent TSS reduction requirement was not met; 2) the 2008 study recommended steps the City could take to increase TSS reductions that have been implemented; and 3) there is always the possibility and likelihood that the 40 percent TSS reduction requirement will be reinstated or some other water quality requirement will be instituted.

Since completion of the 2008 analysis, program modifications were made and an updated version of WinSLAMM (9.4.0) was released on August 17, 2009. The modified routine accounts for pollutant load reduction through not only runoff/particulate infiltration but also filtering processes in grass swale drainage systems. As a result of these program modifications, WDNR also updated guidance on the TSS assessment of compliance. Because of the modifications made to the software and the fact that a significant portion of the City's drainage system is comprised of grass swales/ditches, it became apparent to the City of Greenfield that recalculating the model by inputting specific field infiltration testing data might potentially result in a higher TSS reduction than originally computed.



As suggested in the 2008 guidance report and per a WDNR approved plan (memo dated April 7, 2011, approval email from Bryan Hartsook on April 28, 2011), infiltration tests were conducted on May 26, 2011 at six representative sites in the City. The test results conclude that, while varied throughout the City, the field measured geometric mean static infiltration rate is 1.4 in/hr. For modeling purposes and per WDNR guidance, the dynamic infiltration rate was inputted into WinSLAMM. The dynamic rate is calculated by dividing the static rate in half, which equates to a dynamic infiltration rate of 0.7 in/hr. The results of the field testing were summarized in a memo dated July 27, 2011 and approved by the WDNR (per email from Bryan Hartsook, on August 4, 2011) for use in the updated WinSLAMM analysis.

In addition to the infiltration testing, field swale geometry surveys were conducted on all six infiltration test locations. It was determined that the typical City-wide swale cross section is trapezoidal with bottom width of 2 foot and side slopes of 4 to 1. The longitudinal slope was also analyzed at each of the six locations for this updated WinSLAMM analysis and compared to the previous analysis. It was concluded that the same longitudinal slope 0.017 from the previous analysis was deemed appropriate.

Since the 2008 study, few streets underwent renovations including adding new curbs and gutters. As the information provided by the City (curb and gutter street GIS layer dated on September 08, 2011), after removing required and optionally excluded (direct drainage) areas, there is a slight majority of areas within the city limits that contain curb and gutter drainage conditions (55 percent), with the remainder (45 percent) in swale drainage conditions. Within the 45 percent swale treated area, 31 percent of the area (approximately 14 percent of the total land area included in the analysis) contains no defined swales and hence could be defined as undeveloped road side drainage conditions.

WinSLAMM requires the use of parameter input files that provide data, such as runoff rates, from small source areas, and pollutant buildup and washoff rates from these source areas. One of the parameter input files delivery.PRR file is to account for deposition of particulate pollutants in the storm drainage system, before the outfall, or after outfall controls. The delivery file is calibrated for swales, curb and gutters, undeveloped roadsides, or combinations of drainage conditions. Under the Wisconsin Department of Natural Resources (WDNR) municipal storm water discharge permit guidance, the Wisconsin specified delivery file WI\_DLV01.prr, were obtained from the United States Geological Survey (USGS) – Wisconsin Water Resources Section in 2007. Currently, the WI\_DLV01.prr file sets zero particulate reduction on areas contains undeveloped roadside drainage condition. For a more conservative practice, the 14 percent of the total land area included in the WinSLAMM analysis, which contains no defined swales, is treated as undeveloped road side drainage conditions.

Curb and gutter streets are swept approximately three times per year using a vacuum type high efficiency sweeper. In the model, since the specific sweeping frequency was not an option, a 12 week sweeping frequency from April through November was used. After reviewing the model results, this appears to produce results that are within the range expected for the actual sweeping frequency.

This memorandum documents the procedures and results of the updated WinSLAMM analysis using the most recent model (version 9.4.0, released on August 17, 2009) with the approved dynamic infiltration rate of 0.7 in/hr, updated swale cross section information, and updated city-wide drainage conditions.

## Summary of Analysis

The City's storm water pollution WinSLAMM analysis was evaluated under the following scenarios:

- 1) **Baseline Conditions:** the analysis utilizes the same data used in the 2008 analysis including Fall 2004 land use conditions, curb and gutter drainage conditions, soils, and drainage basin conditions, with no BMPs applied.

- 2) Existing Conditions: the analysis utilizes the same data used in the 2008 analysis including Fall 2004 land use conditions, soils, and drainage basins, but updates drainage conditions and applies BMPs such as grassed swales and street sweeping practices as appropriate. Wet detention basin BMP information was also available as needed. Nearly one-third of City lands included in the WinSLAMM analysis have been confirmed to contain grass swale/ditch drainage. Some additional City GIS data suggests that the actual percentage of swales or other treatment conditions may be higher, but this more conservative value was used for this assessment. The grass swale analysis was conducted using the updated swale routines and the following parameters:
- a. Swale Retardance Class "D" from Table 4.1;
  - b. 4:1 swale cross section with 2-foot bottom width (a more conservative section than used in the original analysis based on the additional field work);
  - c. Field generated dynamic infiltration rate of 0.7 in/hr; and
  - d. The same longitudinal slope from the previous analysis was deemed appropriate.

## Results of Analysis

The updated model results are summarized in Table 1 for total suspended solids (TSS) and total phosphorus. Figure 1 recreates the TSS information under both conditions and compares the results to the WDNR reduction goals similar to Figure 7 in the 2008 report.

The baseline TSS load for the City is essentially the same as the 2008 analysis at 563 tons/year. However, TSS reductions based on the new swale analysis for existing conditions shows the TSS load reduced to 407 tons/year, a 27.7% reduction from the baseline load. Inclusion of the wet detention ponds in the analysis further reduces TSS by 20 tons/year resulting in a final TSS load of 387 tons/year, which equates to a 31.2% total reduction from the baseline load.

The total phosphorus load is 4,030 lbs/year in the baseline condition and 3,025 lbs/year when evaluating the effectiveness of the grass swales in the existing condition, resulting in a 24.9% reduction from the baseline load. When the wet detention ponds are included in the analysis, the total phosphorous load is further reduced to 2,888 lbs/year, corresponding to a total reduction of over 28.3%.

## Recommendations

This assessment shows that applying the updated swale routine in WinSLAMM, using an appropriate field generated infiltration rate, and evaluating the overall impact of best management practices, the City of Greenfield has substantially improved their City-wide TSS reductions through this improved assessment and site specific analysis process, increasing the benchmark TSS reduction level to 31.2%. This is sufficient to satisfy current WDNR requirements. It is recommended that the City conduct a review of roadside drainage conditions to refine the current classifications which may result in additional credit available in the future. This is another inexpensive way to continue the path towards greater TSS reductions should the 40% requirement or some other goal be reinstated.



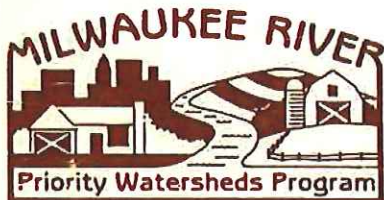
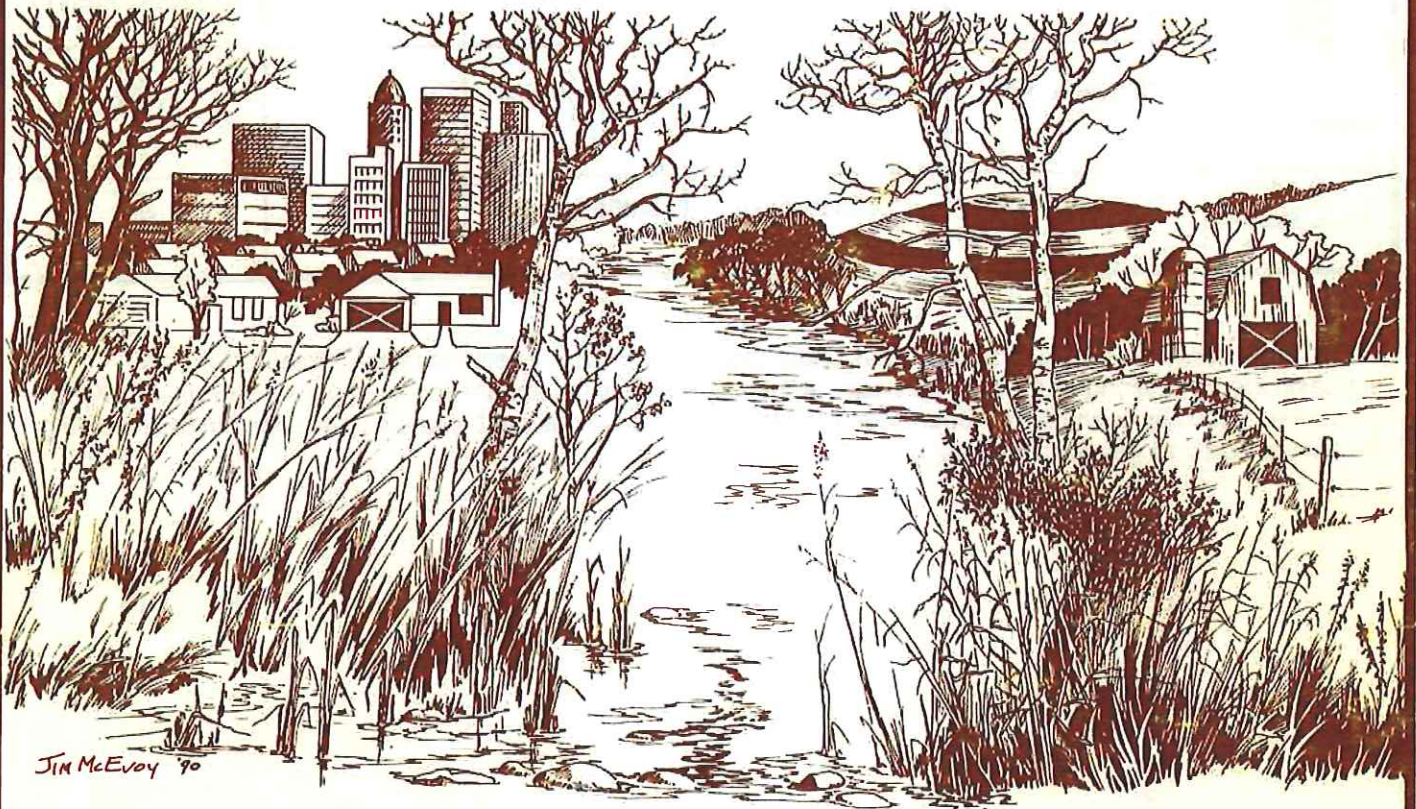
**TABLE 1  
SUMMARY OF CITY-WIDE STORM WATER POLLUTANT LOADING**

<b>POLLUTANT</b>	<b>BASELINE LOAD (NO BMPS)</b>	<b>EXISTING LOAD (SWALES ONLY)</b>	<b>EXISTING LOAD (WITH ALL BMPS)</b>	<b>POLLUTION REDUCTION</b>	<b>MEETS (2008) 20% REDUCTION REQUIREMENT?</b>
Total Suspended Solids (TSS)	563 tons/year	407 tons/year	387 tons/year	31.2%	YES
Total Phosphorus	4,030 lbs/year	3,025 lbs/year	2,888 lbs/year	28.3%	N/A

Appendix A shows the annual pollutant loads under the baseline "no controls" condition. Results for each subbasin are given along with City-wide totals. Appendix B shows the annual pollutant loads with existing BMPs (controls). Loads by subbasin in Appendices A and B are shown as lbs/per 5 years as developed in the modeling. An annual load was generated for display in Table 1.



# A Nonpoint Source Control Plan for the Menomonee River Priority Watershed Project



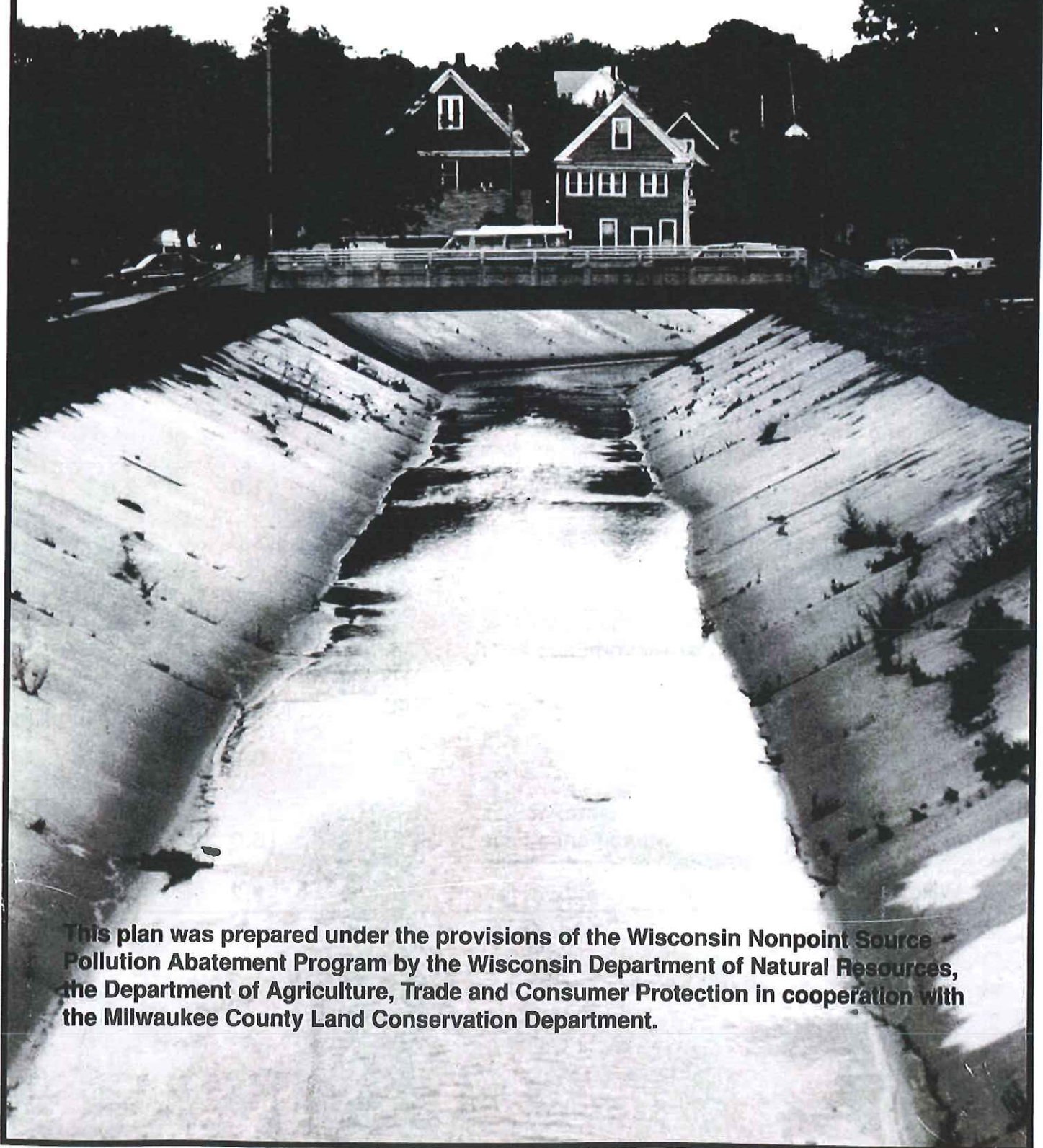
This plan was prepared under the provisions of the Wisconsin Nonpoint Source Water Pollution Abatement Program by the Wisconsin Department of Natural Resources, the Department of Agriculture, Trade and Consumer Protection, and the Milwaukee, Waukesha, Ozaukee, and Washington County Land Conservation Departments.



Table 33. Recommended Urban Best Management Practices for Planned Urban Areas in the Menomonee River Watershed.<sup>1</sup>

Subwatershed <sup>2</sup>	Where Urbanization is Anticipated	Management Plan (acres) <sup>3</sup>	Pond Area (acres)	Total Area (acres)
<b>MILWAUKEE COUNTY</b>				
Dretzka Park	C. of Milwaukee V. of Menomonee Falls	392	9.3	18.6
Granville	C. of Milwaukee	1,684	37.3	74.6
Honey Creek	C. of Milwaukee C. of Wauwatosa C. of West Allis C. of Greenfield	299	2.9	5.8
Lower Menomonee	C. of Brookfield C. of Milwaukee C. of Wauwatosa	144	3.1	6.2
Menomonee Valley	C. of Milwaukee C. of West Allis V. of West Milwaukee	52	1.0	2.0
Noyes Park	C. of Milwaukee	138	3.0	6.0
<b>WASHINGTON COUNTY</b>				
Germantown	V. of Germantown V. of Menomonee Falls	1,776	19.8	39.6
Goldenthal	V. of Germantown	252	5.5	11.0
Upper Menomonee	C. of Mequon	25	0.4	0.8
Victory Center	V. of Germantown V. of Menomonee Falls	603	16.0	32.0
Willow Creek	V. of Germantown	78	2.2	4.4

# **Nonpoint Source Control Plan for the Kinnickinnic River Priority Watershed Project**



**This plan was prepared under the provisions of the Wisconsin Nonpoint Source Pollution Abatement Program by the Wisconsin Department of Natural Resources, the Department of Agriculture, Trade and Consumer Protection in cooperation with the Milwaukee County Land Conservation Department.**



### **West Allis**

West Allis has about 1,100 acres of established urban land in the watershed project area. Approximately 420 acres are in land uses considered critical, i.e., those needing treatment in order to achieve project goals. To meet the pollutant reduction goals of this plan, the equivalent of 1.6 acres of wet detention ponds (on approximately 3 acres of land) are needed to control runoff from industrial, commercial, and high density residential lands. Until these practices can be installed, an estimated 450 catch basin cleanings per year would provide a moderate, interim improvement in pollution control. These practices, along with other core and segmented activities described in Chapter 5, are the plan recommendations for West Allis.

### **Cudahy**

Cudahy has about 2,500 acres of established urban land in the watershed project area. Approximately 460 acres are in land uses considered critical, i.e., those needing treatment in order to achieve project goals. To meet the pollutant reduction goals of this plan, the equivalent of 2.4 acres of wet detention ponds (on approximately 5 acres of land) are needed to control runoff on industrial and commercial lands. Until these practices can be installed, an estimated 304 catch basin cleanings per year would provide a moderate, interim improvement in pollution control. These practices, along with other core and segmented activities described in Chapter 5, are the plan recommendations for Cudahy.

### **Greenfield**

Greenfield has about 1,400 acres of established urban land in the watershed project area. Approximately 170 acres are in land uses considered critical, i.e., those needing treatment in order to achieve project goals. To meet the pollutant reduction goals of this plan, the equivalent of a 0.4 acre wet detention pond (on about 1 acre of land) is needed to control runoff from commercial land. An additional 0.6 acres of wet detention ponds would need to be constructed and maintained by the Department of Transportation to control runoff pollutants from freeways within Greenfield. Until these practices can be installed, an estimated 78 catch basin cleanings per year would provide a moderate, interim improvement in pollution control. These practices, along with other core and segmented activities described in Chapter 5, are the plan recommendations for Greenfield.

### **St. Francis**

St. Francis has about 1,600 acres of established urban land in the watershed project area. Approximately 125 acres are in land uses considered critical, i.e., those needing treatment in order to achieve project goals. To meet the pollutant reduction goals of this plan, the equivalent of a 0.7 acre wet detention pond (on about 2 acres of land) is needed to control runoff from industrial land. Until this practice can be installed, an estimated 78 catch basin cleanings per year would provide a moderate, interim improvement in pollution control. These practices, along with other core and segmented activities described in Chapter 5, are the plan recommendations for St. Francis.

## **Appendix B-4**

### Government Responsibility Resolution



RESOLUTION NO. 3508

GOVERNMENTAL RESPONSIBILITY FOR RUNOFF MANAGEMENT GRANTS

WHEREAS, the City of Greenfield is interested in acquiring a grant from the Wisconsin Department of Natural Resources for the purpose of implementing measures to control agricultural or urban stormwater runoff pollution sources (as described in the application and pursuant to ss. 281.65 or 281.66, Wis. Stats., and chs. NR151, 153 and 155); and

WHEREAS, a cost-sharing grant is required to carry out the project:

THEREFORE, BE IT RESOLVED that the City of Greenfield HEREBY AUTHORIZES the City Engineer, Department of Neighborhood Services, to act on behalf of the City of Greenfield; to submit and sign an application to the State of Wisconsin Department of Natural Resources for any financial aid that may be available; recommend for approval a grant agreement between the City of Greenfield and the Department of Natural Resources; submit reimbursement claims along with necessary supporting documentation; submit signed documents; and take necessary action to undertake, direct and complete the approved project.

BE IT FURTHER RESOLVED that the City of Greenfield shall comply with all state and federal laws, regulations and permit requirements pertaining to implementation of the project and to fulfillment of the grant document provisions.

ADOPTED April 8, 2015

APPROVED April 8, 2015

Jennifer Goergen  
Jennifer Goergen, City Clerk

Pam Akers  
Pam Akers, Council President