

It is expected that a Quorum of the Personnel Committee, Administration Committee, and Common Council will be attending this meeting: (Although it is not expected that any official action of any of those bodies will be taken)

**CITY OF MENASHA**  
**Board of Public Works**  
**Third Floor Council Chambers, 140 Main Street, Menasha**  
April 21, 2008

5:00 PM

**AGENDA**

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**1. CALL TO ORDER**

A. -

**2. ROLL CALL/EXCUSED ABSENCES**

A. -

**3. MINUTES TO APPROVE-MINUTES & COMMUNICATIONS TO RECEIVE**

A. April 7, 2008 & April 15, 2008

[Attachments](#)

**4. DISCUSSION**

A. Presentation of Proposed First Street Reconstruction Plans

[Attachments](#)

B. Draft Storm Water Management Plan (Presentation by Martenson & Eisele)

[Attachments](#)

C. Feasibility of Stormwater Utility Creation (Presentation by Martenson & Eisele)

[Attachments](#)

D. Stormwater Annual Report (Informational Only)

[Attachments](#)

E. Payment - Insituform Technologies USA, Inc.; City of Menasha Wastewater Collection System Rehabilitation Improvements - Phase 3 Project; Contract No. E145-07-01A; \$186,051.80 (Payment No. 1)

[Attachments](#)

F. Request for Stop Sign at the Intersection of Grove and Melissa Streets

[Attachments](#)

G. R-6-08 Final Resolution Authorizing Public Improvements and Levying Special Assessments Against Benefited Property

[Attachments](#)

H. 0-3-08 An Ordinance Relating to Prohibited Parking (River Street)

[Attachments](#)

I. 0-4-08 An Ordinance Relating to Prohibited Parking (Baldwin Street)

[Attachments](#)

**5. ADJOURNMENT**

A. -

"Menasha is committed to its diverse population. Our Non-English speaking population and those with disabilities are invited to contact the Menasha City Clerk at 967-3603 24-hours in advance of the meeting for the City to arrange special accommodations."

**CITY OF MENASHA**  
**Board of Public Works**  
**Third Floor Council Chambers, 140 Main Street, Menasha**  
April 7, 2008

**MINUTES**

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**1. CALL TO ORDER**

Meeting called to order by Vice-Chairman Taylor at 7:34 p.m.

**2. ROLL CALL/EXCUSED ABSENCES**

**A. -**

PRESENT: Ald. Chase, Merkes, Taylor, Hendricks, Eckstein, Michalkiewicz

EXCUSED: Ald. Wisneski, Pack

ALSO PRESENT: Mayor Laux, PC Stanke, DPW Radtke, CDD Keil, PRD Tungate, PHD Nett, C/T Stoffel, Clerk Galeazzi, the Press

**3. MINUTES TO APPROVE-MINUTES & COMMUNICATIONS TO RECEIVE**

**A. March 17, 2008**

Moved by Alderman Hendricks, seconded by Alderman Michalkiewicz to approve March 17, 2008 Minutes

**Motion** Carried on voice vote

**Results:**

**4. ADJOURNMENT**

**A. -**

Moved by Alderman Michalkiewicz, seconded by Alderman Eckstein to adjourn at 7:35 p.m.

**Motion** Passed

**Results:**

*Deborah A. Galeazzi*

Respectfully submitted by Deborah A. Galeazzi, City Clerk

**CITY OF MENASHA**  
**Board of Public Works**  
**140 Main Street, 3rd Floor Council Chambers**  
April 15, 2008

**MINUTES**

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**1. CALL TO ORDER**

Meeting called to order by DPW Radtke at 7:55 p.m .

**2. ROLL CALL/EXCUSED ABSENCES**

**A. Roll Call**

PRESENT: Ald. Taylor, Wisneski, Pack, Hendricks, Zelinski, Benner

EXCUSED: Ald. Michalkiewicz

ALSO PRESENT; Mayor Merkes, Appleton City Attorney Ellen Totzke, PC Stanke, FC Vander Wyst, DPW Radtke, CDD Keil, C/T Stoffel, PHD Nett, Clerk Galeazzi and the Press

**3. ACTION ITEMS**

**A. Election of Chairman**

Moved by Ald. Taylor, seconded by Ald. Hendricks to nominate Ald. Pack for Chairman of Board of Public Works.

No other nominations. Clerk instructed to cast a unanimous ballot declaring Ald. Pack as Chairman of Board of Public Works for one year effective immediately.

Ald. Pack continued the meeting.

**B. Election of Vice-Chairman**

Moved by Ald. Hendricks, seconded by Ald. Wisneski to nominate Ald. Michalkiewicz for Vice-Chairman of Board of Public Works.

No other nominations. Clerk instructed to cast a unanimous ballot declaring Ald. Michalkiewicz Vice-Chairman of Board of Public Works for one year effective immediately.

**4. ADJOURNMENT**

**A. Adjournment**

Moved by Ald. Wisneski, seconded by Ald. Benner to adjourn at 7:58 p.m .

Motion carried on voice vote.

*Deborah A. Galeazzi*

Respectfully submitted by Deborah A. Galeazzi, City Clerk



April 11, 2008

RE: Proposed Reconstruction of First Street

Dear Resident:

The City of Menasha has included the reconstruction of First Street from DePere Street to Ice Street in its 2008 Budget. The project involves the following work items:

- Excavation of existing pavement and street base materials
- Removal and replacement of concrete curb and gutter
- Removal and replacement of driveway aprons
- Placement of new street base course and asphalt pavement

There is no charge to the property owners for this work. As part of the design process, we are evaluating the widening of First Street between DePere Street and Manitowoc Street from its existing width of 27 feet to a width of 29 feet (back of curb to back of curb). This would result in the curb being one foot closer to the sidewalk. As you know, the terrace is very wide in this block, so there should be no adverse impact to any driveway aprons or terraces.

The reason for this proposed widening is to offer additional bypass space when vehicles are parked on both sides of the street. The additional width should not result in higher speeds along this corridor, but will provide some additional comfort, especially during the winter season when the effective width of streets may be reduced due to snow accumulation near the curb line. The 29 foot width is a standard width used by the City for low volume residential streets and we have found this width to be a safe width for motorists, bicyclists and pedestrians alike.

Before we finalize the reconstruction plans, we want to receive input from residents and property owners regarding the width of the street. Please contact us with your thoughts by phone (967-3610), email ([mradtke@ci.menasha.wi.us](mailto:mradtke@ci.menasha.wi.us)) or mail to address shown at the bottom of this page.

The proposed plans will be presented to residents and the Common Council at a workshop in an open house format to be held on Monday, April 21, 2008 from 3:30 pm to 5:00 pm in the Third Floor Council Chambers at Menasha City Hall, 140 Main Street. You are encouraged to attend anytime between those hours to review the proposed reconstruction plans and provide input. If you are unable to attend, feel free to contact me with any comments or questions.

Sincerely,

Mark Radtke  
Director of Public Works

C: Mayor Laux  
Common Council

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Planning  
Environmental  
Surveying  
Engineering  
Architecture



***DRAFT***

**Stormwater Management Plan  
City of Menasha**

Calumet & Winnebago Counties

January 30, 2008

**Martenson & Eisele, Inc.**

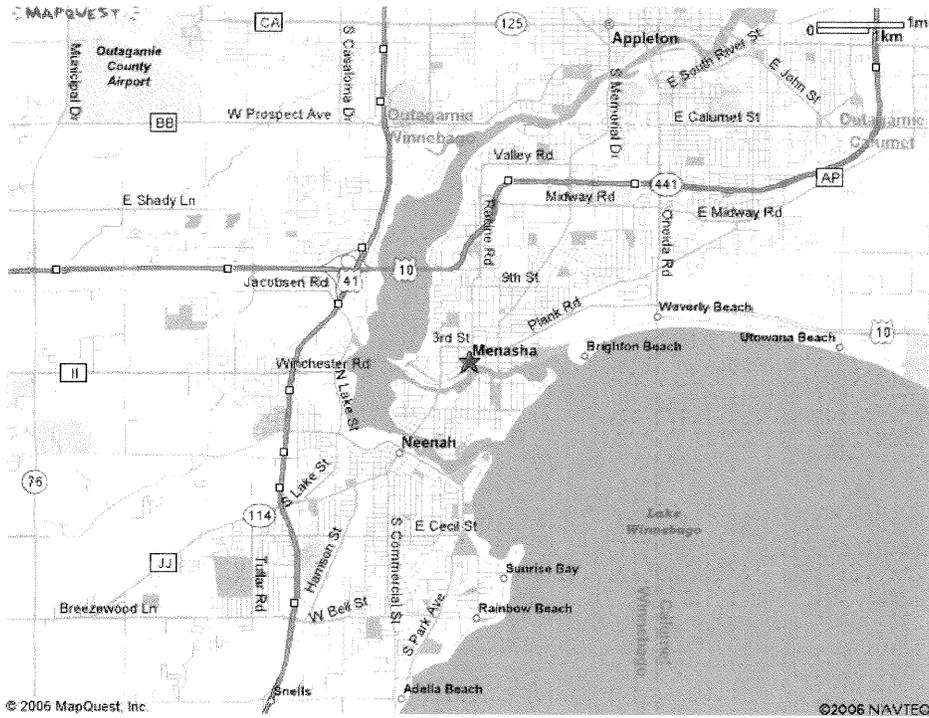
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# Stormwater Management Report

City of Menasha  
Calumet and Winnebago Counties, WI



*As required for WPDES permit coverage*

**DRAFT**

Prepared by:

Aaron S. Madsen, E.I.T.  
and  
Brian C. Olesen, P.E.

Martenson & Eisele Project Number: 210-916

Prepared Using Grant Money From Grant: USP – LF03-70251-06

City of Menasha Stormwater Permit Number: WI-5050075-1 (Issued 01/19/06)

## **I. Introduction**

### **Background**

In 1972 the Federal Government passed the Federal Water Pollution Control Act Amendments of 1972. This act, along with its subsequent amendments in 1977, 1981, 1987, and most recently 2002, has become known as the Federal Clean Water Act. In response to the 1987 amendment, the Federal Environmental Protection Agency (EPA) developed and enacted the National Pollutant Discharge Eliminate Program (NPDES). Phase I of this program focused on contaminated municipal stormwater runoff produced by certain industrial activities, large point source and large non-point source activities. These included construction sites with more than 5 acres of disturbed area and municipal separate storm sewer systems (MS4s) owned by communities with populations greater than 100,000. NPDES required that these types of activates obtain a permit from the EPA or from an approved state administered program. Phase II of the program, named the Final Rule, was implemented in December of 1999 and reduced the permit threshold for non-point sources to 1 acre and required permits from all MS4s located within urbanized areas defined by the EPA.

With the passage of Wisconsin State Statute 283 and Natural Resources Code 216/151, the Wisconsin Pollution Discharge Elimination System (WPDES) was created. This gave the Wisconsin Department of Natural Resources (WDNR) the authority to administer the requirements of Phase I and Phase II of the NPDES. The Wisconsin Department of Transportation (WDOT) enacted Trans. 401 to give it authority to administer the NPDES program on MS4s owned by the WDOT. NR 216 regulates the types and sources of runoff requiring permit coverage in the state of Wisconsin, while NR 151 creates performance standards required to be met as part of permit coverage.

### **Purpose**

The City of Menasha is identified as an “urbanized area” according to the Environmental Protection Agency and due to the ownership of a municipal separate storm sewer system (MS4), must obtain permit coverage for all storm water runoff delivered to waters of the state via that system. Chapters NR 151 and NR 216 of the Wisconsin Administrative Code outline specific measures that must be implemented to obtain a WPDES municipal storm water permit.

One of the tasks assigned to all municipalities is a detailed analysis of existing storm runoff, including the amount of sediment currently entering waters of the state from the municipalities surface and storm sewer flows, and a discussion of current storm water management systems in place. This report will detail the results of this analysis, discuss the current storm water management systems, and propose recommended storm water management systems to help meet future requirements.

### **Requirements**

Municipalities subject to the municipal storm water permit requirements of Wisconsin Administrative Code NR 216 must, to the maximum extent practicable, meet the following:

- 20% reduction in total suspended solids (TSS) discharged to waters of the state by 2008.
- 40% reduction in total suspended solids (TSS) discharged to waters of the state by 2013.

## II. Storm Water Runoff Characteristics & Results

### Existing Drainage Results

Storm water runoff within city limits is conveyed via catch basins, storm sewers, curbs, gutters, ditches, grassed and concrete lined swales. Except for a few regional detention basins located in recent developments, runoff is discharged directly into the Fox River, Lake Winnebago, and Little Lake Butte des Morts. Due to the age of the City, most of its industrial facilities are located directly adjacent to the Fox River. Therefore most storm water runoff flows directly off paved surfaces into waters of the state. Approximately 95% of the City's runoff enters waters of the state without controls.

### Soil Types

The computer modeling software used to determine sediment load for this report only categorizes soils three different types, clayey, sandy, and silty. No areas within the City were determined to be sandy. Areas near the Fox River were modeled as silty and areas on the northern portion of the City were modeled as clayey.

### Existing Land Use

According to the City of Menasha Land Use Plan, existing land use can be classified as shown below:

**Table 1: City of Menasha Land Use**

Land Use	Area (acres)	Percentage
Ag./Open Space/Vacant	645.00	17.23%
Commercial	164.78	4.40%
Industrial	278.40	7.44%
Public/Institutional	157.13	4.20%
Recreational	198.46	5.30%
Residential	1,378.24	36.83%
Transportation & Utilities	732.99	19.59%
Woodlands	187.54	5.01%
total:	3,742.54 (5.85 mi <sup>2</sup> )	100%

As shown here, there is a discrepancy between the area included in the City of Menasha Land Use mapping and the area modeled. This discrepancy is due to the exclusion of industrial sites with individual WDNR Storm Water Permits.

## Water Quality Analysis

As required by the NR216 stormwater permit, all major storm sewer outfalls within the city were identified. The upstream basins for all of these outfalls were then delineated using GIS, orthographic photography, and City of Menasha storm sewer maps. A total of 73 individual drainage basins were delineated, with these basins ranging in size from 0.98 acres to 710.60 acres. The total area modeled was 3,430.93 acres (5.361 mi<sup>2</sup>).

Within each of these individual basins, land use was determined by analyzing orthographic photography and City of Menasha Land Use Maps. WinSLAMM version 9.2.5, was used to calculate the sediment source loading for current conditions within the city. An individual WinSLAMM file was then created for each land use within each drainage basin, for a total of 127 files. These files were created using Standard Land Use Files and assumed the entire city drained by curb and gutter in fair condition for the baseline “no controls” condition. The industrial facilities that currently have stormwater permits were omitted from the modeling. However, since industrial individual stormwater permits from the WDNR only cover rooftop and outdoor storage areas, their associated parking areas were included in the city wide analysis. A list of the facilities within the City of Menasha with stormwater permits can be found in Appendix A of this report. Wisconsin Department of Transportation facilities that are maintained by the WDOT or County Highway Department were not modeled. In the City of Menasha, the Highway 10/441 corridor is the only state highway not maintained by the City. As required, all areas under current development and infill areas under 5 acres in size were modeled assuming full build out. Riparian lands draining directly to waters of the state, State Highways not maintained by the City of Menasha, and internally drained areas were not included in the calculations.

WinSLAMM land use inputs are shown in Table 2. The results of the baseline “no controls” model runs are summarized in Table 3. The citywide baseline “no controls” TSS load is 2,015.63 tons.

**Table 2: WinSLAMM Land Use Inputs**

Basin I.D.	Industrial	Commercial	Residential	Recreational/ Undeveloped
	(acres)	(acres)	(acres)	(acres)
<b>total</b>	331.31 (9.71%)	547.49 (15.96%)	2,010.14 (58.59%)	540.00 (15.74%)

Input parameter files:

- Rain File, *WisReg – Green Bay Five Year Rainfall.ran*
- Pollutant Probability Distribution File, *WI\_GEO01.ppd*
- Runoff Coefficient File, *WI\_SL06 Dec06.rsv*
- Particulate Solids Concentration File, *Wi\_avg01.psc*
- Particulate Residue Delivery File, *Wi\_div01.prr*
- Street Delivery Files
  - Residential/Other, *WI\_Res and Other Urban Dec06.std*
  - Institutional/Commercial/Industrial, *WI\_Com Inst Indust Dec06.std*
  - Freeway – *Freeway Dec06.std*

**Table 3: WinSLAMM Baseline “no controls” Annualized Results**

	Industrial	Commercial	Residential	Recreational/ Undeveloped
	(tons)	(tons)	(tons)	(tons)
<b>total</b>	87.33 (23.38%)	66.56 (17.82%)	213.84 (58.59%)	5.80 (1.55%)

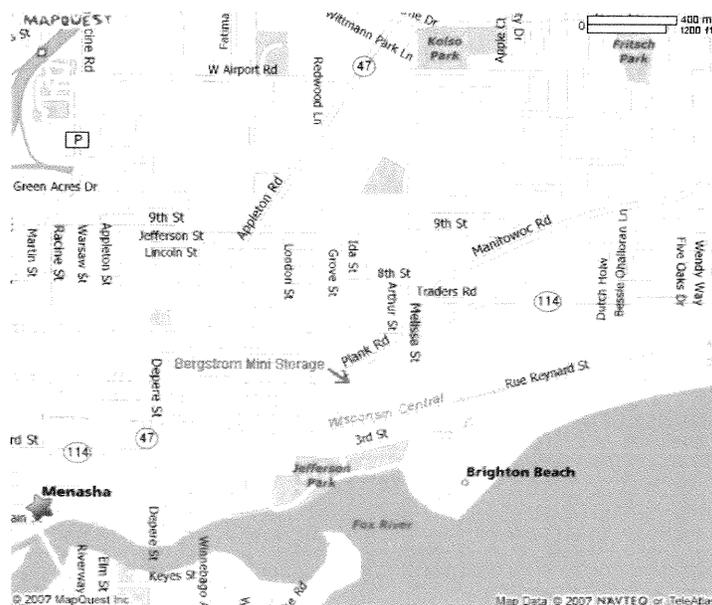
After achieving baseline TSS levels, the city was modeled with existing conditions and implemented BMPs. All current and proposed BMPs were included in the model as operational. The City of Menasha currently owns and operates six operational “wet” detention basins. Located within the City are an additional two wet detention basins and two biofiltration basins located on private property. In addition to these BMPs, the City also has an active street sweeping program that ensures all streets are cleaned a minimum of once a month. All downtown and major roads are cleaned every week and secondary roads are cleaned once a month. The street sweeping control was used for all files that contained roadway at a minimum of once a month. Files that included more heavily traveled roads that are cleaned more often were modeled assuming bi-weekly cleaning, and areas with mostly secondary roads were modeled as being cleaned every four weeks.

The street sweeper owned and operated by the City of Menasha is a standard mechanical broom style machine.

**Existing Stormwater Treatment**

Bergstrom Mini-Storage

Bergstrom Mini-Storage is located along State HWY 114 east of its intersection with Baldwin Street. This was an existing car dealership that was converted into mini-storage buildings. In order to meet the NR216 requirement of 40% TSS reduction for redevelopment sites, two biofiltration basins were designed and installed. The site was constructed under a WDNR Notice of Intent and therefore a stormwater management report with WinSLAMM calculations was created. This report is on file with the City of Menasha, therefore during this study the 40% TSS reduction was used for this site. The site is 2.86 acres in size and is denoted subarea “Z\_W”. These devices are located on private property and are maintained by the property owners.

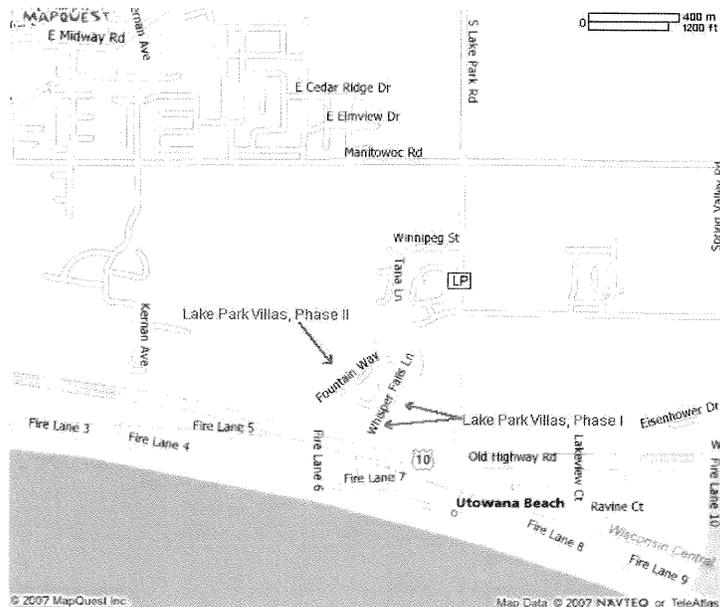


## Lake Park Villas Phase I

Lake Park Villas was a multi use development constructed through a private-public relationship between the City of Menasha and Wisco Enterprises. Lake Park Villas is located north west of the intersection of Lake Park Road and State Highway 10. Low density commercial property is located directly adjacent to Lake Park Road, currently there are three commercial buildings located here. The residential portion of the project is located west of the commercial lots; it consists of single-family attached homes located in a planned unit development (PUD) type plat. The first phase of Lake Park Villas was constructed in 2002, and included the construction of three interconnected and one disconnected wet detention basins were constructed. At the time WinSLAMM was not used to determine TSS reduction, therefore as part of this study the ponds were modeled in WinSLAMM. Runoff from 127.99 acres of high density residential and low-density commercial development drain to these four ponds. The entire 127.99 acres was modeled first to determine a total site reduction; this total site reduction was then applied to the separate commercial and residential SLAMM files used for determining citywide TSS compliance.

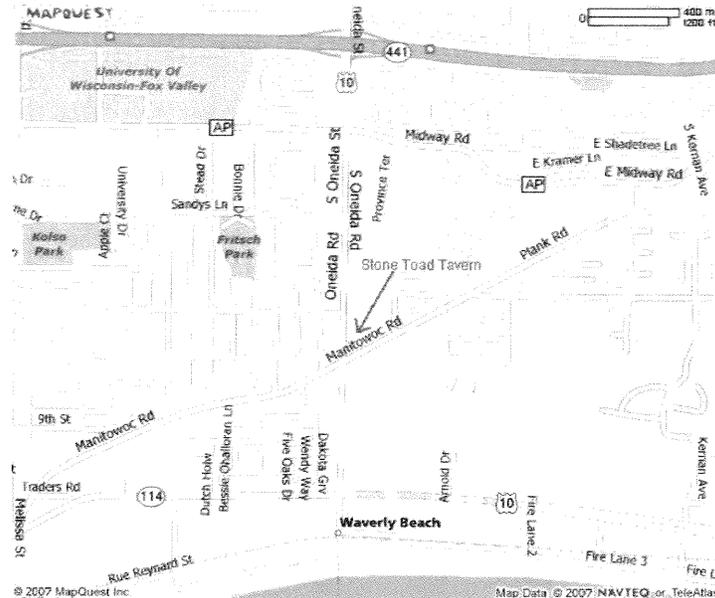
## Lake Park Villas Phase II

The second phase of Lake Park Villa's stormwater management system is currently under construction. This wet detention basin was designed to provide peak shaving and sediment reduction for the final phase of Lake Park Villas and the Silver Birch Development located in the south west corner of the intersection of Lake Park Road and Manitowoc Road. The total drainage area is approximately 145 acres, of which 80.87 acres are located within the City of Menasha. The pond was modeled in WinSLAMM as part of this report. The pond is located west of Fountain Way adjacent to an existing drainage way.



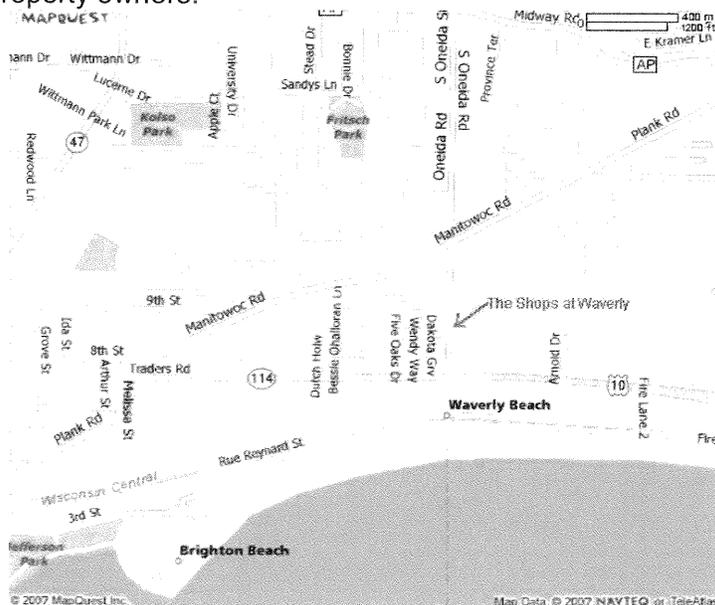
### Stone Toad Tavern

Stone Toad Tavern was constructed in 2005, and the total disturbed area was greater than 1 acre, therefore, it was subject to the requirements of NR216. To meet the requirements of NR216, a wet detention basin was constructed in the southwest corner of the site. A stormwater management plan was prepared for this development, thus for the purpose of citywide modeling, the site was modeled achieving 80% TSS reduction. The pond is located on private property and is maintained by the property owners.



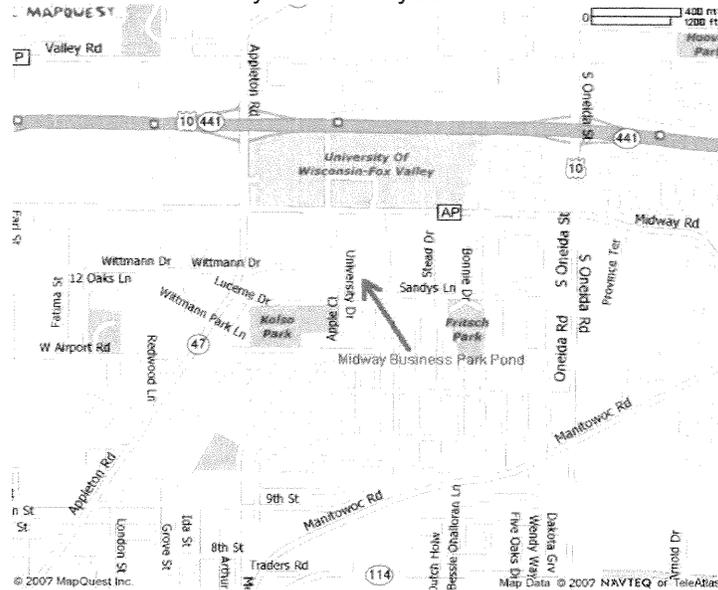
### The Shops At Waverly

The Shops at Waverly were built by a private developer in the Summer of 2006. It is located on the west side of Oneida Street, north of its intersection with State HWY 114. The Shops at Waverly is a six-unit commercial strip mall. In order to meet the requirements of the City of Menasha and the Department of Commerce, the developer installed a wet detention basin directly northwest of the intersection of Oneida Street and Five Oaks Drive. The pond is located on private property and is maintained by the property owners.



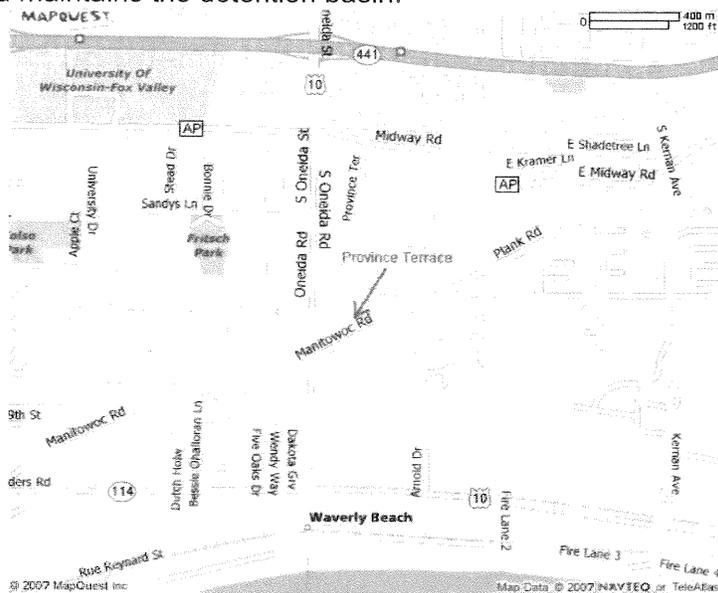
### Midway Business Park

In November of 2005, the City of Menasha constructed a 3.352 ac-ft. wet detention basin to serve a portion of the existing Midway Business Park. This basin was constructed on the south side of the business park, east of University Drive. The pond is owned and maintained by the City of Menasha. A WinSLAMM analysis of pond done during the design determined a TSS removal efficiency of 87.0%. This value was used for this city-wide analysis.



### Province Terrace

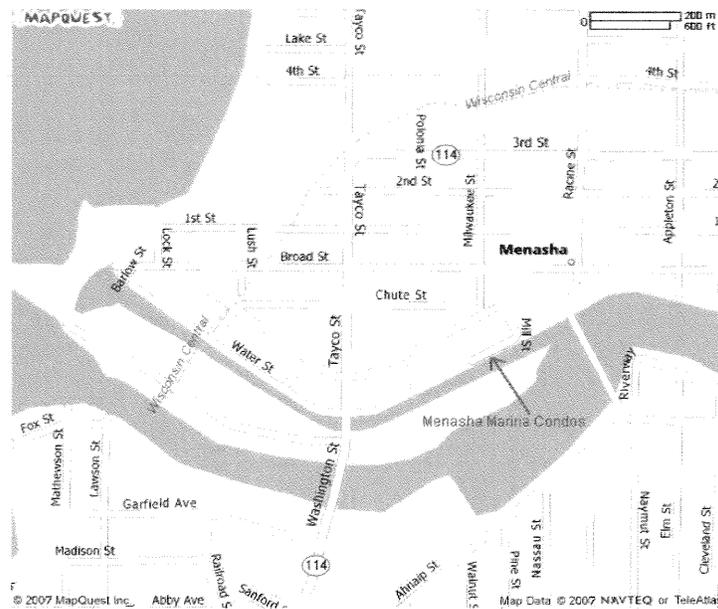
In the summer of 2005, the City of Menasha constructed a 15.46 ac-ft regional wet detention basin. This basin eliminated an existing small dry detention basin serving an existing residential subdivision. The new basin serves as flood control and TSS reduction for a total of 155 acres. Of this area, approximately 81 acres is existing residential housing. The remaining area is partially developed commercial/retail property. A Stormwater Management Plan was created and the pond was modeled using WinSLAMM. The WinSLAMM analysis showed a 79.77% reduction in total suspended solids. This reduction was used for this city-wide analysis also. The City of Menasha owns, operates, and maintains the detention basin.



## Menasha Marina Proprietary Device

As part of Menasha Marina redevelopment project, a stormwater treatment device manufactured by CDS Technologies, Model #PMSU20\_15 was installed to treat approximately 2.20 acres of parking lot and rooftop. The device is owned, operated, and maintained by the City of Menasha. The device is inspected twice per year and cleaned with a vactor truck, as the inspections deem necessary.

For modeling purposes, the proprietary device was modeled as a single sump manhole treating 2.20 acres of Subarea G. The dimensions of the device were entered as the sump dimensions. This input is consistent with the proposed WDNR Technical Standard addressing proprietary devices. WinSLAMM modeling of the device indicates a 4.32% TSS or 0.22 tons of sediment reduction for the area served by the treatment device.



This model run gave the “with controls” current conditions, as well as a citywide TSS reduction of 9.21%. The results of the current “with controls” model runs are summarized in Table 4.

**Table 4: WinSLAMM Current “with controls” Results**

Industrial		Commercial		Residential		Recreational/ Undeveloped	
TSS (tons)	TSS reduction (%)	TSS (tons)	TSS reduction (%)	TSS (tons)	TSS reduction (%)	TSS (tons)	TSS reduction (%)
84.48	3.26%	49.29	25.94%	193.12	9.69%	5.61	3.29%

## Engineering Summary

As the baseline “no controls” model shows, the City of Menasha with no stormwater controls would contribute 373.5 tons of sediment to the Fox River on a yearly basis. In order for the city to meet the March 10, 2008 deadline of a 20% TSS reduction, they will need to have BMPs in place capable of removing 74.71 tons of sediment per year. Subsequently for the city to meet the March 10, 2013 deadline of 40% TSS reduction, best management practices city will need to remove 149.41 tons per year.

Using current BMPs, the City of Menasha is removing 41.03 tons of sediment from its runoff. This equates to a city wide TSS reduction of 10.98%.

## III. Recommendations

Below are our recommendations for the City of Menasha to meet its 20% and 40% TSS reduction goals. Should any of these recommendations be implemented, a more in depth study of the drainage basin, storm sewer elevations, environmental concerns, property values, and public safety should be performed prior to implementation of any best management practice. The City will need to construct a minimum of two “wet” detention basins in order to meet their reduction goal requirements. Land values and public safety concerns play a very important role in the placement and design of these types of BMPs. This report does not address these two aspects. Property values were not taken into consideration because they can vary greatly throughout the year, location, and potential use. Locations for the ponds were suggested based on available open space. If these open spaces are found to be unfeasible, the City may (as other communities have had to) need to investigate private structure purchase and demolition in order to meet WDNR requirements. In addition public safety was not considered in the proposed location of these BMPs.

Wet detention basins are considered attractive nuisances, but they can be designed with fencing, vegetation, and slopes that make them safe in a neighborhood setting. We recommend that all detention basins located within the City be designed in accordance with the WDNR Technical Standard 1001 to achieve a minimum 60% TSS reduction. The permanent pool areas presented for each best management practice are based on WDNR Technical Standard 1001. These areas can vary when modeled with different outlet structures.

### 1. *New Detention Basin Airport Road Storm Sewer, Tayco Street, Town of Menasha*

It is our recommendation that a basin be constructed inline with the existing 96” storm sewer that flows along Airport Road, under State Hwy 441 and empties into Little Lake Butte Des Morts. This 96” storm sewer collects approximately 20% of the total suspended solids generated within the City of Menasha. A basin along this storm sewer would treat runoff from a majority of the residential development within the city. Should this basin be designed to achieve 80% sediment reduction, it would be preventing 57.44 tons of sediment from reaching Little Lake Butte Des Morts. This would equate to 15.38% increase in overall citywide TSS reduction, putting the city wide reduction in excess of the 20% requirement.

The upstream drainage basin is approximately 710.60 acres (565.64ac. residential, 106.39ac. commercial, 6.32ac. industrial, 32.25ac. parkland); therefore a permanent pool area of 8.22 acres would be required for a pond to achieve 80% TSS according to WDNR Technical Standard 1001. Incorporating flow path lengthening into the design could reduce this surface area.

Two parcels of property remain undeveloped along this route; the first is located east of Racine Street, north of Airport Road and west of Earl Street. Menasha Material Handling Corp currently owns the property. The property has a recycling/waste handling facility located on the north portion of the property, while the south portion near the 96" storm sewer remains vacant and wooded. The WDNR surface water data viewer shows an intermittent, navigable stream flowing through this property. This stream, along with any associated wetlands, could create some issues for construction of a pond on this property. Aerial photography appears to show this area to be approximately 8.91 acres in size.

The second area along this storm sewer route that could be utilized for a wet detention basin is located directly west of the State Hwy 441 right of way and east of Lakeshore Drive along the storm sewer route. Currently this property is located in the Town of Menasha and therefore coordination with the Town would be required. The WDNR Surface Water Data Viewer shows the same intermittent navigable stream flowing through this parcel. Aerial photography appears to show this area to be approximately 14.80 acres in size. Another possible challenge associated with this location is the elevation and proximity of the storm sewer to an existing ravine and wetlands.

## *2. New Detention Basin, Jefferson Park*

There are 21" and 36" storm sewers flowing along Konemac Street. Near Jefferson School the storm sewers split; the 21" continues directly south emptying into the Fox River, the 36" storm sewer bends east and continues through Jefferson Park before emptying into the Fox River. This 36" storm sewer presents another option for a detention basin. Determining a total reduction could be difficult because the 21" and 36" sewer appear to be connected at multiple points. However, we estimate an additional 2.56 tons of TSS removal could be achieved by a pond located along the 36" storm sewer. This would equal a 0.69% increase in overall citywide TSS reduction.

## *3. Harold Drive Pond*

By turning the existing dry stormwater detention basin located in the Harold Drive subdivision into a "wet" detention basin capable of achieving an 80% sediment reduction, the city would achieve an additional 1.2 tons of TSS removal. This would equal a 0.32% increase in overall citywide TSS reduction.

The upstream drainage basin is approximately 15.49 acres of residential development; therefore a minimum permanent pool area of 0.16 acres would be required for a pond to achieve 80% TSS. Aerial photography appears to show the dry bottom of the basin to be 0.20 acres, in excess of the needed 0.16. It should be noted that the WDNR Technical Standard 1001 requires wet pond permanent pool areas to be equal to or greater than 0.23 acres in size, however it does make an exception to this requirement if the pond is designed using approved modeling software.

While this pond does not provide a very high TSS reduction, it would require a very small capital investment to achieve this reduction.

#### 4. *Woodland Hills Pond*

Currently the Woodland Hills Subdivision storm sewer drains to a non-navigable wet pond. The existing outlet structure was designed to hydraulically convey the 100yr storm event. If the outlet structure be redesigned and modified with a smaller orifice, the pond could possibly be used for stormwater runoff treatment. The city would achieve an additional 4.64 tons of TSS removal. This would equal a 1.24% increase in overall citywide TSS reduction.

The upstream drainage basin is approximately 57.27 acres of residential development; therefore a minimum permanent pool area of 0.57 acres would be required for a pond to achieve 80% TSS reduction. Aerial photography appears to show the existing pond is approximately 4.80 acres, more than sufficient to achieve 80% sediment reduction.

#### 5. *New Detention Basin Graphic Packaging International Pond*

A 30" storm sewer capturing 47.58 acres of mostly residential development along the City's border with the City of Neenah flows through a parking lot owned by Graphic Packaging International and into the Fox River. This storm sewer collects approximately 1.04% of the total suspended solids generated within the City of Menasha. Aerial photos appear to show an amount of un-developed grass area along the south side of this parking lot. This is another possible location for a detention basin. A basin constructed on this 30" storm sewer capable of achieving 80% TSS reduction would remove 3.28 tons of sediment. This would equal a 0.88% increase in overall citywide TSS reduction.

The upstream drainage basin for the 30" storm sewer at this point is approximately 47.58 acres of residential development; therefore a minimum permanent pool area of 0.48 acres would be required for a pond to achieve 80% TSS reduction. Aerial photography shows 0.80 acres of undeveloped property between the existing parking lot and railroad spur. One obstacle to the creation of a stormwater basin in this area is the presence of flood plain on the property.

#### 6. *New Detention Basin Pleasents Park*

Pleasents Park is located directly adjacent to existing 60" and 24" storm sewers. These two storm sewers collect approximately 4.66% of the total suspended solids generated by the City of Menasha. The city could construct a detention basin south of the existing tennis courts and direct flows in either or both of these pipes through the pond. By intercepting the 60" storm sewer with a pond capable of 80% TSS reduction the city would remove approximately 7.84 tons of sediment per year. This would equal a 2.10% increase in overall citywide TSS reduction. By intercepting the 24" storm sewer with a pond capable of 80% TSS reduction the city would remove approximately 0.87 tons of sediment. This would equal a 0.23% increase in overall citywide TSS reduction.

The upstream drainage basin for the 60" storm sewer at this point is approximately 93.66 acres (18.93 commercial/74.73 acres residential); therefore a minimum permanent pool area of 1.20 acres would be required for a pond to achieve 80% TSS reduction. The upstream drainage basin for the 24" storm sewer is approximately 55.65 acres of residential development; therefore a minimum permanent pool area of 0.56 acres would be required for a pond to achieve 80% TSS reduction. Aerial photography appears to show 3.05 acres of undeveloped property within the Pleasents Park land parcel.

## 7. Higher Efficiency Street Sweeping

The city should also consider higher-quality vacuum or regenerative air based street sweeping machines used on a wider, bi-weekly, basis. These machines achieve, and are given credit for by the modeling program, a much higher TSS removal rate than mechanical broom sweepers. By replacing the existing mechanical broom sweeper with a WDNR approved vacuum assisted street cleaner, the city would achieve an additional 17.45 tons of TSS removal. This would equal a 4.67% increase in overall citywide TSS reduction. This calculation assumes no change in the frequency or location of cleanings, therefore an increase in frequency could also improve that rate. Costs associated with these types of vacuum assisted street sweepers are relatively high (capital costs can exceed \$150,000-\$190,000). Therefore in some cities where there are higher amounts of undeveloped affordable land, other best management practices can be more cost effective. In Menasha, the amount of undeveloped land is very low, therefore the costs to install other more land intensive BMPs makes street sweeping a viable option.

## 8. Proprietary Devices

Due to the high concentration of existing industrial and commercial development located directly adjacent to the surrounding water bodies, proprietary devices could benefit the city in reaching their 20%/40% goals. It should be noted that these types of devices are not generally given credit by the WDNR for achieving high levels of sediment reduction. On average, these devices achieve TSS reductions of 4% to 12% according to the WDNR. This makes the cost per pound of sediment removed unfavorable in comparison to wet detention basins or other best management practices unless land costs are very high.

## 9. Hard-space Reductions & Biofiltration Facilities

Another option would be installation of biofiltration facilities on large parking lot areas. These biofiltration devices could be incorporated into landscape islands. Under drains connecting to storm sewer would be required due to low permeability of most underlying soils. The devices would serve as stormwater runoff treatment only. These types of devices do require re-grading and re-configuration of parking lot layout; therefore the City should encourage them when downtown parking lot reconstructions occur.

**Table 5: Recommendations**

Recommendation	City-Wide Percent Removal Increase		Land/Equip. Purchase Required	Relative Cost
	80% TSS	60% TSS		
1 Airport Road Pond	15.38%	11.54%	Yes	High
2 Jefferson Park Pond	0.69%	0.51%	No	Medium
3 Harold Drive Pond	0.32%	0.24%	No	Low
4 Woodland Hills Pond	1.24%	0.93%	No	Low
5 Graphic Packaging Pond	0.88%	0.66%	Yes	Medium
6 Pleasents Park Pond	2.10%/0.23%	1.24%/0.17%	No	Medium
7 High Efficiency Street Sweeping	min. 4.67%, greater with expanded program		Yes	High
8 Propriety Devices	varies dependant on location, max. < 1.0%		Yes	Medium
9 Parking Lot Bio-Filters	varies dependant on location		No	Low

#### **IV. Conclusions**

Meeting 2008 requirements could be achieved by implementing as little as one or two of the enclosed recommendations. Meeting 2013 requirements will be significantly more difficult as a large percentage of TSS is generated by industrial facilities located directly adjacent to the Fox River in the downtown district. The highest TSS loads per acre of land are located directly adjacent to the waterways, as this is where most of the commercial and industrial development has occurred. Constructing wet detention basins in this area can be very difficult due to the high property value in down town districts with this unique situation the will need to place emphasis on removing as much sediment as possible from areas upstream.

At an absolute minimum, any new development, redevelopment, or site plans approved by the city within the downtown area should be required to install BMPs capable of reducing TSS from the site by greater than 40%. In addition, the recommended BMPs assume that proposed ordinances and information and education programs are implemented and strictly enforced. They also assume that new residential subdivision development, both public and private, include BMPs capable of removing a minimum 80% of TSS.

**DRAFT**

## **References**

EPA Storm Water Home Page:

<http://cfpub.epa.gov/npdes/stormwater/>

WDNR Runoff Management Home Page:

<http://www.dnr.state.wi.us/runoff/>

Wisconsin State Statutes:

*Chapter 283, Pollution Discharge Elimination*

Wisconsin Administrative Code:

*NR 216 & NR 151*

## **Agency Approvals Needed**

### Agency

Department of Natural Resources  
Jennifer Huffman  
3369 W. Brewster Street  
Appleton, WI 54914-1602

### Approval Item

Stormwater Management Plan

## **Required Permits**

### Agency

Department of Natural Resources

### Approval Item

MS4 Storm Water Permit

## **Contacts**

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Director of Public Works  
140 Main Street  
Menasha, WI 54952

Martenson & Eisele, Inc.  
Brian C. Olesen, P.E.  
Project Engineer  
1377 Midway Road  
Menasha, WI 54952



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Subarea	Industrial			Commercial			Residential			Park/Undeveloped			Subarea			Total		
	Particulate Solids Yield (lbs.)	Area Modeled (acre)	Particulate Solids reduction (%)	Particulate Solids Yield w/controls (lbs.)	Area Modeled (acre)	Particulate Solids reduction (%)	Particulate Solids Yield (lbs.)	Area Modeled (acre)	Particulate Solids reduction (%)	Particulate Solids Yield w/controls (lbs.)	Area Modeled (acre)	Particulate Solids reduction (%)	Particulate Solids Yield (lbs.)	Area Modeled (acre)	Particulate Solids Yield (ac)	Particulate Solids Yield (post)	Particulate Solids Yield (pre)	Particulate Solids Yield (ac)
A	1,451.18	5.62	14.86%	975.03	5.62	14.86%	1,451.18	5.62	14.86%	975.03	5.62	14.86%	1,451.18	5.62	0.5	203.77	173.49	0.5
AA	5,005.33	22.94	3.21%	4,844.54	22.94	3.21%	5,005.33	22.94	3.21%	4,844.54	22.94	3.21%	5,005.33	22.94	2.4	22.94	211.19	2.4
AAA	820.38	4.03	3.23%	789.91	4.03	3.23%	820.38	4.03	3.23%	789.91	4.03	3.23%	820.38	4.03	0.4	4.03	209.57	0.4
BB	1,491.46	7.32	3.23%	1,443.33	7.32	3.23%	1,491.46	7.32	3.23%	1,443.33	7.32	3.23%	1,491.46	7.32	1.2	0.15	268.92	1.2
BBB	3,155.25	15.49	3.23%	3,053.44	15.49	3.23%	3,155.25	15.49	3.23%	3,053.44	15.49	3.23%	3,155.25	15.49	1.5	15.49	203.70	1.5
C	1,385.63	6.56	3.23%	1,292.53	6.56	3.23%	1,385.63	6.56	3.23%	1,292.53	6.56	3.23%	1,385.63	6.56	0.6	6.56	203.60	0.6
C-1	200.59	0.98	14.86%	170.78	0.98	14.86%	200.59	0.98	14.86%	170.78	0.98	14.86%	200.59	0.98	0.1	0.98	204.68	0.1
CC	199.22	0.98	3.23%	192.79	0.98	3.23%	199.22	0.98	3.23%	192.79	0.98	3.23%	199.22	0.98	0.1	0.98	203.29	0.1
CCC	511.27	2.51	3.23%	494.77	2.51	3.23%	511.27	2.51	3.23%	494.77	2.51	3.23%	511.27	2.51	0.1	2.51	203.69	0.1
CC-1	1,475.51	5.77	3.64%	1,421.77	5.77	3.64%	1,475.51	5.77	3.64%	1,421.77	5.77	3.64%	1,475.51	5.77	2.82	318.53	388.35	2.82
D	1,222.47	10.42	14.86%	1,007.14	10.42	14.86%	1,222.47	10.42	14.86%	1,007.14	10.42	14.86%	1,222.47	10.42	1.0	19.12	206.56	1.0
DD	14,246.36	67.88	0.22%	14,216.45	67.88	0.22%	14,246.36	67.88	0.22%	14,216.45	67.88	0.22%	14,246.36	67.88	7.1	67.88	209.88	7.1
DDD	2,338.13	11.05	15.27%	1,981.00	11.05	15.27%	2,338.13	11.05	15.27%	1,981.00	11.05	15.27%	2,338.13	11.05	1.0	11.05	211.60	1.0
E	465.66	2.29	3.23%	450.64	2.29	3.23%	465.66	2.29	3.23%	450.64	2.29	3.23%	465.66	2.29	0.2	0.0	207.54	0.2
EE	1,618.84	2.59	11.76%	1,424.00	2.59	11.76%	1,618.84	2.59	11.76%	1,424.00	2.59	11.76%	1,618.84	2.59	0.3	17.71	29.34	0.3
EEE	25.04	2.05	5.08%	23.77	2.05	5.08%	25.04	2.05	5.08%	23.77	2.05	5.08%	25.04	2.05	0.7	2.05	203.69	0.7
F	13,657.61	26.62	1.92%	13,394.85	26.62	1.92%	13,657.61	26.62	1.92%	13,394.85	26.62	1.92%	13,657.61	26.62	10.5	279.95	77.09	10.5
FF	1,195.42	2.33	8.43%	1,094.64	2.33	8.43%	1,195.42	2.33	8.43%	1,094.64	2.33	8.43%	1,195.42	2.33	2.1	20.67	298.56	2.1
G	8,832.52	17.24	8.43%	8,087.70	17.24	8.43%	8,832.52	17.24	8.43%	8,087.70	17.24	8.43%	8,832.52	17.24	0.8	8.82	212.70	0.8
GG	7,664.03	14.97	8.44%	7,016.95	14.97	8.44%	7,664.03	14.97	8.44%	7,016.95	14.97	8.44%	7,664.03	14.97	3.5	14.97	511.96	3.5
GG-del	3,055.08	5.96	8.43%	2,797.46	5.96	8.43%	3,055.08	5.96	8.43%	2,797.46	5.96	8.43%	3,055.08	5.96	0.2	1.75	1124.97	0.2
H	1,968.69	1.75	84.33%	308.52	1.75	84.33%	1,968.69	1.75	84.33%	308.52	1.75	84.33%	1,968.69	1.75	4.3	37.14	254.36	4.3
HH	4,241.18	20.62	5.08%	4,025.89	20.62	5.08%	4,241.18	20.62	5.08%	4,025.89	20.62	5.08%	4,241.18	20.62	1.9	59.99	290.13	1.9
HHH	16,804.78	59.99	77.08%	8,854.39	59.99	77.08%	16,804.78	59.99	77.08%	8,854.39	59.99	77.08%	16,804.78	59.99	4.24	664.45	126.88	4.24
HHH-del	2,817.25	4.24	60.90%	537.96	4.24	60.90%	2,817.25	4.24	60.90%	537.96	4.24	60.90%	2,817.25	4.24	0.3	4.24	848.62	0.3
I	6,893.15	6.68	17.76%	5,668.80	6.68	17.76%	6,893.15	6.68	17.76%	5,668.80	6.68	17.76%	6,893.15	6.68	2.8	6.68	1031.91	2.8
II	9,900.76	48.61	14.86%	8,429.84	48.61	14.86%	9,900.76	48.61	14.86%	8,429.84	48.61	14.86%	9,900.76	48.61	4.2	48.61	203.68	4.2
III	9,690.03	47.58	14.86%	8,250.43	47.58	14.86%	9,690.03	47.58	14.86%	8,250.43	47.58	14.86%	9,690.03	47.58	4.1	47.58	203.66	4.1
JJ	3,494.75	17.16	14.86%	2,975.54	17.16	14.86%	3,494.75	17.16	14.86%	2,975.54	17.16	14.86%	3,494.75	17.16	1.9	19.75	220.81	1.9
JJJ	8,858.83	43.50	3.23%	8,573.00	43.50	3.23%	8,858.83	43.50	3.23%	8,573.00	43.50	3.23%	8,858.83	43.50	4.3	43.50	203.65	4.3
K	15,862.49	76.42	3.23%	15,060.39	76.42	3.23%	15,862.49	76.42	3.23%	15,060.39	76.42	3.23%	15,862.49	76.42	8.3	89.93	189.70	8.3
KK	2,145.14	5.47	19.53%	1,726.16	5.47	19.53%	2,145.14	5.47	19.53%	1,726.16	5.47	19.53%	2,145.14	5.47	1.1	6.39	437.45	1.1
KKK	7,205.31	35.38	3.23%	6,972.83	35.38	3.23%	7,205.31	35.38	3.23%	6,972.83	35.38	3.23%	7,205.31	35.38	3.5	35.38	203.65	3.5
KKK-del	4,963.66	24.04	3.23%	4,801.88	24.04	3.23%	4,963.66	24.04	3.23%	4,801.88	24.04	3.23%	4,963.66	24.04	2.8	31.04	184.91	2.8
L	9,713.88	47.70	3.23%	9,404.81	47.70	3.23%	9,713.88	47.70	3.23%	9,404.81	47.70	3.23%	9,713.88	47.70	6.3	6.3	228.97	6.3
LL	4,231.33	20.78	3.23%	4,094.81	20.78	3.23%	4,231.33	20.78	3.23%	4,094.81	20.78	3.23%	4,231.33	20.78	2.1	30.10	141.66	2.1
LLL	9,724.98	22.07	4.36%	9,300.88	22.07	4.36%	9,724.98	22.07	4.36%	9,300.88	22.07	4.36%	9,724.98	22.07	4.7	22.07	440.64	4.7
LLL-del	2,500.23	12.28	3.23%	2,419.56	12.28	3.23%	2,500.23	12.28	3.23%	2,419.56	12.28	3.23%	2,500.23	12.28	1.2	12.28	203.60	1.2
M	10,534.01	37.39	3.32%	10,184.57	37.39	3.32%	10,534.01	37.39	3.32%	10,184.57	37.39	3.32%	10,534.01	37.39	4.4	4.4	512.16	4.4
MM	268.86	1.32	3.23%	260.18	1.32	3.23%	268.86	1.32	3.23%	260.18	1.32	3.23%	268.86	1.32	0.1	1.32	203.68	0.1
MMM	9,356.77	16.48	3.23%	9,248.47	16.48	3.23%	9,356.77	16.48	3.23%	9,248.47	16.48	3.23%	9,356.77	16.48	1.6	16.48	203.69	1.6
N	2,989	13.43	8.40%	2,737.49	13.43	8.40%	2,989	13.43	8.40%	2,737.49	13.43	8.40%	2,989	13.43	1.4	13.43	202.53	1.4
NN	183.29	0.90	14.86%	156.06	0.90	14.86%	183.29	0.90	14.86%	156.06	0.90	14.86%	183.29	0.90	3.2	3.2	1771	3.2
NNN	1,472.30	7.23	3.23%	1,424.80	7.23	3.23%	1,472.30	7.23	3.23%	1,424.80	7.23	3.23%	1,472.30	7.23	0.7	0.7	203.64	0.7
OO	1,959.89	9.62	3.23%	1,896.65	9.62	3.23%	1,959.89	9.62	3.23%	1,896.65	9.62	3.23%	1,959.89	9.62	0.3	0.3	5.35	0.3
OOO	802.99	3.94	3.23%	777.08	3.94	3.23%	802.99	3.94	3.23%	777.08	3.94	3.23%	802.99	3.94	1.0	0.9	9.62	1.0
OOO-del	813.74	1.16	3.75%	783.24	1.16	3.75%	813.74	1.16	3.75%	783.24	1.16	3.75%	813.74	1.16	0.6	0.6	8.35	0.6
OOO-del	51.86	14.82	0.00%	51.86	14.82	0.00%	51.86	14.82	0.00%	51.86	14.82	0.00%	51.86	14.82	1.1	1.1	665.42	1.1
OOO-del	2,528.36	11.02	3.08%	2,528.36	11.02	3.08%	2,528.36	11.02	3.08%	2,528.36	11.02	3.08%	2,528.36	11.02	0.4	0.4	2.85	0.4
RR	5,216.65	25.61	3.23%	5,048.33	25.61	3.23%	5,216.65	25.61	3.23%	5,048.33	25.61	3.23%	5,216.65	25.61	4.4	4.4	26.94	4.4
RRR	12,903.22	54.56	2.66%	12,550.94	54.56	2.66%	12,903.22	54.56	2.66%	12,550.94	54.56	2.66%	12,903.22	54.56	3.3	3.3	29.83	3.3
S	2,503.99	12.29	3.23%	2,423.20	12.29	3.23%	2,503.99	12.29	3.23%	2,423.20	12.29	3.23%	2,503.99	12.29	1.3	1.3	93.03	1.3
SS	3,090.40	8.88	4.02%	2,966.14	8.88	4.02%	3,090.40	8.88	4.02%	2,966.14	8.88	4.02%	3,090.40	8.88	1.5	1.5	12.29	1.5
T	2,728.06	13.40	3.23%	2,640.04	13.40	3.23%	2,728.06	13.40	3.23%	2,640.04	13.40	3.23%	2,728.06	13.40	1.5	1.5	8.87	1.5
TT	33,531.55	164.65	3.23%	32,449.68	164.65	3.23%	33,531.55	164.65	3.23%	32,449.68	164.65	3.23%	33,531.55	164.65	19.8	19.8	189.24	19.8
UU	1,484.83	7.29	3.23%	1,437.02	7.29	3.23%	1,484.83	7.29	3.23%	1,437.02	7.29	3.23%	1,484.83	7.29	10.9	10.9	99.49	10.9
VV	16,860.93	82.79	3.23%	16,316.93	82.79	3.23%	16,860.93	82.79	3.23%	16,316.93	82.79	3.23%	16,860.93	82.79	5.6	5.6	57.27	5.6
VV-del	11,663.87	57.27	3.23%	11,287.54	57.27	3.23%	11,663.87	57.27	3.23%	11,287.54	57.27	3.23%	11,663.87	57.27	7.4	7.4	703.59	7.4
W	120,046.57	565.64	3.30%	116,089.79	565.64	3.30%	120,046.57	565.64	3.30%	116,089.79	565.64	3.30%	120,046.57	565.64	4.1	4.1	24.49	4.1
W-del	467.75	3.22	3.03%	453.56	3.22	3.03%	467.75	3.22	3.03%	453.56	3.22	3.03%	467.75	3.22	0.4	0.4	103.03	0.4
WW	8,338.87	40.95	3.23%	8,069.81	40.95	3.23%	8,338.87	40.95	3.23%	8,069.81	40.95	3.23%	8,338.87	40.95	6.4	6.4	54.25	6.4
WWW</																		

YV	35,018.51	68.37	-0.01%	35,022.02	68.37	7,778.61	37.29	86.43%	1,055.86	37.29	17,770.78	86.37	81.92%	3,213.26	86.37	3,213.26	86.37	123.66	2.1	206.61	34.52
Z											8,995.63	44.17	0.00%	8,995.63	44.17	8,995.63	44.17	127.96	22.0	344.39	344.42
ZZ	174,669.56	333.31	3.26%	168,967.28	333.31	133,112.98	517.49	25.94%	98,579.14	517.49	427,676.44	2,010.14	4.47%	4,696.14	9.99	386,231.46	2,010.13	3,430.93	332.5	462.06	470.08
		87.33 tons		84.48 tons		66.56 tons	49.29 tons		213.84 tons		193.12 tons			5.61 tons		540.00		5.361 miles		282.14	228.86
YV											11,607.73	5.80	3.29%	11,226.15	540.00	11,226.15	540.00				
Z											53.98	15.42	0.00%	53.98	15.42	53.98	15.42				
ZZ											11,607.73	5.80	3.29%	11,226.15	540.00	11,226.15	540.00				

percent of total area: 9.71%  
percent of total Pre-TSS: 23.39%  
percent of total Post-TSS: 25.41%

percent of total area: 15.96%  
percent of total Pre-TSS: 17.82%  
percent of total Post-TSS: 14.82%

percent of total area: 58.59%  
percent of total Pre-TSS: 57.25%  
percent of total Post-TSS: 58.08%

note: schools are placed with commercial props, but modeled as SLU schools



**Industrial Facilities Within the City of Menasha with WPDES Stormwater Permits**

PERMITTEE NAME	FID	FIN	PERMIT NO	SITE NAME	COUNTY	MINOR CIVIL DIVISION	Mailing Address 1	Mailing Address 2	City	State	Zip	Site Address	DNR REGION
Northeast Asphalt Cold Spring Aggregate	471031750	8280	S067857	WISCONSIN CYCLE E SALVAJE	Winneshago	MENASHA	1038 Winchester Rd		Neenah	WI	54952	2500 Cold Spring Road	NE
Wisconsin Cycle Salvage, Inc	471031750	8280	S067857	WISCONSIN CYCLE E SALVAJE	Winneshago	MENASHA	1038 Winchester Rd		Neenah	WI	54952	2500 Cold Spring Road	NE
Sonoco U S Mills Inc Menasha Mill	471031220	8289	S067849	Sonoco U S Mills Inc Menasha Mill	Winneshago	MENASHA	69 WASHINGTON STREET		MENASHA	WI	54952	69 Washington Street	NE
Sun Chemical Corporation GPI Menasha	471033530	8339	S067857	Sun Chemical Corporation GPI Menasha	Winneshago	MENASHA	450 MILWAUKEE STREET	Attn: Mark Mucha	MENASHA	WI	54952	450 Milwaukee Street	NE
Pechiney Plastic Packaging, Inc	471032760	8541	S067857	Pechiney Plastic Packaging Inc	Winneshago	MENASHA	271 River St		Menasha	WI	54952	271 River St	NE
Michels Materials Jorgenson No 266	471002180	3088	46515	Jorgenson Quarry	Winneshago	MENASHA	817 West Main Street		Brownsville	WI	53006	Hwy 88	NE
Michels Materials J J Schult/Curtis 154	471002930	3070	46515	MICHEL'S MATERIALS J J Schult/Curtis 154	Winneshago	MENASHA	817 West Main Street		Brownsville	WI	53006	W1/2 NW 1/4 S2 120N R17E	NE
Michels Materials Dietz No 189	471001960	3080	46515	Dietz Quarry	Winneshago	MENASHA	817 West Main Street		Brownsville	WI	53006	Shady Lane	NE
Bardger Highways Co Inc Menasha Yard	471001850	2877	46515	Bardger Highways Co Inc Menasha Yard	Winneshago	MENASHA	936 Appleton Road		Menasha	WI	54952	Hwy 47 and 9th Street	NE
Mendi Packaging Akrosil, LLC	471031770	2869	S067857	Mendi Packaging Akrosil, LLC	Winneshago	MENASHA	P O BOX 8001	206 GARFIELD AVENUE	MENASHA	WI	54952	206 Garfield Avenue	NE
SCA Tissue North America LLC	471033510	2329	S067849	SCA Tissue North America LLC	Winneshago	MENASHA	PO Box 2400		Neenah	WI	54957	190 3rd Street	NE
Hayes Manufacturing Group Inc	471438140	2078	S067857	HAYES MANUFACTURING GROUP INC	Winneshago	MENASHA	1200 Independence Drive		Neenah	WI	54957	1200 Independence Drive	NE
Graphic Packaging International	471033970	6317	S067857	Graphic Packaging International	Winneshago	MENASHA	160 Washington Street		MENASHA	WI	54952	160 WASHINGTON ST	NE
Jahnke Auto Parts Inc	471118220	495	S059145	JAHNKE AUTO PARTS INC	Winneshago	MENASHA	1047 Valley Rd		Menasha	WI	54952	1047 Valley Rd	NE
Neenah-Menasha Sewerage Commission	471005590	6124	S067857	Neenah-Menasha Sewerage Commission WWTF	Winneshago	MENASHA	101 Garfield Avenue		Menasha	WI	54952	101 Garfield Avenue, Menasha, Wisconsin	NE
Menasha Electric and Water Utility	471033640	6197	S067857	Menasha Electric and Water Utility	Winneshago	MENASHA	P O Box 340		Menasha	WI	54952	198 River St	NE
Urban Evolutions	471095130	319	S067857	Urban Evolutions	Winneshago	MENASHA	867 Valley Rd		Menasha	WI	54952	867 Valley Rd	NE
Becher Engineering Inc	471040660	60	S067857	BECHER ENGINEERING INC	Winneshago	MENASHA	721 Valley Rd		Menasha	WI	54952	721 Valley Road	NE
George A Whiting Paper Co	471032210	5629	S067849	GEORGE A WHITING PAPER CO	Winneshago	MENASHA	100 RIVER ST		MENASHA	WI	54952	100 River St	NE
ORBIS Corporation subsid of Menasha Corp	471091820	8661	S067857	ORBIS Corporation - Menasha	Winneshago	MENASHA	1320 Earl St		Menasha	WI	54952	1320 and 1326 Earl St	NE
Neenah Paper Inc Finishing Center	471163990	1480	S067857	Neenah Paper Inc Finishing Center	Winneshago	MENASHA	1300 Kimberly Drive		Neenah	WI	54957	1376 Kimberly Drive	NE
Lamars Bus Lines Inc Menasha	471015000	9177	S067857	Lamars Bus Lines Inc	Winneshago	MENASHA	2407 SOUTH POINT ROAD		GREEN BAY	WI	54313	1825 Novak Drive	NE
Paper Valley Recycling Center	47157390	10731	S058831	Paper Valley Recycling Center	Winneshago	MENASHA	PO Box 17999		Milwaukee	WI	53217	1420 Earl St	NE
USF Holland Inc	471156950	11458	S067857	U S F Holland Inc	Winneshago	MENASHA	1495 Kimberly Dr		Neenah	WI	54956	1495 Kimberly Dr	NE
INTERTAPE POLYMER GROUP	471030670	15397	S067857	Intertape Polymer Group	Winneshago	MENASHA	741 FOURTH STREET		MENASHA	WI	54952	741 Fourth Street	NE
Vinon Construction Co	399008940	16311	S067857	Portable Concrete Plant Mobile Unit 1324	Winneshago	MENASHA	PO Box 1987		Manitowish	WI	54221	variable, last at 1433 Shady Lane, Menasha	NE
WOW Logistics Co Menasha	20245	20245	S049158	WOW Logistics Co Menasha	Winneshago	MENASHA	923 Valley Road		Menasha	WI	54952	920 Valley Road	NE
NEA Asphalt Plant Located at Michels	471160470	27044	S067857	NEA Asphalt Plant Located at Michels	Winneshago	MENASHA	N3 W23650 Badfinger Road		Waaukesha	WI	53187	SE 1/4 NE 1/4 S5 T10N R17E	NE
Northeast Asphalt - Cold Spring Asphalt C64	471161320	30593	S067857	Red D Mix Concrete	Winneshago	MENASHA	2885 Allied Street		Green Bay	WI	54304	Kisser Court	NE

# DRAFT

Base Condition

File Number	File Name	File Description	Catchment Area (ac)	Number of Years in Model Run	Runoff Volume (cf)	Rv	Biological Condition	Particulate Solids Yield (lbs)	Particulate Solids Concentration (mg/L)
1	Sub_A_res	Standard Land	5.62	4.996	533646	0.184	Poor	5721.334	171.8727
2	Sub_AA_multi	Standard Land	5.45	4.996	908997	0.323	Poor	7214.329	127.2319
3	Sub_AA_res	Standard Land	17.49	4.996	1659846	0.184	Poor	17792.32	171.8412
4	Sub_AAA_res	Standard Land	4.03	4.996	382350	0.184	Poor	4098.624	171.846
5	Sub_B_ind	Standard Land	1.84	4.996	407237	0.428	Poor	4713.295	185.5408
6	Sub_B_res	Standard Land	7.32	4.996	695121	0.184	Poor	7451.31	171.8443
7	Sub_BB_res	Standard Land	15.49	4.996	1470637	0.184	Poor	15763.62	171.8356
8	Sub_BBB_res	Standard Land	6.56	4.996	622438	0.184	Poor	6672.829	171.8608
9	Sub_C-1_res	Standard Land	0.98	4.996	92868	0.184	Poor	995.304	171.8117
10	Sub_C_res	Standard Land	0.98	4.996	93429	0.184	Poor	1002.121	171.9494
11	Sub_CC_res	Standard Land	2.51	4.996	238319	0.184	Poor	2554.287	171.8197
12	Sub_CCC_ind_2	Standard Land	8.29	4.996	1832717	0.428	Poor	24630.94	215.4508
13	Sub_CCC_park	Standard Land	2.82	4.996	129454	0.089	Good	1591.371	197.0686
14	Sub_CCC_res	Standard Land	5.77	4.996	543081	0.182	Poor	7371.643	217.6016
15	Sub_D_com	Standard Land	8.7	4.996	1064103	0.237	Poor	9127.745	137.5126
16	Sub_D_res	Standard Land	10.42	4.996	989184	0.184	Poor	10603.85	171.8498
17	Sub_DD_res	Standard Land	67.88	4.996	10853800	0.31	Poor	71174.81	105.1253
18	Sub_DDD_res	Standard Land	11.05	4.996	1050629	0.184	Poor	11681.29	178.2396
19	Sub_E_com	Standard Land	1.54	4.996	186560	0.235	Poor	1596.764	137.21
20	Sub_EE_park		15.42	4.996	270211	0.034	Good	269.6871	15.99999
21	Sub_EE_res	Standard Land	2.29	4.996	217020	0.184	Poor	2326.44	171.8524
22	Sub_EEE_ind_2	Standard Land	2.59	4.996	572621	0.428	Poor	8062.757	225.7246
23	Sub_F_com	Standard Land	2.05	4.996	250349	0.237	Poor	2103.665	134.7078
24	Sub_FF_com	Standard Land	4	4.996	1125729	0.545	Poor	10112.94	144.0145
25	Sub_FF_ind	Standard Land	26.62	4.996	5888046	0.428	Poor	68233.44	185.7756
26	Sub_FF_park		224.22	4.996	3928495	0.034	Good	3920.88	16
27	Sub_FF_res	Standard Land	25.11	4.996	2383637	0.184	Poor	25550.72	171.8405
28	Sub_FFF_ind	Standard Land	2.33	4.996	516159	0.428	Poor	5972.343	185.4913
29	Sub_FFF_res	Standard Land	18.34	4.996	1741125	0.184	Poor	18663.43	171.84
30	Sub_G_com	Standard Land	8.82	4.996	1074616	0.236	Poor	9372.777	139.8226
31	Sub_GG_com	Standard Land	4.36	4.996	1228337	0.545	Poor	13117.17	171.1927
32	Sub_GG_com_det	Standard Land	1.75	4.996	491808	0.545	Poor	9835.581	320.6027
33	Sub_GG_ind	Standard Land	17.24	4.996	3813255	0.428	Poor	44127.28	185.5128
34	Sub_GG_res	Standard Land	5.19	4.996	492206	0.184	Poor	5275.983	171.8379
35	Sub_GGG_ind_2	Standard Land	14.97	4.996	3309207	0.428	Poor	38289.48	185.489
36	Sub_H_com	Standard Land	20.62	4.996	2522218	0.237	Poor	21188.92	134.6756

37	Sub_H_ind	Standard Land	5.96	4.996	1318974	0.428	Poor	15263.18	185.5118
38	Sub_H_res	Standard Land	10.56	4.996	1002317	0.184	Poor	10744.5	171.8477
39	Sub_HH_com	Standard Land	59.99	4.996	16903070	0.546	Poor	83956.7	79.62551
40	Sub_HH_com_det	Standard Land	4.24	4.996	1194113	0.545	Poor	14074.98	188.9579
41	Sub_HH_park		0.01	4.996	175	0.034	Good	0.1748709	16
42	Sub_HHH_ind	Standard Land	6.68	4.996	1479176	0.429	Poor	34438.16	373.2351
43	Sub_I_res	Standard Land	48.61	4.996	4614466	0.184	Poor	49464.22	171.8432
44	Sub_III_res	Standard Land	47.58	4.996	4516320	0.184	Poor	48411.41	171.8406
45	Sub_J_com	Standard Land	2.59	4.996	460726	0.345	Poor	4327.423	150.5738
46	Sub_J_res	Standard Land	17.16	4.996	1628782	0.184	Poor	17459.78	171.8456
47	Sub_JJ_res	Standard Land	43.5	4.996	4128875	0.184	Poor	44258.7	171.8421
48	Sub_JJJ_park	Standard Land	13.51	4.996	627718	0.09	Good	7481.714	191.0728
49	Sub_JJJ_res	Standard Land	76.42	4.996	7253341	0.184	Poor	77750.21	171.8407
50	Sub_K_park	Standard Land	0.92	4.996	41066	0.086	Good	3248.319	1268.055
51	Sub_K_res	Standard Land	5.47	4.996	521556	0.185	Poor	10717.1	329.4118
52	Sub_KK_res	Standard Land	35.38	4.996	3358216	0.184	Poor	35997.72	171.8419
53	Sub_KKK_park	Standard Land	7	4.996	325270	0.09	Good	3876.927	191.0763
54	Sub_KKK_res	Standard Land	24.04	4.996	2282199	0.184	Poor	24798.44	174.1941
55	Sub_L_com	Standard Land	2.15	4.996	382681	0.345	Poor	3593.341	150.5304
56	Sub_L_ind	Standard Land	5.62	4.996	1094223	0.377	Poor	10774.65	157.8555
57	Sub_L_res	Standard Land	47.7	4.996	4527456	0.184	Poor	48530.61	171.8399
58	Sub_LL_park		9.32	4.996	163260	0.034	Good	162.9438	16.00001
59	Sub_LL_res	Standard Land	20.78	4.996	1972075	0.184	Poor	21139.7	171.8455
60	Sub_LLL_res	Standard Land	22.07	4.996	2094830	0.184	Poor	48586	371.8133
61	Sub_M_res	Standard Land	12.28	4.996	1165254	0.184	Poor	12491.14	171.848
62	Sub_MM_ind	Standard Land	17.26	4.996	3816448	0.428	Poor	44164.21	185.5127
63	Sub_MMM_ind	Standard Land	15.35	4.996	3394856	0.428	Poor	39277.47	185.4747
64	Sub_MMM_multi	Standard Land	5.26	4.996	875814	0.323	Poor	6950.125	127.2165
65	Sub_MMM_park	Standard Land	0.01	4.996	175	0.034	Good	2.480981	227
66	Sub_MMM_res	Standard Land	32.13	4.996	3047598	0.184	Poor	45677.8	240.2758
67	Sub_N_res	Standard Land	1.32	4.996	125250	0.184	Poor	1343.222	171.9231
68	Sub_NN_res	Standard Land	16.48	4.996	1564465	0.184	Poor	16770.41	171.8464
69	Sub_NNN_multi	Standard Land	4.16	4.996	692599	0.323	Poor	5496.926	127.2333
70	Sub_NNN_res	Standard Land	9.27	4.996	880091	0.184	Poor	9433.826	171.8394
71	Sub_O_indust_2	Standard Land	12.98	4.996	2537515	0.378	Poor	29995.79	189.5023
72	Sub_O_park	Standard Land	3.83	4.996	125864	0.064	Good	897.9617	114.3717
73	Sub_O_res	Standard Land	0.9	4.996	85428	0.184	Poor	915.7296	171.8415
74	Sub_OO_res	Standard Land	7.23	4.996	686175	0.184	Poor	7355.63	171.8493
75	Sub_OOO_park	Standard Land	5.35	4.996	248402	0.09	Good	2897.556	186.9993

76	Sub_P_com	Standard Land	2.37	4.996	288564	0.236	Poor	2427.992	134.8863
77	Sub_PP_res	Standard Land	9.62	4.996	913503	0.184	Poor	9791.615	171.8332
78	Sub_PPP_park	Standard Land	4.41	4.996	204787	0.09	Good	2457.618	192.3862
79	Sub_PPP_res	Standard Land	3.94	4.996	374270	0.184	Poor	4011.721	171.8336
80	Sub_Q_ind	Standard Land	2.05	4.996	450566	0.426	Poor	6606.019	235.0415
81	Sub_Q_res	Standard Land	1.16	4.996	112076	0.187	Poor	4065.451	581.5103
82	Sub_QQ_park		14.82	4.996	259587	0.034	Good	259.0842	16
83	Sub_QQ_com	Standard Land	2.85	4.996	804372	0.545	Poor	7177.548	143.048
84	Sub_R_com	Standard Land	4.94	4.996	604092	0.237	Poor	5074.607	134.6673
85	Sub_R_ind_2	Standard Land	10.98	4.996	2146525	0.378	Poor	25373.95	189.5024
86	Sub_R_res	Standard Land	11.02	4.996	1033041	0.181	Poor	13033.24	202.2542
87	Sub_RR_ind	Standard Land	3.22	4.996	712478	0.428	Poor	8244.657	185.5084
88	Sub_RR_res	Standard Land	25.61	4.996	2431345	0.184	Poor	26062.36	171.8422
89	Sub_S_com	Standard Land	4.83	4.996	591057	0.237	Poor	4965.529	134.6786
90	Sub_S_ind_2	Standard Land	23.82	4.996	5267903	0.428	Poor	60959.7	185.5102
91	Sub_S_multi	Standard Land	1.73	4.996	288170	0.323	Poor	2004.953	111.5367
92	Sub_S_park	Standard Land	5.55	4.996	257682	0.09	Good	3071.104	191.0616
93	Sub_S_res	Standard Land	52.83	4.996	4950545	0.181	Poor	62459.55	202.2593
94	Sub_S_school	Standard Land	4.27	4.996	761200	0.345	Poor	7149.78	150.5763
95	Sub_SS_res	Standard Land	12.29	4.996	1166971	0.184	Poor	12509.95	171.8534
96	Sub_T_multi	Standard Land	2.14	4.996	356218	0.322	Poor	3228.5	145.2938
97	Sub_T_res	Standard Land	6.74	4.996	639977	0.184	Poor	12211.14	305.8826
98	Sub_TT_res	Standard Land	13.4	4.996	1271432	0.184	Poor	13629.37	171.8483
99	Sub_U_com	Standard Land	12.47	4.996	2221798	0.345	Poor	20863.55	150.538
100	Sub_U_ind	Standard Land	4.39	4.996	970326	0.428	Poor	11228.43	185.5085
101	Sub_U_park	Standard Land	7.73	4.996	359241	0.09	Good	4281.706	191.0707
102	Sub_U_res	Standard Land	164.65	4.996	15628270	0.184	Poor	167523.6	171.8414
103	Sub_UU_res	Standard Land	7.29	4.996	692128	0.184	Poor	7418.694	171.8318
104	Sub_V_com	Standard Land	16.7	4.996	2974832	0.345	Poor	27937.03	150.5499
105	Sub_V_res	Standard Land	82.79	4.996	7858559	0.184	Poor	84237.21	171.8398
106	Sub_VV_res	Standard Land	57.27	4.996	5436198	0.184	Poor	58272.68	171.8432
107	Sub_W_com	Standard Land	99.38	4.996	12146930	0.237	Poor	103352.7	136.4011
108	Sub_W_com_Det	Standard Land	24.49	4.996	2994974	0.237	Poor	41312.42	221.1313
109	Sub_W_ind_2	Standard Land	6.32	4.996	1393485	0.427	Poor	18049.4	207.6459
110	Sub_W_multi	Standard Land	13.41	4.996	2234676	0.323	Poor	17734.28	127.2218
111	Sub_W_park	Standard Land	32.25	4.996	1498435	0.09	Good	17860.9	191.0856
112	Sub_W_res	Standard Land	552.23	4.996	52412720	0.184	Poor	582018.4	178.0175
113	Sub_WW_park		99.81	4.996	1748821	0.034	Good	1745.431	16
114	Sub_WW_res	Standard Land	3.22	4.996	185284	0.112	Good	2336.861	202.1886

115	Sub_WWW_com	Standard Land	2.62	4.996	714630	0.528	Poor	5097.526	114.3512
116	Sub_WWW_ind	Standard Land	6.38	4.996	1410063	0.428	Poor	16326.47	185.6165
117	Sub_WWW_park	Standard Land	4.3	4.996	199731	0.09	Good	2417.187	194.0112
118	Sub_WWW_res	Standard Land	40.95	4.996	3886514	0.184	Poor	41660.98	171.843
119	Sub_X_com	Standard Land	27.83	4.996	3404310	0.237	Poor	28600.67	134.6821
120	Sub_X_park		4.39	4.996	76917	0.034	Good	76.76833	16
121	Sub_X_res	Standard Land	25.67	4.996	2436628	0.184	Poor	26118.95	171.8419
122	Sub_XX_res	Standard Land	80.87	4.996	7676364	0.184	Poor	61850.96	129.1676
123	Sub_Y_com	Standard Land	186.64	4.996	22829720	0.237	Poor	191781.7	134.6695
124	Sub_Y_ind_2	Standard Land	70.05	4.996	15490060	0.428	Poor	182965	189.3553
125	Sub_Y_park		68.93	4.996	1207726	0.034	Good	1205.385	16
126	Sub_YY_com	Standard Land	37.29	4.996	4560495	0.237	Poor	38861.92	136.6076
127	Sub_YY_res	Standard Land	86.37	4.996	8203568	0.184	Poor	88782.8	173.4957
128	Sub_Z_ind_2	Standard Land	68.37	4.996	15120290	0.428	Poor	174952.5	185.4908
129	Sub_Z_park		15.42	4.996	270211	0.034	Good	269.6871	15.99999
130	Sub_Z_res	Standard Land	44.17	4.996	4192588	0.184	Poor	44942.19	171.8441
131	Sub_ZZ_res	Standard Land	9.99	4.996	949766	0.184	Poor	24558.62	414.5242

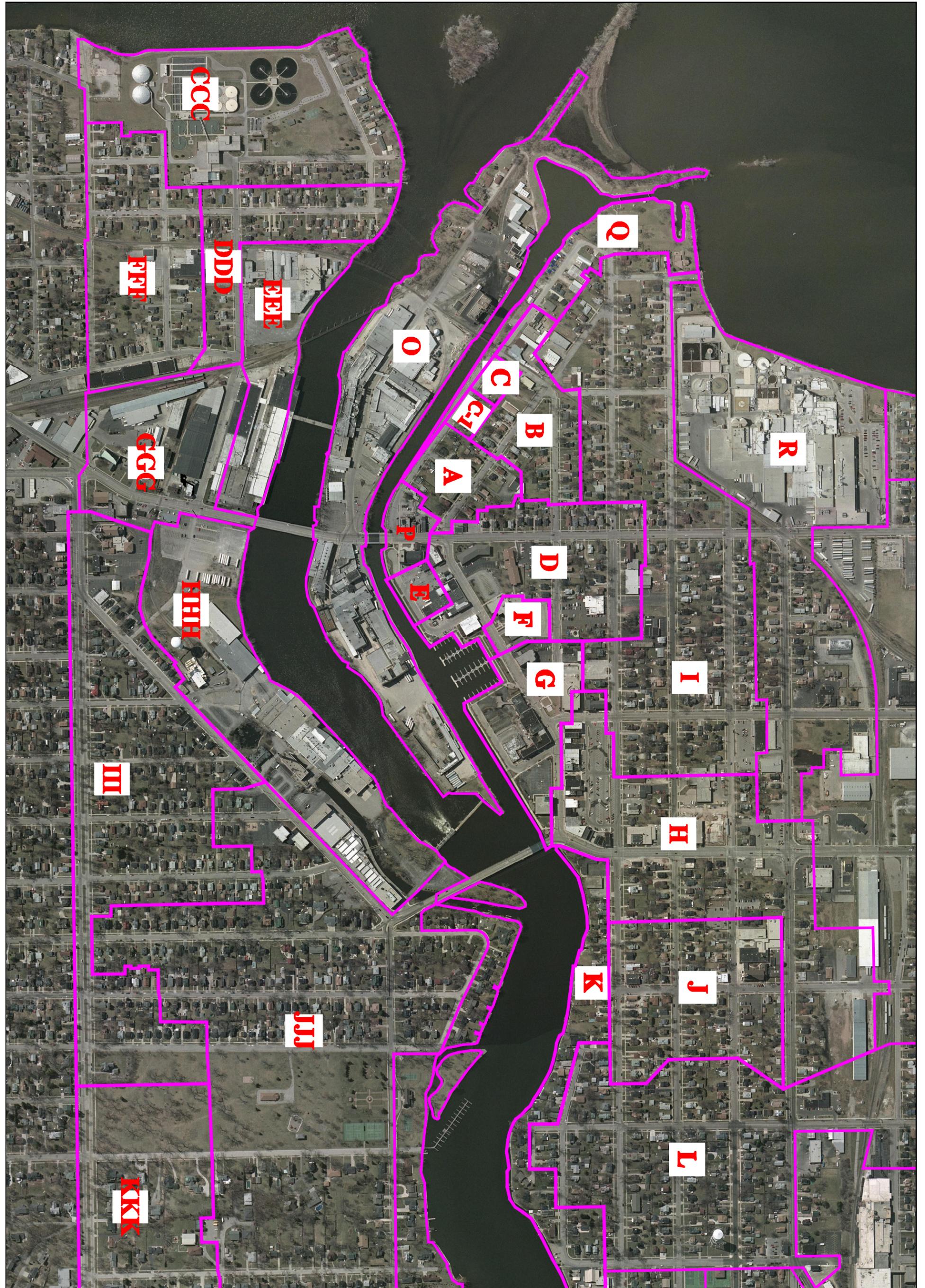
Post-BMPs

File Number	File Name	File Description	Catchment Area (ac)	Number of Years in Model Run	Runoff Volume (cf)	Rv	Biological Condition	Particulate Solids Yield (lbs)	Particulate Solids Concentration (mg/L)
1	Sub_A_res	Standard Land	5.62	4.996	533646	0.184	Poor	4871.242	146.3354
2	Sub_AA_multi	Standard Land	5.45	4.996	908997	0.323	Poor	6985.072	123.1887
3	Sub_AA_res	Standard Land	17.49	4.996	1659846	0.184	Poor	17218.27	166.2969
4	Sub_AAA_res	Standard Land	4.03	4.996	382350	0.184	Poor	3966.378	166.3012
5	Sub_B_ind	Standard Land	1.84	4.996	407237	0.428	Poor	4315.7	169.8894
6	Sub_B_res	Standard Land	7.32	4.996	695121	0.184	Poor	7210.877	166.2993
7	Sub_BB_res	Standard Land	15.49	4.996	1470637	0.184	Poor	15255	166.2913
8	Sub_BBB_res	Standard Land	6.56	4.996	622438	0.184	Poor	6457.504	166.315
9	Sub_C-1_res	Standard Land	0.98	4.996	92868	0.184	Poor	963.1836	166.267
10	Sub_C_res	Standard Land	0.98	4.996	93429	0.184	Poor	853.1926	146.3955
11	Sub_CC_res	Standard Land	2.51	4.996	238319	0.184	Poor	2471.882	166.2766
12	Sub_CCC_ind_2	Standard Land	8.29	4.996	1832717	0.428	Poor	24013.37	210.0488
13	Sub_CCC_park	Standard Land	2.82	4.996	129454	0.089	Good	1561.356	193.3517
14	Sub_CCC_res	Standard Land	5.77	4.996	543081	0.182	Poor	7103.154	209.6762
15	Sub_D_com	Standard Land	8.7	4.996	1064103	0.237	Poor	8626.894	129.9671
16	Sub_D_res	Standard Land	10.42	4.996	989184	0.184	Poor	9028.47	146.3186
17	Sub_DD_res	Standard Land	67.88	4.996	10853800	0.31	Poor	71020.41	104.8972
18	Sub_DDD_res	Standard Land	11.05	4.996	1050627	0.184	Poor	9897.071	151.0152
19	Sub_E_com	Standard Land	1.54	4.996	186560	0.235	Poor	1513.288	130.0369
20	Sub_EE_park		15.42	4.996	270211	0.034	Good	269.6871	15.99999
21	Sub_EE_res	Standard Land	2.29	4.996	217020	0.184	Poor	2251.382	166.3079
22	Sub_EEE_ind_2	Standard Land	2.59	4.996	572621	0.428	Poor	7114.298	199.1716
23	Sub_F_com	Standard Land	2.05	4.996	250349	0.237	Poor	1996.816	127.8658
24	Sub_FF_com	Standard Land	4	4.996	1125729	0.545	Poor	9750.048	138.8467
25	Sub_FF_ind	Standard Land	26.62	4.996	5888046	0.428	Poor	66921.18	182.2028
26	Sub_FF_park		224.22	4.996	3928495	0.034	Good	3920.88	16
27	Sub_FF_res	Standard Land	25.11	4.996	2383637	0.184	Poor	24726.35	166.2962
28	Sub_FFF_ind	Standard Land	2.33	4.996	516159	0.428	Poor	5468.836	169.8532
29	Sub_FFF_res	Standard Land	18.34	4.996	1741125	0.184	Poor	15890.64	146.31
30	Sub_G_com	Standard Land	8.82	4.996	1074616	0.236	Poor	8401.97	125.3402
31	Sub_GG_com	Standard Land	4.36	4.996	1228337	0.545	Poor	10880.39	142.0004
32	Sub_GG_com_Det	Standard Land	1.75	4.996	491808	0.545	Poor	1541.343	50.24194
33	Sub_GG_ind	Standard Land	17.24	4.996	3813255	0.428	Poor	40406.13	169.869
34	Sub_GG_res	Standard Land	5.19	4.996	492206	0.184	Poor	4492.167	146.3092
35	Sub_GGG_ind_2	Standard Land	14.97	4.996	3309291	0.428	Poor	35056.68	169.8237
36	Sub_H_com	Standard Land	20.62	4.996	2522218	0.237	Poor	20113.33	127.8391

37	Sub H_ind	Standard Land	5.96	4.996	1318974	0.428	13976.1	169.8684
38	Sub H_res	Standard Land	10.56	4.996	1002317	0.184	9148.193	146.3164
39	Sub HH_com	Standard Land	59.99	4.996	16905730	0.546	19256.54	18.26026
40	Sub HH_com_Det	Standard Land	4.24	4.996	1194113	0.545	2687.667	36.08217
41	Sub HH_park		0.01	4.996	175	0.034	0.1748709	16
42	Sub HHH_ind	Standard Land	6.68	4.996	1479176	0.429	28321.32	306.9419
43	Sub I_res	Standard Land	48.61	4.996	4614466	0.184	42115.49	146.313
44	Sub III_res	Standard Land	47.58	4.996	4516320	0.184	41219.14	146.311
45	Sub J_com	Standard Land	2.59	4.996	460726	0.345	3876.251	134.8752
46	Sub J_res	Standard Land	17.16	4.996	1628782	0.184	14865.79	146.3145
47	Sub JJ_res	Standard Land	43.5	4.996	4128875	0.184	42830.69	166.2976
48	Sub JJJ_park	Standard Land	13.51	4.996	627718	0.09	7348.903	187.681
49	Sub JJJ_res	Standard Land	76.42	4.996	7253341	0.184	75241.7	166.2965
50	Sub K_park	Standard Land	0.92	4.996	41066	0.086	2519.604	983.5848
51	Sub K_res	Standard Land	5.47	4.996	521556	0.185	8623.886	265.0727
52	Sub KK_res	Standard Land	35.38	4.996	3358216	0.184	34836.27	166.2975
53	Sub KKK_park	Standard Land	7	4.996	325270	0.09	3808.121	187.6851
54	Sub KKK_res	Standard Land	24.04	4.996	2281886	0.184	23990.2	168.5398
55	Sub L_com	Standard Land	2.15	4.996	382681	0.345	3505.842	146.8649
56	Sub L_ind	Standard Land	5.62	4.996	1094223	0.377	10440.25	152.9564
57	Sub L_res	Standard Land	47.7	4.996	4527456	0.184	46964.8	166.2957
58	Sub LL_park		9.32	4.996	163260	0.034	162.9438	16.00001
59	Sub LL_res	Standard Land	20.78	4.996	1972075	0.184	20437.67	166.3012
60	Sub LLL_res	Standard Land	22.07	4.996	2094830	0.184	46467.19	355.5987
61	Sub M_res	Standard Land	12.28	4.996	1165254	0.184	12088.13	166.3035
62	Sub MM_ind	Standard Land	17.26	4.996	3816448	0.428	43318.18	181.959
63	Sub MMM_ind	Standard Land	15.35	4.996	3394856	0.428	38525.54	181.924
64	Sub MMM_multi	Standard Land	5.26	4.996	875814	0.323	6950.125	127.2165
65	Sub MMM_park	Standard Land	0.01	4.996	175	0.034	2.480981	227
66	Sub MMM_res	Standard Land	32.13	4.996	3047598	0.184	43932.01	231.0926
67	Sub N_res	Standard Land	1.32	4.996	125250	0.184	1299.874	166.375
68	Sub NN_res	Standard Land	16.48	4.996	1564465	0.184	16229.34	166.302
69	Sub NNN_multi	Standard Land	4.16	4.996	692599	0.323	5045.471	116.7838
70	Sub NNN_res	Standard Land	9.27	4.996	880091	0.184	8631.041	157.2165
71	Sub O_Indust_2	Standard Land	12.98	4.996	2537515	0.378	28046.96	177.1902
72	Sub O_park	Standard Land	3.83	4.996	125864	0.064	690.5763	87.95737
73	Sub O_res	Standard Land	0.9	4.996	85428	0.184	779.6832	146.3116
74	Sub OO_res	Standard Land	7.23	4.996	686175	0.184	7118.292	166.3044
75	Sub OOO_park	Standard Land	5.35	4.996	248402	0.09	2848.785	183.8518

76	Sub_P_com	Standard Land	2.37	4.996	288564	0.236	Poor	2302.779	127.9301
77	Sub_PP_res	Standard Land	9.62	4.996	913503	0.184	Poor	9475.685	166.2889
78	Sub_PPP_park	Standard Land	4.41	4.996	204787	0.09	Good	2412.597	188.8619
79	Sub_PPP_res	Standard Land	3.94	4.996	374270	0.184	Poor	3882.274	166.289
80	Sub_Q_ind	Standard Land	2.05	4.996	450566	0.426	Poor	6421.368	228.4716
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83	Sub_QQQ_com	Standard Land	2.85	4.996	804372	0.545	Poor	4153.33	82.77557
84	Sub_R_com	Standard Land	4.94	4.996	604092	0.237	Poor	5018.139	133.1688
85	Sub_R_ind_2	Standard Land	10.98	4.996	2146525	0.378	Poor	25001.01	186.7172
86	Sub_R_res	Standard Land	11.02	4.996	1033041	0.181	Poor	12631.67	196.0224
87	Sub_RR_ind	Standard Land	3.22	4.996	712478	0.428	Poor	8086.716	181.9546
88	Sub_RR_res	Standard Land	25.61	4.996	2431345	0.184	Poor	25221.48	166.2978
89	Sub_S_com	Standard Land	4.83	4.996	591057	0.237	Poor	4910.252	133.1793
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91	Sub_S_multi	Standard Land	1.73	4.996	288170	0.323	Poor	2214.383	123.1875
92	Sub_S_park	Standard Land	5.55	4.996	257682	0.09	Good	3016.593	187.6704
93	Sub_S_res	Standard Land	52.83	4.996	4950545	0.181	Poor	60535.07	196.0274
94	Sub_S_school	Standard Land	4.27	4.996	761200	0.345	Poor	6975.581	146.9076
95	Sub_SS_res	Standard Land	12.29	4.996	1166971	0.184	Poor	12106.31	166.3084
96	Sub_T_multi	Standard Land	2.13	4.996	356133	0.323	Poor	3115.113	140.2248
97	Sub_T_res	Standard Land	6.74	4.996	639977	0.184	Poor	11703.71	293.1718
98	Sub_TT_res	Standard Land	13.4	4.996	1271432	0.184	Poor	13189.65	166.304
99	Sub_U_com	Standard Land	12.47	4.996	2221798	0.345	Poor	20355.42	146.8717
100	Sub_U_ind	Standard Land	4.39	4.996	970326	0.428	Poor	11013.35	181.9551
101	Sub_U_park	Standard Land	7.73	4.996	359241	0.09	Good	4205.734	187.6805
102	Sub_U_res	Standard Land	164.65	4.996	15628270	0.184	Poor	162118.6	166.297
103	Sub_UU_res	Standard Land	7.29	4.996	692128	0.184	Poor	7179.342	166.2879
104	Sub_V_com	Standard Land	16.7	4.996	2974832	0.345	Poor	27256.5	146.8826
105	Sub_V_res	Standard Land	82.79	4.996	7858559	0.184	Poor	81519.39	166.2955
106	Sub_VV_res	Standard Land	57.27	4.996	5436198	0.184	Poor	56392.56	166.2988
107	Sub_W_com	Standard Land	99.38	4.996	12146930	0.237	Poor	102144.6	134.8067
108	Sub_W_com_Det	Standard Land	24.49	4.996	2994847	0.237	Poor	10402.7	55.68447
109	Sub_W_ind_2	Standard Land	6.32	4.996	1393485	0.427	Poor	17629.54	202.8157
110	Sub_W_multi	Standard Land	13.41	4.996	2234676	0.323	Poor	17170.79	123.1794
111	Sub_W_park	Standard Land	32.25	4.996	1498435	0.09	Good	17543.85	187.6937
112	Sub_W_res	Standard Land	552.23	4.996	52412720	0.184	Poor	562813.8	172.1435
113	Sub_WW_park		99.81	4.996	1596224	0.031	Good	1593.13	16
114	Sub_WW_res	Standard Land	3.22	4.996	185284	0.112	Good	2265.991	196.0568

115	Sub_WWW_com	Standard Land	2.62	4.996	714630	0.528	Poor	5040.095	113.0629
116	Sub_WWW_ind	Standard Land	6.38	4.996	1410063	0.428	Poor	16015.05	182.0759
117	Sub_WWW_park	Standard Land	4.3	4.996	199731	0.09	Good	2372.167	190.3978
118	Sub_WWW_res	Standard Land	40.95	4.996	3886514	0.184	Poor	40316.78	166.2984
119	Sub_X_com	Standard Land	27.83	4.996	3404310	0.237	Poor	28282.28	133.1827
120	Sub_X_park		4.39	4.996	76917	0.034	Good	76.76833	16
121	Sub_X_res	Standard Land	25.67	4.996	2436628	0.184	Poor	25276.21	166.2973
122	Sub_XX_res	Standard Land	80.87	4.996	7684484	0.184	Poor	12615.72	26.31843
123	Sub_Y_com	Standard Land	186.64	4.996	22829720	0.237	Poor	189649.4	133.1722
124	Sub_Y_ind_2	Standard Land	70.05	4.996	15490060	0.428	Poor	179307	185.5697
125	Sub_Y_park		68.93	4.996	1207726	0.034	Good	1205.385	16
126	Sub_YY_com	Standard Land	37.29	4.996	4560495	0.237	Poor	5275.058	18.54291
127	Sub_YY_res	Standard Land	86.37	4.996	8202291	0.184	Poor	16053.44	31.37586
128	Sub_Z_ind_2	Standard Land	68.37	4.996	15120290	0.428	Poor	174970	185.5094
129	Sub_Z_park		15.42	4.996	270211	0.034	Good	269.6871	15.99999
130	Sub_Z_res	Standard Land	44.17	4.996	4192588	0.184	Poor	44942.19	171.8441
131	Sub_ZZ_res	Standard Land	9.99	4.996	949766	0.184	Poor	23461.91	396.0129



**STORMWATER SUBBASIN EXHIBIT**

PLATE 8

CITY OF MENASHA SWMP

WINNEBAGO COUNTY, WISCONSIN

NO.	DATE	DRAWN BY EAE	CHECKED ASM	APPROVED	REVISION

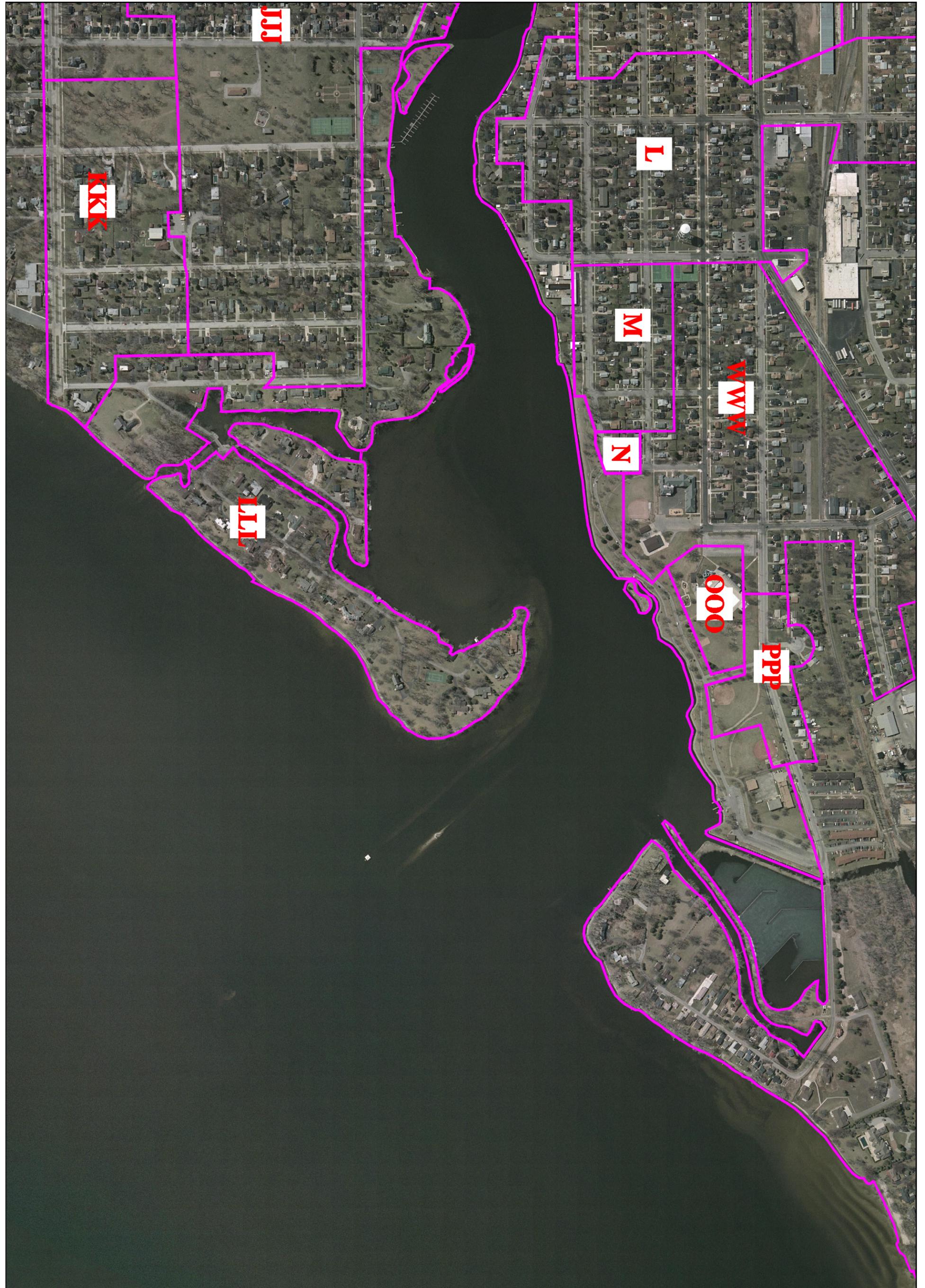
**Martenson & Eisele, Inc.**

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Menasha, WI 54952  
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920.731.0381 1.800.236.0381

Planning  
Environmental  
Surveying  
Engineering  
Architecture



DATE	5/29/07
SCALE	1"=500'
DESIGNER	OSCAR MARTENS
CHECKER	MANUELA STORNING
DATE	2/10/916



**STORMWATER SUBBASIN EXHIBIT**

PLATE 9

CITY OF MENASHA SWMP

WINNEBAGO COUNTY, WISCONSIN

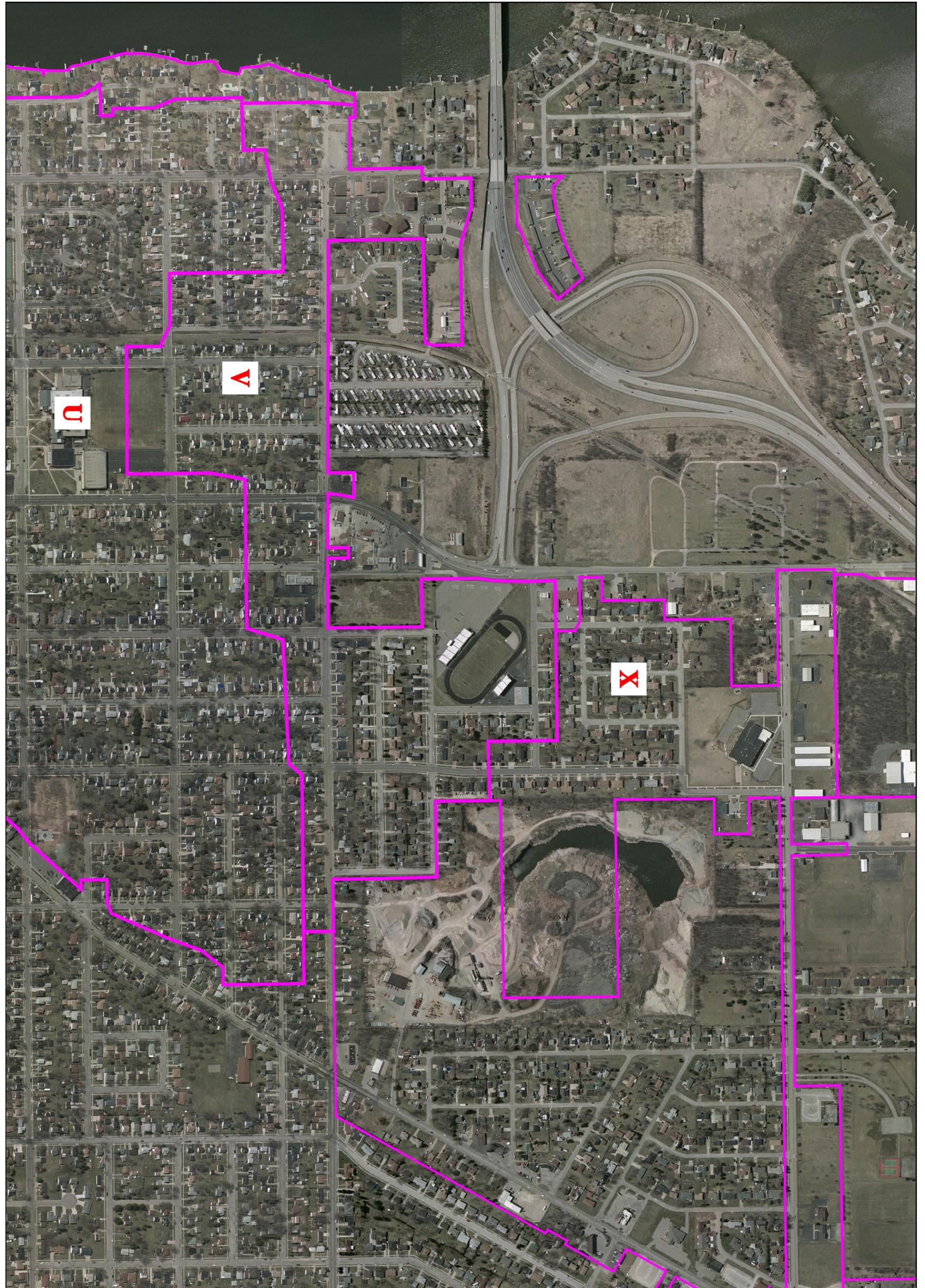
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PLATE 4

**CITY OF MENASHA SWMP**

WINNEBAGO COUNTY, WISCONSIN

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**STORMWATER SUBBASIN EXHIBIT**  
**PLATE 5**  
**CITY OF MENASHA SWMP**  
 WINNEBAGO COUNTY, WISCONSIN

**SCALE**  
 1"=500'  
**DATE**  
 5/29/07  
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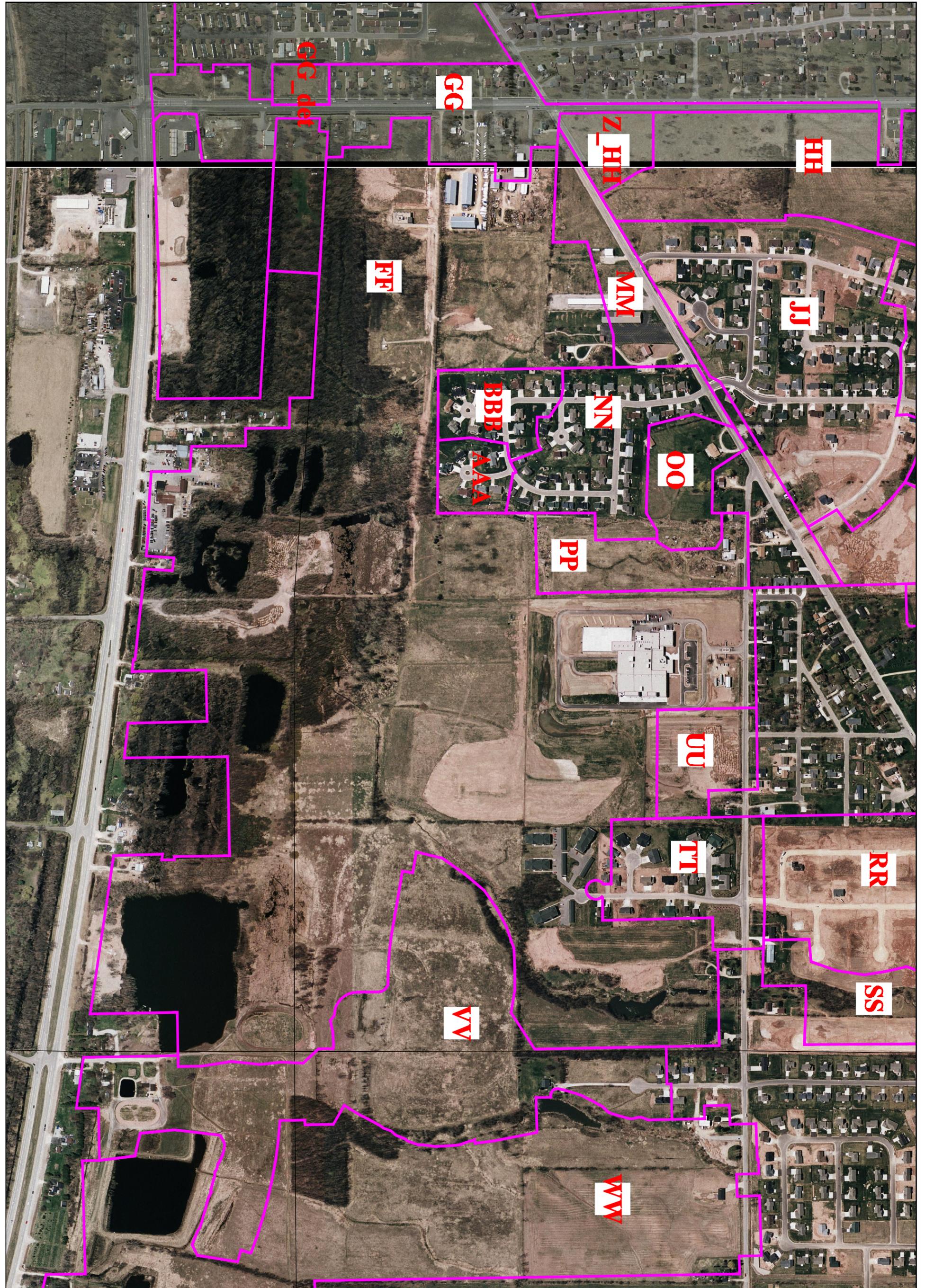
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				REVISION	

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PLATE 6

CITY OF MENASHA SWMP

WINNEBAGO COUNTY, WISCONSIN

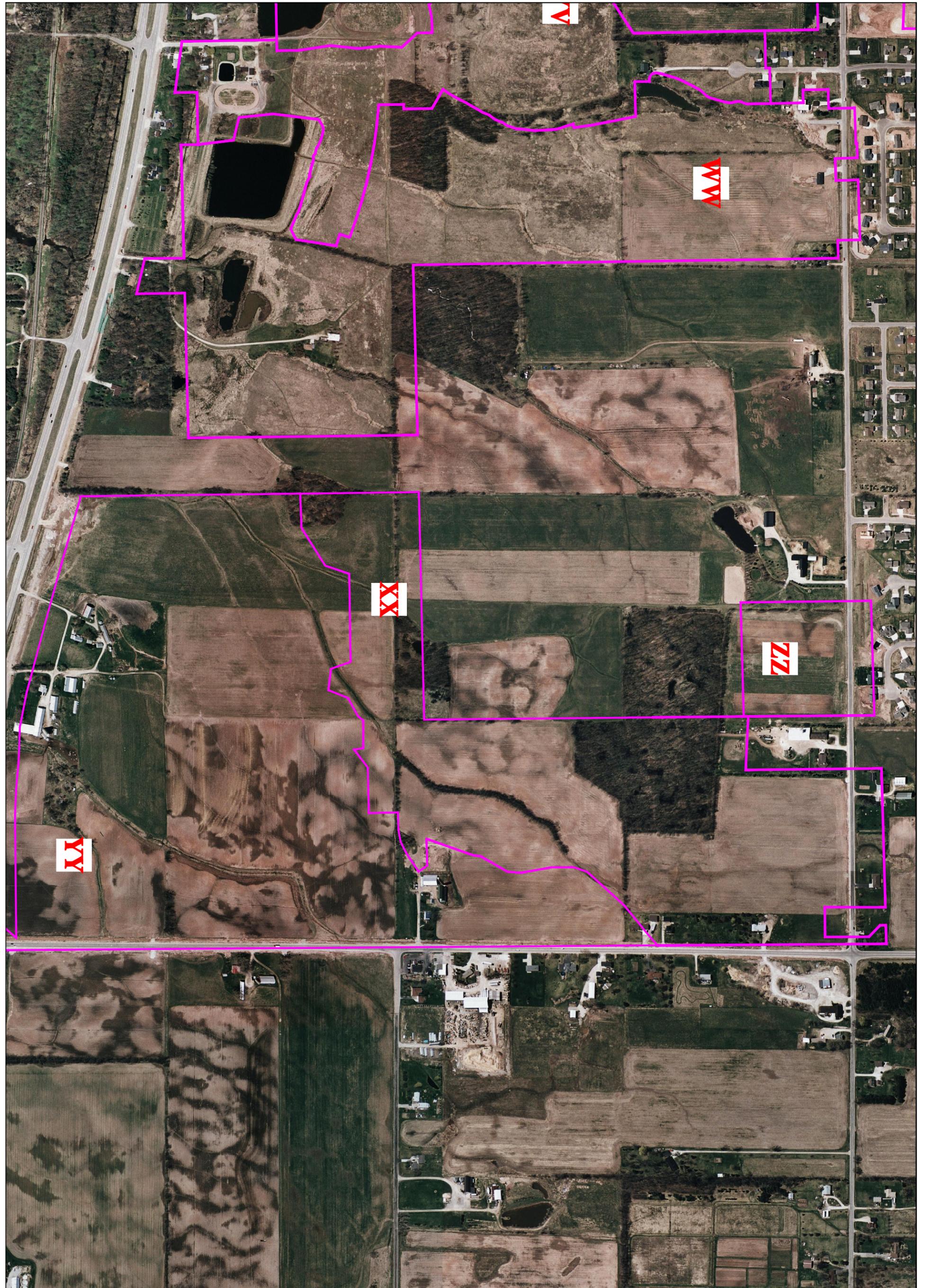
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**STORMWATER SUBBASIN EXHIBIT**

PLATE 7

**CITY OF MENASHA SWMP**

WINNEBAGO COUNTY, WISCONSIN

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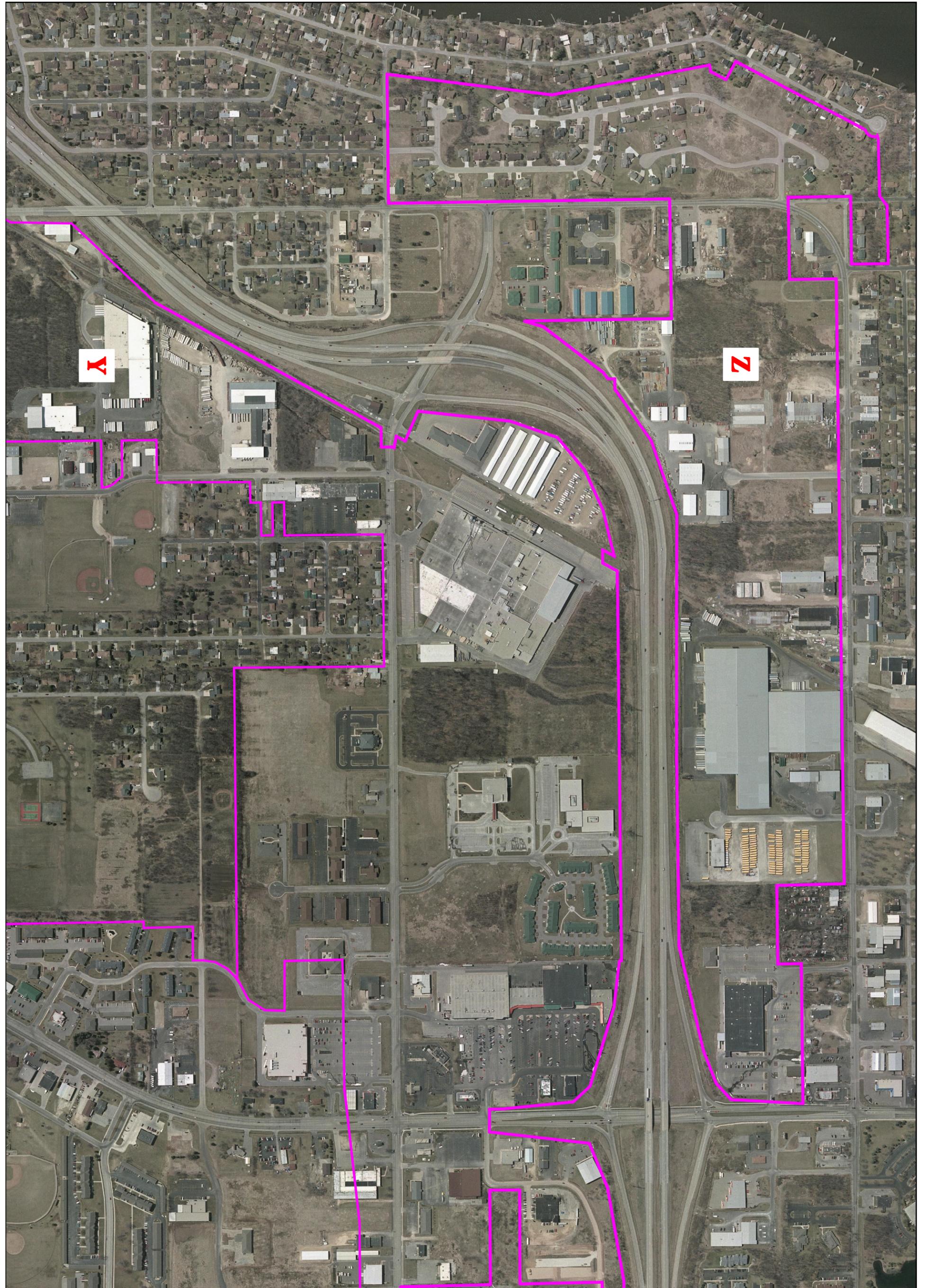


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**STORMWATER SUBBASIN EXHIBIT**

PLATE 1

CITY OF MENASHA SWMP

WINNEBAGO COUNTY, WISCONSIN

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EAE	ASM	

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 DATE  
 5/29/07  
 OSBORNE  
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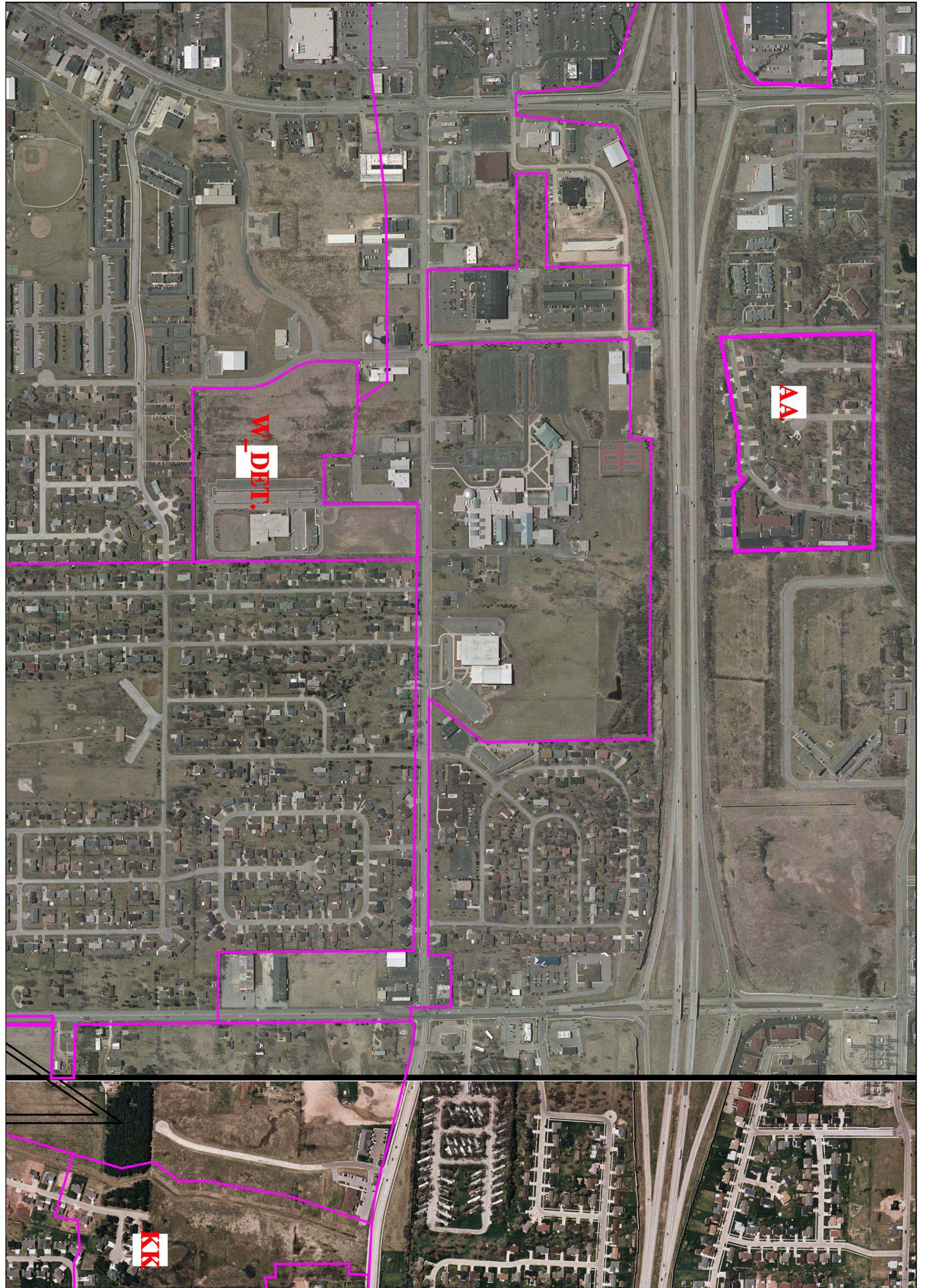
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**STORMWATER SUBBASIN EXHIBIT**

PLATE 2

CITY OF MENASHA SWMP

WINNEBAGO COUNTY, WISCONSIN

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		EAE	ASM	REVISION

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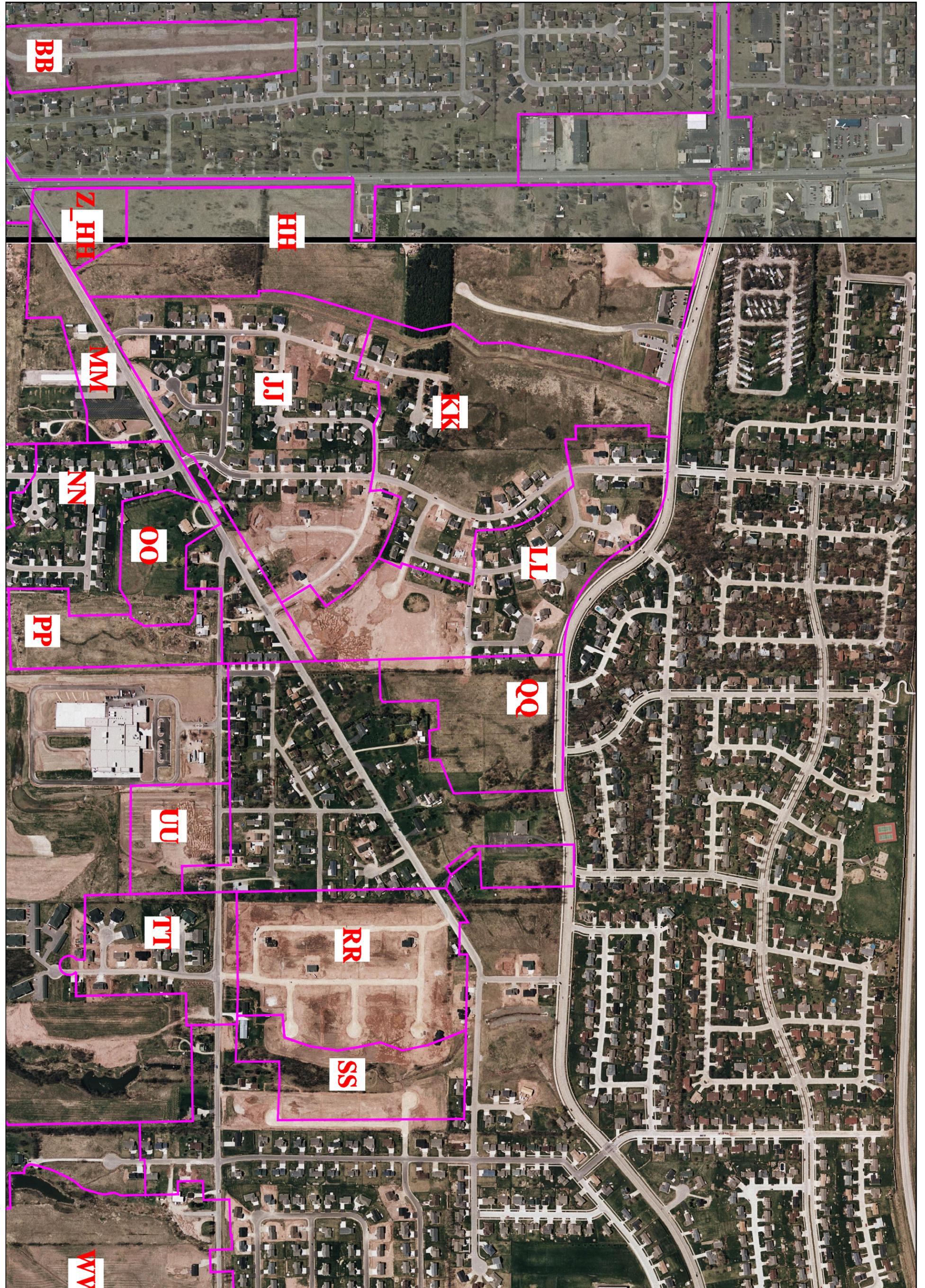
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M.E. 210-916



**STORMWATER SUBBASIN EXHIBIT**

PLATE 3

CITY OF MENASHA SWMP

WINNEBAGO COUNTY, WISCONSIN

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		EAE	ASM	REVISION

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**Storm Water  
Utility Study**

**City of Menasha**

**Draft 4/16/2008**

**DRAFT**

Martenson & Eisele, Inc.



## Introduction

The City of Menasha is considering the development and implementation of a Storm Water Utility to perform the following:

1. Provide flood protection for the City and it's residents.
2. Protect nearby waters of the state from unnecessary sediment loading.
3. Maintain existing storm water management facilities and construct new facilities.

## Federal and State Regulations

The City of Menasha, as an "urbanized area", is subject to the requirements of the United States Environmental Protection Agency (USEPA) Phase II storm water regulations and Wisconsin Department of Natural Resources (DNR) Chapter NR 216 and NR 151 administrative codes. As part of Chapter NR 216 compliance, the City will need to apply for and obtain a Wisconsin Pollutant Discharge Elimination System (WPDES) permit.

To obtain permit coverage, the City of Menasha will need to establish and maintain a storm water management program that addresses the following six categories:

1. **Public Education and Outreach** – satisfied through educational materials and community meetings.
2. **Public Participation and Involvement** – satisfied through public meetings and community projects (clean-ups, workshops, and volunteer programs).
3. **Illicit Discharge Detection and Elimination** – satisfied through city ordinances for illegal dumping, identifying and labeling all storm water discharge points, and community education.
4. **Construction Site Runoff Control** – satisfied through storm water ordinances, site plan reviews, and site inspections.
5. **Post-Construction Runoff Control** – satisfied through citywide best management practices (BMPs), and long-term maintenance program.
6. **Pollution Prevention and Good Housekeeping** – satisfied through city employee training, BMPs, and long-term maintenance program.

According to Chapter NR 151, the storm water management program will need to be developed and implemented in two stages. Stage 1, which must be completed by March 10, 2008, includes the development of the program and a 20% reduction of total suspended solids that enter waters of the state. Stage 2, which must be completed by March 10, 2013, requires the implementation of measures that provide a 40% reduction of total suspended solids that enter waters of the state.

## Property Tax versus Storm Water Utility Fee

The City of Menasha currently conducts management activities related to storm water in the city. The cost of these activities is paid for through property tax. Significant increases in the budget for storm water management will be necessary to meet the Federal and State regulations.

A stormwater utility is an equitable and fair way to support the stormwater management systems necessary to ensure that the City of Menasha will be in compliance with the Federal and State stormwater regulations.

The adoption of a storm water utility will result in a major shift of revenue and expenses from the property tax rolls. Initially this shift may result in a decrease in the operating budget for the City of Menasha. The impact will be most clearly seen in the first year of operations.

## Process

There are four major steps in the process of creating a storm water utility.

- The development of a storm water management plan
- Informing the public on the need for storm water management
- Determining how to equitably fund the costs of the storm water utility
- Implementing the utility in a cost efficient and effective manner

### **Storm Water Management Plan**

As part of the permitting process, the city will need to develop a storm water management plan. This plan will aid the city in determining how much sediment is currently discharged into waters of the state and what they will need to do to meet the 2008 and 2013 total suspended solid reduction goals. Specifically, the storm water management plan will:

1. Analyze current sediment loading
2. Provide a description of current land uses
3. Identify current storm water management measures (detention basins, treatment swales, filtration devices, etc.)
4. Identify drainage areas and receiving water bodies'
5. Describe current maintenance practices (street sweeping, snow removal, storm sewer repairs and upgrades, etc.)
6. Identify specific areas of storm water contamination (industrial sites, material storage)
7. Provide conclusions on how to improve current storm water management measures
8. Provide long-term maintenance requirements for existing and proposed measures

### **Public Information and Education Program**

The purpose of this portion of the process is to provide public facilitation, information, and education on the storm water utility and its development process. This is described in more detail on page 4.

### **Rate Calculation**

There are two parts to this portion of the process – costs and revenues. Costs include administrative, operating and capital projects related to the community's storm water management activities. The revenue portion begins with the determination of the amount of impervious surface in the community that generates the stormwater runoff and from where it is coming. A system of allocating that stormwater among all of the developed properties in the community is used that is called an Equivalent Residential Unit or ERU. An ERU is the amount of storm water that drains off an average single-family residential property. When the community calculates the costs and the number of ERUs in the community, it can then determine what the cost per ERU is and bill developed properties for that amount.

**Implementation**

The most important implementation step is the creation and adoption of a storm water utility ordinance that clearly states what is to be accomplished with the utility and how it is to be accomplished. The next most important step is to set up the administrative procedures to efficiently and effectively operate the utility.

**Authority**

The authority for the City of Menasha to create a storm water utility is specified in Wisconsin State Statutes 66.0821, which states in part that, “. . . a municipality may construct, acquire or lease, extend or improve any plant and equipment within or without its corporate limits for the collection, transportation, storage, treatment and disposal of sewage or storm water and surface water, including necessary lateral, main and interceptor sewers . . . .”

## **Area Served by the Storm Water Utility**

The City of Menasha Storm Water Utility will serve all of the properties within the city limits. In addition, storm water from properties that are in the Towns of Harrison and Menasha and the City of Appleton are part of the storm water management system. This is due to the irregular boundary line between the City of Menasha and the adjacent municipalities that has occurred as a result of annexations.

At this time, fees for the Storm Water Utility will only be assessed against properties that are in the City of Menasha. It is recommended that the City of Menasha initiate discussions with the Towns of Harrison and Menasha and the City of Appleton to look at the properties in those municipalities that are being served by the City of Menasha's storm water management system and determine how a fee can be equitably assessed against those properties.

## **Public Information and Education Program**

The need for public services like electricity and water provided through a utility are commonly known and understood. That is not the case for storm water. An important part of the creation of a storm water utility is to inform and educate the public on why storm water must be managed and how the costs of doing that can be equitably distributed among those who are responsible for the storm water.

### **City of Menasha Web Site and Newsletter**

The City of Menasha has and will continue to use its web site and newsletter to provide information to residents and businesses in the city on storm water in general and the City's management of it specifically.

### **Project Brochure**

A brochure has been developed by the Community Development Department that covers a variety of topics related to storm water and to the concept of a storm water utility.

### **Meeting with Tax Exempt Property Owners**

Because the cost of operating and maintaining the City's storm water management system will be funded through a utility instead of the property tax, owners of property tax exempt properties like schools, churches, and not-for-profit organizations will be required to pay for a service for which they previously did not pay. A meeting was on July 12, 2006 to share information on the storm water utility with the owners of tax-exempt properties in the City of Menasha.

### **Other**

The City of Menasha will be looking at other ways to help inform and educate the public on storm water and on the storm water utility itself.

## Storm Water Utility Costs

### Introduction

There are three primary areas of costs that will be included in the Storm Water Utility, which are described in more detail below. The costs for the first year of utility operations are based on an analysis of the costs related to storm water in the City of Menasha's 2006 Operating Budget and on the storm water management practices outlined in the City of Menasha's Storm Water Management Plan.

### Administrative

Staff from several City departments will be involved in managing the Storm Water Utility. Projecting the administrative costs at this time is a challenge because time spent on storm water activities has not been tracked separately. Estimates have been made as to the percent of total time staff will spend on storm water activities based on discussions with department heads and on budgets from other communities that have a storm water utility.

It is recommended that a system be established to track the time spent by staff on administrative activities for the Storm Water Utility. This will allow for more accurate budgeting of these costs in the future.

#### **City Attorney**

The City Attorney will be involved in the drafting of the initial ordinance establishing the Storm Water Utility and in any amendments to the ordinance in the future.

#### **City Clerk**

The City Clerk will be involved in preparing meeting notices and minutes related to the operation of the Storm Water Utility.

#### **Comptroller/ Treasurer**

This department will have the key role in setting up and administering the billing process.

#### **Assessor**

The Assessor's Office will be instrumental in tracking changes to properties that will generate changes in the fees charged to a property.

#### **Information Systems**

Significant time will be incurred by the Information Systems Department in initially setting up the quarterly billing system. Annual maintenance and updating will be needed.

#### **Public Works**

The Public Works Department will have the most involvement with the Storm Water Utility on an on-going basis as it plans, designs, and constructs new storm water management practices, and supervises the operation and maintenance of the storm water management system.

#### **Community Development**

The major role for the Community Development Department will be the Community Information and Education Program. A second role will be in the administration of the City's ordinances related to storm water management.

## Operating

There are two primary areas related to the operations of the storm water management system.

### **Street Cleaning**

These operating costs are associated with the materials, labor, and equipment to sweep and clean the streets in the City on a regular basis from Spring through Fall.

### **Storm Sewers and Drains**

These operating costs are associated with the maintenance and construction of storm sewer systems throughout the City.

## Capital Improvement Program

The City of Menasha has a five-year Capital Improvements Program for street projects, while other capital needs are budgeted for on an annual basis. Current large storm water projects are borrowed for and either special assessed or included in a Tax Increment Financing district. No major storm water projects other than TIF projects were included in the 2006 Operating Budget because of the state imposed levy limits.

### **Storm Sewers and Drains**

The 2008 Operating Budget included \$20,000 for capital projects. A similar amount is projected for future years.

### **Storm Water Management Plan**

Initial findings and recommendations from the City of Menasha Storm Water Management Plan indicate current storm water facilities within the City of Menasha remove approximately 10% of the total suspended solids (TSS) within the storm water runoff. As stated earlier in this report, Menasha is required to meet 20% TSS removal by 2008. To meet this goal, we recommend Menasha locate and build a large retention pond to reduce the sediment load to the Fox River/Little Lake Buttes Des Morts and also purchase a new, high-efficiency street sweeper. Wet detention basins are the most cost effective means of improving storm water runoff quality (i.e. removing TSS) and high efficiency (regenerative air) street sweepers greatly improve the street sweeping efforts of a municipality.

To be effective, the pond will need to be located on the city's northwest side where water from a 96" storm sewer interceptor can be treated before it empties into Little Lake Butte des Morts. A preliminary estimate of the cost of the pond is \$750,000. This number includes design, engineering, and construction, but does not include the cost of land acquisition. A new high-efficiency street sweeper would cost approximately \$150,000 - \$200,000. Therefore, the City of Menasha will need to spend at least \$900,000 in the near future to meet the 20% TSS removal goal. Additional funds will be needed to meet the 40% TSS removal goals for 2013.

Table 1 (next page) shows the costs from the 2008 Operating Budget that could have been included in a Storm Water Utility Budget.

**Table 1 – 2008 Operating Budget Storm Water Costs**

Account		2008 Budget	Potential Storm Water Allocation	
Name	Number		Percent	Actual
<b>OPERATING</b>				
City Attorney	51-??-103	\$152,777	2%	\$3,055
City Clerk	51-??-104	\$144,900	2%	\$2,898
Comptroller/Treasurer	51-??-106	\$395,042	5%	\$19,752
Assessor	51-??-107	\$69,900	2%	\$1,400
Information Systems	51-??-108	\$380,821	5%	\$19,041
Building & Plumbing Inspector	52-??-201	\$118,250	5%	\$5,913
Engineering/Public Works	54-??-111	\$575,422	25%	\$143,855
Street Cleaning	54-??-123	\$103,963	100%	\$103,963
Storm Sewers & Drains	54-??-134	\$169,551	100%	\$169,551
Community Development	56-??-202	\$259,868	10%	\$25,987
Recycling - Yard Waste	54-??-308	\$352,757	40%	\$141,103
<b>CAPITAL</b>				
Storm Sewers & Drains	54-??-134	\$20,000	100%	\$20,000
			<b>Total</b>	<b>\$656,520</b>

Source: City of Menasha 2008 Operating Budget

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## Storm Water Utility Revenues

### Introduction

A range of potential factors was considered in determining how to equitably charge the properties in the City of Menasha for the storm water management system.

The primary factor is the impervious area of a property, with impervious being defined as the roofs of building and ground surfaces where storm water does not penetrate, such as blacktop or concrete, or where some storm water may be absorbed but most runs off, such as hard-packed gravel surfaces. Other potential physical factors included the topography of the property and the soil types on the property.

Another factor that was considered was how detailed the evaluation of a property's impervious surface should be. At one end of the range, each and every parcel's impervious surface could be measured on site, and multiple categories of residential, commercial, and industrial parcel types could be developed. At the other end of the range, just a few categories of parcel types could be developed with impervious surface calculations based on existing property records and no field measurement.

The process selected is somewhere in between. A sample of residential properties was used to determine the average impervious area while every commercial and industrial property was measured through the use of air photos and geographic information systems software.

### Equivalent Residential Unit

The standard unit of measurement of the impervious surface on a property is an Equivalent Residential Unit or ERU. An ERU is the average impervious surface of a single-family residential property in the City of Menasha. The impervious surface of all of the other types of property in the City of Menasha will be based on the single-family ERU as shown below.

### Calculation of Residential Impervious Areas

Only single and two family residential properties are included in the residential category. A random sample of 95 residential properties was generated based on lot sizes. The average impervious surface for all 95 properties was calculated to be 3,765 square feet. When the five smallest and five largest lots were eliminated from the sample in order to reduce the impact of very small or very large lots, the average impervious surface was calculated to be 2,980 square feet. This means one ERU in the City of Menasha will be 2,980 square feet.

The impervious surfaces associated with single-family residential properties include the roof of the house, garage and other outbuildings, the driveway, a patio, and private sidewalks. Public sidewalks and streets are not included.

Most communities use one single-family ERU category. Some communities have used two or even three ERU categories to reflect significant differences between the impervious surfaces on small lots/small houses and large lots/large houses.

**It is recommended that the City of Menasha use one ERU category of 2,980 square feet for all of the single-family residential properties in the city. Two-family residential uses (duplexes) should be assigned an ERU factor of 1.5 or 0.75 ERU per unit.**

There are approximately 5,000 residential ERUs in the City of Menasha.

In the future, the City may choose to develop two or possibly three categories of residential ERUs to more equitably reflect the range of house sizes in the community. For example, residential properties with 2,000 to 4,000 square feet of impervious surface would be considered average and be assigned one ERU. Properties with less than 2,000 square feet may be assigned an ERU that is 75% of the average ERU and properties with more than 4,000 square feet of impervious surfaces may be assigned an ERU that is 125% of the average ERU. The City of Menasha should understand that using more than one ERU for single family residential properties would require a significant amount of time to measure the impervious surface of each property, versus the sample used in this study.

## Calculation of Non-Residential Impervious Areas

Non-residential properties include commercial, industrial and property tax exempt. There are approximately 9,000 non-residential ERUs in the City of Menasha. The number of ERUs is determined by dividing the area of impervious surfaces by 2,980, which is one ERU. All commercial, industrial, and property tax exempt properties are assigned a minimum of one ERU.

### **Commercial**

Included in the commercial category are multi-unit apartments, mobile home parks, and multi-unit condominiums.

### **Industrial**

Warehousing and manufacturing properties are included in this category.

### **Property Tax Exempt**

Included in this category would be property owned by the Menasha School District, UW-Fox Valley, churches, parochial schools, hospitals, non-for-profit organizations, and government-owned property.

## Example of Storm Water Utility Fee

The calculation of the storm water fee that will be charged to each property owner in the City of Menasha begins with projections of the costs in building and managing the storm water management system. These costs are then divided by the total number of ERUs in the City of Menasha to come up with the cost per ERU. The cost per ERU figure is then multiplied by the number of ERUs that have been assigned to every property in the City of Menasha. This can be summarized as follows:

$$\text{Annual Costs divided by Number of ERUs} = \text{Cost/ERU}$$

$$\text{Cost per ERU times the Number of ERUs Assigned to a Property} = \text{Annual Fee}$$

For example, if the annual costs are \$1,000,000 and there are 20,000 ERUs, the cost per ERU would be \$50 per ERU. A residential property owner would pay a fee of \$50. A commercial property owner with ten (10) ERUs would pay a fee of \$500 and a manufacturing company with fifty (50) ERUs would pay a fee of \$2,500.

## Credits

It is common for a storm water utility to offer a credit to the owner of a property if the owner can demonstrate that the storm water management system he/she has in place for his/her property either reduces the amount of storm water that needs to be managed by the municipality's storm water management system and/or it reduces the sediment loading to the state's waters.

An example of these credits can be found in the City of Oshkosh, which offers credits toward reducing the number of ERUs allocated to a property. The two credits are a riparian property credit and a post development flow control credit.

According to the City's Storm Water Utility Credit Application Manual, the riparian property credit can be applied to, "Properties that discharge storm water from all or a portion of the property directly into the Fox River, Lake Buttes Des Morts, or Lake Winnebago, without entering a City of Oshkosh municipal storm water conveyance system.... "

The post development flow control credit, "...applies to all properties that provide privately constructed and maintained runoff flow control measures . . . as component of a land development process."

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## Implementation Plan

There are three steps that need to be taken to implement the Storm Water Utility in the City of Menasha.

- Creation and adoption of an ordinance
- Development of billing procedures
- Development of a system to monitor development and redevelopment

These are explained in more detail below.

### Ordinance

The creation and adoption is a required legal step in the formation of a storm water utility. The ordinance typically consists of the following sections:

- General Provisions
  - Findings and necessity
  - Establishment
  - Authority
  - Definitions
- Rates and Charges
  - Rate Charges
  - Customer Classification
  - New Construction
  - Method of Appeal
  - Special Assessment Authority
  - Budget Excess Revenues
  - Severability

The actual rates to be charged per ERU are typically not contained in the ordinance, but are instead adopted by resolution. This allows the community to change the rates annually or as needed without going through the process of amending the ordinance.

### Billing and Collection

There are several options for the billing and collection of the fee charged through the Storm Water Utility.

#### Utility Billing and Collection Systems

The most common option is to “piggyback” the storm water utility fee on either the community’s water and sewer bill or on the electric bill, if the community has a municipal electric utility. Discussions have been held with Menasha Utilities, which does the billing for water and electricity for most, but not all of properties in the city. Some City of Menasha residents are billed by the Town of Menasha Utility District and the Waverly Sanitary District for water and sewer and by WE Energies for electric service. While it would be possible to bill using Menasha Utilities, Town of Menasha Utilities, and the Waverly Sanitary District, a single billing and collection system would be strongly preferred.

**City of Menasha Property Tax Billing and Collection System**

The only bill received by every property in the City of Menasha from the City of Menasha is the property tax bill. While the same system could be used for generating quarterly bills from the Storm Water Utility, the City does not have the staff time to handle the increased workload of billing to and collecting from over 6,000 property owners in the City of Menasha on a quarterly basis.

**Contract Billing and Collection Systems**

A third option would be to contract out with a private company for billing and collecting.

**Monitoring Development and Redevelopment**

Critical to the equitable implementation of the storm water utility district is to accurately monitor changes in the use of property in the City of Menasha. Vacant lots are developed. Existing structures are expanded or demolished. These changes need to be monitored through building and demolition permits for potential adjustments to the ERU factor assigned to the property.

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**SECTION IV. General Information**

- a. Describe what efforts the municipality has undertaken to invite the municipal governing body, interest groups, and the general public to review and comment on the annual report.

A copy of the draft report, along with a summary was sent to the City Council members for review at the April 7, 2008 meeting and Council members will be asked to comment orally or in writing at the April 21, 2008 meeting. Interest groups and the general public will be invited to the April 21 meeting and two periods for public comment - one on any subject and the other on matters pertaining to the agenda – are provided at each meeting.

A copy of the draft report was posted on the City of Menasha Website, Public Works/Engineering Department web page. An explanation of the report and reasons for preparation will also be posted to the web page along with a request for review and comments. Viewers will be able to respond directly to the City with comments via a link on the web page. Alternative methods to submit comments will also be listed.

All non-profit groups in the City of Menasha were invited to a meeting which described the potential creation of a stormwater utility and MS4 general permit requirements.

A news release will be sent to the city's official newspaper. The article included the following:

- An invitation to the Common Council meeting where the report was reviewed
- An explanation of what the report covers and the reasons for preparing the report
- Where to find and obtain a copy of the draft report
- A request for comments
- The location, date and time of the meeting
- How and where to send comments

- b. Describe how elected and municipal officials and staff have been kept apprised of the permit and its requirements.

Officials and staff have been kept apprised of the permit and its requirements by attending and participating in the following meetings:

- Quarterly meetings of staff from permitted communities within Calumet County (including County staff) to discuss methods to meet permit requirements and potential partnerships
- Quarterly general business meetings of Northeast Wisconsin Stormwater Consortium (NEWSC) to discuss permit requirements
- Presentation of the Non-point Education for Municipal Officials (NEMO) given before the Common Council by the NEWSC Coordinator
- Monthly meetings of the NEWSC Information and Education Committee to discuss public education and outreach requirements and methods to meet them

## Annual Report MS4 General Permit No. WI-S050075-1

- Monthly meetings of the NEWSC Erosion Control Committee to discuss construction site pollutant control and post-construction stormwater management requirements and methods to meet them

City Staff attended three educational workshops in 2007 conducted by UWEX on stormwater permit requirements.

On September 21, 2007, staff from Calumet County, the City of Menasha and other permitted communities within Calumet County sponsored and conducted a bus tour and educational workshop for County and local government officials and staff and the media. The tour and workshop focused on permit requirements, natural resource problems and best management practices related to the permits, and how communities might work together to meet permit conditions.

NEWSC also sponsored or conducted various educational activities on a regional basis in 2006 and 2007 that were attended by or reached City officials and staff. For a list of these activities, please refer to the annual report submitted by NEWSC to DNR.

### c. Title and date of stormwater management plan.

Note: Sections of the City of Menasha Storm Water Management Plan are being developed as permit conditions and deadlines are met. Sections will be submitted to DNR as they are completed.

### d. Describe cooperative efforts to perform one or more conditions of the general permit.

This cooperative effort assists the City in meeting a portion of permit requirement 2.1.3 under Public Education and Outreach. Its purpose is to promote the proper use of lawn and garden fertilizers by the public.

The City of Menasha is a member of NEWSC. In 2007, NEWSC applied for (and has since been awarded) a DNR grant to help develop and implement a focused marketing campaign to area homeowners and renters. The purpose of the campaign is to positively change their behaviors related to lawn and garden fertilizer applications. The City, and all other permitted communities that are members of NEWSC, signed a memorandum of understanding (MOU) with NEWSC and East Central Wisconsin Regional Planning Commission (ECWRPC) to endorse the use of City dues to NEWSC in the marketing campaign as a grant match funds and to allow ECWRPC to act as financial administrator of the grant funds. A copy of the MOU document has been submitted with this report.

**SECTION V. Permit Conditions**

a. Public Education and Outreach

The City of Menasha, in cooperation with Calumet County, the City of Appleton, the Town of Harrison, and Northeast Wisconsin Stormwater Consortium, developed a draft Public Education and Outreach/Public Involvement and Participation program plan to fulfill this requirement. The final plan is scheduled to be submitted with the City of Menasha Storm Water Management Plan.

The City will begin implementation of this plan in 2008. Parts of it will be implemented in cooperation with the permitted communities listed above and NEWSC. A partnership agreement or memorandum of understanding (MOU) may be developed with one or more of the communities to assist in implementation. The city, alone and in cooperation with NEWSC and other permitted communities, has developed materials for and completed activities designed to meet requirements under section 2.1 of the general permit during 2006 and 2007. Although the city's Public Education and Outreach/Public Involvement has not yet been adopted, the completed materials and activities meet some of the city permit requirements. Therefore, the city wishes to report them as such. A short description of them is provided below.

City staff members served on the NEWSC Information and Education committee during 2006 and 2007. The committee and NEWSC as a whole developed materials for and implemented public education and outreach activities designed to meet permit requirements 2.1.1 through 2.1.8 during those years. Please refer to the Public Education and Outreach sections of the annual report submitted by NEWSC to DNR for a list of the materials and activities.

City staff created materials for distribution and distributed materials created by NEWSC via the city website and newsletter. The city newsletter reaches all households in the city of Menasha. These materials were designed to meet portions or all permit requirements of 2.1.2, 2.1.3, and 2.15; informing and educating the public about property management of hazardous household materials, promoting beneficial reuse of leaves and grass clippings and proper use of fertilizers and pesticides, and promoting infiltration of residential storm water runoff.

The City of Menasha, in cooperation with Calumet, Winnebago, and Outagamie Counties, the City of Appleton, and the Towns of Menasha and Harrison, participated in promoting an Urban Clean Sweep program to dispose of household hazardous wastes. Educational brochures, advertising, and news articles were distributed to make people aware of why proper disposal of hazardous wastes is important. This program helped the city to meet requirements of Section 2.1.2 in 2007.

b. Public Involvement and Participation

The City of Menasha, in cooperation with Calumet County, the City of Appleton, the Town of Harrison, and Northeast Wisconsin Stormwater Consortium, developed a draft Public Education and Outreach/Public Involvement and Participation program plan to

## **Annual Report MS4 General Permit No. WI-S050075-1**

fulfill this requirement. The final plan is scheduled to be submitted with the City of Menasha Storm Water Management Plan.

The City will begin implementation of this plan in 2008. Parts of it will be implemented in cooperation with the permitted communities listed above and NEWSC. A partnership agreement or memorandum of understanding (MOU) may be developed with one or more of the communities to assist in implementation.

The City of Menasha, in cooperation with Calumet, Winnebago, and Outagamie Counties, the City of Appleton, and the Towns of Menasha and Harrison, participated in two Urban Clean Sweep programs for household hazardous waste.

### **c. Illicit Discharge Detection and Elimination**

City officials and staff have been made aware of the permit conditions in this section and the deadlines for meeting them. City staff and officials have met with and will continue to meet with other permitted community staff and officials within Calumet County to discuss various methods, strategies, and potential partnerships to meet the conditions. It is anticipated that the model illicit discharge ordinance developed by NEWSC will be used to draft the City's ordinance and that the draft ordinance will be submitted to DNR by October 13, 2008. Enactment and implementation of the ordinance is planned to occur prior to April 13, 2009. Proposed illicit discharge response procedures will also be submitted to DNR by October 13, 2008. The initial field screening and the development of an ongoing field screening program plan will be completed and submitted to DNR by October 13, 2009. The ordinance, response procedures, and screening program plans will be integrated into the City of Menasha Storm Water Management Plan.

### **d. Construction Site Pollutant Control**

City officials and staff have been made aware of the permit conditions in this section and the deadlines for meeting them. At the end of 2007, staff drafted a City construction site erosion control ordinance based on a model ordinance developed by NEWSC. A City staff member assisted NEWSC in 2006 & 2007 in the development of the model ordinance. It is anticipated that informational meetings and public hearings on the draft ordinance will occur in spring 2008. The ordinance will be brought before the Common Council for adoption in May of 2008, with a beginning enforcement date of October 1, 2008. The Public Works Department will administer and enforce the ordinance. Staff will begin development of construction site inspection and enforcement procedures based on the completed draft ordinances. The draft ordinance and inspection and enforcement procedures for it will be submitted to DNR by April 21, 2008 as part of the Calumet County Storm Water Management Plan.

### **e. Post-Construction Stormwater Management**

City officials and staff have been made aware of the permit conditions in this section and the deadlines for meeting them. At the end of 2007, staff was drafting a city post-construction storm water management ordinance based on a model ordinance developed by NEWSC. A city staff member assisted NEWSC in 2006 & 2007 in the development of the model ordinance. It is anticipated that informational meetings and public hearings on the draft ordinance will occur in spring 2008. The ordinance will be brought before Common Council for adoption in May of 2008, with a beginning

## **Annual Report MS4 General Permit No. WI-S050075-1**

enforcement date of October 1, 2008. The Engineering Department will administer and enforce the ordinance. Staff will begin development of long-term maintenance procedures of storm water management facilities based on the completed draft ordinances. The draft ordinance and long-term maintenance procedures for it will be submitted to DNR by April 13, 2008 as part of the City of Menasha Storm Water Management Plan.

### **f. Pollution Prevention**

City officials and staff have been made aware of the permit conditions in this section and the deadlines for meeting them. However a comprehensive pollution prevention program plan that establishes measurable goals for pollution prevention did not exist in 2007. Department of Public Works staff will develop such a plan in 2008 and submit it to DNR as part of the City of Menasha Annual Report under MS4 General Permit No. WI-S050075-1 Storm Water Management Plan by October 13, 2008. It is anticipated that the plan will be implemented by April 13, 2009.

### **g. Storm Water Quality Management**

The City of Menasha owns and maintains 6 structural flood control facilities within the areas covered by this permit. City staff does not currently have the technical expertise to conduct the pollutant-loading analysis required by this section.

In 2007, City of Menasha staff met twice with staff from other adjacent permitted communities and a representative from an engineering consulting firm to discuss potential partnerships to meet permit conditions under this section.

In 2005 the City of Menasha applied for and received a DNR Stormwater Planning Grant to complete a detailed analysis of existing storm runoff, including the amount of sediment currently entering waters of the state from Menasha's surface and storm sewer flows, and a discussion of current storm water management systems in place.

The report is scheduled to be reviewed at the April 21, 2008 Common Council meeting.

### **h. Storm Sewer System Map**

The Storm Sewer System Map is expected to be completed by fall 2008.

**SECTION IV. General Information**

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Officials and staff have been kept apprised of the permit and its requirements by attending and participating in the following meetings:

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## Annual Report MS4 General Permit No. WI-S050075-1

- Monthly meetings of the NEWSOC Erosion Control Committee to discuss construction site pollutant control and post-construction stormwater management requirements and methods to meet them

City Staff attended three educational workshops in 2007 conducted by UWEX on stormwater permit requirements.

On September 21, 2007, staff from Calumet County, the City of Menasha and other permitted communities within Calumet County sponsored and conducted a bus tour and educational workshop for County and local government officials and staff and the media. The tour and workshop focused on permit requirements, natural resource problems and best management practices related to the permits, and how communities might work together to meet permit conditions.

NEWSOC also sponsored or conducted various educational activities on a regional basis in 2006 and 2007 that were attended by or reached City officials and staff. For a list of these activities, please refer to the annual report submitted by NEWSOC to DNR.

### c. Title and date of stormwater management plan.

Note: Sections of the City of Menasha Storm Water Management Plan are being developed as permit conditions and deadlines are met. Sections will be submitted to DNR as they are completed.

### d. Describe cooperative efforts to perform one or more conditions of the general permit.

This cooperative effort assists the City in meeting a portion of permit requirement 2.1.3 under Public Education and Outreach. Its purpose is to promote the proper use of lawn and garden fertilizers by the public.

The City of Menasha is a member of NEWSOC. In 2007, NEWSOC applied for (and has since been awarded) a DNR grant to help develop and implement a focused marketing campaign to area homeowners and renters. The purpose of the campaign is to positively change their behaviors related to lawn and garden fertilizer applications. The City, and all other permitted communities that are members of NEWSOC, signed a memorandum of understanding (MOU) with NEWSOC and East Central Wisconsin Regional Planning Commission (ECWRPC) to endorse the use of City dues to NEWSOC in the marketing campaign as a grant match funds and to allow ECWRPC to act as financial administrator of the grant funds. A copy of the MOU document has been submitted with this report.

**SECTION V. Permit Conditions**

a. Public Education and Outreach

The City of Menasha, in cooperation with Calumet County, the City of Appleton, the Town of Harrison, and Northeast Wisconsin Stormwater Consortium, developed a draft Public Education and Outreach/Public Involvement and Participation program plan to fulfill this requirement. The final plan is scheduled to be submitted with the City of Menasha Storm Water Management Plan.

The City will begin implementation of this plan in 2008. Parts of it will be implemented in cooperation with the permitted communities listed above and NEWSC. A partnership agreement or memorandum of understanding (MOU) may be developed with one or more of the communities to assist in implementation. The city, alone and in cooperation with NEWSC and other permitted communities, has developed materials for and completed activities designed to meet requirements under section 2.1 of the general permit during 2006 and 2007. Although the city's Public Education and Outreach/Public Involvement has not yet been adopted, the completed materials and activities meet some of the city permit requirements. Therefore, the city wishes to report them as such. A short description of them is provided below.

City staff members served on the NEWSC Information and Education committee during 2006 and 2007. The committee and NEWSC as a whole developed materials for and implemented public education and outreach activities designed to meet permit requirements 2.1.1 through 2.1.8 during those years. Please refer to the Public Education and Outreach sections of the annual report submitted by NEWSC to DNR for a list of the materials and activities.

City staff created materials for distribution and distributed materials created by NEWSC via the city website and newsletter. The city newsletter reaches all households in the city of Menasha. These materials were designed to meet portions or all permit requirements of 2.1.2, 2.1.3, and 2.15; informing and educating the public about property management of hazardous household materials, promoting beneficial reuse of leaves and grass clippings and proper use of fertilizers and pesticides, and promoting infiltration of residential storm water runoff.

The City of Menasha, in cooperation with Calumet, Winnebago, and Outagamie Counties, the City of Appleton, and the Towns of Menasha and Harrison, participated in promoting an Urban Clean Sweep program to dispose of household hazardous wastes. Educational brochures, advertising, and news articles were distributed to make people aware of why proper disposal of hazardous wastes is important. This program helped the city to meet requirements of Section 2.1.2 in 2007.

b. Public Involvement and Participation

The City of Menasha, in cooperation with Calumet County, the City of Appleton, the Town of Harrison, and Northeast Wisconsin Stormwater Consortium, developed a draft Public Education and Outreach/Public Involvement and Participation program plan to

## **Annual Report MS4 General Permit No. WI-S050075-1**

fulfill this requirement. The final plan is scheduled to be submitted with the City of Menasha Storm Water Management Plan.

The City will begin implementation of this plan in 2008. Parts of it will be implemented in cooperation with the permitted communities listed above and NEWSC. A partnership agreement or memorandum of understanding (MOU) may be developed with one or more of the communities to assist in implementation.

The City of Menasha, in cooperation with Calumet, Winnebago, and Outagamie Counties, the City of Appleton, and the Towns of Menasha and Harrison, participated in two Urban Clean Sweep programs for household hazardous waste.

### **c. Illicit Discharge Detection and Elimination**

City officials and staff have been made aware of the permit conditions in this section and the deadlines for meeting them. City staff and officials have met with and will continue to meet with other permitted community staff and officials within Calumet County to discuss various methods, strategies, and potential partnerships to meet the conditions. It is anticipated that the model illicit discharge ordinance developed by NEWSC will be used to draft the City's ordinance and that the draft ordinance will be submitted to DNR by October 13, 2008. Enactment and implementation of the ordinance is planned to occur prior to April 13, 2009. Proposed illicit discharge response procedures will also be submitted to DNR by October 13, 2008. The initial field screening and the development of an ongoing field screening program plan will be completed and submitted to DNR by October 13, 2009. The ordinance, response procedures, and screening program plans will be integrated into the City of Menasha Storm Water Management Plan.

### **d. Construction Site Pollutant Control**

City officials and staff have been made aware of the permit conditions in this section and the deadlines for meeting them. At the end of 2007, staff drafted a City construction site erosion control ordinance based on a model ordinance developed by NEWSC. A City staff member assisted NEWSC in 2006 & 2007 in the development of the model ordinance. It is anticipated that informational meetings and public hearings on the draft ordinance will occur in spring 2008. The ordinance will be brought before the Common Council for adoption in May of 2008, with a beginning enforcement date of October 1, 2008. The Public Works Department will administer and enforce the ordinance. Staff will begin development of construction site inspection and enforcement procedures based on the completed draft ordinances. The draft ordinance and inspection and enforcement procedures for it will be submitted to DNR by April 21, 2008 as part of the Calumet County Storm Water Management Plan.

### **e. Post-Construction Stormwater Management**

City officials and staff have been made aware of the permit conditions in this section and the deadlines for meeting them. At the end of 2007, staff was drafting a city post-construction storm water management ordinance based on a model ordinance developed by NEWSC. A city staff member assisted NEWSC in 2006 & 2007 in the development of the model ordinance. It is anticipated that informational meetings and public hearings on the draft ordinance will occur in spring 2008. The ordinance will be brought before Common Council for adoption in May of 2008, with a beginning

## **Annual Report MS4 General Permit No. WI-S050075-1**

enforcement date of October 1, 2008. The Engineering Department will administer and enforce the ordinance. Staff will begin development of long-term maintenance procedures of storm water management facilities based on the completed draft ordinances. The draft ordinance and long-term maintenance procedures for it will be submitted to DNR by April 13, 2008 as part of the City of Menasha Storm Water Management Plan.

### **f. Pollution Prevention**

City officials and staff have been made aware of the permit conditions in this section and the deadlines for meeting them. However a comprehensive pollution prevention program plan that establishes measurable goals for pollution prevention did not exist in 2007. Department of Public Works staff will develop such a plan in 2008 and submit it to DNR as part of the City of Menasha Annual Report under MS4 General Permit No. WI-S050075-1 Storm Water Management Plan by October 13, 2008. It is anticipated that the plan will be implemented by April 13, 2009.

### **g. Storm Water Quality Management**

The City of Menasha owns and maintains 6 structural flood control facilities within the areas covered by this permit. City staff does not currently have the technical expertise to conduct the pollutant-loading analysis required by this section.

In 2007, City of Menasha staff met twice with staff from other adjacent permitted communities and a representative from an engineering consulting firm to discuss potential partnerships to meet permit conditions under this section.

In 2005 the City of Menasha applied for and received a DNR Stormwater Planning Grant to complete a detailed analysis of existing storm runoff, including the amount of sediment currently entering waters of the state from Menasha's surface and storm sewer flows, and a discussion of current storm water management systems in place.

The report is scheduled to be reviewed at the April 21, 2008 Common Council meeting.

### **h. Storm Sewer System Map**

The Storm Sewer System Map is expected to be completed by fall 2008.

MONTHLY STATEMENT OF UNIT PRICE CONTRACT AMOUNT

Request for: Partial Payment No. PR-1450701A-01 Date: April 8, 2008  
 (Partial/~~Final~~)

Project: Wastewater Collection System Rehabilitation Improvements, Phase 3

Owner: City of Menasha

Contractor: Insituform Technologies USA, Inc. E145-05.11

Original Contract Amount as Bid:	\$1,582,723.00
* (ADD) (DEDUCT) by Revised Quantities:	\$0.00
* Amount Added by Change Order:	\$0.00
* Amount Deducted by Change Order:	\$0.00
<b>TOTAL CONTRACT THIS DATE:</b>	<b>\$1,582,723.00</b>
Value of Work Completed to Date:	\$195,844.00
Less <u>5</u> Per Cent Retainable:	(\$9,792.20)
<b>Net Total:</b>	<b>\$186,051.80</b>

Project on Schedule:  X  YES        NO  12  % Complete

Record of Previous Payments:

1	_____	6	_____	11	_____
2	_____	7	_____	12	_____
3	_____	8	_____	13	_____
4	_____	9	_____	14	_____
5	_____	10	_____	15	_____

Amount Previously Paid: \$0.00

**AMOUNT DUE THIS REQUEST:** \$186,051.80

This is to certify that, in accordance with the terms of the Contract, the Contractor is entitled to a payment in the amount requested.

Engineer's Approval for Payment

Owner's Approval for Payment

BY:   
 Taryn S. Nall, P.E.  
 KAEMPFER & ASSOCIATES, INC.

BY: \_\_\_\_\_  
 Mark Radtke, P.E., Dir. of Public Works  
 CITY OF MENASHA

\* See Unit Price Contract Spreadsheet  
K:\E145\0511\PR\INSITUFORM#1.doc

Unit Price Contract  
 E145-07-01A Sanitary Sewer Lining  
 March 31, 2008

**PROJECT: Wastewater Collection System Rehabilitation Improvements Phase 3**  
**OWNER: City of Menasha**  
**CONTRACTOR: Insituform Technologies USA, Inc.**

ITEM NO.	DESCRIPTION	UNITS	UNIT PRICE	BID QTY.	BID TOTAL	PREVIOUSLY REQUESTED		CURRENT REQUEST		REVISED * QUANTITY	TOTAL	ADD (+) DEDUCT (-)
						QTY.	TOTAL	QTY.	TOTAL			
1A	21-inch sanitary sewer CIPP lining	LF	\$64.00	1,006	\$64,384.00	0	\$0.00		\$0.00	0	\$0.00	-\$64,384.00
2A	18-inch sanitary sewer CIPP lining	LF	\$44.00	7,643	\$336,292.00	0	\$0.00	2,021	\$88,924.00	2021	\$88,924.00	-\$247,368.00
3A	15-inch sanitary sewer CIPP lining	LF	\$37.00	2,547	\$94,239.00	0	\$0.00		\$0.00	0	\$0.00	-\$94,239.00
4A	12-inch sanitary sewer CIPP lining	LF	\$31.00	13,417	\$415,927.00	0	\$0.00		\$0.00	0	\$0.00	-\$415,927.00
5A	10-inch sanitary sewer CIPP lining	LF	\$27.00	6,546	\$176,742.00	0	\$0.00		\$0.00	0	\$0.00	-\$176,742.00
6A	8-inch sanitary sewer CIPP lining	LF	\$24.00	14,650	\$351,600.00	0	\$0.00	4,455	\$106,920.00	4455	\$106,920.00	-\$244,680.00
7A	Pressure inject grouting lateral connection	EA	\$300.00	220	\$66,000.00	0	\$0.00		\$0.00	0	\$0.00	-\$66,000.00
8A	Pressure inject grout material as specified in Article C2.18	GAL	\$25.00	580	\$14,500.00	0	\$0.00		\$0.00	0	\$0.00	-\$14,500.00
<b>OPTIONAL WORK ITEMS</b>												
9A	12-inch sanitary sewer CIPP lining on Melissa St.	LF	\$30.00	399	\$11,970.00	0	\$0.00		\$0.00	0	\$0.00	-\$11,970.00
10A	10-inch sanitary sewer CIPP lining on Jefferson Street and Brighton Drive	LF	\$28.00	698	\$19,544.00	0	\$0.00		\$0.00	0	\$0.00	-\$19,544.00
11A	8-inch sanitary sewer CIPP lining on Eighth Street and Harding Street	LF	\$25.00	879	\$21,975.00	0	\$0.00		\$0.00	0	\$0.00	-\$21,975.00
12A	Pressure inject grouting lateral connection	EA	\$300.00	26	\$7,800.00	0	\$0.00		\$0.00	0	\$0.00	-\$7,800.00
13A	Pressure inject grout material as specified in Article C2.18	GAL	\$25.00	70	\$1,750.00	0	\$0.00		\$0.00	0	\$0.00	-\$1,750.00
<b>TOTAL, PART A ITEMS 1A THROUGH 13A</b>						<b>\$1,582,723.00</b>			<b>\$0.00</b>		<b>\$195,844.00</b>	<b>-\$1,386,879.00</b>

K:\E1450511\PR\INSITUFORM\PR#1



**Insituform**  
Technologies<sup>®</sup> USA, Inc.

CITY OF MENASHA  
C/O KAEMPFER & ASSOCIATES, INC.  
650 E. JACKSON STREET  
OCONTO FALLS, WI 54154

Contract : Wastewater Coll. Rehab-Phase 3  
Project :

PAGE : 1 of 1  
DATE : 03/31/08  
ESTIMATE # 1  
INVOICE # 56880  
JOB # 121202  
BILLING PERIOD : 03/01/08 - 03/19/08  
FEDERAL ID. : 13-3032158

12897 MAIN ST  
LEMONT, IL 60439  
630 257-2209  
  
Please Remit Payment to :  
PO BOX 502657  
ST LOUIS, MO 63150-2657

ITEM NO	DESCRIPTION OF WORK	QUANTITY	UNIT	CONTRACT UNIT PRICE	PRICE	COMPLETED THIS PERIOD		COMPLETED TO DATE	
						QUANTITY	AMOUNT	QUANTITY	AMOUNT
01	21" Sanitary Sewer Lining	1006	LF	\$64.00	\$64,384.00	0.00	\$0.00	0.00	\$0.00
02	18" Sanitary Sewer Lining	7643	LF	\$44.00	\$336,292.00	2021.00	\$88,924.00	2021.00	\$88,924.00
03	15" Sanitary Sewer Lining	2547	LF	\$37.00	\$94,239.00	0.00	\$0.00	0.00	\$0.00
04	12" Sanitary Sewer Lining	13417	LF	\$31.00	\$415,927.00	0.00	\$0.00	0.00	\$0.00
05	10" Sanitary Sewer Lining	6546	LF	\$27.00	\$176,742.00	0.00	\$0.00	0.00	\$0.00
06	8" Sanitary Sewer Lining	14650	LF	\$24.00	\$351,600.00	4455.00	\$106,920.00	4455.00	\$106,920.00
07	Pressure Inject Lateral Connec	220	EA	\$300.00	\$66,000.00	0.00	\$0.00	0.00	\$0.00
08	Gallons of pressure Inject Grt	560	GA	\$25.00	\$14,500.00	0.00	\$0.00	0.00	\$0.00
09	12" Sanitary Sewer Lining-Alt	399	LF	\$30.00	\$11,970.00	0.00	\$0.00	0.00	\$0.00
10	10" Sanitary Sewer Lining-Alt	698	LF	\$28.00	\$19,544.00	0.00	\$0.00	0.00	\$0.00
11	8" Sanitary Sewer Lining-Alt	879	LF	\$25.00	\$21,975.00	0.00	\$0.00	0.00	\$0.00
12	Pressure Inject Lat Conn-Alt	26	EA	\$300.00	\$7,800.00	0.00	\$0.00	0.00	\$0.00
13	Gal of pressure Inject grt mat	70	GA	\$25.00	\$1,750.00	0.00	\$0.00	0.00	\$0.00

**TOTAL CONTRACT \$1,582,723.00      EARNED THIS PERIOD \$195,844.00      EARNED TO DATE \$195,844.00**

Month Gross	\$195,844.00	Sales Tax	
Sales Tax		Less: Retainage @	\$9,792.20
Month Retention	\$9,792.20	Previous Estimates	
Month Open	\$186,051.80	Other	
Customer #	1757072	Total Deductions from Earned to Date	
		<b>AMOUNT DUE THIS ESTIMATE</b>	<b>\$186,051.80</b>

# Menasha, WI 121202

Shot-Seg	Date		MH Bgn - End	Bid Item #	Bid Item Description	UM	Quantity	Unit Price	Extended Total
	Performed								
0003-0004	03/04/2008	742/639	2	18" Sanitary Sewer Lining	LF	389.00	\$ 44.00	\$ 17,116.00	
0017-0025	03/05/2008	639/638	2	18" Sanitary Sewer Lining	LF	467.00	\$ 44.00	\$ 20,548.00	
0018-0026	03/06/2008	638/637	2	18" Sanitary Sewer Lining	LF	403.00	\$ 44.00	\$ 17,732.00	
0024-0032	03/11/2008	441/442	2	18" Sanitary Sewer Lining	LF	168.00	\$ 44.00	\$ 7,392.00	
0024-0033	03/11/2008	442/443	2	18" Sanitary Sewer Lining	LF	245.00	\$ 44.00	\$ 10,780.00	
0025-0034	03/12/2008	410/413	2	18" Sanitary Sewer Lining	LF	349.00	\$ 44.00	\$ 15,356.00	
0043-0057	03/18/2008	618/617	6	8" Sanitary Sewer Lining	LF	295.00	\$ 24.00	\$ 7,080.00	
0044-0058	03/18/2008	599/600	6	8" Sanitary Sewer Lining	LF	265.00	\$ 24.00	\$ 6,360.00	
0045-0059	02/29/2008	625/624	6	8" Sanitary Sewer Lining	LF	132.00	\$ 24.00	\$ 3,168.00	
0046-0060	02/29/2008	597/596	6	8" Sanitary Sewer Lining	LF	159.00	\$ 24.00	\$ 3,816.00	
0047-0061	03/14/2008	596/595	6	8" Sanitary Sewer Lining	LF	234.00	\$ 24.00	\$ 5,616.00	
0047-0062	03/14/2008	595/594	6	8" Sanitary Sewer Lining	LF	240.00	\$ 24.00	\$ 5,760.00	
0049-0064	02/28/2008	661/662	6	8" Sanitary Sewer Lining	LF	462.00	\$ 24.00	\$ 11,088.00	
0050-0065	02/27/2008	662/607	6	8" Sanitary Sewer Lining	LF	399.00	\$ 24.00	\$ 9,576.00	
0052-0067	03/17/2008	614/613	6	8" Sanitary Sewer Lining	LF	155.00	\$ 24.00	\$ 3,720.00	
0055-0070	03/15/2008	664/665	6	8" Sanitary Sewer Lining	LF	283.00	\$ 24.00	\$ 6,792.00	
0056-0071	03/13/2008	665/609	6	8" Sanitary Sewer Lining	LF	284.00	\$ 24.00	\$ 6,816.00	
0056-0072	03/13/2008	609/608	6	8" Sanitary Sewer Lining	LF	284.00	\$ 24.00	\$ 6,816.00	
0059-0075	02/26/2008	627/622	6	8" Sanitary Sewer Lining	LF	264.00	\$ 24.00	\$ 6,336.00	
0059-0076	02/26/2008	622/594	6	8" Sanitary Sewer Lining	LF	326.00	\$ 24.00	\$ 7,824.00	
0060-0077	03/15/2008	591/591A	6	8" Sanitary Sewer Lining	LF	84.00	\$ 24.00	\$ 2,016.00	
0062-0079	03/17/2008	363/361	6	8" Sanitary Sewer Lining	LF	286.00	\$ 24.00	\$ 6,864.00	
0062-0080	03/17/2008	361/361A	6	8" Sanitary Sewer Lining	LF	78.00	\$ 24.00	\$ 1,872.00	
0084-0112	03/19/2008	288/286	6	8" Sanitary Sewer Lining	LF	225.00	\$ 24.00	\$ 5,400.00	
<b>Billable Summary</b>								<b>Sub Total</b>	<b>\$ 195,844.00</b>
<b>121202</b>								<b>Sub Total</b>	<b>\$ 195,844.00</b>
								<b>\$</b>	<b>\$ 195,844.00</b>

## Segment Work Complete

### Billable Summary



**Insituform**  
*Technologies<sup>®</sup> USA, Inc.*

*Worldwide Pipeline  
Rehabilitation*

12897 Main Street  
Lemont, IL 60439

Tel: (630) 257-2200  
Fax: (630) 257-9712  
www.insituform.com

## WAIVER OF LIEN - PARTIAL (REVISED)

State of Illinois  
Cook County

*To all whom it may concern:*

The undersigned, *Insituform Technologies USA, Inc.* has been employed by the **City of Menasha, Wisconsin, Menasha, Wisconsin** to furnish labor and/or materials for the construction, repair, or reconstruction of the project known as the **Wastewater Collection System Rehabilitation Improvements - Phase 3 Project in Menasha, Wisconsin.**

Now, therefore, know ye, that *Insituform Technologies USA, Inc.* the undersigned, for and in consideration of **\$186,051.80** U.S. Dollars, and other good and valuable considerations, conditioned upon receipt thereof, does hereby waive and release any and all lien, or claim or right of lien on said above described project under the Statutes of the State of Wisconsin relating to Mechanic's Liens, on account of labor or materials, or both, furnished up to this date by the undersigned to or on account of the said **City of Menasha, Wisconsin** for said project.

Given under my hand and seal this **3rd day of April, 2008.**

*Insituform Technologies USA, Inc.*

  
Michael A. Smyth, Senior Project Manager

Exact copy should be made and retained.



April 17, 2008

Board of Public Works  
City of Menasha  
Menasha, WI 54952

RE: Request for Stop Sign on Grove Street at Melissa Street

Members of the Board:

A request has been received for the placement of a stop sign on Grove Street at Melissa Street. The City is obligated to comply with the Manual on Uniform Traffic Control Devices (MUTCD) when considering this type of traffic control sign installation. The MUTCD recommends the completion of an engineering study to determine whether warrants for the sign placement are met.

It is my recommendation the Engineering Department be directed to perform the necessary engineering study and return to the Board with its findings.

Sincerely,

Mark Radtke  
Director of Public Works



○

Dear menasha mayor laux  
My name is Faithe Ann Huff.

am 9 years old. and I live on

melissa St my address is

1143. and I'm fighting this

letter because I think we need

a Stop Sign on the end of melissa

St and Grove. because when its

Summer time people will want

to ride there bikes and when

cars are going by there will

be no Stop Sign so they can

go faster and as there doing

that they might hit some one

→

and I no you want to make this  
a better town heres your chance  
if you want to take me on my  
offer call 480-1473 Thank you



City of Menasha • Office of the Mayor  
Joseph F. Laux, Mayor

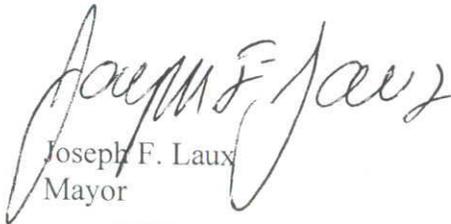
April 10, 2008

Faithe Huff  
1143 Melissa St.  
Menasha, WI 54952

Dear Faithe:

Thank you for your letter concerning a stop sign at the corner of Grove Street and Melissa Street. I will be passing your letter on to the City of Menasha's Director of Public Works, Mark Radtke.

Best Regards,



Joseph F. Laux  
Mayor

Cc: Mark Radtke, Director of Public Works

## **RESOLUTION R-6-08**

**FINAL RESOLUTION AUTHORIZING PUBLIC IMPROVEMENTS AND LEVYING SPECIAL ASSESSMENTS AGAINST BENEFITED PROPERTY.**

*WHEREAS, the Common Council of the City of Menasha, Wisconsin, held a Public Hearing at the Council Chambers in the City Hall at 7:00 p.m. on April 21, 2008, for the purpose of hearing all interested persons regarding Concrete Curb and Gutter Construction, 4" Asphaltic Concrete Pavement Construction and Various Associated Items with appurtenances in the following area:*

- A. Improvements
  - 1. Concrete Curb and Gutter Construction
  - 2. 4" Asphaltic Concrete Pavement Construction
  - 3. Various Associated Items
  
- B. Location of Improvements
  - 1. Lake Park Heights Subdivision
  - 2. Walker Subdivision
  - 3. Northridge Manor II Subdivision

*NOW, THEREFORE, BE IT RESOLVED by the Common Council of the City of Menasha as follows:*

- 1. That the report of the Board of Public Works pertaining to the construction of the described public improvements, including plans and specifications, is, therefore and hereby, reaffirmed.*
- 2. That payment for said improvements be made by assessing the applicable costs to the property benefited as indicated in said report.*
- 3. The schedule of assessments made under the police power, and the amount assessed against each parcel, are true and correct and are hereby confirmed.*
- 4. That the assessment for all projects included on said report is a single assessment.*
- 5. That the assessment against any parcel shall be paid in accordance with Section 3-2-14 of the Menasha Municipal Code.*
- 6. The City Clerk is directed to publish this resolution in the Official Newspaper of the City.*
- 7. The Clerk is further directed to mail a copy of this resolution to every property owner whose name appears on the assessment roll and whose post office address is known or can, with diligence, be ascertained.*

*Passed and approved this \_\_\_\_ day of \_\_\_\_\_, 2008.*

\_\_\_\_\_  
*Donald Merkes, Mayor*

ATTEST: \_\_\_\_\_  
*Debbie A. Galeazzi, City Clerk*

ORDINANCE O - 3 - 08

AN ORDINANCE RELATING TO PROHIBITED PARKING (River Street)

Introduced by Alderman Wisneski

The Common Council of the City of Menasha does ordain as follows:

SECTION 1: Sec. 10 – 1 – 26 (af) is created to read as follows:

Both sides of River Street west of the westernmost set of railroad tracks”

SECTION 2: This ordinance shall become effective upon its passage and publication as provided by law.

Passed and approved this \_\_\_\_\_ day of \_\_\_\_\_, 2008.

\_\_\_\_\_  
Donald Merkes, Mayor

ATTEST:

\_\_\_\_\_  
Deborah A. Galeazzi, City Clerk

ORDINANCE O - 4 - 08

AN ORDINANCE RELATING TO PROHIBITED PARKING (Baldwin Street)

Introduced by Alderman Wisneski

The Common Council of the City of Menasha does ordain as follows:

SECTION 1: Sec. 10 – 1 – 26 (ag) is created to read as follows:

The east side of Baldwin Street.

SECTION 2: This ordinance shall become effective upon its passage and publication as provided by law.

Passed and approved this \_\_\_\_\_ day of \_\_\_\_\_, 2008.

\_\_\_\_\_  
Donald Merkes, Mayor

ATTEST:

\_\_\_\_\_  
Deborah A. Galeazzi, City Clerk